TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 160-18852-1

Job Description: HDP RFP-CBA-022 (21 DAY TAT)

For:
Westinghouse Electric Company LLC
3300 State Road P
Festus, MO 63028

Attention: Mr. Martin Swanson

Approved for release.
Ivan H Vania
Project Manager II
9/14/2016 4:51 PM

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09/14/2016

The test results in this report meet NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted. Results pertain only to samples listed in this report. Pursuant to NELAP, this report shall not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of TestAmerica and its client. All questions regarding this report should be directed to the TestAmerica Project Manager.

Louisiana Lab Certification ID (Non-Potable, Solid/Haz. Material): 106151
Florida Lab Certification ID (Drinking Water): E87689.

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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

CASE NARRATIVE

Client: Westinghouse Electric Company LLC

Project: HDP RFP-CBA-022 (21 DAY TAT)

Report Number: 160-18852-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica St. Louis attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 8/29/2016 11:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.8º C.

VOLATILE ORGANIC COMPOUNDS (GC/MS)

Samples TB-082516 (160-18852-1), GW-BR10RB-082516 (160-18852-2), GW-GWJJ-082516 (160-18852-3), GW-BR13JC-082516 (160-18852-4), GW-BR04JC-082516 (160-18852-5), GW-BR08JC-082516 (160-18852-6), GW-BR08JC-082516-FD (160-18852-7), GW-BR10JC-082516 (160-18852-8), GW-NB72-082516 (160-18852-9), GW-NB73-082516 (160-18852-10) and GW-NB34-082516 (160-18852-11) were analyzed for Volatile Organic Compounds (GC/MS) in accordance with EPA SW-846 Method 8260C. The samples were analyzed on 09/04/2016 and 09/07/2016.

The continuing calibration verification (CCV) associated with batch 160-267958 recovered above the upper control limit for Chloromethane, Vinyl acetate, Bromomethane, Vinyl chloride, and Chloroethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: (CCVIS 160-267958/5).

The following compounds did not meet the minimum relative response factor limits in the continuing calibration verification (CCV) associated with batch 160-267958: Acetone, n-Butanol, 2-Butanone, and 2-Hexanone. A low level CCV was analyzed at the base reporting limit of 1ug/L and the affected analytes were detected. Target analytes recovering above the reporting limit will be qualified and reported. (CCVIS 160-267958/5)

The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 160-267958 recovered outside control limits for the following analytes: Chloroethane and Vinyl chloride. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with analytical batch 160-267958. LCS/LCSD were performed in order to demonstrate accuracy and replicate-precision. (LCS 160-267958/6) and (LCSD 160-267958/7)

The following samples in batch 160-267958 were analyzed at reduced volume due to high concentrations of target analytes:

GW-GWJJ-082516 (160-18852-3), GW-BR04JC-082516 (160-18852-5) and GW-BR08JC-082516 (160-18852-6). The reporting limits have been elevated by the appropriate factor.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch 268249. A LCS/LCSD were performed to demonstrate accuracy and replicate precision.GW-NB34-082516 (160-18852-11)

The following sample in batch 160-268249 was analyzed at reduced volume due to high concentrations of target analytes: GW-NB34-082516 (160-18852-11). The reporting limits have been elevated by the appropriate factor.

The following compounds did not meet the minimum relative response factor limits in the continuing calibration verification (CCV) associated with batch 160-268257: 2-Butanone, n-Butanol, 2-Hexanone, and Acetone. A low level CCV was analyzed at the base reporting limit of 1ug/L and the affected analytes were detected. Affected target analytes recovering above the reporting limit in the associated samples will be qualified and reported. (CCVIS 160-268257/7)

The following samples in batch 160-268257 were analyzed at reduced volume due to high concentrations of target analytes: GW-GWJJ-082516 (160-18852-3), GW-BR08JC-082516 (160-18852-6), GW-BR08JC-082516-FD (160-18852-7), GW-BR08JC-082516-MS (160-18852-7[MS]), GW-BR08JC-082516-MSD (160-18852-7[MSD]), GW-BR10JC-082516 (160-18852-8), GW-NB72-082516 (160-18852-9) and GW-NB73-082516 (160-18852-10). The reporting limits have been elevated by the appropriate factor.

The matrix spike (MS) and duplicate (MSD) for 160-268257 required dilution. The MS/MSD for parent, GW-BR08JC-082516-FD (160-18852-7), were analyzed at an incorrect dilution. The MS/MSD is out of hold and cannot be re-analyzed. A laboratory control sample and duplicate (LCS/LCSD) were analyzed to demonstrate reproducibility. Data is being reported with this narrative.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples GW-BR10RB-082516 (160-18852-2), GW-GWJJ-082516 (160-18852-3), GW-BR13JC-082516 (160-18852-4), GW-BR04JC-082516 (160-18852-5) and GW-NB34-082516 (160-18852-11) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were prepared on 09/06/2016 and analyzed on 09/09/2016 and 09/12/2016.

Preparation Batch 160-268210:
The detection goal of 0.100 pCi/L was not met for the following samples due to a reduction of sample size attributed to historic high activity: (MB 160-268210/1-A). (See Prep NCM: 160-92846) Analytical results are reported with the detection limit achieved.

Due to historical high activity a reduced sample size along with a,laboratory control sample and laboratory control sample duplicate were prepared for the following samples:GW-BR10RB-082516 (160-18852-2), GW-GWJJ-082516 (160-18852-3), GW-BR13JC-082516 (160-18852-4), GW-BR04JC-082516 (160-18852-5) and GW-NB34-082516 (160-18852-11).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TECHNETIUM-99 (LSC)

Samples GW-BR10RB-082516 (160-18852-2), GW-GWJJ-082516 (160-18852-3), GW-BR13JC-082516 (160-18852-4), GW-BR04JC-082516 (160-18852-5) and GW-NB34-082516 (160-18852-11) were analyzed for Technetium-99 (LSC) in accordance with TC_02_RC. The samples were prepared on 09/01/2016 and analyzed on 09/06/2016.

Preparation Batch 160-267772:
The following sample has a tracer recovery above the 110% QC limit; (160-18472-A-13-C: 137%). Matrix interferences are suspected. The LCS (laboratory control sample) has an acceptable spike recovery demonstrating acceptable sample preparation and instrument performance. The sample carriers associated with the batch have been truncated to 100% to reduce any potential bias a high carrier recovery may have. GW-BR10RB-082516 (160-18852-2), GW-GWJJ-082516 (160-18852-3), GW-BR13JC-082516 (160-18852-4), GW-BR04JC-082516 (160-18852-5), GW-NB34-082516 (160-18852-11), (LCS 160-267772/2-A), (MB 160-267772/1-A), (160-18742-A-13-C), (160-18742-A-13-D MS) and (160-18742-B-13-C MSD).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample ID: TB-082516
Date Collected: 08/25/16 07:00
Date Received: 08/29/16 11:10

Lab Sample ID: 160-18852-1
Matrix: Water

Method: 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			09/04/16 17:01	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.10	ug/L			09/04/16 17:01	1
1,1,2-Trichloroethane	ND		1.0	0.13	ug/L			09/04/16 17:01	1
1,1-Dichloroethene	ND		1.0	0.10	ug/L			09/04/16 17:01	1
1,1-Dichloroethane	ND		1.0	0.070	ug/L			09/04/16 17:01	1
1,2,4-Trichlorobenzene	ND		1.0	0.10	ug/L			09/04/16 17:01	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.41	ug/L			09/04/16 17:01	1
1,2-Dichloroethane	ND		1.0	0.22	ug/L			09/04/16 17:01	1
1,2-Dichloroethene, Total	ND		2.0	0.14	ug/L			09/04/16 17:01	1
1,2-Dichloropropane	ND		1.0	0.10	ug/L			09/04/16 17:01	1
2-Butanone	ND		5.0	0.47	ug/L			09/04/16 17:01	1
2-Hexanone	ND		5.0	0.25	ug/L			09/04/16 17:01	1
4-Methyl-2-pentanone	ND		5.0	0.22	ug/L			09/04/16 17:01	1
Acetone	ND		2.0	0.55	ug/L			09/04/16 17:01	1
Benzene	ND		1.0	0.10	ug/L			09/04/16 17:01	1
Bromoform	ND		1.0	0.17	ug/L			09/04/16 17:01	1
Methyl bromide	ND		2.0	0.25	ug/L			09/04/16 17:01	1
Carbon disulfide	ND		1.0	0.10	ug/L			09/04/16 17:01	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			09/04/16 17:01	1
Chlorobenzene	ND		1.0	0.11	ug/L			09/04/16 17:01	1
Chlorodibromomethane	ND		1.0	0.14	ug/L			09/04/16 17:01	1
Chloroethane	ND	*	2.0	0.16	ug/L			09/04/16 17:01	1
Chloroform	ND		1.0	0.10	ug/L			09/04/16 17:01	1
Chloromethane	ND		2.0	0.10	ug/L			09/04/16 17:01	1
cis-1,2-Dichloroethene	ND		1.0	0.10	ug/L			09/04/16 17:01	1
cis-1,3-Dichloropropene	ND		1.0	0.16	ug/L			09/04/16 17:01	1
Bromodichloromethane	ND		1.0	0.14	ug/L			09/04/16 17:01	1
Ethylbenzene	ND		1.0	0.12	ug/L			09/04/16 17:01	1
1,2-Dibromoethane	ND		1.0	0.13	ug/L			09/04/16 17:01	1
Methylene Chloride	ND		1.0	0.27	ug/L			09/04/16 17:01	1
n-Butanol	ND		50	12	ug/L			09/04/16 17:01	1
Styrene	ND		1.0	0.13	ug/L			09/04/16 17:01	1
Tetrachloroethene	ND		1.0	0.18	ug/L			09/04/16 17:01	1
Toluene	ND		1.0	0.14	ug/L			09/04/16 17:01	1
trans-1,2-Dichloroethene	ND		1.0	0.10	ug/L			09/04/16 17:01	1
trans-1,3-Dichloropropene	ND		1.0	0.10	ug/L			09/04/16 17:01	1
Trichloroethene	ND		1.0	0.25	ug/L			09/04/16 17:01	1
Vinyl acetate	ND		2.0	0.18	ug/L			09/04/16 17:01	1
Vinyl chloride	ND	*	2.0	0.19	ug/L			09/04/16 17:01	1
Xylenes, Total	ND		3.0	0.26	ug/L			09/04/16 17:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*75 - 129*		*09/04/16 17:01*	*1*
4-Bromofluorobenzene (Surr)	*111*		*81 - 130*		*09/04/16 17:01*	*1*
Dibromofluoromethane (Surr)	*108*		*81 - 124*		*09/04/16 17:01*	*1*
Toluene-d8 (Surr)	*109*		*87 - 128*		*09/04/16 17:01*	*1*

Client Sample ID: GW-BR10RB-082516
Date Collected: 08/25/16 08:00
Date Received: 08/29/16 11:10

Lab Sample ID: 160-18852-2
Matrix: Water

Method: 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			09/04/16 17:26	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.10	ug/L			09/04/16 17:26	1
1,1,2-Trichloroethane	ND		1.0	0.13	ug/L			09/04/16 17:26	1
1,1-Dichloroethene	ND		1.0	0.10	ug/L			09/04/16 17:26	1
1,1-Dichloroethane	ND		1.0	0.070	ug/L			09/04/16 17:26	1
1,2,4-Trichlorobenzene	ND		1.0	0.10	ug/L			09/04/16 17:26	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.41	ug/L			09/04/16 17:26	1
1,2-Dichloroethane	ND		1.0	0.22	ug/L			09/04/16 17:26	1
1,2-Dichloroethene, Total	ND		2.0	0.14	ug/L			09/04/16 17:26	1
1,2-Dichloropropane	ND		1.0	0.10	ug/L			09/04/16 17:26	1
2-Butanone	ND		5.0	0.47	ug/L			09/04/16 17:26	1
2-Hexanone	ND		5.0	0.25	ug/L			09/04/16 17:26	1
4-Methyl-2-pentanone	ND		5.0	0.22	ug/L			09/04/16 17:26	1
Acetone	ND		2.0	0.55	ug/L			09/04/16 17:26	1
Benzene	ND		1.0	0.10	ug/L			09/04/16 17:26	1
Bromoform	ND		1.0	0.17	ug/L			09/04/16 17:26	1
Methyl bromide	ND		2.0	0.25	ug/L			09/04/16 17:26	1
Carbon disulfide	ND		1.0	0.10	ug/L			09/04/16 17:26	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			09/04/16 17:26	1
Chlorobenzene	ND		1.0	0.11	ug/L			09/04/16 17:26	1
Chlorodibromomethane	ND		1.0	0.14	ug/L			09/04/16 17:26	1
Chloroethane	ND	*	2.0	0.16	ug/L			09/04/16 17:26	1
Chloroform	ND		1.0	0.10	ug/L			09/04/16 17:26	1
Chloromethane	ND		2.0	0.10	ug/L			09/04/16 17:26	1
cis-1,2-Dichloroethene	ND		1.0	0.10	ug/L			09/04/16 17:26	1
cis-1,3-Dichloropropene	ND		1.0	0.16	ug/L			09/04/16 17:26	1
Bromodichloromethane	ND		1.0	0.14	ug/L			09/04/16 17:26	1
Ethylbenzene	ND		1.0	0.12	ug/L			09/04/16 17:26	1
1,2-Dibromoethane	ND		1.0	0.13	ug/L			09/04/16 17:26	1
Methylene Chloride	ND		1.0	0.27	ug/L			09/04/16 17:26	1
n-Butanol	ND		50	12	ug/L			09/04/16 17:26	1
Styrene	ND		1.0	0.13	ug/L			09/04/16 17:26	1
Tetrachloroethene	ND		1.0	0.18	ug/L			09/04/16 17:26	1
Toluene	ND		1.0	0.14	ug/L			09/04/16 17:26	1
trans-1,2-Dichloroethene	ND		1.0	0.10	ug/L			09/04/16 17:26	1
trans-1,3-Dichloropropene	ND		1.0	0.10	ug/L			09/04/16 17:26	1
Trichloroethene	ND		1.0	0.25	ug/L			09/04/16 17:26	1
Vinyl acetate	ND		2.0	0.18	ug/L			09/04/16 17:26	1
Vinyl chloride	ND	*	2.0	0.19	ug/L			09/04/16 17:26	1
Xylenes, Total	ND		3.0	0.26	ug/L			09/04/16 17:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*75 - 129*		*09/04/16 17:26*	*1*
4-Bromofluorobenzene (Surr)	*112*		*81 - 130*		*09/04/16 17:26*	*1*
Dibromofluoromethane (Surr)	*117*		*81 - 124*		*09/04/16 17:26*	*1*
Toluene-d8 (Surr)	*111*		*87 - 128*		*09/04/16 17:26*	*1*

Client Sample ID: GW-BR10RB-082516

Lab Sample ID: 160-18852-2

Date Collected: 08/25/16 08:00

Matrix: Water

Date Received: 08/29/16 11:10

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium 238	**0.125**		0.0590	0.0599	0.100	0.0209	pCi/L	09/06/16 13:27	09/12/16 15:01	1
Uranium 234	**3.21**		0.301	0.404	0.100	0.0700	pCi/L	09/06/16 13:27	09/12/16 15:01	1
Uranium-235/236	0.00867	U	0.0173	0.0174	0.100	0.0260	pCi/L	09/06/16 13:27	09/12/16 15:01	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Uranium 232	*66.0*		*30 - 110*	*09/06/16 13:27*	*09/12/16 15:01*	*1*

Method: TC-02-RC - Technetium-99 (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	-0.162	U	1.05	1.05	3.00	1.80	pCi/L	09/01/16 14:31	09/06/16 14:04	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tc-99m	*107*		*30 - 110*	*09/01/16 14:31*	*09/06/16 14:04*	*1*

Client Sample ID: GW-GWJJ-082516

Lab Sample ID: 160-18852-3

Date Collected: 08/25/16 08:35

Matrix: Water

Date Received: 08/29/16 11:10

Method: 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.86	ug/L			09/07/16 16:50	5
1,1,2,2-Tetrachloroethane	ND		5.0	0.50	ug/L			09/07/16 16:50	5
1,1,2-Trichloroethane	ND		5.0	0.66	ug/L			09/07/16 16:50	5
1,1-Dichloroethene	**43**		5.0	0.50	ug/L			09/07/16 16:50	5
1,1-Dichloroethane	**20**		5.0	0.35	ug/L			09/07/16 16:50	5
1,2,4-Trichlorobenzene	ND		5.0	0.50	ug/L			09/07/16 16:50	5
1,2-Dibromo-3-Chloropropane	ND		5.0	2.1	ug/L			09/07/16 16:50	5
1,2-Dichloroethane	ND		5.0	1.1	ug/L			09/07/16 16:50	5
1,2-Dichloroethene, Total	**1000**		100	6.9	ug/L			09/04/16 17:51	50
1,2-Dichloropropane	ND		5.0	0.50	ug/L			09/07/16 16:50	5
2-Butanone	**20**	**J**	25	2.3	ug/L			09/07/16 16:50	5
2-Hexanone	ND		25	1.2	ug/L			09/07/16 16:50	5
4-Methyl-2-pentanone	ND		25	1.1	ug/L			09/07/16 16:50	5
Acetone	**11**	**B**	10	2.8	ug/L			09/07/16 16:50	5
Benzene	ND		5.0	0.50	ug/L			09/07/16 16:50	5
Bromoform	ND		5.0	0.85	ug/L			09/07/16 16:50	5
Methyl bromide	ND		10	1.3	ug/L			09/07/16 16:50	5
Carbon disulfide	ND		5.0	0.50	ug/L			09/07/16 16:50	5
Carbon tetrachloride	ND		5.0	0.91	ug/L			09/07/16 16:50	5
Chlorobenzene	ND		5.0	0.55	ug/L			09/07/16 16:50	5
Chlorodibromomethane	ND		5.0	0.72	ug/L			09/07/16 16:50	5
Chloroethane	ND		10	0.82	ug/L			09/07/16 16:50	5
Chloroform	ND		5.0	0.50	ug/L			09/07/16 16:50	5
Chloromethane	ND		10	0.51	ug/L			09/07/16 16:50	5
cis-1,2-Dichloroethene	**980**		50	5.0	ug/L			09/04/16 17:51	50
cis-1,3-Dichloropropene	ND		5.0	0.79	ug/L			09/07/16 16:50	5

Client Sample ID: GW-GWJJ-082516

Date Collected: 08/25/16 08:35
Date Received: 08/29/16 11:10

Lab Sample ID: 160-18852-3

Matrix: Water

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	ND		5.0	0.69	ug/L			09/07/16 16:50	5
Ethylbenzene	ND		5.0	0.61	ug/L			09/07/16 16:50	5
1,2-Dibromoethane	ND		5.0	0.65	ug/L			09/07/16 16:50	5
Methylene Chloride	ND		5.0	1.4	ug/L			09/07/16 16:50	5
n-Butanol	ND		250	62	ug/L			09/07/16 16:50	5
Styrene	ND		5.0	0.67	ug/L			09/07/16 16:50	5
Tetrachloroethene	**9.2**		5.0	0.90	ug/L			09/07/16 16:50	5
Toluene	ND		5.0	0.70	ug/L			09/07/16 16:50	5
trans-1,2-Dichloroethene	**24**		5.0	0.52	ug/L			09/07/16 16:50	5
trans-1,3-Dichloropropene	ND		5.0	0.50	ug/L			09/07/16 16:50	5
Trichloroethene	**600**		50	13	ug/L			09/04/16 17:51	50
Vinyl acetate	ND		10	0.90	ug/L			09/07/16 16:50	5
Vinyl chloride	**10**		10	0.97	ug/L			09/07/16 16:50	5
Xylenes, Total	ND		15	1.3	ug/L			09/07/16 16:50	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*75 - 129*		*09/04/16 17:51*	*50*
1,2-Dichloroethane-d4 (Surr)	*102*		*75 - 129*		*09/07/16 16:50*	*5*
4-Bromofluorobenzene (Surr)	*124*		*81 - 130*		*09/04/16 17:51*	*50*
4-Bromofluorobenzene (Surr)	*117*		*81 - 130*		*09/07/16 16:50*	*5*
Dibromofluoromethane (Surr)	*113*		*81 - 124*		*09/04/16 17:51*	*50*
Dibromofluoromethane (Surr)	*104*		*81 - 124*		*09/07/16 16:50*	*5*
Toluene-d8 (Surr)	*122*		*87 - 128*		*09/04/16 17:51*	*50*
Toluene-d8 (Surr)	*114*		*87 - 128*		*09/07/16 16:50*	*5*

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium 238	0.0692	U	0.0687	0.0689	0.100	0.0835	pCi/L	09/06/16 13:27	09/09/16 12:48	1
Uranium 234	0.00882	U	0.0328	0.0328	0.100	0.0836	pCi/L	09/06/16 13:27	09/09/16 12:48	1
Uranium-235/236	0.000	U	0.0157	0.0157	0.100	0.0565	pCi/L	09/06/16 13:27	09/09/16 12:48	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Uranium 232	*60.6*		*30 - 110*	*09/06/16 13:27*	*09/09/16 12:48*	*1*

Method: TC-02-RC - Technetium-99 (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	**4.12**		1.28	1.34	3.00	1.91	pCi/L	09/01/16 14:31	09/06/16 14:50	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tc-99m	*93.9*		*30 - 110*	*09/01/16 14:31*	*09/06/16 14:50*	*1*

Client Sample ID: GW-BR13JC-082516

Date Collected: 08/25/16 09:25
Date Received: 08/29/16 11:10

Lab Sample ID: 160-18852-4

Matrix: Water

Method: 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			09/04/16 18:16	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.10	ug/L			09/04/16 18:16	1
1,1,2-Trichloroethane	ND		1.0	0.13	ug/L			09/04/16 18:16	1
1,1-Dichloroethene	ND		1.0	0.10	ug/L			09/04/16 18:16	1
1,1-Dichloroethane	**0.34**	**J**	1.0	0.070	ug/L			09/04/16 18:16	1
1,2,4-Trichlorobenzene	ND		1.0	0.10	ug/L			09/04/16 18:16	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.41	ug/L			09/04/16 18:16	1
1,2-Dichloroethane	ND		1.0	0.22	ug/L			09/04/16 18:16	1
1,2-Dichloroethene, Total	**9.5**		2.0	0.14	ug/L			09/04/16 18:16	1
1,2-Dichloropropane	ND		1.0	0.10	ug/L			09/04/16 18:16	1
2-Butanone	ND		5.0	0.47	ug/L			09/04/16 18:16	1
2-Hexanone	ND		5.0	0.25	ug/L			09/04/16 18:16	1
4-Methyl-2-pentanone	ND		5.0	0.22	ug/L			09/04/16 18:16	1
Acetone	**0.63**	**J**	2.0	0.55	ug/L			09/04/16 18:16	1
Benzene	ND		1.0	0.10	ug/L			09/04/16 18:16	1
Bromoform	ND		1.0	0.17	ug/L			09/04/16 18:16	1
Methyl bromide	ND		2.0	0.25	ug/L			09/04/16 18:16	1
Carbon disulfide	ND		1.0	0.10	ug/L			09/04/16 18:16	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			09/04/16 18:16	1
Chlorobenzene	ND		1.0	0.11	ug/L			09/04/16 18:16	1
Chlorodibromomethane	ND		1.0	0.14	ug/L			09/04/16 18:16	1
Chloroethane	ND	*	2.0	0.16	ug/L			09/04/16 18:16	1
Chloroform	ND		1.0	0.10	ug/L			09/04/16 18:16	1
Chloromethane	ND		2.0	0.10	ug/L			09/04/16 18:16	1
cis-1,2-Dichloroethene	**9.5**		1.0	0.10	ug/L			09/04/16 18:16	1
cis-1,3-Dichloropropene	ND		1.0	0.16	ug/L			09/04/16 18:16	1
Bromodichloromethane	ND		1.0	0.14	ug/L			09/04/16 18:16	1
Ethylbenzene	ND		1.0	0.12	ug/L			09/04/16 18:16	1
1,2-Dibromoethane	ND		1.0	0.13	ug/L			09/04/16 18:16	1
Methylene Chloride	ND		1.0	0.27	ug/L			09/04/16 18:16	1
n-Butanol	ND		50	12	ug/L			09/04/16 18:16	1
Styrene	ND		1.0	0.13	ug/L			09/04/16 18:16	1
Tetrachloroethene	**0.48**	**J**	1.0	0.18	ug/L			09/04/16 18:16	1
Toluene	ND		1.0	0.14	ug/L			09/04/16 18:16	1
trans-1,2-Dichloroethene	ND		1.0	0.10	ug/L			09/04/16 18:16	1
trans-1,3-Dichloropropene	ND		1.0	0.10	ug/L			09/04/16 18:16	1
Trichloroethene	**32**		1.0	0.25	ug/L			09/04/16 18:16	1
Vinyl acetate	ND		2.0	0.18	ug/L			09/04/16 18:16	1
Vinyl chloride	**0.26**	**J ***	2.0	0.19	ug/L			09/04/16 18:16	1
Xylenes, Total	ND		3.0	0.26	ug/L			09/04/16 18:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*75 - 129*		*09/04/16 18:16*	*1*
4-Bromofluorobenzene (Surr)	*116*		*81 - 130*		*09/04/16 18:16*	*1*
Dibromofluoromethane (Surr)	*116*		*81 - 124*		*09/04/16 18:16*	*1*
Toluene-d8 (Surr)	*111*		*87 - 128*		*09/04/16 18:16*	*1*

Client Sample ID: GW-BR13JC-082516

Lab Sample ID: 160-18852-4

Date Collected: 08/25/16 09:25

Matrix: Water

Date Received: 08/29/16 11:10

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium 238	**0.299**		0.0922	0.0955	0.100	0.0213	pCi/L	09/06/16 13:27	09/12/16 15:01	1
Uranium 234	**4.16**		0.345	0.490	0.100	0.0504	pCi/L	09/06/16 13:27	09/12/16 15:01	1
Uranium-235/236	**0.0709**		0.0502	0.0505	0.100	0.0266	pCi/L	09/06/16 13:27	09/12/16 15:01	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Uranium 232	*63.0*		*30 - 110*	*09/06/16 13:27*	*09/12/16 15:01*	*1*

Method: TC-02-RC - Technetium-99 (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	-0.117	U	1.05	1.05	3.00	1.80	pCi/L	09/01/16 14:31	09/06/16 15:36	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tc-99m	*110*		*30 - 110*	*09/01/16 14:31*	*09/06/16 15:36*	*1*

Client Sample ID: GW-BR04JC-082516

Lab Sample ID: 160-18852-5

Date Collected: 08/25/16 10:05

Matrix: Water

Date Received: 08/29/16 11:10

Method: 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		5.0	0.86	ug/L			09/04/16 20:22	5
1,1,2,2-Tetrachloroethane	ND		5.0	0.50	ug/L			09/04/16 20:22	5
1,1,2-Trichloroethane	ND		5.0	0.66	ug/L			09/04/16 20:22	5
1,1-Dichloroethene	**7.6**		5.0	0.50	ug/L			09/04/16 20:22	5
1,1-Dichloroethane	**7.2**		5.0	0.35	ug/L			09/04/16 20:22	5
1,2,4-Trichlorobenzene	ND		5.0	0.50	ug/L			09/04/16 20:22	5
1,2-Dibromo-3-Chloropropane	ND		5.0	2.1	ug/L			09/04/16 20:22	5
1,2-Dichloroethane	ND		5.0	1.1	ug/L			09/04/16 20:22	5
1,2-Dichloroethene, Total	**9.1**	**J**	10	0.69	ug/L			09/04/16 20:22	5
1,2-Dichloropropane	ND		5.0	0.50	ug/L			09/04/16 20:22	5
2-Butanone	ND		25	2.3	ug/L			09/04/16 20:22	5
2-Hexanone	ND		25	1.2	ug/L			09/04/16 20:22	5
4-Methyl-2-pentanone	ND		25	1.1	ug/L			09/04/16 20:22	5
Acetone	ND		10	2.8	ug/L			09/04/16 20:22	5
Benzene	ND		5.0	0.50	ug/L			09/04/16 20:22	5
Bromoform	ND		5.0	0.85	ug/L			09/04/16 20:22	5
Methyl bromide	ND		10	1.3	ug/L			09/04/16 20:22	5
Carbon disulfide	ND		5.0	0.50	ug/L			09/04/16 20:22	5
Carbon tetrachloride	ND		5.0	0.91	ug/L			09/04/16 20:22	5
Chlorobenzene	ND		5.0	0.55	ug/L			09/04/16 20:22	5
Chlorodibromomethane	ND		5.0	0.72	ug/L			09/04/16 20:22	5
Chloroethane	ND	*	10	0.82	ug/L			09/04/16 20:22	5
Chloroform	ND		5.0	0.50	ug/L			09/04/16 20:22	5
Chloromethane	ND		10	0.51	ug/L			09/04/16 20:22	5
cis-1,2-Dichloroethene	**9.1**		5.0	0.50	ug/L			09/04/16 20:22	5
cis-1,3-Dichloropropene	ND		5.0	0.79	ug/L			09/04/16 20:22	5

Client Sample ID: GW-BR04JC-082516

Date Collected: 08/25/16 10:05
Date Received: 08/29/16 11:10

Lab Sample ID: 160-18852-5

Matrix: Water

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	ND		5.0	0.69	ug/L			09/04/16 20:22	5
Ethylbenzene	ND		5.0	0.61	ug/L			09/04/16 20:22	5
1,2-Dibromoethane	ND		5.0	0.65	ug/L			09/04/16 20:22	5
Methylene Chloride	ND		5.0	1.4	ug/L			09/04/16 20:22	5
n-Butanol	ND		250	62	ug/L			09/04/16 20:22	5
Styrene	ND		5.0	0.67	ug/L			09/04/16 20:22	5
Tetrachloroethene	**910**		50	9.0	ug/L			09/04/16 18:41	50
Toluene	ND		5.0	0.70	ug/L			09/04/16 20:22	5
trans-1,2-Dichloroethene	ND		5.0	0.52	ug/L			09/04/16 20:22	5
trans-1,3-Dichloropropene	ND		5.0	0.50	ug/L			09/04/16 20:22	5
Trichloroethene	**84**		5.0	1.3	ug/L			09/04/16 20:22	5
Vinyl acetate	ND		10	0.90	ug/L			09/04/16 20:22	5
Vinyl chloride	ND	*	10	0.97	ug/L			09/04/16 20:22	5
Xylenes, Total	ND		15	1.3	ug/L			09/04/16 20:22	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*75 - 129*		*09/04/16 18:41*	*50*
1,2-Dichloroethane-d4 (Surr)	*114*		*75 - 129*		*09/04/16 20:22*	*5*
4-Bromofluorobenzene (Surr)	*107*		*81 - 130*		*09/04/16 18:41*	*50*
4-Bromofluorobenzene (Surr)	*108*		*81 - 130*		*09/04/16 20:22*	*5*
Dibromofluoromethane (Surr)	*115*		*81 - 124*		*09/04/16 18:41*	*50*
Dibromofluoromethane (Surr)	*113*		*81 - 124*		*09/04/16 20:22*	*5*
Toluene-d8 (Surr)	*98*		*87 - 128*		*09/04/16 18:41*	*50*
Toluene-d8 (Surr)	*104*		*87 - 128*		*09/04/16 20:22*	*5*

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium 238	**0.461**		0.163	0.167	0.100	0.0781	pCi/L	09/06/16 13:27	09/09/16 12:48	1
Uranium 234	**3.32**		0.435	0.516	0.100	0.0931	pCi/L	09/06/16 13:27	09/09/16 12:48	1
Uranium-235/236	**0.0705**		0.0705	0.0707	0.100	0.0529	pCi/L	09/06/16 13:27	09/09/16 12:48	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Uranium 232	*62.9*		*30 - 110*	*09/06/16 13:27*	*09/09/16 12:48*	*1*

Method: TC-02-RC - Technetium-99 (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	-0.266	U	1.10	1.10	3.00	1.90	pCi/L	09/01/16 14:31	09/06/16 16:22	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tc-99m	*94.8*		*30 - 110*	*09/01/16 14:31*	*09/06/16 16:22*	*1*

Client Sample ID: GW-BR08JC-082516

Date Collected: 08/25/16 10:40
Date Received: 08/29/16 11:10

Lab Sample ID: 160-18852-6

Matrix: Water

Method: 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		50	8.6	ug/L			09/07/16 17:16	50
1,1,2,2-Tetrachloroethane	ND		50	5.0	ug/L			09/07/16 17:16	50
1,1,2-Trichloroethane	ND		50	6.6	ug/L			09/07/16 17:16	50
1,1-Dichloroethene	**120**		50	5.0	ug/L			09/07/16 17:16	50
1,1-Dichloroethane	**210**		50	3.5	ug/L			09/07/16 17:16	50
1,2,4-Trichlorobenzene	ND		50	5.0	ug/L			09/07/16 17:16	50
1,2-Dibromo-3-Chloropropane	ND		50	21	ug/L			09/07/16 17:16	50
1,2-Dichloroethane	ND		50	11	ug/L			09/07/16 17:16	50
1,2-Dichloroethene, Total	**2000**		100	6.9	ug/L			09/07/16 17:16	50
1,2-Dichloropropane	ND		50	5.0	ug/L			09/07/16 17:16	50
2-Butanone	ND		250	23	ug/L			09/07/16 17:16	50
2-Hexanone	ND		250	12	ug/L			09/07/16 17:16	50
4-Methyl-2-pentanone	ND		250	11	ug/L			09/07/16 17:16	50
Acetone	ND		100	28	ug/L			09/07/16 17:16	50
Benzene	ND		50	5.0	ug/L			09/07/16 17:16	50
Bromoform	ND		50	8.5	ug/L			09/07/16 17:16	50
Methyl bromide	ND		100	13	ug/L			09/07/16 17:16	50
Carbon disulfide	ND		50	5.0	ug/L			09/07/16 17:16	50
Carbon tetrachloride	ND		50	9.1	ug/L			09/07/16 17:16	50
Chlorobenzene	ND		50	5.5	ug/L			09/07/16 17:16	50
Chlorodibromomethane	ND		50	7.2	ug/L			09/07/16 17:16	50
Chloroethane	**14**	**J**	100	8.2	ug/L			09/07/16 17:16	50
Chloroform	ND		50	5.0	ug/L			09/07/16 17:16	50
Chloromethane	ND		100	5.1	ug/L			09/07/16 17:16	50
cis-1,2-Dichloroethene	**2000**		50	5.0	ug/L			09/07/16 17:16	50
cis-1,3-Dichloropropene	ND		50	7.9	ug/L			09/07/16 17:16	50
Bromodichloromethane	ND		50	6.9	ug/L			09/07/16 17:16	50
Ethylbenzene	ND		50	6.1	ug/L			09/07/16 17:16	50
1,2-Dibromoethane	ND		50	6.5	ug/L			09/07/16 17:16	50
Methylene Chloride	ND		50	14	ug/L			09/07/16 17:16	50
n-Butanol	ND		2500	620	ug/L			09/07/16 17:16	50
Styrene	ND		50	6.7	ug/L			09/07/16 17:16	50
Tetrachloroethene	**1100**		50	9.0	ug/L			09/07/16 17:16	50
Toluene	ND		50	7.0	ug/L			09/07/16 17:16	50
trans-1,2-Dichloroethene	**12**	**J**	50	5.2	ug/L			09/07/16 17:16	50
trans-1,3-Dichloropropene	ND		50	5.0	ug/L			09/07/16 17:16	50
Trichloroethene	**7100**		500	130	ug/L			09/04/16 19:06	500
Vinyl acetate	ND		100	9.0	ug/L			09/07/16 17:16	50
Vinyl chloride	**140**		100	9.7	ug/L			09/07/16 17:16	50
Xylenes, Total	ND		150	13	ug/L			09/07/16 17:16	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*111*		*75 - 129*		*09/04/16 19:06*	*500*
1,2-Dichloroethane-d4 (Surr)	*107*		*75 - 129*		*09/07/16 17:16*	*50*
4-Bromofluorobenzene (Surr)	*114*		*81 - 130*		*09/04/16 19:06*	*500*
4-Bromofluorobenzene (Surr)	*118*		*81 - 130*		*09/07/16 17:16*	*50*
Dibromofluoromethane (Surr)	*113*		*81 - 124*		*09/04/16 19:06*	*500*
Dibromofluoromethane (Surr)	*109*		*81 - 124*		*09/07/16 17:16*	*50*
Toluene-d8 (Surr)	*114*		*87 - 128*		*09/04/16 19:06*	*500*
Toluene-d8 (Surr)	*114*		*87 - 128*		*09/07/16 17:16*	*50*

Client Sample ID: GW-BR08JC-082516-FD

Lab Sample ID: 160-18852-7

Date Collected: 08/25/16 10:40

Matrix: Water

Date Received: 08/29/16 11:10

Method: 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		50	8.6	ug/L			09/07/16 19:47	50
1,1,2,2-Tetrachloroethane	ND		50	5.0	ug/L			09/07/16 19:47	50
1,1,2-Trichloroethane	ND		50	6.6	ug/L			09/07/16 19:47	50
1,1-Dichloroethene	**130**		50	5.0	ug/L			09/07/16 19:47	50
1,1-Dichloroethane	**220**		50	3.5	ug/L			09/07/16 19:47	50
1,2,4-Trichlorobenzene	ND		50	5.0	ug/L			09/07/16 19:47	50
1,2-Dibromo-3-Chloropropane	ND		50	21	ug/L			09/07/16 19:47	50
1,2-Dichloroethane	ND		50	11	ug/L			09/07/16 19:47	50
1,2-Dichloroethene, Total	**1700**		1000	69	ug/L			09/07/16 13:03	500
1,2-Dichloropropane	ND		50	5.0	ug/L			09/07/16 19:47	50
2-Butanone	ND		250	23	ug/L			09/07/16 19:47	50
2-Hexanone	ND		250	12	ug/L			09/07/16 19:47	50
4-Methyl-2-pentanone	ND		250	11	ug/L			09/07/16 19:47	50
Acetone	ND		100	28	ug/L			09/07/16 19:47	50
Benzene	ND		50	5.0	ug/L			09/07/16 19:47	50
Bromoform	ND		50	8.5	ug/L			09/07/16 19:47	50
Methyl bromide	ND		100	13	ug/L			09/07/16 19:47	50
Carbon disulfide	ND		50	5.0	ug/L			09/07/16 19:47	50
Carbon tetrachloride	ND		50	9.1	ug/L			09/07/16 19:47	50
Chlorobenzene	ND		50	5.5	ug/L			09/07/16 19:47	50
Chlorodibromomethane	ND		50	7.2	ug/L			09/07/16 19:47	50
Chloroethane	**16**	**J**	100	8.2	ug/L			09/07/16 19:47	50
Chloroform	ND		50	5.0	ug/L			09/07/16 19:47	50
Chloromethane	ND		100	5.1	ug/L			09/07/16 19:47	50
cis-1,2-Dichloroethene	**1700**		500	50	ug/L			09/07/16 13:03	500
cis-1,3-Dichloropropene	ND		50	7.9	ug/L			09/07/16 19:47	50
Bromodichloromethane	ND		50	6.9	ug/L			09/07/16 19:47	50
Ethylbenzene	ND		50	6.1	ug/L			09/07/16 19:47	50
1,2-Dibromoethane	ND		50	6.5	ug/L			09/07/16 19:47	50
Methylene Chloride	ND		50	14	ug/L			09/07/16 19:47	50
n-Butanol	ND		2500	620	ug/L			09/07/16 19:47	50
Styrene	ND		50	6.7	ug/L			09/07/16 19:47	50
Tetrachloroethene	**1300**		50	9.0	ug/L			09/07/16 19:47	50
Toluene	ND		50	7.0	ug/L			09/07/16 19:47	50
trans-1,2-Dichloroethene	**13**	**J**	50	5.2	ug/L			09/07/16 19:47	50
trans-1,3-Dichloropropene	ND		50	5.0	ug/L			09/07/16 19:47	50
Trichloroethene	**6500**		500	130	ug/L			09/07/16 13:03	500
Vinyl acetate	ND		100	9.0	ug/L			09/07/16 19:47	50
Vinyl chloride	**160**		100	9.7	ug/L			09/07/16 19:47	50
Xylenes, Total	ND		150	13	ug/L			09/07/16 19:47	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*75 - 129*		*09/07/16 13:03*	*500*
1,2-Dichloroethane-d4 (Surr)	*107*		*75 - 129*		*09/07/16 19:47*	*50*
4-Bromofluorobenzene (Surr)	*115*		*81 - 130*		*09/07/16 13:03*	*500*
4-Bromofluorobenzene (Surr)	*114*		*81 - 130*		*09/07/16 19:47*	*50*
Dibromofluoromethane (Surr)	*102*		*81 - 124*		*09/07/16 13:03*	*500*
Dibromofluoromethane (Surr)	*108*		*81 - 124*		*09/07/16 19:47*	*50*
Toluene-d8 (Surr)	*114*		*87 - 128*		*09/07/16 13:03*	*500*

Client Sample ID: GW-BR08JC-082516-FD

Lab Sample ID: 160-18852-7

Date Collected: 08/25/16 10:40
Matrix: Water
Date Received: 08/29/16 11:10

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	114		87 - 128		09/07/16 19:47	50

Client Sample ID: GW-BR10JC-082516

Lab Sample ID: 160-18852-8

Date Collected: 08/25/16 13:10
Matrix: Water
Date Received: 08/29/16 11:10

Method: 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		10	1.7	ug/L			09/07/16 20:12	10
1,1,2,2-Tetrachloroethane	ND		10	1.0	ug/L			09/07/16 20:12	10
1,1,2-Trichloroethane	ND		10	1.3	ug/L			09/07/16 20:12	10
1,1-Dichloroethene	**37**		10	1.0	ug/L			09/07/16 20:12	10
1,1-Dichloroethane	**50**		10	0.70	ug/L			09/07/16 20:12	10
1,2,4-Trichlorobenzene	ND		10	1.0	ug/L			09/07/16 20:12	10
1,2-Dibromo-3-Chloropropane	ND		10	4.1	ug/L			09/07/16 20:12	10
1,2-Dichloroethane	ND		10	2.2	ug/L			09/07/16 20:12	10
1,2-Dichloroethene, Total	**550**		200	14	ug/L			09/07/16 17:41	100
1,2-Dichloropropane	ND		10	1.0	ug/L			09/07/16 20:12	10
2-Butanone	**39**	**J**	50	4.7	ug/L			09/07/16 20:12	10
2-Hexanone	ND		50	2.5	ug/L			09/07/16 20:12	10
4-Methyl-2-pentanone	ND		50	2.2	ug/L			09/07/16 20:12	10
Acetone	**16**	**J B**	20	5.5	ug/L			09/07/16 20:12	10
Benzene	ND		10	1.0	ug/L			09/07/16 20:12	10
Bromoform	ND		10	1.7	ug/L			09/07/16 20:12	10
Methyl bromide	ND		20	2.5	ug/L			09/07/16 20:12	10
Carbon disulfide	ND		10	1.0	ug/L			09/07/16 20:12	10
Carbon tetrachloride	ND		10	1.8	ug/L			09/07/16 20:12	10
Chlorobenzene	ND		10	1.1	ug/L			09/07/16 20:12	10
Chlorodibromomethane	ND		10	1.4	ug/L			09/07/16 20:12	10
Chloroethane	ND		20	1.6	ug/L			09/07/16 20:12	10
Chloroform	ND		10	1.0	ug/L			09/07/16 20:12	10
Chloromethane	ND		20	1.0	ug/L			09/07/16 20:12	10
cis-1,2-Dichloroethene	**550**		100	10	ug/L			09/07/16 17:41	100
cis-1,3-Dichloropropene	ND		10	1.6	ug/L			09/07/16 20:12	10
Bromodichloromethane	ND		10	1.4	ug/L			09/07/16 20:12	10
Ethylbenzene	ND		10	1.2	ug/L			09/07/16 20:12	10
1,2-Dibromoethane	ND		10	1.3	ug/L			09/07/16 20:12	10
Methylene Chloride	ND		10	2.7	ug/L			09/07/16 20:12	10
n-Butanol	ND		500	120	ug/L			09/07/16 20:12	10
Styrene	ND		10	1.3	ug/L			09/07/16 20:12	10
Tetrachloroethene	**140**		10	1.8	ug/L			09/07/16 20:12	10
Toluene	ND		10	1.4	ug/L			09/07/16 20:12	10
trans-1,2-Dichloroethene	**3.4**	**J**	10	1.0	ug/L			09/07/16 20:12	10
trans-1,3-Dichloropropene	ND		10	1.0	ug/L			09/07/16 20:12	10
Trichloroethene	**1200**		100	25	ug/L			09/07/16 17:41	100
Vinyl acetate	ND		20	1.8	ug/L			09/07/16 20:12	10
Vinyl chloride	**23**		20	1.9	ug/L			09/07/16 20:12	10
Xylenes, Total	ND		30	2.6	ug/L			09/07/16 20:12	10

Client Sample ID: GW-BR10JC-082516

Lab Sample ID: 160-18852-8

Date Collected: 08/25/16 13:10

Matrix: Water

Date Received: 08/29/16 11:10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*75 - 129*		*09/07/16 17:41*	*100*
1,2-Dichloroethane-d4 (Surr)	*104*		*75 - 129*		*09/07/16 20:12*	*10*
4-Bromofluorobenzene (Surr)	*114*		*81 - 130*		*09/07/16 17:41*	*100*
4-Bromofluorobenzene (Surr)	*118*		*81 - 130*		*09/07/16 20:12*	*10*
Dibromofluoromethane (Surr)	*108*		*81 - 124*		*09/07/16 17:41*	*100*
Dibromofluoromethane (Surr)	*105*		*81 - 124*		*09/07/16 20:12*	*10*
Toluene-d8 (Surr)	*114*		*87 - 128*		*09/07/16 17:41*	*100*
Toluene-d8 (Surr)	*114*		*87 - 128*		*09/07/16 20:12*	*10*

Client Sample ID: GW-NB72-082516

Lab Sample ID: 160-18852-9

Date Collected: 08/25/16 13:40

Matrix: Water

Date Received: 08/29/16 11:10

Method: 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		50	8.6	ug/L			09/07/16 20:37	50
1,1,2,2-Tetrachloroethane	ND		50	5.0	ug/L			09/07/16 20:37	50
1,1,2-Trichloroethane	ND		50	6.6	ug/L			09/07/16 20:37	50
1,1-Dichloroethene	**120**		50	5.0	ug/L			09/07/16 20:37	50
1,1-Dichloroethane	**170**		50	3.5	ug/L			09/07/16 20:37	50
1,2,4-Trichlorobenzene	ND		50	5.0	ug/L			09/07/16 20:37	50
1,2-Dibromo-3-Chloropropane	ND		50	21	ug/L			09/07/16 20:37	50
1,2-Dichloroethane	ND		50	11	ug/L			09/07/16 20:37	50
1,2-Dichloroethene, Total	**5200**		1000	69	ug/L			09/07/16 18:06	500
1,2-Dichloropropane	ND		50	5.0	ug/L			09/07/16 20:37	50
2-Butanone	ND		250	23	ug/L			09/07/16 20:37	50
2-Hexanone	ND		250	12	ug/L			09/07/16 20:37	50
4-Methyl-2-pentanone	ND		250	11	ug/L			09/07/16 20:37	50
Acetone	ND		100	28	ug/L			09/07/16 20:37	50
Benzene	ND		50	5.0	ug/L			09/07/16 20:37	50
Bromoform	ND		50	8.5	ug/L			09/07/16 20:37	50
Methyl bromide	ND		100	13	ug/L			09/07/16 20:37	50
Carbon disulfide	ND		50	5.0	ug/L			09/07/16 20:37	50
Carbon tetrachloride	ND		50	9.1	ug/L			09/07/16 20:37	50
Chlorobenzene	ND		50	5.5	ug/L			09/07/16 20:37	50
Chlorodibromomethane	ND		50	7.2	ug/L			09/07/16 20:37	50
Chloroethane	ND		100	8.2	ug/L			09/07/16 20:37	50
Chloroform	ND		50	5.0	ug/L			09/07/16 20:37	50
Chloromethane	ND		100	5.1	ug/L			09/07/16 20:37	50
cis-1,2-Dichloroethene	**5200**		500	50	ug/L			09/07/16 18:06	500
cis-1,3-Dichloropropene	ND		50	7.9	ug/L			09/07/16 20:37	50
Bromodichloromethane	ND		50	6.9	ug/L			09/07/16 20:37	50
Ethylbenzene	ND		50	6.1	ug/L			09/07/16 20:37	50
1,2-Dibromoethane	ND		50	6.5	ug/L			09/07/16 20:37	50
Methylene Chloride	ND		50	14	ug/L			09/07/16 20:37	50
n-Butanol	ND		2500	620	ug/L			09/07/16 20:37	50
Styrene	ND		50	6.7	ug/L			09/07/16 20:37	50
Tetrachloroethene	**170**		50	9.0	ug/L			09/07/16 20:37	50
Toluene	ND		50	7.0	ug/L			09/07/16 20:37	50
trans-1,2-Dichloroethene	**22**	**J**	50	5.2	ug/L			09/07/16 20:37	50

Client Sample ID: GW-NB72-082516

Lab Sample ID: 160-18852-9

Date Collected: 08/25/16 13:40

Matrix: Water

Date Received: 08/29/16 11:10

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,3-Dichloropropene	ND		50	5.0	ug/L			09/07/16 20:37	50
Trichloroethene	**5600**		500	130	ug/L			09/07/16 18:06	500
Vinyl acetate	ND		100	9.0	ug/L			09/07/16 20:37	50
Vinyl chloride	**100**		100	9.7	ug/L			09/07/16 20:37	50
Xylenes, Total	ND		150	13	ug/L			09/07/16 20:37	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*112*		*75 - 129*		*09/07/16 18:06*	*500*
1,2-Dichloroethane-d4 (Surr)	*107*		*75 - 129*		*09/07/16 20:37*	*50*
4-Bromofluorobenzene (Surr)	*116*		*81 - 130*		*09/07/16 18:06*	*500*
4-Bromofluorobenzene (Surr)	*116*		*81 - 130*		*09/07/16 20:37*	*50*
Dibromofluoromethane (Surr)	*110*		*81 - 124*		*09/07/16 18:06*	*500*
Dibromofluoromethane (Surr)	*111*		*81 - 124*		*09/07/16 20:37*	*50*
Toluene-d8 (Surr)	*116*		*87 - 128*		*09/07/16 18:06*	*500*
Toluene-d8 (Surr)	*116*		*87 - 128*		*09/07/16 20:37*	*50*

Client Sample ID: GW-NB73-082516

Lab Sample ID: 160-18852-10

Date Collected: 08/25/16 14:10

Matrix: Water

Date Received: 08/29/16 11:10

Method: 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	**5.8**		2.5	0.43	ug/L			09/07/16 21:02	2.5
1,1,2,2-Tetrachloroethane	ND		2.5	0.25	ug/L			09/07/16 21:02	2.5
1,1,2-Trichloroethane	ND		2.5	0.33	ug/L			09/07/16 21:02	2.5
1,1-Dichloroethene	**32**		2.5	0.25	ug/L			09/07/16 21:02	2.5
1,1-Dichloroethane	**11**		2.5	0.18	ug/L			09/07/16 21:02	2.5
1,2,4-Trichlorobenzene	ND		2.5	0.25	ug/L			09/07/16 21:02	2.5
1,2-Dibromo-3-Chloropropane	ND		2.5	1.0	ug/L			09/07/16 21:02	2.5
1,2-Dichloroethane	ND		2.5	0.54	ug/L			09/07/16 21:02	2.5
1,2-Dichloroethene, Total	**140**		5.0	0.34	ug/L			09/07/16 21:02	2.5
1,2-Dichloropropane	ND		2.5	0.25	ug/L			09/07/16 21:02	2.5
2-Butanone	ND		13	1.2	ug/L			09/07/16 21:02	2.5
2-Hexanone	ND		13	0.62	ug/L			09/07/16 21:02	2.5
4-Methyl-2-pentanone	ND		13	0.54	ug/L			09/07/16 21:02	2.5
Acetone	ND		5.0	1.4	ug/L			09/07/16 21:02	2.5
Benzene	ND		2.5	0.25	ug/L			09/07/16 21:02	2.5
Bromoform	ND		2.5	0.43	ug/L			09/07/16 21:02	2.5
Methyl bromide	ND		5.0	0.63	ug/L			09/07/16 21:02	2.5
Carbon disulfide	ND		2.5	0.25	ug/L			09/07/16 21:02	2.5
Carbon tetrachloride	ND		2.5	0.45	ug/L			09/07/16 21:02	2.5
Chlorobenzene	ND		2.5	0.27	ug/L			09/07/16 21:02	2.5
Chlorodibromomethane	ND		2.5	0.36	ug/L			09/07/16 21:02	2.5
Chloroethane	ND		5.0	0.41	ug/L			09/07/16 21:02	2.5
Chloroform	ND		2.5	0.25	ug/L			09/07/16 21:02	2.5
Chloromethane	ND		5.0	0.26	ug/L			09/07/16 21:02	2.5
cis-1,2-Dichloroethene	**100**		25	2.5	ug/L			09/07/16 18:31	25
cis-1,3-Dichloropropene	ND		2.5	0.40	ug/L			09/07/16 21:02	2.5
Bromodichloromethane	ND		2.5	0.35	ug/L			09/07/16 21:02	2.5
Ethylbenzene	ND		2.5	0.31	ug/L			09/07/16 21:02	2.5

Client Sample ID: GW-NB73-082516

Lab Sample ID: 160-18852-10

Date Collected: 08/25/16 14:10

Matrix: Water

Date Received: 08/29/16 11:10

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane	ND		2.5	0.33	ug/L			09/07/16 21:02	2.5
Methylene Chloride	ND		2.5	0.68	ug/L			09/07/16 21:02	2.5
n-Butanol	ND		130	31	ug/L			09/07/16 21:02	2.5
Styrene	ND		2.5	0.34	ug/L			09/07/16 21:02	2.5
Tetrachloroethene	**710**		25	4.5	ug/L			09/07/16 18:31	25
Toluene	ND		2.5	0.35	ug/L			09/07/16 21:02	2.5
trans-1,2-Dichloroethene	**8.2**		2.5	0.26	ug/L			09/07/16 21:02	2.5
trans-1,3-Dichloropropene	ND		2.5	0.25	ug/L			09/07/16 21:02	2.5
Trichloroethene	**190**		25	6.3	ug/L			09/07/16 18:31	25
Vinyl acetate	ND		5.0	0.45	ug/L			09/07/16 21:02	2.5
Vinyl chloride	**0.95**	**J**	5.0	0.49	ug/L			09/07/16 21:02	2.5
Xylenes, Total	ND		7.5	0.66	ug/L			09/07/16 21:02	2.5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*75 - 129*		*09/07/16 18:31*	*25*
1,2-Dichloroethane-d4 (Surr)	*108*		*75 - 129*		*09/07/16 21:02*	*2.5*
4-Bromofluorobenzene (Surr)	*118*		*81 - 130*		*09/07/16 18:31*	*25*
4-Bromofluorobenzene (Surr)	*118*		*81 - 130*		*09/07/16 21:02*	*2.5*
Dibromofluoromethane (Surr)	*106*		*81 - 124*		*09/07/16 18:31*	*25*
Dibromofluoromethane (Surr)	*107*		*81 - 124*		*09/07/16 21:02*	*2.5*
Toluene-d8 (Surr)	*113*		*87 - 128*		*09/07/16 18:31*	*25*
Toluene-d8 (Surr)	*110*		*87 - 128*		*09/07/16 21:02*	*2.5*

Client Sample ID: GW-NB34-082516

Lab Sample ID: 160-18852-11

Date Collected: 08/25/16 14:55

Matrix: Water

Date Received: 08/29/16 11:10

Method: 8260C - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	**26**		2.5	0.43	ug/L			09/07/16 17:37	2.5
1,1,2,2-Tetrachloroethane	ND		2.5	0.25	ug/L			09/07/16 17:37	2.5
1,1,2-Trichloroethane	ND		2.5	0.33	ug/L			09/07/16 17:37	2.5
1,1-Dichloroethene	**61**		2.5	0.25	ug/L			09/07/16 17:37	2.5
1,1-Dichloroethane	**13**		2.5	0.18	ug/L			09/07/16 17:37	2.5
1,2,4-Trichlorobenzene	ND		2.5	0.25	ug/L			09/07/16 17:37	2.5
1,2-Dibromo-3-Chloropropane	ND		2.5	1.0	ug/L			09/07/16 17:37	2.5
1,2-Dichloroethane	**0.56**	**J**	2.5	0.54	ug/L			09/07/16 17:37	2.5
1,2-Dichloroethene, Total	**80**		5.0	0.34	ug/L			09/07/16 17:37	2.5
1,2-Dichloropropane	ND		2.5	0.25	ug/L			09/07/16 17:37	2.5
2-Butanone	ND		13	1.2	ug/L			09/07/16 17:37	2.5
2-Hexanone	ND		13	0.62	ug/L			09/07/16 17:37	2.5
4-Methyl-2-pentanone	ND		13	0.54	ug/L			09/07/16 17:37	2.5
Acetone	ND		5.0	1.4	ug/L			09/07/16 17:37	2.5
Benzene	ND		2.5	0.25	ug/L			09/07/16 17:37	2.5
Bromoform	ND		2.5	0.43	ug/L			09/07/16 17:37	2.5
Methyl bromide	ND		5.0	0.63	ug/L			09/07/16 17:37	2.5
Carbon disulfide	ND		2.5	0.25	ug/L			09/07/16 17:37	2.5
Carbon tetrachloride	ND		2.5	0.45	ug/L			09/07/16 17:37	2.5
Chlorobenzene	ND		2.5	0.27	ug/L			09/07/16 17:37	2.5
Chlorodibromomethane	ND		2.5	0.36	ug/L			09/07/16 17:37	2.5

Client Sample ID: GW-NB34-082516

Date Collected: 08/25/16 14:55
Date Received: 08/29/16 11:10

Lab Sample ID: 160-18852-11

Matrix: Water

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	ND		5.0	0.41	ug/L			09/07/16 17:37	2.5
Chloroform	**0.43**	**J**	2.5	0.25	ug/L			09/07/16 17:37	2.5
Chloromethane	ND		5.0	0.26	ug/L			09/07/16 17:37	2.5
cis-1,2-Dichloroethene	**73**		2.5	0.25	ug/L			09/07/16 17:37	2.5
cis-1,3-Dichloropropene	ND		2.5	0.40	ug/L			09/07/16 17:37	2.5
Bromodichloromethane	ND		2.5	0.35	ug/L			09/07/16 17:37	2.5
Ethylbenzene	ND		2.5	0.31	ug/L			09/07/16 17:37	2.5
1,2-Dibromoethane	ND		2.5	0.33	ug/L			09/07/16 17:37	2.5
Methylene Chloride	ND		2.5	0.68	ug/L			09/07/16 17:37	2.5
n-Butanol	ND		130	31	ug/L			09/07/16 17:37	2.5
Styrene	ND		2.5	0.34	ug/L			09/07/16 17:37	2.5
Tetrachloroethene	**950**		25	4.5	ug/L			09/07/16 15:17	25
Toluene	ND		2.5	0.35	ug/L			09/07/16 17:37	2.5
trans-1,2-Dichloroethene	**6.8**		2.5	0.26	ug/L			09/07/16 17:37	2.5
trans-1,3-Dichloropropene	ND		2.5	0.25	ug/L			09/07/16 17:37	2.5
Trichloroethene	**230**		25	6.3	ug/L			09/07/16 15:17	25
Vinyl acetate	ND		5.0	0.45	ug/L			09/07/16 17:37	2.5
Vinyl chloride	ND		5.0	0.49	ug/L			09/07/16 17:37	2.5
Xylenes, Total	ND		7.5	0.66	ug/L			09/07/16 17:37	2.5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*75 - 129*		*09/07/16 15:17*	*25*
1,2-Dichloroethane-d4 (Surr)	*98*		*75 - 129*		*09/07/16 17:37*	*2.5*
4-Bromofluorobenzene (Surr)	*111*		*81 - 130*		*09/07/16 15:17*	*25*
4-Bromofluorobenzene (Surr)	*112*		*81 - 130*		*09/07/16 17:37*	*2.5*
Dibromofluoromethane (Surr)	*101*		*81 - 124*		*09/07/16 15:17*	*25*
Dibromofluoromethane (Surr)	*102*		*81 - 124*		*09/07/16 17:37*	*2.5*
Toluene-d8 (Surr)	*106*		*87 - 128*		*09/07/16 15:17*	*25*
Toluene-d8 (Surr)	*109*		*87 - 128*		*09/07/16 17:37*	*2.5*

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium 238	**0.0728**		0.0648	0.0651	0.100	0.0721	pCi/L	09/06/16 13:27	09/09/16 12:48	1
Uranium 234	0.0621	U	0.0667	0.0669	0.100	0.0964	pCi/L	09/06/16 13:27	09/09/16 12:48	1
Uranium-235/236	-0.00677	U	0.0135	0.0136	0.100	0.0899	pCi/L	09/06/16 13:27	09/09/16 12:48	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Uranium 232	*70.5*		*30 - 110*	*09/06/16 13:27*	*09/09/16 12:48*	*1*

Method: TC-02-RC - Technetium-99 (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	**4.50**		1.22	1.30	3.00	1.80	pCi/L	09/01/16 14:31	09/06/16 17:08	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tc-99m	*104*		*30 - 110*	*09/01/16 14:31*	*09/06/16 17:08*	*1*

Surrogate Summary

Client: Westinghouse Electric Company LLC
Project/Site: HDP RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-18852-1

Method: 8260C - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(75-129)	(81-130)	(81-124)	(87-128)
160-18852-1	TB-082516	108	111	108	109
160-18852-2	GW-BR10RB-082516	117	112	117	111
160-18852-3	GW-GWJJ-082516	111	124	113	122
160-18852-3	GW-GWJJ-082516	102	117	104	114
160-18852-4	GW-BR13JC-082516	112	116	116	111
160-18852-5	GW-BR04JC-082516	114	107	115	98
160-18852-5	GW-BR04JC-082516	114	108	113	104
160-18852-6	GW-BR08JC-082516	111	114	113	114
160-18852-6	GW-BR08JC-082516	107	118	109	114
160-18852-7	GW-BR08JC-082516-FD	99	115	102	114
160-18852-7	GW-BR08JC-082516-FD	107	114	108	114
160-18852-8	GW-BR10JC-082516	106	114	108	114
160-18852-8	GW-BR10JC-082516	104	118	105	114
160-18852-9	GW-NB72-082516	112	116	110	116
160-18852-9	GW-NB72-082516	107	116	111	116
160-18852-10	GW-NB73-082516	108	118	106	113
160-18852-10	GW-NB73-082516	108	118	107	110
160-18852-11	GW-NB34-082516	94	111	101	106
160-18852-11	GW-NB34-082516	98	112	102	109
LCS 160-267958/6	Lab Control Sample	103	94	106	100
LCS 160-268249/15	Lab Control Sample	92	107	110	102
LCS 160-268257/8	Lab Control Sample	97	110	101	112
LCSD 160-267958/7	Lab Control Sample Dup	99	99	100	107
LCSD 160-268249/16	Lab Control Sample Dup	93	108	109	102
LCSD 160-268257/33	Lab Control Sample Dup	95	110	100	112
MB 160-267958/9	Method Blank	105	100	103	109
MB 160-268249/18	Method Blank	90	116	105	108
MB 160-268257/10	Method Blank	103	117	104	116

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Tracer/Carrier Summary

Client: Westinghouse Electric Company LLC
Project/Site: HDP RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-18852-1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	U-232 (30-110)
160-18852-2	GW-BR10RB-082516	66.0
160-18852-3	GW-GWJJ-082516	60.6
160-18852-4	GW-BR13JC-082516	63.0
160-18852-5	GW-BR04JC-082516	62.9
160-18852-11	GW-NB34-082516	70.5
LCS 160-268210/2-A	Lab Control Sample	55.0
LCSD 160-268210/3-A	Lab Control Sample Dup	47.2
MB 160-268210/1-A	Method Blank	51.8

Tracer/Carrier Legend

U-232 = Uranium 232

Method: TC-02-RC - Technetium-99 (LSC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Tc-99m (30-110)
160-18742-A-13-D MS	Matrix Spike	103
160-18742-B-13-C MSD	Matrix Spike Duplicate	101
160-18852-2	GW-BR10RB-082516	107
160-18852-3	GW-GWJJ-082516	93.9
160-18852-4	GW-BR13JC-082516	110
160-18852-5	GW-BR04JC-082516	94.8
160-18852-11	GW-NB34-082516	104
LCS 160-267772/2-A	Lab Control Sample	104
MB 160-267772/1-A	Method Blank	105

Tracer/Carrier Legend

Tc-99m = Tc-99m

Method: 8260C - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 160-267958/9
Matrix: Water
Analysis Batch: 267958

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			09/04/16 11:33	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.10	ug/L			09/04/16 11:33	1
1,1,2-Trichloroethane	ND		1.0	0.13	ug/L			09/04/16 11:33	1
1,1-Dichloroethene	ND		1.0	0.10	ug/L			09/04/16 11:33	1
1,1-Dichloroethane	ND		1.0	0.070	ug/L			09/04/16 11:33	1
1,2,4-Trichlorobenzene	ND		1.0	0.10	ug/L			09/04/16 11:33	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.41	ug/L			09/04/16 11:33	1
1,2-Dichloroethane	ND		1.0	0.22	ug/L			09/04/16 11:33	1
1,2-Dichloroethene, Total	ND		2.0	0.14	ug/L			09/04/16 11:33	1
1,2-Dichloropropane	ND		1.0	0.10	ug/L			09/04/16 11:33	1
2-Butanone	ND		5.0	0.47	ug/L			09/04/16 11:33	1
2-Hexanone	ND		5.0	0.25	ug/L			09/04/16 11:33	1
4-Methyl-2-pentanone	ND		5.0	0.22	ug/L			09/04/16 11:33	1
Acetone	ND		2.0	0.55	ug/L			09/04/16 11:33	1
Benzene	ND		1.0	0.10	ug/L			09/04/16 11:33	1
Bromoform	ND		1.0	0.17	ug/L			09/04/16 11:33	1
Methyl bromide	ND		2.0	0.25	ug/L			09/04/16 11:33	1
Carbon disulfide	ND		1.0	0.10	ug/L			09/04/16 11:33	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			09/04/16 11:33	1
Chlorobenzene	ND		1.0	0.11	ug/L			09/04/16 11:33	1
Chlorodibromomethane	ND		1.0	0.14	ug/L			09/04/16 11:33	1
Chloroethane	ND		2.0	0.16	ug/L			09/04/16 11:33	1
Chloroform	ND		1.0	0.10	ug/L			09/04/16 11:33	1
Chloromethane	ND		2.0	0.10	ug/L			09/04/16 11:33	1
cis-1,2-Dichloroethene	ND		1.0	0.10	ug/L			09/04/16 11:33	1
cis-1,3-Dichloropropene	ND		1.0	0.16	ug/L			09/04/16 11:33	1
Bromodichloromethane	ND		1.0	0.14	ug/L			09/04/16 11:33	1
Ethylbenzene	ND		1.0	0.12	ug/L			09/04/16 11:33	1
1,2-Dibromoethane	ND		1.0	0.13	ug/L			09/04/16 11:33	1
Methylene Chloride	ND		1.0	0.27	ug/L			09/04/16 11:33	1
n-Butanol	ND		50	12	ug/L			09/04/16 11:33	1
Styrene	ND		1.0	0.13	ug/L			09/04/16 11:33	1
Tetrachloroethene	ND		1.0	0.18	ug/L			09/04/16 11:33	1
Toluene	ND		1.0	0.14	ug/L			09/04/16 11:33	1
trans-1,2-Dichloroethene	ND		1.0	0.10	ug/L			09/04/16 11:33	1
trans-1,3-Dichloropropene	ND		1.0	0.10	ug/L			09/04/16 11:33	1
Trichloroethene	ND		1.0	0.25	ug/L			09/04/16 11:33	1
Vinyl acetate	ND		2.0	0.18	ug/L			09/04/16 11:33	1
Vinyl chloride	ND		2.0	0.19	ug/L			09/04/16 11:33	1
Xylenes, Total	ND		3.0	0.26	ug/L			09/04/16 11:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*75 - 129*		*09/04/16 11:33*	*1*
4-Bromofluorobenzene (Surr)	*100*		*81 - 130*		*09/04/16 11:33*	*1*
Dibromofluoromethane (Surr)	*103*		*81 - 124*		*09/04/16 11:33*	*1*
Toluene-d8 (Surr)	*109*		*87 - 128*		*09/04/16 11:33*	*1*

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 160-267958/6
Matrix: Water
Analysis Batch: 267958

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	10.0		ug/L		100	85 - 116
1,1,2,2-Tetrachloroethane	10.0	9.54		ug/L		95	80 - 120
1,1,2-Trichloroethane	10.0	10.0		ug/L		100	80 - 120
1,1-Dichloroethene	10.0	9.54		ug/L		95	80 - 120
1,1-Dichloroethane	10.0	9.90		ug/L		99	80 - 120
1,2,4-Trichlorobenzene	10.0	9.31		ug/L		93	75 - 121
1,2-Dibromo-3-Chloropropane	10.0	9.66		ug/L		97	73 - 123
1,2-Dichloroethane	10.0	10.1		ug/L		101	80 - 115
1,2-Dichloroethene, Total	20.0	18.9		ug/L		95	80 - 120
1,2-Dichloropropane	10.0	10.1		ug/L		101	80 - 120
2-Butanone	10.0	12.0		ug/L		120	67 - 127
2-Hexanone	10.0	10.6		ug/L		106	70 - 123
4-Methyl-2-pentanone	10.0	10.5		ug/L		105	75 - 126
Acetone	10.0	10.9		ug/L		109	69 - 129
Benzene	10.0	10.7		ug/L		107	80 - 120
Bromoform	10.0	8.64		ug/L		86	80 - 120
Methyl bromide	10.0	11.3		ug/L		113	70 - 124
Carbon disulfide	10.0	9.75		ug/L		97	80 - 121
Carbon tetrachloride	10.0	10.0		ug/L		100	83 - 125
Chlorobenzene	10.0	10.2		ug/L		102	80 - 120
Chlorodibromomethane	10.0	9.63		ug/L		96	80 - 120
Chloroethane	10.0	12.7	*	ug/L		127	73 - 119
Chloroform	10.0	10.0		ug/L		100	80 - 120
Chloromethane	10.0	11.5		ug/L		115	72 - 124
cis-1,2-Dichloroethene	10.0	9.45		ug/L		94	80 - 120
cis-1,3-Dichloropropene	10.0	10.0		ug/L		100	80 - 120
Bromodichloromethane	10.0	9.59		ug/L		96	80 - 120
Ethylbenzene	10.0	10.5		ug/L		105	80 - 120
1,2-Dibromoethane	10.0	9.75		ug/L		97	80 - 120
Methylene Chloride	10.0	8.60		ug/L		86	80 - 120
n-Butanol	250	224		ug/L		90	62 - 128
Styrene	10.0	11.2		ug/L		112	81 - 133
Tetrachloroethene	10.0	10.0		ug/L		100	83 - 123
Toluene	10.0	10.8		ug/L		108	80 - 120
trans-1,2-Dichloroethene	10.0	9.49		ug/L		95	80 - 120
trans-1,3-Dichloropropene	10.0	10.2		ug/L		102	82 - 124
Trichloroethene	10.0	10.1		ug/L		101	80 - 120
Vinyl acetate	10.0	11.4		ug/L		114	63 - 140
Vinyl chloride	10.0	12.3	*	ug/L		123	77 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*75 - 129*
4-Bromofluorobenzene (Surr)	*94*		*81 - 130*
Dibromofluoromethane (Surr)	*106*		*81 - 124*
Toluene-d8 (Surr)	*100*		*87 - 128*

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 160-267958/7
Matrix: Water
Analysis Batch: 267958

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane			10.0	9.94		ug/L		99	85 - 116	1	20
1,1,2,2-Tetrachloroethane			10.0	8.98		ug/L		90	80 - 120	6	20
1,1,2-Trichloroethane			10.0	9.91		ug/L		99	80 - 120	1	20
1,1-Dichloroethene			10.0	10.1		ug/L		101	80 - 120	6	20
1,1-Dichloroethane			10.0	10.4		ug/L		104	80 - 120	5	20
1,2,4-Trichlorobenzene			10.0	9.50		ug/L		95	75 - 121	2	20
1,2-Dibromo-3-Chloropropane			10.0	9.20		ug/L		92	73 - 123	5	20
1,2-Dichloroethane			10.0	9.87		ug/L		99	80 - 115	2	20
1,2-Dichloroethene, Total			20.0	20.1		ug/L		101	80 - 120	6	20
1,2-Dichloropropane			10.0	10.7		ug/L		107	80 - 120	5	20
2-Butanone			10.0	11.1		ug/L		111	67 - 127	8	20
2-Hexanone			10.0	10.5		ug/L		105	70 - 123	1	20
4-Methyl-2-pentanone			10.0	10.2		ug/L		102	75 - 126	3	20
Acetone			10.0	11.1		ug/L		111	69 - 129	2	20
Benzene			10.0	10.5		ug/L		105	80 - 120	2	20
Bromoform			10.0	8.34		ug/L		83	80 - 120	3	20
Methyl bromide			10.0	12.1		ug/L		121	70 - 124	7	20
Carbon disulfide			10.0	10.4		ug/L		104	80 - 121	6	20
Carbon tetrachloride			10.0	9.84		ug/L		98	83 - 125	2	20
Chlorobenzene			10.0	10.2		ug/L		102	80 - 120	0	20
Chlorodibromomethane			10.0	9.30		ug/L		93	80 - 120	3	20
Chloroethane			10.0	13.2	*	ug/L		132	73 - 119	4	20
Chloroform			10.0	9.92		ug/L		99	80 - 120	1	20
Chloromethane			10.0	12.0		ug/L		120	72 - 124	4	20
cis-1,2-Dichloroethene			10.0	10.1		ug/L		101	80 - 120	7	20
cis-1,3-Dichloropropene			10.0	10.5		ug/L		105	80 - 120	4	20
Bromodichloromethane			10.0	9.97		ug/L		100	80 - 120	4	20
Ethylbenzene			10.0	10.6		ug/L		106	80 - 120	1	20
1,2-Dibromoethane			10.0	9.44		ug/L		94	80 - 120	3	20
Methylene Chloride			10.0	9.01		ug/L		90	80 - 120	5	20
n-Butanol			250	227		ug/L		91	62 - 128	1	20
Styrene			10.0	11.3		ug/L		113	81 - 133	1	20
Tetrachloroethene			10.0	10.4		ug/L		104	83 - 123	3	20
Toluene			10.0	11.0		ug/L		110	80 - 120	2	20
trans-1,2-Dichloroethene			10.0	10.0		ug/L		100	80 - 120	5	20
trans-1,3-Dichloropropene			10.0	10.3		ug/L		103	82 - 124	0	20
Trichloroethene			10.0	10.5		ug/L		105	80 - 120	4	20
Vinyl acetate			10.0	11.2		ug/L		112	63 - 140	3	20
Vinyl chloride			10.0	13.2	*	ug/L		132	77 - 122	7	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*75 - 129*
4-Bromofluorobenzene (Surr)	*99*		*81 - 130*
Dibromofluoromethane (Surr)	*100*		*81 - 124*
Toluene-d8 (Surr)	*107*		*87 - 128*

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 160-268249/18
Matrix: Water
Analysis Batch: 268249

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			09/07/16 12:55	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.10	ug/L			09/07/16 12:55	1
1,1,2-Trichloroethane	ND		1.0	0.13	ug/L			09/07/16 12:55	1
1,1-Dichloroethene	ND		1.0	0.10	ug/L			09/07/16 12:55	1
1,1-Dichloroethane	ND		1.0	0.070	ug/L			09/07/16 12:55	1
1,2,4-Trichlorobenzene	ND		1.0	0.10	ug/L			09/07/16 12:55	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.41	ug/L			09/07/16 12:55	1
1,2-Dichloroethane	ND		1.0	0.22	ug/L			09/07/16 12:55	1
1,2-Dichloroethene, Total	ND		2.0	0.14	ug/L			09/07/16 12:55	1
1,2-Dichloropropane	ND		1.0	0.10	ug/L			09/07/16 12:55	1
2-Butanone	ND		5.0	0.47	ug/L			09/07/16 12:55	1
2-Hexanone	ND		5.0	0.25	ug/L			09/07/16 12:55	1
4-Methyl-2-pentanone	ND		5.0	0.22	ug/L			09/07/16 12:55	1
Acetone	ND		2.0	0.55	ug/L			09/07/16 12:55	1
Benzene	ND		1.0	0.10	ug/L			09/07/16 12:55	1
Bromoform	ND		1.0	0.17	ug/L			09/07/16 12:55	1
Methyl bromide	ND		2.0	0.25	ug/L			09/07/16 12:55	1
Carbon disulfide	ND		1.0	0.10	ug/L			09/07/16 12:55	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			09/07/16 12:55	1
Chlorobenzene	ND		1.0	0.11	ug/L			09/07/16 12:55	1
Chlorodibromomethane	ND		1.0	0.14	ug/L			09/07/16 12:55	1
Chloroethane	ND		2.0	0.16	ug/L			09/07/16 12:55	1
Chloroform	ND		1.0	0.10	ug/L			09/07/16 12:55	1
Chloromethane	ND		2.0	0.10	ug/L			09/07/16 12:55	1
cis-1,2-Dichloroethene	ND		1.0	0.10	ug/L			09/07/16 12:55	1
cis-1,3-Dichloropropene	ND		1.0	0.16	ug/L			09/07/16 12:55	1
Bromodichloromethane	ND		1.0	0.14	ug/L			09/07/16 12:55	1
Ethylbenzene	ND		1.0	0.12	ug/L			09/07/16 12:55	1
1,2-Dibromoethane	ND		1.0	0.13	ug/L			09/07/16 12:55	1
Methylene Chloride	ND		1.0	0.27	ug/L			09/07/16 12:55	1
n-Butanol	ND		50	12	ug/L			09/07/16 12:55	1
Styrene	ND		1.0	0.13	ug/L			09/07/16 12:55	1
Tetrachloroethene	ND		1.0	0.18	ug/L			09/07/16 12:55	1
Toluene	ND		1.0	0.14	ug/L			09/07/16 12:55	1
trans-1,2-Dichloroethene	ND		1.0	0.10	ug/L			09/07/16 12:55	1
trans-1,3-Dichloropropene	ND		1.0	0.10	ug/L			09/07/16 12:55	1
Trichloroethene	ND		1.0	0.25	ug/L			09/07/16 12:55	1
Vinyl acetate	ND		2.0	0.18	ug/L			09/07/16 12:55	1
Vinyl chloride	ND		2.0	0.19	ug/L			09/07/16 12:55	1
Xylenes, Total	ND		3.0	0.26	ug/L			09/07/16 12:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*75 - 129*		*09/07/16 12:55*	*1*
4-Bromofluorobenzene (Surr)	*116*		*81 - 130*		*09/07/16 12:55*	*1*
Dibromofluoromethane (Surr)	*105*		*81 - 124*		*09/07/16 12:55*	*1*
Toluene-d8 (Surr)	*108*		*87 - 128*		*09/07/16 12:55*	*1*

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 160-268249/15
Matrix: Water
Analysis Batch: 268249

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	9.74		ug/L		97	85 - 116
1,1,2,2-Tetrachloroethane	10.0	9.31		ug/L		93	80 - 120
1,1,2-Trichloroethane	10.0	9.42		ug/L		94	80 - 120
1,1-Dichloroethene	10.0	10.7		ug/L		107	80 - 120
1,1-Dichloroethane	10.0	9.97		ug/L		100	80 - 120
1,2,4-Trichlorobenzene	10.0	10.9		ug/L		109	75 - 121
1,2-Dibromo-3-Chloropropane	10.0	10.2		ug/L		102	73 - 123
1,2-Dichloroethane	10.0	8.96		ug/L		90	80 - 115
1,2-Dichloroethene, Total	20.0	20.5		ug/L		103	80 - 120
1,2-Dichloropropane	10.0	9.78		ug/L		98	80 - 120
2-Butanone	10.0	8.75		ug/L		88	67 - 127
2-Hexanone	10.0	9.21		ug/L		92	70 - 123
4-Methyl-2-pentanone	10.0	9.78		ug/L		98	75 - 126
Acetone	10.0	10.5		ug/L		105	69 - 129
Benzene	10.0	9.98		ug/L		100	80 - 120
Bromoform	10.0	10.6		ug/L		106	80 - 120
Methyl bromide	10.0	8.86		ug/L		89	70 - 124
Carbon disulfide	10.0	10.2		ug/L		102	80 - 121
Carbon tetrachloride	10.0	10.1		ug/L		101	83 - 125
Chlorobenzene	10.0	9.99		ug/L		100	80 - 120
Chlorodibromomethane	10.0	10.3		ug/L		103	80 - 120
Chloroethane	10.0	7.94		ug/L		79	73 - 119
Chloroform	10.0	9.79		ug/L		98	80 - 120
Chloromethane	10.0	9.03		ug/L		90	72 - 124
cis-1,2-Dichloroethene	10.0	10.1		ug/L		101	80 - 120
cis-1,3-Dichloropropene	10.0	10.1		ug/L		101	80 - 120
Bromodichloromethane	10.0	9.74		ug/L		97	80 - 120
Ethylbenzene	10.0	9.02		ug/L		90	80 - 120
1,2-Dibromoethane	10.0	10.3		ug/L		103	80 - 120
Methylene Chloride	10.0	10.1		ug/L		101	80 - 120
n-Butanol	250	259		ug/L		104	62 - 128
Styrene	10.0	11.3		ug/L		113	81 - 133
Tetrachloroethene	10.0	10.5		ug/L		105	83 - 123
Toluene	10.0	10.3		ug/L		103	80 - 120
trans-1,2-Dichloroethene	10.0	10.4		ug/L		104	80 - 120
trans-1,3-Dichloropropene	10.0	9.83		ug/L		98	82 - 124
Trichloroethene	10.0	9.99		ug/L		100	80 - 120
Vinyl acetate	10.0	9.39		ug/L		94	63 - 140
Vinyl chloride	10.0	7.88		ug/L		79	77 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*75 - 129*
4-Bromofluorobenzene (Surr)	*107*		*81 - 130*
Dibromofluoromethane (Surr)	*110*		*81 - 124*
Toluene-d8 (Surr)	*102*		*87 - 128*

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 160-268249/16
Matrix: Water
Analysis Batch: 268249

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane			10.0	9.94		ug/L		99	85 - 116	2	20
1,1,2,2-Tetrachloroethane			10.0	9.44		ug/L		94	80 - 120	1	20
1,1,2-Trichloroethane			10.0	9.68		ug/L		97	80 - 120	3	20
1,1-Dichloroethene			10.0	10.7		ug/L		107	80 - 120	0	20
1,1-Dichloroethane			10.0	9.79		ug/L		98	80 - 120	2	20
1,2,4-Trichlorobenzene			10.0	10.4		ug/L		104	75 - 121	5	20
1,2-Dibromo-3-Chloropropane			10.0	10.0		ug/L		100	73 - 123	1	20
1,2-Dichloroethane			10.0	8.79		ug/L		88	80 - 115	2	20
1,2-Dichloroethene, Total			20.0	20.7		ug/L		104	80 - 120	1	20
1,2-Dichloropropane			10.0	9.86		ug/L		99	80 - 120	1	20
2-Butanone			10.0	8.80		ug/L		88	67 - 127	0	20
2-Hexanone			10.0	9.75		ug/L		97	70 - 123	6	20
4-Methyl-2-pentanone			10.0	10.2		ug/L		102	75 - 126	5	20
Acetone			10.0	9.84		ug/L		98	69 - 129	7	20
Benzene			10.0	9.82		ug/L		98	80 - 120	2	20
Bromoform			10.0	11.1		ug/L		111	80 - 120	5	20
Methyl bromide			10.0	8.79		ug/L		88	70 - 124	1	20
Carbon disulfide			10.0	10.4		ug/L		104	80 - 121	2	20
Carbon tetrachloride			10.0	10.2		ug/L		102	83 - 125	1	20
Chlorobenzene			10.0	9.92		ug/L		99	80 - 120	1	20
Chlorodibromomethane			10.0	10.6		ug/L		106	80 - 120	3	20
Chloroethane			10.0	7.72		ug/L		77	73 - 119	3	20
Chloroform			10.0	9.20		ug/L		92	80 - 120	6	20
Chloromethane			10.0	9.01		ug/L		90	72 - 124	0	20
cis-1,2-Dichloroethene			10.0	10.3		ug/L		103	80 - 120	2	20
cis-1,3-Dichloropropene			10.0	10.4		ug/L		104	80 - 120	3	20
Bromodichloromethane			10.0	9.80		ug/L		98	80 - 120	1	20
Ethylbenzene			10.0	9.03		ug/L		90	80 - 120	0	20
1,2-Dibromoethane			10.0	10.3		ug/L		103	80 - 120	0	20
Methylene Chloride			10.0	10.2		ug/L		102	80 - 120	1	20
n-Butanol			250	262		ug/L		105	62 - 128	1	20
Styrene			10.0	11.2		ug/L		112	81 - 133	1	20
Tetrachloroethene			10.0	10.7		ug/L		107	83 - 123	1	20
Toluene			10.0	10.4		ug/L		104	80 - 120	1	20
trans-1,2-Dichloroethene			10.0	10.4		ug/L		104	80 - 120	0	20
trans-1,3-Dichloropropene			10.0	10.2		ug/L		102	82 - 124	4	20
Trichloroethene			10.0	10.1		ug/L		101	80 - 120	1	20
Vinyl acetate			10.0	9.22		ug/L		92	63 - 140	2	20
Vinyl chloride			10.0	7.76		ug/L		78	77 - 122	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*75 - 129*
4-Bromofluorobenzene (Surr)	*108*		*81 - 130*
Dibromofluoromethane (Surr)	*109*		*81 - 124*
Toluene-d8 (Surr)	*102*		*87 - 128*

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 160-268257/10
Matrix: Water
Analysis Batch: 268257

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.17	ug/L			09/07/16 12:38	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.10	ug/L			09/07/16 12:38	1
1,1,2-Trichloroethane	ND		1.0	0.13	ug/L			09/07/16 12:38	1
1,1-Dichloroethene	ND		1.0	0.10	ug/L			09/07/16 12:38	1
1,1-Dichloroethane	ND		1.0	0.070	ug/L			09/07/16 12:38	1
1,2,4-Trichlorobenzene	ND		1.0	0.10	ug/L			09/07/16 12:38	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.41	ug/L			09/07/16 12:38	1
1,2-Dichloroethane	ND		1.0	0.22	ug/L			09/07/16 12:38	1
1,2-Dichloroethene, Total	ND		2.0	0.14	ug/L			09/07/16 12:38	1
1,2-Dichloropropane	ND		1.0	0.10	ug/L			09/07/16 12:38	1
2-Butanone	ND		5.0	0.47	ug/L			09/07/16 12:38	1
2-Hexanone	ND		5.0	0.25	ug/L			09/07/16 12:38	1
4-Methyl-2-pentanone	ND		5.0	0.22	ug/L			09/07/16 12:38	1
Acetone	0.579	J	2.0	0.55	ug/L			09/07/16 12:38	1
Benzene	ND		1.0	0.10	ug/L			09/07/16 12:38	1
Bromoform	ND		1.0	0.17	ug/L			09/07/16 12:38	1
Methyl bromide	ND		2.0	0.25	ug/L			09/07/16 12:38	1
Carbon disulfide	ND		1.0	0.10	ug/L			09/07/16 12:38	1
Carbon tetrachloride	ND		1.0	0.18	ug/L			09/07/16 12:38	1
Chlorobenzene	ND		1.0	0.11	ug/L			09/07/16 12:38	1
Chlorodibromomethane	ND		1.0	0.14	ug/L			09/07/16 12:38	1
Chloroethane	ND		2.0	0.16	ug/L			09/07/16 12:38	1
Chloroform	ND		1.0	0.10	ug/L			09/07/16 12:38	1
Chloromethane	ND		2.0	0.10	ug/L			09/07/16 12:38	1
cis-1,2-Dichloroethene	ND		1.0	0.10	ug/L			09/07/16 12:38	1
cis-1,3-Dichloropropene	ND		1.0	0.16	ug/L			09/07/16 12:38	1
Bromodichloromethane	ND		1.0	0.14	ug/L			09/07/16 12:38	1
Ethylbenzene	ND		1.0	0.12	ug/L			09/07/16 12:38	1
1,2-Dibromoethane	ND		1.0	0.13	ug/L			09/07/16 12:38	1
Methylene Chloride	ND		1.0	0.27	ug/L			09/07/16 12:38	1
n-Butanol	ND		50	12	ug/L			09/07/16 12:38	1
Styrene	ND		1.0	0.13	ug/L			09/07/16 12:38	1
Tetrachloroethene	ND		1.0	0.18	ug/L			09/07/16 12:38	1
Toluene	ND		1.0	0.14	ug/L			09/07/16 12:38	1
trans-1,2-Dichloroethene	ND		1.0	0.10	ug/L			09/07/16 12:38	1
trans-1,3-Dichloropropene	ND		1.0	0.10	ug/L			09/07/16 12:38	1
Trichloroethene	ND		1.0	0.25	ug/L			09/07/16 12:38	1
Vinyl acetate	ND		2.0	0.18	ug/L			09/07/16 12:38	1
Vinyl chloride	ND		2.0	0.19	ug/L			09/07/16 12:38	1
Xylenes, Total	ND		3.0	0.26	ug/L			09/07/16 12:38	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*75 - 129*		*09/07/16 12:38*	*1*
4-Bromofluorobenzene (Surr)	*117*		*81 - 130*		*09/07/16 12:38*	*1*
Dibromofluoromethane (Surr)	*104*		*81 - 124*		*09/07/16 12:38*	*1*
Toluene-d8 (Surr)	*116*		*87 - 128*		*09/07/16 12:38*	*1*

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 160-268257/8
Matrix: Water
Analysis Batch: 268257

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	10.0	9.23		ug/L		92	85 - 116
1,1,2,2-Tetrachloroethane	10.0	9.80		ug/L		98	80 - 120
1,1,2-Trichloroethane	10.0	9.98		ug/L		100	80 - 120
1,1-Dichloroethene	10.0	9.54		ug/L		95	80 - 120
1,1-Dichloroethane	10.0	10.1		ug/L		101	80 - 120
1,2,4-Trichlorobenzene	10.0	9.48		ug/L		95	75 - 121
1,2-Dibromo-3-Chloropropane	10.0	9.16		ug/L		92	73 - 123
1,2-Dichloroethane	10.0	9.24		ug/L		92	80 - 115
1,2-Dichloroethene, Total	20.0	19.7		ug/L		99	80 - 120
1,2-Dichloropropane	10.0	10.6		ug/L		106	80 - 120
2-Butanone	10.0	11.1		ug/L		111	67 - 127
2-Hexanone	10.0	11.2		ug/L		112	70 - 123
4-Methyl-2-pentanone	10.0	10.8		ug/L		108	75 - 126
Acetone	10.0	11.5		ug/L		115	69 - 129
Benzene	10.0	10.4		ug/L		104	80 - 120
Bromoform	10.0	8.84		ug/L		88	80 - 120
Methyl bromide	10.0	9.11		ug/L		91	70 - 124
Carbon disulfide	10.0	9.88		ug/L		99	80 - 121
Carbon tetrachloride	10.0	9.00		ug/L		90	83 - 125
Chlorobenzene	10.0	10.2		ug/L		102	80 - 120
Chlorodibromomethane	10.0	9.24		ug/L		92	80 - 120
Chloroethane	10.0	10.7		ug/L		107	73 - 119
Chloroform	10.0	9.51		ug/L		95	80 - 120
Chloromethane	10.0	9.16		ug/L		92	72 - 124
cis-1,2-Dichloroethene	10.0	9.92		ug/L		99	80 - 120
cis-1,3-Dichloropropene	10.0	10.3		ug/L		103	80 - 120
Bromodichloromethane	10.0	9.46		ug/L		95	80 - 120
Ethylbenzene	10.0	10.6		ug/L		106	80 - 120
1,2-Dibromoethane	10.0	9.47		ug/L		95	80 - 120
Methylene Chloride	10.0	8.82		ug/L		88	80 - 120
n-Butanol	250	225		ug/L		90	62 - 128
Styrene	10.0	11.1		ug/L		111	81 - 133
Tetrachloroethene	10.0	9.86		ug/L		99	83 - 123
Toluene	10.0	10.8		ug/L		108	80 - 120
trans-1,2-Dichloroethene	10.0	9.80		ug/L		98	80 - 120
trans-1,3-Dichloropropene	10.0	10.3		ug/L		103	82 - 124
Trichloroethene	10.0	10.2		ug/L		102	80 - 120
Vinyl acetate	10.0	10.6		ug/L		106	63 - 140
Vinyl chloride	10.0	10.2		ug/L		102	77 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*75 - 129*
4-Bromofluorobenzene (Surr)	*110*		*81 - 130*
Dibromofluoromethane (Surr)	*101*		*81 - 124*
Toluene-d8 (Surr)	*112*		*87 - 128*

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 160-268257/33
Matrix: Water
Analysis Batch: 268257

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane			10.0	9.25		ug/L		92	85 - 116	0	20
1,1,2,2-Tetrachloroethane			10.0	10.0		ug/L		100	80 - 120	2	20
1,1,2-Trichloroethane			10.0	9.76		ug/L		98	80 - 120	2	20
1,1-Dichloroethene			10.0	9.73		ug/L		97	80 - 120	2	20
1,1-Dichloroethane			10.0	10.1		ug/L		101	80 - 120	0	20
1,2,4-Trichlorobenzene			10.0	9.48		ug/L		95	75 - 121	0	20
1,2-Dibromo-3-Chloropropane			10.0	8.86		ug/L		89	73 - 123	3	20
1,2-Dichloroethane			10.0	9.07		ug/L		91	80 - 115	2	20
1,2-Dichloroethene, Total			20.0	19.8		ug/L		99	80 - 120	0	20
1,2-Dichloropropane			10.0	10.6		ug/L		106	80 - 120	1	20
2-Butanone			10.0	10.4		ug/L		104	67 - 127	7	20
2-Hexanone			10.0	10.4		ug/L		104	70 - 123	8	20
4-Methyl-2-pentanone			10.0	10.5		ug/L		105	75 - 126	3	20
Acetone			10.0	10.7		ug/L		107	69 - 129	6	20
Benzene			10.0	10.4		ug/L		104	80 - 120	0	20
Bromoform			10.0	8.70		ug/L		87	80 - 120	2	20
Methyl bromide			10.0	9.27		ug/L		93	70 - 124	2	20
Carbon disulfide			10.0	9.88		ug/L		99	80 - 121	0	20
Carbon tetrachloride			10.0	9.01		ug/L		90	83 - 125	0	20
Chlorobenzene			10.0	10.3		ug/L		103	80 - 120	1	20
Chlorodibromomethane			10.0	8.98		ug/L		90	80 - 120	3	20
Chloroethane			10.0	10.7		ug/L		107	73 - 119	0	20
Chloroform			10.0	9.51		ug/L		95	80 - 120	0	20
Chloromethane			10.0	9.42		ug/L		94	72 - 124	3	20
cis-1,2-Dichloroethene			10.0	9.94		ug/L		99	80 - 120	0	20
cis-1,3-Dichloropropene			10.0	10.3		ug/L		103	80 - 120	0	20
Bromodichloromethane			10.0	9.34		ug/L		93	80 - 120	1	20
Ethylbenzene			10.0	10.8		ug/L		108	80 - 120	2	20
1,2-Dibromoethane			10.0	9.25		ug/L		93	80 - 120	2	20
Methylene Chloride			10.0	8.72		ug/L		87	80 - 120	1	20
n-Butanol			250	212		ug/L		85	62 - 128	6	20
Styrene			10.0	11.3		ug/L		113	81 - 133	1	20
Tetrachloroethene			10.0	10.3		ug/L		103	83 - 123	4	20
Toluene			10.0	11.0		ug/L		110	80 - 120	2	20
trans-1,2-Dichloroethene			10.0	9.83		ug/L		98	80 - 120	0	20
trans-1,3-Dichloropropene			10.0	10.1		ug/L		101	82 - 124	2	20
Trichloroethene			10.0	10.2		ug/L		102	80 - 120	0	20
Vinyl acetate			10.0	11.3		ug/L		113	63 - 140	6	20
Vinyl chloride			10.0	10.2		ug/L		102	77 - 122	1	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*75 - 129*
4-Bromofluorobenzene (Surr)	*110*		*81 - 130*
Dibromofluoromethane (Surr)	*100*		*81 - 124*
Toluene-d8 (Surr)	*112*		*87 - 128*

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-268210/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 269255 — **Prep Batch: 268210**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Uranium 238	0.01836	U	0.0367	0.0367	0.100	0.0551	pCi/L	09/06/16 13:27	09/12/16 14:59	1
Uranium 234	-0.01533	U G	0.0217	0.0217	0.100	0.121	pCi/L	09/06/16 13:27	09/12/16 14:59	1
Uranium-235/236	0.0000	U	0.0191	0.0191	0.100	0.0687	pCi/L	09/06/16 13:27	09/12/16 14:59	1

Tracer	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Uranium 232	*51.8*		*30 - 110*	*09/06/16 13:27*	*09/12/16 14:59*	*1*

Lab Sample ID: LCS 160-268210/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 268755 — **Prep Batch: 268210**

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Uranium 238			6.51	6.272		0.819	0.100	0.0866	pCi/L	96	83 - 121		
Uranium 234			6.37	5.851		0.782	0.100	0.136	pCi/L	92	84 - 120		

Tracer	*LCS %Yield*	*LCS Qualifier*	*Limits*
Uranium 232	*55.0*		*30 - 110*

Lab Sample ID: LCSD 160-268210/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 268756 — **Prep Batch: 268210**

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Uranium 238			6.51	6.185		0.848	0.100	0.100	pCi/L	95	83 - 121	0.05	1
Uranium 234			6.37	6.532		0.880	0.100	0.0544	pCi/L	103	84 - 120	0.41	1

Tracer	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Uranium 232	*47.2*		*30 - 110*

Method: TC-02-RC - Technetium-99 (LSC)

Lab Sample ID: MB 160-267772/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 268294 — **Prep Batch: 267772**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Technetium 99	0.2068	U	1.07	1.07	3.00	1.81	pCi/L	09/01/16 14:31	09/06/16 05:37	1

Tracer	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tc-99m	*105*		*30 - 110*	*09/01/16 14:31*	*09/06/16 05:37*	*1*

Method: TC-02-RC - Technetium-99 (LSC) (Continued)

Lab Sample ID: LCS 160-267772/2-A
Matrix: Water
Analysis Batch: 268294

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 267772

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Technetium 99			206	193.4		19.0	3.00	1.79	pCi/L	94	75 - 125		

Tracer	*LCS %Yield*	*LCS Qualifier*	*Limits*
Tc-99m	*104*		*30 - 110*

Lab Sample ID: 160-18742-A-13-D MS
Matrix: Water
Analysis Batch: 268294

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 267772

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Technetium 99	0.513	U	206	192.5		19.0	3.00	1.80	pCi/L	93	68 - 121		

Tracer	*MS %Yield*	*MS Qualifier*	*Limits*
Tc-99m	*103*		*30 - 110*

Lab Sample ID: 160-18742-B-13-C MSD
Matrix: Water
Analysis Batch: 268294

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 267772

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Technetium 99	0.513	U	206	194.3		19.1	3.00	1.81	pCi/L	94	68 - 121	0.05	1

Tracer	*MSD %Yield*	*MSD Qualifier*	*Limits*
Tc-99m	*101*		*30 - 110*

GC/MS VOA

Analysis Batch: 267958

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18852-1	TB-082516	Total/NA	Water	8260C	
160-18852-2	GW-BR10RB-082516	Total/NA	Water	8260C	
160-18852-3	GW-GWJJ-082516	Total/NA	Water	8260C	
160-18852-4	GW-BR13JC-082516	Total/NA	Water	8260C	
160-18852-5	GW-BR04JC-082516	Total/NA	Water	8260C	
160-18852-5	GW-BR04JC-082516	Total/NA	Water	8260C	
160-18852-6	GW-BR08JC-082516	Total/NA	Water	8260C	
MB 160-267958/9	Method Blank	Total/NA	Water	8260C	
LCS 160-267958/6	Lab Control Sample	Total/NA	Water	8260C	
LCSD 160-267958/7	Lab Control Sample Dup	Total/NA	Water	8260C	

Analysis Batch: 268249

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18852-11	GW-NB34-082516	Total/NA	Water	8260C	
160-18852-11	GW-NB34-082516	Total/NA	Water	8260C	
MB 160-268249/18	Method Blank	Total/NA	Water	8260C	
LCS 160-268249/15	Lab Control Sample	Total/NA	Water	8260C	
LCSD 160-268249/16	Lab Control Sample Dup	Total/NA	Water	8260C	

Analysis Batch: 268257

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18852-3	GW-GWJJ-082516	Total/NA	Water	8260C	
160-18852-6	GW-BR08JC-082516	Total/NA	Water	8260C	
160-18852-7	GW-BR08JC-082516-FD	Total/NA	Water	8260C	
160-18852-7	GW-BR08JC-082516-FD	Total/NA	Water	8260C	
160-18852-8	GW-BR10JC-082516	Total/NA	Water	8260C	
160-18852-8	GW-BR10JC-082516	Total/NA	Water	8260C	
160-18852-9	GW-NB72-082516	Total/NA	Water	8260C	
160-18852-9	GW-NB72-082516	Total/NA	Water	8260C	
160-18852-10	GW-NB73-082516	Total/NA	Water	8260C	
160-18852-10	GW-NB73-082516	Total/NA	Water	8260C	
MB 160-268257/10	Method Blank	Total/NA	Water	8260C	
LCS 160-268257/8	Lab Control Sample	Total/NA	Water	8260C	
LCSD 160-268257/33	Lab Control Sample Dup	Total/NA	Water	8260C	

Rad

Prep Batch: 267772

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18852-2	GW-BR10RB-082516	Total/NA	Water	Ext_Chrom_LSC	
160-18852-3	GW-GWJJ-082516	Total/NA	Water	Ext_Chrom_LSC	
160-18852-4	GW-BR13JC-082516	Total/NA	Water	Ext_Chrom_LSC	
160-18852-5	GW-BR04JC-082516	Total/NA	Water	Ext_Chrom_LSC	
160-18852-11	GW-NB34-082516	Total/NA	Water	Ext_Chrom_LSC	
MB 160-267772/1-A	Method Blank	Total/NA	Water	Ext_Chrom_LSC	
LCS 160-267772/2-A	Lab Control Sample	Total/NA	Water	Ext_Chrom_LSC	
160-18742-A-13-D MS	Matrix Spike	Total/NA	Water	Ext_Chrom_LSC	
160-18742-B-13-C MSD	Matrix Spike Duplicate	Total/NA	Water	Ext_Chrom_LSC	

Rad (Continued)

Prep Batch: 268210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-18852-2	GW-BR10RB-082516	Total/NA	Water	ExtChrom	
160-18852-3	GW-GWJJ-082516	Total/NA	Water	ExtChrom	
160-18852-4	GW-BR13JC-082516	Total/NA	Water	ExtChrom	
160-18852-5	GW-BR04JC-082516	Total/NA	Water	ExtChrom	
160-18852-11	GW-NB34-082516	Total/NA	Water	ExtChrom	
MB 160-268210/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-268210/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
LCSD 160-268210/3-A	Lab Control Sample Dup	Total/NA	Water	ExtChrom	

Client Sample ID: TB-082516 — Lab Sample ID: 160-18852-1

Date Collected: 08/25/16 07:00 — **Matrix: Water**
Date Received: 08/29/16 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	267958	09/04/16 17:01	ADB	TAL SL

Client Sample ID: GW-BR10RB-082516 — Lab Sample ID: 160-18852-2

Date Collected: 08/25/16 08:00 — **Matrix: Water**
Date Received: 08/29/16 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	267958	09/04/16 17:26	ADB	TAL SL
Total/NA	Prep	ExtChrom			268210	09/06/16 13:27	ATS	TAL SL
Total/NA	Analysis	A-01-R		1	269256	09/12/16 15:01	ALD	TAL SL
Total/NA	Prep	Ext_Chrom_LSC			267772	09/01/16 14:31	MRB	TAL SL
Total/NA	Analysis	TC-02-RC		1	268294	09/06/16 14:04	ALD	TAL SL

Client Sample ID: GW-GWJJ-082516 — Lab Sample ID: 160-18852-3

Date Collected: 08/25/16 08:35 — **Matrix: Water**
Date Received: 08/29/16 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		50	267958	09/04/16 17:51	ADB	TAL SL
Total/NA	Analysis	8260C		5	268257	09/07/16 16:50	SMR	TAL SL
Total/NA	Prep	ExtChrom			268210	09/06/16 13:27	ATS	TAL SL
Total/NA	Analysis	A-01-R		1	268758	09/09/16 12:48	RTM	TAL SL
Total/NA	Prep	Ext_Chrom_LSC			267772	09/01/16 14:31	MRB	TAL SL
Total/NA	Analysis	TC-02-RC		1	268294	09/06/16 14:50	ALD	TAL SL

Client Sample ID: GW-BR13JC-082516 — Lab Sample ID: 160-18852-4

Date Collected: 08/25/16 09:25 — **Matrix: Water**
Date Received: 08/29/16 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	267958	09/04/16 18:16	ADB	TAL SL
Total/NA	Prep	ExtChrom			268210	09/06/16 13:27	ATS	TAL SL
Total/NA	Analysis	A-01-R		1	269257	09/12/16 15:01	ALD	TAL SL
Total/NA	Prep	Ext_Chrom_LSC			267772	09/01/16 14:31	MRB	TAL SL
Total/NA	Analysis	TC-02-RC		1	268294	09/06/16 15:36	ALD	TAL SL

Client Sample ID: GW-BR04JC-082516 — Lab Sample ID: 160-18852-5

Date Collected: 08/25/16 10:05 — **Matrix: Water**
Date Received: 08/29/16 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		50	267958	09/04/16 18:41	ADB	TAL SL

Client Sample ID: GW-BR04JC-082516
Lab Sample ID: 160-18852-5
Date Collected: 08/25/16 10:05
Matrix: Water
Date Received: 08/29/16 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		5	267958	09/04/16 20:22	ADB	TAL SL
Total/NA	Prep	ExtChrom			268210	09/06/16 13:27	ATS	TAL SL
Total/NA	Analysis	A-01-R		1	268760	09/09/16 12:48	RTM	TAL SL
Total/NA	Prep	Ext_Chrom_LSC			267772	09/01/16 14:31	MRB	TAL SL
Total/NA	Analysis	TC-02-RC		1	268294	09/06/16 16:22	ALD	TAL SL

Client Sample ID: GW-BR08JC-082516
Lab Sample ID: 160-18852-6
Date Collected: 08/25/16 10:40
Matrix: Water
Date Received: 08/29/16 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		500	267958	09/04/16 19:06	ADB	TAL SL
Total/NA	Analysis	8260C		50	268257	09/07/16 17:16	SMR	TAL SL

Client Sample ID: GW-BR08JC-082516-FD
Lab Sample ID: 160-18852-7
Date Collected: 08/25/16 10:40
Matrix: Water
Date Received: 08/29/16 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		500	268257	09/07/16 13:03	SMR	TAL SL
Total/NA	Analysis	8260C		50	268257	09/07/16 19:47	SMR	TAL SL

Client Sample ID: GW-BR10JC-082516
Lab Sample ID: 160-18852-8
Date Collected: 08/25/16 13:10
Matrix: Water
Date Received: 08/29/16 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		100	268257	09/07/16 17:41	SMR	TAL SL
Total/NA	Analysis	8260C		10	268257	09/07/16 20:12	SMR	TAL SL

Client Sample ID: GW-NB72-082516
Lab Sample ID: 160-18852-9
Date Collected: 08/25/16 13:40
Matrix: Water
Date Received: 08/29/16 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		500	268257	09/07/16 18:06	SMR	TAL SL
Total/NA	Analysis	8260C		50	268257	09/07/16 20:37	SMR	TAL SL

Lab Chronicle

Client: Westinghouse Electric Company LLC
Project/Site: HDP RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-18852-1

Client Sample ID: GW-NB73-082516

Lab Sample ID: 160-18852-10

Date Collected: 08/25/16 14:10

Matrix: Water

Date Received: 08/29/16 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		25	268257	09/07/16 18:31	SMR	TAL SL
Total/NA	Analysis	8260C		2.5	268257	09/07/16 21:02	SMR	TAL SL

Client Sample ID: GW-NB34-082516

Lab Sample ID: 160-18852-11

Date Collected: 08/25/16 14:55

Matrix: Water

Date Received: 08/29/16 11:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		25	268249	09/07/16 15:17	ECF	TAL SL
Total/NA	Analysis	8260C		2.5	268249	09/07/16 17:37	ECF	TAL SL
Total/NA	Prep	ExtChrom			268210	09/06/16 13:27	ATS	TAL SL
Total/NA	Analysis	A-01-R		1	268761	09/09/16 12:48	RTM	TAL SL
Total/NA	Prep	Ext_Chrom_LSC			267772	09/01/16 14:31	MRB	TAL SL
Total/NA	Analysis	TC-02-RC		1	268294	09/06/16 17:08	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Certification Summary

Client: Westinghouse Electric Company LLC
Project/Site: HDP RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-18852-1

Laboratory: TestAmerica St. Louis

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Louisiana	NELAP	6	04080	06-30-17

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
8260C		Water	1,1,1-Trichloroethane
8260C		Water	1,1,2,2-Tetrachloroethane
8260C		Water	1,1,2-Trichloroethane
8260C		Water	1,1-Dichloroethane
8260C		Water	1,1-Dichloroethene
8260C		Water	1,2,4-Trichlorobenzene
8260C		Water	1,2-Dibromo-3-Chloropropane
8260C		Water	1,2-Dibromoethane
8260C		Water	1,2-Dichloroethane
8260C		Water	1,2-Dichloroethene, Total
8260C		Water	1,2-Dichloropropane
8260C		Water	2-Butanone
8260C		Water	2-Hexanone
8260C		Water	4-Methyl-2-pentanone
8260C		Water	Acetone
8260C		Water	Benzene
8260C		Water	Bromodichloromethane
8260C		Water	Bromoform
8260C		Water	Carbon disulfide
8260C		Water	Carbon tetrachloride
8260C		Water	Chlorobenzene
8260C		Water	Chlorodibromomethane
8260C		Water	Chloroethane
8260C		Water	Chloroform
8260C		Water	Chloromethane
8260C		Water	cis-1,2-Dichloroethene
8260C		Water	cis-1,3-Dichloropropene
8260C		Water	Ethylbenzene
8260C		Water	Methyl bromide
8260C		Water	Methylene Chloride
8260C		Water	n-Butanol
8260C		Water	Styrene
8260C		Water	Tetrachloroethene
8260C		Water	Toluene
8260C		Water	trans-1,2-Dichloroethene
8260C		Water	trans-1,3-Dichloropropene
8260C		Water	Trichloroethene
8260C		Water	Vinyl acetate
8260C		Water	Vinyl chloride
8260C		Water	Xylenes, Total
A-01-R	ExtChrom	Water	Uranium-235/236
TC-02-RC	Ext_Chrom_LSC	Water	Technetium 99

Missouri	State Program	7	780	06-30-17

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
8260C		Water	1,1,1-Trichloroethane

Laboratory: TestAmerica St. Louis (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Missouri	State Program	7	780	06-30-17

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
8260C		Water	1,1,2,2-Tetrachloroethane
8260C		Water	1,1,2-Trichloroethane
8260C		Water	1,1-Dichloroethane
8260C		Water	1,1-Dichloroethene
8260C		Water	1,2,4-Trichlorobenzene
8260C		Water	1,2-Dibromo-3-Chloropropane
8260C		Water	1,2-Dibromoethane
8260C		Water	1,2-Dichloroethane
8260C		Water	1,2-Dichloroethene, Total
8260C		Water	1,2-Dichloropropane
8260C		Water	2-Butanone
8260C		Water	2-Hexanone
8260C		Water	4-Methyl-2-pentanone
8260C		Water	Acetone
8260C		Water	Benzene
8260C		Water	Bromodichloromethane
8260C		Water	Bromoform
8260C		Water	Carbon disulfide
8260C		Water	Carbon tetrachloride
8260C		Water	Chlorobenzene
8260C		Water	Chlorodibromomethane
8260C		Water	Chloroethane
8260C		Water	Chloroform
8260C		Water	Chloromethane
8260C		Water	cis-1,2-Dichloroethene
8260C		Water	cis-1,3-Dichloropropene
8260C		Water	Ethylbenzene
8260C		Water	Methyl bromide
8260C		Water	Methylene Chloride
8260C		Water	n-Butanol
8260C		Water	Styrene
8260C		Water	Tetrachloroethene
8260C		Water	Toluene
8260C		Water	trans-1,2-Dichloroethene
8260C		Water	trans-1,3-Dichloropropene
8260C		Water	Trichloroethene
8260C		Water	Vinyl acetate
8260C		Water	Vinyl chloride
8260C		Water	Xylenes, Total
A-01-R	ExtChrom	Water	Uranium 234
A-01-R	ExtChrom	Water	Uranium 238
A-01-R	ExtChrom	Water	Uranium-235/236
TC-02-RC	Ext_Chrom_LSC	Water	Technetium 99

NRC	NRC		24-24817-01	12-31-22

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte

Laboratory: TestAmerica St. Louis (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
NRC	NRC		24-24817-01	12-31-22

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
8260C		Water	1,1,1-Trichloroethane
8260C		Water	1,1,2,2-Tetrachloroethane
8260C		Water	1,1,2-Trichloroethane
8260C		Water	1,1-Dichloroethane
8260C		Water	1,1-Dichloroethene
8260C		Water	1,2,4-Trichlorobenzene
8260C		Water	1,2-Dibromo-3-Chloropropane
8260C		Water	1,2-Dibromoethane
8260C		Water	1,2-Dichloroethane
8260C		Water	1,2-Dichloroethene, Total
8260C		Water	1,2-Dichloropropane
8260C		Water	2-Butanone
8260C		Water	2-Hexanone
8260C		Water	4-Methyl-2-pentanone
8260C		Water	Acetone
8260C		Water	Benzene
8260C		Water	Bromodichloromethane
8260C		Water	Bromoform
8260C		Water	Carbon disulfide
8260C		Water	Carbon tetrachloride
8260C		Water	Chlorobenzene
8260C		Water	Chlorodibromomethane
8260C		Water	Chloroethane
8260C		Water	Chloroform
8260C		Water	Chloromethane
8260C		Water	cis-1,2-Dichloroethene
8260C		Water	cis-1,3-Dichloropropene
8260C		Water	Ethylbenzene
8260C		Water	Methyl bromide
8260C		Water	Methylene Chloride
8260C		Water	n-Butanol
8260C		Water	Styrene
8260C		Water	Tetrachloroethene
8260C		Water	Toluene
8260C		Water	trans-1,2-Dichloroethene
8260C		Water	trans-1,3-Dichloropropene
8260C		Water	Trichloroethene
8260C		Water	Vinyl acetate
8260C		Water	Vinyl chloride
8260C		Water	Xylenes, Total
A-01-R	ExtChrom	Water	Uranium 234
A-01-R	ExtChrom	Water	Uranium 238
A-01-R	ExtChrom	Water	Uranium-235/236
TC-02-RC	Ext_Chrom_LSC	Water	Technetium 99

Method Summary

Client: Westinghouse Electric Company LLC
Project/Site: HDP RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-18852-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds (GC/MS)	SW846	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
TC-02-RC	Technetium-99 Tracers	DOE	TAL SL
TC-02-RC	Technetium-99 (LSC)	DOE	TAL SL

Protocol References:

DOE = U.S. Department of Energy

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: Westinghouse Electric Company LLC
Project/Site: HDP RFP-CBA-022 (21 DAY TAT)

TestAmerica Job ID: 160-18852-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-18852-1	TB-082516	Water	08/25/16 07:00	08/29/16 11:10
160-18852-2	GW-BR10RB-082516	Water	08/25/16 08:00	08/29/16 11:10
160-18852-3	GW-GWJJ-082516	Water	08/25/16 08:35	08/29/16 11:10
160-18852-4	GW-BR13JC-082516	Water	08/25/16 09:25	08/29/16 11:10
160-18852-5	GW-BR04JC-082516	Water	08/25/16 10:05	08/29/16 11:10
160-18852-6	GW-BR08JC-082516	Water	08/25/16 10:40	08/29/16 11:10
160-18852-7	GW-BR08JC-082516-FD	Water	08/25/16 10:40	08/29/16 11:10
160-18852-8	GW-BR10JC-082516	Water	08/25/16 13:10	08/29/16 11:10
160-18852-9	GW-NB72-082516	Water	08/25/16 13:40	08/29/16 11:10
160-18852-10	GW-NB73-082516	Water	08/25/16 14:10	08/29/16 11:10
160-18852-11	GW-NB34-082516	Water	08/25/16 14:55	08/29/16 11:10

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Instrument ID: VMSL Analysis Batch Number: 265937

Lab Sample ID: IC 160-265937/6 Client Sample ID:

Date Analyzed: 08/22/16 11:18 Lab File ID: LICL4704.D GC Column: RTX-VMS40 ID: 0.18(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.38	Peak Tail	rhoadess	08/22/16 13:44
2-Chloroethyl vinyl ether	10.23	Missed Peak	rhoadess	08/22/16 13:44
1,2-Dibromo-3-Chloropropane	15.32	Missed Peak	rhoadess	08/22/16 13:44

Lab Sample ID: IC 160-265937/7 Client Sample ID:

Date Analyzed: 08/22/16 11:43 Lab File ID: LICL4705.D GC Column: RTX-VMS40 ID: 0.18(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.38	Peak Tail	rhoadess	08/22/16 13:46

Lab Sample ID: IC 160-265937/8 Client Sample ID:

Date Analyzed: 08/22/16 12:08 Lab File ID: LICL4706.D GC Column: RTX-VMS40 ID: 0.18(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.38	Peak Tail	rhoadess	08/22/16 13:52

Lab Sample ID: IC 160-265937/9 Client Sample ID:

Date Analyzed: 08/22/16 12:33 Lab File ID: LICL4707.D GC Column: RTX-VMS40 ID: 0.18(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.38	Peak Tail	rhoadess	08/22/16 13:59

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Instrument ID: VMSL Analysis Batch Number: 265937

Lab Sample ID: ICIS 160-265937/10 Client Sample ID:

Date Analyzed: 08/22/16 12:59 Lab File ID: LICL4708.D GC Column: RTX-VMS40 ID: 0.18(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.38	Peak Tail	rhoadess	08/22/16 14:02

Lab Sample ID: IC 160-265937/12 Client Sample ID:

Date Analyzed: 08/22/16 13:49 Lab File ID: LICL4710.D GC Column: RTX-VMS40 ID: 0.18(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.38	Peak Tail	rhoadess	08/22/16 14:36

Lab Sample ID: ICV 160-265937/14 Client Sample ID:

Date Analyzed: 08/22/16 14:40 Lab File ID: LICV4712.D GC Column: RTX-VMS40 ID: 0.18(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.38	Peak Tail	rhoadess	08/22/16 15:30

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Instrument ID: VMSL Analysis Batch Number: 267958

Lab Sample ID: CCVIS 160-267958/5 Client Sample ID:

Date Analyzed: 09/04/16 09:52 Lab File ID: LCCV4849.D GC Column: RTX-VMS40 ID: 0.18(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.36	Peak Tail	rhoadess	09/06/16 06:53

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Instrument ID: VMSL Analysis Batch Number: 268257

Lab Sample ID: CCVIS 160-268257/7 Client Sample ID:

Date Analyzed: 09/07/16 10:58 Lab File ID: LLCS4959.D GC Column: RTX-VMS40 ID: 0.18(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.38	Peak Tail	rhoadess	09/07/16 11:48

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Instrument ID: VMSZ Analysis Batch Number: 268249

Lab Sample ID: IC 160-268249/5 Client Sample ID:

Date Analyzed: 09/07/16 07:32 Lab File ID: ZICL8934.D GC Column: RTX-VMS40 ID: 0.18(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.25	Split Peak	fishere	09/07/16 09:46
Ethyl acrylate	9.51	Baseline	fishere	09/07/16 09:46

Lab Sample ID: IC 160-268249/6 Client Sample ID:

Date Analyzed: 09/07/16 07:55 Lab File ID: ZICL8935.D GC Column: RTX-VMS40 ID: 0.18(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.26	Split Peak	fishere	09/07/16 09:43

Lab Sample ID: IC 160-268249/7 Client Sample ID:

Date Analyzed: 09/07/16 08:19 Lab File ID: ZICL8936.D GC Column: RTX-VMS40 ID: 0.18(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.25	Split Peak	fishere	09/07/16 09:40

Lab Sample ID: IC 160-268249/8 Client Sample ID:

Date Analyzed: 09/07/16 08:43 Lab File ID: ZICL8937.D GC Column: RTX-VMS40 ID: 0.18(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.26	Split Peak	fishere	09/07/16 09:41

GC/MS VOA MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Instrument ID: VMSZ Analysis Batch Number: 268249

Lab Sample ID: IC 160-268249/10 Client Sample ID:

Date Analyzed: 09/07/16 09:30 Lab File ID: ZICL8939.D GC Column: RTX-VMS40 ID: 0.18(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Ethylbenzene	11.77	Baseline	fishere	09/07/16 09:55

Lab Sample ID: IC 160-268249/11 Client Sample ID:

Date Analyzed: 09/07/16 09:54 Lab File ID: ZICL8940.D GC Column: RTX-VMS40 ID: 0.18(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.26	Split Peak	fishere	09/07/16 10:29

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
82232-334_00001	06/03/60		Eckert & Ziegler, Lot 82232-334		(Purchased Reagent)		Am-241	7.281 Bq
							Pu-239	7.137 Bq
							Th-230	7.63 Bq
82233-334_00001	06/03/60		Eckert & Zigler, Lot 82233-334		(Purchased Reagent)		Am-241	5.114 Bq
							Pu-239	6.064 Bq
							Th-230	4.95 Bq
82234-334_00001	06/02/60		Eckert & Zigler, Lot 82234-334		(Purchased Reagent)		Am-241	5.652 Bq
							Pu-239	5.936 Bq
							Th-230	5.685 Bq
82235-334_00001	06/04/60		Eckert & Ziegler, Lot 82235-334		(Purchased Reagent)		Am-241	7.466 Bq
							Pu-239	6.897 Bq
							Th-230	7.167 Bq
82236-334_00001	06/02/60		Eckert & Ziegler, Lot 82236-334		(Purchased Reagent)		Am-241	6.891 Bq
							Pu-239	6.664 Bq
							Th-230	7.107 Bq
82237-334_00003	06/01/60		Eckert & Ziegler, Lot 82237-334		(Purchased Reagent)		Am-241	5.608 Bq
							Pu-239	6.424 Bq
							Th-230	5.856 Bq
82241-334_00001	06/08/60		Eckert & Ziegler, Lot 82241-334		(Purchased Reagent)		Am-241	6.638 Bq
							Pu-239	6.797 Bq
							Th-230	6.629 Bq
82242-334_00001	06/08/60		Eckert & Ziegler, Lot 82242-334		(Purchased Reagent)		Am-241	7.145 Bq
							Pu-239	6.414 Bq
							Th-230	6.583 Bq
82244-334_00001	06/09/60		Eckert & Zigler, Lot 82244-334		(Purchased Reagent)		Am-241	6.897 Bq
							Pu-239	6.717 Bq
							Th-230	7.352 Bq
82245-334_00001	06/09/60		Eckert & Ziegler, Lot 82245-334		(Purchased Reagent)		Am-241	5.528 Bq
							Pu-239	5.437 Bq
							Th-230	6.727 Bq
82246-334_00001	06/09/60		Eckert & Ziegler, Lot 82246-334		(Purchased Reagent)		Am-241	6.002 Bq
							Pu-239	5.353 Bq
							Th-230	5.57 Bq
82247-334_00001	06/10/60		Eckert & Ziegler, Lot 82247-334		(Purchased Reagent)		Am-241	6.291 Bq
							Pu-239	5.746 Bq
							Th-230	6.251 Bq
8260 NewWkMix_00180	08/28/16	08/21/16	Methanol, Lot DM417	10 mL	8260_2_CLEVE_00043	100 uL	2-Chloroethyl vinyl ether	25 ug/mL
					8260Custom1_00041	125 uL	1,2-Dichloro-1,1,2,2-tetrafluoroethane	25 ug/mL
							n-Nonyl Aldehyde	25 ug/mL
					8260Cyclohexa_00043	100 uL	Cyclohexanone	250 ug/mL
					8260Gases_00170	100 uL	Butadiene	25 ug/mL
							Chloroethane	25 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Chloromethane	25 ug/mL
							Dichlorodifluoromethane	25 ug/mL
							Dichlorofluoromethane	25 ug/mL
							Methyl bromide	25 ug/mL
							Trichlorofluoromethane	25 ug/mL
							Vinyl chloride	25 ug/mL
					8260Ketones_00043	20 uL	2-Butanone	25 ug/mL
							2-Hexanone	25 ug/mL
							4-Methyl-2-pentanone	25 ug/mL
							Acetone	25 ug/mL
					8260MegaMix_00043	100 uL	1,1,1,2-Tetrachloroethane	25 ug/mL
							1,1,1-Trichloroethane	25 ug/mL
							1,1,2,2-Tetrachloroethane	25 ug/mL
							1,1,2-Trichloro-1,2,2-trifluoroethane	25 ug/mL
							1,1,2-Trichloroethane	25 ug/mL
							1,1-Dichloroethane	25 ug/mL
							1,1-Dichloroethene	25 ug/mL
							1,1-Dichloropropene	25 ug/mL
							1,2,3-Trichlorobenzene	25 ug/mL
							1,2,3-Trichloropropane	25 ug/mL
							1,2,4-Trichlorobenzene	25 ug/mL
							1,2,4-Trimethylbenzene	25 ug/mL
							1,2-Dibromo-3-Chloropropane	25 ug/mL
							1,2-Dibromoethane	25 ug/mL
							1,2-Dichlorobenzene	25 ug/mL
							1,2-Dichloroethane	25 ug/mL
							1,2-Dichloropropane	25 ug/mL
							1,3,5-Trimethylbenzene	25 ug/mL
							1,3-Dichlorobenzene	25 ug/mL
							1,3-Dichloropropane	25 ug/mL
							1,4-Dichlorobenzene	25 ug/mL
							1,4-Dioxane	500 ug/mL
							2,2-Dichloropropane	25 ug/mL
							2-Chlorotoluene	25 ug/mL
							2-Methyl-2-propanol	250 ug/mL
							3-Chloro-1-propene	25 ug/mL
							4-Chlorotoluene	25 ug/mL
							4-Isopropyltoluene	25 ug/mL
							Acrylonitrile	250 ug/mL
							Benzene	25 ug/mL
							Bromobenzene	25 ug/mL
							Bromodichloromethane	25 ug/mL
							Bromoform	25 ug/mL
							Carbon disulfide	25 ug/mL
							Carbon tetrachloride	25 ug/mL
							Chlorobenzene	25 ug/mL
							Chlorobromomethane	25 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Chlorodibromomethane	25 ug/mL
							Chloroform	25 ug/mL
							cis-1,2-Dichloroethene	25 ug/mL
							cis-1,3-Dichloropropene	25 ug/mL
							Cyclohexane	25 ug/mL
							Dibromomethane	25 ug/mL
							Ethyl ether	25 ug/mL
							Ethyl methacrylate	25 ug/mL
							Ethylbenzene	25 ug/mL
							Hexachlorobutadiene	25 ug/mL
							Hexane	25 ug/mL
							Iodomethane	25 ug/mL
							Isobutyl alcohol	625 ug/mL
							Isopropylbenzene	25 ug/mL
							m-Xylene & p-Xylene	25 ug/mL
							Methyl acetate	125 ug/mL
							Methyl tert-butyl ether	25 ug/mL
							Methylcyclohexane	25 ug/mL
							Methylene Chloride	25 ug/mL
							n-Butylbenzene	25 ug/mL
							n-Heptane	25 ug/mL
							N-Propylbenzene	25 ug/mL
							Naphthalene	25 ug/mL
							o-Xylene	25 ug/mL
							sec-Butylbenzene	25 ug/mL
							Styrene	25 ug/mL
							tert-Butylbenzene	25 ug/mL
							Tetrachloroethene	25 ug/mL
							Tetrahydrofuran	50 ug/mL
							Toluene	25 ug/mL
							trans-1,2-Dichloroethene	25 ug/mL
							trans-1,3-Dichloropropene	25 ug/mL
							trans-1,4-Dichloro-2-butene	25 ug/mL
							Trichloroethene	25 ug/mL
					8260VinAcetat_00045	50 uL	Vinyl acetate	25 ug/mL
					Acrolein_00036	62.5 uL	Acrolein	125 ug/mL
					Adds (B) 2016_00005	100 uL	Ethyl acetate	50 ug/mL
							Ethyl acrylate	25 ug/mL
							Methyl methacrylate	50 ug/mL
							n-Butyl acetate	25 ug/mL
					Adds(A) 2016_00005	100 uL	1,2,3-Trimethylbenzene	25 ug/mL
							1,3,5-Trichlorobenzene	25 ug/mL
							2-Chloro-1,3-butadiene	25 ug/mL
							2-Nitropropane	50 ug/mL
							Benzyl chloride	25 ug/mL
							Isooctane	25 ug/mL
							Isopropyl alcohol	250 ug/mL
							Methacrylonitrile	250 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							n-Butanol	625 ug/mL
					Polar Add._00034	100 uL	Acetonitrile	250 ug/mL
							Ethanol	1000 ug/mL
							Isopropyl ether	25 ug/mL
							Propionitrile	250 ug/mL
							Tert-amyl methyl ether	25 ug/mL
							Tert-butyl ethyl ether	25 ug/mL
.8260_2_CLEVE_00043	09/21/16		Restek, Lot A0115628		(Purchased Reagent)		2-Chloroethyl vinyl ether	2500 ug/mL
.8260Custom1_00041	09/14/16		Accustandard, Lot 215101095-01		(Purchased Reagent)		1,2-Dichloro-1,1,2,2-tetrafluoroethane	2000 ug/mL
							n-Nonyl Aldehyde	2000 ug/mL
.8260Cyclohexa_00043	09/21/16		Restek, Lot A0116621		(Purchased Reagent)		Cyclohexanone	25000 ug/mL
.8260Gases_00170	08/28/16		Restek, Lot A0115012		(Purchased Reagent)		Butadiene	2500 ug/mL
							Chloroethane	2500 ug/mL
							Chloromethane	2500 ug/mL
							Dichlorodifluoromethane	2500 ug/mL
							Dichlorofluoromethane	2500 ug/mL
							Methyl bromide	2500 ug/mL
							Trichlorofluoromethane	2500 ug/mL
							Vinyl chloride	2500 ug/mL
.8260Ketones_00043	09/21/16		Restek, Lot A0115554		(Purchased Reagent)		2-Butanone	12500 ug/mL
							2-Hexanone	12500 ug/mL
							4-Methyl-2-pentanone	12500 ug/mL
							Acetone	12500 ug/mL
.8260MegaMix_00043	09/21/16		Restek, Lot A0118177		(Purchased Reagent)		1,1,1,2-Tetrachloroethane	2500 ug/mL
							1,1,1-Trichloroethane	2500 ug/mL
							1,1,2,2-Tetrachloroethane	2500 ug/mL
							1,1,2-Trichloro-1,2,2-trifluoroethane	2500 ug/mL
							1,1,2-Trichloroethane	2500 ug/mL
							1,1-Dichloroethane	2500 ug/mL
							1,1-Dichloroethene	2500 ug/mL
							1,1-Dichloropropene	2500 ug/mL
							1,2,3-Trichlorobenzene	2500 ug/mL
							1,2,3-Trichloropropane	2500 ug/mL
							1,2,4-Trichlorobenzene	2500 ug/mL
							1,2,4-Trimethylbenzene	2500 ug/mL
							1,2-Dibromo-3-Chloropropane	2500 ug/mL
							1,2-Dibromoethane	2500 ug/mL
							1,2-Dichlorobenzene	2500 ug/mL
							1,2-Dichloroethane	2500 ug/mL
							1,2-Dichloropropane	2500 ug/mL
							1,3,5-Trimethylbenzene	2500 ug/mL
							1,3-Dichlorobenzene	2500 ug/mL
							1,3-Dichloropropane	2500 ug/mL
							1,4-Dichlorobenzene	2500 ug/mL
							1,4-Dioxane	50000 ug/mL
							2,2-Dichloropropane	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2-Chlorotoluene	2500 ug/mL
							2-Methyl-2-propanol	25000 ug/mL
							3-Chloro-1-propene	2500 ug/mL
							4-Chlorotoluene	2500 ug/mL
							4-Isopropyltoluene	2500 ug/mL
							Acrylonitrile	25000 ug/mL
							Benzene	2500 ug/mL
							Bromobenzene	2500 ug/mL
							Bromodichloromethane	2500 ug/mL
							Bromoform	2500 ug/mL
							Carbon disulfide	2500 ug/mL
							Carbon tetrachloride	2500 ug/mL
							Chlorobenzene	2500 ug/mL
							Chlorobromomethane	2500 ug/mL
							Chlorodibromomethane	2500 ug/mL
							Chloroform	2500 ug/mL
							cis-1,2-Dichloroethene	2500 ug/mL
							cis-1,3-Dichloropropene	2500 ug/mL
							Cyclohexane	2500 ug/mL
							Dibromomethane	2500 ug/mL
							Ethyl ether	2500 ug/mL
							Ethyl methacrylate	2500 ug/mL
							Ethylbenzene	2500 ug/mL
							Hexachlorobutadiene	2500 ug/mL
							Hexane	2500 ug/mL
							Iodomethane	2500 ug/mL
							Isobutyl alcohol	62500 ug/mL
							Isopropylbenzene	2500 ug/mL
							m-Xylene & p-Xylene	2500 ug/mL
							Methyl acetate	12500 ug/mL
							Methyl tert-butyl ether	2500 ug/mL
							Methylcyclohexane	2500 ug/mL
							Methylene Chloride	2500 ug/mL
							n-Butylbenzene	2500 ug/mL
							n-Heptane	2500 ug/mL
							N-Propylbenzene	2500 ug/mL
							Naphthalene	2500 ug/mL
							o-Xylene	2500 ug/mL
							sec-Butylbenzene	2500 ug/mL
							Styrene	2500 ug/mL
							tert-Butylbenzene	2500 ug/mL
							Tetrachloroethene	2500 ug/mL
							Tetrahydrofuran	5000 ug/mL
							Toluene	2500 ug/mL
							trans-1,2-Dichloroethene	2500 ug/mL
							trans-1,3-Dichloropropene	2500 ug/mL
							trans-1,4-Dichloro-2-butene	2500 ug/mL
							Trichloroethene	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.8260VinAcetat_00045	08/31/16		Restek, Lot A0118759		(Purchased Reagent)		Vinyl acetate	5000 ug/mL
.Acrolein_00036	08/31/16		Restek, Lot A0118994		(Purchased Reagent)		Acrolein	20000 ug/mL
.Adds (B) 2016_00005	09/07/16		Restek, Lot A0116077		(Purchased Reagent)		Ethyl acetate	5000 ug/mL
							Ethyl acrylate	2500 ug/mL
							Methyl methacrylate	5000 ug/mL
							n-Butyl acetate	2500 ug/mL
.Adds(A) 2016_00005	09/07/16		Restek, Lot A0116133		(Purchased Reagent)		1,2,3-Trimethylbenzene	2500 ug/mL
							1,3,5-Trichlorobenzene	2500 ug/mL
							2-Chloro-1,3-butadiene	2500 ug/mL
							2-Nitropropane	5000 ug/mL
							Benzyl chloride	2500 ug/mL
							Isooctane	2500 ug/mL
							Isopropyl alcohol	25000 ug/mL
							Methacrylonitrile	25000 ug/mL
							n-Butanol	62500 ug/mL
.Polar Add._00034	09/21/16		Restek, Lot A0114666		(Purchased Reagent)		Acetonitrile	25000 ug/mL
							Ethanol	100000 ug/mL
							Isopropyl ether	2500 ug/mL
							Propionitrile	25000 ug/mL
							Tert-amyl methyl ether	2500 ug/mL
							Tert-butyl ethyl ether	2500 ug/mL
8260 NewWkMix_00181	09/04/16	08/28/16	Methanol, Lot DP303	10 mL	8260Gases_00171	100 uL	Chloroethane	25 ug/mL
							Chloromethane	25 ug/mL
							Methyl bromide	25 ug/mL
							Vinyl chloride	25 ug/mL
					8260Ketones_00043	20 uL	2-Butanone	25 ug/mL
							2-Hexanone	25 ug/mL
							4-Methyl-2-pentanone	25 ug/mL
							Acetone	25 ug/mL
					8260MegaMix_00043	100 uL	1,1,1-Trichloroethane	25 ug/mL
							1,1,2,2-Tetrachloroethane	25 ug/mL
							1,1,2-Trichloroethane	25 ug/mL
							1,1-Dichloroethane	25 ug/mL
							1,1-Dichloroethene	25 ug/mL
							1,2,4-Trichlorobenzene	25 ug/mL
							1,2-Dibromo-3-Chloropropane	25 ug/mL
							1,2-Dibromoethane	25 ug/mL
							1,2-Dichloroethane	25 ug/mL
							1,2-Dichloropropane	25 ug/mL
							Benzene	25 ug/mL
							Bromodichloromethane	25 ug/mL
							Bromoform	25 ug/mL
							Carbon disulfide	25 ug/mL
							Carbon tetrachloride	25 ug/mL
							Chlorobenzene	25 ug/mL
							Chlorodibromomethane	25 ug/mL
							Chloroform	25 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							cis-1,2-Dichloroethene	25 ug/mL
							cis-1,3-Dichloropropene	25 ug/mL
							Ethylbenzene	25 ug/mL
							Methylene Chloride	25 ug/mL
							Styrene	25 ug/mL
							Tetrachloroethene	25 ug/mL
							Toluene	25 ug/mL
							trans-1,2-Dichloroethene	25 ug/mL
							trans-1,3-Dichloropropene	25 ug/mL
							Trichloroethene	25 ug/mL
					8260VinAcetat_00046	50 uL	Vinyl acetate	25 ug/mL
					Adds(A) 2016_00005	100 uL	n-Butanol	625 ug/mL
.8260Gases_00171	09/04/16		Restek, Lot A0115012		(Purchased Reagent)		Chloroethane	2500 ug/mL
							Chloromethane	2500 ug/mL
							Methyl bromide	2500 ug/mL
							Vinyl chloride	2500 ug/mL
.8260Ketones_00043	09/21/16		Restek, Lot A0115554		(Purchased Reagent)		2-Butanone	12500 ug/mL
							2-Hexanone	12500 ug/mL
							4-Methyl-2-pentanone	12500 ug/mL
							Acetone	12500 ug/mL
.8260MegaMix_00043	09/21/16		Restek, Lot A0118177		(Purchased Reagent)		1,1,1-Trichloroethane	2500 ug/mL
							1,1,2,2-Tetrachloroethane	2500 ug/mL
							1,1,2-Trichloroethane	2500 ug/mL
							1,1-Dichloroethane	2500 ug/mL
							1,1-Dichloroethene	2500 ug/mL
							1,2,4-Trichlorobenzene	2500 ug/mL
							1,2-Dibromo-3-Chloropropane	2500 ug/mL
							1,2-Dibromoethane	2500 ug/mL
							1,2-Dichloroethane	2500 ug/mL
							1,2-Dichloropropane	2500 ug/mL
							Benzene	2500 ug/mL
							Bromodichloromethane	2500 ug/mL
							Bromoform	2500 ug/mL
							Carbon disulfide	2500 ug/mL
							Carbon tetrachloride	2500 ug/mL
							Chlorobenzene	2500 ug/mL
							Chlorodibromomethane	2500 ug/mL
							Chloroform	2500 ug/mL
							cis-1,2-Dichloroethene	2500 ug/mL
							cis-1,3-Dichloropropene	2500 ug/mL
							Ethylbenzene	2500 ug/mL
							Methylene Chloride	2500 ug/mL
							Styrene	2500 ug/mL
							Tetrachloroethene	2500 ug/mL
							Toluene	2500 ug/mL
							trans-1,2-Dichloroethene	2500 ug/mL
							trans-1,3-Dichloropropene	2500 ug/mL
							Trichloroethene	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.8260VinAcetat_00046	09/28/16		Restek, Lot A0118759		(Purchased Reagent)		Vinyl acetate	5000 ug/mL
.Adds(A) 2016_00005	09/07/16		Restek, Lot A0116133		(Purchased Reagent)		n-Butanol	62500 ug/mL
8260 NewWkMix_00182	09/11/16	09/04/16	Methanol, Lot DP303	10 mL	8260_2_CLEVE_00043	100 uL	2-Chloroethyl vinyl ether	25 ug/mL
					8260Custom1_00041	125 uL	1,2-Dichloro-1,1,2,2-tetrafluoroethane	25 ug/mL
							n-Nonyl Aldehyde	25 ug/mL
					8260Cyclohexa_00043	100 uL	Cyclohexanone	250 ug/mL
					8260Gases_00172	100 uL	Butadiene	25 ug/mL
							Chloroethane	25 ug/mL
							Chloromethane	25 ug/mL
							Dichlorodifluoromethane	25 ug/mL
							Dichlorofluoromethane	25 ug/mL
							Methyl bromide	25 ug/mL
							Trichlorofluoromethane	25 ug/mL
							Vinyl chloride	25 ug/mL
					8260Ketones_00043	20 uL	2-Butanone	25 ug/mL
							2-Hexanone	25 ug/mL
							4-Methyl-2-pentanone	25 ug/mL
							Acetone	25 ug/mL
					8260MegaMix_00043	100 uL	1,1,1,2-Tetrachloroethane	25 ug/mL
							1,1,1-Trichloroethane	25 ug/mL
							1,1,2,2-Tetrachloroethane	25 ug/mL
							1,1,2-Trichloro-1,2,2-trifluoroethane	25 ug/mL
							1,1,2-Trichloroethane	25 ug/mL
							1,1-Dichloroethane	25 ug/mL
							1,1-Dichloroethene	25 ug/mL
							1,1-Dichloropropene	25 ug/mL
							1,2,3-Trichlorobenzene	25 ug/mL
							1,2,3-Trichloropropane	25 ug/mL
							1,2,4-Trichlorobenzene	25 ug/mL
							1,2,4-Trimethylbenzene	25 ug/mL
							1,2-Dibromo-3-Chloropropane	25 ug/mL
							1,2-Dibromoethane	25 ug/mL
							1,2-Dichlorobenzene	25 ug/mL
							1,2-Dichloroethane	25 ug/mL
							1,2-Dichloropropane	25 ug/mL
							1,3,5-Trimethylbenzene	25 ug/mL
							1,3-Dichlorobenzene	25 ug/mL
							1,3-Dichloropropane	25 ug/mL
							1,4-Dichlorobenzene	25 ug/mL
							1,4-Dioxane	500 ug/mL
							2,2-Dichloropropane	25 ug/mL
							2-Chlorotoluene	25 ug/mL
							2-Methyl-2-propanol	250 ug/mL
							3-Chloro-1-propene	25 ug/mL
							4-Chlorotoluene	25 ug/mL
							4-Isopropyltoluene	25 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Acrylonitrile	250 ug/mL
							Benzene	25 ug/mL
							Bromobenzene	25 ug/mL
							Bromodichloromethane	25 ug/mL
							Bromoform	25 ug/mL
							Carbon disulfide	25 ug/mL
							Carbon tetrachloride	25 ug/mL
							Chlorobenzene	25 ug/mL
							Chlorobromomethane	25 ug/mL
							Chlorodibromomethane	25 ug/mL
							Chloroform	25 ug/mL
							cis-1,2-Dichloroethene	25 ug/mL
							cis-1,3-Dichloropropene	25 ug/mL
							Cyclohexane	25 ug/mL
							Dibromomethane	25 ug/mL
							Ethyl ether	25 ug/mL
							Ethyl methacrylate	25 ug/mL
							Ethylbenzene	25 ug/mL
							Hexachlorobutadiene	25 ug/mL
							Hexane	25 ug/mL
							Iodomethane	25 ug/mL
							Isobutyl alcohol	625 ug/mL
							Isopropylbenzene	25 ug/mL
							m-Xylene & p-Xylene	25 ug/mL
							Methyl acetate	125 ug/mL
							Methyl tert-butyl ether	25 ug/mL
							Methylcyclohexane	25 ug/mL
							Methylene Chloride	25 ug/mL
							n-Butylbenzene	25 ug/mL
							n-Heptane	25 ug/mL
							N-Propylbenzene	25 ug/mL
							Naphthalene	25 ug/mL
							o-Xylene	25 ug/mL
							sec-Butylbenzene	25 ug/mL
							Styrene	25 ug/mL
							tert-Butylbenzene	25 ug/mL
							Tetrachloroethene	25 ug/mL
							Tetrahydrofuran	50 ug/mL
							Toluene	25 ug/mL
							trans-1,2-Dichloroethene	25 ug/mL
							trans-1,3-Dichloropropene	25 ug/mL
							trans-1,4-Dichloro-2-butene	25 ug/mL
							Trichloroethene	25 ug/mL
					8260VinAcetat_00046	50 uL	Vinyl acetate	25 ug/mL
					Acrolein_00037	62.5 uL	Acrolein	125 ug/mL
					Adds (B) 2016_00006	100 uL	Ethyl acetate	50 ug/mL
							Ethyl acrylate	25 ug/mL
							Methyl methacrylate	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							n-Butyl acetate	25 ug/mL
					Adds(A) 2016_00006	100 uL	1,2,3-Trimethylbenzene	25 ug/mL
							1,3,5-Trichlorobenzene	25 ug/mL
							2-Chloro-1,3-butadiene	25 ug/mL
							2-Nitropropane	50 ug/mL
							Benzyl chloride	25 ug/mL
							Isooctane	25 ug/mL
							Isopropyl alcohol	250 ug/mL
							Methacrylonitrile	250 ug/mL
							n-Butanol	625 ug/mL
					Polar Add._00034	100 uL	Acetonitrile	250 ug/mL
							Ethanol	1000 ug/mL
							Isopropyl ether	25 ug/mL
							Propionitrile	250 ug/mL
							Tert-amyl methyl ether	25 ug/mL
							Tert-butyl ethyl ether	25 ug/mL
.8260_2_CLEVE_00043	09/21/16		Restek, Lot A0115628		(Purchased Reagent)		2-Chloroethyl vinyl ether	2500 ug/mL
.8260Custom1_00041	09/14/16		Accustandard, Lot 215101095-01		(Purchased Reagent)		1,2-Dichloro-1,1,2,2-tetrafluoroethane	2000 ug/mL
							n-Nonyl Aldehyde	2000 ug/mL
.8260Cyclohexa_00043	09/21/16		Restek, Lot A0116621		(Purchased Reagent)		Cyclohexanone	25000 ug/mL
.8260Gases_00172	09/11/16		Restek, Lot A0115012		(Purchased Reagent)		Butadiene	2500 ug/mL
							Chloroethane	2500 ug/mL
							Chloromethane	2500 ug/mL
							Dichlorodifluoromethane	2500 ug/mL
							Dichlorofluoromethane	2500 ug/mL
							Methyl bromide	2500 ug/mL
							Trichlorofluoromethane	2500 ug/mL
							Vinyl chloride	2500 ug/mL
.8260Ketones_00043	09/21/16		Restek, Lot A0115554		(Purchased Reagent)		2-Butanone	12500 ug/mL
							2-Hexanone	12500 ug/mL
							4-Methyl-2-pentanone	12500 ug/mL
							Acetone	12500 ug/mL
.8260MegaMix_00043	09/21/16		Restek, Lot A0118177		(Purchased Reagent)		1,1,1,2-Tetrachloroethane	2500 ug/mL
							1,1,1-Trichloroethane	2500 ug/mL
							1,1,2,2-Tetrachloroethane	2500 ug/mL
							1,1,2-Trichloro-1,2,2-trifluoroethane	2500 ug/mL
							1,1,2-Trichloroethane	2500 ug/mL
							1,1-Dichloroethane	2500 ug/mL
							1,1-Dichloroethene	2500 ug/mL
							1,1-Dichloropropene	2500 ug/mL
							1,2,3-Trichlorobenzene	2500 ug/mL
							1,2,3-Trichloropropane	2500 ug/mL
							1,2,4-Trichlorobenzene	2500 ug/mL
							1,2,4-Trimethylbenzene	2500 ug/mL
							1,2-Dibromo-3-Chloropropane	2500 ug/mL
							1,2-Dibromoethane	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2-Dichlorobenzene	2500 ug/mL
							1,2-Dichloroethane	2500 ug/mL
							1,2-Dichloropropane	2500 ug/mL
							1,3,5-Trimethylbenzene	2500 ug/mL
							1,3-Dichlorobenzene	2500 ug/mL
							1,3-Dichloropropane	2500 ug/mL
							1,4-Dichlorobenzene	2500 ug/mL
							1,4-Dioxane	50000 ug/mL
							2,2-Dichloropropane	2500 ug/mL
							2-Chlorotoluene	2500 ug/mL
							2-Methyl-2-propanol	25000 ug/mL
							3-Chloro-1-propene	2500 ug/mL
							4-Chlorotoluene	2500 ug/mL
							4-Isopropyltoluene	2500 ug/mL
							Acrylonitrile	25000 ug/mL
							Benzene	2500 ug/mL
							Bromobenzene	2500 ug/mL
							Bromodichloromethane	2500 ug/mL
							Bromoform	2500 ug/mL
							Carbon disulfide	2500 ug/mL
							Carbon tetrachloride	2500 ug/mL
							Chlorobenzene	2500 ug/mL
							Chlorobromomethane	2500 ug/mL
							Chlorodibromomethane	2500 ug/mL
							Chloroform	2500 ug/mL
							cis-1,2-Dichloroethene	2500 ug/mL
							cis-1,3-Dichloropropene	2500 ug/mL
							Cyclohexane	2500 ug/mL
							Dibromomethane	2500 ug/mL
							Ethyl ether	2500 ug/mL
							Ethyl methacrylate	2500 ug/mL
							Ethylbenzene	2500 ug/mL
							Hexachlorobutadiene	2500 ug/mL
							Hexane	2500 ug/mL
							Iodomethane	2500 ug/mL
							Isobutyl alcohol	62500 ug/mL
							Isopropylbenzene	2500 ug/mL
							m-Xylene & p-Xylene	2500 ug/mL
							Methyl acetate	12500 ug/mL
							Methyl tert-butyl ether	2500 ug/mL
							Methylcyclohexane	2500 ug/mL
							Methylene Chloride	2500 ug/mL
							n-Butylbenzene	2500 ug/mL
							n-Heptane	2500 ug/mL
							N-Propylbenzene	2500 ug/mL
							Naphthalene	2500 ug/mL
							o-Xylene	2500 ug/mL
							sec-Butylbenzene	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Styrene	2500 ug/mL
							tert-Butylbenzene	2500 ug/mL
							Tetrachloroethene	2500 ug/mL
							Tetrahydrofuran	5000 ug/mL
							Toluene	2500 ug/mL
							trans-1,2-Dichloroethene	2500 ug/mL
							trans-1,3-Dichloropropene	2500 ug/mL
							trans-1,4-Dichloro-2-butene	2500 ug/mL
							Trichloroethene	2500 ug/mL
.8260VinAcetat_00046	09/28/16		Restek, Lot A0118759		(Purchased Reagent)		Vinyl acetate	5000 ug/mL
.Acrolein_00037	09/28/16		Restek, Lot A0119846		(Purchased Reagent)		Acrolein	20000 ug/mL
.Adds (B) 2016_00006	10/04/16		Restek, Lot A0116077		(Purchased Reagent)		Ethyl acetate	5000 ug/mL
							Ethyl acrylate	2500 ug/mL
							Methyl methacrylate	5000 ug/mL
							n-Butyl acetate	2500 ug/mL
.Adds(A) 2016_00006	10/04/16		Restek, Lot A0116133		(Purchased Reagent)		1,2,3-Trimethylbenzene	2500 ug/mL
							1,3,5-Trichlorobenzene	2500 ug/mL
							2-Chloro-1,3-butadiene	2500 ug/mL
							2-Nitropropane	5000 ug/mL
							Benzyl chloride	2500 ug/mL
							Isooctane	2500 ug/mL
							Isopropyl alcohol	25000 ug/mL
							Methacrylonitrile	25000 ug/mL
							n-Butanol	62500 ug/mL
.Polar Add._00034	09/21/16		Restek, Lot A0114666		(Purchased Reagent)		Acetonitrile	25000 ug/mL
							Ethanol	100000 ug/mL
							Isopropyl ether	2500 ug/mL
							Propionitrile	25000 ug/mL
							Tert-amyl methyl ether	2500 ug/mL
							Tert-butyl ethyl ether	2500 ug/mL
8260 Surr 25_00064	09/03/16	08/03/16	Methanol, Lot DM417	25 mL	8260_Surr_00038	250 uL	1,2-Dichloroethane-d4 (Surr)	25 ug/mL
							4-Bromofluorobenzene (Surr)	25 ug/mL
							Dibromofluoromethane (Surr)	25 ug/mL
							Toluene-d8 (Surr)	25 ug/mL
.8260_Surr_00038	09/03/16		Restek, Lot A0115812		(Purchased Reagent)		1,2-Dichloroethane-d4 (Surr)	2500 ug/mL
							4-Bromofluorobenzene (Surr)	2500 ug/mL
							Dibromofluoromethane (Surr)	2500 ug/mL
							Toluene-d8 (Surr)	2500 ug/mL
8260 Surr 25_00065	10/04/16	09/04/16	Methanol, Lot DM417	25 mL	8260_Surr_00039	250 uL	1,2-Dichloroethane-d4 (Surr)	25 ug/mL
							4-Bromofluorobenzene (Surr)	25 ug/mL
							Dibromofluoromethane (Surr)	25 ug/mL
							Toluene-d8 (Surr)	25 ug/mL
.8260_Surr_00039	10/04/16		Restek, Lot A0115812		(Purchased Reagent)		1,2-Dichloroethane-d4 (Surr)	2500 ug/mL
							4-Bromofluorobenzene (Surr)	2500 ug/mL
							Dibromofluoromethane (Surr)	2500 ug/mL
							Toluene-d8 (Surr)	2500 ug/mL
8260_Surr_00038	09/03/16		Restek, Lot A0115812		(Purchased Reagent)		1,2-Dichloroethane-d4 (Surr)	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							4-Bromofluorobenzene (Surr)	2500 ug/mL
							Dibromofluoromethane (Surr)	2500 ug/mL
							Toluene-d8 (Surr)	2500 ug/mL
8260_Surr_00039	10/04/16		Restek, Lot A0115812		(Purchased Reagent)		1,2-Dichloroethane-d4 (Surr)	2500 ug/mL
							4-Bromofluorobenzene (Surr)	2500 ug/mL
							Dibromofluoromethane (Surr)	2500 ug/mL
							Toluene-d8 (Surr)	2500 ug/mL
8260NewHiWrk_00158	08/28/16	08/21/16	Methanol, Lot DM417	1 mL	8260_2_CLEVE_00043	50 uL	2-Chloroethyl vinyl ether	125 ug/mL
					8260Custom1_00041	62.5 uL	1,2-Dichloro-1,1,2,2-tetrafluoroethane	125 ug/mL
							n-Nonyl Aldehyde	125 ug/mL
					8260Cyclohexa_00043	50 uL	Cyclohexanone	1250 ug/mL
					8260Gases_00170	50 uL	Butadiene	125 ug/mL
							Chloroethane	125 ug/mL
							Chloromethane	125 ug/mL
							Dichlorodifluoromethane	125 ug/mL
							Dichlorofluoromethane	125 ug/mL
							Methyl bromide	125 ug/mL
							Trichlorofluoromethane	125 ug/mL
							Vinyl chloride	125 ug/mL
					8260Ketones_00043	10 uL	2-Butanone	125 ug/mL
							2-Hexanone	125 ug/mL
							4-Methyl-2-pentanone	125 ug/mL
							Acetone	125 ug/mL
					8260MegaMix_00043	50 uL	1,1,1,2-Tetrachloroethane	125 ug/mL
							1,1,1-Trichloroethane	125 ug/mL
							1,1,2,2-Tetrachloroethane	125 ug/mL
							1,1,2-Trichloro-1,2,2-trifluoroethane	125 ug/mL
							1,1,2-Trichloroethane	125 ug/mL
							1,1-Dichloroethane	125 ug/mL
							1,1-Dichloroethene	125 ug/mL
							1,1-Dichloropropene	125 ug/mL
							1,2,3-Trichlorobenzene	125 ug/mL
							1,2,3-Trichloropropane	125 ug/mL
							1,2,4-Trichlorobenzene	125 ug/mL
							1,2,4-Trimethylbenzene	125 ug/mL
							1,2-Dibromo-3-Chloropropane	125 ug/mL
							1,2-Dibromoethane	125 ug/mL
							1,2-Dichlorobenzene	125 ug/mL
							1,2-Dichloroethane	125 ug/mL
							1,2-Dichloropropane	125 ug/mL
							1,3,5-Trimethylbenzene	125 ug/mL
							1,3-Dichlorobenzene	125 ug/mL
							1,3-Dichloropropane	125 ug/mL
							1,4-Dichlorobenzene	125 ug/mL
							1,4-Dioxane	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,2-Dichloropropane	125 ug/mL
							2-Chlorotoluene	125 ug/mL
							2-Methyl-2-propanol	1250 ug/mL
							3-Chloro-1-propene	125 ug/mL
							4-Chlorotoluene	125 ug/mL
							4-Isopropyltoluene	125 ug/mL
							Acrylonitrile	1250 ug/mL
							Benzene	125 ug/mL
							Bromobenzene	125 ug/mL
							Bromodichloromethane	125 ug/mL
							Bromoform	125 ug/mL
							Carbon disulfide	125 ug/mL
							Carbon tetrachloride	125 ug/mL
							Chlorobenzene	125 ug/mL
							Chlorobromomethane	125 ug/mL
							Chlorodibromomethane	125 ug/mL
							Chloroform	125 ug/mL
							cis-1,2-Dichloroethene	125 ug/mL
							cis-1,3-Dichloropropene	125 ug/mL
							Cyclohexane	125 ug/mL
							Dibromomethane	125 ug/mL
							Ethyl ether	125 ug/mL
							Ethyl methacrylate	125 ug/mL
							Ethylbenzene	125 ug/mL
							Hexachlorobutadiene	125 ug/mL
							Hexane	125 ug/mL
							Iodomethane	125 ug/mL
							Isobutyl alcohol	3125 ug/mL
							Isopropylbenzene	125 ug/mL
							m-Xylene & p-Xylene	125 ug/mL
							Methyl acetate	625 ug/mL
							Methyl tert-butyl ether	125 ug/mL
							Methylcyclohexane	125 ug/mL
							Methylene Chloride	125 ug/mL
							n-Butylbenzene	125 ug/mL
							n-Heptane	125 ug/mL
							N-Propylbenzene	125 ug/mL
							Naphthalene	125 ug/mL
							o-Xylene	125 ug/mL
							sec-Butylbenzene	125 ug/mL
							Styrene	125 ug/mL
							tert-Butylbenzene	125 ug/mL
							Tetrachloroethene	125 ug/mL
							Tetrahydrofuran	250 ug/mL
							Toluene	125 ug/mL
							trans-1,2-Dichloroethene	125 ug/mL
							trans-1,3-Dichloropropene	125 ug/mL
							trans-1,4-Dichloro-2-butene	125 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Trichloroethene	125 ug/mL
					8260VinAcetat_00045	25 uL	Vinyl acetate	125 ug/mL
					Acrolein_00036	31.25 uL	Acrolein	625 ug/mL
					Adds (B) 2016_00005	50 uL	Ethyl acetate	250 ug/mL
							Ethyl acrylate	125 ug/mL
							Methyl methacrylate	250 ug/mL
							n-Butyl acetate	125 ug/mL
					Adds(A) 2016_00005	50 uL	1,2,3-Trimethylbenzene	125 ug/mL
							1,3,5-Trichlorobenzene	125 ug/mL
							2-Chloro-1,3-butadiene	125 ug/mL
							2-Nitropropane	250 ug/mL
							Benzyl chloride	125 ug/mL
							Isooctane	125 ug/mL
							Isopropyl alcohol	1250 ug/mL
							Methacrylonitrile	1250 ug/mL
							n-Butanol	3125 ug/mL
					Polar Add._00034	50 uL	Acetonitrile	1250 ug/mL
							Ethanol	5000 ug/mL
							Isopropyl ether	125 ug/mL
							Propionitrile	1250 ug/mL
							Tert-amyl methyl ether	125 ug/mL
							Tert-butyl ethyl ether	125 ug/mL
.8260_2_CLEVE_00043	09/21/16		Restek, Lot A0115628		(Purchased Reagent)		2-Chloroethyl vinyl ether	2500 ug/mL
.8260Custom1_00041	09/14/16		Accustandard, Lot 215101095-01		(Purchased Reagent)		1,2-Dichloro-1,1,2,2-tetrafluoroethane	2000 ug/mL
							n-Nonyl Aldehyde	2000 ug/mL
.8260Cyclohexa_00043	09/21/16		Restek, Lot A0116621		(Purchased Reagent)		Cyclohexanone	25000 ug/mL
.8260Gases_00170	08/28/16		Restek, Lot A0115012		(Purchased Reagent)		Butadiene	2500 ug/mL
							Chloroethane	2500 ug/mL
							Chloromethane	2500 ug/mL
							Dichlorodifluoromethane	2500 ug/mL
							Dichlorofluoromethane	2500 ug/mL
							Methyl bromide	2500 ug/mL
							Trichlorofluoromethane	2500 ug/mL
							Vinyl chloride	2500 ug/mL
.8260Ketones_00043	09/21/16		Restek, Lot A0115554		(Purchased Reagent)		2-Butanone	12500 ug/mL
							2-Hexanone	12500 ug/mL
							4-Methyl-2-pentanone	12500 ug/mL
							Acetone	12500 ug/mL
.8260MegaMix_00043	09/21/16		Restek, Lot A0118177		(Purchased Reagent)		1,1,1,2-Tetrachloroethane	2500 ug/mL
							1,1,1-Trichloroethane	2500 ug/mL
							1,1,2,2-Tetrachloroethane	2500 ug/mL
							1,1,2-Trichloro-1,2,2-trifluoroethane	2500 ug/mL
							1,1,2-Trichloroethane	2500 ug/mL
							1,1-Dichloroethane	2500 ug/mL
							1,1-Dichloroethene	2500 ug/mL
							1,1-Dichloropropene	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,3-Trichlorobenzene	2500 ug/mL
							1,2,3-Trichloropropane	2500 ug/mL
							1,2,4-Trichlorobenzene	2500 ug/mL
							1,2,4-Trimethylbenzene	2500 ug/mL
							1,2-Dibromo-3-Chloropropane	2500 ug/mL
							1,2-Dibromoethane	2500 ug/mL
							1,2-Dichlorobenzene	2500 ug/mL
							1,2-Dichloroethane	2500 ug/mL
							1,2-Dichloropropane	2500 ug/mL
							1,3,5-Trimethylbenzene	2500 ug/mL
							1,3-Dichlorobenzene	2500 ug/mL
							1,3-Dichloropropane	2500 ug/mL
							1,4-Dichlorobenzene	2500 ug/mL
							1,4-Dioxane	50000 ug/mL
							2,2-Dichloropropane	2500 ug/mL
							2-Chlorotoluene	2500 ug/mL
							2-Methyl-2-propanol	25000 ug/mL
							3-Chloro-1-propene	2500 ug/mL
							4-Chlorotoluene	2500 ug/mL
							4-Isopropyltoluene	2500 ug/mL
							Acrylonitrile	25000 ug/mL
							Benzene	2500 ug/mL
							Bromobenzene	2500 ug/mL
							Bromodichloromethane	2500 ug/mL
							Bromoform	2500 ug/mL
							Carbon disulfide	2500 ug/mL
							Carbon tetrachloride	2500 ug/mL
							Chlorobenzene	2500 ug/mL
							Chlorobromomethane	2500 ug/mL
							Chlorodibromomethane	2500 ug/mL
							Chloroform	2500 ug/mL
							cis-1,2-Dichloroethene	2500 ug/mL
							cis-1,3-Dichloropropene	2500 ug/mL
							Cyclohexane	2500 ug/mL
							Dibromomethane	2500 ug/mL
							Ethyl ether	2500 ug/mL
							Ethyl methacrylate	2500 ug/mL
							Ethylbenzene	2500 ug/mL
							Hexachlorobutadiene	2500 ug/mL
							Hexane	2500 ug/mL
							Iodomethane	2500 ug/mL
							Isobutyl alcohol	62500 ug/mL
							Isopropylbenzene	2500 ug/mL
							m-Xylene & p-Xylene	2500 ug/mL
							Methyl acetate	12500 ug/mL
							Methyl tert-butyl ether	2500 ug/mL
							Methylcyclohexane	2500 ug/mL
							Methylene Chloride	2500 ug/mL

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							n-Butylbenzene	2500 ug/mL
							n-Heptane	2500 ug/mL
							N-Propylbenzene	2500 ug/mL
							Naphthalene	2500 ug/mL
							o-Xylene	2500 ug/mL
							sec-Butylbenzene	2500 ug/mL
							Styrene	2500 ug/mL
							tert-Butylbenzene	2500 ug/mL
							Tetrachloroethene	2500 ug/mL
							Tetrahydrofuran	5000 ug/mL
							Toluene	2500 ug/mL
							trans-1,2-Dichloroethene	2500 ug/mL
							trans-1,3-Dichloropropene	2500 ug/mL
							trans-1,4-Dichloro-2-butene	2500 ug/mL
							Trichloroethene	2500 ug/mL
.8260VinAcetat_00045	08/31/16		Restek, Lot A0118759		(Purchased Reagent)		Vinyl acetate	5000 ug/mL
.Acrolein_00036	08/31/16		Restek, Lot A0118994		(Purchased Reagent)		Acrolein	20000 ug/mL
.Adds (B) 2016_00005	09/07/16		Restek, Lot A0116077		(Purchased Reagent)		Ethyl acetate	5000 ug/mL
							Ethyl acrylate	2500 ug/mL
							Methyl methacrylate	5000 ug/mL
							n-Butyl acetate	2500 ug/mL
.Adds(A) 2016_00005	09/07/16		Restek, Lot A0116133		(Purchased Reagent)		1,2,3-Trimethylbenzene	2500 ug/mL
							1,3,5-Trichlorobenzene	2500 ug/mL
							2-Chloro-1,3-butadiene	2500 ug/mL
							2-Nitropropane	5000 ug/mL
							Benzyl chloride	2500 ug/mL
							Isooctane	2500 ug/mL
							Isopropyl alcohol	25000 ug/mL
							Methacrylonitrile	25000 ug/mL
							n-Butanol	62500 ug/mL
.Polar Add._00034	09/21/16		Restek, Lot A0114666		(Purchased Reagent)		Acetonitrile	25000 ug/mL
							Ethanol	100000 ug/mL
							Isopropyl ether	2500 ug/mL
							Propionitrile	25000 ug/mL
							Tert-amyl methyl ether	2500 ug/mL
							Tert-butyl ethyl ether	2500 ug/mL
8260NewHiWrk_00160	09/11/16	09/04/16	Methanol, Lot DP303	1 mL	8260_2_CLEVE_00043	50 uL	2-Chloroethyl vinyl ether	125 ug/mL
					8260Custom1_00041	62.5 uL	1,2-Dichloro-1,1,2,2-tetrafluoroethane	125 ug/mL
							n-Nonyl Aldehyde	125 ug/mL
					8260Cyclohexa_00043	50 uL	Cyclohexanone	1250 ug/mL
					8260Gases_00172	50 uL	Butadiene	125 ug/mL
							Chloroethane	125 ug/mL
							Chloromethane	125 ug/mL
							Dichlorodifluoromethane	125 ug/mL
							Dichlorofluoromethane	125 ug/mL
							Methyl bromide	125 ug/mL
							Trichlorofluoromethane	125 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Vinyl chloride	125 ug/mL
					8260Ketones_00043	10 uL	2-Butanone	125 ug/mL
							2-Hexanone	125 ug/mL
							4-Methyl-2-pentanone	125 ug/mL
							Acetone	125 ug/mL
					8260MegaMix_00043	50 uL	1,1,1,2-Tetrachloroethane	125 ug/mL
							1,1,1-Trichloroethane	125 ug/mL
							1,1,2,2-Tetrachloroethane	125 ug/mL
							1,1,2-Trichloro-1,2,2-trifluoroethane	125 ug/mL
							1,1,2-Trichloroethane	125 ug/mL
							1,1-Dichloroethane	125 ug/mL
							1,1-Dichloroethene	125 ug/mL
							1,1-Dichloropropene	125 ug/mL
							1,2,3-Trichlorobenzene	125 ug/mL
							1,2,3-Trichloropropane	125 ug/mL
							1,2,4-Trichlorobenzene	125 ug/mL
							1,2,4-Trimethylbenzene	125 ug/mL
							1,2-Dibromo-3-Chloropropane	125 ug/mL
							1,2-Dibromoethane	125 ug/mL
							1,2-Dichlorobenzene	125 ug/mL
							1,2-Dichloroethane	125 ug/mL
							1,2-Dichloropropane	125 ug/mL
							1,3,5-Trimethylbenzene	125 ug/mL
							1,3-Dichlorobenzene	125 ug/mL
							1,3-Dichloropropane	125 ug/mL
							1,4-Dichlorobenzene	125 ug/mL
							1,4-Dioxane	2500 ug/mL
							2,2-Dichloropropane	125 ug/mL
							2-Chlorotoluene	125 ug/mL
							2-Methyl-2-propanol	1250 ug/mL
							3-Chloro-1-propene	125 ug/mL
							4-Chlorotoluene	125 ug/mL
							4-Isopropyltoluene	125 ug/mL
							Acrylonitrile	1250 ug/mL
							Benzene	125 ug/mL
							Bromobenzene	125 ug/mL
							Bromodichloromethane	125 ug/mL
							Bromoform	125 ug/mL
							Carbon disulfide	125 ug/mL
							Carbon tetrachloride	125 ug/mL
							Chlorobenzene	125 ug/mL
							Chlorobromomethane	125 ug/mL
							Chlorodibromomethane	125 ug/mL
							Chloroform	125 ug/mL
							cis-1,2-Dichloroethene	125 ug/mL
							cis-1,3-Dichloropropene	125 ug/mL
							Cyclohexane	125 ug/mL

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Dibromomethane	125 ug/mL
							Ethyl ether	125 ug/mL
							Ethyl methacrylate	125 ug/mL
							Ethylbenzene	125 ug/mL
							Hexachlorobutadiene	125 ug/mL
							Hexane	125 ug/mL
							Iodomethane	125 ug/mL
							Isobutyl alcohol	3125 ug/mL
							Isopropylbenzene	125 ug/mL
							m-Xylene & p-Xylene	125 ug/mL
							Methyl acetate	625 ug/mL
							Methyl tert-butyl ether	125 ug/mL
							Methylcyclohexane	125 ug/mL
							Methylene Chloride	125 ug/mL
							n-Butylbenzene	125 ug/mL
							n-Heptane	125 ug/mL
							N-Propylbenzene	125 ug/mL
							Naphthalene	125 ug/mL
							o-Xylene	125 ug/mL
							sec-Butylbenzene	125 ug/mL
							Styrene	125 ug/mL
							tert-Butylbenzene	125 ug/mL
							Tetrachloroethene	125 ug/mL
							Tetrahydrofuran	250 ug/mL
							Toluene	125 ug/mL
							trans-1,2-Dichloroethene	125 ug/mL
							trans-1,3-Dichloropropene	125 ug/mL
							trans-1,4-Dichloro-2-butene	125 ug/mL
							Trichloroethene	125 ug/mL
					8260VinAcetat_00046	25 uL	Vinyl acetate	125 ug/mL
					Acrolein_00037	31.25 uL	Acrolein	625 ug/mL
					Adds (B) 2016_00006	50 uL	Ethyl acetate	250 ug/mL
							Ethyl acrylate	125 ug/mL
							Methyl methacrylate	250 ug/mL
							n-Butyl acetate	125 ug/mL
					Adds(A) 2016_00006	50 uL	1,2,3-Trimethylbenzene	125 ug/mL
							1,3,5-Trichlorobenzene	125 ug/mL
							2-Chloro-1,3-butadiene	125 ug/mL
							2-Nitropropane	250 ug/mL
							Benzyl chloride	125 ug/mL
							Isooctane	125 ug/mL
							Isopropyl alcohol	1250 ug/mL
							Methacrylonitrile	1250 ug/mL
							n-Butanol	3125 ug/mL
					Polar Add._00034	50 uL	Acetonitrile	1250 ug/mL
							Ethanol	5000 ug/mL
							Isopropyl ether	125 ug/mL
							Propionitrile	1250 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Tert-amyl methyl ether	125 ug/mL
							Tert-butyl ethyl ether	125 ug/mL
.8260_2_CLEVE_00043	09/21/16		Restek, Lot A0115628		(Purchased Reagent)		2-Chloroethyl vinyl ether	2500 ug/mL
.8260Custom1_00041	09/14/16		Accustandard, Lot 215101095-01		(Purchased Reagent)		1,2-Dichloro-1,1,2,2-tetrafluoroethane	2000 ug/mL
							n-Nonyl Aldehyde	2000 ug/mL
.8260Cyclohexa_00043	09/21/16		Restek, Lot A0116621		(Purchased Reagent)		Cyclohexanone	25000 ug/mL
.8260Gases_00172	09/11/16		Restek, Lot A0115012		(Purchased Reagent)		Butadiene	2500 ug/mL
							Chloroethane	2500 ug/mL
							Chloromethane	2500 ug/mL
							Dichlorodifluoromethane	2500 ug/mL
							Dichlorofluoromethane	2500 ug/mL
							Methyl bromide	2500 ug/mL
							Trichlorofluoromethane	2500 ug/mL
							Vinyl chloride	2500 ug/mL
.8260Ketones_00043	09/21/16		Restek, Lot A0115554		(Purchased Reagent)		2-Butanone	12500 ug/mL
							2-Hexanone	12500 ug/mL
							4-Methyl-2-pentanone	12500 ug/mL
							Acetone	12500 ug/mL
.8260MegaMix_00043	09/21/16		Restek, Lot A0118177		(Purchased Reagent)		1,1,1,2-Tetrachloroethane	2500 ug/mL
							1,1,1-Trichloroethane	2500 ug/mL
							1,1,2,2-Tetrachloroethane	2500 ug/mL
							1,1,2-Trichloro-1,2,2-trifluoroethane	2500 ug/mL
							1,1,2-Trichloroethane	2500 ug/mL
							1,1-Dichloroethane	2500 ug/mL
							1,1-Dichloroethene	2500 ug/mL
							1,1-Dichloropropene	2500 ug/mL
							1,2,3-Trichlorobenzene	2500 ug/mL
							1,2,3-Trichloropropane	2500 ug/mL
							1,2,4-Trichlorobenzene	2500 ug/mL
							1,2,4-Trimethylbenzene	2500 ug/mL
							1,2-Dibromo-3-Chloropropane	2500 ug/mL
							1,2-Dibromoethane	2500 ug/mL
							1,2-Dichlorobenzene	2500 ug/mL
							1,2-Dichloroethane	2500 ug/mL
							1,2-Dichloropropane	2500 ug/mL
							1,3,5-Trimethylbenzene	2500 ug/mL
							1,3-Dichlorobenzene	2500 ug/mL
							1,3-Dichloropropane	2500 ug/mL
							1,4-Dichlorobenzene	2500 ug/mL
							1,4-Dioxane	50000 ug/mL
							2,2-Dichloropropane	2500 ug/mL
							2-Chlorotoluene	2500 ug/mL
							2-Methyl-2-propanol	25000 ug/mL
							3-Chloro-1-propene	2500 ug/mL
							4-Chlorotoluene	2500 ug/mL
							4-Isopropyltoluene	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Acrylonitrile	25000 ug/mL
							Benzene	2500 ug/mL
							Bromobenzene	2500 ug/mL
							Bromodichloromethane	2500 ug/mL
							Bromoform	2500 ug/mL
							Carbon disulfide	2500 ug/mL
							Carbon tetrachloride	2500 ug/mL
							Chlorobenzene	2500 ug/mL
							Chlorobromomethane	2500 ug/mL
							Chlorodibromomethane	2500 ug/mL
							Chloroform	2500 ug/mL
							cis-1,2-Dichloroethene	2500 ug/mL
							cis-1,3-Dichloropropene	2500 ug/mL
							Cyclohexane	2500 ug/mL
							Dibromomethane	2500 ug/mL
							Ethyl ether	2500 ug/mL
							Ethyl methacrylate	2500 ug/mL
							Ethylbenzene	2500 ug/mL
							Hexachlorobutadiene	2500 ug/mL
							Hexane	2500 ug/mL
							Iodomethane	2500 ug/mL
							Isobutyl alcohol	62500 ug/mL
							Isopropylbenzene	2500 ug/mL
							m-Xylene & p-Xylene	2500 ug/mL
							Methyl acetate	12500 ug/mL
							Methyl tert-butyl ether	2500 ug/mL
							Methylcyclohexane	2500 ug/mL
							Methylene Chloride	2500 ug/mL
							n-Butylbenzene	2500 ug/mL
							n-Heptane	2500 ug/mL
							N-Propylbenzene	2500 ug/mL
							Naphthalene	2500 ug/mL
							o-Xylene	2500 ug/mL
							sec-Butylbenzene	2500 ug/mL
							Styrene	2500 ug/mL
							tert-Butylbenzene	2500 ug/mL
							Tetrachloroethene	2500 ug/mL
							Tetrahydrofuran	5000 ug/mL
							Toluene	2500 ug/mL
							trans-1,2-Dichloroethene	2500 ug/mL
							trans-1,3-Dichloropropene	2500 ug/mL
							trans-1,4-Dichloro-2-butene	2500 ug/mL
							Trichloroethene	2500 ug/mL
.8260VinAcetat_00046	09/28/16		Restek, Lot A0118759		(Purchased Reagent)		Vinyl acetate	5000 ug/mL
.Acrolein_00037	09/28/16		Restek, Lot A0119846		(Purchased Reagent)		Acrolein	20000 ug/mL
.Adds (B) 2016_00006	10/04/16		Restek, Lot A0116077		(Purchased Reagent)		Ethyl acetate	5000 ug/mL
							Ethyl acrylate	2500 ug/mL
							Methyl methacrylate	5000 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							n-Butyl acetate	2500 ug/mL
.Adds(A) 2016_00006	10/04/16		Restek, Lot A0116133		(Purchased Reagent)		1,2,3-Trimethylbenzene	2500 ug/mL
							1,3,5-Trichlorobenzene	2500 ug/mL
							2-Chloro-1,3-butadiene	2500 ug/mL
							2-Nitropropane	5000 ug/mL
							Benzyl chloride	2500 ug/mL
							Isooctane	2500 ug/mL
							Isopropyl alcohol	25000 ug/mL
							Methacrylonitrile	25000 ug/mL
							n-Butanol	62500 ug/mL
.Polar Add._00034	09/21/16		Restek, Lot A0114666		(Purchased Reagent)		Acetonitrile	25000 ug/mL
							Ethanol	100000 ug/mL
							Isopropyl ether	2500 ug/mL
							Propionitrile	25000 ug/mL
							Tert-amyl methyl ether	2500 ug/mL
							Tert-butyl ethyl ether	2500 ug/mL
8260NewICVMix_00171	08/28/16	08/21/16	Methanol, Lot DM417	5 mL	8260GasesSS_00171	50 uL	Chloroethane	25 ug/mL
							Chloromethane	25 ug/mL
							Methyl bromide	25 ug/mL
							Vinyl chloride	25 ug/mL
					8260KetonesSS_00042	10 uL	2-Butanone	25 ug/mL
							2-Hexanone	25 ug/mL
							4-Methyl-2-pentanone	25 ug/mL
							Acetone	25 ug/mL
					8260MegaMixSS_00042	50 uL	1,1,1-Trichloroethane	25 ug/mL
							1,1,2,2-Tetrachloroethane	25 ug/mL
							1,1,2-Trichloroethane	25 ug/mL
							1,1-Dichloroethane	25 ug/mL
							1,1-Dichloroethene	25 ug/mL
							1,2,4-Trichlorobenzene	25 ug/mL
							1,2-Dibromo-3-Chloropropane	25 ug/mL
							1,2-Dibromoethane	25 ug/mL
							1,2-Dichloroethane	25 ug/mL
							1,2-Dichloropropane	25 ug/mL
							Benzene	25 ug/mL
							Bromodichloromethane	25 ug/mL
							Bromoform	25 ug/mL
							Carbon disulfide	25 ug/mL
							Carbon tetrachloride	25 ug/mL
							Chlorobenzene	25 ug/mL
							Chlorodibromomethane	25 ug/mL
							Chloroform	25 ug/mL
							cis-1,2-Dichloroethene	25 ug/mL
							cis-1,3-Dichloropropene	25 ug/mL
							Ethylbenzene	25 ug/mL
							Methylene Chloride	25 ug/mL
							Styrene	25 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Tetrachloroethene	25 ug/mL
							Toluene	25 ug/mL
							trans-1,2-Dichloroethene	25 ug/mL
							trans-1,3-Dichloropropene	25 ug/mL
							Trichloroethene	25 ug/mL
					8260VinAcetSS_00044	25 uL	Vinyl acetate	25 ug/mL
					Add(A)SS 2016_00007	50 uL	n-Butanol	625 ug/mL
.8260GasesSS_00171	08/28/16		Restek, Lot A0115484		(Purchased Reagent)		Chloroethane	2500 ug/mL
							Chloromethane	2500 ug/mL
							Methyl bromide	2500 ug/mL
							Vinyl chloride	2500 ug/mL
.8260KetonesSS_00042	09/21/16		Restek, Lot A0112937		(Purchased Reagent)		2-Butanone	12500 ug/mL
							2-Hexanone	12500 ug/mL
							4-Methyl-2-pentanone	12500 ug/mL
							Acetone	12500 ug/mL
.8260MegaMixSS_00042	09/21/16		Restek, Lot A0108163		(Purchased Reagent)		1,1,1-Trichloroethane	2500 ug/mL
							1,1,2,2-Tetrachloroethane	2500 ug/mL
							1,1,2-Trichloroethane	2500 ug/mL
							1,1-Dichloroethane	2500 ug/mL
							1,1-Dichloroethene	2500 ug/mL
							1,2,4-Trichlorobenzene	2500 ug/mL
							1,2-Dibromo-3-Chloropropane	2500 ug/mL
							1,2-Dibromoethane	2500 ug/mL
							1,2-Dichloroethane	2500 ug/mL
							1,2-Dichloropropane	2500 ug/mL
							Benzene	2500 ug/mL
							Bromodichloromethane	2500 ug/mL
							Bromoform	2500 ug/mL
							Carbon disulfide	2500 ug/mL
							Carbon tetrachloride	2500 ug/mL
							Chlorobenzene	2500 ug/mL
							Chlorodibromomethane	2500 ug/mL
							Chloroform	2500 ug/mL
							cis-1,2-Dichloroethene	2500 ug/mL
							cis-1,3-Dichloropropene	2500 ug/mL
							Ethylbenzene	2500 ug/mL
							Methylene Chloride	2500 ug/mL
							Styrene	2500 ug/mL
							Tetrachloroethene	2500 ug/mL
							Toluene	2500 ug/mL
							trans-1,2-Dichloroethene	2500 ug/mL
							trans-1,3-Dichloropropene	2500 ug/mL
							Trichloroethene	2500 ug/mL
.8260VinAcetSS_00044	09/07/16		Restek, Lot A0119399		(Purchased Reagent)		Vinyl acetate	5000 ug/mL
.Add(A)SS 2016_00007	09/07/16		Restek, Lot A0116135		(Purchased Reagent)		n-Butanol	62500 ug/mL
8260NewICVMix_00173	09/11/16	09/04/16	Methanol, Lot DP303	5 mL	8260GasesSS_00173	50 uL	Chloroethane	25 ug/mL
							Chloromethane	25 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Methyl bromide	25 ug/mL
							Vinyl chloride	25 ug/mL
					8260KetonesSS_00042	10 uL	2-Butanone	25 ug/mL
							2-Hexanone	25 ug/mL
							4-Methyl-2-pentanone	25 ug/mL
							Acetone	25 ug/mL
					8260MegaMixSS_00042	50 uL	1,1,1-Trichloroethane	25 ug/mL
							1,1,2,2-Tetrachloroethane	25 ug/mL
							1,1,2-Trichloroethane	25 ug/mL
							1,1-Dichloroethane	25 ug/mL
							1,1-Dichloroethene	25 ug/mL
							1,2,4-Trichlorobenzene	25 ug/mL
							1,2-Dibromo-3-Chloropropane	25 ug/mL
							1,2-Dibromoethane	25 ug/mL
							1,2-Dichloroethane	25 ug/mL
							1,2-Dichloropropane	25 ug/mL
							Benzene	25 ug/mL
							Bromodichloromethane	25 ug/mL
							Bromoform	25 ug/mL
							Carbon disulfide	25 ug/mL
							Carbon tetrachloride	25 ug/mL
							Chlorobenzene	25 ug/mL
							Chlorodibromomethane	25 ug/mL
							Chloroform	25 ug/mL
							cis-1,2-Dichloroethene	25 ug/mL
							cis-1,3-Dichloropropene	25 ug/mL
							Ethylbenzene	25 ug/mL
							Methylene Chloride	25 ug/mL
							Styrene	25 ug/mL
							Tetrachloroethene	25 ug/mL
							Toluene	25 ug/mL
							trans-1,2-Dichloroethene	25 ug/mL
							trans-1,3-Dichloropropene	25 ug/mL
							Trichloroethene	25 ug/mL
					8260VinAcetSS_00045	25 uL	Vinyl acetate	25 ug/mL
					Add(A)SS 2016_00008	50 uL	n-Butanol	625 ug/mL
.8260GasesSS_00173	09/11/16		Restek, Lot A0115484		(Purchased Reagent)		Chloroethane	2500 ug/mL
							Chloromethane	2500 ug/mL
							Methyl bromide	2500 ug/mL
							Vinyl chloride	2500 ug/mL
.8260KetonesSS_00042	09/21/16		Restek, Lot A0112937		(Purchased Reagent)		2-Butanone	12500 ug/mL
							2-Hexanone	12500 ug/mL
							4-Methyl-2-pentanone	12500 ug/mL
							Acetone	12500 ug/mL
.8260MegaMixSS_00042	09/21/16		Restek, Lot A0108163		(Purchased Reagent)		1,1,1-Trichloroethane	2500 ug/mL
							1,1,2,2-Tetrachloroethane	2500 ug/mL
							1,1,2-Trichloroethane	2500 ug/mL
							1,1-Dichloroethane	2500 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,1-Dichloroethene	2500 ug/mL
							1,2,4-Trichlorobenzene	2500 ug/mL
							1,2-Dibromo-3-Chloropropane	2500 ug/mL
							1,2-Dibromoethane	2500 ug/mL
							1,2-Dichloroethane	2500 ug/mL
							1,2-Dichloropropane	2500 ug/mL
							Benzene	2500 ug/mL
							Bromodichloromethane	2500 ug/mL
							Bromoform	2500 ug/mL
							Carbon disulfide	2500 ug/mL
							Carbon tetrachloride	2500 ug/mL
							Chlorobenzene	2500 ug/mL
							Chlorodibromomethane	2500 ug/mL
							Chloroform	2500 ug/mL
							cis-1,2-Dichloroethene	2500 ug/mL
							cis-1,3-Dichloropropene	2500 ug/mL
							Ethylbenzene	2500 ug/mL
							Methylene Chloride	2500 ug/mL
							Styrene	2500 ug/mL
							Tetrachloroethene	2500 ug/mL
							Toluene	2500 ug/mL
							trans-1,2-Dichloroethene	2500 ug/mL
							trans-1,3-Dichloropropene	2500 ug/mL
							Trichloroethene	2500 ug/mL
.8260VinAcetSS_00045	10/04/16		Restek, Lot A0119399		(Purchased Reagent)		Vinyl acetate	5000 ug/mL
.Add(A)SS 2016_00008	10/04/16		Restek, Lot A0116135		(Purchased Reagent)		n-Butanol	62500 ug/mL
I.S. Working_00134	09/02/16	08/02/16	Methanol, Lot DM417	25 mL	8260 IS(2014)_00030	250 uL	1,4-Dichlorobenzene-d4	25 ug/mL
							Chlorobenzene-d5	25 ug/mL
							Fluorobenzene	25 ug/mL
.8260 IS(2014)_00030	09/02/16		Restek, Lot A0113698		(Purchased Reagent)		1,4-Dichlorobenzene-d4	2500 ug/mL
							Chlorobenzene-d5	2500 ug/mL
							Fluorobenzene	2500 ug/mL
I.S. Working_00135	09/28/16	08/28/16	Methanol, Lot DP303	25 mL	8260 IS(2014)_00031	250 uL	1,4-Dichlorobenzene-d4	25 ug/mL
							Chlorobenzene-d5	25 ug/mL
							Fluorobenzene	25 ug/mL
.8260 IS(2014)_00031	09/28/16		Restek, Lot A0113698		(Purchased Reagent)		1,4-Dichlorobenzene-d4	2500 ug/mL
							Chlorobenzene-d5	2500 ug/mL
							Fluorobenzene	2500 ug/mL
LSC Check_00001	02/23/21		Perkin Elmer, Lot 135		(Purchased Reagent)		Background	0 dpm
							C-14	112100 dpm
							Tritium	286200 dpm
Source A_00001	04/01/59	02/23/11	water, Lot 79670-334	0.9986 Source	Gamma Ampuole_00001	0.9986 g	Am-241	9.4429 Bq
							Cd-109	132.909 Bq
							Ce-139	4.4538 Bq
							Co-57	2.9513 Bq
							Co-60	6.2002 Bq

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Cs-137	3.7296 Bq
							Hg-203	9.6996 Bq
							Sn-113	7.6266 Bq
							Y-88	12.712 Bq
.Gamma Ampuole_00001	04/07/59		Analytics, Lot 79670-334		(Purchased Reagent)		Am-241	9442.9 Bq
							Cd-109	132909 Bq
							Ce-139	4453.8 Bq
							Co-57	2951.3 Bq
							Co-60	6200.2 Bq
							Cs-137	3729.6 Bq
							Hg-203	9699.6 Bq
							Sn-113	7626.6 Bq
							Y-88	12712 Bq
Source C_00001	04/01/59	02/23/12	water, Lot 79670-334	1.0148 g	Gamma Ampuole_00001	1.0148 g	Am-241	9442.9 Bq
							Cd-109	132909 Bq
							Ce-139	4453.8 Bq
							Co-57	2951.3 Bq
							Co-60	6200.2 Bq
							Cs-137	3729.6 Bq
							Hg-203	9699.6 Bq
							Sn-113	7626.6 Bq
							Y-88	12712 Bq
.Gamma Ampuole_00001	04/07/59		Analytics, Lot 79670-334		(Purchased Reagent)		Am-241	9442.9 Bq
							Cd-109	132909 Bq
							Ce-139	4453.8 Bq
							Co-57	2951.3 Bq
							Co-60	6200.2 Bq
							Cs-137	3729.6 Bq
							Hg-203	9699.6 Bq
							Sn-113	7626.6 Bq
							Y-88	12712 Bq
Source D_00001	04/01/59	02/23/11	water, Lot 79670-334	0.9781 g	Gamma Ampuole_00001	0.9781 g	Am-241	9442.9 Bq
							Cd-109	132909 Bq
							Ce-139	4453.8 Bq
							Co-57	2951.3 Bq
							Co-60	6200.2 Bq
							Cs-137	3729.6 Bq
							Hg-203	9699.6 Bq
							Sn-113	7626.6 Bq
							Y-88	12712 Bq
.Gamma Ampuole_00001	04/07/59		Analytics, Lot 79670-334		(Purchased Reagent)		Am-241	9442.9 Bq
							Cd-109	132909 Bq
							Ce-139	4453.8 Bq
							Co-57	2951.3 Bq
							Co-60	6200.2 Bq
							Cs-137	3729.6 Bq
							Hg-203	9699.6 Bq

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Sn-113	7626.6 Bq
							Y-88	12712 Bq
Tc (T) Dil #2_00247	09/03/16	09/01/16	DI Water, Lot 0	100 mL	Tc (T) Dil #1_00209	10 mL	Tc-99m	20000 pCi/ml
.Tc (T) Dil #1_00209	09/04/16	09/01/16	Blood Bank Saline, Lot 231454	100 mL	Tc (T) Source_00196	1 mL	Tc-99m	200000 pCi/ml
..Tc (T) Source_00196	09/04/16	Triad, Lot 20160518			(Purchased Reagent)		Tc-99m	20 uCi/ml
Tc-99_00007	01/01/50	07/19/06	DI Water, Lot 0	100 mL	Tc-99_00003	4.9519 g	Technetium 99	22185.5 dpm/mL
.Tc-99_00003	01/01/50	Isotope Products, Lot 681-78-1			(Purchased Reagent)		Technetium 99	7.467 kBq/g
Tc-99_00019	03/15/17	03/18/15	2M HNO3, Lot n/a	500 mL	Tc-99_00015	12 mL	Technetium 99	228.819 dpm/mL
							Total Activity	228.819 dpm/mL
.Tc-99_00015	03/16/17	06/28/05	2M HNO3, Lot 0	100 mL	Tc-99_00004	10 mL	Technetium 99	9534.11 dpm/mL
							Total Activity	9534.11 dpm/mL
..Tc-99_00004	03/16/17	02/28/02	2M HNO3, Lot 0	100 mL	Tc-99_00002	4.8728 g	Technetium 99	95341.1 dpm/mL
							Total Activity	95341.1 dpm/mL
...Tc-99_00002	03/16/17	NIST, Lot SRM 4288A			(Purchased Reagent)		Technetium 99	32.61 kBq/g
							Total Activity	32.61 kBq/g
Tuna Can LCS_00005	10/29/16	Analytics, Lot 74139-334			(Purchased Reagent)		Am-241	219 dpm/g
							Co-60	136 dpm/g
							Cs-137	82.3 dpm/g
Tuna Can_00002	02/03/15	Eckert & Ziegler, Lot 81427-334			(Purchased Reagent)		Am-241	1164 Bq
							Cd-109	16063 Bq
							Ce-139	546 Bq
							Co-57	357 Bq
							Co-60	742 Bq
							Cs-137	465 Bq
							Hg-203	1208 Bq
							Pb-210	15186 Bq
							Sn-113	943 Bq
							Y-88	1571 Bq
Tuna Can_00003	02/09/17	Eckert & Ziegler, Lot 90099			(Purchased Reagent)		Am-241	1164 Bq
							Cd-109	16373 Bq
							Ce-139	549 Bq
							Co-57	362 Bq
							Co-60	735 Bq
							Cs-137	467 Bq
							Hg-203	1171 Bq
							Pb-210	14936 Bq
							Sn-113	967 Bq
							Y-88	1590 Bq

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
Tuna Can_00006	03/01/16	Eckert & Ziegler, Lot 83814-334			(Purchased Reagent)		Am-241	1195 Bq
							Cd-109	16353 Bq
							Ce-139	543 Bq
							Co-57	354 Bq
							Co-60	745 Bq
							Cs-137	453 Bq
							Hg-203	1175 Bq
							Pb-210	14606 Bq
							Sn-113	961 Bq
							Y-88	1568 Bq
U-232_00035	07/13/17	07/16/15	2M HNO3, Lot n/a	500 mL	U-232_00009	4 mL	Uranium 232	82.2457 dpm/mL
.U-232_00009	07/13/17	08/29/11	1M HNO3, Lot 0	100 mL	U-232_00003	5.1609 g	Uranium 232	10280.7 dpm/mL
..U-232_00003	08/25/61	Eckert & Ziegler, Lot 85539-334			(Purchased Reagent)		Uranium 232	3320.07 Bq/g
UNAT_00012	05/05/17	04/28/15	1M HNO3, Lot n/a	200 mL	UNAT Parent_00001	20 mL	Uranium 234	70.6912 dpm/mL
							Uranium 238	72.265 dpm/mL
							Uranium-235/236	3.37064 dpm/mL
.UNAT Parent_00001	05/05/17	05/03/13	1M HNO3, Lot n/a	200 mL	UNAT Ampoule_00001	19.2509 g	Uranium 234	706.912 dpm/mL
							Uranium 238	722.65 dpm/mL
							Uranium-235/236	33.7064 dpm/mL
..UNAT Ampoule_00001	03/30/58	New Brunswick Lab, Lot CRM 145			(Purchased Reagent)		Uranium 234	7344.2 dpm/g
							Uranium 238	7507.7 dpm/g
							Uranium-235/236	350.18 dpm/g

Reagent

82232-334_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
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www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82232-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 3-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	7.630E+00	4420-4800	7.540E+04	0.7	1.1	2.6
Pu-239	7.137E+00	4950-5240	2.410E+04	0.7	1.1	2.6
Am-241	7.281E+00	5280-5600	4.326E+02	0.7	1.1	2.6
Total Activity	2.210E+01	3000-8000		0.4	1.1	2.3

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY
HEALTH PHYSICS SOCIETY
FOUNDED 1956

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82233-334_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82233-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 3-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	4.950E+00	4420-4800	7.540E+04	0.8	1.1	2.7
Pu-239	6.064E+00	4950-5240	2.410E+04	0.7	1.1	2.6
Am-241	5.114E+00	5280-5600	4.326E+02	0.8	1.1	2.7
Total Activity	1.616E+01	3000-8000		0.1	1.1	2.2

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82234-334_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82234-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 2-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	5.685E+00	4420-4800	7.540E+04	0.9	1.1	2.8
Pu-239	5.936E+00	4950-5240	2.410E+04	0.9	1.1	2.8
Am-241	5.652E+00	5280-5600	4.326E+02	0.9	1.1	2.8
Total Activity	1.732E+01	3000-8000		0.5	1.1	2.4

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82235-334_00001

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Analytics

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Atlanta, Georgia 30318
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www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82235-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 4-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	7.167E+00	4420-4800	7.540E+04	0.8	1.1	2.7
Pu-239	6.897E+00	4950-5240	2.410E+04	0.8	1.1	2.7
Am-241	7.466E+00	5280-5600	4.326E+02	0.8	1.1	2.7
Total Activity	2.161E+01	3000-8000		0.5	1.1	2.4

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

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ACCREDITED SOURCE CALIBRATION LABORATORY
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FOUNDED 1958

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82236-334_00001

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Analytics

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www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82236-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 2-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	7.107E+00	4420-4800	7.540E+04	0.7	1.1	2.6
Pu-239	6.664E+00	4950-5240	2.410E+04	0.8	1.1	2.7
Am-241	6.891E+00	5280-5600	4.326E+02	0.7	1.1	2.6
Total Activity	2.071E+01	3000-8000		0.4	1.1	2.3

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1958

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.46 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82237-334_00003

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Analytics

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CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82237-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 1-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	5.856E+00	4420-4800	7.540E+04	1.0	1.1	3.0
Pu-239	6.424E+00	4950-5240	2.410E+04	0.9	1.1	2.8
Am-241	5.608E+00	5280-5600	4.326E+02	1.0	1.1	3.0
Total Activity	1.793E+01	3000-8000		0.6	1.1	2.5

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

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ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1958

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82241-334_00001

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Analytics

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www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82241-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 8-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	6.629E+00	4420-4800	7.540E+04	0.8	1.1	2.7
Pu-239	6.797E+00	4950-5240	2.410E+04	0.8	1.1	2.7
Am-241	6.638E+00	5280-5600	4.326E+02	0.8	1.1	2.7
Total Activity	2.011E+01	3000-8000		0.4	1.1	2.3

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY
HEALTH PHYSICS SOCIETY
FOUNDED 1956

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82242-334_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82242-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 8-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	6.583E+00	4420-4800	7.540E+04	0.9	1.1	2.8
Pu-239	6.414E+00	4950-5240	2.410E+04	0.9	1.1	2.8
Am-241	7.145E+00	5280-5600	4.326E+02	0.9	1.1	2.8
Total Activity	2.018E+01	3000-8000		0.6	1.1	2.5

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1958

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82244-334_00001

Eckert & Ziegler
Analytics

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Atlanta, Georgia 30318
Tel 404•352•8677
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www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82244-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 9-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	7.352E+00	4420-4800	7.540E+04	0.8	1.1	2.7
Pu-239	6.717E+00	4950-5240	2.410E+04	0.9	1.1	2.8
Am-241	6.897E+00	5280-5600	4.326E+02	0.9	1.1	2.8
Total Activity	2.101E+01	3000-8000		0.6	1.1	2.5

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY
HEALTH PHYSICS SOCIETY
FOUNDED 1956

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82245-334_00001

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www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82245-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 9-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	6.727E+00	4420-4800	7.540E+04	1.0	1.1	3.0
Pu-239	5.437E+00	4950-5240	2.410E+04	1.1	1.1	3.1
Am-241	5.528E+00	5280-5600	4.326E+02	1.1	1.1	3.1
Total Activity	1.773E+01	3000-8000		0.8	1.1	2.7

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY — HEALTH PHYSICS SOCIETY — FOUNDED 1956

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

82246-334_00001

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Analytics

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CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82246-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 9-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	5.570E+00	4420-4800	7.540E+04	1.0	1.1	3.0
Pu-239	5.353E+00	4950-5240	2.410E+04	1.0	1.1	3.0
Am-241	6.002E+00	5280-5600	4.326E+02	1.0	1.1	3.0
Total Activity	1.696E+01	3000-8000		0.7	1.1	2.6

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY
HEALTH PHYSICS SOCIETY
FOUNDED 1956

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06.24.2010
E. A. Taskaev, QA Manager Alternate

Reagent

82247-334_00001

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Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

82247-334

24.1 mm Diameter x 0.65 mm Thick Stainless Steel Disk

Customer: Test America/St. Louis
P.O. No.: 2355182, Item 1

This standard radionuclide source was prepared by electrodeposition onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities and impurities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Reference Date: 10-Jun-2010 12:00 PM EST

Isotope	Activity (Bq)	Energy Range (keV)	Half-Life, years	Uncertainty* Type (%) u_A	u_B	U
Th-230	6.251E+00	4420-4800	7.540E+04	0.9	1.1	2.8
Pu-239	5.746E+00	4950-5240	2.410E+04	0.9	1.1	2.8
Am-241	6.291E+00	5280-5600	4.326E+02	0.9	1.1	2.8
Total Activity	1.832E+01	3000-8000		0.6	1.1	2.5

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY — HEALTH PHYSICS SOCIETY — FOUNDED 1956

Comments:
Diameter of active area: 19 mm. Disk mounted on customer supplied disk 31.8 mm diameter x 0.45 mm thick stainless steel disk.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

Source Calibrated by: _____
A. Chen, Spectroscopist

QA Approved: _____ Date: 06-24-2010
E. A. Taskaev, QA Manager Alternate

Reagent

8260 IS(2014)_00030

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30241 **Lot No.:** A0113698

Description : 8260A Internal Standard Mix

8260A Internal Standard Mix 2,500 µg/mL, P&T Methanol, 1mL/ampul

RECD 3-16-16 JDH

870891-895

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : September 30, 2020 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Fluorobenzene	2,509.7 µg/mL	+/- 14.5916 µg/mL	Gravimetric
	CAS # 462-06-6 (Lot 1380033)		+/- 28.3005 µg/mL	Unstressed
	Purity 99%		+/- 32.5657 µg/mL	Stressed
2	Chlorobenzene-d5	2,518.2 µg/mL	+/- 14.6410 µg/mL	Gravimetric
	CAS # 3114-55-4 (Lot PR-23926)		+/- 28.3963 µg/mL	Unstressed
	Purity 99%		+/- 32.6760 µg/mL	Stressed
3	1,4-Dichlorobenzene-d4	2,511.6 µg/mL	+/- 14.6027 µg/mL	Gravimetric
	CAS # 3855-82-1 (Lot PR-18488)		+/- 28.3219 µg/mL	Unstressed
	Purity 99%		+/- 32.5903 µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

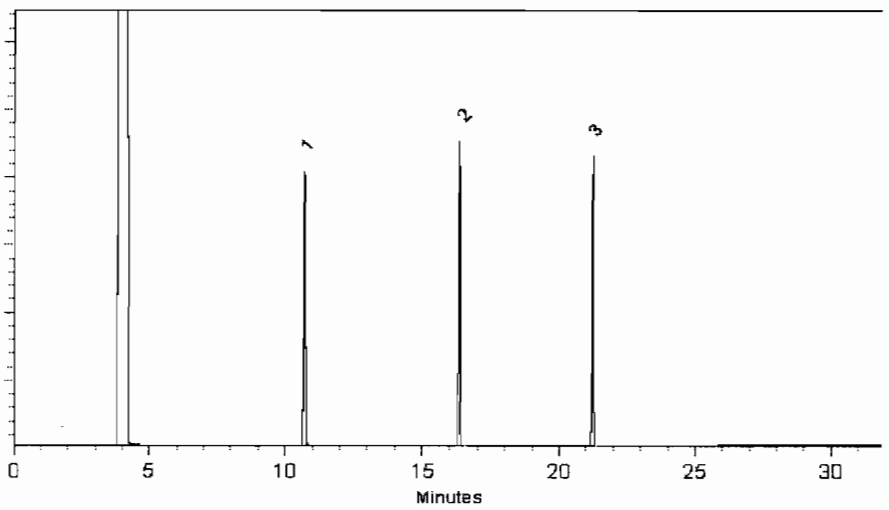
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Cheryl Graham

Cheryl Graham - Mix Technician

Date Mixed: 01-Sep-2015 **Balance:** 1127510105

Diane Shaffer

Diane Shaffer - QA Analyst

Date Passed: 03-Sep-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260 IS(2014)_00031

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30241 **Lot No.:** A0113698

Description : 8260A Internal Standard Mix

8260A Internal Standard Mix 2,500 µg/mL, P&T Methanol, 1mL/ampul

RECD 3-16-16 JDH

870891-895

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : September 30, 2020 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Fluorobenzene **CAS #** 462-06-6 (Lot 1380033) **Purity** 99%	2,509.7 µg/mL	+/- 14.5916 µg/mL +/- 28.3005 µg/mL +/- 32.5657 µg/mL	Gravimetric Unstressed Stressed
2	Chlorobenzene-d5 **CAS #** 3114-55-4 (Lot PR-23926) **Purity** 99%	2,518.2 µg/mL	+/- 14.6410 µg/mL +/- 28.3963 µg/mL +/- 32.6760 µg/mL	Gravimetric Unstressed Stressed
3	1,4-Dichlorobenzene-d4 **CAS #** 3855-82-1 (Lot PR-18488) **Purity** 99%	2,511.6 µg/mL	+/- 14.6027 µg/mL +/- 28.3219 µg/mL +/- 32.5903 µg/mL	Gravimetric Unstressed Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

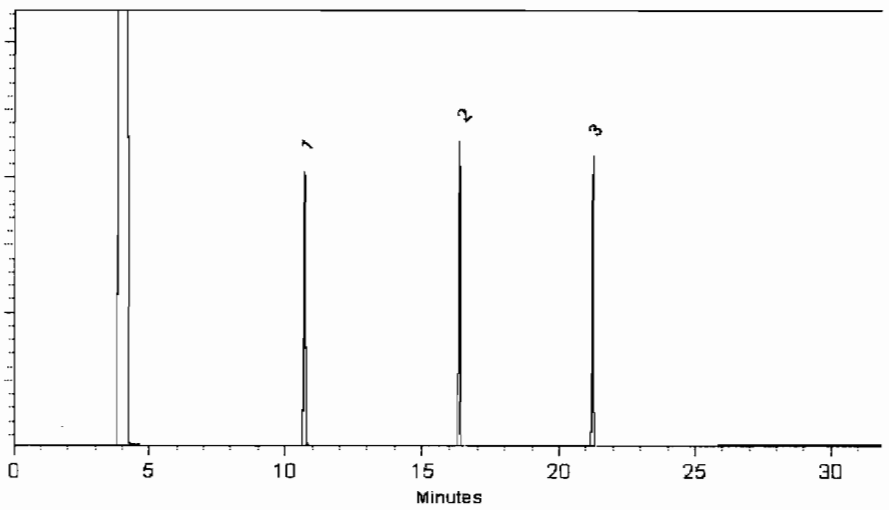
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Cheryl Graham - Mix Technician

Date Mixed: 01-Sep-2015 **Balance:** 1127510105

Diane Shaffer - QA Analyst

Date Passed: 03-Sep-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260_2_CLEVE_00043

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited Reference Material Producer
Certificate #3222.01

ACCREDITED
ISO/IEC 17025 Accredited Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569723 **Lot No.:** A0115628

Description : 8260 List 1 / Std #4 2-CEVE (2015)

8260 List 1 / Std #4 2-CEVE (2015) 2,500 ug/ml, P&T Methanol, 1 ml/ampul

REC'D 7-7-16
JAT
960548-550

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : November 30, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	2-Chloroethyl vinyl ether	2,509.2 µg/mL	+/- 14.5887	µg/mL	Gravimetric
	CAS # 110-75-8 (Lot MKBK2735V)		+/- 53.7223	µg/mL	Unstressed
	Purity 99%		+/- 55.2841	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Tech Tips:
Degradation of tetrachloroethylene to pentachloroethane may occur if solutions containing 2-chloroethyl vinyl ether are combined with solutions that contain tetrachloroethylene.

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

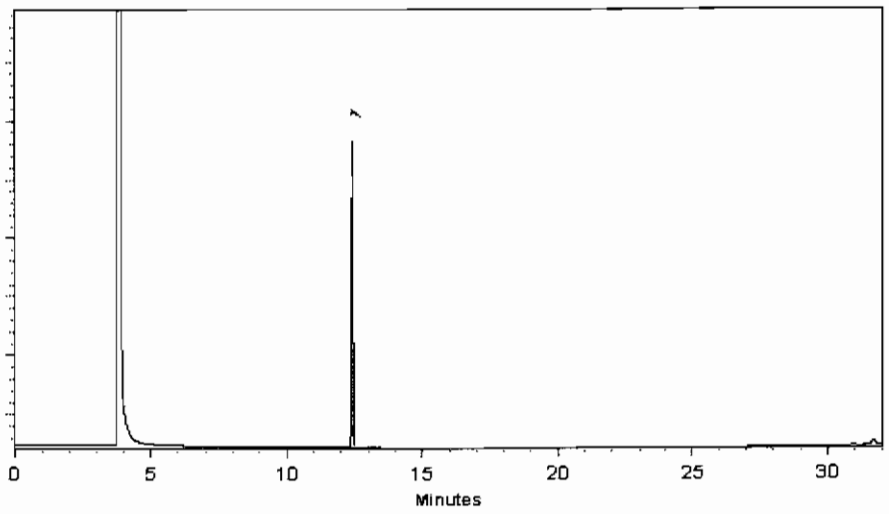
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Cheryl Graham - Mix Technician

Date Mixed: 24-Nov-2015 **Balance:** B251644995

Jennifer L. Pollino - QC Analyst

Date Passed: 30-Nov-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260_Surr_00038

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

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ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

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ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

Certificate of Analysis

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 567650 **Lot No.:** A0115812

Description : 8260 Surrogate Standard

8260 Surrogate Standard 2,500 ug/ml, P&T Methanol, 5 ml/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : December 31, 2020 **Storage:** 0°C or colder

REC'D 3-16-16
JDH

870896,898-901

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)			
1	Dibromofluoromethane		2,503.1 µg/mL	+/-	14.5534	µg/mL	Gravimetric
	CAS # 1868-53-7	(Lot 022012)		+/-	140.3482	µg/mL	Unstressed
	Purity 99%			+/-	143.6322	µg/mL	Stressed
2	1,2-Dichloroethane-d4		2,500.1 µg/mL	+/-	14.5360	µg/mL	Gravimetric
	CAS # 17060-07-0	(Lot 14C-191)		+/-	140.1800	µg/mL	Unstressed
	Purity 99%			+/-	143.4600	µg/mL	Stressed
3	Toluene-d8		2,505.0 µg/mL	+/-	14.5643	µg/mL	Gravimetric
	CAS # 2037-26-5	(Lot PR-26282)		+/-	140.4529	µg/mL	Unstressed
	Purity 99%			+/-	143.7393	µg/mL	Stressed
4	1-Bromo-4-fluorobenzene (BFB)		2,501.1 µg/mL	+/-	14.5418	µg/mL	Gravimetric
	CAS # 460-00-4	(Lot 20401KOV)		+/-	140.2361	µg/mL	Unstressed
	Purity 99%			+/-	143.5174	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

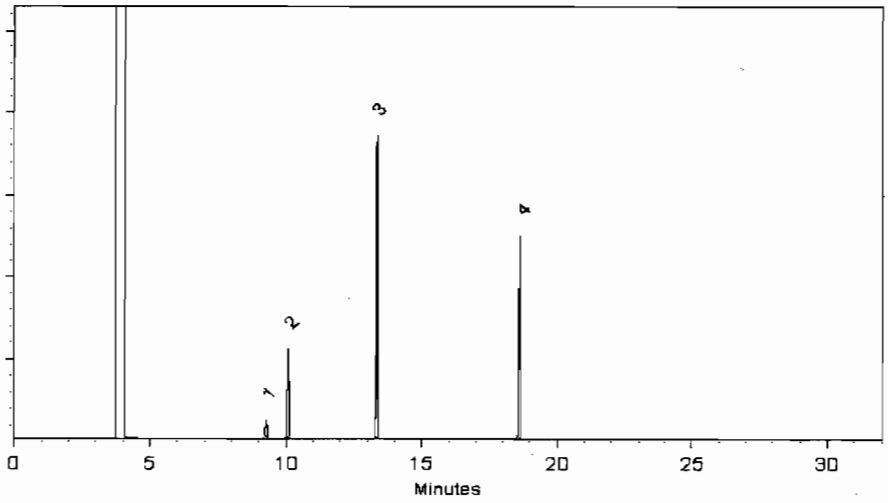
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Brandon Cook - Mix Technician

Date Mixed: 07-Dec-2015 **Balance:** 1127510105

Jennifer L. Pollino - QC Analyst

Date Passed: 10-Dec-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260_Surr_00039

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 567650 **Lot No.:** A0115812

Description : 8260 Surrogate Standard

8260 Surrogate Standard 2,500 ug/ml, P&T Methanol, 5 ml/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : December 31, 2020 **Storage:** 0°C or colder

REC'D 7-7-16
JDH
960589-590

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Dibromofluoromethane	2,503.1 µg/mL	+/- 14.5534 µg/mL	Gravimetric
	CAS # 1868-53-7 (Lot 022012)		+/- 140.3482 µg/mL	Unstressed
	Purity 99%		+/- 143.6322 µg/mL	Stressed
2	1,2-Dichloroethane-d4	2,500.1 µg/mL	+/- 14.5360 µg/mL	Gravimetric
	CAS # 17060-07-0 (Lot 14C-191)		+/- 140.1800 µg/mL	Unstressed
	Purity 99%		+/- 143.4600 µg/mL	Stressed
3	Toluene-d8	2,505.0 µg/mL	+/- 14.5643 µg/mL	Gravimetric
	CAS # 2037-26-5 (Lot PR-26282)		+/- 140.4529 µg/mL	Unstressed
	Purity 99%		+/- 143.7393 µg/mL	Stressed
4	1-Bromo-4-fluorobenzene (BFB)	2,501.1 µg/mL	+/- 14.5418 µg/mL	Gravimetric
	CAS # 460-00-4 (Lot 20401KOV)		+/- 140.2361 µg/mL	Unstressed
	Purity 99%		+/- 143.5174 µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

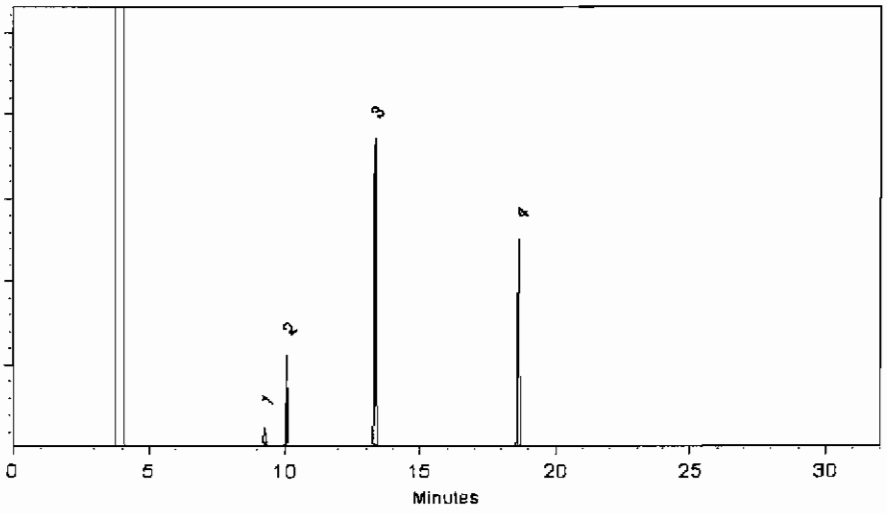
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Brandon Cook - Mix Technician

Date Mixed: 07-Dec-2015 **Balance:** 1127510105

Jennifer L. Pollino - QC Analyst

Date Passed: 10-Dec-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260Custom1_00041

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

Catalog No: S-26138
Description: Custom VOC Standard
Lot: 215101095-01
Solvent: Methanol
Hazards: **HIGHLY FLAMMABLE** - *Refer to SDS for safety info*

Danger 2

Date Certified: Jul 25, 2016
Expiration: Jul 25, 2017
Sample Size: 1 mL
Components: 2
Storage Condition: Refrig (0-5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes

Included on ISO Guide 34 Scope of Accreditation: Yes

Component	CAS #	Purity % (GC/FID)	Prepared Concentration[1] (µg/mL)	Certified Analyte Concentration[2] (µg/mL)
Freon 114	76-14-2	99.0	2013	1993
Nonanal	124-19-6	100.0	2004	2004

REC'D 7-26-16
JDH

962484-488

A product with e suffix (-1A, -2B, etc. or -01, -02, etc.) on its lot number has had its expiration date extended and is identical to the same lot number without the suffix.

[1] All weights are traceable through NIST, Test No. 822-275872-11

[2] Certified Analyte Concentration = Purity x Prepared Concentration. The Uncertainty associated with the gravimetric values reported on this certificate is ±0.24%. The CRM Uncertainty calculated for this product is ±5%. These values are the expanded uncertainty and represent an estimated standard deviation equal to the positive square root of the total variation of the uncertainty of components. A normal distribution is assumed and a coverage factor of K=2 is chosen using approximately a 95% confidence level.

Labels and certificates follow U.S. Conventions in reporting numerical values: A comma (,) is used to separate units of one-thousand or greater. A period (.) is used as a decimal place marker.

See raverse side for additional information

Certified By:
Larry Decker, Organic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

CERTIFICATION REPORT

1. **Quality Documentation:** This certificate is designed in accordance with ISO Guide 31 (Reference Materials - Contents of Certificates and Labels) and ISO Guide 35 (Reference Materials – General and Statistical Principles for Certification).

2. **Quality Standards:**

   ISO Guide 34 - General Requirements for the Competence of Reference Material Producers ANAB Certificate Number AR-1463

   ISO/IEC 17025 - General Requirements for the Competence of Testing and Calibration Laboratories ANAB Certificate Number AT-1339

   ISO 9001 - Quality Management System - Requirements Eagle Registrations Certificate Number 3774

3. **Intended Use:** The product covered by this certificate is designed for calibration or for use in quality control procedures for the specified chemical compounds listed on the reverse side. This product can be used for quantification and/or identification. This product can also be used as a reference material to validate analytical procedures, subject to the conditions under Section 11. If dilution is required, use only Class A glassware and diluent compatible with all certified analytes in this preparation. All solutions should be thoroughly mixed prior to use.

4. **Raw Materials:** Reference standards are prepared from the highest quality starting materials with defined purities. All analytes and solvents are obtained from pre-qualified vendors and then analyzed or evaluated prior to use.

5. **Manufacturing:** All balances are calibrated daily using an in-house procedure with weights that are compared annually to master weights and traceable to NIST. The balances are also calibrated annually by an ISO/IEC 17025 accredited calibration laboratory. Please refer to the NIST test number listed on the front of this certificate. Class A glassware is used in the manufacture and quality control of all standards and calibrated using an in-house procedure. Good Laboratory Practices have been used throughout the preparation of this CRM.

6. **Homogeneity Assessment:** Homogeneity of the finished product is assessed by analyzing sample batches or by other methods consistent with the intended use of the product and by procedures that comply with the appropriate Quality System requirements, and ISO Guide 35.

7. **Stability Assessment:** The manufacturer guarantees the stability of this solution through the expiration date stated on the label, when handled and stored according to the conditions stated on the label. To ensure a uniform solution, mix the contents of the sealed container thoroughly prior to use. Care should be taken not to contaminate the contents of the original container.

8. **Analytical Quality Control:** Products are tested by validated analytical methods specified in the manufacturer's quality system.

9. **Uncertainty Statistics and Confidence Limits:** The uncertainty values as stated on the face of this certificate have been determined using the EURACHEM/CITAC Guide. We report a combined expanded uncertainty equal to the positive square root of the total variance of the uncertainty of the components using the following formula: $u_m = \sqrt{(u(P))^2 + (u(m))^2 + (u(V))^2}$. The expanded uncertainty, U_{CRM} assumes a normal distribution and a coverage factor of k=2 is chosen using approximately a 95% confidence level. The U_{CRM} for organic products is ±5%, the U_{CRM} for inorganic products is ±2%.

10. **Warranties:** The manufacturer warrants that its products shall conform to the description of such products as provided in its catalog or on the specific product label. This warranty is exclusive, and the manufacturer makes no other warranty, express or implied, including any implied warranty of merchantability or fitness for any particular purpose.

11. **Legal Notice and Limit of Liability:** This product is for routine laboratory analysis and research purposes only. Due to the hazardous nature, only trained personnel should handle this product. The company's liability will be limited to replacement of product or refund of purchase price. Notice of claims must be made within thirty (30) days from date of delivery.

Reagent

8260Cyclohexa_00043

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

ACCREDITED
ISO Guide 34 Accredited Reference Material Producer
Certificate #3222.01

Certificate of Analysis

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569727 **Lot No.:** A0116621

Description : 8260 List 2/ Std #3 Cyclohexanone (2015)

8260 List 2/ Std #3 Cyclohexanone (2015) 25,000 µg/ml, Water, 1 ml/ampul

REC'D 7-7-16
JDH
915359
960546 -SA7

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : January 31, 2019 **Storage:** 10°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Cyclohexanone	25,086.7 µg/mL	+/- 146.8879	µg/mL	Gravimetric
	CAS # 108-94-1 (Lot MKBN5282V)		+/- 1,513.6896	µg/mL	Unstressed
	Purity 99%		+/- 1,517.2828	µg/mL	Stressed

Solvent: Water
CAS # 7732-18-5
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

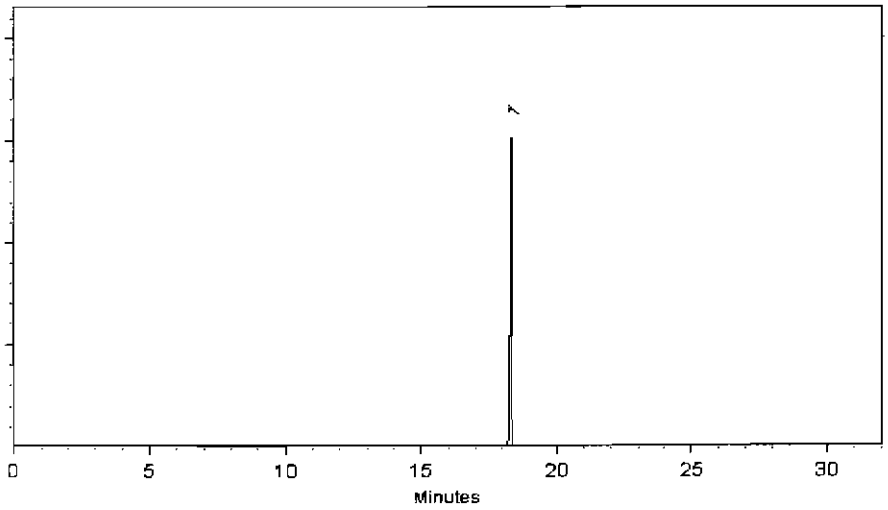
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Cheryl Graham - Mix Technician

Date Mixed: 17-Jan-2016 **Balance:** 1125113331

Amanda Miller - QC Analyst

Date Passed: 19-Jan-2016

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260Gases_00170

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

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ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569722 **Lot No.:** A0115012

Description : 8260 List 1 / Std #3 Gases (2015)

8260 List 1 / Std #3 Gases (2015) 2,500 ug/ml, P&T Methanol, 1 ml/ampul

REC'D 7-14-16 JDH 960536-545

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : October 31, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Dichlorodifluoromethane (CFC-12)	2,502.3 µg/mL	+/- 17.1236 µg/mL	Gravimetric
	CAS # 75-71-8 (Lot Q167-08)		+/- 140.5935 µg/mL	Unstressed
	Purity 99%		+/- 143.8698 µg/mL	Stressed
2	Chloromethane (methyl chloride)	2,506.2 µg/mL	+/- 15.8909 µg/mL	Gravimetric
	CAS # 74-87-3 (Lot SHBF7067V)		+/- 140.6631 µg/mL	Unstressed
	Purity 99%		+/- 143.9478 µg/mL	Stressed
3	Vinyl chloride	2,507.2 µg/mL	+/- 16.0743 µg/mL	Gravimetric
	CAS # 75-01-4 (Lot 25LPST)		+/- 140.7405 µg/mL	Unstressed
	Purity 99%		+/- 144.0261 µg/mL	Stressed
4	1,3-Butadiene	2,517.0 µg/mL	+/- 17.1894 µg/mL	Gravimetric
	CAS # 106-99-0 (Lot SHBF3387V)		+/- 141.4157 µg/mL	Unstressed
	Purity 99%		+/- 144.7114 µg/mL	Stressed
5	Bromomethane (methyl bromide)	2,511.3 µg/mL	+/- 17.3826 µg/mL	Gravimetric
	CAS # 74-83-9 (Lot 101604)		+/- 141.1222 µg/mL	Unstressed
	Purity 99%		+/- 144.4097 µg/mL	Stressed
6	Chloroethane (ethyl chloride)	2,497.4 µg/mL	+/- 16.0992 µg/mL	Gravimetric
	CAS # 75-00-3 (Lot SHBD1717V)		+/- 140.2015 µg/mL	Unstressed
	Purity 99%		+/- 143.4741 µg/mL	Stressed
7	Dichlorofluoromethane (CFC-21)	2,516.3 µg/mL	+/- 19.2032 µg/mL	Gravimetric
	CAS # 75-43-4 (Lot Q9B-58)		+/- 141.6354 µg/mL	Unstressed
	Purity 99%		+/- 144.9242 µg/mL	Stressed

8	Trichlorofluoromethane (CFC-11)		2.512.2	µg/mL	+/-	18.6489	µg/mL	Gravimetric
	CAS # 75-69-4	(Lot SHBF6387V)			+/-	141.3341	µg/mL	Unstressed
	Purity 99%				+/-	144 6191	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

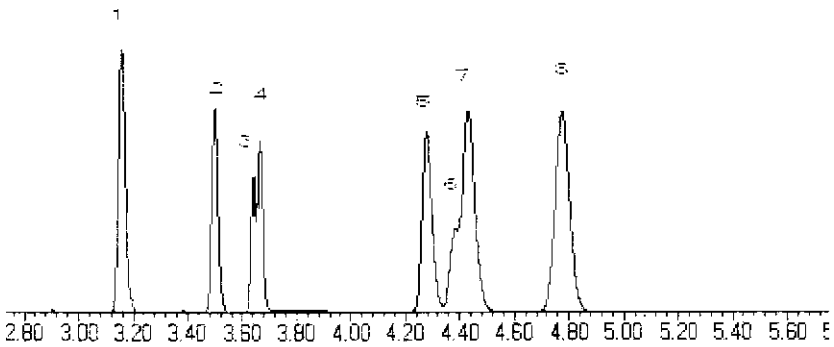
Carrier Gas:
helium-constant flow 2.0 mL/min

Temp. Program:
40°C (hold 6 min.) to 100°C
@ 6°C/min.

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Kendra Swope - Mix Technician

Date Mixed: 29-Oct-2015 **Balance:** 1125113331

Jennifer L. Pollino - QC Analyst

Date Passed: 02-Nov-2015

Manufactured under Restek's ISO 9001:2008
Registered Quality System
Certificate #FM 80397

Reagent

8260Gases_00171

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

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Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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Catalog No. : 569722 **Lot No.:** A0115012

Description : 8260 List 1 / Std #3 Gases (2015)

8260 List 1 / Std #3 Gases (2015) 2,500 ug/ml, P&T Methanol, 1 ml/ampul

REC'D 7-14-16 JDH
960536-545

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : October 31, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Dichlorodifluoromethane (CFC-12) **CAS #** 75-71-8 (Lot Q167-08) **Purity** 99%	2,502.3 µg/mL	+/- 17.1236 µg/mL +/- 140.5935 µg/mL +/- 143.8698 µg/mL	Gravimetric Unstressed Stressed
2	Chloromethane (methyl chloride) **CAS #** 74-87-3 (Lot SHBF7067V) **Purity** 99%	2,506.2 µg/mL	+/- 15.8909 µg/mL +/- 140.6631 µg/mL +/- 143.9478 µg/mL	Gravimetric Unstressed Stressed
3	Vinyl chloride **CAS #** 75-01-4 (Lot 25LPST) **Purity** 99%	2,507.2 µg/mL	+/- 16.0743 µg/mL +/- 140.7405 µg/mL +/- 144.0261 µg/mL	Gravimetric Unstressed Stressed
4	1,3-Butadiene **CAS #** 106-99-0 (Lot SHBF3387V) **Purity** 99%	2,517.0 µg/mL	+/- 17.1894 µg/mL +/- 141.4157 µg/mL +/- 144.7114 µg/mL	Gravimetric Unstressed Stressed
5	Bromomethane (methyl bromide) **CAS #** 74-83-9 (Lot 101604) **Purity** 99%	2,511.3 µg/mL	+/- 17.3826 µg/mL +/- 141.1222 µg/mL +/- 144.4097 µg/mL	Gravimetric Unstressed Stressed
6	Chloroethane (ethyl chloride) **CAS #** 75-00-3 (Lot SHBD1717V) **Purity** 99%	2,497.4 µg/mL	+/- 16.0992 µg/mL +/- 140.2015 µg/mL +/- 143.4741 µg/mL	Gravimetric Unstressed Stressed
7	Dichlorofluoromethane (CFC-21) **CAS #** 75-43-4 (Lot Q9B-58) **Purity** 99%	2,516.3 µg/mL	+/- 19.2032 µg/mL +/- 141.6354 µg/mL +/- 144.9242 µg/mL	Gravimetric Unstressed Stressed

8	Trichlorofluoromethane (CFC-11)		2.512.2	µg/mL	+/-	18.6489	µg/mL	Gravimetric
	CAS # 75-69-4	(Lot SHBF6387V)			+/-	141.3341	µg/mL	Unstressed
	Purity 99%				+/-	144 6191	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

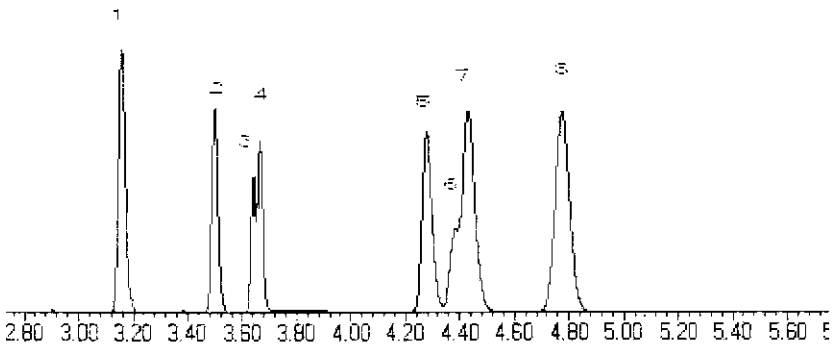
Carrier Gas:
helium-constant flow 2.0 mL/min

Temp. Program:
40°C (hold 6 min.) to 100°C
@ 6°C/min.

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Kendra Swope - Mfg Technician

Date Mixed: 29-Oct-2015 **Balance:** 1125113331

Jennifer L. Pollino - QC Analyst

Date Passed: 02-Nov-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260Gases_00172

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

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Certificate #3222.01

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Testing Laboratory
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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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Catalog No. : 569722 **Lot No.:** A0115012

Description : 8260 List 1 / Std #3 Gases (2015)

8260 List 1 / Std #3 Gases (2015) 2,500 ug/ml, P&T Methanol, 1 ml/ampul

REC'D 7-14-16 JDH 960536-545

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : October 31, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Dichlorodifluoromethane (CFC-12)	2.502.3 µg/mL	+/- 17.1236 µg/mL	Gravimetric
	CAS # 75-71-8 (Lot Q167-08)		+/- 140.5935 µg/mL	Unstressed
	Purity 99%		+/- 143.8698 µg/mL	Stressed
2	Chloromethane (methyl chloride)	2.506.2 µg/mL	+/- 15.8909 µg/mL	Gravimetric
	CAS # 74-87-3 (Lot SHBF7067V)		+/- 140.6631 µg/mL	Unstressed
	Purity 99%		+/- 143.9478 µg/mL	Stressed
3	Vinyl chloride	2.507.2 µg/mL	+/- 16.0743 µg/mL	Gravimetric
	CAS # 75-01-4 (Lot 25LPST)		+/- 140.7405 µg/mL	Unstressed
	Purity 99%		+/- 144.0261 µg/mL	Stressed
4	1,3-Butadiene	2.517.0 µg/mL	+/- 17.1894 µg/mL	Gravimetric
	CAS # 106-99-0 (Lot SHBF3387V)		+/- 141.4157 µg/mL	Unstressed
	Purity 99%		+/- 144.7114 µg/mL	Stressed
5	Bromomethane (methyl bromide)	2.511.3 µg/mL	+/- 17.3826 µg/mL	Gravimetric
	CAS # 74-83-9 (Lot 101604)		+/- 141.1222 µg/mL	Unstressed
	Purity 99%		+/- 144.4097 µg/mL	Stressed
6	Chloroethane (ethyl chloride)	2.497.4 µg/mL	+/- 16.0992 µg/mL	Gravimetric
	CAS # 75-00-3 (Lot SHBD1717V)		+/- 140.2015 µg/mL	Unstressed
	Purity 99%		+/- 143.4741 µg/mL	Stressed
7	Dichlorofluoromethane (CFC-21)	2.516.3 µg/mL	+/- 19.2032 µg/mL	Gravimetric
	CAS # 75-43-4 (Lot Q9B-58)		+/- 141.6354 µg/mL	Unstressed
	Purity 99%		+/- 144.9242 µg/mL	Stressed

8	Trichlorofluoromethane (CFC-11)		2.512.2	µg/mL	+/-	18.6489	µg/mL	Gravimetric
	CAS # 75-69-4	(Lot SHBF6387V)			+/-	141.3341	µg/mL	Unstressed
	Purity 99%				+/-	144 6191	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

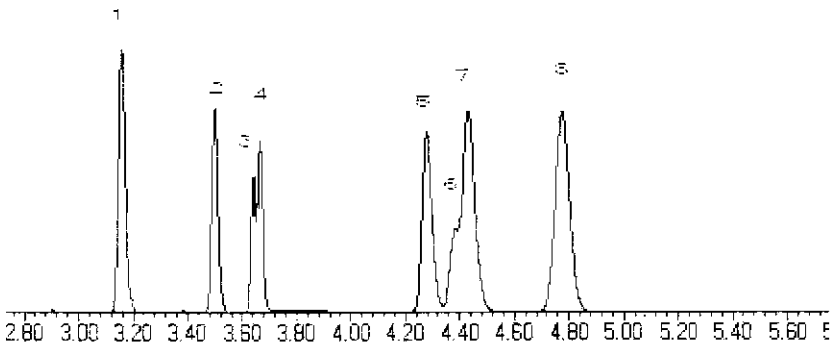
Carrier Gas:
helium-constant flow 2.0 mL/min

Temp. Program:
40°C (hold 6 min.) to 100°C
@ 6°C/min.

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Kendra Swope - Mix Technician

Date Mixed: 29-Oct-2015 **Balance:** 1125113331

Jennifer L. Pollino - QC Analyst

Date Passed: 02-Nov-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260GasesSS_00171

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
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Fax: (814)353-1309

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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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Catalog No. : 569722.sec **Lot No.:** A0115484

Description : 8260 List 1 / Std #3 Gases (2015)

8260 List 1 / Std #3 Gases (2015) 2,500 ug/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : November 30, 2018 **Storage:** 0°C or colder

REC'D 7-7-16
JDH
960573-582

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Dichlorodifluoromethane (CFC-12) **CAS #** 75-71-8.SEC (Lot 22274) **Purity** 99%	2,505.6 µg/mL	+/- 16.6251 µg/mL +/- 140.7169 µg/mL +/- 143.9990 µg/mL	Gravimetric Unstressed Stressed
2	Chloromethane (methyl chloride) **CAS #** 74-87-3.SEC (Lot 18343) **Purity** 99%	2,517.3 µg/mL	+/- 17.3796 µg/mL +/- 141.4522 µg/mL +/- 144.7477 µg/mL	Gravimetric Unstressed Stressed
3	Vinyl chloride **CAS #** 75-01-4.SEC (Lot MKBK6872V) **Purity** 99%	2,510.2 µg/mL	+/- 16.6342 µg/mL +/- 140.9727 µg/mL +/- 144.2609 µg/mL	Gravimetric Unstressed Stressed
4	1,3-Butadiene **CAS #** 106-99-0.SEC (Lot 22331) **Purity** 99%	2,516.5 µg/mL	+/- 17.4874 µg/mL +/- 141.4240 µg/mL +/- 144.7182 µg/mL	Gravimetric Unstressed Stressed
5	Bromomethane (methyl bromide) **CAS #** 74-83-9.SEC (Lot Q119-46) **Purity** 99%	2,511.5 µg/mL	+/- 16.8310 µg/mL +/- 141.0664 µg/mL +/- 144.3557 µg/mL	Gravimetric Unstressed Stressed
6	Chloroethane (ethyl chloride) **CAS #** 75-00-3.SEC (Lot 00004202) **Purity** 99%	2,504.8 µg/mL	+/- 16.4341 µg/mL +/- 140.6469 µg/mL +/- 143.9283 µg/mL	Gravimetric Unstressed Stressed
7	Dichlorofluoromethane (CFC-21) **CAS #** 75-43-4.SEC (Lot SHBC0858V) **Purity** 99%	2,500.5 µg/mL	+/- 16.1659 µg/mL +/- 140.3776 µg/mL +/- 143.6540 µg/mL	Gravimetric Unstressed Stressed

8	Trichlorofluoromethane (CFC-11)		2,524.5	µg/mL	+/-	16.8928	µg/mL	Gravimetric
	CAS # 75-69-4.SEC	(Lot Q12B-59)			+/-	141.7952	µg/mL	Unstressed
	Purity 99%				+/-	145.1017	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

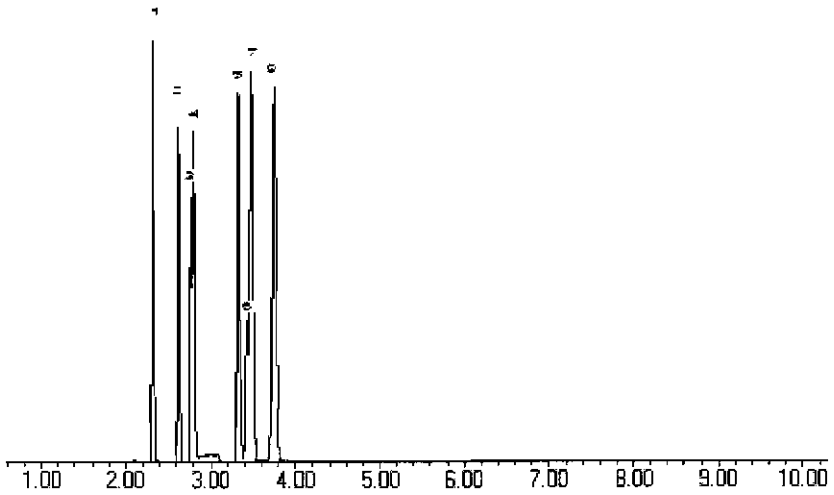
Carrier Gas:
helium-constant flow 2.0 mL/min.

Temp. Program:
40°C (hold 6 min.) to 100°C
@ 6°C/min.

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Lane Kibe - Mix Technician

Date Mixed: 17-Nov-2015 **Balance:** 1127510105

Jennifer L. Pollino - QC Analyst

Date Passed: 10-Dec-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260GasesSS_00173

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ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

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Catalog No. : 569722.sec **Lot No.:** A0115484

Description : 8260 List 1 / Std #3 Gases (2015)

8260 List 1 / Std #3 Gases (2015) 2,500 ug/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : November 30, 2018 **Storage:** 0°C or colder

REC'D 7-7-16
JDH
960573-582

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Dichlorodifluoromethane (CFC-12) **CAS #** 75-71-8.SEC (Lot 22274) **Purity** 99%	2,505.6 µg/mL	+/- 16.6251 +/- 140.7169 +/- 143.9990	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
2	Chloromethane (methyl chloride) **CAS #** 74-87-3.SEC (Lot 18343) **Purity** 99%	2,517.3 µg/mL	+/- 17.3796 +/- 141.4522 +/- 144.7477	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
3	Vinyl chloride **CAS #** 75-01-4.SEC (Lot MKBK6872V) **Purity** 99%	2,510.2 µg/mL	+/- 16.6342 +/- 140.9727 +/- 144.2609	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
4	1,3-Butadiene **CAS #** 106-99-0.SEC (Lot 22331) **Purity** 99%	2,516.5 µg/mL	+/- 17.4874 +/- 141.4240 +/- 144.7182	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
5	Bromomethane (methyl bromide) **CAS #** 74-83-9.SEC (Lot Q119-46) **Purity** 99%	2,511.5 µg/mL	+/- 16.8310 +/- 141.0664 +/- 144.3557	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
6	Chloroethane (ethyl chloride) **CAS #** 75-00-3.SEC (Lot 00004202) **Purity** 99%	2,504.8 µg/mL	+/- 16.4341 +/- 140.6469 +/- 143.9283	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
7	Dichlorofluoromethane (CFC-21) **CAS #** 75-43-4.SEC (Lot SHBC0858V) **Purity** 99%	2,500.5 µg/mL	+/- 16.1659 +/- 140.3776 +/- 143.6540	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

8	Trichlorofluoromethane (CFC-11)		2,524.5	µg/mL	+/-	16.8928	µg/mL	Gravimetric
	CAS # 75-69-4.SEC	(Lot Q12B-59)			+/-	141.7952	µg/mL	Unstressed
	Purity 99%				+/-	145.1017	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

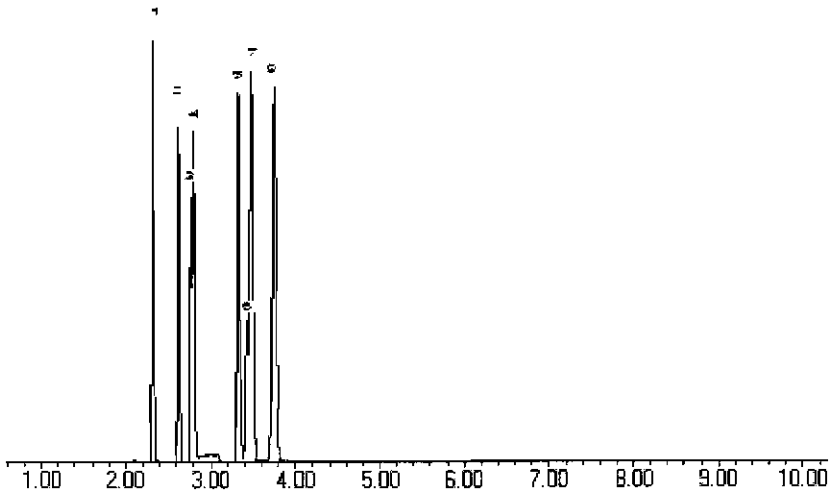
Carrier Gas:
helium-constant flow 2.0 mL/min.

Temp. Program:
40°C (hold 6 min.) to 100°C
@ 6°C/min.

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



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Lane Kibe - Mix Technician

Date Mixed: 17-Nov-2015 **Balance:** 1127510105

Jennifer L. Pollino - QC Analyst

Date Passed: 10-Dec-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260Ketones_00043

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110 Benner Circle
Bellefonte, PA 16823-8812
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Fax: (814)353-1309

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Certificate #3222.01

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ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

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Catalog No. : 569721 **Lot No.:** A0115554

Description : 8260 List 1/ Std #2 Ketones (2015)

8260 List 1/ Std #2 Ketones (2015) 12,500 µg/mL P&T Methanol/Water (90:10), 1 mL/ampul

REC'D 7-14-16
JDH
960533-535

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : November 30, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)		Expanded Uncertainty (95% C.L.; K=2)		
1	Acetone		12,501.8	µg/mL	+/- 72.6865	µg/mL	Gravimetric
	CAS # 67-64-1	(Lot 07196AK)			+/- 754.2890	µg/mL	Unstressed
	Purity 99%				+/- 756.0798	µg/mL	Stressed
2	2-Butanone (MEK)		12,499.7	µg/mL	+/- 72.6744	µg/mL	Gravimetric
	CAS # 78-93-3	(Lot SHBG0444V)			+/- 754.1625	µg/mL	Unstressed
	Purity 98%				+/- 755.9530	µg/mL	Stressed
3	4-Methyl-2-pentanone (MIBK)		12,500.6	µg/mL	+/- 72.6796	µg/mL	Gravimetric
	CAS # 108-10-1	(Lot SHBP9556V)			+/- 754.2166	µg/mL	Unstressed
	Purity 99%				+/- 756.0072	µg/mL	Stressed
4	2-Hexanone		12,502.4	µg/mL	+/- 72.6900	µg/mL	Gravimetric
	CAS # 591-78-6	(Lot MKBT3158V)			+/- 754.3252	µg/mL	Unstressed
	Purity 99%				+/- 756.1161	µg/mL	Stressed

Solvent: P&T Methanol/Water (90:10)
CAS # 67-56-1/7732-18-5
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

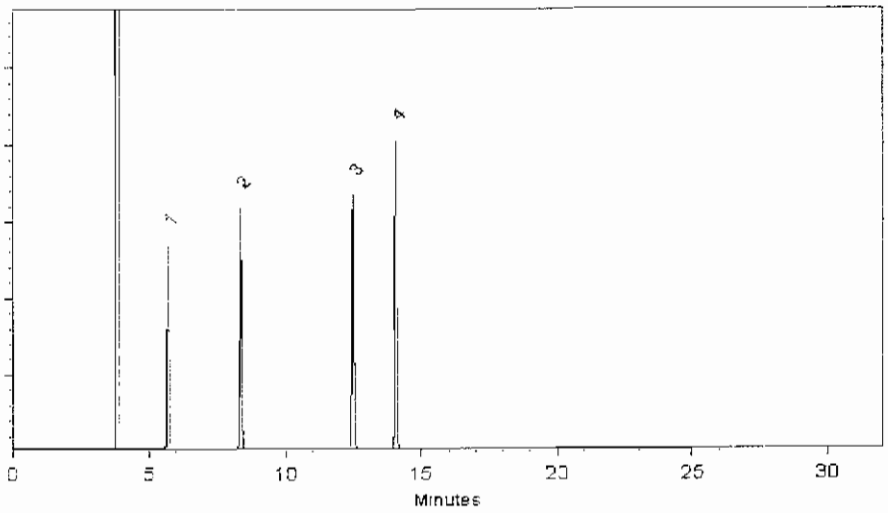
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

F. Joseph Fallon - MD Technician

Date Mixed: 20-Nov-2015 **Balance:** B251644995

Jennifer L. Pollino - QC Analyst

Date Passed: 24-Nov-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260KetonesSS_00042

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569721.sec **Lot No.:** A0112937

Description : 8260 List 1/ Std #2 Ketones (2015)

8260 List 1/ Std #2 Ketones (2015) 12,500 µg/ml, P&T Methanol/Water (90:10), 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : July 31, 2018 **Storage:** 0°C or colder

REC'D 7-7-16
@ JDH
860561 - 563
JDH 7-27-16

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Acetone	12.501.5 µg/mL	+/- 73.1990 µg/mL	Gravimetric
	CAS # 67-64-1.SEC (Lot P14A572)		+/- 665.3586 µg/mL	Unstressed
	Purity 99%		+/- 666.0923 µg/mL	Stressed
2	2-Butanone (MEK)	12.506.0 µg/mL	+/- 73.2254 µg/mL	Gravimetric
	CAS # 78-93-3.SEC (Lot RA58J)		+/- 665.5981 µg/mL	Unstressed
	Purity 99%		+/- 666.3320 µg/mL	Stressed
3	4-Methyl-2-pentanone (MIBK)	12.525.0 µg/mL	+/- 73.3366 µg/mL	Gravimetric
	CAS # 108-10-1.SEC (Lot E29T040)		+/- 666.6094 µg/mL	Unstressed
	Purity 99%		+/- 667.3444 µg/mL	Stressed
4	2-Hexanone	12.513.5 µg/mL	+/- 73.2693 µg/mL	Gravimetric
	CAS # 591-78-6.SEC (Lot ZSVCD-FF)		+/- 665.9973 µg/mL	Unstressed
	Purity 99%		+/- 666.7316 µg/mL	Stressed

Solvent: P&T Methanol/Water (90:10)
CAS # 67-56-1/7732-18-5
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

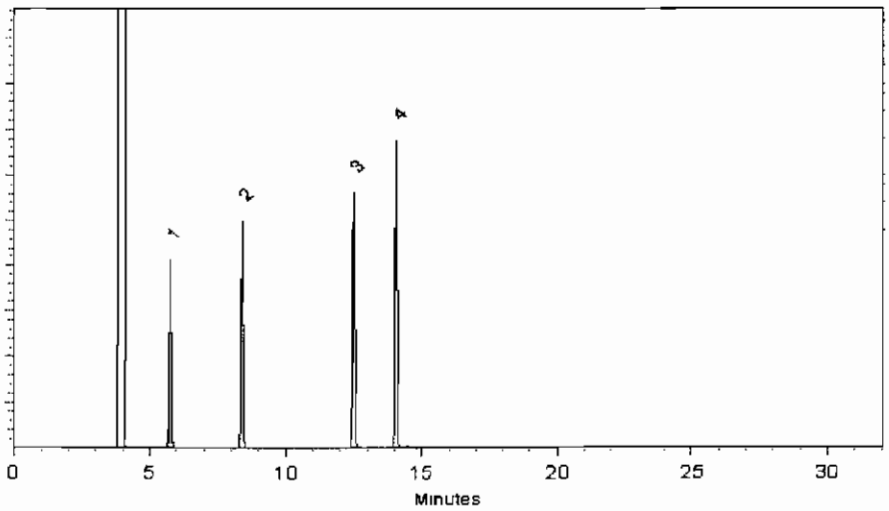
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Mary Ellen Wood - Mix Technician **Date Mixed:** 30-Jul-2015 **Balance:** 1127510105

Jennifer L. Pollino - QC Analyst **Date Passed:** 03-Aug-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260MegaMix_00043

RESTEK®
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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

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Reference Material Producer
Certificate #3323.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3323.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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Catalog No. : 569720 **Lot No.:** A0118177

Description : 8260 List 1 / Std #1 MegaMix (2015)

8260 List 1 / Std #1 MegaMix (2015) 1250-62500 µg/mL P&T Methanol, 1 mL/ampul

REC'D 7-14-16
JDH
960530-532

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : March 31, 2018 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Diethyl ether (ethyl ether) **CAS #** 60-29-7 (Lot SHBG1462V) **Purity** 99%	2,503.5 µg/mL	+/- 14.5556 µg/mL +/- 151.0472 µg/mL +/- 151.4059 µg/mL	Gravimetric Unstressed Stressed
2	1,1,2-Trichlorotrifluoroethane (CFC-113) **CAS #** 76-13-1 (Lot 00004562) **Purity** 99%	2,500.0 µg/mL	+/- 14.5352 µg/mL +/- 150.8361 µg/mL +/- 151.1942 µg/mL	Gravimetric Unstressed Stressed
3	1,1-Dichloroethane **CAS #** 75-34-3 (Lot 00008621) **Purity** 99%	2,500.1 µg/mL	+/- 14.5359 µg/mL +/- 150.8436 µg/mL +/- 151.2017 µg/mL	Gravimetric Unstressed Stressed
4	tert-Butanol (TBA) **CAS #** 75-65-0 (Lot SHBD0362V) **Purity** 99%	25,033.4 µg/mL	+/- 145.5386 µg/mL +/- 1,510.3737 µg/mL +/- 1,513.9596 µg/mL	Gravimetric Unstressed Stressed
5	Iodomethane (methyl iodide) **CAS #** 74-88-4 (Lot SHBF2149V) **Purity** 98%	2,502.9 µg/mL	+/- 14.5522 µg/mL +/- 151.0123 µg/mL +/- 151.3708 µg/mL	Gravimetric Unstressed Stressed
6	Methyl acetate **CAS #** 79-20-9 (Lot SHBD7134V) **Purity** 98%	12,508.6 µg/mL	+/- 72.7223 µg/mL +/- 754.6987 µg/mL +/- 756.4905 µg/mL	Gravimetric Unstressed Stressed
7	Allyl chloride (3-chloropropene) **CAS #** 107-05-1 (Lot SHBF8133V) **Purity** 99%	2,500.0 µg/mL	+/- 19.2743 µg/mL +/- 151.3663 µg/mL +/- 151.7231 µg/mL	Gravimetric Unstressed Stressed

8	Methylene chloride (dichloromethane)		2,521.4	µg/mL	+/-	14.6595	µg/mL	Gravimetric
	CAS # 75-09-2	(Lot SHBF9870V)			+/-	152.1257	µg/mL	Unstressed
	Purity 99%				+/-	152.4869	µg/mL	Stressed
9	Carbon disulfide		2,516.0	µg/mL	+/-	14.6282	µg/mL	Gravimetric
	CAS # 75-15-0	(Lot S20A856)			+/-	151.8014	µg/mL	Unstressed
	Purity 99%				+/-	152.1618	µg/mL	Stressed
10	Acrylonitrile		25,001.3	µg/mL	+/-	145.3518	µg/mL	Gravimetric
	CAS # 107-13-1	(Lot J08Z057)			+/-	1,508.4355	µg/mL	Unstressed
	Purity 99%				+/-	1,512.0167	µg/mL	Stressed
11	cis-1,2-Dichloroethene		2,507.8	µg/mL	+/-	14.5807	µg/mL	Gravimetric
	CAS # 156-59-2	(Lot MKBV2831V)			+/-	151.3079	µg/mL	Unstressed
	Purity 98%				+/-	151.6671	µg/mL	Stressed
12	n-Hexane (C6)		2,512.4	µg/mL	+/-	14.6072	µg/mL	Gravimetric
	CAS # 110-54-3	(Lot SHBF7674V)			+/-	151.5827	µg/mL	Unstressed
	Purity 99%				+/-	151.9426	µg/mL	Stressed
13	1,1-dichloroethene		2,508.1	µg/mL	+/-	14.5825	µg/mL	Gravimetric
	CAS # 75-35-4	(Lot 73896KMV)			+/-	151.3263	µg/mL	Unstressed
	Purity 99%				+/-	151.6856	µg/mL	Stressed
14	2,2-Dichloropropane		2,507.6	µg/mL	+/-	14.5795	µg/mL	Gravimetric
	CAS # 594-20-7	(Lot BCBL9720V)			+/-	151.2961	µg/mL	Unstressed
	Purity 99%				+/-	151.6553	µg/mL	Stressed
15	trans-1,2-Dichloroethene		2,509.8	µg/mL	+/-	14.5919	µg/mL	Gravimetric
	CAS # 156-60-5	(Lot MKBH9850V)			+/-	151.4243	µg/mL	Unstressed
	Purity 99%				+/-	151.7838	µg/mL	Stressed
16	Isobutanol (2-Methyl-1-propanol)		62,815.4	µg/mL	+/-	365.1949	µg/mL	Gravimetric
	CAS # 78-83-1	(Lot SHBD1647V)			+/-	3,789.9281	µg/mL	Unstressed
	Purity 99%				+/-	3,798.9260	µg/mL	Stressed
17	Methyl-tert-butyl ether (MTBE)		2,510.0	µg/mL	+/-	14.5934	µg/mL	Gravimetric
	CAS # 1634-04-4	(Lot MKBV2134V)			+/-	151.4394	µg/mL	Unstressed
	Purity 99%				+/-	151.7990	µg/mL	Stressed
18	Bromochloromethane		2,507.0	µg/mL	+/-	14.5759	µg/mL	Gravimetric
	CAS # 74-97-5	(Lot 00004559)			+/-	151.2584	µg/mL	Unstressed
	Purity 99%				+/-	151.6175	µg/mL	Stressed
19	Tetrahydrofuran		5,025.3	µg/mL	+/-	29.2172	µg/mL	Gravimetric
	CAS # 109-99-9	(Lot SHBG2910V)			+/-	303.1956	µg/mL	Unstressed
	Purity 99%				+/-	303.9154	µg/mL	Stressed
20	1,1,1-trichloroethane		2,508.9	µg/mL	+/-	14.5868	µg/mL	Gravimetric
	CAS # 71-55-6	(Lot B15MW0705)			+/-	151.3715	µg/mL	Unstressed
	Purity 99%				+/-	151.7309	µg/mL	Stressed
21	Cyclohexane		2,503.4	µg/mL	+/-	14.5548	µg/mL	Gravimetric
	CAS # 110-82-7	(Lot MKBV3194V)			+/-	151.0397	µg/mL	Unstressed
	Purity 99%				+/-	151.3983	µg/mL	Stressed
22	1,1-Dichloropropene		2,507.4	µg/mL	+/-	14.5781	µg/mL	Gravimetric
	CAS # 563-58-6	(Lot PR09161302)			+/-	151.2810	µg/mL	Unstressed
	Purity 99%				+/-	151.6402	µg/mL	Stressed
23	carbon tetrachloride		2,505.9	µg/mL	+/-	14.5694	µg/mL	Gravimetric
	CAS # 56-23-5	(Lot SHBG1763V)			+/-	151.1905	µg/mL	Unstressed
	Purity 99%				+/-	151.5495	µg/mL	Stressed

24	n-Heptane (C7) **CAS #** 142-82-5 **Purity** 99%	(Lot MKBV6176V)	2.510.8	µg/mL	+/- +/- +/-	14.5977 151.4847 151.8443	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
25	1,2-Dichloroethane **CAS #** 107-06-2 **Purity** 99%	(Lot MKBV4565V)	2.511.1	µg/mL	+/- +/- +/-	14.5999 151.5073 151.8670	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
26	Benzene **CAS #** 71-43-2 **Purity** 99%	(Lot SHBG1169V)	2.502.9	µg/mL	+/- +/- +/-	14.5519 151.0095 151.3681	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
27	Trichloroethene **CAS #** 79-01-6 **Purity** 99%	(Lot SHBF0943V)	2.500.4	µg/mL	+/- +/- +/-	14.5374 150.8587 151.2169	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
28	Methylcyclohexane **CAS #** 108-87-2 **Purity** 99%	(Lot 50996APV)	2.503.9	µg/mL	+/- +/- +/-	14.5577 151.0699 151.4285	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
29	1,2-Dichloropropane **CAS #** 78-87-5 **Purity** 99%	(Lot 01113D0V)	2.523.5	µg/mL	+/- +/- +/-	14.6718 152.2539 152.6154	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
30	bromodichloromethane **CAS #** 75-27-4 **Purity** 98%	(Lot MKBL1617V)	2.509.0	µg/mL	+/- +/- +/-	14.5878 151.3818 151.7412	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
31	1,4-Dioxane **CAS #** 123-91-1 **Purity** 99%	(Lot SHBG6312V)	50.018.1	µg/mL	+/- -/- +/-	290.7945 3,017.8137 3,024.9785	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
32	Dibromomethane **CAS #** 74-95-3 **Purity** 98%	(Lot 10183283)	2.511.4	µg/mL	+/- +/- +/-	14.6013 151.5222 151.8820	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
33	cis-1,3-Dichloropropene **CAS #** 10061-01-5 **Purity** 99%	(Lot 22622)	2.506.0	µg/mL	+/- +/- +/-	14.5701 151.1981 151.5571	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
34	Toluene **CAS #** 108-88-3 **Purity** 99%	(Lot MKBV5601V)	2.515.5	µg/mL	+/- +/- +/-	14.6253 151.7713 152.1316	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
35	Ethyl methacrylate **CAS #** 97-63-2 **Purity** 99%	(Lot SHBD9190V)	2.503.1	µg/mL	+/- +/- +/-	14.5534 151.0246 151.3832	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
36	trans-1,3-Dichloropropene **CAS #** 10061-02-6 **Purity** 99%	(Lot C584177)	2.508.0	µg/mL	+/- +/- +/-	14.5817 151.3188 151.6780	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
37	1,1,2-Trichloroethane **CAS #** 79-00-5 **Purity** 99%	(Lot FGB011)	2.508.4	µg/mL	+/- +/- +/-	14.5839 151.3414 151.7007	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
38	1,3-Dichloropropane **CAS #** 142-28-9 **Purity** 99%	(Lot BCBG2162V)	2.522.8	µg/mL	+/- +/- +/-	14.6675 152.2087 152.5701	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
39	Tetrachloroethene **CAS #** 127-18-4 **Purity** 99%	(Lot SHBD9374V)	2.518.9	µg/mL	+/- +/- +/-	14.6450 151.9749 152.3357	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed

40	dibromochloromethane		2,505.4	µg/mL	+/-	14.5664	µg/mL	Gravimetric
	CAS # 124-48-1	(Lot MKBQ6577V)			+/-	151.1601	µg/mL	Unstressed
	Purity 98%				+/-	151.5190	µg/mL	Stressed
41	1,2-Dibromoethane (EDB)		2,505.1	µg/mL	+/-	14.5650	µg/mL	Gravimetric
	CAS # 106-93-4	(Lot BCBH3877V)			+/-	151.1453	µg/mL	Unstressed
	Purity 99%				+/-	151.5041	µg/mL	Stressed
42	Chlorobenzene		2,505.6	µg/mL	+/-	14.5679	µg/mL	Gravimetric
	CAS # 108-90-7	(Lot SHBF0505V)			+/-	151.1755	µg/mL	Unstressed
	Purity 99%				+/-	151.5344	µg/mL	Stressed
43	1,1,2,2-Tetrachloroethane		2,505.1	µg/mL	+/-	14.5650	µg/mL	Gravimetric
	CAS # 79-34-5	(Lot CFA4D)			+/-	151.1453	µg/mL	Unstressed
	Purity 99%				+/-	151.5041	µg/mL	Stressed
44	Ethylbenzene		2,506.1	µg/mL	+/-	14.5708	µg/mL	Gravimetric
	CAS # 100-41-4	(Lot SHBG5920V)			+/-	151.2056	µg/mL	Unstressed
	Purity 99%				+/-	151.5646	µg/mL	Stressed
45	m-Xylene		1,254.4	µg/mL	+/-	7.2930	µg/mL	Gravimetric
	CAS # 108-38-3	(Lot SHBF8095V)			+/-	75.6820	µg/mL	Unstressed
	Purity 99%				+/-	75.8617	µg/mL	Stressed
46	p-Xylene		1,250.0	µg/mL	+/-	7.2676	µg/mL	Gravimetric
	CAS # 106-42-3	(Lot SHBF3427V)			+/-	75.4180	µg/mL	Unstressed
	Purity 99%				+/-	75.5971	µg/mL	Stressed
47	o-Xylene		2,506.3	µg/mL	+/-	14.5716	µg/mL	Gravimetric
	CAS # 95-47-6	(Lot SHBF7003V)			+/-	151.2132	µg/mL	Unstressed
	Purity 99%				+/-	151.5722	µg/mL	Stressed
48	Styrene		2,503.9	µg/mL	+/-	14.5577	µg/mL	Gravimetric
	CAS # 100-42-5	(Lot MKBS7097V)			+/-	151.0699	µg/mL	Unstressed
	Purity 99%				+/-	151.4285	µg/mL	Stressed
49	Isopropylbenzene (cumene)		2,509.4	µg/mL	+/-	14.5897	µg/mL	Gravimetric
	CAS # 98-82-8	(Lot 10185056)			+/-	151.4017	µg/mL	Unstressed
	Purity 99%				+/-	151.7612	µg/mL	Stressed
50	bromoform		2,503.3	µg/mL	+/-	14.5541	µg/mL	Gravimetric
	CAS # 75-25-2	(Lot SHBC3410V)			+/-	151.0322	µg/mL	Unstressed
	Purity 99%				+/-	151.3907	µg/mL	Stressed
51	1,1,1,2-Tetrachloroethane		2,505.0	µg/mL	+/-	14.5643	µg/mL	Gravimetric
	CAS # 630-20-6	(Lot MKBS3769V)			+/-	151.1378	µg/mL	Unstressed
	Purity 99%				+/-	151.4966	µg/mL	Stressed
52	chloroform		2,507.8	µg/mL	+/-	14.5803	µg/mL	Gravimetric
	CAS # 67-66-3	(Lot MKBV2089V)			+/-	151.3037	µg/mL	Unstressed
	Purity 99%				+/-	151.6629	µg/mL	Stressed
53	1,2,3-Trichloropropane		2,504.8	µg/mL	+/-	14.5628	µg/mL	Gravimetric
	CAS # 96-18-4	(Lot BCBH8722V)			+/-	151.1227	µg/mL	Unstressed
	Purity 99%				+/-	151.4815	µg/mL	Stressed
54	trans-1,4-dichloro-2-butene		2,499.7	µg/mL	+/-	14.5334	µg/mL	Gravimetric
	CAS # 110-57-6	(Lot MKBP6041V)			+/-	150.8172	µg/mL	Unstressed
	Purity 95%				+/-	151.1753	µg/mL	Stressed
55	n-Propylbenzene		2,507.5	µg/mL	+/-	14.5788	µg/mL	Gravimetric
	CAS # 103-65-1	(Lot MKBJ0332V)			+/-	151.2886	µg/mL	Unstressed
	Purity 99%				+/-	151.6478	µg/mL	Stressed

56	Bromobenzene		2.515.1	µg/mL	+/-	14.6232	µg/mL	Gravimetric
	CAS # 108-86-1	(Lot MKBD4032V)			+/-	151.7486	µg/mL	Unstressed
	Purity 99%				+/-	152.1089	µg/mL	Stressed
57	1.2.4-Trimethylbenzene		2.503.7	µg/mL	+/-	14.5565	µg/mL	Gravimetric
	CAS # 95-63-6	(Lot MKBJ6229V)			+/-	151.0566	µg/mL	Unstressed
	Purity 98%				+/-	151.4152	µg/mL	Stressed
58	2-Chlorotoluene		2.502.1	µg/mL	+/-	14.5476	µg/mL	Gravimetric
	CAS # 95-49-8	(Lot MKBH8892V)			+/-	150.9643	µg/mL	Unstressed
	Purity 99%				+/-	151.3227	µg/mL	Stressed
59	4-Chlorotoluene		2.512.6	µg/mL	+/-	14.6086	µg/mL	Gravimetric
	CAS # 106-43-4	(Lot MKBL7753V)			+/-	151.5978	µg/mL	Unstressed
	Purity 99%				+/-	151.9577	µg/mL	Stressed
60	tert-Butylbenzene		2.507.8	µg/mL	+/-	14.5803	µg/mL	Gravimetric
	CAS # 98-06-6	(Lot S52237V)			+/-	151.3037	µg/mL	Unstressed
	Purity 99%				+/-	151.6629	µg/mL	Stressed
61	1.3.5-Trimethylbenzene		2.502.5	µg/mL	+/-	14.5498	µg/mL	Gravimetric
	CAS # 108-67-8	(Lot BCBJ6245V)			+/-	150.9869	µg/mL	Unstressed
	Purity 99%				+/-	151.3454	µg/mL	Stressed
62	sec-Butylbenzene		2.521 8	µg/mL	+/-	14.6617	µg/mL	Gravimetric
	CAS # 135-98-8	(Lot MKBK3151V)			+/-	152.1484	µg/mL	Unstressed
	Purity 99%				+/-	152.5096	µg/mL	Stressed
63	p-Isopropyltoluene (p-Cymene)		2.502.6	µg/mL	+/-	14.5505	µg/mL	Gravimetric
	CAS # 99-87-6	(Lot MKBK4439V)			+/-	150.9945	µg/mL	Unstressed
	Purity 99%				+/-	151.3529	µg/mL	Stressed
64	1.3-Dichlorobenzene		2.505.8	µg/mL	+/-	14.5686	µg/mL	Gravimetric
	CAS # 541-73-1	(Lot BCBM5751V)			+/-	151.1830	µg/mL	Unstressed
	Purity 99%				+/-	151.5419	µg/mL	Stressed
65	1.4-Dichlorobenzene		2.504.1	µg/mL	+/-	14.5592	µg/mL	Gravimetric
	CAS # 106-46-7	(Lot MKBS1350V)			+/-	151.0850	µg/mL	Unstressed
	Purity 99%				+/-	151.4437	µg/mL	Stressed
66	n-Butylbenzene		2.503.3	µg/mL	+/-	14.5541	µg/mL	Gravimetric
	CAS # 104-51-8	(Lot 09418JJV)			+/-	151.0322	µg/mL	Unstressed
	Purity 99%				+/-	151.3907	µg/mL	Stressed
67	1.2-Dichlorobenzene		2.505.5	µg/mL	+/-	14.5672	µg/mL	Gravimetric
	CAS # 95-50-1	(Lot SHBD7331V)			+/-	151.1679	µg/mL	Unstressed
	Purity 99%				+/-	151.5268	µg/mL	Stressed
68	1.2-Dibromo-3-chloropropane		2.508.6	µg/mL	+/-	14.5854	µg/mL	Gravimetric
	CAS # 96-12-8	(Lot FBL01-JM)			+/-	151.3565	µg/mL	Unstressed
	Purity 99%				+/-	151.7158	µg/mL	Stressed
69	1.2.4-Trichlorobenzene		2.518.6	µg/mL	+/-	14.6435	µg/mL	Gravimetric
	CAS # 120-82-1	(Lot 26896BM)			+/-	151.9598	µg/mL	Unstressed
	Purity 99%				+/-	152.3206	µg/mL	Stressed
70	Hexachlorobutadiene		2.499.9	µg/mL	+/-	14.5344	µg/mL	Gravimetric
	CAS # 87-68-3	(Lot J31X013)			+/-	150.8275	µg/mL	Unstressed
	Purity 98%				+/-	151.1856	µg/mL	Stressed
71	Naphthalene		2.514.9	µg/mL	+/-	14.6217	µg/mL	Gravimetric
	CAS # 91-20-3	(Lot MKBH4351V)			+/-	151.7336	µg/mL	Unstressed
	Purity 99%				+/-	152.0938	µg/mL	Stressed

72	1,2,3-Trichlorobenzene		2,502.0 µg/mL	+/-	14.5468	µg/mL	Gravimetric
	CAS # 87-61-6	(Lot MKBS4859V)		+/-	150.9567	µg/mL	Unstressed
	Purity 99%			+/-	151.3151	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4um
Rtx-502.2 (cat.#10916)

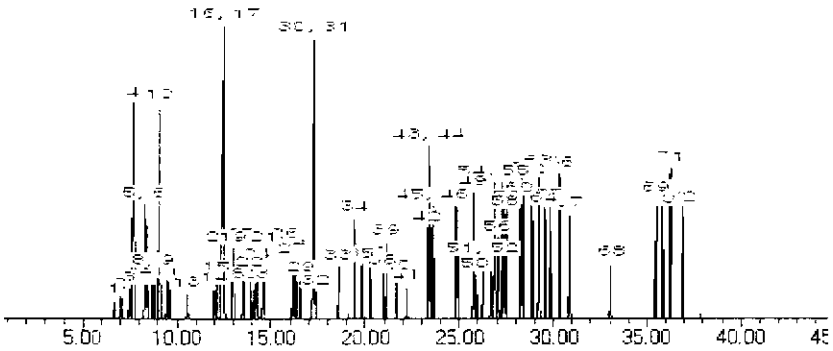
Carrier Gas:
helium-constant pressure 30 psi

Temp. Program:
40°C (hold 6 min.) to 240°C
@ 6°C/min. (hold 10 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Date Mixed: 21-Mar-2016 **Balance:** 1125113331

Jodi E. Breon - QA Analyst

Date Passed: 28-Mar-2016

Manufactured under Restek's ISO 9001:2008
Registered Quality System
Certificate #FM 80397

Reagent

8260MegaMixSS_00042

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

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ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569720.sec **Lot No.:** A0108163

Description : 8260 List 1 / Std #1 MegaMix (2015)

8260 List 1 / Std #1 MegaMix (2015) 1250-62500 µg/ml, P&T Methanol, 1 ml/ampul

REC'D-7-7-16 JDH
9 $60558-560
JDH 7.27.16

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : January 31, 2017 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Diethyl ether (ethyl ether) **CAS #** 60-29-7.SEC (Lot F23X068) **Purity** 99%	2,501.1 µg/mL	+/- 14.5418 µg/mL +/- 133.1044 µg/mL +/- 133.2511 µg/mL	Gravimetric Unstressed Stressed
2	1,1,2-Trichlorotrifluoroethane (CFC-113) **CAS #** 76-13-1.SEC (Lot 18342) **Purity** 99%	2,501.1 µg/mL	+/- 14.5418 µg/mL +/- 133.1044 µg/mL +/- 133.2511 µg/mL	Gravimetric Unstressed Stressed
3	1,1-Dichloroethene **CAS #** 75-35-4.SEC (Lot 903000) **Purity** 99%	2,502.8 µg/mL	+/- 14.5512 µg/mL +/- 133.1908 µg/mL +/- 133.3377 µg/mL	Gravimetric Unstressed Stressed
4	tert-Butanol (TBA) **CAS #** 75-65-0.SEC (Lot XYXDO) **Purity** 98%	25,000.5 µg/mL	+/- 145.3477 µg/mL +/- 1,330.4725 µg/mL +/- 1,331.9397 µg/mL	Gravimetric Unstressed Stressed
5	Iodomethane (methyl iodide) **CAS #** 74-88-4.SEC (Lot A13Y016) **Purity** 97%	2,500.5 µg/mL	+/- 14.5383 µg/mL +/- 133.0732 µg/mL +/- 133.2199 µg/mL	Gravimetric Unstressed Stressed
6	Methyl acetate **CAS #** 79-20-9.SEC (Lot YDGVD) **Purity** 99%	12,500.6 µg/mL	+/- 72.6759 µg/mL +/- 665.2553 µg/mL +/- 665.9889 µg/mL	Gravimetric Unstressed Stressed
7	Allyl chloride (3-chloropropene) **CAS #** 107-05-1.SEC (Lot 5MNOA-DQ) **Purity** 99%	2,501.3 µg/mL	+/- 14.5425 µg/mL +/- 133.1110 µg/mL +/- 133.2578 µg/mL	Gravimetric Unstressed Stressed

8	Methylene chloride (dichloromethane)		2,501.4	µg/mL	+/-	14.5432	µg/mL	Gravimetric
	CAS # 75-09-2.SEC	(Lot FGM02)			+/-	133.1177	µg/mL	Unstressed
	Purity 99%				+/-	133.2645	µg/mL	Stressed
9	Carbon disulfide		2,501.2	µg/mL	+/-	14.5422	µg/mL	Gravimetric
	CAS # 75-15-0.SEC	(Lot MKBL1376V)			+/-	133.1086	µg/mL	Unstressed
	Purity 98%				+/-	133.2554	µg/mL	Stressed
10	Acrylonitrile		25,002.1	µg/mL	+/-	145.3569	µg/mL	Gravimetric
	CAS # 107-13-1.SEC	(Lot CCFKL)			+/-	1,330.5571	µg/mL	Unstressed
	Purity 99%				+/-	1,332.0244	µg/mL	Stressed
11	cis-1,2-Dichloroethene		2,500.3	µg/mL	+/-	14.5367	µg/mL	Gravimetric
	CAS # 156-59-2.SEC	(Lot HGC01-BLKT)			+/-	133.0578	µg/mL	Unstressed
	Purity 99%				+/-	133.2045	µg/mL	Stressed
12	n-Hexane (C6)		2,500.1	µg/mL	+/-	14.5358	µg/mL	Gravimetric
	CAS # 110-54-3.SEC	(Lot K24W001)			+/-	133.0499	µg/mL	Unstressed
	Purity 98%				+/-	133.1967	µg/mL	Stressed
13	1,1-Dichloroethane		2,503.0	µg/mL	+/-	14.5527	µg/mL	Gravimetric
	CAS # 75-34-3.SEC	(Lot 2663100)			+/-	133.2041	µg/mL	Unstressed
	Purity 99%				+/-	133.3510	µg/mL	Stressed
14	2,2-Dichloropropane		2,500.8	µg/mL	+/-	14.5396	µg/mL	Gravimetric
	CAS # 594-20-7.SEC	(Lot GI01)			+/-	133.0844	µg/mL	Unstressed
	Purity 99%				+/-	133.2312	µg/mL	Stressed
15	trans-1,2-Dichloroethene		2,500.2	µg/mL	+/-	14.5362	µg/mL	Gravimetric
	CAS # 156-60-5.SEC	(Lot TS5UB)			+/-	133.0538	µg/mL	Unstressed
	Purity 97%				+/-	133.2005	µg/mL	Stressed
16	Isobutanol (2-Methyl-1-propanol)		62,501.3	µg/mL	+/-	363.3687	µg/mL	Gravimetric
	CAS # 78-83-1.SEC	(Lot PH2XK)			+/-	3,326.1766	µg/mL	Unstressed
	Purity 99%				+/-	3,329.8447	µg/mL	Stressed
17	Methyl-tert-butyl ether (MTBE)		2,500.5	µg/mL	+/-	14.5381	µg/mL	Gravimetric
	CAS # 1634-04-4.SEC	(Lot ZAQTA-MS)			+/-	133.0711	µg/mL	Unstressed
	Purity 99%				+/-	133.2178	µg/mL	Stressed
18	Bromoehloromethane		2,500.6	µg/mL	+/-	14.5388	µg/mL	Gravimetric
	CAS # 74-97-5.SEC	(Lot 345600)			+/-	133.0777	µg/mL	Unstressed
	Purity 99%				+/-	133.2245	µg/mL	Stressed
19	Tetrahydrofuran		5,002.3	µg/mL	+/-	29.0835	µg/mL	Gravimetric
	CAS # 109-99-9.SEC	(Lot XWFLA)			+/-	266.2087	µg/mL	Unstressed
	Purity 99%				+/-	266.5023	µg/mL	Stressed
20	1,1,1-Trichloroethane		2,501.9	µg/mL	+/-	14.5461	µg/mL	Gravimetric
	CAS # 71-55-6.SEC	(Lot 1103200)			+/-	133.1443	µg/mL	Unstressed
	Purity 99%				+/-	133.2911	µg/mL	Stressed
21	Cyclohexane		2,501.5	µg/mL	+/-	14.5439	µg/mL	Gravimetrie
	CAS # 110-82-7.SEC	(Lot YADRA)			+/-	133.1243	µg/mL	Unstressed
	Purity 99%				+/-	133.2711	µg/mL	Stressed
22	1,1-Dichloropropene		2,501.1	µg/mL	+/-	14.5419	µg/mL	Gravimetric
	CAS # 563-58-6.SEC	(Lot 2028500)			+/-	133.1054	µg/mL	Unstressed
	Purity 97%				+/-	133.2522	µg/mL	Stressed
23	Carbon tetrachloride		2,501.9	µg/mL	+/-	14.5465	µg/mL	Gravimetric
	CAS # 56-23-5.SEC	(Lot 11466)			+/-	133.1477	µg/mL	Unstressed
	Purity 98%				+/-	133.2946	µg/mL	Stressed

24	n-Heptane (C7)		2,500.4	µg/mL	+/-	14.5374	µg/mL	Gravimetric
	CAS # 142-82-5.SEC	(Lot OGM01)			+/-	133.0644	µg/mL	Unstressed
	Purity 99%				+/-	133.2112	µg/mL	Stressed
25	1,2-Dichloroethane		2,501.9	µg/mL	+/-	14.5461	µg/mL	Gravimetric
	CAS # 107-06-2.SEC	(Lot FO6PK)			+/-	133.1443	µg/mL	Unstressed
	Purity 99%				+/-	133.2911	µg/mL	Stressed
26	Benzene		2,500.9	µg/mL	+/-	14.5403	µg/mL	Gravimetrie
	CAS # 71-43-2.SEC	(Lot B28Y008)			+/-	133.0911	µg/mL	Unstressed
	Purity 99%				+/-	133.2378	µg/mL	Stressed
27	Trichloroethene		2,500.6	µg/mL	+/-	14.5387	µg/mL	Gravimetrie
	CAS # 79-01-6.SEC	(Lot H04X050)			+/-	133.0760	µg/mL	Unstressed
	Purity 98%				+/-	133.2228	µg/mL	Stressed
28	Methylcyclohexane		2,500.5	µg/mL	+/-	14.5381	µg/mL	Gravimetric
	CAS # 108-87-2.SEC	(Lot 24MSD-CD)			+/-	133.0711	µg/mL	Unstressed
	Purity 99%				+/-	133.2178	µg/mL	Stressed
29	1,2-Dichloropropane		2,500.0	µg/mL	+/-	14.5352	µg/mL	Gravimetric
	CAS # 78-87-5.SEC	(Lot OGG01)			+/-	133.0445	µg/mL	Unstressed
	Purity 99%				+/-	133.1912	µg/mL	Stressed
30	Bromodichloromethane		2,501.5	µg/mL	+/-	14.5439	µg/mL	Gravimetric
	CAS # 75-27-4.SEC	(Lot 10171168)			+/-	133.1243	µg/mL	Unstressed
	Purity 99%				+/-	133.2711	µg/mL	Stressed
31	1,4-Dioxane		50,000.8	µg/mL	+/-	290.6935	µg/mL	Gravimetric
	CAS # 123-91-1.SEC	(Lot CHA4A)			+/-	2,660.9280	µg/mL	Unstressed
	Purity 99%				+/-	2,663.8624	µg/mL	Stressed
32	Dibromomethane		2,500.6	µg/mL	+/-	14.5388	µg/mL	Gravimetric
	CAS # 74-95-3.SEC	(Lot FGI01-OICH)			+/-	133.0777	µg/mL	Unstressed
	Purity 99%				+/-	133.2245	µg/mL	Stressed
33	cis-1,3-Dichloropropene		2,501.0	µg/mL	+/-	14.5410	µg/mL	Gravimetrie
	CAS # 10061-01-5.SEC	(Lot 7ZLXJ-TJ)			+/-	133.0977	µg/mL	Unstressed
	Purity 99%				+/-	133.2445	µg/mL	Stressed
34	Toluene		2,500.1	µg/mL	+/-	14.5359	µg/mL	Gravimetric
	CAS # 108-88-3.SEC	(Lot YND2B-BD)			+/-	133.0511	µg/mL	Unstressed
	Purity 99%				+/-	133.1979	µg/mL	Stressed
35	Ethyl methacrylate		2,500.8	µg/mL	+/-	14.5396	µg/mL	Gravimetric
	CAS # 97-63-2.SEC	(Lot MLWYK-LS)			+/-	133.0844	µg/mL	Unstressed
	Purity 99%				+/-	133.2312	µg/mL	Stressed
36	trans-1,3-Dichloropropene		2,501.6	µg/mL	+/-	14.5444	µg/mL	Gravimetric
	CAS # 10061-02-6.SEC	(Lot 2ECIC-NM)			+/-	133.1282	µg/mL	Unstressed
	Purity 98%				+/-	133.2750	µg/mL	Stressed
37	1,1,2-Trichloroethane		2,501.0	µg/mL	+/-	14.5410	µg/mL	Gravimetrie
	CAS # 79-00-5.SEC	(Lot 732700)			+/-	133.0977	µg/mL	Unstressed
	Purity 99%				+/-	133.2445	µg/mL	Stressed
38	1,3-Dichloropropane		2,500.8	µg/mL	+/-	14.5396	µg/mL	Gravimetric
	CAS # 142-28-9.SEC	(Lot AGN01-EFPC)			+/-	133.0844	µg/mL	Unstressed
	Purity 99%				+/-	133.2312	µg/mL	Stressed
39	Tetrachloroethene		2,500.0	µg/mL	+/-	14.5352	µg/mL	Gravimetric
	CAS # 127-18-4.SEC	(Lot F09W014)			+/-	133.0445	µg/mL	Unstressed
	Purity 99%				+/-	133.1912	µg/mL	Stressed

40	Dibromochloromethane		2,501.8	µg/mL	+/-	14.5454	µg/mL	Gravimetric
	CAS # 124-48-1.SEC	(Lot I13W021)			+/-	133.1377	µg/mL	Unstressed
	Purity 97%				+/-	133.2845	µg/mL	Stressed
41	1,2-Dibromoethane (EDB)		2,502.1	µg/mL	+/-	14.5472	µg/mL	Gravimetric
	CAS # 106-93-4.SEC	(Lot 1368400)			+/-	133.1542	µg/mL	Unstressed
	Purity 98%				+/-	133.3011	µg/mL	Stressed
42	Chlorobenzene		2,501.6	µg/mL	+/-	14.5447	µg/mL	Gravimetric
	CAS # 108-90-7.SEC	(Lot 1161936)			+/-	133.1310	µg/mL	Unstressed
	Purity 99%				+/-	133.2778	µg/mL	Stressed
43	1,1,1,2-Tetrachloroethane		2,500.8	µg/mL	+/-	14.5396	µg/mL	Gravimetric
	CAS # 630-20-6.SEC	(Lot GC01-QSHR)			+/-	133.0844	µg/mL	Unstressed
	Purity 99%				+/-	133.2312	µg/mL	Stressed
44	Ethylbenzene		2,500.3	µg/mL	+/-	14.5367	µg/mL	Gravimetric
	CAS # 100-41-4.SEC	(Lot PI4SE-GR)			+/-	133.0578	µg/mL	Unstressed
	Purity 99%				+/-	133.2045	µg/mL	Stressed
45	m-Xylene		1,250.4	µg/mL	+/-	7.2698	µg/mL	Gravimetric
	CAS # 108-38-3.SEC	(Lot OUKMG-GB)			+/-	66.5422	µg/mL	Unstressed
	Purity 99%				+/-	66.6156	µg/mL	Stressed
46	o-Xylene		2,501.3	µg/mL	+/-	14.5425	µg/mL	Gravimetric
	CAS # 95-47-6.SEC	(Lot FGL01-KTPK)			+/-	133.1110	µg/mL	Unstressed
	Purity 99%				+/-	133.2578	µg/mL	Stressed
47	p-Xylene		1,251.6	µg/mL	+/-	7.2771	µg/mL	Gravimetric
	CAS # 106-42-3.SEC	(Lot GM01)			+/-	66.6087	µg/mL	Unstressed
	Purity 99%				+/-	66.6822	µg/mL	Stressed
48	Styrene		2,500.9	µg/mL	+/-	14.5403	µg/mL	Gravimetric
	CAS # 100-42-5.SEC	(Lot OFIOL-IA)			+/-	133.0911	µg/mL	Unstressed
	Purity 99%				+/-	133.2378	µg/mL	Stressed
49	Isopropylbenzene (cumene)		2,501.3	µg/mL	+/-	14.5425	µg/mL	Gravimetric
	CAS # 98-82-8.SEC	(Lot 2PHXG-IH)			+/-	133.1110	µg/mL	Unstressed
	Purity 99%				+/-	133.2578	µg/mL	Stressed
50	Bromoform		2,501.5	µg/mL	+/-	14.5439	µg/mL	Gravimetric
	CAS # 75-25-2.SEC	(Lot 1039300)			+/-	133.1243	µg/mL	Unstressed
	Purity 99%				+/-	133.2711	µg/mL	Stressed
51	1,1,2,2-Tetrachloroethane		2,502.9	µg/mL	+/-	14.5519	µg/mL	Gravimetric
	CAS # 79-34-5.SEC	(Lot CFA4D-AQ)			+/-	133.1975	µg/mL	Unstressed
	Purity 99%				+/-	133.3444	µg/mL	Stressed
52	Chloroform		2,501.6	µg/mL	+/-	14.5447	µg/mL	Gravimetric
	CAS # 67-66-3.SEC	(Lot 1297547)			+/-	133.1310	µg/mL	Unstressed
	Purity 99%				+/-	133.2778	µg/mL	Stressed
53	1,2,3-Trichloropropane		2,501.9	µg/mL	+/-	14.5465	µg/mL	Gravimetric
	CAS # 96-18-4.SEC	(Lot OGI01)			+/-	133.1477	µg/mL	Unstressed
	Purity 98%				+/-	133.2946	µg/mL	Stressed
54	trans-1,4-Dichloro-2-butene		2,502.7	µg/mL	+/-	14.5510	µg/mL	Gravimetric
	CAS # 110-57-6.SEC	(Lot 100700-2)			+/-	133.1893	µg/mL	Unstressed
	Purity 97%				+/-	133.3362	µg/mL	Stressed
55	n-Propylbenzene		2,500.0	µg/mL	+/-	14.5352	µg/mL	Gravimetric
	CAS # 103-65-1.SEC	(Lot T2HFC-IT)			+/-	133.0445	µg/mL	Unstressed
	Purity 99%				+/-	133.1912	µg/mL	Stressed

56	Bromobenzene		2,501.6	µg/mL	+/-	14.5447	µg/mL	Gravimetric
	CAS # 108-86-1.SEC	(Lot 2FUHG-EM)			+/-	133.1310	µg/mL	Unstressed
	Purity 99%				+/-	133.2778	µg/mL	Stressed
57	1,2,4-Trimethylbenzene		2,502.4	µg/mL	+/-	14.5490	µg/mL	Gravimetric
	CAS # 95-63-6.SEC	(Lot SC7LO-QA)			+/-	133.1709	µg/mL	Unstressed
	Purity 99%				+/-	133.3177	µg/mL	Stressed
58	2-Chlorotoluene		2,500.5	µg/mL	+/-	14.5381	µg/mL	Gravimetric
	CAS # 95-49-8.SEC	(Lot SW8QG-AO)			+/-	133.0711	µg/mL	Unstressed
	Purity 99%				+/-	133.2178	µg/mL	Stressed
59	4-Chlorotoluene		2,500.3	µg/mL	+/-	14.5367	µg/mL	Gravimetric
	CAS # 106-43-4.SEC	(Lot P4XHJ-AO)			+/-	133.0578	µg/mL	Unstressed
	Purity 99%				+/-	133.2045	µg/mL	Stressed
60	tert-Butylbenzene		2,501.6	µg/mL	+/-	14.5447	µg/mL	Gravimetric
	CAS # 98-06-6.SEC	(Lot OGN01)			+/-	133.1310	µg/mL	Unstressed
	Purity 99%				+/-	133.2778	µg/mL	Stressed
61	1,3,5-Trimethylbenzene		2,500.3	µg/mL	+/-	14.5367	µg/mL	Gravimetric
	CAS # 108-67-8.SEC	(Lot FGH02-CMLN)			+/-	133.0578	µg/mL	Unstressed
	Purity 99%				+/-	133.2045	µg/mL	Stressed
62	sec-Butylbenzene		2,500.1	µg/mL	+/-	14.5359	µg/mL	Gravimetric
	CAS # 135-98-8.SEC	(Lot OGN01)			+/-	133.0511	µg/mL	Unstressed
	Purity 99%				+/-	133.1979	µg/mL	Stressed
63	4-Isopropyltoluene (p-cymene)		2,501.6	µg/mL	+/-	14.5447	µg/mL	Gravimetric
	CAS # 99-87-6.SEC	(Lot 1721700)			+/-	133.1310	µg/mL	Unstressed
	Purity 99%				+/-	133.2778	µg/mL	Stressed
64	1,3-Dichlorobenzene		2,501.5	µg/mL	+/-	14.5439	µg/mL	Gravimetric
	CAS # 541-73-1.SEC	(Lot FMDFD-KA)			+/-	133.1243	µg/mL	Unstressed
	Purity 99%				+/-	133.2711	µg/mL	Stressed
65	1,4-Dichlorobenzene		2,500.3	µg/mL	+/-	14.5367	µg/mL	Gravimetric
	CAS # 106-46-7.SEC	(Lot YWKDC-MK)			+/-	133.0578	µg/mL	Unstressed
	Purity 99%				+/-	133.2045	µg/mL	Stressed
66	n-Butylbenzene		2,500.6	µg/mL	+/-	14.5388	µg/mL	Gravimetric
	CAS # 104-51-8.SEC	(Lot OGN01)			+/-	133.0777	µg/mL	Unstressed
	Purity 99%				+/-	133.2245	µg/mL	Stressed
67	1,2-Dichlorobenzene		2,500.0	µg/mL	+/-	14.5352	µg/mL	Gravimetric
	CAS # 95-50-1.SEC	(Lot 4NRGF-OT)			+/-	133.0445	µg/mL	Unstressed
	Purity 99%				+/-	133.1912	µg/mL	Stressed
68	1,2-Dibromo-3-chloropropane		2,500.5	µg/mL	+/-	14.5383	µg/mL	Gravimetric
	CAS # 96-12-8.SEC	(Lot LC00408V)			+/-	133.0732	µg/mL	Unstressed
	Purity 97%				+/-	133.2199	µg/mL	Stressed
69	1,2,4-Trichlorobenzene		2,501.0	µg/mL	+/-	14.5410	µg/mL	Gravimetric
	CAS # 120-82-1.SEC	(Lot OGO01)			+/-	133.0977	µg/mL	Unstressed
	Purity 99%				+/-	133.2445	µg/mL	Stressed
70	Hexachlorobutadiene		2,501.0	µg/mL	+/-	14.5412	µg/mL	Gravimetric
	CAS # 87-68-3.SEC	(Lot 2009400)			+/-	133.0990	µg/mL	Unstressed
	Purity 97%				+/-	133.2458	µg/mL	Stressed
71	Naphthalene		2,500.5	µg/mL	+/-	14.5381	µg/mL	Gravimetric
	CAS # 91-20-3.SEC	(Lot 4KW3H-OO)			+/-	133.0711	µg/mL	Unstressed
	Purity 99%				+/-	133.2178	µg/mL	Stressed

72	1,2,3-Trichlorobenzene		2,502.4	µg/mL	+/-	14.5490	µg/mL	Gravimetric
	CAS # 87-61-6.SEC	(Lot A0043055)			+/-	133.1709	µg/mL	Unstressed
	Purity 99%				+/-	133.3177	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
60m x 0.25mm x 1.4µm
Rtx-502.2 (cat.#10916)

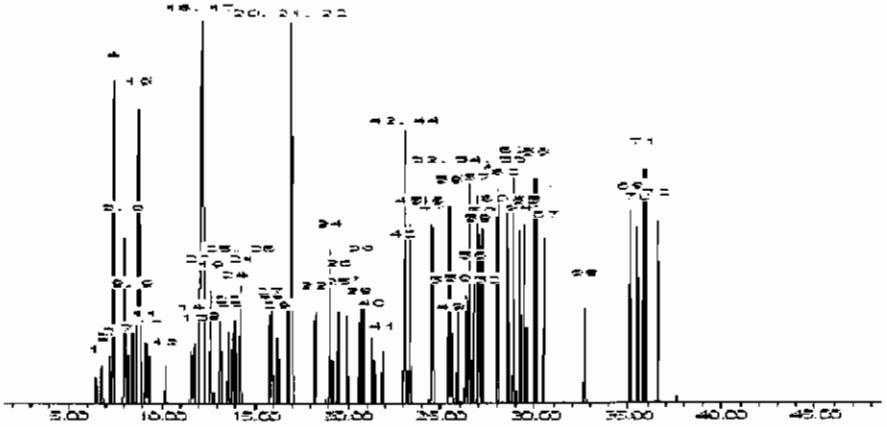
Carrier Gas:
helium-constant pressure 30 psi

Temp. Program:
40°C (hold 6 min.) to 240°C
@ 6°C/min. (hold 10 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
MSD



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Michael J Maye

Date Mixed: 07-Jan-2015 **Balance:** 1127510105

Tyler Brown - QA Analyst

Date Passed: 14-Jan-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260VinAcetat_00045

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

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CERTIFIED REFERENCE MATERIAL

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ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ilac-MRA

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

Certificate of Analysis

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569724 **Lot No.:** A0118759

Description : 8260 List 1 / Std #6 Vinyl Acetate (2015)

8260 List 1 / Std #6 Vinyl Acetate (2015) 5000 ug/ml, P&T Methanol, 1 ml/ampul

REC'D 7-6-16
JDH
946761-7632
JDH 7-6-16

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : October 31, 2016 **Storage:** 0°C or colder

Handling: This product is photosensitive.

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Vinyl acetate	5,002.0 µg/mL	+/- 29.3545 µg/mL	Gravimetric
	CAS # 108-05-4 (Lot STBD7333V)		+/- 301.8192 µg/mL	Unstressed
	Purity 99%		+/- 302.5356 µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Tech Tips:

Vinyl acetate is a volatile organic ester included in the target lists of several US EPA and other methods. Under acidic conditions, esters react with alcohols to form new esters (transesterification). Methanol-based mixes containing halogenated compounds are slightly acidic, so it is important to minimize exposure of vinyl acetate to mixes of halogenated compounds in methanol. For this reason, we offer vinyl acetate in individual solution, and suggest that it be introduced into the working level calibration solution immediately before use. This will minimize problems and ensure more consistent results.

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

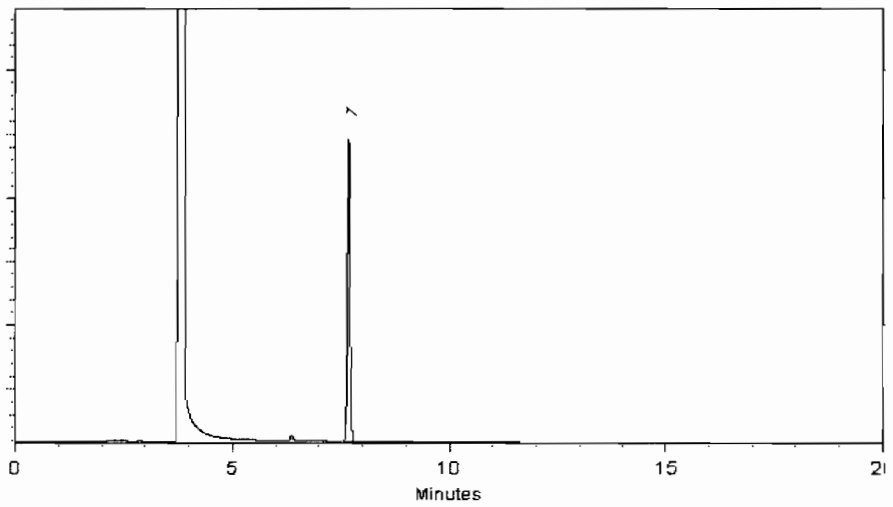
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

F. Joseph Tallon - Mix Technician

Date Mixed: 18-Apr-2016 **Balance:** B251644995

Jodi E. Breon - QA Analyst

Date Passed: 20-Apr-2016

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260VinAcetat_00046

RESTEK
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Fax: (814)353-1309

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Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569724 **Lot No.:** A0118759

Description : 8260 List 1 / Std #6 Vinyl Acetate (2015)

8260 List 1 / Std #6 Vinyl Acetate (2015) 5000 ug/ml, P&T Methanol, 1 ml/ampul

REC'D 7-6-16
JDH
946761-7632
JDH 7-6-16

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : October 31, 2016 **Storage:** 0°C or colder

Handling: This product is photosensitive.

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Vinyl acetate	5,002.0 µg/mL	+/- 29.3545 µg/mL	Gravimetric
	CAS # 108-05-4 (Lot STBD7333V)		+/- 301.8192 µg/mL	Unstressed
	Purity 99%		+/- 302.5356 µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Tech Tips:

Vinyl acetate is a volatile organic ester included in the target lists of several US EPA and other methods. Under acidic conditions, esters react with alcohols to form new esters (transesterification). Methanol-based mixes containing halogenated compounds are slightly acidic, so it is important to minimize exposure of vinyl acetate to mixes of halogenated compounds in methanol. For this reason, we offer vinyl acetate in individual solution, and suggest that it be introduced into the working level calibration solution immediately before use. This will minimize problems and ensure more consistent results.

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

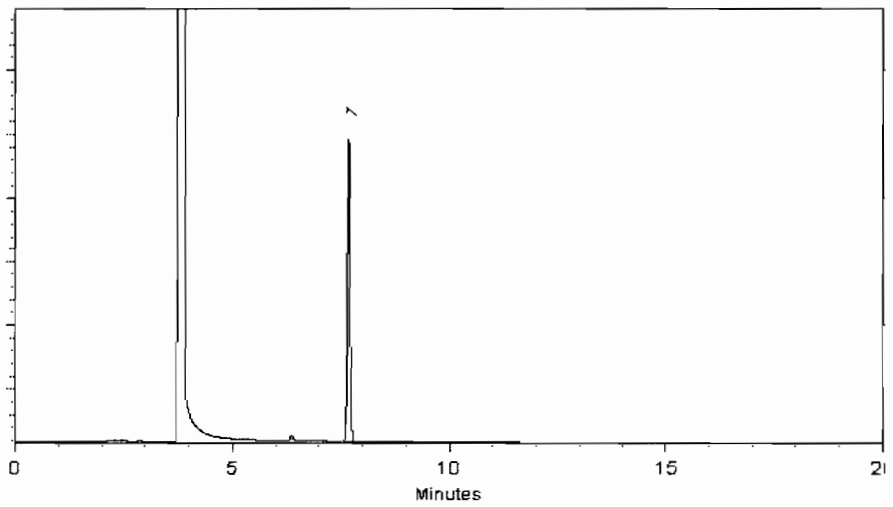
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

F. Joseph Tallon - Mix Technician **Date Mixed:** 18-Apr-2016 **Balance:** B251644995

Jodi E. Breon - QA Analyst **Date Passed:** 20-Apr-2016

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260VinAcetSS_00044

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ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569724.sec **Lot No.:** A0119399

Description : 8260 List 1 / Std #6 Vinyl Acetate (2015)

8260 List 1 / Std #6 Vinyl Acetate (2015) 5000 ug/ml, P&T Methanol, 1 ml/ampul

REC'D 7-6-16
JDH
946806-807

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : November 30, 2016 **Storage:** 0°C or colder

Handling: This product is photosensitive.

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Vinyl acetate	5,009.0 µg/mL	+/- 29.3956	µg/mL	Gravimetric
	CAS # 108-05-4.SEC (Lot F3Z5C)		+/- 302.2416	µg/mL	Unstressed
	Purity 99%		+/- 302.9590	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Tech Tips:

Vinyl acetate is a volatile organic ester included in the target lists of several US EPA and other methods. Under acidic conditions, esters react with alcohols to form new esters (transesterification). Methanol-based mixes containing halogenated compounds are slightly acidic, so it is important to minimize exposure of vinyl acetate to mixes of halogenated compounds in methanol. For this reason, we offer vinyl acetate in individual solution, and suggest that it be introduced into the working level calibration solution immediately before use. This will minimize problems and ensure more consistent results.

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

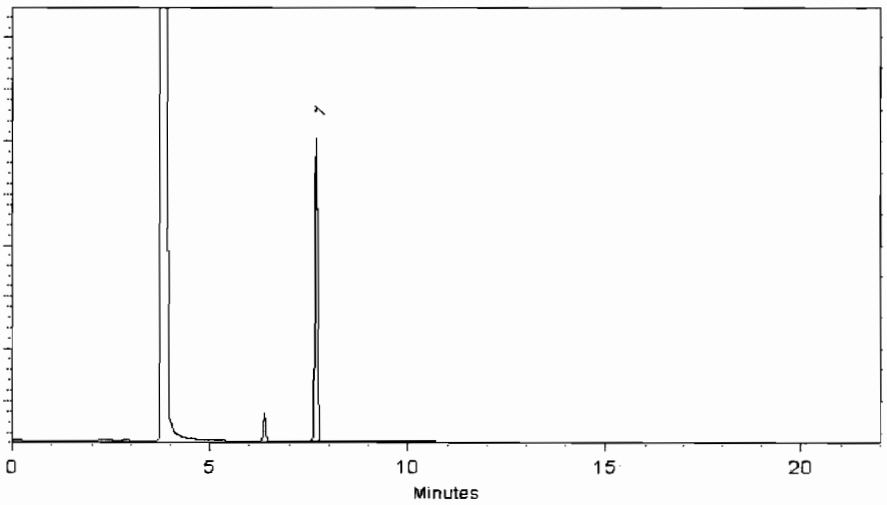
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Michael J Maye

Jennifer L. Pollino - QC Analyst

Date Mixed: 20-May-2016 **Balance:** 1127510105

Date Passed: 24-May-2016

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

8260VinAcetSS_00045

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Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

REC'D 7-6-16
JDH
946806-807

Catalog No. : 569724.sec **Lot No.:** A0119399

Description : 8260 List 1 / Std #6 Vinyl Acetate (2015)

8260 List 1 / Std #6 Vinyl Acetate (2015) 5000 ug/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : November 30, 2016 **Storage:** 0°C or colder

Handling: This product is photosensitive.

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Vinyl acetate	5,009.0 µg/mL	+/- 29.3956	µg/mL	Gravimetric
	CAS # 108-05-4.SEC (Lot F3Z5C)		+/- 302.2416	µg/mL	Unstressed
	Purity 99%		+/- 302.9590	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Tech Tips:

Vinyl acetate is a volatile organic ester included in the target lists of several US EPA and other methods. Under acidic conditions, esters react with alcohols to form new esters (transesterification). Methanol-based mixes containing halogenated compounds are slightly acidic, so it is important to minimize exposure of vinyl acetate to mixes of halogenated compounds in methanol. For this reason, we offer vinyl acetate in individual solution, and suggest that it be introduced into the working level calibration solution immediately before use. This will minimize problems and ensure more consistent results.

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

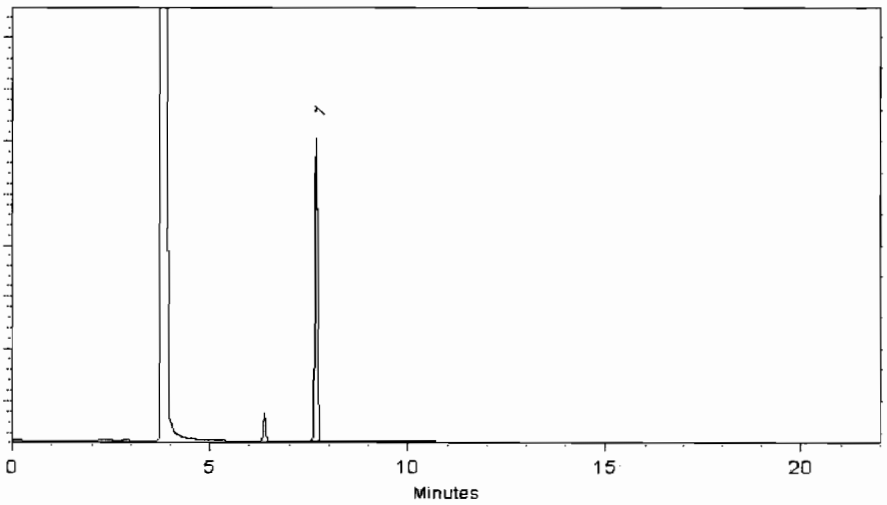
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Michael J Maye

Jennifer L. Pollino - QC Analyst

Date Mixed: 20-May-2016 **Balance:** 1127510105

Date Passed: 24-May-2016

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

Acrolein_00036

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Bellefonte, PA 16823-8812
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Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 568720 **Lot No.:** A0118994

Description : 8260 List 1/Std #5 Acrolein High

8260 List 1/Std #5 Acrolein High 19,750 µg/mL, Water, 1 mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : August 31, 2016 **Storage:** 0°C or colder

Handling: This product is photosensitive.

RCD 7-6-16
JOH
946636-637

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Acrolein	19,761.0 µg/mL	+/- 115.7050	µg/mL	Gravimetric
	CAS # 107-02-8 (Lot 150923JLM)		+/- 633.5998	µg/mL	Unstressed
	Purity 99%		+/- 736.4904	µg/mL	Stressed

Solvent: Water
CAS # 7732-18-5
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

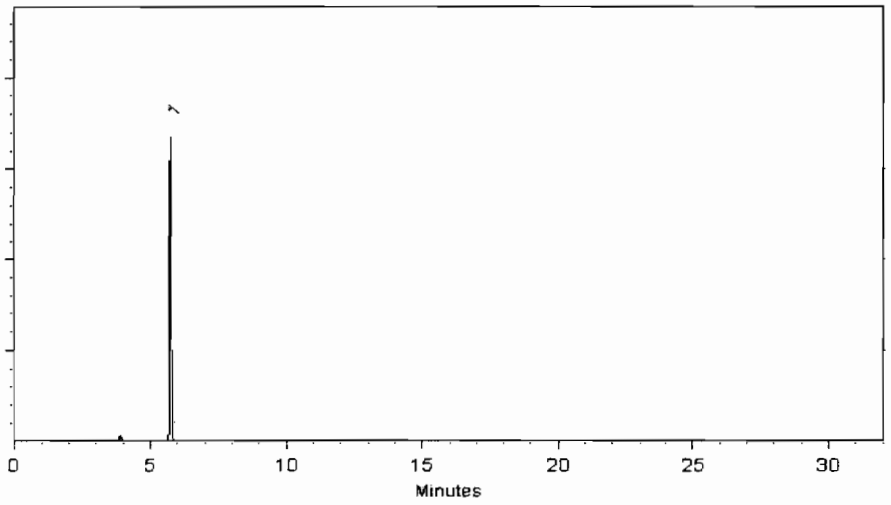
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

F. Joseph Tallon - Mix Technician

Date Mixed: 29-Apr-2016 **Balance:** B251644995

Jennifer L. Pollino - QC Analyst

Date Passed: 03-May-2016

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

Add(A)SS 2016_00007

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Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 570808.sec **Lot No.:** A0116135

Description : 8260 List 2 / Std #6

8260 List 2 / Std #6 2500-62500 µg/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : June 30, 2017 **Storage:** 0°C or colder

REC'D 7-7-16
JDH
@
860583-584
JDH
7-27-16

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	2-Propanol (isopropanol) **CAS #** 67-63-0.SEC (Lot NWVYK) **Purity** 98%	25,004.1 µg/mL	+/- 146.4046 µg/mL +/- 1,237.0209 µg/mL +/- 1,267.7746 µg/mL	Gravimetric Unstressed Stressed
2	Chloroprene **CAS #** 126-99-8.A * (Lot 151210JLM) **Purity** 99%	2,502.4 µg/mL	+/- 14.6855 µg/mL +/- 123.8044 µg/mL +/- 126.8822 µg/mL	Gravimetric Unstressed Stressed
3	Methacrylonitrile **CAS #** 126-98-7 * (Lot 1012014) **Purity** 99%	25,001.6 µg/mL	+/- 146.3899 µg/mL +/- 1,236.8966 µg/mL +/- 1,267.6472 µg/mL	Gravimetric Unstressed Stressed
4	2,2,4-Trimethylpentane (Isooctane) **CAS #** 540-84-1.SEC (Lot 1894700) **Purity** 99%	2,500.8 µg/mL	+/- 14.6761 µg/mL +/- 123.7253 µg/mL +/- 126.8010 µg/mL	Gravimetric Unstressed Stressed
5	1-Butanol **CAS #** 71-36-3.SEC (Lot QBO2D) **Purity** 99%	62,500.0 µg/mL	+/- 365.9324 µg/mL +/- 3,092.0415 µg/mL +/- 3,168.9130 µg/mL	Gravimetric Unstressed Stressed
6	2-Nitropropane **CAS #** 79-46-9.SEC (Lot KW38H-RN) **Purity** 98%	5,000.4 µg/mL	+/- 29.2782 µg/mL +/- 247.3809 µg/mL +/- 253.5311 µg/mL	Gravimetric Unstressed Stressed
7	1-Chlorohexane **CAS #** 544-10-5.SEC (Lot 3890000) **Purity** 98%	2,500.2 µg/mL	+/- 14.6724 µg/mL +/- 123.6944 µg/mL +/- 126.7694 µg/mL	Gravimetric Unstressed Stressed

8	1,2,3-Trimethylbenzene		2,501.0	µg/mL	+/-	14.6776	µg/mL	Gravimetric
	CAS # 526-73-8.SEC	(Lot 4591200)			+/-	123.7375	µg/mL	Unstressed
	Purity 97%				+/-	126.8136	µg/mL	Stressed
9	Benzyl chloride		2,500.4	µg/mL	+/-	14.6737	µg/mL	Gravimetric
	CAS # 100-44-7.SEC	(Lot H29N03)			+/-	123.7055	µg/mL	Unstressed
	Purity 99%				+/-	126.7807	µg/mL	Stressed
10	1,3,5-Trichlorobenzene		2,500.4	µg/mL	+/-	14.6737	µg/mL	Gravimetric
	CAS # 108-70-3.SEC	(Lot I28U021)			+/-	123.7055	µg/mL	Unstressed
	Purity 99%				+/-	126.7807	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

*** Restek is unable to identify a reliable and/or acceptable second source for this material - the same batch of neat material may have been used to produce both the primary and secondary standard. The primary and secondary standards were prepared using different equipment and personnel.**

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

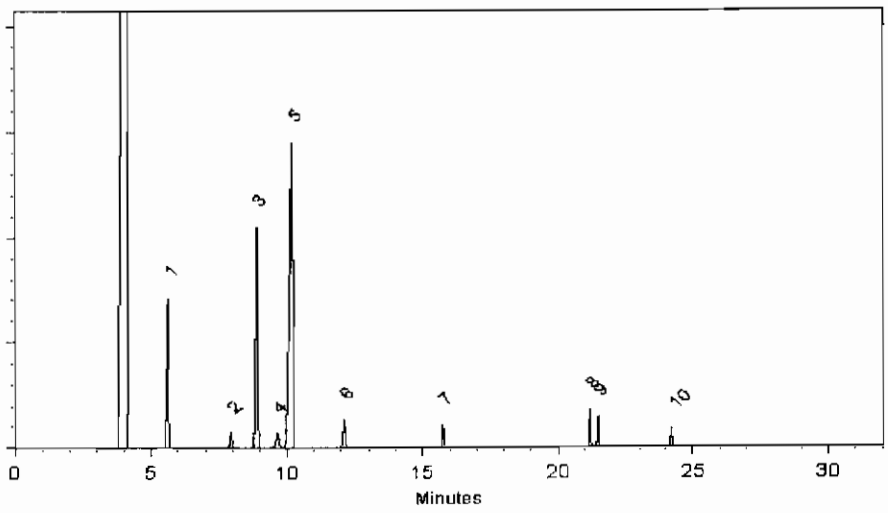
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Michael J Moye

Jennifer L. Pollino - QC Analyst

Date Mixed: 28-Dec-2015 **Balance:** 1127510105

Date Passed: 29-Dec-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

Add(A)SS 2016_00008

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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 570808.sec **Lot No.:** A0116135

Description : 8260 List 2 / Std #6

8260 List 2 / Std #6 2500-62500 µg/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : June 30, 2017 **Storage:** 0°C or colder

REC'D 7-7-16
JDH
@
860583-584
JDH
7-27-16

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	2-Propanol (isopropanol) **CAS #** 67-63-0.SEC (Lot NWVYK) **Purity** 98%	25,004.1 µg/mL	+/- 146.4046 µg/mL +/- 1,237.0209 µg/mL +/- 1,267.7746 µg/mL	Gravimetric Unstressed Stressed
2	Chloroprene **CAS #** 126-99-8.A * (Lot 151210JLM) **Purity** 99%	2,502.4 µg/mL	+/- 14.6855 µg/mL +/- 123.8044 µg/mL +/- 126.8822 µg/mL	Gravimetric Unstressed Stressed
3	Methacrylonitrile **CAS #** 126-98-7 * (Lot 1012014) **Purity** 99%	25,001.6 µg/mL	+/- 146.3899 µg/mL +/- 1,236.8966 µg/mL +/- 1,267.6472 µg/mL	Gravimetric Unstressed Stressed
4	2,2,4-Trimethylpentane (Isooctane) **CAS #** 540-84-1.SEC (Lot 1894700) **Purity** 99%	2,500.8 µg/mL	+/- 14.6761 µg/mL +/- 123.7253 µg/mL +/- 126.8010 µg/mL	Gravimetric Unstressed Stressed
5	1-Butanol **CAS #** 71-36-3.SEC (Lot QBO2D) **Purity** 99%	62,500.0 µg/mL	+/- 365.9324 µg/mL +/- 3,092.0415 µg/mL +/- 3,168.9130 µg/mL	Gravimetric Unstressed Stressed
6	2-Nitropropane **CAS #** 79-46-9.SEC (Lot KW38H-RN) **Purity** 98%	5,000.4 µg/mL	+/- 29.2782 µg/mL +/- 247.3809 µg/mL +/- 253.5311 µg/mL	Gravimetric Unstressed Stressed
7	1-Chlorohexane **CAS #** 544-10-5.SEC (Lot 3890000) **Purity** 98%	2,500.2 µg/mL	+/- 14.6724 µg/mL +/- 123.6944 µg/mL +/- 126.7694 µg/mL	Gravimetric Unstressed Stressed

8	1,2,3-Trimethylbenzene		2,501.0	µg/mL	+/-	14.6776	µg/mL	Gravimetric
	CAS # 526-73-8.SEC	(Lot 4591200)			+/-	123.7375	µg/mL	Unstressed
	Purity 97%				+/-	126.8136	µg/mL	Stressed
9	Benzyl chloride		2,500.4	µg/mL	+/-	14.6737	µg/mL	Gravimetric
	CAS # 100-44-7.SEC	(Lot H29N03)			+/-	123.7055	µg/mL	Unstressed
	Purity 99%				+/-	126.7807	µg/mL	Stressed
10	1,3,5-Trichlorobenzene		2,500.4	µg/mL	+/-	14.6737	µg/mL	Gravimetric
	CAS # 108-70-3.SEC	(Lot I28U021)			+/-	123.7055	µg/mL	Unstressed
	Purity 99%				+/-	126.7807	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

*** Restek is unable to identify a reliable and/or acceptable second source for this material - the same batch of neat material may have been used to produce both the primary and secondary standard. The primary and secondary standards were prepared using different equipment and personnel.**

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

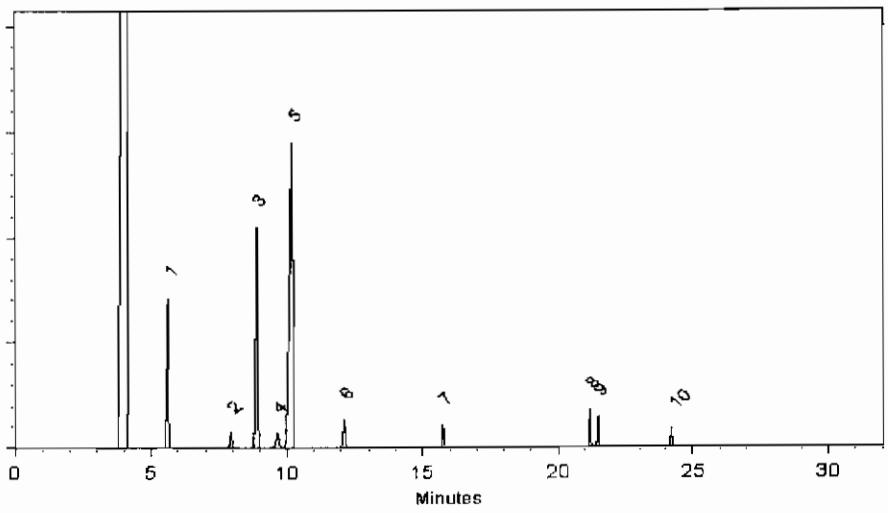
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Michael J Maye

Jennifer L. Pollino - QC Analyst

Date Mixed: 28-Dec-2015 **Balance:** 1127510105

Date Passed: 29-Dec-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

Adds (B) 2016_00005

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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 570809 **Lot No.:** A0116077

Description : 8260 List 2 / Std #7

8260 List 2 / Std #7 2500-5000 µg/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : June 30, 2017 **Storage:** 0°C or colder

REC'D 7-7-16
JDH
960556-557

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)		
1	Ethyl acetate		5.016.0 µg/mL	+/- 29.1635	µg/mL	Gravimetric
	CAS # 141-78-6	(Lot SHBF6909V)		+/- 302.6375	µg/mL	Unstressed
	Purity 99%			+/- 303.3560	µg/mL	Stressed
2	Ethyl acrylate		2,502.5 µg/mL	+/- 14.5498	µg/mL	Gravimetric
	CAS # 140-88-5	(Lot 10129902)		+/- 150.9869	µg/mL	Unstressed
	Purity 99%			+/- 151.3454	µg/mL	Stressed
3	Methyl methacrylate		5,007.8 µg/mL	+/- 29.1155	µg/mL	Gravimetric
	CAS # 80-62-6	(Lot MKBN8882V)		+/- 302.1397	µg/mL	Unstressed
	Purity 99%			+/- 302.8571	µg/mL	Stressed
4	Butyl acetate		2.501.3 µg/mL	+/- 14.5425	µg/mL	Gravimetric
	CAS # 123-86-4	(Lot SHBF4442V)		+/- 150.9115	µg/mL	Unstressed
	Purity 99%			+/- 151.2698	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

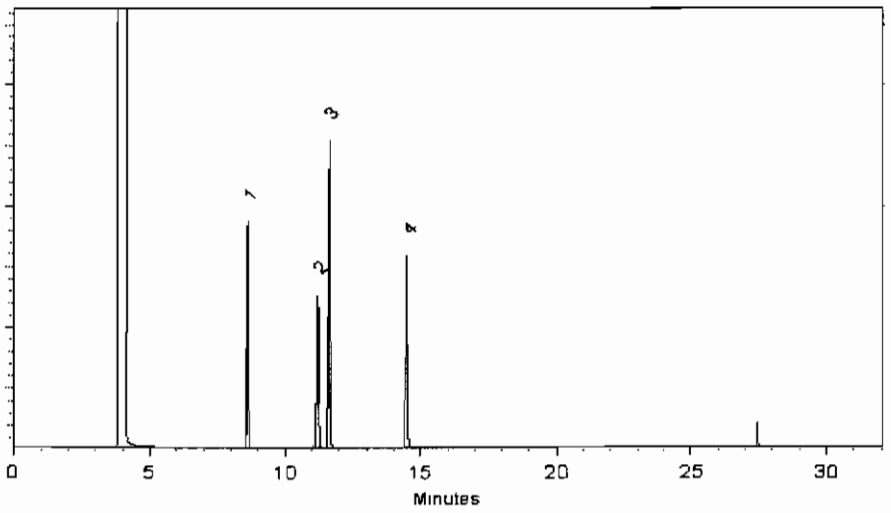
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Rebecca Sawyer

Date Mixed: 21-Dec-2015 **Balance:** 1125113331

Jennifer L Pollino

Jennifer L. Pollino - QC Analyst

Date Passed: 22-Dec-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

Adds (B) 2016_00006

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 570809 **Lot No.:** A0116077

Description : 8260 List 2 / Std #7

8260 List 2 / Std #7 2500-5000 µg/ml, P&T Methanol, 1 ml/ampul

REC'D 7-7-16
JDH
960556-557

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : June 30, 2017 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)	
1	Ethyl acetate **CAS #** 141-78-6 (Lot SHBF6909V) **Purity** 99%	5,016.0 µg/mL	+/- 29.1635 µg/mL +/- 302.6375 µg/mL +/- 303.3560 µg/mL	Gravimetric Unstressed Stressed
2	Ethyl acrylate **CAS #** 140-88-5 (Lot 10129902) **Purity** 99%	2,502.5 µg/mL	+/- 14.5498 µg/mL +/- 150.9869 µg/mL +/- 151.3454 µg/mL	Gravimetric Unstressed Stressed
3	Methyl methacrylate **CAS #** 80-62-6 (Lot MKBN8882V) **Purity** 99%	5,007.8 µg/mL	+/- 29.1155 µg/mL +/- 302.1397 µg/mL +/- 302.8571 µg/mL	Gravimetric Unstressed Stressed
4	Butyl acetate **CAS #** 123-86-4 (Lot SHBF4442V) **Purity** 99%	2,501.3 µg/mL	+/- 14.5425 µg/mL +/- 150.9115 µg/mL +/- 151.2698 µg/mL	Gravimetric Unstressed Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

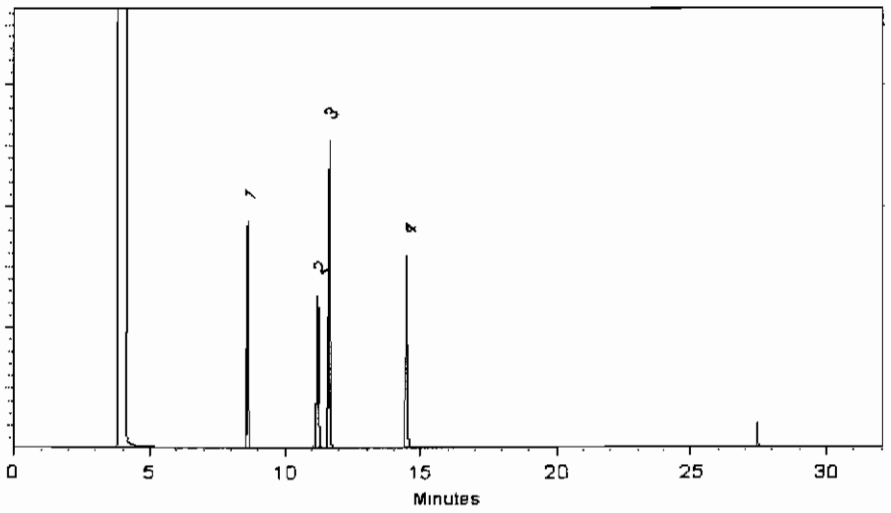
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Rebecca Sawyer

Jennifer L. Pollino - QC Analyst

Date Mixed: 21-Dec-2015 **Balance:** 1125113331

Date Passed: 22-Dec-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

Adds(A) 2016_00005

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 570808 **Lot No.:** A0116133

Description : 8260 List 2 / Std #6

8260 List 2 / Std #6 2500-62500 µg/ml, P&T Methanol, 1 ml/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : June 30, 2017 **Storage:** 0°C or colder

REC'D 7-7-16
JDH
960554-555

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)		Expanded Uncertainty (95% C.L.; K=2)		
1	2-Propanol (isopropanol)		25,021.0	µg/mL	+/- 145.4666	µg/mL	Gravimetric
	CAS # 67-63-0	(Lot SHBF0274V)			+/- 1,237.7341	µg/mL	Unstressed
	Purity 99%				+/- 1,268.5115	µg/mL	Stressed
2	Chloroprene		2,515.8	µg/mL	+/- 14.6268	µg/mL	Gravimetric
	CAS # 126-99-8.A	(Lot 151210JLM)			+/- 124.4487	µg/mL	Unstressed
	Purity 99%				+/- 127.5433	µg/mL	Stressed
3	Methacrylonitrile		25,005.8	µg/mL	+/- 145.3780	µg/mL	Gravimetric
	CAS # 126-98-7	(Lot 1012014)			+/- 1,236.9798	µg/mL	Unstressed
	Purity 99%				+/- 1,267.7384	µg/mL	Stressed
4	2,2,4-Trimethylpentane (isooctane)		2,501.3	µg/mL	+/- 14.5425	µg/mL	Gravimetric
	CAS # 540-84-1	(Lot SHBD2922V)			+/- 123.7315	µg/mL	Unstressed
	Purity 99%				+/- 126.8081	µg/mL	Stressed
5	1-Butanol		62,520.3	µg/mL	+/- 363.4791	µg/mL	Gravimetric
	CAS # 71-36-3	(Lot SHBF1679V)			+/- 3,092.7400	µg/mL	Unstressed
	Purity 99%				+/- 3,169.6438	µg/mL	Stressed
6	2-Nitropropane		5,001.3	µg/mL	+/- 29.0781	µg/mL	Gravimetric
	CAS # 79-46-9	(Lot BCBB8938)			+/- 247.4045	µg/mL	Unstressed
	Purity 97%				+/- 253.5565	µg/mL	Stressed
7	1-Chlorohexane		2,503.2	µg/mL	+/- 14.5536	µg/mL	Gravimetric
	CAS # 544-10-5	(Lot 05107LK)			+/- 123.8262	µg/mL	Unstressed
	Purity 98%				+/- 126.9052	µg/mL	Stressed

8	1,2,3-Trimethylbenzene		2,501.4	µg/mL	+/-	14.5433	µg/mL	Gravimetric
	CAS # 526-73-8	(Lot 877605-14)			+/-	123.7383	µg/mL	Unstressed
	Purity 97%				+/-	126.8151	µg/mL	Stressed
9	Benzyl chloride		2,502.0	µg/mL	+/-	14.5468	µg/mL	Gravimetric
	CAS # 100-44-7	(Lot SHBB7346V)			+/-	123.7686	µg/mL	Unstressed
	Purity 99%				+/-	126.8462	µg/mL	Stressed
10	1,3,5-Trichlorobenzene		2,500.8	µg/mL	+/-	14.5396	µg/mL	Gravimetric
	CAS # 108-70-3	(Lot 11319AS)			+/-	123.7067	µg/mL	Unstressed
	Purity 99%				+/-	126.7828	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

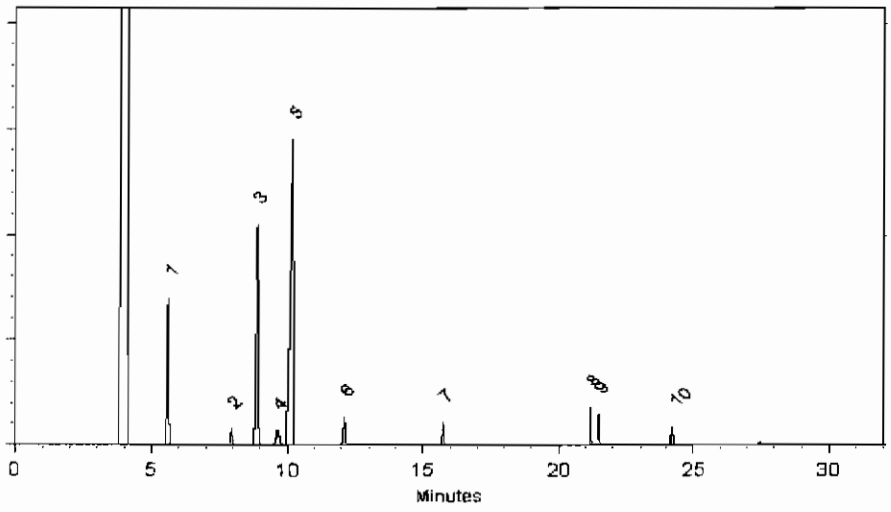
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

F. Joseph Tallon - Mix Technician

Date Mixed: 28-Dec-2015 **Balance:** B251644995

Jennifer L. Pollino - QC Analyst

Date Passed: 29-Dec-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

Adds(A) 2016_00006

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ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 570808 **Lot No.:** A0116133

Description : 8260 List 2 / Std #6

8260 List 2 / Std #6 2500-62500 µg/ml, P&T Methanol, 1 ml/ampul

REC'D 7-7-16
JDH
960554-555

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : June 30, 2017 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)		Expanded Uncertainty (95% C.L.; K=2)		
1	2-Propanol (isopropanol)		25,021.0	µg/mL	+/- 145.4666	µg/mL	Gravimetric
	CAS # 67-63-0	(Lot SHBF0274V)			+/- 1,237.7341	µg/mL	Unstressed
	Purity 99%				+/- 1,268.5115	µg/mL	Stressed
2	Chloroprene		2,515.8	µg/mL	+/- 14.6268	µg/mL	Gravimetric
	CAS # 126-99-8.A	(Lot 151210JLM)			+/- 124.4487	µg/mL	Unstressed
	Purity 99%				+/- 127.5433	µg/mL	Stressed
3	Methacrylonitrile		25,005.8	µg/mL	+/- 145.3780	µg/mL	Gravimetric
	CAS # 126-98-7	(Lot 1012014)			+/- 1,236.9798	µg/mL	Unstressed
	Purity 99%				+/- 1,267.7384	µg/mL	Stressed
4	2,2,4-Trimethylpentane (isooctane)		2,501.3	µg/mL	+/- 14.5425	µg/mL	Gravimetric
	CAS # 540-84-1	(Lot SHBD2922V)			+/- 123.7315	µg/mL	Unstressed
	Purity 99%				+/- 126.8081	µg/mL	Stressed
5	1-Butanol		62,520.3	µg/mL	+/- 363.4791	µg/mL	Gravimetric
	CAS # 71-36-3	(Lot SHBF1679V)			+/- 3,092.7400	µg/mL	Unstressed
	Purity 99%				+/- 3,169.6438	µg/mL	Stressed
6	2-Nitropropane		5,001.3	µg/mL	+/- 29.0781	µg/mL	Gravimetric
	CAS # 79-46-9	(Lot BCBB8938)			+/- 247.4045	µg/mL	Unstressed
	Purity 97%				+/- 253.5565	µg/mL	Stressed
7	1-Chlorohexane		2,503.2	µg/mL	+/- 14.5536	µg/mL	Gravimetric
	CAS # 544-10-5	(Lot 05107LK)			+/- 123.8262	µg/mL	Unstressed
	Purity 98%				+/- 126.9052	µg/mL	Stressed

8	1,2,3-Trimethylbenzene		2,501.4	µg/mL	+/-	14.5433	µg/mL	Gravimetric
	CAS # 526-73-8	(Lot 877605-14)			+/-	123.7383	µg/mL	Unstressed
	Purity 97%				+/-	126.8151	µg/mL	Stressed
9	Benzyl chloride		2,502.0	µg/mL	+/-	14.5468	µg/mL	Gravimetric
	CAS # 100-44-7	(Lot SHBB7346V)			+/-	123.7686	µg/mL	Unstressed
	Purity 99%				+/-	126.8462	µg/mL	Stressed
10	1,3,5-Trichlorobenzene		2,500.8	µg/mL	+/-	14.5396	µg/mL	Gravimetric
	CAS # 108-70-3	(Lot 11319AS)			+/-	123.7067	µg/mL	Unstressed
	Purity 99%				+/-	126.7828	µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

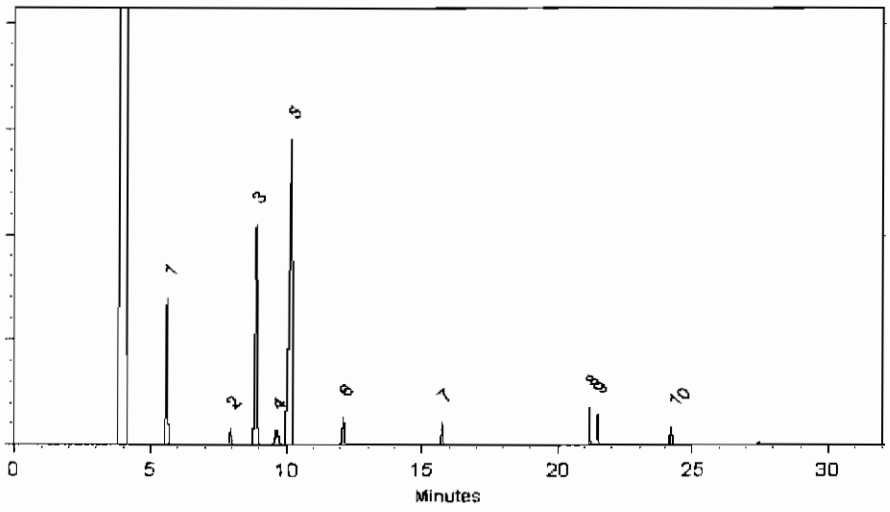
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



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F. Joseph Tallon - Mix Technician

Date Mixed: 28-Dec-2015 **Balance:** B251644995

Jennifer L. Pollino - QC Analyst

Date Passed: 29-Dec-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

Gamma Ampuole_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

79670-334

5 mL Liquid in Flame Sealed Vial

Customer: TestAmerica St. Louis
P.O. No.: 2303925, Item 1
Calibration Date: 01-Apr-2009 12:00 EST **Grams of Master Source:** 0.028371

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Analytics maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Am-241	59.5	157860	———	3.390E+03	0.1	0.9	1.8	4π LS
Cd-109	88.0	462.60	1.691E+05	4.798E+03	0.4	1.7	3.5	HPGe
Co-57	122.1	271.79	8.904E+04	2.526E+03	0.5	1.3	2.8	HPGe
Ce-139	165.9	137.6	1.256E+05	3.563E+03	0.4	1.1	2.3	HPGe
Hg-203	279.2	46.61	2.788E+05	7.910E+03	0.3	1.1	2.3	HPGe
Sn-113	391.7	115.1	1.725E+05	4.894E+03	0.5	1.1	2.4	HPGe
Cs-137	661.7	10983	1.120E+05	3.178E+03	0.7	1.2	2.8	HPGe
Y-88	898.0	106.6	4.205E+05	1.193E+04	0.8	1.1	2.7	HPGe
Co-60	1173.2	1925.4	2.184E+05	6.196E+03	0.7	1.1	2.6	HPGe
Co-60	1332.5	1925.4	2.185E+05	6.199E+03	0.7	1.1	2.6	HPGe
Y-88	1836.1	106.6	4.444E+05	1.261E+04	0.7	1.1	2.6	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
5.31740 grams 4M HCl solution with approximately 30 microg/g each of Cd, Co, Ce, Hg, Sn, Cs, and Y carriers.

This standard will expire one year after the calibration date.

Source Prepared by: _____ for
W. Mao, Radiochemist

QA Approved: _____ Date: 5-13-09
D. M. Montgomery, QA Manager

End of Certificate

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Reagent

LSC Check_00001

PerkinElmer Inc. 549 Albany Street, Boston, MA 02118 USA Tel. No. 800-762-4000

PerkinElmer®

Certificate of Radioactivity / Traceability

Product **Unquenched Toluene Standard for Liquid Scintillation Counting**

Part Number **6008500**

Radionuclide	Average Activity Assay		Lot No. = Assay Date	Serial No.
^{3}H (Tritium) - Toluene	**286,200** DPM/Std. ± 3 % 0.129 µCi		**February 23, 2016**	**135**
Carbon 14 - Toluene	**112,100** DPM/Std. ± 2 % 0.050 µCi		**February 23, 2016**	**135**

Expiration Date **February 23, 2021**

REFERENCE STANDARD: National Institute of Standards and Technology SRM 4947C (3H) and SRM 4222C (14C)

METHOD OF STANDARDIZATION:

The ^{3}H bulk solution is standardized by liquid scintillation counting using SRM 4947C as the reference material. The total uncertainty of the assay is ± 1.6 %

The ^{14}C bulk solution is standardized by liquid scintillation counting using SRM 4222C as the reference material. The total uncertainty of the assay is ± 1.3 %

The glass vial may have some imperfections due to the vendor's manufacturing process. These imperfections do not affect the performance of the product.

I hereby certify that the above information is accurate.

Approved by: *Donna Novi* **Date:** May 23, 2016

Chemist

CN 8845270

Reagent

Polar Add._00034

RESTEK
110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

ACCREDITED
ISO Guide 34 Accredited
Reference Material Producer
Certificate #3222.01

ACCREDITED
ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569728 **Lot No.:** A0114666

Description : 8260 List 3/ Std#1 Polar Additions (2015)

8260 List 3/ Std#1 Polar Additions (2015) 2500-100,000 µg/ml, 1 ml/ampul

RECD 7-7-16 JDT

960551-553

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : October 31, 2017 **Storage:** 0°C or colder

CERTIFIED VALUES

Elution Order	Compound		Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.: K=2)	
1	Ethanol		100.005.8 µg/mL	+/- 581.4117 µg/mL	Gravimetric
	CAS # 64-17-5	(Lot PG0219)		+/- 4,947.0657 µg/mL	Unstressed
	Purity 99%			+/- 5,070.0789 µg/mL	Stressed
2	Acetonitrile		25,001.0 µg/mL	+/- 145.3505 µg/mL	Gravimetric
	CAS # 75-05-8	(Lot SHBB3177V)		+/- 1,236.7460 µg/mL	Unstressed
	Purity 98%			+/- 1,267.4988 µg/mL	Stressed
3	Diisopropyl ether (DIPE)		2.500.8 µg/mL	+/- 14.5396 µg/mL	Gravimetric
	CAS # 108-20-3	(Lot SHBB6268V)		+/- 123.7067 µg/mL	Unstressed
	Purity 99%			+/- 126.7828 µg/mL	Stressed
4	Ethyl-tert-hutyl ether (ETBE)		2,505.0 µg/mL	+/- 14.5643 µg/mL	Gravimetric
	CAS # 637-92-3	(Lot MKBR1623V)		+/- 123.9170 µg/mL	Unstressed
	Purity 99%			+/- 126.9983 µg/mL	Stressed
5	Propionitrile		25.001.5 µg/mL	+/- 145.3533 µg/mL	Gravimetric
	CAS # 107-12-0	(Lot BCBM6569V)		+/- 1,236.7695 µg/mL	Unstressed
	Purity 99%			+/- 1,267.5229 µg/mL	Stressed
6	tert-Amyl alcohol		25.012.3 µg/mL	+/- 145.4158 µg/mL	Gravimetric
	CAS # 75-85-4	(Lot STBB1898V)		+/- 1,237.3013 µg/mL	Unstressed
	Purity 99%			+/- 1,268.0679 µg/mL	Stressed
7	tert-Amyl methyl ether (TAME)		2.503.5 µg/mL	+/- 14.5556 µg/mL	Gravimetric
	CAS # 994-05-8	(Lot HMBC8037V)		+/- 123.8428 µg/mL	Unstressed
	Purity 99%			+/- 126.9222 µg/mL	Stressed

Solvent: P&T Methanol
CAS # 67-56-1
Purity 99%

Column:
105m x 0.53mm x 3.0µm
Rtx-502.2 (cat.#10910)

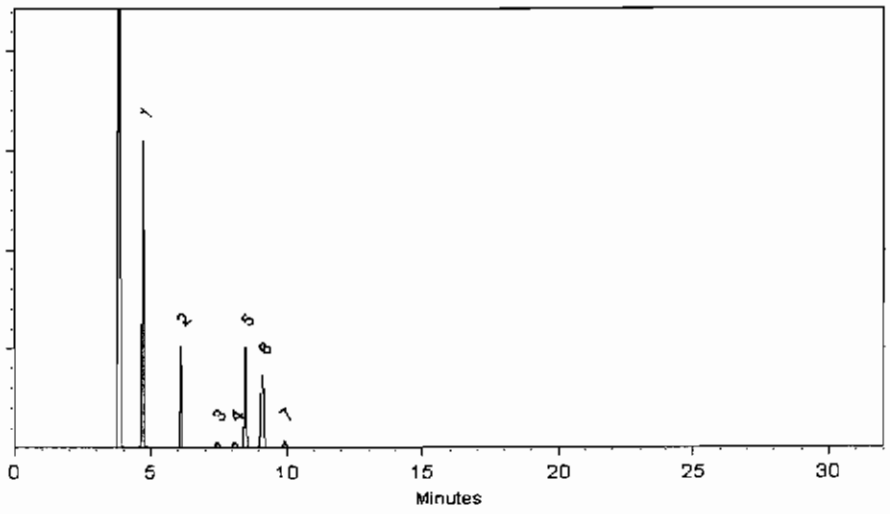
Carrier Gas:
hydrogen-constant pressure 11.0 psi.

Temp. Program:
40°C (hold 2 min.) to 240°C
@ 8°C/min. (hold 5 min.)

Inj. Temp:
200°C

Det. Temp:
250°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

F. Joseph Fallon - Mix Technician **Date Mixed:** 12-Oct-2015 **Balance:** B251644995

Jennifer L. Pollino - QC Analyst **Date Passed:** 14-Oct-2015

Manufactured under Restek's ISO 9001:2008 Registered Quality System Certificate #FM 80397

Reagent

Source A_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

79670-334

5 mL Liquid in Flame Sealed Vial

Customer: TestAmerica St. Louis
P.O. No.: 2303925, Item 1
Calibration Date: 01-Apr-2009 12:00 EST **Grams of Master Source:** 0.028371

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Analytics maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Am-241	59.5	157860	———	3.390E+03	0.1	0.9	1.8	4π LS
Cd-109	88.0	462.60	1.691E+05	4.798E+03	0.4	1.7	3.5	HPGe
Co-57	122.1	271.79	8.904E+04	2.526E+03	0.5	1.3	2.8	HPGe
Ce-139	165.9	137.6	1.256E+05	3.563E+03	0.4	1.1	2.3	HPGe
Hg-203	279.2	46.61	2.788E+05	7.910E+03	0.3	1.1	2.3	HPGe
Sn-113	391.7	115.1	1.725E+05	4.894E+03	0.5	1.1	2.4	HPGe
Cs-137	661.7	10983	1.120E+05	3.178E+03	0.7	1.2	2.8	HPGe
Y-88	898.0	106.6	4.205E+05	1.193E+04	0.8	1.1	2.7	HPGe
Co-60	1173.2	1925.4	2.184E+05	6.196E+03	0.7	1.1	2.6	HPGe
Co-60	1332.5	1925.4	2.185E+05	6.199E+03	0.7	1.1	2.6	HPGe
Y-88	1836.1	106.6	4.444E+05	1.261E+04	0.7	1.1	2.6	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
5.31740 grams 4M HCl solution with approximately 30 microg/g each of Cd, Co, Ce, Hg, Sn, Cs, and Y carriers.

This standard will expire one year after the calibration date.

Source Prepared by: _____ for
W. Mao, Radiochemist

QA Approved: _____ Date: 5-13-09
D. M. Montgomery, QA Manager

End of Certificate

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Reagent

Source C_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

79670-334

5 mL Liquid in Flame Sealed Vial

Customer: TestAmerica St. Louis
P.O. No.: 2303925, Item 1
Calibration Date: 01-Apr-2009 12:00 EST **Grams of Master Source:** 0.028371

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Analytics maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

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Ce-139	165.9	137.6	1.256E+05	3.563E+03	0.4	1.1	2.3	HPGe
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Sn-113	391.7	115.1	1.725E+05	4.894E+03	0.5	1.1	2.4	HPGe
Cs-137	661.7	10983	1.120E+05	3.178E+03	0.7	1.2	2.8	HPGe
Y-88	898.0	106.6	4.205E+05	1.193E+04	0.8	1.1	2.7	HPGe
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Y-88	1836.1	106.6	4.444E+05	1.261E+04	0.7	1.1	2.6	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
5.31740 grams 4M HCl solution with approximately 30 microg/g each of Cd, Co, Ce, Hg, Sn, Cs, and Y carriers.

This standard will expire one year after the calibration date.

Source Prepared by: _____ for
W. Mao, Radiochemist

QA Approved: _____ Date: 5-13-09
D. M. Montgomery, QA Manager

End of Certificate

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Reagent

Source D_00001

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404•352•8677
Fax 404•352•2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

79670-334

5 mL Liquid in Flame Sealed Vial

Customer: TestAmerica St. Louis
P.O. No.: 2303925, Item 1
Calibration Date: 01-Apr-2009 12:00 EST **Grams of Master Source:** 0.028371

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Analytics maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
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Co-57	122.1	271.79	8.904E+04	2.526E+03	0.5	1.3	2.8	HPGe
Ce-139	165.9	137.6	1.256E+05	3.563E+03	0.4	1.1	2.3	HPGe
Hg-203	279.2	46.61	2.788E+05	7.910E+03	0.3	1.1	2.3	HPGe
Sn-113	391.7	115.1	1.725E+05	4.894E+03	0.5	1.1	2.4	HPGe
Cs-137	661.7	10983	1.120E+05	3.178E+03	0.7	1.2	2.8	HPGe
Y-88	898.0	106.6	4.205E+05	1.193E+04	0.8	1.1	2.7	HPGe
Co-60	1173.2	1925.4	2.184E+05	6.196E+03	0.7	1.1	2.6	HPGe
Co-60	1332.5	1925.4	2.185E+05	6.199E+03	0.7	1.1	2.6	HPGe
Y-88	1836.1	106.6	4.444E+05	1.261E+04	0.7	1.1	2.6	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
5.31740 grams 4M HCl solution with approximately 30 microg/g each of Cd, Co, Ce, Hg, Sn, Cs, and Y carriers.

This standard will expire one year after the calibration date.

Source Prepared by: _____ for
W. Mao, Radiochemist

QA Approved: _____ Date: 5-13-09
D. M. Montgomery, QA Manager

End of Certificate

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Reagent

Tc-99_00002

National Institute of Standards & Technology

Certificate

Standard Reference Material 4288A
Technetium-99 Radioactivity Standard

This Standard Reference Material (SRM) consists of radioactive technetium-99, as potassium pertechnetate, and potassium hydroxide dissolved in 5 mL of distilled water. The solution is contained in a flame-sealed NIST borosilicate-glass ampoule. The SRM is intended for the calibration of beta-particle counting instruments and for the monitoring of radiochemical procedures.

Radiological Hazard

The SRM ampoule contains technetium-99 with a total activity of approximately 160 kBq. Technetium-99 decays by beta-particle emission. None of the beta particles escape from the SRM ampoule. During the decay process no photons are emitted. Approximate unshielded dose rates at several distances (as of the reference time) are given in note [a]*. There is no detectable external radiation. The SRM should be used only by persons qualified to handle radioactive material.

Chemical Hazard

The SRM ampoule contains potassium hydroxide (KOH) with a concentration of 0.001 moles per liter of water. The solution is mildly corrosive and could represent a health hazard if it comes in contact with eyes or skin. If the ampoule is to be opened to transfer the solution, the recommended procedure is given on page 2.

Storage and Handling

The SRM should be stored and used at a temperature between 5 and 65 °C. The solution in an unopened ampoule should remain stable and homogeneous until at least September 2006.

The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material. If the ampoule is transported it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) because of the radioactivity.

Preparation

This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, J.M.R. Hutchinson, Group Leader. The overall technical direction and physical measurements leading to certification were provided by L.L. Lucas of the Radioactivity Group.

The support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by M.M. Training.

Gaithersburg, Maryland 20899
October 1996

Thomas E. Gills, Chief
Standard Reference Materials Program

*Notes and references are on pages 5 and 6.

Recommended Procedure for Opening the SRM Ampoule

1) If the SRM solution is to be diluted, it is recommended that the diluting solution have a composition comparable to that of the SRM solution.

2) Wear eye protection, gloves, and protective clothing and work over a tray with absorbent paper in it.

3) Shake the ampoule to wet all of the inside surface of the ampoule. Return the ampoule to the upright position.

4) Check that all of the liquid has drained out of the neck of the ampoule. If necessary, gently tap the neck to speed the process.

5) Holding the ampoule upright, score the narrowest part of the neck with a scribe or diamond pencil.

6) Lightly wet the scored line. This reduces the crack propagation velocity and makes for a cleaner break.

7) Hold the ampoule upright with a paper towel, a wiper, or a support jig. Position the scored line away from you. Using a paper towel or wiper to avoid contamination, snap off the top of the ampoule by pressing the narrowest part of the neck away from you while pulling the tip of the ampoule towards you.

8) Transfer the solution from the ampoule using a pycnometer or a pipet with dispenser handle. NEVER PIPETTE BY MOUTH.

9) Seal any unused SRM solution in a flame-sealed glass ampoule, if possible, to minimize the evaporation loss. See also reference [4]*.

*Notes and references are on pages 5 and 6.

PROPERTIES OF SRM 4288A
(Certified values are shown in bold type)

Source identification number	NIST SRM 4288A		
Physical Properties:			
Source description	Liquid in flame-sealed NIST borosilicate-glass ampoule		
Ampoule specifications	Body outside diameter Wall Thickness Barium content Lead-oxide content Other heavy elements	(16.5 ± 0.5) mm (0.60 ± 0.04) mm Less than 2.5% Less than 0.02% Trace quantities	
Solution density	(0.998 ± 0.002) $g \cdot mL^{-1}$ at 21 °C [b]*		
Solution mass	(4.998 ± 0.002) g [b]		
Chemical Properties:			
Solution composition	Chemical Formula	Concentration ($mol \cdot L^{-1}$)	Mass Fraction ($g \cdot g^{-1}$)
	H_2O	55	1.00
	KOH	0.001	0.00006
	$K^{99}TcO_4$	0.0005	0.0001
Radiological Properties:			
Radionuclide	Technetium-99		
Reference time	1200 EST, 1 September 1996		
Massic activity of the solution [c]	32.61 $kBq \cdot g^{-1}$		
Relative expanded uncertainty (k=2)	1.14% [d] [e]		
Photon-emitting impurities	None detected [f]		
Half lives used in the decay corrections	Cobalt-60: (5.2714 ± 0.0005) a [g] Technetium-99: (2.111 ± 0.012) × 10^5 a [g]		
Measuring instrument	NIST 4πβ(LS)-γ-anticoincidence counting system using cobalt-60 as the efficiency-tracing radionuclide. The efficiency was varied electronically from 50 to 93 percent.		

*Notes and references are on pages 5 and 6.

EVALUATION OF THE UNCERTAINTY OF THE MASSIC ACTIVITY [d]*

Input Quantity x_i, the source of uncertainty (and individual uncertainty components where appropriate)	Method Used To Evaluate $u(x_i)$, the standard uncertainty of x_i (A) denotes evaluation by statistical methods (B) denotes evaluation by other methods	Relative Uncertainty Of Input Quantity, $u(x_i)/x_i$, (%) [h]	Relative Sensitivity Factor, $\lvert\partial y/\partial x_i\rvert \cdot (x_i/y)$ [i]	Relative Uncertainty Of Output Quantity, $u_i(y)/y$, (%) [j]
Extrapolated massic liquid-scintillation count rate of the Tc-99 solution, corrected for background, cobalt-60 tracer count rate, and decay.	Standard deviation of the mean for 4 sets of repeated measurements on each of 3 samples (A)	0.10	1.0	0.10
Decay corrections for cobalt-60 for technetium-99	[k] Standard uncertainty of the half life (A) Standard uncertainty of the half life (A)	[k] 0.01 0.6	[m] 0.01 0.000005	0.0001 0.000003
Decay scheme data	Standard uncertainty of the probability of decay by beta-particle emission (A)	0.01	1.0	0.01
Extrapolation of the beta-particle-count-rate versus anticoincidence-gamma-ray-count-rate to zero anticoincidence-gamma-ray-count-rate	Estimated (B)	0.40	1.0	0.40
Calibration of the cobalt-60 tracer solution using the 4πβ(LS)-γ-anticoincidence counting system	Standard uncertainty of the extrapolated massic count rate (B)	0.25	1.0	0.25
Gravimetric measurements	Estimated (B)	0.20	1.0	0.20
Live-time measurements [n]	Estimated (B)	0.10	1.0	0.10
Variability between ampoules	Estimated (B)	0.20	1.0	0.20
Photon-emitting impurities	Limit of detection (B) [p]	100.	0.00004	0.004
Relative Combined Standard Uncertainty of the Output Quantity, $u_c(y)/y$, (%)				0.57
Coverage Factor, k				x 2
Relative Expanded Uncertainty of the Output Quantity, U/y, (%)				1.14

*Notes and references are on pages 5 and 6.

NOTES

[a] The Sievert is the SI unit for dose equivalent. See reference [1]. One μSv is equal to 0.1 mrem.

Distance from Ampoule (cm):	1	30	100
Approximate Dose Rate (μSv/h):	<0.1 (Not detectable)		

[b] The stated uncertainty is two times the standard uncertainty.

[c] Massic activity is the preferred name for the quantity activity divided by the total mass of the sample. See reference [1].

[d] The reported value, y, of massic activity (activity per unit mass) at the reference time was not measured directly but was derived from measurements and calculations of other quantities. This can be expressed as $y = f(x_1, x_2, x_3, \ldots x_n)$, where f is a mathematical function derived from the assumed model of the measurement process.

The value, x_i, used for each input quantity i has a standard uncertainty, $u(x_i)$, that generates a corresponding uncertainty in y, $u_i(y) = |\partial y/\partial x_i| \cdot u(x_i)$, called a component of combined standard uncertainty of y.

The combined standard uncertainty of y, $u_c(y)$, is the positive square root of the sum of the squares of the components of combined standard uncertainty.

The combined standard uncertainty is multiplied by a coverage factor of $k = 2$ to obtain U, the expanded uncertainty of y.

Since it can be assumed that the possible estimated values of the massic activity are approximately normally distributed with approximate standard deviation $u_c(y)$, the unknown value of the massic activity is believed to lie in the interval $y \pm U$ with a level of confidence of approximately 95 percent.

For further information on the expression of uncertainties, see references [2] and [3].

[e] The value of each standard uncertainty component, and hence the value of the expanded uncertainty itself, is a best estimate based upon all available information, but is only approximately known. That is to say, the "uncertainty of the uncertainty" is large and not well known. This is true for uncertainties evaluated by statistical methods (e.g., the relative standard deviation of the standard deviation of the mean for the liquid-scintillation counting is approximately 50%) and for uncertainties evaluated by other methods (which could easily be over estimated or under estimated by substantial amounts). The unknown value of the expanded uncertainty is believed to lie in the interval $U/2$ to $2U$ (i.e., within a factor of 2 of the estimated value).

[f] Estimated limits of detection for photon-emitting impurities are:
2×10^{-4} $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 20 and 85 keV,
2×10^{-5} $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 93 and 503 keV,
1×10^{-5} $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 519 and 1457 keV, and
5×10^{-6} $\gamma \cdot s^{-1} \cdot g^{-1}$ for energies between 1465 and 3250 keV.

[g] The stated uncertainty is the standard uncertainty. See reference [5].

[h] Relative standard uncertainty of the input quantity x_i.

[i] The relative change in the output quantity y divided by the relative change in the input quantity x_i. If $|\partial y/\partial x_i| \cdot (x_i/y) = 1.0$, then a 1% change in x_i results in a 1% change in y. If $|\partial y/\partial x_i| \cdot (x_i/y) = 0.05$, then a 1% change in x_i results in a 0.05% change in y.

[j] Relative component of combined standard uncertainty of output quantity y, rounded to two significant figures or less. The relative component of combined standard uncertainty of y is given by $u_i(y)/y = |\partial y/\partial x_i| \cdot u(x_i)/y = |\partial y/\partial x_i| \cdot (x_i/y) \cdot u(x_i)/x_i$. The numerical values of $u(x_i)/x_i$, $|\partial y/\partial x_i| \cdot (x_i/y)$, and $u_i(y)/y$, all dimensionless quantities, are listed in columns 3, 4, and 5, respectively. Thus, the value in column 5 is equal to the value in column 4 multiplied by the value in column 3. The input quantities are independent, or very nearly so. Hence the covariances are zero or negligible.

[k] The relative standard uncertainty of $\lambda \cdot t$ is determined by the relative standard uncertainty of λ (i.e., of the half life). The relative standard uncertainty of t is negligible.

[m] $|\partial y/\partial x_i| \cdot (x_i/y) = |\lambda \cdot t|$, multiplied by other sensitivity factors where appropriate.

[n] The live time is determined by counting the pulses from a gated crystal-controlled oscillator.

[p] The standard uncertainty for each undetected impurity that might reasonably be expected to be present is estimated to be equal to the estimated limit of detection for that impurity, i.e. $u(x_i)/x_i = 100\%$. $|\partial y/\partial x_i| \cdot (x_i/y) = \{$(response per Bq of impurity)/(response per Bq of Tc-99)$\} \cdot \{$(Bq of impurity)/(Bq of Tc-99)$\}$. Thus $u_i(y)/y$ is the relative change in y if the impurity were present with a massic activity equal to the estimated limit of detection.

REFERENCES

[1] International Organization for Standardization (ISO), *ISO Standards Handbook - Quantities and Units*, 1993. Available from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036, U.S.A. 1-212-642-4900.

[2] International Organization for Standardization (ISO), *Guide to the Expression of Uncertainty in Measurement*, 1993. Available from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036, U.S.A. 1-212-642-4900. (Listed under ISO miscellaneous publications as "ISO Guide to the Expression 1993".)

[3] B. N. Taylor and C. E. Kuyatt, *Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results*, NIST Technical Note 1297, 1994. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, U.S.A.

[4] National Council on Radiation Protection and Measurements Report No. 58, *A Handbook of Radioactivity Measurements Procedures*, Second Edition, 1985. Available from the National Council on Radiation Protection and Measurements, 7910 Woodmont Avenue, Bethesda, MD 20814 U.S.A.

[5] Evaluated Nuclear Structure Data File (ENSDF), September 1996.

Reagent

Tc-99_00003

NIST TRACEABLE CERTIFICATE
BETA STANDARD SOLUTION

Radionuclide:	Tc-99	**Customer:**	SEVERN TRENT LABORATORIES			
Half-life:	(2.13 ± 0.05)E+05 years	**P.O. No.:**	NJ14830			
Catalog No.:	7099	**Reference Date:**	1-Jan-00	12:00	PST	
Source No.:	681-78-1	**Contained Radioactivity:**	1.009	**µCi,**	37.33	**kBq**

Physical description:

A. Mass of solution:	5.00077 g in 5 mL flame-sealed ampoule
B. Chemical form:	NH_4TcO_4 in H_2O
C. Carrier content:	None
D. Density:	0.9982 g/mL @ 20°C

Radioimpurities: None detected

Radionuclide concentration: 0.2018 µCi/g, 7.467 kBq/g

Method of Calibration:
This source was prepared from a weighed aliquot of solution whose activity in µCi/g was determined using a liquid scintillation counter.

Uncertainty of Measurement:

A. Type A (random) uncertainty:	± 1.3 %
B. Type B (systematic) uncertainty:	± 1.5 %
C. Uncertainty in aliquot weighing:	± 0.0 %
D. Total uncertainty at the 99% confidence level:	± 2.0 %

Notes:

- See reverse side for leak tests performed on this source.
- IPL participates in an NIST measurement assurance program to establish and maintain implicit traceability for a number of nuclides, based on the blind assay (and later NIST certification) of Standard Reference Materials (As in NRC Regulatory Guide 4.15).
- Nuclear data was taken from "Table of Radioactive Isotopes", edited by Virginia Shirley, 1986.

Daniel James Van Dalsem
Quality Control

10-Dec-99
Date Signed

ISOTOPE PRODUCTS LABORATORIES
1800 N. KEYSTONE STREET
BURBANK, CALIFORNIA 91504
818·843·7000 FAX 818·843·6168

IPL Reference Number: 681-78

Reagent

Tc-99_00004

National Institute of Standards & Technology

Certificate

Standard Reference Material 4288A
Technetium-99 Radioactivity Standard

This Standard Reference Material (SRM) consists of radioactive technetium-99, as potassium pertechnetate, and potassium hydroxide dissolved in 5 mL of distilled water. The solution is contained in a flame-sealed NIST borosilicate-glass ampoule. The SRM is intended for the calibration of beta-particle counting instruments and for the monitoring of radiochemical procedures.

Radiological Hazard

The SRM ampoule contains technetium-99 with a total activity of approximately 160 kBq. Technetium-99 decays by beta-particle emission. None of the beta particles escape from the SRM ampoule. During the decay process no photons are emitted. Approximate unshielded dose rates at several distances (as of the reference time) are given in note [a]*. There is no detectable external radiation. The SRM should be used only by persons qualified to handle radioactive material.

Chemical Hazard

The SRM ampoule contains potassium hydroxide (KOH) with a concentration of 0.001 moles per liter of water. The solution is mildly corrosive and could represent a health hazard if it comes in contact with eyes or skin. If the ampoule is to be opened to transfer the solution, the recommended procedure is given on page 2.

Storage and Handling

The SRM should be stored and used at a temperature between 5 and 65 °C. The solution in an unopened ampoule should remain stable and homogeneous until at least September 2006.

The ampoule (or any subsequent container) should always be clearly marked as containing radioactive material. If the ampoule is transported it should be packed, marked, labeled, and shipped in accordance with the applicable national, international, and carrier regulations. The solution in the ampoule is a dangerous good (hazardous material) because of the radioactivity.

Preparation

This Standard Reference Material was prepared in the Physics Laboratory, Ionizing Radiation Division, Radioactivity Group, J.M.R. Hutchinson, Group Leader. The overall technical direction and physical measurements leading to certification were provided by L.L. Lucas of the Radioactivity Group.

The support aspects involved in the preparation, certification, and issuance of this SRM were coordinated through the Standard Reference Materials Program by N.M. Trahey.

Gaithersburg, Maryland 20899
October 1996

Thomas E. Gills, Chief
Standard Reference Materials Program

*Notes and references are on pages 5 and 6.

Recommended Procedure for Opening the SRM Ampoule

1) If the SRM solution is to be diluted, it is recommended that the diluting solution have a composition comparable to that of the SRM solution.

2) Wear eye protection, gloves, and protective clothing and work over a tray with absorbent paper in it.

3) Shake the ampoule to wet all of the inside surface of the ampoule. Return the ampoule to the upright position.

4) Check that all of the liquid has drained out of the neck of the ampoule. If necessary, gently tap the neck to speed the process.

5) Holding the ampoule upright, score the narrowest part of the neck with a scribe or diamond pencil.

6) Lightly wet the scored line. This reduces the crack propagation velocity and makes for a cleaner break.

7) Hold the ampoule upright with a paper towel, a wiper, or a support jig. Position the scored line away from you. Using a paper towel or wiper to avoid contamination, snap off the top of the ampoule by pressing the narrowest part of the neck away from you while pulling the tip of the ampoule towards you.

8) Transfer the solution from the ampoule using a pycnometer or a pipet with dispenser handle. NEVER PIPETTE BY MOUTH.

9) Seal any unused SRM solution in a flame-sealed glass ampoule, if possible, to minimize the evaporation loss. See also reference [4]*.

*Notes and references are on pages 5 and 6.

PROPERTIES OF SRM 4288A
(Certified values are shown in bold type)

Source identification number	NIST SRM 4288A		
Physical Properties:			
Source description	Liquid in flame-sealed NIST borosilicate-glass ampoule		
Ampoule specifications	Body outside diameter Wall Thickness Barium content Lead-oxide content Other heavy elements	(16.5 ± 0.5) mm (0.60 ± 0.04) mm Less than 2.5% Less than 0.02% Trace quantities	
Solution density	(0.998 ± 0.002) $g \cdot mL^{-1}$ at 21 °C [b]*		
Solution mass	(4.998 ± 0.002) g [b]		
Chemical Properties:			
Solution composition	Chemical Formula	Concentration ($mol \cdot L^{-1}$)	Mass Fraction ($g \cdot g^{-1}$)
	H_2O KOH $K^{99}TcO_4$	55 0.001 0.0005	1.00 0.00006 0.0001
Radiological Properties:			
Radionuclide	Technetium-99		
Reference time	1200 EST, 1 September 1996		
Massic activity of the solution [c]	32.61 $kBq \cdot g^{-1}$		
Relative expanded uncertainty (k=2)	1.14% [d] [e]		
Photon-emitting impurities	None detected [f]		
Half lives used in the decay corrections	Cobalt-60: (5.2714 ± 0.0005) a [g] Technetium-99: (2.111 ± 0.012) × 10^5 a [g]		
Measuring instrument	NIST 4πß(LS)-γ-anticoincidence counting system using cobalt-60 as the efficiency-tracing radionuclide. The efficiency was varied electronically from 50 to 93 percent.		

*Notes and references are on pages 5 and 6.

EVALUATION OF THE UNCERTAINTY OF THE MASSIC ACTIVITY [d]*

Input Quantity x_i, the source of uncertainty (and individual uncertainty components where appropriate)	Method Used To Evaluate $u(x_i)$, the standard uncertainty of x_i (A) denotes evaluation by statistical methods (B) denotes evaluation by other methods	Relative Uncertainty Of Input Quantity, $u(x_i)/x_i$, (%) [h]	Relative Sensitivity Factor, $\lvert \partial y / \partial x_i \rvert * (x_i/y)$ [i]	Relative Uncertainty Of Output Quantity, $u_c(y)/y$, (%) [j]
Extrapolated massic liquid-scintillation count rate of the Tc-99 solution, corrected for background, cobalt-60 tracer count rate, and decay.	Standard deviation of the mean for 4 sets of repeated measurements on each of 3 samples (A)	0.10	1.0	0.10
Decay corrections for cobalt-60 for technetium-99	Standard uncertainty of the half life (A) Standard uncertainty of the half life (A)	[k] 0.01 0.6	[m] 0.01 0.0004005	0.0001 0.000003
Decay scheme data	Standard uncertainty of the probability of decay by beta-particle emission (A)	0.01	1.0	0.01
Extrapolation of the beta-particle-count-rate versus anticoincidence-gamma-ray-count-rate to zero anticoincidence-gamma-ray-count-rate	Estimated (B)	0.40	1.0	0.40
Calibration of the cobalt-60 tracer solution using the 4πβ(LS)-γ-anticoincidence counting system	Standard uncertainty of the extrapolated massic count rate (B)	0.25	1.0	0.25
Gravimetric measurements	Estimated (B)	0.20	1.0	0.20
Live-time measurements [n]	Estimated (B)	0.10	1.0	0.10
Variability between ampoules	Estimated (B)	0.20	1.0	0.20
Photon-emitting impurities	Limit of detection (B) [p]	109.	0.000004	0.004
Relative Combined Standard Uncertainty of the Output Quantity, $u_c(y)/y$, (%)				0.57
Coverage Factor, k				x 2
Relative Expanded Uncertainty of the Output Quantity, U/y, (%)				1.14

*Notes and references are on pages 5 and 6.

SRM 4288A, page 4 of 6

NOTES

[a] The Sievert is the SI unit for dose equivalent. See reference [1]. One μSv is equal to 0.1 mrem.

Distance from Ampoule (cm):	1	30	100
Approximate Dose Rate (μSv/h):	<0.1 (Not detectable)		

[b] The stated uncertainty is two times the standard uncertainty.

[c] Massic activity is the preferred name for the quantity activity divided by the total mass of the sample. See reference [1].

[d] The reported value, y, of massic activity (activity per unit mass) at the reference time was not measured directly but was derived from measurements and calculations of other quantities. This can be expressed as $y = f(x_1, x_2, x_3, \ldots x_n)$, where f is a mathematical function derived from the assumed model of the measurement process.

The value, x_i, used for each input quantity i has a standard uncertainty, $u(x_i)$, that generates a corresponding uncertainty in y, $u_i(y) = |\partial y/\partial x_i| * u(x_i)$, called a component of combined standard uncertainty of y.

The combined standard uncertainty of y, $u_c(y)$, is the positive square root of the sum of the squares of the components of combined standard uncertainty.

The combined standard uncertainty is multiplied by a coverage factor of $k = 2$ to obtain U, the expanded uncertainty of y.

Since it can be assumed that the possible estimated values of the massic activity are approximately normally distributed with approximate standard deviation $u_c(y)$, the unknown value of the massic activity is believed to lie in the interval $y \pm U$ with a level of confidence of approximately 95 percent.

For further information on the expression of uncertainties, see references [2] and [3].

[e] The value of each standard uncertainty component, and hence the value of the expanded uncertainty itself, is a best estimate based upon all available information, but is only approximately known. That is to say, the "uncertainty of the uncertainty" is large and not well known. This is true for uncertainties evaluated by statistical methods (e.g., the relative standard deviation of the standard deviation of the mean for the liquid-scintillation counting is approximately 50%) and for uncertainties evaluated by other methods (which could easily be over estimated or under estimated by substantial amounts). The unknown value of the expanded uncertainty is believed to lie in the interval $U/2$ to $2U$ (i.e., within a factor of 2 of the estimated value).

[f] Estimated limits of detection for photon-emitting impurities are:
2×10^{-4} $\gamma * s^{-1} * g^{-1}$ for energies between 20 and 85 keV,
2×10^{-5} $\gamma * s^{-1} * g^{-1}$ for energies between 93 and 503 keV,
1×10^{-5} $\gamma * s^{-1} * g^{-1}$ for energies between 519 and 1457 keV, and
5×10^{-6} $\gamma * s^{-1} * g^{-1}$ for energies between 1465 and 3250 keV.

[g] The stated uncertainty is the standard uncertainty. See reference [5].

[h] Relative standard uncertainty of the input quantity x_i.

[i] The relative change in the output quantity y divided by the relative change in the input quantity x_i. If $|\partial y/\partial x_i| \cdot (x_i/y) = 1.0$, then a 1% change in x_i results in a 1% change in y. If $|\partial y/\partial x_i| \cdot (x_i/y) = 0.05$, then a 1% change in x_i results in a 0.05% change in y.

[j] Relative component of combined standard uncertainty of output quantity y, rounded to two significant figures or less. The relative component of combined standard uncertainty of y is given by $u_i(y)/y = |\partial y/\partial x_i| \cdot u(x_i)/y = |\partial y/\partial x_i| \cdot (x_i/y) * u(x_i)/x_i$. The numerical values of $u(x_i)/x_i$, $|\partial y/\partial x_i| \cdot (x_i/y)$, and $u_i(y)/y$, all dimensionless quantities, are listed in columns 3, 4, and 5, respectively. Thus, the value in column 5 is equal to the value in column 4 multiplied by the value in column 3. The input quantities are independent, or very nearly so. Hence the covariances are zero or negligible.

[k] The relative standard uncertainty of $\lambda \cdot t$ is determined by the relative standard uncertainty of λ (i.e., of the half life). The relative standard uncertainty of t is negligible.

[m] $|\partial y/\partial x_i| \cdot (x_i/y) = |\lambda \cdot t|$, multiplied by other sensitivity factors where appropriate.

[n] The live time is determined by counting the pulses from a gated crystal-controlled oscillator.

[p] The standard uncertainty for each undetected impurity that might reasonably be expected to be present is estimated to be equal to the estimated limit of detection for that impurity, i.e. $u(x_i)/x_i = 100\%$. $|\partial y/\partial x_i| \cdot (x_i/y) = \{(\text{response per Bq of impurity})/(\text{response per Bq of Tc-99})\} \cdot \{(\text{Bq of impurity})/(\text{Bq of Tc-99})\}$. Thus $u_i(y)/y$ is the relative change in y if the impurity were present with a massic activity equal to the estimated limit of detection.

REFERENCES

[1] International Organization for Standardization (ISO), *ISO Standards Handbook - Quantities and Units*, 1993. Available from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036, U.S.A. 1-212-642-4900.

[2] International Organization for Standardization (ISO), *Guide to the Expression of Uncertainty in Measurement*, 1993. Available from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036, U.S.A. 1-212-642-4900. (Listed under ISO miscellaneous publications as "ISO Guide to the Expression 1993".)

[3] B. N. Taylor and C. E. Kuyatt, *Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results*, NIST Technical Note 1297, 1994. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20407, U.S.A.

[4] National Council on Radiation Protection and Measurements Report No. 58, *A Handbook of Radioactivity Measurements Procedures*, Second Edition, 1985. Available from the National Council on Radiation Protection and Measurements, 7910 Woodmont Avenue, Bethesda, MD 20814 U.S.A.

[5] Evaluated Nuclear Structure Data File (ENSDF), September 1996.

Reagent

Tc-99_00019

St. Louis Radiological Standard Reverification Form

Standard ID Number: Tc-99_00019
True Value = 228.82 DPM/L or g
Date Analyzed: 3/16/2016

Radionuclide: Tc-99

	Replicates	
#1	231.67	DPM/L or g
#2	231.67	DPM/L or g
#3	234.67	DPM/L or g

Mean = 232.67

1 sigma = 1.732051 1.96 sigma = 3.39482

True Value minus 5% = 217.379 (True Value - 5%)
True Value plus 5% = 240.261 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Amanda Leigh Dick 03/16/2016

SOP Reference: STL-QA-0002, Current Revision

Pink
Prot. 19
46 min

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Tc-99 Standard Verification:

Std #: 355913
Activity: 228.82dpm/mL
Reference Date: 9/1/1996

-00016

Vial #	InstaGel (mL)	Teva Column	Tc99_~~00012~~ (mL)	DI Water (mL)
1	10	2	1	4
2	10	2	1	4
3	10	2	1	4

0.25mL of 2M HNO_3 was added to vials to mimic the tracer amount added to counting standards (A, B, C).
BKG was made with 5 mL of DI water, 10 mL of InstaGel, 0.25 mL of 2M HNO3, and a conditioned teva column.
Teva column: conditioned with 5mL 0.01M HNO_3.

Prepared By: ~~Justin Price~~ MPM 3/15/16 Mark Minier 3/15/16
Date: ~~5/8/2014~~ MPM 3/15/16

~~PINK~~ MPM 3/15/16
~~Prot 17~~ MPM 3/15/16
30mins MPM 3/15/16

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Reagent ID: Tc-99_00016

Description:	Tc-99 Spike	Expiration Date:	05/12/2015
No. of Bottles:	1	Laboratory:	TestAmerica St. Louis
Storage Location:	RAD Actinide STDs	Prepared By:	Bernsen, Sarah C
Reagent Volume:	500.000 mL	Solvent:	2M HNO3
Creation Date:	04/30/2014	Solvent Lot:	n/a
Open Date:			
Container(s):	582609		
Comment:			

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
Tc-99	Tc-99_00015	09/01/2046	9534.11100	dpm/mL	228.81866	dpm/mL
Total Activity	Tc-99_00015	09/01/2046	9534.11100	dpm/mL	228.81866	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
Tc-99_00015	Tc-99 Secondary Dilution		09/01/46				12.00000	mL

Assay Definition

Assay Description:

Assay Type: DPM (Single)
Report Name: Tc99_Protocol 19
Output Data Path: \Slsvr01\Rad\Upload\PACK_LSC_Pink
Raw Results Path: C:\Packard\Tricarb\Results\Default\Tc99_2015 Protocol 19\20160315_1535\20160315_1535.results
Assay File Name: C:\Packard\TriCarb\Assays\Tc99_2015 Protocol 19.1sa

Additional Data Files Generated with this Protocol:
19Tc99
[Auto] 19Tc99.001

Count Conditions

Nuclide: Tc99_2015
Quench Indicator: tSIE
External Std Terminator (sec): 15 sec
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: Tc99_2015
Count Time (min): 45.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract

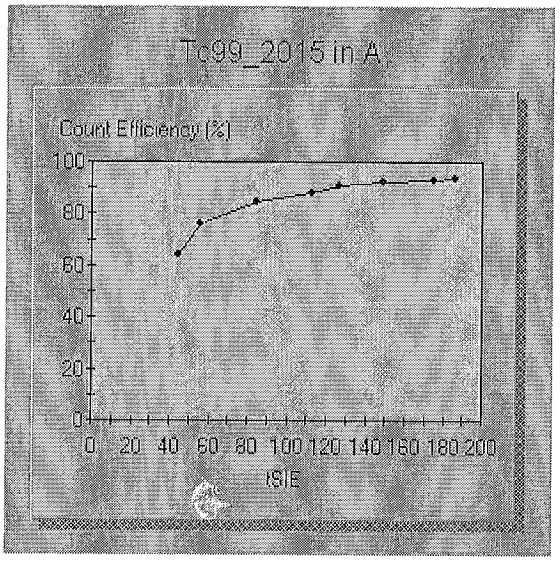
Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: On - Any Region

Regions	LL	UL	2Sigma % Terminator
A	0.0	292.0	1.50
B	2.0	292.0	0.00
C	292.1	450.0	0.00

Count Corrections

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Cycle 1 Results
Quench Curve Block Data

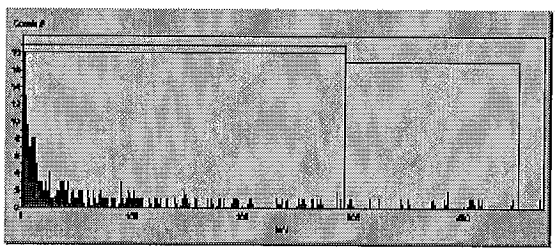


Date Acquired: 08/23/2015
Date Modified:
Tc99_2015 in A

tSIE	Count Efficiency (%)
185.95	93.82
175.23	93.08
148.66	92.15
126.06	91.00
112.84	88.16
84.69	84.43
55.45	76.30
44.33	63.88

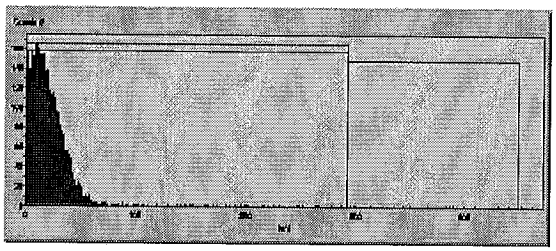
S#			SMPL ID	Count Time	CPMA	DPM1	TIME
DATE	EFF	tSIE	LUM	MESSAGES			
1			BKG	45.00	8.73e+000	9.33e+000	3:35:56 PM
3/15/2016	0.936	182.24	100				

SpectraView Block Data



2			Verification 1	45.00	2.10e+002	2.41e+002	4:26:13 PM
3/15/2016	0.872	105.43	100				

SpectraView Block Data



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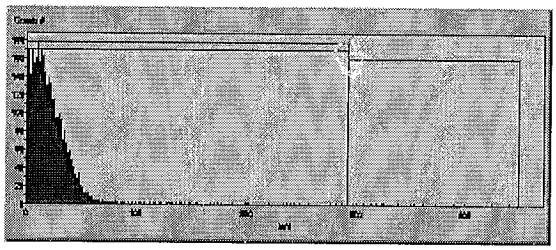
3 Verification 2 45.00 2.11e+002 2.41e+002 5:16:33 PM
3/15/2016 0.875 107.49 100

SpectraView Block Data



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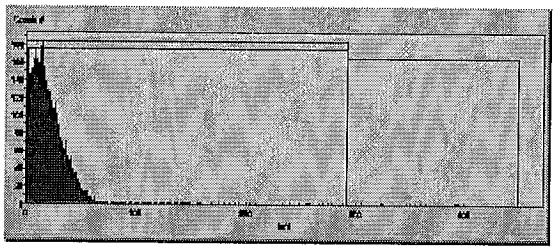
4 Verification 3 45.00 2.14e+002 2.44e+002 6:06:53 PM
3/15/2016 0.878 109.76 100

SpectraView Block Data



3/16/2016 12:01:50 AM: The network path was not found. : '\Slsvr01\Rad\Upload \PACK_LSC_Pink\19Tc99.001' redirected to 'C:\Packard\Tricarb\Results\Default\Tc99_2015 Protocol 19\20160315_1535\19Tc99.001'

Reagent

Tuna Can LCS_00005

St. Louis Radiological Standard Reverification Form

Standard ID Number: Tuna Can LCS_00005 (776670)
True Value = 30.08 pCi/g
Date Analyzed: 10/25/2015

Radionuclide: Gamma LCS Cs-137

	Replicates	
#1	30	pCi/g
#2	29.42	pCi/g
#3	28.95	pCi/g

Mean = 29.45667

1 sigma = 0.525959

1.96 sigma = 1.030881

True Value minus 5% = 28.576 (True Value - 5%)
True Value plus 5% = 31.584 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? Yes **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? Yes **(Acceptance Criteria)**

Standard Reverification Acceptable? Yes

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Jody Watson 10/29/15

SOP Reference: STL-QA-0002, Current Revision

St. Louis Radiological Standard Reverification Form

Standard ID Number: Tuna Can LCS_00005 (776670)
True Value = 97.23 pCi/g
Date Analyzed: 10/25/2015

Radionuclide: Gamma LCS Am-241

	Replicates	
#1	96.82	pCi/g
#2	97.14	pCi/g
#3	97.26	pCi/g

Mean = 97.07333

1 sigma = 0.22745 1.96 sigma = 0.445801

True Value minus 5% = 92.3685 (True Value - 5%)
True Value plus 5% = 102.0915 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? Yes **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? Yes **(Acceptance Criteria)**

Standard Reverification Acceptable? Yes

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Jody Watson 10/29/15

SOP Reference: STL-QA-0002, Current Revision

St. Louis Radiological Standard Reverification Form

Standard ID Number: Tuna Can LCS_00005 (776670)
True Value = 18.6 pCi/g
Date Analyzed: 10/25/2015

Radionuclide: Gamma LCS Co-60

	Replicates	
#1	17.74	pCi/g
#2	18.7	pCi/g
#3	17.74	pCi/g

Mean = 18.06

1 sigma = 0.554256

1.96 sigma = 1.086342

True Value minus 5% = 17.67 (True Value - 5%)
True Value plus 5% = 19.53 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Jody Watson 10/29/15

SOP Reference: STL-QA-0002, Current Revision

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Analysis Report for Gamma Spectroscopy

Batch: 217910 **Operator:**

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
LCS 160-217910~2-	LCS	341.90g	1.00	GammaVision	GV01	10 / 25 / 15 16:00	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	11136	6.771E-001pCi/g	2.800E-001	2.778E-001	1.003E+000	4.849E-001	0.68
AG-108M	10982	-6.779E-003pCi/g	1.235E-002	1.235E-002	2.560E-001	1.249E-001	-0.03
AG-110M	10973	8.663E-003pCi/g	1.112E-001	1.112E-001	3.788E-001	1.830E-001	0.02
AM-241	10818	9.682E+001pCi/g	5.076E+000	7.243E-001	1.019E+000	5.045E-001	95.00
BA-133	10469	1.494E-002pCi/g	8.071E-002	8.071E-002	2.729E-001	1.325E-001	0.05
BA-140	10463	1.374E-001pCi/g	2.240E-001	2.238E-001	7.542E-001	3.638E-001	0.18
BE-7	10435	0.000E+000pCi/g	3.925E-001	3.925E-001	2.266E+000	1.104E+000	0.00
BI-207	10195	-2.705E-003pCi/g	5.167E-002	5.167E-002	1.770E-001	8.502E-002	-0.02
BI-210M	10173	8.461E-002pCi/g	9.172E-002	9.158E-002	3.052E-001	1.486E-001	0.28
BI-212	10160	5.691E-002pCi/g	6.570E-001	6.570E-001	2.266E+000	1.080E+000	0.03
BI-214	10154	5.973E-001pCi/g	1.858E-001	1.832E-001	3.511E-001	1.678E-001	1.70
CD-109	9254	9.357E+000pCi/g	3.288E+000	3.246E+000	3.163E+000	1.546E+000	2.96
CD-113M	17462	-1.418E+002pCi/g	7.297E+002	7.296E+002	2.462E+003	1.198E+003	-0.06
CE-139	9241	-3.471E-002pCi/g	4.795E-002	4.783E-002	1.596E-001	7.801E-002	-0.22
CE-141	9235	1.101E-001pCi/g	6.681E-002	6.657E-002	2.193E-001	1.068E-001	0.50
CE-144	9221	-1.962E-001pCi/g	3.271E-001	3.269E-001	1.092E+000	5.343E-001	-0.18
CF-249	9215	-9.471E-002pCi/g	9.312E-002	9.299E-002	3.094E-001	1.508E-001	-0.31
CF-251	13690	9.783E-002pCi/g	2.187E-001	2.185E-001	7.329E-001	3.576E-001	0.13
CO-56	8704	-4.255E-002pCi/g	7.343E-002	7.340E-002	2.477E-001	1.193E-001	-0.17
CO-57	13694	3.299E-002pCi/g	4.336E-002	4.333E-002	1.444E-001	7.069E-002	0.23
CO-58	8698	-4.234E-003pCi/g	6.516E-002	6.516E-002	2.232E-001	1.072E-001	-0.02
CO-60	8692	1.774E+001pCi/g	9.138E-001	2.049E-001	6.716E-002	2.728E-002	264.12
CR-51	8604	3.076E-001pCi/g	4.401E-001	4.398E-001	1.475E+000	7.149E-001	0.21
CS-134	8553	2.831E-002pCi/g	5.517E-002	5.515E-002	1.867E-001	8.973E-002	0.15
CS-136	8546	-1.109E-001pCi/g	7.217E-002	7.189E-002	2.373E-001	1.142E-001	-0.47
CS-137	8539	3.000E+001pCi/g	1.596E+000	3.338E-001	2.346E-001	1.129E-001	127.87
EU-152	7145	2.877E-001pCi/g	2.421E-001	2.417E-001	6.269E-001	3.045E-001	0.46
EU-154	7138	1.536E-001pCi/g	1.711E-001	1.709E-001	2.192E+000	1.058E+000	0.07
EU-155	7131	4.023E-002pCi/g	1.795E-001	1.795E-001	6.019E-001	2.949E-001	0.07
FE-59	7073	5.086E-002pCi/g	8.161E-002	8.157E-002	4.958E-001	2.382E-001	0.10
GA-68	18005	-1.209E+000pCi/g	2.759E+000	2.758E+000	9.368E+000	4.493E+000	-0.13
GD-153	6824	-3.997E-003pCi/g	1.316E-001	1.316E-001	4.420E-001	2.167E-001	-0.01
HF-181	6495	9.445E-002pCi/g	6.542E-002	6.524E-002	2.322E-001	1.124E-001	0.41
HG-203	6466	-3.305E-002pCi/g	5.989E-002	5.986E-002	2.006E-001	9.778E-002	-0.16
I-131	6380	6.854E-002pCi/g	6.647E-002	6.638E-002	2.080E-001	1.010E-001	0.33
IR-192	6303	-3.750E-002pCi/g	5.981E-002	5.977E-002	2.001E-001	9.748E-002	-0.19
K-40	6148	-1.766E-002pCi/g	3.281E-001	3.281E-001	1.273E+000	5.734E-001	-0.01
LA-140	6096	5.379E-002pCi/g	4.255E-002	4.246E-002	1.212E-001	5.304E-002	0.44
MN-54	5382	3.726E-002pCi/g	6.608E-002	6.605E-002	2.235E-001	1.073E-001	0.17
NA-22	5201	2.193E-002pCi/g	3.156E-002	3.154E-002	1.109E-001	4.933E-002	0.20
NB-94	5160	-7.036E-002pCi/g	5.947E-002	5.936E-002	1.977E-001	9.485E-002	-0.36
NB-95	5154	3.994E-002pCi/g	5.496E-002	5.493E-002	1.856E-001	8.861E-002	0.22
ND-147	5083	-4.022E-002pCi/g	4.368E-001	4.368E-001	1.486E+000	7.183E-001	-0.03
NP-237	4757	-4.170E-001pCi/g	3.829E-001	3.821E-001	1.266E+000	6.228E-001	-0.33
NP-239	4751	-3.998E-004pCi/g	1.579E-001	1.579E-001	5.314E-001	2.601E-001	0.00
PA-231	4541	1.362E+000pCi/g	8.851E-001	8.820E-001	4.992E+000	2.420E+000	0.27
PA-233	4535	1.538E-001pCi/g	1.053E-001	1.050E-001	4.596E-001	2.236E-001	0.33
PA-234	4528	-1.000E-001pCi/g	2.035E-001	2.034E-001	6.804E-001	3.330E-001	-0.15
PA-234M	19453	-4.676E-001pCi/g	9.603E+000	9.603E+000	3.283E+001	1.580E+001	-0.01
PB-210	4467	8.549E+002pCi/g	5.089E+001	8.359E+000	1.428E+001	7.079E+000	59.88

PB-212	4454	3.866E-001pCi/g	1.254E-001	1.229E-001	3.210E-001	1.563E-001	1.20
PB-214	4448	3.785E-001pCi/g	1.361E-001	1.347E-001	4.828E-001	2.350E-001	0.78
PM-144	19585	4.119E-002pCi/g	3.554E-002	3.548E-002	1.884E-001	9.023E-002	0.22
PM-146	2464	3.014E-002pCi/g	1.161E-001	1.161E-001	5.435E-001	2.596E-001	0.06
RH-106	1882	-2.180E-001pCi/g	1.994E-001	1.991E-001	2.012E+000	9.694E-001	-0.11
RU-103	1828	0.000E+000pCi/g	5.216E-002	5.216E-002	2.468E-001	1.200E-001	0.00
SB-124	1784	4.494E-003pCi/g	5.524E-002	5.524E-002	1.889E-001	9.084E-002	0.02
SB-125	1777	2.356E-001pCi/g	2.342E-001	2.338E-001	7.180E-001	3.497E-001	0.33
SC-46	1739	9.344E-002pCi/g	5.627E-002	5.606E-002	2.546E-001	1.226E-001	0.37
SN-113	1570	-5.143E-002pCi/g	9.312E-002	9.309E-002	3.121E-001	1.520E-001	-0.16
SN-126	17459	5.835E-002pCi/g	5.783E-001	5.783E-001	1.938E+000	9.517E-001	0.03
TA-182	1301	1.840E-003pCi/g	2.175E-001	2.175E-001	7.482E-001	3.582E-001	0.00
TC-99M	17412	2.645E-002pCi/g	4.239E-002	4.236E-002	1.415E-001	6.920E-002	0.19
TH-227	1058	2.617E+000pCi/g	1.856E+000	1.850E+000	6.105E+000	3.024E+000	0.43
TH-229	1046	9.577E-002pCi/g	1.073E-001	1.070E-001	3.470E+000	1.699E+000	0.03
TH-234	1027	7.930E-002pCi/g	7.788E-002	7.777E-002	5.067E+000	2.489E+000	0.02
TL-208	929	1.848E-001pCi/g	8.785E-002	8.733E-002	2.310E-001	1.114E-001	0.80
U-235	281	8.439E-002pCi/g	1.008E-001	1.007E-001	9.972E-001	4.863E-001	0.08
Y-88	74	-2.520E-002pCi/g	8.904E-002	8.903E-002	3.017E-001	1.458E-001	-0.08
ZN-65	31	-9.888E-002pCi/g	1.701E-001	1.700E-001	5.742E-001	2.762E-001	-0.17
ZR-95	7	8.948E-002pCi/g	8.129E-002	8.116E-002	3.492E-001	1.669E-001	0.26

Laboratory Control Sample Information

Sample ID	WRKNO	Analyte	Activity		StdAdded	Recovery	ZFactor
LCS 160-217910~2-A	LCS 160-217910~2-A	CS-137	3.000E+001	pCi/g	3.008E+001	99.72%	-0.0379
		CO-60	1.774E+001	pCi/g	1.860E+001	95.37%	-0.6506
		AM-241	9.682E+001	pCi/g	9.723E+001	99.58%	-0.0565

Sample Duplicate Information

Sample ID	Dup Sample ID	Analyte	Samp Activity	Dup Activity	RPD	RER	DER	Flag	ZFactor

Blanks Information

SampID	WRKNO	Analyte	Activity	UncTotal	ZFactor
MB 160-217910~1-A	MB	AC-228	4.303E-002	4.671E-002	0.9214
MB 160-217910~1-A	MB	AG-108M	5.251E-003	5.684E-003	0.9238
MB 160-217910~1-A	MB	AG-110M	-1.714E-002	2.621E-002	-0.6542
MB 160-217910~1-A	MB	AM-241	-1.074E-002	2.656E-002	-0.4043
MB 160-217910~1-A	MB	BA-133	8.629E-003	1.742E-002	0.4954
MB 160-217910~1-A	MB	BA-140	1.558E-002	5.153E-002	0.3023
MB 160-217910~1-A	MB	BE-7	2.157E-003	9.785E-002	0.0220
MB 160-217910~1-A	MB	BI-207	1.116E-002	1.404E-002	0.7947
MB 160-217910~1-A	MB	BI-210M	1.161E-002	2.003E-002	0.5795
MB 160-217910~1-A	MB	BI-212	-6.519E-004	1.749E-001	-0.0037
MB 160-217910~1-A	MB	BI-214	-3.620E-002	1.629E-001	-0.2222
MB 160-217910~1-A	MB	CD-109	1.434E-001	1.674E-001	0.8566
MB 160-217910~1-A	MB	CD-113M	0.000E+000	1.045E+002	0.0000
MB 160-217910~1-A	MB	CE-139	1.578E-003	8.340E-003	0.1892
MB 160-217910~1-A	MB	CE-141	1.422E-002	1.284E-002	1.1075
MB 160-217910~1-A	MB	CE-144	4.109E-002	5.187E-002	0.7922
MB 160-217910~1-A	MB	CF-249	-5.027E-003	1.126E-002	-0.4467
MB 160-217910~1-A	MB	CF-251	4.859E-003	5.226E-002	0.0930
MB 160-217910~1-A	MB	CO-56	8.053E-003	1.466E-002	0.5492
MB 160-217910~1-A	MB	CO-57	0.000E+000	3.213E-003	0.0000
MB 160-217910~1-A	MB	CO-58	0.000E+000	1.250E-002	0.0000
MB 160-217910~1-A	MB	CO-60	-1.064E-002	2.053E-002	-0.5180
MB 160-217910~1-A	MB	CR-51	1.172E-001	6.390E-002	1.8350
MB 160-217910~1-A	MB	CS-134	9.570E-003	1.221E-002	0.7837
MB 160-217910~1-A	MB	CS-136	3.486E-003	1.564E-002	0.2228
MB 160-217910~1-A	MB	CS-137	9.350E-003	1.111E-002	0.8412
MB 160-217910~1-A	MB	EU-152	2.175E-002	4.360E-002	0.4989
MB 160-217910~1-A	MB	EU-154	4.973E-002	3.892E-002	1.2779
MB 160-217910~1-A	MB	EU-155	1.249E-002	1.540E-002	0.8106
MB 160-217910~1-A	MB	FE-59	1.620E-002	2.388E-002	0.6781
MB 160-217910~1-A	MB	GA-68	0.000E+000	1.259E-001	0.0000
MB 160-217910~1-A	MB	GD-153	-7.436E-003	2.145E-002	-0.3466
MB 160-217910~1-A	MB	HF-181	3.207E-003	4.689E-003	0.6839
MB 160-217910~1-A	MB	HG-203	-1.192E-003	1.116E-002	-0.1067
MB 160-217910~1-A	MB	I-131	2.131E-002	1.517E-002	1.4047
MB 160-217910~1-A	MB	IR-192	1.091E-003	6.973E-003	0.1565
MB 160-217910~1-A	MB	K-40	-4.508E-001	8.911E+000	-0.0506
MB 160-217910~1-A	MB	LA-140	0.000E+000	5.961E-003	0.0000
MB 160-217910~1-A	MB	MN-54	-1.135E-002	1.784E-002	-0.6362
MB 160-217910~1-A	MB	NA-22	0.000E+000	4.741E-003	0.0000
MB 160-217910~1-A	MB	NB-94	2.773E-004	1.092E-002	0.0254
MB 160-217910~1-A	MB	NB-95	7.816E-004	1.302E-002	0.0600
MB 160-217910~1-A	MB	ND-147	4.997E-002	8.625E-002	0.5794
MB 160-217910~1-A	MB	NP-237	1.411E-002	3.697E-002	0.3816
MB 160-217910~1-A	MB	NP-239	1.903E-002	2.441E-002	0.7798
MB 160-217910~1-A	MB	PA-231	5.945E-002	5.603E-002	1.0610
MB 160-217910~1-A	MB	PA-233	2.561E-002	2.422E-002	1.0574
MB 160-217910~1-A	MB	PA-234	2.390E-002	2.381E-002	1.0038
MB 160-217910~1-A	MB	PA-234M	-1.176E+000	2.117E+000	-0.5557
MB 160-217910~1-A	MB	PB-210	0.000E+000	1.332E-001	0.0000
MB 160-217910~1-A	MB	PB-212	0.000E+000	1.627E-002	0.0000
MB 160-217910~1-A	MB	PB-214	5.054E-002	1.994E-002	2.5345

MB 160-217910~1-A	MB	PM-144	7.657E-003	1.530E-002	0.5006
MB 160-217910~1-A	MB	PM-146	-3.061E-002	4.827E-002	-0.6342
MB 160-217910~1-A	MB	RA-226	-8.578E-002	2.376E-001	-0.3610
MB 160-217910~1-A	MB	RH-106	-3.627E-003	1.343E-001	-0.0270
MB 160-217910~1-A	MB	RU-103	-4.735E-003	1.118E-002	-0.4237
MB 160-217910~1-A	MB	SB-124	4.616E-003	1.522E-002	0.3032
MB 160-217910~1-A	MB	SB-125	1.047E-002	2.186E-002	0.4787
MB 160-217910~1-A	MB	SC-46	0.000E+000	7.139E-003	0.0000
MB 160-217910~1-A	MB	SN-113	6.694E-003	1.727E-002	0.3875
MB 160-217910~1-A	MB	SN-126	9.094E-003	7.322E-002	0.1242
MB 160-217910~1-A	MB	TA-182	9.043E-003	1.445E-002	0.6258
MB 160-217910~1-A	MB	TC-99M	-1.255E-003	8.033E-003	-0.1562
MB 160-217910~1-A	MB	TH-227	5.670E-003	1.499E-001	0.0378
MB 160-217910~1-A	MB	TH-229	-7.369E-002	1.885E-001	-0.3910
MB 160-217910~1-A	MB	TH-234	1.446E-002	1.018E-001	0.1420
MB 160-217910~1-A	MB	TL-208	1.346E-002	1.077E-002	1.2495
MB 160-217910~1-A	MB	U-235	7.507E-002	5.910E-002	1.2704
MB 160-217910~1-A	MB	Y-88	0.000E+000	3.838E-003	0.0000
MB 160-217910~1-A	MB	ZN-65	-1.025E-002	3.666E-002	-0.2797
MB 160-217910~1-A	MB	ZR-95	3.371E-003	1.189E-002	0.2836

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Analysis Report for Gamma Spectroscopy

Batch: 218441 **Operator:**

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
LCS 160-218441~2-	LCS	341.90g	1.00	GammaVision	GV08	10 / 27 / 15 15:25	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	11136	7.359E-002pCi/g	1.183E-001	1.183E-001	1.351E+000	6.534E-001	0.05
AG-108M	10982	-1.250E-001pCi/g	9.830E-002	9.810E-002	3.249E-001	1.586E-001	-0.38
AG-110M	10973	-2.165E-001pCi/g	1.350E-001	1.346E-001	4.435E-001	2.131E-001	-0.49
AM-241	10818	9.714E+001pCi/g	5.131E+000	9.547E-001	1.461E+000	7.246E-001	66.50
BA-133	10469	-1.434E-001pCi/g	1.166E-001	1.163E-001	3.856E-001	1.880E-001	-0.37
BA-140	10463	3.008E-001pCi/g	3.866E-001	3.863E-001	8.898E-001	4.279E-001	0.34
BE-7	10435	1.764E-001pCi/g	8.364E-001	8.364E-001	2.818E+000	1.373E+000	0.06
BI-207	10195	-3.983E-002pCi/g	7.303E-002	7.300E-002	2.465E-001	1.188E-001	-0.16
BI-210M	10173	4.829E-002pCi/g	6.207E-002	6.201E-002	3.950E-001	1.928E-001	0.12
BI-212	10160	1.191E+000pCi/g	9.269E-001	9.248E-001	3.076E+000	1.467E+000	0.39
BI-214	10154	1.600E-001pCi/g	1.464E-001	1.462E-001	4.902E-001	2.351E-001	0.33
CD-109	9254	2.361E+000pCi/g	4.441E+000	4.439E+000	4.063E+000	1.992E+000	0.58
CD-113M	17462	-3.716E+001pCi/g	9.021E+002	9.021E+002	3.049E+003	1.485E+003	-0.01
CE-139	9241	3.182E-002pCi/g	5.820E-002	5.812E-002	1.942E-001	9.506E-002	0.16
CE-141	9235	4.980E-002pCi/g	8.364E-002	8.361E-002	2.795E-001	1.366E-001	0.18
CE-144	9221	2.569E-002pCi/g	4.004E-001	4.004E-001	1.345E+000	6.591E-001	0.02
CF-249	9215	5.942E-002pCi/g	1.163E-001	1.162E-001	3.177E-001	1.540E-001	0.19
CF-251	13690	3.966E-001pCi/g	2.757E-001	2.735E-001	9.033E-001	4.415E-001	0.44
CO-56	8704	8.557E-002pCi/g	8.063E-002	8.051E-002	2.695E-001	1.287E-001	0.32
CO-57	13694	3.076E-002pCi/g	5.134E-002	5.131E-002	1.712E-001	8.393E-002	0.18
CO-58	8698	1.346E-002pCi/g	8.405E-002	8.405E-002	2.875E-001	1.379E-001	0.05
CO-60	8692	1.870E+001pCi/g	1.007E+000	3.639E-001	1.870E-001	8.459E-002	100.02
CR-51	8604	-4.740E-001pCi/g	6.167E-001	6.162E-001	2.059E+000	1.002E+000	-0.23
CS-134	8553	9.391E-002pCi/g	6.368E-002	6.349E-002	1.526E-001	7.164E-002	0.62
CS-136	8546	3.304E-002pCi/g	3.799E-002	3.794E-002	3.085E-001	1.484E-001	0.11
CS-137	8539	2.942E+001pCi/g	1.582E+000	3.998E-001	3.497E-001	1.691E-001	84.15
EU-152	7145	1.912E-001pCi/g	2.554E-001	2.552E-001	8.302E-001	4.042E-001	0.23
EU-154	7138	6.956E-002pCi/g	1.146E-001	1.146E-001	2.351E+000	1.125E+000	0.03
EU-155	7131	2.888E-002pCi/g	2.199E-001	2.199E-001	7.370E-001	3.618E-001	0.04
FE-59	7073	-1.833E-001pCi/g	1.818E-001	1.815E-001	6.083E-001	2.908E-001	-0.30
GA-68	18005	4.764E+000pCi/g	2.454E+000	2.440E+000	7.914E+000	3.694E+000	0.60
GD-153	6824	7.978E-002pCi/g	1.552E-001	1.551E-001	5.177E-001	2.540E-001	0.15
HF-181	6495	2.335E-002pCi/g	1.043E-001	1.043E-001	3.518E-001	1.712E-001	0.07
HG-203	6466	6.698E-003pCi/g	6.497E-002	6.497E-002	2.197E-001	1.068E-001	0.03
I-131	6380	-1.610E-002pCi/g	8.500E-002	8.500E-002	2.866E-001	1.396E-001	-0.06
IR-192	6303	1.018E-001pCi/g	9.042E-002	9.022E-002	2.283E-001	1.111E-001	0.45
K-40	6148	1.623E-001pCi/g	3.950E-001	3.949E-001	1.502E+000	6.607E-001	0.11
LA-140	6096	6.191E-003pCi/g	4.179E-002	4.179E-002	5.946E-002	1.880E-002	0.10
MN-54	5382	1.822E-002pCi/g	9.095E-002	9.094E-002	3.102E-001	1.491E-001	0.06
NA-22	5201	1.507E-002pCi/g	4.555E-002	4.554E-002	1.637E-001	7.329E-002	0.09
NB-94	5160	6.019E-002pCi/g	3.912E-002	3.899E-002	2.572E-001	1.233E-001	0.23
NB-95	5154	2.541E-002pCi/g	7.560E-002	7.559E-002	2.579E-001	1.234E-001	0.10
ND-147	5083	4.071E-001pCi/g	4.877E-001	4.871E-001	1.636E+000	7.863E-001	0.25
NP-237	4757	0.000E+000pCi/g	4.510E-001	4.510E-001	1.509E+000	7.430E-001	0.00
NP-239	4751	-1.622E-002pCi/g	2.061E-001	2.061E-001	6.910E-001	3.393E-001	-0.02
PA-231	4541	-2.797E-001pCi/g	6.016E-001	6.014E-001	7.388E+000	3.603E+000	-0.04
PA-233	4535	1.354E-001pCi/g	2.200E-001	2.199E-001	5.917E-001	2.884E-001	0.23
PA-234	4528	2.370E-002pCi/g	7.301E-002	7.300E-002	8.496E-001	4.166E-001	0.03
PA-234M	19453	2.685E+000pCi/g	3.731E+000	3.729E+000	3.935E+001	1.884E+001	0.07
PB-210	4467	8.385E+002pCi/g	5.067E+001	1.196E+001	2.132E+001	1.059E+001	39.34

PB-212	4454	2.569E-001pCi/g	1.484E-001	1.475E-001	4.865E-001	2.382E-001	0.53
PB-214	4448	-1.187E-001pCi/g	2.062E-001	2.061E-001	4.941E-001	2.392E-001	-0.24
PM-144	19585	-1.104E-002pCi/g	1.584E-002	1.583E-002	2.412E-001	1.154E-001	-0.05
PM-146	2464	1.016E-001pCi/g	1.134E-001	1.133E-001	6.877E-001	3.278E-001	0.15
RH-106	1882	9.849E-001pCi/g	7.318E-001	7.301E-001	1.785E+000	8.453E-001	0.55
RU-103	1828	-7.826E-003pCi/g	8.182E-002	8.182E-002	2.777E-001	1.346E-001	-0.03
SB-124	1784	1.264E-001pCi/g	7.595E-002	7.567E-002	1.582E-001	7.445E-002	0.80
SB-125	1777	2.237E-001pCi/g	1.965E-001	1.962E-001	9.608E-001	4.688E-001	0.23
SC-46	1739	6.651E-002pCi/g	9.525E-002	9.519E-002	3.209E-001	1.541E-001	0.21
SN-113	1570	2.166E-002pCi/g	1.160E-001	1.160E-001	3.912E-001	1.906E-001	0.06
SN-126	17459	-6.991E+000pCi/g	1.044E+000	9.772E-001	3.085E+000	1.523E+000	-2.27
TA-182	1301	2.287E-001pCi/g	2.419E-001	2.416E-001	9.149E-001	4.354E-001	0.25
TC-99M	17412	-3.499E-002pCi/g	5.302E-002	5.298E-002	1.767E-001	8.659E-002	-0.20
TH-227	1058	-3.701E+001pCi/g	4.063E+000	3.522E+000	1.124E+001	5.589E+000	-3.29
TH-229	1046	-1.190E+000pCi/g	1.295E+000	1.291E+000	4.291E+000	2.104E+000	-0.28
TH-234	1027	-5.199E+001pCi/g	5.252E+000	4.493E+000	1.365E+001	6.775E+000	-3.81
TL-208	929	1.496E-001pCi/g	8.481E-002	8.445E-002	2.772E-001	1.334E-001	0.54
U-235	281	-6.184E-002pCi/g	1.918E+001	1.918E+001	1.442E+000	7.072E-001	-0.04
Y-88	74	-1.169E-001pCi/g	1.223E-001	1.221E-001	4.080E-001	1.972E-001	-0.29
ZN-65	31	-6.060E-002pCi/g	2.169E-001	2.169E-001	7.398E-001	3.548E-001	-0.08
ZR-95	7	1.074E-001pCi/g	1.365E-001	1.364E-001	4.600E-001	2.199E-001	0.23

Laboratory Control Sample Information

Sample ID	WRKNO	Analyte	Activity	StdAdded	Recovery	ZFactor
LCS 160-218441~2-A	LCS 160-218441~2-A	CS-137	2.942E+001 pCi/g	3.008E+001	97.82%	-0.2899
		CO-60	1.870E+001 pCi/g	1.859E+001	100.64%	0.0836
		AM-241	9.714E+001 pCi/g	9.723E+001	99.92%	-0.0112

Sample Duplicate Information

Sample ID	Dup Sample ID	Analyte	Samp Activity	Dup Activity	RPD	RER	DER	Flag	ZFactor

Blanks Information

SampID	WRKNO	Analyte	Activity	UncTotal	ZFactor
MB 160-218441~1-A	MB	AC-228	3.987E-002	4.560E-002	0.8743
MB 160-218441~1-A	MB	AG-108M	5.451E-003	8.527E-003	0.6393
MB 160-218441~1-A	MB	AG-110M	-1.473E-002	2.625E-002	-0.5612
MB 160-218441~1-A	MB	AM-241	-1.477E-002	2.928E-002	-0.5047
MB 160-218441~1-A	MB	BA-133	3.407E-003	1.959E-002	0.1740
MB 160-218441~1-A	MB	BA-140	6.525E-002	6.139E-002	1.0630
MB 160-218441~1-A	MB	BE-7	0.000E+000	6.035E-002	0.0000
MB 160-218441~1-A	MB	BI-207	8.121E-003	1.544E-002	0.5258
MB 160-218441~1-A	MB	BI-210M	1.934E-002	1.581E-002	1.2233
MB 160-218441~1-A	MB	BI-212	0.000E+000	1.856E-001	0.0000
MB 160-218441~1-A	MB	BI-214	-1.133E-002	5.880E-002	-0.1926
MB 160-218441~1-A	MB	CD-109	9.453E-002	2.288E-001	0.4132
MB 160-218441~1-A	MB	CD-113M	-1.366E+002	2.218E+002	-0.6159
MB 160-218441~1-A	MB	CE-139	-3.140E-003	9.986E-003	-0.3145
MB 160-218441~1-A	MB	CE-141	-6.169E-003	1.570E-002	-0.3929
MB 160-218441~1-A	MB	CE-144	4.904E-003	4.662E-002	0.1052
MB 160-218441~1-A	MB	CF-249	8.754E-003	1.572E-002	0.5569
MB 160-218441~1-A	MB	CF-251	-2.594E-002	5.279E-002	-0.4914
MB 160-218441~1-A	MB	CO-56	-6.736E-003	1.135E-002	-0.5936
MB 160-218441~1-A	MB	CO-57	4.406E-003	9.298E-003	0.4738
MB 160-218441~1-A	MB	CO-58	1.276E-002	1.914E-002	0.6662
MB 160-218441~1-A	MB	CO-60	-3.371E-003	2.082E-002	-0.1619
MB 160-218441~1-A	MB	CR-51	6.564E-002	1.182E-001	0.5552
MB 160-218441~1-A	MB	CS-134	-7.518E-004	1.083E-003	-0.6945
MB 160-218441~1-A	MB	CS-136	0.000E+000	5.399E-003	0.0000
MB 160-218441~1-A	MB	CS-137	1.650E-002	1.844E-002	0.8946
MB 160-218441~1-A	MB	EU-152	-8.619E-004	1.441E-003	-0.5979
MB 160-218441~1-A	MB	EU-154	1.149E-001	1.445E-001	0.7954
MB 160-218441~1-A	MB	EU-155	-2.026E-002	3.719E-002	-0.5447
MB 160-218441~1-A	MB	FE-59	9.255E-003	1.826E-002	0.5070
MB 160-218441~1-A	MB	GA-68	0.000E+000	1.430E-001	0.0000
MB 160-218441~1-A	MB	GD-153	-2.088E-002	3.165E-002	-0.6598
MB 160-218441~1-A	MB	HF-181	-1.476E-003	1.865E-003	-0.7914
MB 160-218441~1-A	MB	HG-203	1.656E-002	9.732E-003	1.7013
MB 160-218441~1-A	MB	I-131	6.142E-003	2.344E-002	0.2620
MB 160-218441~1-A	MB	IR-192	3.418E-003	1.317E-002	0.2595
MB 160-218441~1-A	MB	K-40	-6.451E-001	1.290E+001	-0.0500
MB 160-218441~1-A	MB	LA-140	2.528E-003	2.485E-002	0.1017
MB 160-218441~1-A	MB	MN-54	-2.351E-003	1.657E-002	-0.1419
MB 160-218441~1-A	MB	NA-22	0.000E+000	5.287E-003	0.0000
MB 160-218441~1-A	MB	NB-94	1.400E-003	7.442E-003	0.1881
MB 160-218441~1-A	MB	NB-95	-2.221E-003	1.672E-002	-0.1328
MB 160-218441~1-A	MB	ND-147	2.932E-002	2.819E-002	1.0401
MB 160-218441~1-A	MB	NP-237	-1.201E-002	7.433E-002	-0.1615
MB 160-218441~1-A	MB	NP-239	4.366E-002	2.736E-002	1.5962
MB 160-218441~1-A	MB	PA-231	3.079E-001	2.831E-001	1.0876
MB 160-218441~1-A	MB	PA-233	2.077E-002	3.041E-002	0.6831
MB 160-218441~1-A	MB	PA-234	5.537E-002	5.645E-002	0.9808
MB 160-218441~1-A	MB	PA-234M	-7.028E-001	1.816E+000	-0.3870
MB 160-218441~1-A	MB	PB-210	4.463E-001	4.306E-001	1.0364
MB 160-218441~1-A	MB	PB-212	4.711E-003	2.788E-002	0.1690
MB 160-218441~1-A	MB	PB-214	4.377E-002	3.189E-002	1.3727

MB 160-218441~1-A	MB	PM-144	9.554E-004	6.357E-003	0.1503
MB 160-218441~1-A	MB	PM-146	-3.544E-002	4.841E-002	-0.7319
MB 160-218441~1-A	MB	RH-106	4.655E-002	1.634E-001	0.2849
MB 160-218441~1-A	MB	RU-103	6.210E-003	1.531E-002	0.4057
MB 160-218441~1-A	MB	SB-124	-1.006E-002	1.857E-002	-0.5418
MB 160-218441~1-A	MB	SB-125	1.305E-003	4.143E-003	0.3151
MB 160-218441~1-A	MB	SC-46	-1.594E-004	1.758E-002	-0.0091
MB 160-218441~1-A	MB	SN-113	3.684E-002	1.998E-002	1.8437
MB 160-218441~1-A	MB	SN-126	2.933E-001	1.237E-001	2.3710
MB 160-218441~1-A	MB	TA-182	2.383E-002	4.528E-002	0.5262
MB 160-218441~1-A	MB	TC-99M	3.169E-003	8.389E-003	0.3778
MB 160-218441~1-A	MB	TH-227	2.179E-001	1.503E-001	1.4498
MB 160-218441~1-A	MB	TH-229	-9.602E-002	2.482E-001	-0.3868
MB 160-218441~1-A	MB	TH-234	-6.219E-001	8.472E-001	-0.7341
MB 160-218441~1-A	MB	TL-208	1.433E-002	2.289E-002	0.6260
MB 160-218441~1-A	MB	U-235	1.116E-001	8.413E-002	1.3268
MB 160-218441~1-A	MB	Y-88	0.000E+000	6.164E-003	0.0000
MB 160-218441~1-A	MB	ZN-65	0.000E+000	9.463E-003	0.0000
MB 160-218441~1-A	MB	ZR-95	-8.939E-004	1.210E-003	-0.7385

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Analysis Report for Gamma Spectroscopy

Batch: 218442 **Operator:**

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
LCS 160-218442~2-	LCS	341.90g	1.00	GammaVision	GV09	10 / 27 / 15 14:09	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA
AC-228	11136	5.980E-001pCi/g	2.506E-001	2.488E-001	1.014E+000	4.923E-001	0.59
AG-108M	10982	6.362E-006pCi/g	7.135E-002	7.135E-002	2.404E-001	1.175E-001	0.00
AG-110M	10973	-4.015E-003pCi/g	1.009E-001	1.009E-001	3.435E-001	1.661E-001	-0.01
AM-241	10818	9.726E+001pCi/g	5.101E+000	7.368E-001	1.053E+000	5.222E-001	92.32
BA-133	10469	8.644E-004pCi/g	8.695E-002	8.695E-002	2.932E-001	1.432E-001	0.00
BA-140	10463	2.814E-001pCi/g	2.308E-001	2.303E-001	7.647E-001	3.708E-001	0.37
BE-7	10435	5.425E-001pCi/g	6.400E-001	6.394E-001	2.131E+000	1.041E+000	0.25
BI-207	10195	-2.984E-002pCi/g	5.728E-002	5.726E-002	1.928E-001	9.338E-002	-0.15
BI-210M	10173	2.463E-002pCi/g	9.686E-002	9.684E-002	3.249E-001	1.590E-001	0.08
BI-212	10160	4.340E-001pCi/g	7.169E-001	7.165E-001	2.420E+000	1.163E+000	0.18
BI-214	10154	8.273E-001pCi/g	1.845E-001	1.794E-001	3.533E-001	1.700E-001	2.34
CD-109	9254	5.485E+000pCi/g	3.401E+000	3.387E+000	3.143E+000	1.540E+000	1.75
CD-113M	17462	8.114E+000pCi/g	7.905E+002	7.905E+002	2.661E+003	1.302E+003	0.00
CE-139	9241	-3.089E-002pCi/g	5.178E-002	5.170E-002	1.723E-001	8.460E-002	-0.18
CE-141	9235	-3.579E-003pCi/g	6.317E-002	6.317E-002	2.129E-001	1.040E-001	-0.02
CE-144	9221	1.068E-001pCi/g	3.278E-001	3.277E-001	1.096E+000	5.379E-001	0.10
CF-249	9215	1.007E-001pCi/g	1.004E-001	1.002E-001	2.876E-001	1.404E-001	0.35
CF-251	13690	-2.639E-001pCi/g	2.511E-001	2.500E-001	8.293E-001	4.069E-001	-0.32
CO-56	8704	1.134E-001pCi/g	8.881E-002	8.861E-002	2.341E-001	1.131E-001	0.48
CO-57	13694	5.717E-003pCi/g	4.406E-002	4.406E-002	1.476E-001	7.249E-002	0.04
CO-58	8698	5.129E-002pCi/g	6.155E-002	6.150E-002	2.064E-001	9.935E-002	0.25
CO-60	8692	1.774E+001pCi/g	9.122E-001	1.984E-001	9.851E-002	4.359E-002	180.05
CR-51	8604	-2.572E-002pCi/g	5.332E-001	5.332E-001	1.795E+000	8.779E-001	-0.01
CS-134	8553	5.920E-002pCi/g	4.059E-002	4.047E-002	2.764E-001	1.350E-001	0.21
CS-136	8546	4.051E-002pCi/g	4.705E-002	4.700E-002	1.989E-001	9.561E-002	0.20
CS-137	8539	2.895E+001pCi/g	1.537E+000	3.066E-001	2.184E-001	1.053E-001	132.57
EU-152	7145	1.210E-001pCi/g	1.140E-001	1.138E-001	6.662E-001	3.254E-001	0.18
EU-154	7138	1.536E-001pCi/g	2.903E-001	2.902E-001	2.035E+000	9.844E-001	0.08
EU-155	7131	-2.215E-001pCi/g	1.885E-001	1.881E-001	6.227E-001	3.061E-001	-0.36
FE-59	7073	-2.347E-001pCi/g	1.656E-001	1.651E-001	5.463E-001	2.646E-001	-0.43
GA-68	18005	-1.959E+000pCi/g	2.934E+000	2.932E+000	9.861E+000	4.761E+000	-0.20
GD-153	6824	1.074E-001pCi/g	5.604E-002	5.566E-002	4.253E-001	2.089E-001	0.25
HF-181	6495	7.655E-003pCi/g	2.864E-002	2.863E-002	2.832E-001	1.384E-001	0.03
HG-203	6466	-5.635E-002pCi/g	6.273E-002	6.264E-002	2.084E-001	1.020E-001	-0.27
I-131	6380	7.130E-002pCi/g	8.246E-002	8.238E-002	2.211E-001	1.079E-001	0.32
IR-192	6303	6.154E-002pCi/g	5.067E-002	5.054E-002	2.010E-001	9.829E-002	0.31
K-40	6148	-1.447E-001pCi/g	7.481E-001	7.481E-001	1.284E+000	5.849E-001	-0.11
LA-140	6096	1.563E-002pCi/g	2.812E-002	2.811E-002	1.016E-001	4.393E-002	0.15
MN-54	5382	-2.832E-002pCi/g	6.926E-002	6.925E-002	2.341E-001	1.131E-001	-0.12
NA-22	5201	-2.471E-002pCi/g	3.987E-002	3.985E-002	1.381E-001	6.356E-002	-0.18
NB-94	5160	4.992E-002pCi/g	4.304E-002	4.296E-002	1.435E-001	6.826E-002	0.35
NB-95	5154	-8.541E-002pCi/g	6.319E-002	6.303E-002	2.089E-001	1.008E-001	-0.41
ND-147	5083	-5.970E-002pCi/g	4.393E-001	4.392E-001	1.487E+000	7.219E-001	-0.04
NP-237	4757	-4.152E-001pCi/g	3.778E-001	3.771E-001	1.248E+000	6.152E-001	-0.33
NP-239	4751	1.422E-001pCi/g	1.425E-001	1.422E-001	4.725E-001	2.313E-001	0.30
PA-231	4541	7.897E-001pCi/g	5.588E-001	5.571E-001	6.014E+000	2.942E+000	0.13
PA-233	4535	1.659E-001pCi/g	1.174E-001	1.170E-001	4.817E-001	2.355E-001	0.34
PA-234	4528	7.379E-003pCi/g	1.848E-001	1.848E-001	6.212E-001	3.043E-001	0.01
PA-234M	19453	-3.849E+000pCi/g	1.050E+001	1.050E+001	3.544E+001	1.718E+001	-0.11
PB-210	4467	8.556E+002pCi/g	5.093E+001	8.354E+000	1.399E+001	6.939E+000	61.17

PB-212	4454	4.747E-001pCi/g	1.198E-001	1.158E-001	2.884E-001	1.405E-001	1.65
PB-214	4448	2.527E-001pCi/g	1.397E-001	1.390E-001	4.865E-001	2.377E-001	0.52
PM-144	19585	5.467E-002pCi/g	5.088E-002	5.080E-002	1.697E-001	8.140E-002	0.32
PM-146	2464	-1.121E-001pCi/g	1.694E-001	1.693E-001	5.705E-001	2.747E-001	-0.20
RH-106	1882	2.453E-001pCi/g	5.500E-001	5.499E-001	1.858E+000	8.973E-001	0.13
RU-103	1828	3.179E-003pCi/g	6.795E-002	6.795E-002	2.296E-001	1.119E-001	0.01
SB-124	1784	6.871E-002pCi/g	5.491E-002	5.479E-002	1.820E-001	8.786E-002	0.38
SB-125	1777	7.725E-002pCi/g	1.204E-001	1.203E-001	7.192E-001	3.515E-001	0.11
SC-46	1739	6.865E-002pCi/g	3.773E-002	3.756E-002	2.744E-001	1.331E-001	0.25
SN-113	1570	-5.988E-002pCi/g	9.283E-002	9.278E-002	3.100E-001	1.515E-001	-0.19
SN-126	17459	4.728E-001pCi/g	6.187E-001	6.182E-001	2.053E+000	1.011E+000	0.23
TA-182	1301	2.190E-001pCi/g	1.744E-001	1.740E-001	6.078E-001	2.897E-001	0.36
TC-99M	17412	4.814E-002pCi/g	4.538E-002	4.530E-002	1.502E-001	7.375E-002	0.32
TH-227	1058	5.812E-001pCi/g	8.496E-001	8.490E-001	7.338E+000	3.643E+000	0.08
TH-229	1046	3.346E-001pCi/g	9.867E-001	9.864E-001	3.300E+000	1.619E+000	0.10
TH-234	1027	-3.012E+001pCi/g	2.825E+000	2.346E+000	7.161E+000	3.541E+000	-4.21
TL-208	929	1.402E-001pCi/g	7.085E-002	7.047E-002	2.180E-001	1.055E-001	0.64
U-235	281	1.225E-001pCi/g	2.509E-001	2.508E-001	1.165E+000	5.718E-001	0.11
Y-88	74	-5.977E-002pCi/g	8.913E-002	8.908E-002	2.987E-001	1.449E-001	-0.20
ZN-65	31	1.053E-001pCi/g	9.011E-002	8.995E-002	3.017E-001	1.411E-001	0.35
ZR-95	7	3.603E-002pCi/g	1.120E-001	1.120E-001	3.799E-001	1.833E-001	0.09

Laboratory Control Sample Information

Sample ID	WRKNO	Analyte	Activity		StdAdded	Recovery	ZFactor
LCS 160-218442~2-A	LCS 160-218442~2-A	CS-137	2.895E+001	pCi/g	3.008E+001	96.24%	-0.5100
		CO-60	1.774E+001	pCi/g	1.859E+001	95.42%	-0.6439
		AM-241	9.726E+001	pCi/g	9.723E+001	100.04%	0.0052

Sample Duplicate Information

Sample ID	Dup Sample ID	Analyte	Samp Activity	Dup Activity	RPD	RER	DER	Flag	ZFactor

Blanks Information

SampID	WRKNO	Analyte	Activity	UncTotal	ZFactor
MB 160-218442~1-A	MB	AC-228	4.629E-002	5.406E-002	0.8562
MB 160-218442~1-A	MB	AG-108M	5.830E-003	1.413E-002	0.4125
MB 160-218442~1-A	MB	AG-110M	1.867E-002	2.797E-002	0.6674
MB 160-218442~1-A	MB	AM-241	4.337E-002	3.562E-002	1.2178
MB 160-218442~1-A	MB	BA-133	3.213E-003	1.707E-002	0.1882
MB 160-218442~1-A	MB	BA-140	7.074E-002	6.022E-002	1.1747
MB 160-218442~1-A	MB	BE-7	2.063E-003	1.089E-001	0.0189
MB 160-218442~1-A	MB	BI-207	-8.550E-003	1.554E-002	-0.5500
MB 160-218442~1-A	MB	BI-210M	-5.240E-005	2.134E-002	-0.0025
MB 160-218442~1-A	MB	BI-212	1.891E-001	2.106E-001	0.8980
MB 160-218442~1-A	MB	BI-214	5.878E-002	4.257E-002	1.3807
MB 160-218442~1-A	MB	CD-109	-3.780E-002	2.773E-001	-0.1363
MB 160-218442~1-A	MB	CD-113M	-1.209E+002	2.006E+002	-0.6023
MB 160-218442~1-A	MB	CE-139	-2.638E-003	1.098E-002	-0.2403
MB 160-218442~1-A	MB	CE-141	0.000E+000	1.549E-002	0.0000
MB 160-218442~1-A	MB	CE-144	2.685E-004	7.314E-002	0.0037
MB 160-218442~1-A	MB	CF-249	1.313E-003	1.950E-002	0.0673
MB 160-218442~1-A	MB	CF-251	-3.857E-003	5.706E-002	-0.0676
MB 160-218442~1-A	MB	CO-56	1.232E-004	1.804E-004	0.6833
MB 160-218442~1-A	MB	CO-57	2.443E-003	8.085E-003	0.3022
MB 160-218442~1-A	MB	CO-58	-1.180E-003	2.037E-002	-0.0579
MB 160-218442~1-A	MB	CO-60	6.900E-003	9.579E-003	0.7203
MB 160-218442~1-A	MB	CR-51	1.599E-003	1.074E-001	0.0149
MB 160-218442~1-A	MB	CS-134	3.207E-002	2.395E-002	1.3391
MB 160-218442~1-A	MB	CS-136	5.803E-003	1.781E-002	0.3257
MB 160-218442~1-A	MB	CS-137	0.000E+000	1.138E-002	0.0000
MB 160-218442~1-A	MB	EU-152	-3.093E-005	4.932E-002	-0.0006
MB 160-218442~1-A	MB	EU-154	-1.070E-001	1.707E-001	-0.6272
MB 160-218442~1-A	MB	EU-155	2.380E-002	1.887E-002	1.2612
MB 160-218442~1-A	MB	FE-59	0.000E+000	8.903E-003	0.0000
MB 160-218442~1-A	MB	GA-68	0.000E+000	1.515E-001	0.0000
MB 160-218442~1-A	MB	GD-153	0.000E+000	1.067E-002	0.0000
MB 160-218442~1-A	MB	HF-181	1.261E-002	1.480E-002	0.8522
MB 160-218442~1-A	MB	HG-203	3.510E-003	1.144E-002	0.3067
MB 160-218442~1-A	MB	I-131	0.000E+000	6.680E-003	0.0000
MB 160-218442~1-A	MB	IR-192	1.578E-003	1.452E-002	0.1086
MB 160-218442~1-A	MB	K-40	-2.137E-001	7.006E-001	-0.3050
MB 160-218442~1-A	MB	LA-140	0.000E+000	7.055E-003	0.0000
MB 160-218442~1-A	MB	MN-54	0.000E+000	5.770E-003	0.0000
MB 160-218442~1-A	MB	NA-22	-2.879E-004	1.602E-002	-0.0180
MB 160-218442~1-A	MB	NB-94	1.568E-003	1.741E-002	0.0901
MB 160-218442~1-A	MB	NB-95	2.922E-003	1.554E-002	0.1880
MB 160-218442~1-A	MB	ND-147	7.112E-002	1.032E-001	0.6894
MB 160-218442~1-A	MB	NP-237	5.092E-003	7.332E-002	0.0695
MB 160-218442~1-A	MB	NP-239	1.565E-002	3.200E-002	0.4890
MB 160-218442~1-A	MB	PA-231	-1.854E-001	3.961E-001	-0.4681
MB 160-218442~1-A	MB	PA-233	7.432E-003	1.916E-002	0.3879
MB 160-218442~1-A	MB	PA-234	1.231E-002	3.411E-002	0.3608
MB 160-218442~1-A	MB	PA-234M	0.000E+000	7.911E-001	0.0000
MB 160-218442~1-A	MB	PB-210	3.880E-001	4.487E-001	0.8648
MB 160-218442~1-A	MB	PB-212	-2.440E-002	9.674E-002	-0.2522
MB 160-218442~1-A	MB	PB-214	-2.424E-002	8.010E-002	-0.3026

MB 160-218442~1-A	MB	PM-144	2.715E-003	1.733E-002	0.1567
MB 160-218442~1-A	MB	PM-146	1.519E-002	1.570E-002	0.9676
MB 160-218442~1-A	MB	RH-106	-2.995E-002	1.833E-001	-0.1634
MB 160-218442~1-A	MB	RU-103	-5.540E-003	1.385E-002	-0.4000
MB 160-218442~1-A	MB	SB-124	3.566E-003	1.681E-002	0.2121
MB 160-218442~1-A	MB	SB-125	-3.271E-002	4.871E-002	-0.6716
MB 160-218442~1-A	MB	SC-46	1.794E-002	1.459E-002	1.2302
MB 160-218442~1-A	MB	SN-113	5.033E-004	1.899E-002	0.0265
MB 160-218442~1-A	MB	SN-126	2.542E-002	1.062E-001	0.2393
MB 160-218442~1-A	MB	TA-182	5.091E-002	6.392E-002	0.7965
MB 160-218442~1-A	MB	TC-99M	4.412E-003	8.994E-003	0.4906
MB 160-218442~1-A	MB	TH-227	0.000E+000	6.308E-002	0.0000
MB 160-218442~1-A	MB	TH-229	1.425E-001	1.928E-001	0.7391
MB 160-218442~1-A	MB	TH-234	-5.703E-002	3.530E-001	-0.1616
MB 160-218442~1-A	MB	TL-208	-2.982E-003	2.496E-002	-0.1195
MB 160-218442~1-A	MB	U-235	-6.134E-003	8.135E-003	-0.7541
MB 160-218442~1-A	MB	Y-88	1.099E-002	2.017E-002	0.5449
MB 160-218442~1-A	MB	ZN-65	0.000E+000	1.005E-002	0.0000
MB 160-218442~1-A	MB	ZR-95	-1.630E-002	3.169E-002	-0.5142

Rec'd : 12-26-06

ANALYTICS
An Isotope Products Laboratories Company

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

74139-334
1.0 Liter Sand in 1 Liter Wide Mouth HDPE "S" Bottle

Customer: Severn Trent Laboratories/Earth City, MO
P.O. No.: 2169577, Item 1
Calibration Date: 01-Oct-2006 12:00 EST **Grams of Master Source:** 0.01552

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Analytics maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST."

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Pb-210	46.5	8145.9	———	3079.8	0.33	1.46	2.99	4π LS
Am-241	59.5	157860	———	2034.3	0.33	1.46	2.99	4π LS
Cd-109	88.0	462.60	189000	2933.5	0.57	1.70	3.59	HPGe
Co-57	122.1	271.79	94570	1467.8	0.34	1.30	2.69	HPGe
Ce-139	165.9	137.6	133800	2076.7	0.35	1.10	2.31	HPGe
Hg-203	279.2	46.61	295300	4583	0.40	1.10	2.34	HPGe
Sn-113	391.7	115.1	185600	2880.7	0.42	1.10	2.35	HPGe
Cs-137	661.7	10983	116700	1811.3	0.70	1.20	2.78	HPGe
Y-88	898.0	106.60	455400	7068	0.50	1.10	2.42	HPGe
Co-60	1173.2	1925.4	226900	3522	0.60	1.10	2.51	HPGe
Co-60	1332.5	1925.4	227000	3523	0.90	1.10	2.84	HPGe
Y-88	1836.1	106.6	481200	7469	0.90	1.10	2.84	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
1550 grams of sand. NOTE: Homogeneity was checked by the addition of Tc-99 tracer to the solution used to spike the sand. Ten 10-gram aliquots were removed after mixing and counted to measure the Tc-99. The standard deviation for the 10 measurements was 1.3% with a range of 4.8%. This demonstrates reasonable homogeneity for this source material down to a 10-gram aliquot.
This standard will expire one year after the calibration date.

Source Prepared by: M. I. Taskaeva
M. I. Taskaeva, Radiochemist

QA Approved: for
D. M. Montgomery, QA Manager

Date: 12-21-06

End of Certificate

Reagent

Tuna Can_00002

Rec'd 2/3/10

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

81427-334

1.0 Liter Sand in 1 Liter HDPE Silgan Jar

Customer: TestAmerica/St. Louis, MO
P.O. No.: 2339090, Item 1
Reference Date: 01-Jan-2010 12:00 PM EST **Grams of Master Source:** 0.017570

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Pb-210	46.5	8.120E+03	———	3.141E+03	0.1	2.1	4.1	4π LS
Am-241	59.5	1.580E+05	———	2.034E+03	0.1	1.7	3.5	4π LS
Cd-109	88.0	4.626E+02	1.606E+05	2.822E+03	0.4	2.3	4.7	HPGe
Co-57	122.1	2.718E+02	8.471E+04	1.488E+03	0.5	2.0	4.1	HPGe
Ce-139	165.9	1.376E+02	1.209E+05	2.124E+03	0.4	1.9	3.9	HPGe
Hg-203	279.2	4.661E+01	2.726E+05	4.790E+03	0.4	1.9	3.9	HPGe
Sn-113	391.7	1.151E+02	1.672E+05	2.938E+03	0.5	1.9	3.9	HPGe
Cs-137	661.7	1.098E+04	1.096E+05	1.926E+03	0.6	1.9	4.0	HPGe
Y-88	898.0	1.066E+02	4.077E+05	7.163E+03	0.4	1.9	3.9	HPGe
Co-60	1173.2	1.925E+03	2.055E+05	3.611E+03	0.5	1.9	3.9	HPGe
Co-60	1332.5	1.925E+03	2.056E+05	3.612E+03	0.7	1.9	4.0	HPGe
Y-88	1836.1	1.066E+02	4.308E+05	7.569E+03	0.5	1.9	3.9	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY — HEALTH PHYSICS SOCIETY — FOUNDED 1956

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd Atlanta, Georgia 30318

Comments:
1550 grams of sand.
This standard will expire one year after the reference date.

Source Prepared by: _____
W. Mao, Radiochemist

QA Approved: _____ Date: 2/1/10
J. D. McCorvey, QA Manager Alternate

Reagent

Tuna Can_00003

Eckert & Ziegler
Analytics

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION
Standard Radionuclide Source

90099
1.0 Liter Sand in 1 Liter Wide Mouth HDPE Silgan Jar

Customer: TestAmerica St. Louis / Earth City, MO
P.O. No.: 2454150, Item 1
Reference Date: 01-Jan-2012 12:00 PM EST **Grams of Master Source:** 0.017180

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Additional radionuclides were added gravimetrically from solutions calibrated by gamma-ray spectrometry, ionization chamber, or liquid scintillation counting. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 2, July 2007, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty* , % Type u_A	u_B	U	Calibration Method*
Pb-210	46.5	8.109E+03	———	3.094E+03	0.1	2.1	4.1	4π LS
Am-241	59.5	1.580E+05	———	2.037E+03	0.1	1.7	3.5	4π LS
Cd-109	88.0	4.626E+02	1.677E+05	2.881E+03	0.5	2.3	4.7	HPGe
Co-57	122.1	2.718E+02	8.795E+04	1.511E+03	0.4	2.0	4.1	HPGe
Ce-139	165.9	1.376E+02	1.245E+05	2.139E+03	0.4	1.9	3.9	HPGe
Hg-203	279.2	4.661E+01	2.707E+05	4.651E+03	0.3	1.9	3.8	HPGe
Sn-113	391.7	1.151E+02	1.755E+05	3.015E+03	0.4	1.9	3.9	HPGe
Cs-137	661.7	1.098E+04	1.128E+05	1.938E+03	0.7	1.9	4.0	HPGe
Y-88	898.0	1.066E+02	4.228E+05	7.264E+03	0.5	1.9	3.9	HPGe
Co-60	1173.2	1.925E+03	2.084E+05	3.580E+03	0.6	1.9	4.0	HPGe
Co-60	1332.5	1.925E+03	2.084E+05	3.581E+03	0.7	1.9	4.0	HPGe
Y-88	1836.1	1.066E+02	4.476E+05	7.690E+03	0.7	1.9	4.0	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

Comments:
1550 grams of sand. Homogenous down to 10 grams aliquot.
This standard will expire one year after the reference date.

Source Prepared by: _____
Z. Dimitrova, Radiochemist

QA Approved: _____ Date: 30 JAN 12
J.D. McCorvey, Counting Room Manager

Reagent

Tuna Can_00006

Eckert & Ziegler
Analytics

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Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

83814-334

1.0 Liter Sand in 1 Liter Wide Mouth HDPE Silgan Jar

Customer: Test America St. Louis
P.O. No.: 2395112, Item 1
Reference Date: 01-Jan-2011 12:00 PM EST **Grams of Master Source:** 0.016927

This standard radionuclide source was prepared using aliquots measured gravimetrically from master radionuclide solutions. Calibration and purity were checked using a germanium gamma spectrometer system. At the time of calibration no interfering gamma-ray emitting impurities were detected. The gamma-ray emission rates for the most intense gamma-ray lines are given. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Nuclide	Gamma-Ray Energy (keV)	Half-Life, Days	Master Source* γps/gram	This Source γps	Uncertainty, % Type u_A	u_B	U	Calibration Method
Pb-210	46.5	8.120E+03	———	3.021E+03	0.1	2.1	4.1	4π LS
Am-241	59.5	1.580E+05	———	2.090E+03	0.1	1.7	3.5	4π LS
Cd-109	88.0	4.626E+02	1.697E+05	2.873E+03	0.8	2.3	4.9	HPGe
Co-57	122.1	2.718E+02	8.711E+04	1.475E+03	0.5	2.0	4.1	HPGe
Ce-139	165.9	1.376E+02	1.247E+05	2.111E+03	0.5	1.9	3.9	HPGe
Hg-203	279.2	4.661E+01	2.753E+05	4.660E+03	0.4	1.9	3.9	HPGe
Sn-113	391.7	1.151E+02	1.769E+05	2.994E+03	0.5	1.9	3.9	HPGe
Cs-137	661.7	1.098E+04	1.109E+05	1.877E+03	0.7	1.9	4.0	HPGe
Y-88	898.0	1.066E+02	4.224E+05	7.150E+03	0.5	1.9	3.9	HPGe
Co-60	1173.2	1.925E+03	2.142E+05	3.626E+03	0.6	1.9	4.0	HPGe
Co-60	1332.5	1.925E+03	2.143E+05	3.627E+03	0.6	1.9	4.0	HPGe
Y-88	1836.1	1.066E+02	4.472E+05	7.570E+03	0.5	1.9	3.9	HPGe

* Master Source refers to Analytics' 8-isotope mixture which is calibrated quarterly.

Calibration Methods: 4π LS - 4 pi Liquid Scintillation Counting, HPGe - High Purity Germanium Gamma-Ray Spectrometer, IC - Ionization Chamber. **Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

(Certificate continued on reverse side)

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

Comments:
1550 grams of sand. Homogeneous down to 10 gram aliquot.
This standard will expire one year after the reference date.

Source Prepared by: _____
Z. Dimitrova, Radiochemist

QA Approved: _____ Date: 2/11/11
J. D. McCorvey, QA Manager Alternate

Reagent

U-232_00003

Eckert & Ziegler
Analytics

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Atlanta, Georgia 30318
Tel 404·352·8677
Fax 404·352·2837
www.analyticsinc.com

CERTIFICATE OF CALIBRATION

Standard Radionuclide Source

85539-334

5 mL Liquid in Flame Sealed Vial

Customer: Test America/Earth City, MO
P.O. No.: 2434448, Item 1

This standard radionuclide source was prepared gravimetrically from a master solution, calibrated by Eckert & Ziegler Analytics. The master solution was calibrated by liquid scintillation counting. Radionuclide purity and calibration were checked by germanium gamma-ray spectrometry and liquid scintillation counting. The nuclear decay rate and reference date for this source are given below. Eckert & Ziegler Analytics (EZA) maintains traceability to the National Institute of Standards and Technology through a Measurements Assurance Program as described in USNRC Regulatory Guide 4.15, Revision 1, February, 1979, and compliance with ANSI N42.22-1995, "Traceability of Radioactive Sources to NIST." EZA is accredited by the Health Physics Society (HPS) for the production of NIST-traceable sources, and this source was produced in accordance with the HPS accreditation requirements. Customers may report any concerns with the accreditation program to the HPS Secretariat, 1313 Dolley Madison Blvd., Ste. 402, McLean, VA 22101.

Isotope	Half-Life, Days	Activity (Bq)	Uncertainty*, % Type u_A	u_B	U	Reference Date (12:00 PM EST)
U-232	2.517E+04	1.725E+04	0.5	2.4	4.9	08/25/2011

***Uncertainty:** U - Relative expanded uncertainty, k = 2. See NIST Technical Note 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

Comments:
Impurities: U-232 daughters, γ-impurities (other than decay products) < 0.1 %.

Source Prepared by: M. I. Taskaeva, Radiochemist

QA Approved: J. D. McCorvey, QA Manager Alternate Date: 8/25/11

ACCREDITED SOURCE CALIBRATION LABORATORY HEALTH PHYSICS SOCIETY FOUNDED 1956

Corporate Office
24937 Avenue Tibbitts Valencia, California 91355

Laboratory
1380 Seaboard Industrial Blvd. Atlanta, Georgia, 30318

Reagent

U-232_00035

Standard ID Number: U-232_00032
True Value = 78.302 Dpm/mL
Date Analyzed: 7/13/2016

Radionuclide: U-232

	Replicates	
#1	81.64	Dpm/mL
#2	78.78	Dpm/mL
#3	74.25	Dpm/mL

Mean = 78.2233333

1 sigma = 3.72631632 1.96 sigma = 7.30358

True Value minus 5% = 74.3869 (True Value - 5%)
True Value plus 5% = 82.2171 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? Yes **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? Yes **(Acceptance Criteria)**

Standard Reverification Acceptable? Yes

Note: Criteria for reverification of radiological standards is taken from the DoD/DOE Consolidated QSM and LANL Statements of Work

1st Reviewed By/Date: Amanda Leigh Dick 07/14/16 ALD 7/14

2nd Reviewed By/Date: RM 7.15.16

Decay Calculations

Raw Sample/Standard Information

Initial Date/Time (t_0):	8/25/2011 0:00		
Decayto Date/Time (t):	7/13/16 0:00		
Initial Activity (A_0):	82.25 dpm		
Initial Aliquot:	1 mL		
Initial Conc:	82.25 dpm/mL		
***Soln. Density:**	1 g/mL		
Nuclide:	U-232		
Half-Life (days):	25165.725	decay days	fraction
****Decay Factor:**	0.9521	1784.00	0.07089
Decay Corr Activity:	7.8306E+01 dpm		
Decay Corr Conc:	7.8306E+01 dpm/mL		

Conversion/Calculations

Final Activity Unit:	dpm
Activity Unit Factor:	1.00000
Final Volume Unit:	mL
Volume Unit Factor:	1.000
Final Concentration:	7.8306E+01 dpm/mL
Aliquot Volume:	1.0000E+00 mL
Final Activity (A):	7.8306E+01 dpm

** Uses basic decay equation: $A = A_0 * \exp(-\ln(2)*(t-t_0)/(\text{half-life})$

* Soln. Density to be used when converting from liquid expressed in mass (g) units to liquid units (mL), and is only applied in that case.

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:22:33AM 7/14/2016

Sample

Sample Name: Verification 1 Type: Sample
Spectrum #1 Analysis #1

Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: U-232_00032 (unclean)
AnalysisResultsID: 171222
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

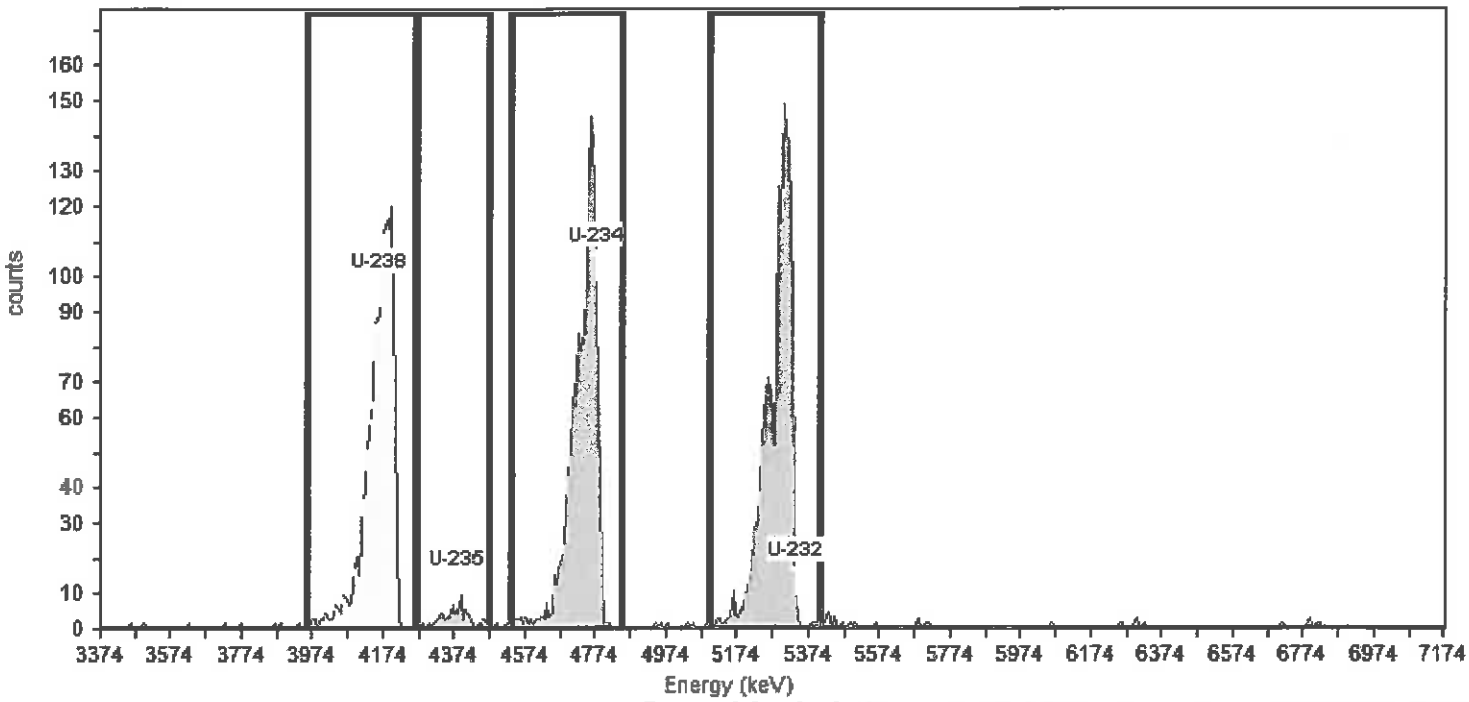
Tracer Name: UNAT_00009
Tracer Activity: 72.26 DPM / mL x (Vol.) 0.10 mL = 7.23 DPM
Tracer Ref. Date: 3/30/2008 4:33:01PM

Tracer Nuclide: U-238
Tracer Recovery: 68.52%

Acquisition

Detector: AV227 SN: 50-120DD5
Acquisition Start Date: 7/13/2016 11:16:29AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Background Date: 6/24/2016 4:15:27PM
Bkgd Info: Sample: ICB;AV227; Det: AV227; Spectrum #1; 6/24/2016 4:15:27 PM

Energy Calibration: IC-9817;AV227-20151018
Efficiency Calibration:IC-9817;AV227-20151018
Calibration Date: 10/18/2015 9:20:24PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.29% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI_U-232
Decay Correction:7/13/2016 11:14:26AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	69.7	100.0	1202	0.0000	1202.00	4.952E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	90.0	80.2	63	0.0000	63.00	4.723E+000	DPM/mL
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	74.4	99.8	1279	1.0000	1278.00	7.699E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	62.9	100.1	1363	4.0000	1359.00	8.164E+001	DPM/mL

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THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:22:42AM 7/14/2016

Sample

Sample Name: Verification 2 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: U-232_00032 (unclean)
AnalysisResultsID: 171223
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

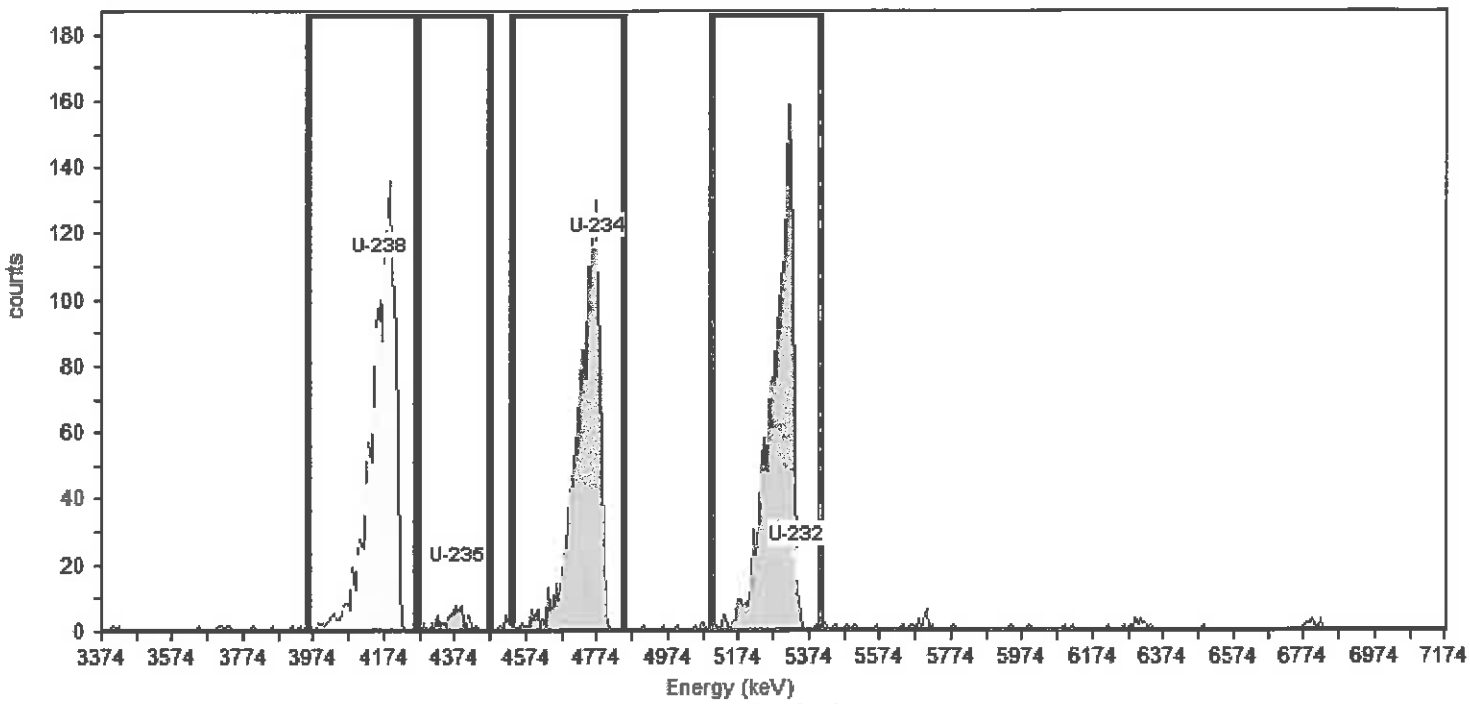
Tracer Name: UNAT_00009
Tracer Activity: 72.26 DPM / mL x (Vol.) 0.10 mL = 7.23 DPM
Tracer Ref. Date: 3/30/2008 4:33:01PM

Tracer Nuclide: U-238
Tracer Recovery: 73.96%

Acquisition

Detector: AV228 SN: 51-005Q6
Acquisition Start Date: 7/13/2016 11:16:29AM
Live Time: 960.00 min.
Real Time: 960.12 min.
Background Date: 6/24/2016 4:15:28PM
Bkgd Info: Sample: ICB;AV228; Det: AV228; Spectrum #1; 6/24/2016 4:15:28 PM

Energy Calibration: IC-9884;AV228-20151018
Efficiency Calibration:IC-9884;AV228-20151018
Calibration Date: 10/18/2015 9:20:29PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.26% +/- 0.36% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI_U-232
Decay Correction:7/13/2016 11:14:26AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	73.9	100.0	1298	2.0000	1296.00	5.345E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	36.6	80.2	53	0.0000	53.00	3.685E+000	DPM/mL
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	72.6	99.8	1246	3.0000	1243.00	6.945E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	76.4	100.1	1419	5.0000	1414.00	7.878E+001	DPM/mL

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Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:22:51AM 7/14/2016

Sample

Sample Name: Verification 3 Type: Sample
Spectrum #1 Analysis #1

Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: U-232_00032 (unclean)
AnalysisResultsID: 171224
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

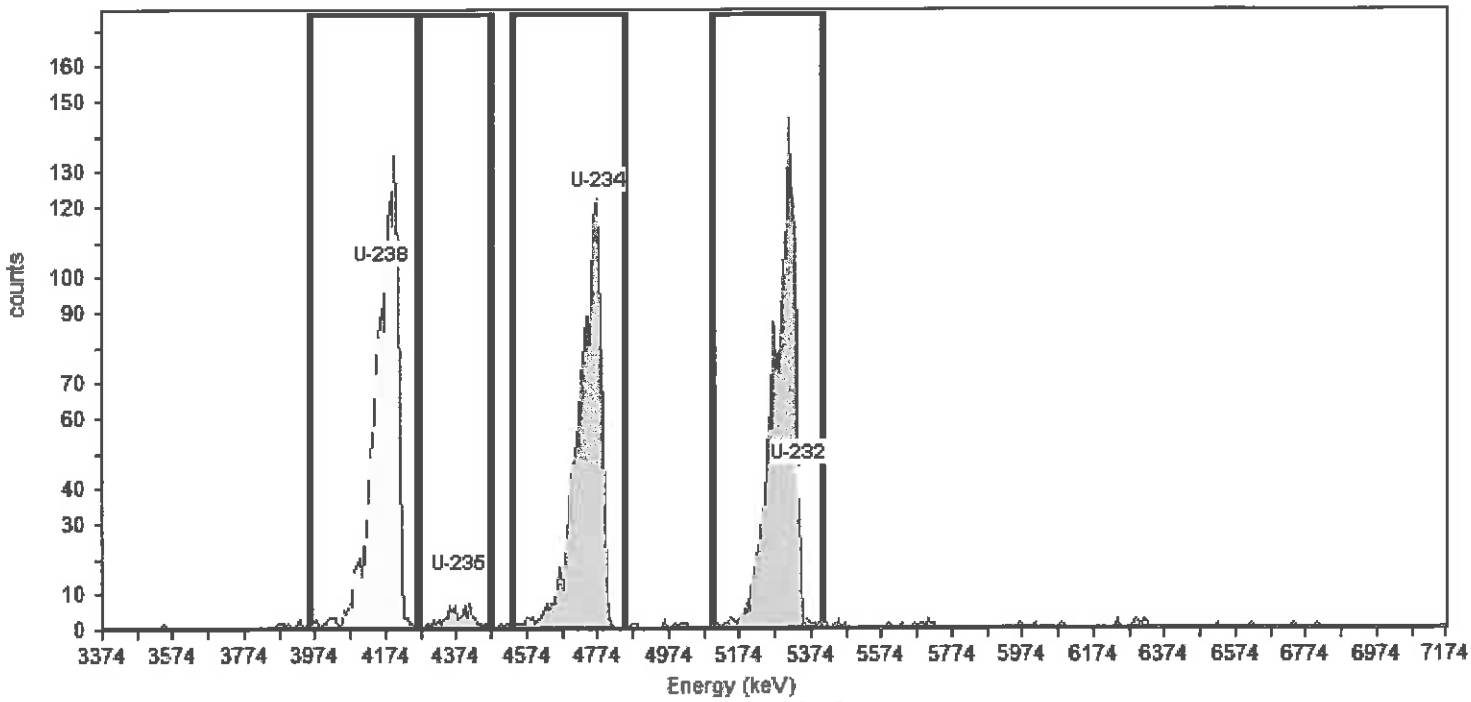
Tracer Name: UNAT_00009
Tracer Activity: 72.26 DPM / mL x (Vol.) 0.10 mL = 7.23 DPM
Tracer Ref. Date: 3/30/2008 4:33:01PM

Tracer Nuclide: U-238
Tracer Recovery: 69.93%

Acquisition

Detector: AV229 SN: 51-005EE4
Acquisition Start Date: 7/13/2016 11:16:30AM
Live Time: 960.00 min.
Real Time: 960.15 min.
Background Date: 7/7/2016 4:03:35PM
Bkgd Info: Sample: BKG;AV229; Det: AV229; Spectrum #1; 7/7/2016 4:03:35 PM

Energy Calibration: IC-9885;AV229-20151018
Efficiency Calibration:IC-9885;AV229-20151018
Calibration Date: 10/18/2015 9:20:33PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 26.18% +/- 0.38% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI_U-232
Decay Correction:7/13/2016 11:14:26AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	74.2	100.0	1274	4.0000	1270.00	5.053E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	33.2	80.2	63	0.0000	63.00	4.470E+000	DPM/mL
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	79.5	99.8	1214	4.0000	1210.00	6.899E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	76.8	100.1	1322	16.0000	1306.00	7.425E+001	DPM/mL

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U-232 Unclean Tracer (re-cert exp: 8/16)

Actinide Prep

Ver. by Columns

Batch No. : _____

Balance ID : _____

No.	Sample Number	Aliquot (g / mL)	Crucible ID	Dilution
1	Ver. 1	0.1	227	
2	2	1	228	
3	3		229	
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Note: If a section below is not used, marked the N/A box and initial & date next to the N/A.
i.e. Mark the N/A box if a tracer is not added to the sample(s) then initial and date next to the N/A

Tracer ☐ N/A

Initials / Date

Isotope : UNAT

Std Sol'n No. : UNAT-00012

Vol (mL) : 0.1

Ref Activity (dpm/mL) : 234 - 70.69
235 - 3.37

Act Ref Date : 238 - 72.26
03-30-08

Samples Spiked and Traced By:

SUB 7/11/16
Initials / Date

Verification Signature & Date:

CME 7/11/16
Initials / Date

LCS Standard ☐ N/A

Initials / Date

Isotope : U-232 Unclean

Std Sol'n ID. : U-232-00032

Vol (mL) : 0.1

Ref Activity (dpm/mL) : 92.2456

Act Ref Date : 08-25-11

SOP's applied in preparing these samples. Mark box to left for all that apply:

☐	ST-RC-0003 Rev.	☐	ST-RC-0040 Rev.	☐	ST-RC-0110 Rev.
☐	ST-RC-0004 Rev.	☐	ST-RC-0041 Rev.	☐	ST-RC-0120 Rev.
☐	ST-RC-0014 Rev.	☐	ST-RC-0050 Rev.	☐	ST-RC-0232 Rev.
☐	ST-RC-0020 Rev.	☐	ST-RC-0090 Rev.	☑	ST-RC-0238 Rev.
☐	ST-RC-0021 Rev.	☑	ST-RC-0100 Rev.	☐	ST-RC-0240 Rev.
				☐	ST-RC-0241 Rev.
				☐	ST-RC-0242 Rev.
				☐	ST-RC-5016 Rev.
				☐	
				☐	

Isotope(s)

αβ ☐	Iso Pu ☐	Tc-99 ☐	Iso Cm ☐
Iso Am ☐	Ra ☐	Iso Th ☐	Pu-241 ☐
KPA ☐	Sr ☐	Iso U ☑	Th-229 ☐
Np ☐	TAR ☐	C-14 ☐	Cl-36 ☐

Count Time	Matrix
Long Count ☑	Soil ☐
Short Count ☐	H_2O ☐

Prepared By : SUB

Date : 7/11/16

Reviewed by: _____

Date: _____

\\Slsvr01\RAD\MasterForms\RAD-0045 Rev(3)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

U - 232 - 00032

Reagent ID: U-232_00032

Description:	U-232 Unclean tracer	Expiration Date:	08/06/2016
No. of Bottles:	1	Laboratory:	TestAmerica St. Louis
Storage Location:	RAD Actinide STDs	Prepared By:	Bernsen, Sarah C
Reagent Volume:	500.000 mL	Solvent:	2M HNO3
Creation Date:	07/16/2015	Solvent Lot:	n/a
Open Date:			
Container(s):	684064		
Comment:			

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
U-232	U-232_00009	03/24/2017	10280.70700	dpm/mL	82.24566	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
U-232_00009	U-232 Parent		03/24/17				4.00000	mL

Uranium only via UTEVA

Batch:_____ ST-RC-0238

*All rinses should flow at 1 mL/minute (only 3M HNO_3 may be done at 3 mL/minute)

UTEVA lot: _____

U-232 ver.

11.4.4	UTEVA cartridge	
11.4.5	5mL 3M HNO_3	COMPLETED ☐
11.4.6	Load sample	
11.4.7	25mL 3M HNO_3	COMPLETED ☐
11.4.8	5mL 9M HCl	COMPLETED ☐
11.4.9	20mL 5M HCl / 0.05M oxalic	COMPLETED ☐
11.4.10-11.4.11	Elute into clean tube with 15mL 1M HCl	COMPLETED ☐

Uranium only via UTEVA

ST-RC-0238

Batch: ~~_____~~

*All rinses should flow at 1 mL/minute (only 3M HNO_3 may be done at 3 mL/minute)

UTEVA lot: U7SR15G

11.4.4	UTEVA cartridge	
11.4.5	5mL 3M HNO_3	COMPLETED ☐
11.4.6	Load sample	
11.4.7	25mL 3M HNO_3	COMPLETED ☐
11.4.8	5mL 9M HCl	COMPLETED ☐
11.4.9	20mL 5M HCl / 0.05M oxalic	COMPLETED ☐
11.4.10-11.4.11	Elute into clean tube with 15mL 1M HCl	COMPLETED ☐

U-232 ver.

Reagent

UNAT Ampoule_00001

New Brunswick Laboratory
U.S. Department of Energy

Certificate of Analysis

CRM 145

Uranyl (Normal) Nitrate Assay and Isotopic Solution

Uranium Mass Fraction: **0.0101356 g U/g solution ± 0.0000011 g U/g solution**
[10.1356 mg U/g solution ± 0.0011 mg U/g solution]

	$^{234}U/^{238}U$	$^{235}U/^{238}U$
Atom Ratio:	**0.000052841**	**0.0072543**
Atom Ratio Uncertainty:	**0.000000082**	**0.0000040**

	^{234}U	^{235}U	^{238}U
Atom Percent:	**0.0052458**	**0.72017**	**99.27458**
Atom Percent Uncertainty:	**0.0000081**	**0.00039**	**0.00039**
Weight Percent:	**0.0051579**	**0.71114**	**99.28370**
Weight Percent Uncertainty:	**0.0000080**	**0.00038**	**0.00038**

Relative Atomic Weight: **238.028918**
Relative Atomic Weight Uncertainty: **0.000012**

Note: ^{233}U and ^{236}U were not detected. The detection limit of uranium ratios for the technique used is 5×10^{-9}.

This Certified Reference Material (CRM) is a uranium concentration and isotopic solution standard intended for use in calibration of and/or quality control for uranium analysis methods. Each unit of CRM 145 consists of approximately 20-mL of uranyl nitrate solution in 1M nitric acid, contained in a sealed glass ampoule.

NOTE: The vial should be handled under proper radiologically-controlled conditions at all times.

The certified uranium content value is based on the mass of high-purity metal dissolved and diluted to a known solution mass. The stated uranium concentration was calculated as the prepared value and verified experimentally by the NBL-modified Davies and Gray titration. The certified uranium isotopic composition and atomic weight is based upon measurements performed on multiple samples by two different measurement techniques on a Thermal Ionization Mass Spectrometer (TIMS), calibrated using CRM U030-A as primary comparator and CRM 129-A as a quality control sample. The isotopic values are shared with CRM 112-A, uranium (normal) metal standard which was the source of uranium used to produce the solutions.

RAD13-0018
UNAT Spike
marrss
None
Prep/Opened: 5/3/2013
Exp(1): 5/10/2014
Exp(2): 5/10/2014

All uncertainties for the certified values are expressed as expanded uncertainties (U) where $U = k*u_c$, where u_c is the

September 30, 2010
Argonne, Illinois

www.nbl.doe.gov

Jon Neuhoff, Director
New Brunswick Laboratory

(Revision of Certificate dated March 30, 2008)

combined standard uncertainty and the coverage factor k = 2. Uncertainties were determined according to the JCGM 100:2008 *Guide to the Expression of Uncertainty in Measurement*. The coverage factor of 2 was chosen to provide an approximate 95% level of confidence. The input quantities associated with the uranium content included uncertainties due to weighing, CRM 112-A purity, and buoyancy factors. The input quantities associated with the uranium isotopic composition included uncertainties from the certified value for CRM U030-A, measurement precision, and background corrections associated with the analytical techniques.

The CRM was produced by dissolving uranium metal in a single batch and container, with extensive mixing of the resultant solution followed by dispensation into individual bottles. Subsequent measurements of a random sampling of the total lot produced did not indicate any inhomogeneity in uranium concentration or isotopic composition. The minimum sample sizes taken from packaged units and measured were 30 mg U by titration and 1 μg U by TIMS. The NBL makes no recommendation as to the minimum sample size to be used to ensure concentration or isotopic homogeneity.

Users are cautioned that once the vial is opened, the uranium concentration and/or isotopic composition of the material may be affected by evaporative losses or environmental contamination. User's should take appropriate precautions to safeguard the material before, during and after use to ensure valid certificate values.

Recommended Procedure for Ampoule Handling and Dispensing of Solution

1. The ampoule contains a strongly acidic solution of uranium. Appropriate precautions should be taken.

2. Before opening the ampoule, ensure that any dried uranium or condensed liquid in the neck or body of the ampoule is re-dissolved into solution. This can be accomplished by inverting the ampoule repeatedly.

3. The glass ampoules are scored at the neck for ease of opening. However, glass burrs and fragments pose a cut hazard to anyone opening the ampoules. Appropriate precautions should be taken.

4. Lightly moisten the scored line on the neck with distilled water to help ensure a clean break at the score.

5. Because of the narrow neck of the ampoule it may be difficult or impossible to pour the solution out. Here is one possible method:

    a. Obtain approximately 12-cm length of plastic capillary tubing (e.g. i.d. 0f 0.1", o.d. of 0.16").
    b. Insert one end of the capillary tubing fully into the ampoule
    c. Fold the remaining length of tubing along the outside of the ampoule, ensuring that the tube is not crimped and will allow the free flow of air through the tube and into the ampoule.
    d. Holding the ampoule and tubing in one hand, and a beaker or dispensing bottle in another, invert the ampoule over the container allowing the solution to drain into it.
    e. The capillary tubing allows air to flow into the ampoule, eliminating the "airlock" created by the narrow neck of the open ampoule.

6. The user should be wary of evaporative losses once the ampoule is opened, and prevent uranium contamination of the sample. It is recommended that the entire solution be accurately weighed and aliquanted as soon as possible after opening the sample. Precautions should be taken (clean glass/plastic ware, air filtration, etc) to prevent uranium contamination of the CRM with subsequent perturbation of the isotopic composition.

Reagent

UNAT_00012

St. Louis Radiological Standard Reverification Form

Standard ID Number: UNAT_00011
True Value = 70.69 DPM/L or g
Date Analyzed: 5/5/2016

Radionuclide: U-234

	Replicates	
#1	66.49	DPM/L or g
#2	71.93	DPM/L or g
#3	67.79	DPM/L or g

Mean = 68.73667

1 sigma = 2.840868 1.96 sigma = 5.568102

True Value minus 5% = 67.1555 (True Value - 5%)
True Value plus 5% = 74.2245 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? Yes **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? Yes **(Acceptance Criteria)**

Standard Reverification Acceptable? Yes

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Amanda Dick 05/09/2016

SOP Reference: STL-QA-0002, Current Revision

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:10:46AM 5/9/2016

Sample

Sample Name: Verification 1 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: UNAT_00011
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

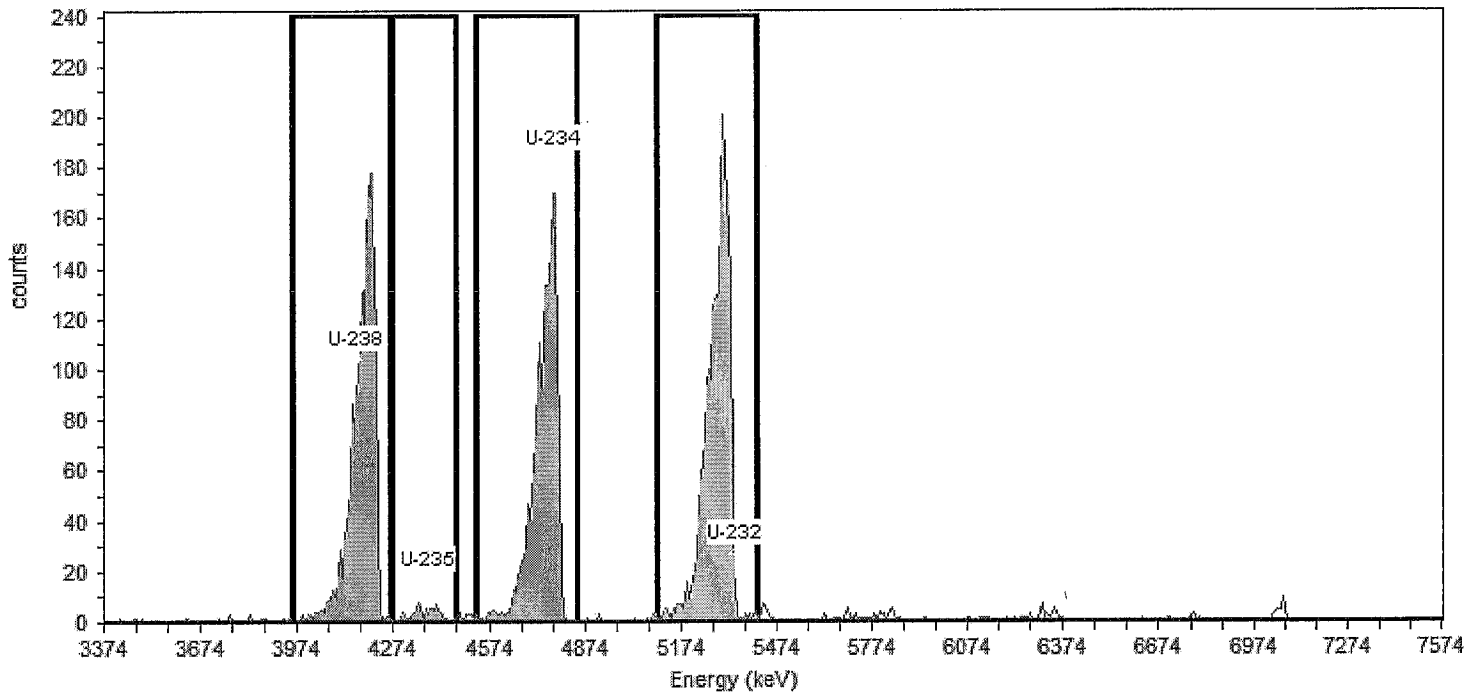
Tracer Name: U-232_00032
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/25/2011 12:03:08PM

Tracer Nuclide: U-232
Tracer Recovery: 100.46%

Acquisition

Detector: AV194 SN: 50-119J2
Acquisition Start Date: 5/5/2016 10:51:35AM
Live Time: 960.00 min.
Real Time: 960.00 min.
Background Date: 4/22/2016 10:41:10AM
Bkgd Info: Sample: ICB;AV194; Det: AV194; Spectrum #1; 4/22/2016 10:41:10 AM

Energy Calibration: IC-9520;AV194-20151017
Efficiency Calibration:IC-9520;AV194-20151017
Calibration Date: 10/18/2015 3:55:14PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.83% +/- 0.35% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:5/5/2016 10:49:41AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	77.8	100.0	1645	1.0000	1644.00	6.865E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	22.2	80.2	60	3.0000	57.00	2.968E+000	DPM/mL
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	74.8	99.8	1590	1.0000	1589.00	6.649E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	76.2	100.1	1892	8.0000	1884.00	8.262E+001	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:10:20AM 5/9/2016

Sample

Sample Name: Verification 2 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: UNAT_00011
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

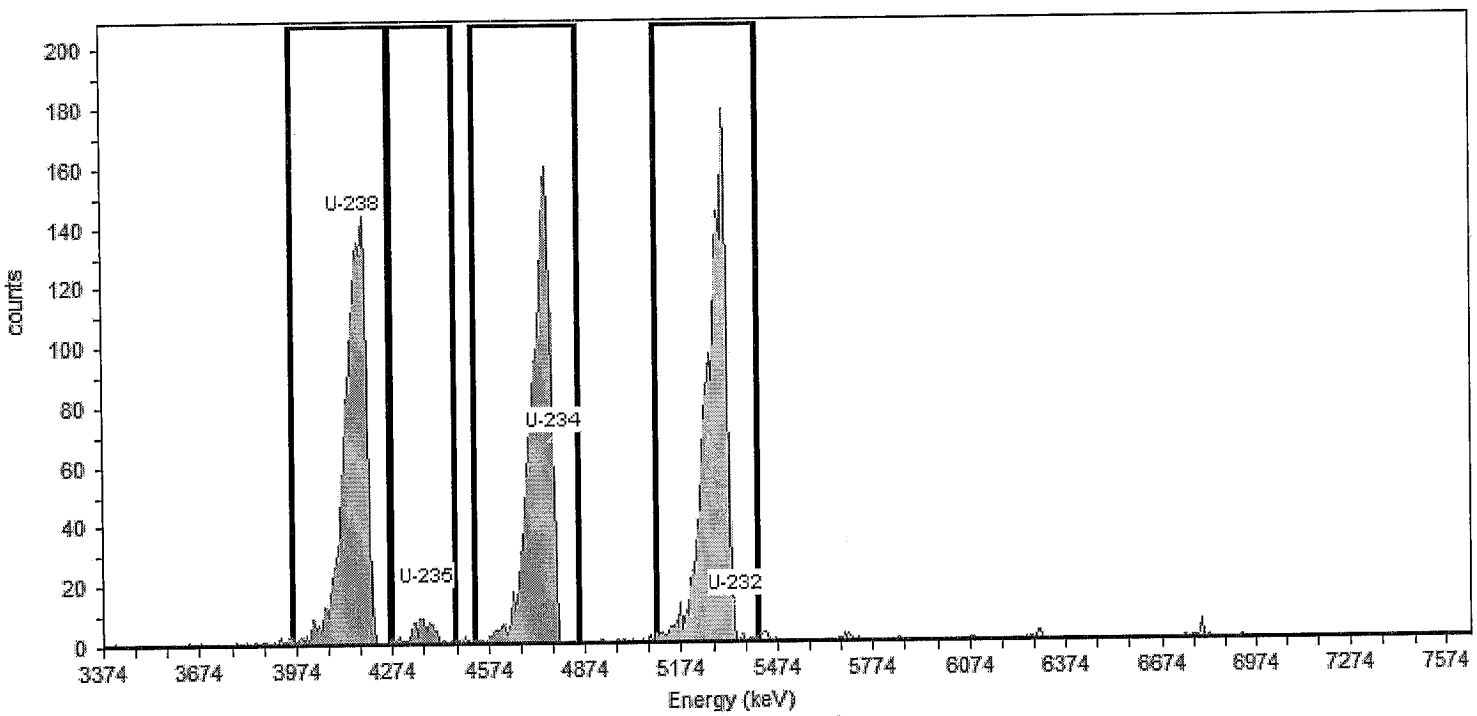
Tracer Name: U-232_00032
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/25/2011 12:03:08PM

Tracer Nuclide: U-232
Tracer Recovery: 83.14%

Acquisition

Detector: AV195 SN: 50-117AA2
Acquisition Start Date: 5/5/2016 10:51:35AM
Live Time: 960.00 min.
Real Time: 960.00 min.
Background Date: 4/22/2016 10:41:10AM
Bkgd Info: Sample: ICB;AV195; Det: AV195; Spectrum #1; 4/22/2016 10:41:10 AM

Energy Calibration: IC-9792;AV195-20151017a
Efficiency Calibration:IC-9792;AV195-20151017a
Calibration Date: 10/18/2015 3:55:41PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.85% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:5/5/2016 10:49:41AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	73.6	100.0	1490	0.0000	1490.00	7.223E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	78.5	80.2	77	0.0000	77.00	4.654E+000	DPM/mL
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	69.4	99.8	1484	3.0000	1481.00	7.193E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	73.2	100.1	1633	10.0000	1623.00	6.838E+001	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:09:54AM 5/9/2016

Sample

Sample Name: Verification 3 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: UNAT_00011
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

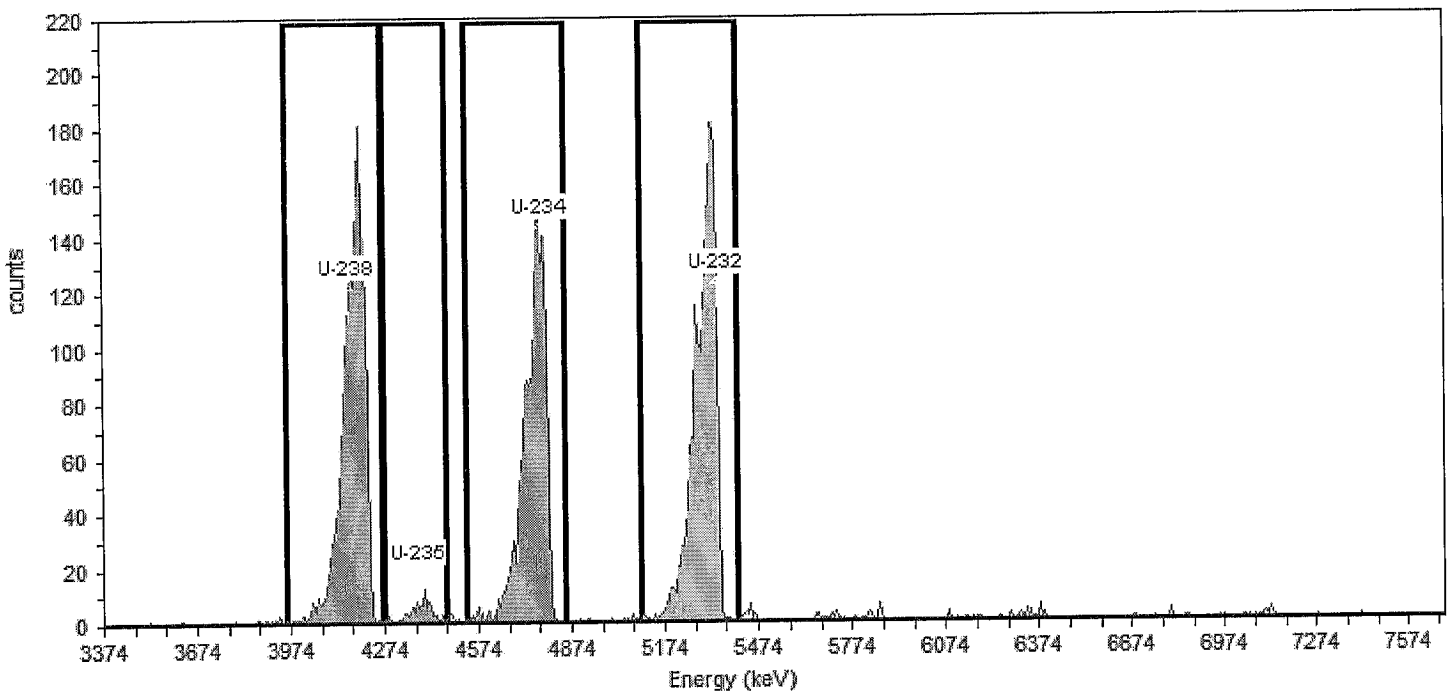
Tracer Name: U-232_00032
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/25/2011 12:03:08PM

Tracer Nuclide: U-232
Tracer Recovery: 95.37%

Acquisition

Detector: AV197 SN: 50-117Z5
Acquisition Start Date: 5/5/2016 10:51:35AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Background Date: 4/25/2016 9:56:18AM
Bkgd Info: Sample: ICB;AV197; Det: AV197; Spectrum #1; 4/25/2016 9:56:18 AM

Energy Calibration: IC-9794;AV197-20151017
Efficiency Calibration:IC-9794;AV197-20151017
Calibration Date: 10/18/2015 3:55:22PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.48% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:5/5/2016 10:49:41AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	73.5	99.8	1519	3.0000	1516.00	6.779E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	78.8	100.1	1769	6.0000	1763.00	7.844E+001	DPM/mL
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	72.8	100.0	1655	0.0000	1655.00	7.385E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	62.5	80.2	77	0.0000	77.00	4.284E+000	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

UNAT verification

Aliquot Only

Batch No. : _____

Balance ID : _____

No.	Sample Number	Aliquot (g / mL)	Crucible ID	Dilution
BC: 115 1	verification-1	0.1	194	BC:199
BC: 116 2	2	1	195	BC:200
BC: 117 3	3	1	197	BC:201
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Note: If a section below is not used, marked the N/A box and initial & date next to the N/A. i.e. Mark the N/A box if a tracer is not added to the sample(s) then initial and date next to the N/A

Tracer ☐ N/A

Initials / Date

Isotope : U-232
Std Sol'n No. : U-232-00032
Vol (mL) : 0.1
Ref Activity (dpm/mL) : _____
Act Ref Date : _____

Samples Spiked and Traced By: SUB 5/2/16 (Initials / Date)

Verification Signature & Date: JMR 5/2/16 (Initials / Date)

LCS Standard ☐ N/A

Initials / Date

Isotope : UNAT
Std Sol'n ID. : UNAT-00011
Vol (mL) : 0.1
Ref Activity (dpm/mL) : 234-78.169 235-3.370 238-72.2649
Act Ref Date : 03-30-08

SOP's applied in preparing these samples. Mark box to left for all that apply:

☐ ST-RC-0003 Rev.	☐ ST-RC-0040 Rev.	☐ ST-RC-0110 Rev.
☐ ST-RC-0004 Rev.	☐ ST-RC-0041 Rev.	☐ ST-RC-0120 Rev.
☐ ST-RC-0014 Rev.	☐ ST-RC-0050 Rev.	☐ ST-RC-0232 Rev.
☐ ST-RC-0020 Rev.	☐ ST-RC-0090 Rev.	☑ ST-RC-0238 Rev.
☐ ST-RC-0021 Rev.	☑ ST-RC-0100 Rev.	☐ ST-RC-0240 Rev.
		☐ ST-RC-0241 Rev.
		☐ ST-RC-0242 Rev.
		☐ ST-RC-5016 Rev.
		☐
		☐

Isotope(s)

αβ ☐	Iso Pu ☐	Tc-99 ☐	Iso Cm ☐
Iso Am ☐	Ra ☐	Iso Th ☐	Pu-241 ☐
KPA ☐	Sr ☐	Iso U ☑	Th-229 ☐
Np ☐	TAR ☐	C-14 ☐	Cl-36 ☐

Count Time	Matrix
Long Count ☑	Soil ☐
Short Count ☐	H_2O ☐

Prepared By : SUB

Date : _____

Reviewed by: _____

Date: _____

\\Slsvr01\RAD\MasterForms\RAD-0045 Rev(3)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

UNAT_00011

Reagent ID: UNAT_00011

Description:	UNAT spike	Expiration Date:	05/20/2016
No. of Bottles:	1	Laboratory:	TestAmerica St. Louis
Storage Location:	RAD Actinide STDs	Prepared By:	Bernsen, Sarah C
Reagent Volume:	200.000 mL	Solvent:	1M HNO3
Creation Date:	04/28/2015	Solvent Lot:	n/a
Open Date:			
Container(s):	622074		
Comment:			

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
U-234	UNAT Parent_00001	05/20/2016	706.91200	dpm/mL	70.69123	dpm/mL
U-235	UNAT Parent_00001	05/20/2016	33.70600	dpm/mL	3.37064	dpm/mL
U-238	UNAT Parent_00001	05/20/2016	722.65000	dpm/mL	72.26499	dpm/mL

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
UNAT Parent_00001	UNAT Parent		05/20/16				20.00000	mL

Uranium only via UTEVA

Batch: _____

ST-RC-0238

*All rinses should flow at 1 mL/minute (only 3M HNO_3 may be done at 3 mL/minute)

UTEVA lot: UTSR156

11.4.4 UTEVA cartridge

11.4.5 5mL 3M HNO_3 COMPLETED ☐

11.4.6 Load sample

11.4.7 25mL 3M HNO_3 COMPLETED ☐

11.4.8 5mL 9M HCl COMPLETED ☐

11.4.9 20mL 5M HCl / 0.05M oxalic COMPLETED ☐

11.4.10-11.4.11 Elute into clean tube with 15mL 1M HCl COMPLETED ☐

St. Louis Radiological Standard Reverification Form

Standard ID Number: UNAT_00011
True Value = 72.2649 DPM/L or g
Date Analyzed: 5/5/2016

Radionuclide: U-238

	Replicates	
#1	68.65	DPM/L or g
#2	72.23	DPM/L or g
#3	73.85	DPM/L or g

Mean = 71.57667

1 sigma = 2.660852 1.96 sigma = 5.21527

True Value minus 5% = 68.65166 (True Value - 5%)
True Value plus 5% = 75.87815 (True Value + 5%)

Accuracy:
Mean value within 5% of Certified (True) Value? **Yes** **(Acceptance Criteria)**

Precision:
1.96 sigma Value Within 10% of Mean Value? **Yes** **(Acceptance Criteria)**

Standard Reverification Acceptable? **Yes**

Note: Criteria for reverification of radiological standards is taken from the DOE QSAS and LANL Statements of Work

Reviewed By/Date: Amanda Dick 05/09/2016

SOP Reference: STL-QA-0002, Current Revision

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:10:46AM 5/9/2016

Sample

Sample Name: Verification 1 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: UNAT_00011
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

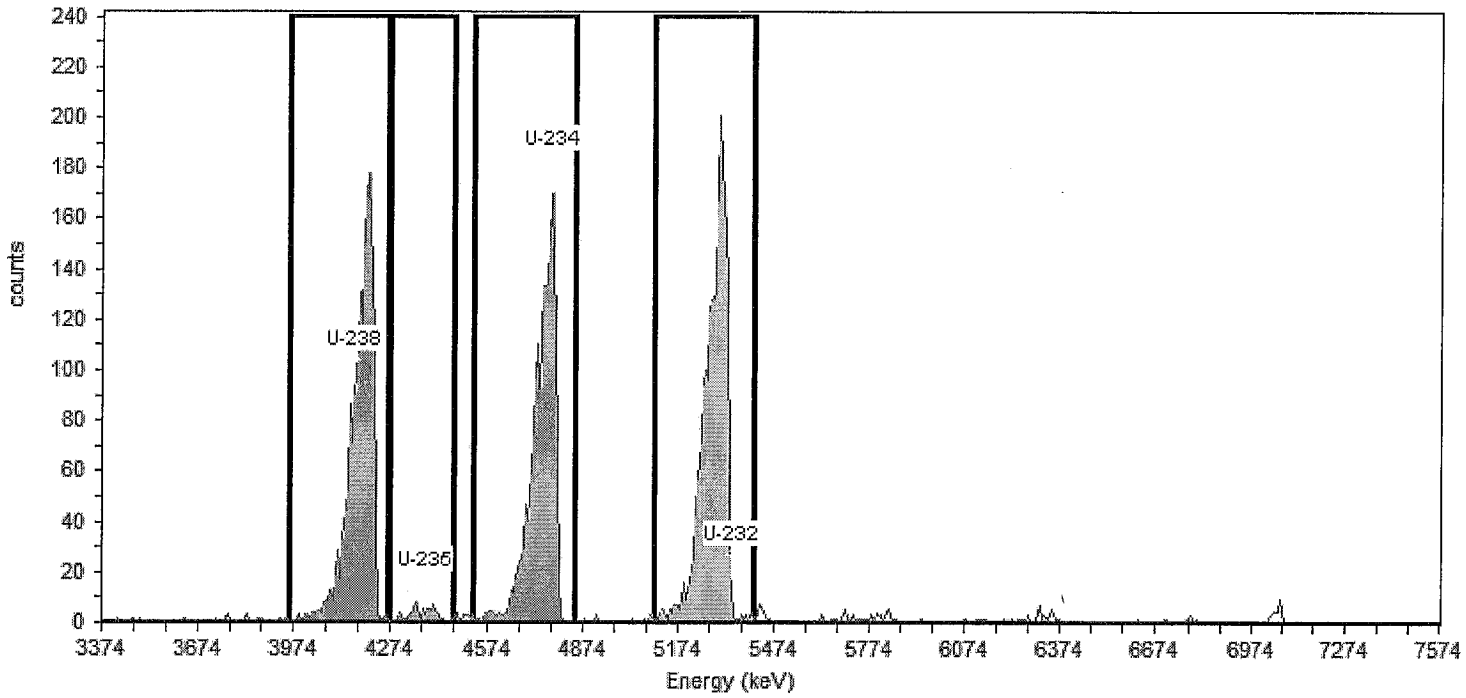
Tracer Name: U-232_00032
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/25/2011 12:03:08PM

Tracer Nuclide: U-232
Tracer Recovery: 100.46%

Acquisition

Detector: AV194 SN: 50-119J2
Acquisition Start Date: 5/5/2016 10:51:35AM
Live Time: 960.00 min.
Real Time: 960.00 min.
Background Date: 4/22/2016 10:41:10AM
Bkgd Info: Sample: ICB;AV194; Det: AV194; Spectrum #1; 4/22/2016 10:41:10 AM

Energy Calibration: IC-9520;AV194-20151017
Efficiency Calibration:IC-9520;AV194-20151017
Calibration Date: 10/18/2015 3:55:14PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 24.83% +/- 0.35% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:5/5/2016 10:49:41AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	77.8	100.0	1645	1.0000	1644.00	6.865E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	22.2	80.2	60	3.0000	57.00	2.968E+000	DPM/mL
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	74.8	99.8	1590	1.0000	1589.00	6.649E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	76.2	100.1	1892	8.0000	1884.00	8.262E+001	DPM/mL

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:10:20AM 5/9/2016

Sample

Sample Name: Verification 2 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: UNAT_00011
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

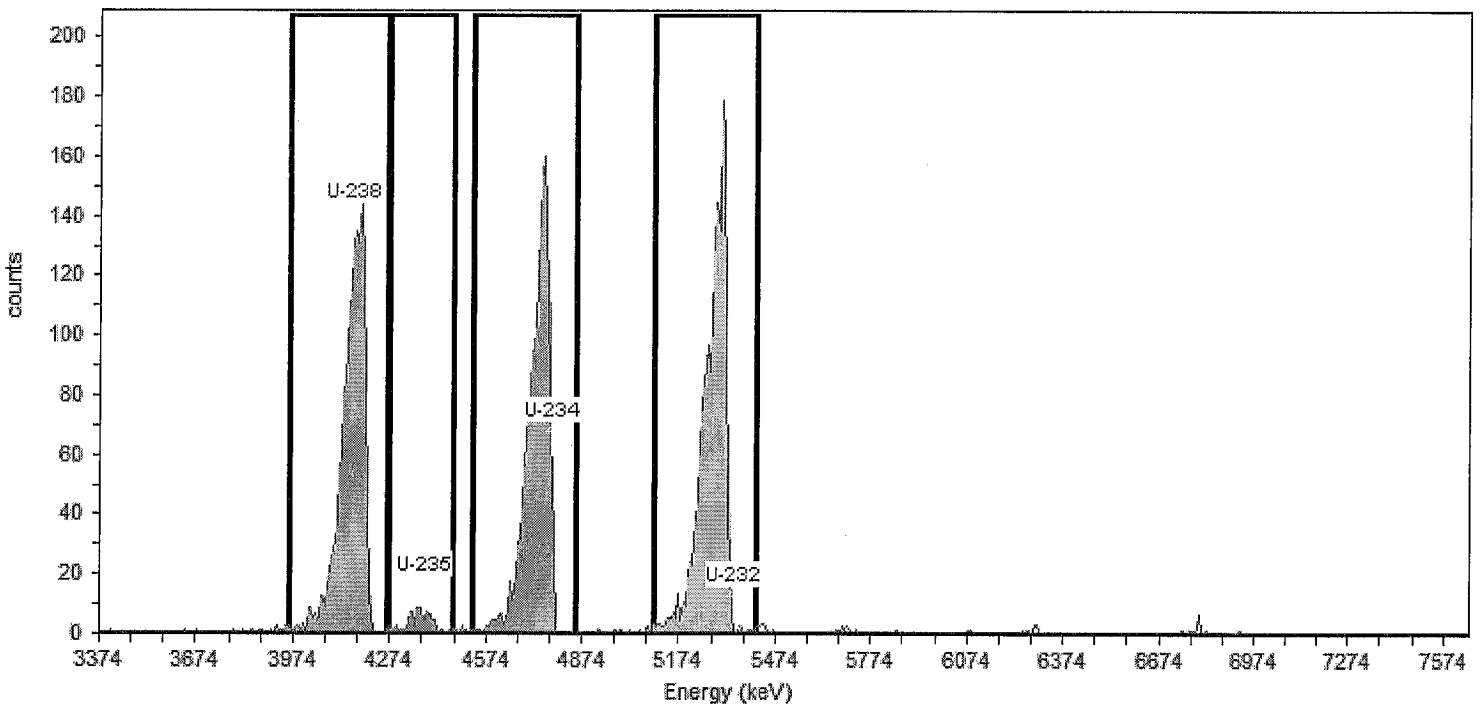
Tracer Name: U-232_00032
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/25/2011 12:03:08PM

Tracer Nuclide: U-232
Tracer Recovery: 83.14%

Acquisition

Detector: AV195 SN: 50-117AA2
Acquisition Start Date: 5/5/2016 10:51:35AM
Live Time: 960.00 min.
Real Time: 960.00 min.
Background Date: 4/22/2016 10:41:10AM
Bkgd Info: Sample: ICB;AV195; Det: AV195; Spectrum #1; 4/22/2016 10:41:10 AM

Energy Calibration: IC-9792;AV195-20151017a
Efficiency Calibration:IC-9792;AV195-20151017a
Calibration Date: 10/18/2015 3:55:41PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2
Efficiency: 25.85% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:5/5/2016 10:49:41AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	73.6	100.0	1490	0.0000	1490.00	7.223E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	78.5	80.2	77	0.0000	77.00	4.654E+000	DPM/mL
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	69.4	99.8	1484	3.0000	1481.00	7.193E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	73.2	100.1	1633	10.0000	1623.00	6.838E+001	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
11:09:54AM 5/9/2016

Sample

Sample Name: Verification 3 Type: Sample
Spectrum #1 Analysis #1
:
Sample Collection Date:
Comment:

Sample Volume : 0.10 Sample Units: mL
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: UNAT_00011
:
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

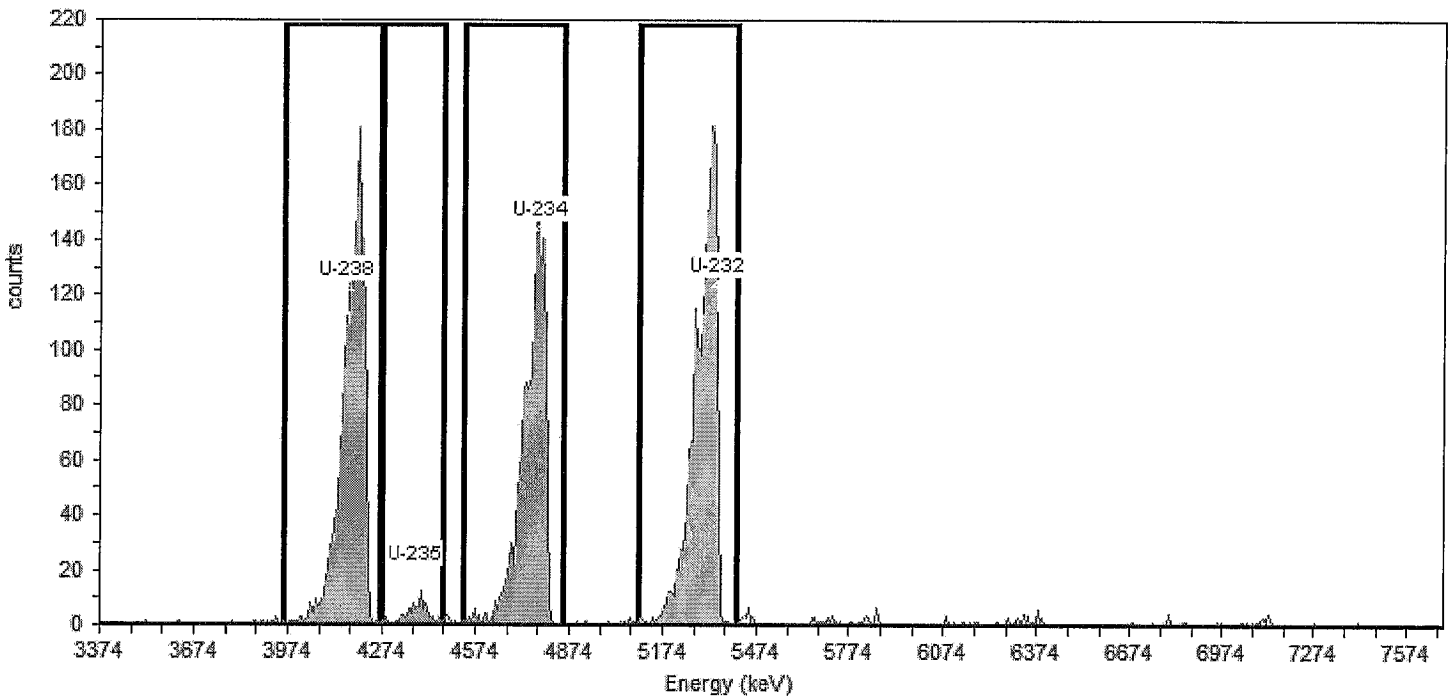
Tracer Name: U-232_00032
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/25/2011 12:03:08PM

Tracer Nuclide: U-232
Tracer Recovery: 95.37%

Acquisition

Detector: AV197 SN: 50-117Z5
Acquisition Start Date: 5/5/2016 10:51:35AM
Live Time: 960.00 min.
Real Time: 960.01 min.
Background Date: 4/25/2016 9:56:18AM
Bkgd Info: Sample: ICB;AV197; Det: AV197; Spectrum #1; 4/25/2016 9:56:18 AM

Energy Calibration: IC-9794;AV197-20151017
Efficiency Calibration:IC-9794;AV197-20151017
Calibration Date: 10/18/2015 3:55:22PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 24.48% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:5/5/2016 10:49:41AM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	73.5	99.8	1519	3.0000	1516.00	6.779E+001	DPM/mL
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	78.8	100.1	1769	6.0000	1763.00	7.844E+001	DPM/mL
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	72.8	100.0	1655	0.0000	1655.00	7.385E+001	DPM/mL
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	62.5	80.2	77	0.0000	77.00	4.284E+000	DPM/mL

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

UNAT verification

Aliquot Only

Batch No. : _____

Balance ID : _____

No.	Sample Number	Aliquot (g / mL)	Crucible ID	Dilution
BC: 115 1	verification-1	0.1	194	BC:199
BC: 116 2	2	1	195	BC:200
BC: 117 3	3	1	197	BC:201
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Note: If a section below is not used, marked the N/A box and initial & date next to the N/A. i.e. Mark the N/A box if a tracer is not added to the sample(s) then initial and date next to the N/A

Tracer ☐ N/A

Initials / Date

Isotope : U-232

Std Sol'n No. : U-232-00032

Vol (mL) : 0.1

Ref Activity (dpm/mL) : _____

Act Ref Date : _____

Samples Spiked and Traced By: SUB 5/2/14 (Initials / Date)

Verification Signature & Date: JMC 5/2/16 (Initials / Date)

LCS Standard ☐ N/A

Initials / Date

Isotope : UNAT

Std Sol'n ID. : UNAT-00011

Vol (mL) : 0.1

Ref Activity (dpm/mL) : 234-70.169 / 235-3.310 / 238-72.2649

Act Ref Date : 03-30-08

SOP's applied in preparing these samples. Mark box to left for all that apply:

☐ ST-RC-0003 Rev.	☐ ST-RC-0040 Rev.	☐ ST-RC-0110 Rev.
☐ ST-RC-0004 Rev.	☐ ST-RC-0041 Rev.	☐ ST-RC-0120 Rev.
☐ ST-RC-0014 Rev.	☐ ST-RC-0050 Rev.	☐ ST-RC-0232 Rev.
☐ ST-RC-0020 Rev.	☐ ST-RC-0090 Rev.	☑ ST-RC-0238 Rev.
☐ ST-RC-0021 Rev.	☑ ST-RC-0100 Rev.	☐ ST-RC-0240 Rev.
		☐ ST-RC-0241 Rev.
		☐ ST-RC-0242 Rev.
		☐ ST-RC-5016 Rev.

Isotope(s)

αβ ☐	Iso Pu ☐	Tc-99 ☐	Iso Cm ☐
Iso Am ☐	Ra ☐	Iso Th ☐	Pu-241 ☐
KPA ☐	Sr ☐	Iso U ☑	Th-229 ☐
Np ☐	TAR ☐	C-14 ☐	Cl-36 ☐

Count Time	Matrix
Long Count ☑	Soil ☐
Short Count ☐	H_2O ☐

Prepared By : SUB

Date : _____

Reviewed by: _____

Date: _____

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

UNAT_00011

Reagent ID: UNAT_00011

Description:	UNAT spike	Expiration Date:	05/20/2016
No. of Bottles:	1	Laboratory:	TestAmerica St. Louis
Storage Location:	RAD Actinide STDs	Prepared By:	Bernsen, Sarah C
Reagent Volume:	200.000 mL	Solvent:	1M HNO3
Creation Date:	04/28/2015	Solvent Lot:	n/a
Open Date:			
Container(s):	622074		
Comment:			

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
U-234	UNAT Parent_00001	05/20/2016	706.91200	dpm/mL	70.69123	dpm/mL
U-235	UNAT Parent_00001	05/20/2016	33.70600	dpm/mL	3.37064	dpm/mL
U-238	UNAT Parent_00001	05/20/2016	722.65000	dpm/mL	72.26499	dpm/mL

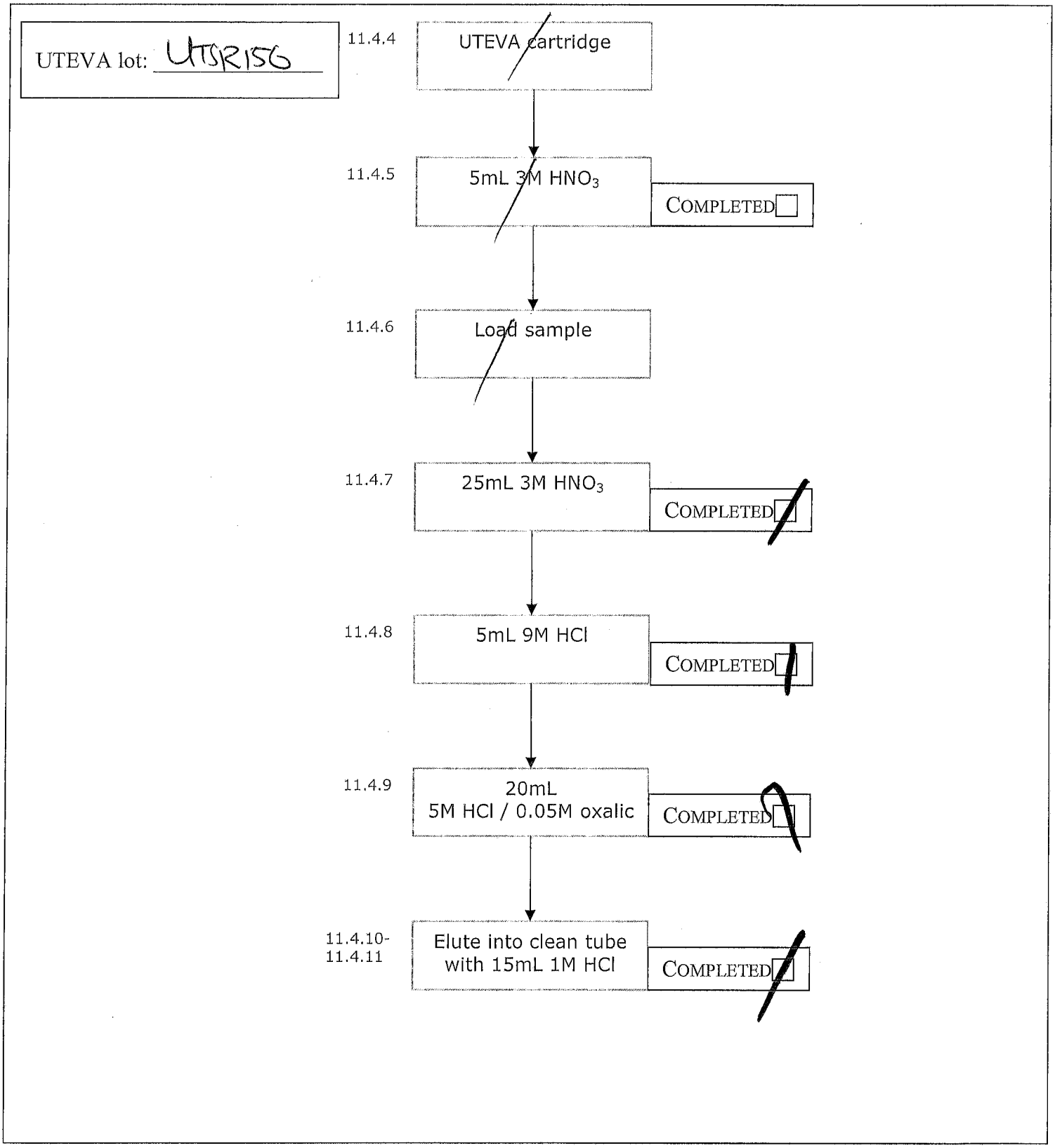
Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
UNAT Parent_00001	UNAT Parent		05/20/16				20.00000	mL

Uranium only via UTEVA

Batch: _____ ST-RC-0238

*All rinses should flow at 1 mL/minute (only 3M HNO_3 may be done at 3 mL/minute)



Method 8260C Low Level

Volatile Organic Compounds (GC/MS) by Method 8260C Low Level

FORM II
GC/MS VOA SURROGATE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): RTX-VMS40 ID: 0.18(mm)

Client Sample ID	Lab Sample ID	DBFM #	DCA #	TOL #	BFB #
TB-082516	160-18852-1	108	108	109	111
GW-BR10RB-082516	160-18852-2	117	117	111	112
GW-GWJJ-082516	160-18852-3	113	111	122	124
GW-GWJJ-082516	160-18852-3	104	102	114	117
GW-BR13JC-082516	160-18852-4	116	112	111	116
GW-BR04JC-082516	160-18852-5	115	114	98	107
GW-BR04JC-082516	160-18852-5	113	114	104	108
GW-BR08JC-082516	160-18852-6	113	111	114	114
GW-BR08JC-082516	160-18852-6	109	107	114	118
GW-BR08JC-082516-FD	160-18852-7	102	99	114	115
GW-BR08JC-082516-FD	160-18852-7	108	107	114	114
GW-BR10JC-082516	160-18852-8	108	106	114	114
GW-BR10JC-082516	160-18852-8	105	104	114	118
GW-NB72-082516	160-18852-9	110	112	116	116
GW-NB72-082516	160-18852-9	111	107	116	116
GW-NB73-082516	160-18852-10	106	108	113	118
GW-NB73-082516	160-18852-10	107	108	110	118
GW-NB34-082516	160-18852-11	101	94	106	111
GW-NB34-082516	160-18852-11	102	98	109	112
	MB 160-267958/9	103	105	109	100
	MB 160-268249/18	105	90	108	116
	MB 160-268257/10	104	103	116	117
	LCS 160-267958/6	106	103	100	94
	LCS 160-268249/15	110	92	102	107
	LCS 160-268257/8	101	97	112	110
	LCSD 160-267958/7	100	99	107	99
	LCSD 160-268249/16	109	93	102	108
	LCSD 160-268257/33	100	95	112	110

	QC LIMITS
DBFM = Dibromofluoromethane (Surr)	81-124
DCA = 1,2-Dichloroethane-d4 (Surr)	75-129
TOL = Toluene-d8 (Surr)	87-128
BFB = 4-Bromofluorobenzene (Surr)	81-130

Column to be used to flag recovery values

FORM II 8260C

FORM III
GC/MS VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Matrix: Water Level: Low Lab File ID: LLCS4850.D

Lab ID: LCS 160-267958/6 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
1,1,1-Trichloroethane	10.0	10.0	100	85-116	
1,1,2,2-Tetrachloroethane	10.0	9.54	95	80-120	
1,1,2-Trichloroethane	10.0	10.0	100	80-120	
1,1-Dichloroethene	10.0	9.54	95	80-120	
1,1-Dichloroethane	10.0	9.90	99	80-120	
1,2,4-Trichlorobenzene	10.0	9.31	93	75-121	
1,2-Dibromo-3-Chloropropane	10.0	9.66	97	73-123	
1,2-Dichloroethane	10.0	10.1	101	80-115	
1,2-Dichloroethene, Total	20.0	18.9	95	80-120	
1,2-Dichloropropane	10.0	10.1	101	80-120	
2-Butanone	10.0	12.0	120	67-127	
2-Hexanone	10.0	10.6	106	70-123	
4-Methyl-2-pentanone	10.0	10.5	105	75-126	
Acetone	10.0	10.9	109	69-129	
Benzene	10.0	10.7	107	80-120	
Bromoform	10.0	8.64	86	80-120	
Methyl bromide	10.0	11.3	113	70-124	
Carbon disulfide	10.0	9.75	97	80-121	
Carbon tetrachloride	10.0	10.0	100	83-125	
Chlorobenzene	10.0	10.2	102	80-120	
Chlorodibromomethane	10.0	9.63	96	80-120	
Chloroethane	10.0	12.7	127	73-119	*
Chloroform	10.0	10.0	100	80-120	
Chloromethane	10.0	11.5	115	72-124	
cis-1,2-Dichloroethene	10.0	9.45	94	80-120	
cis-1,3-Dichloropropene	10.0	10.0	100	80-120	
Bromodichloromethane	10.0	9.59	96	80-120	
Ethylbenzene	10.0	10.5	105	80-120	
1,2-Dibromoethane	10.0	9.75	97	80-120	
Methylene Chloride	10.0	8.60	86	80-120	
n-Butanol	250	224	90	62-128	
Styrene	10.0	11.2	112	81-133	
Tetrachloroethene	10.0	10.0	100	83-123	
Toluene	10.0	10.8	108	80-120	
trans-1,2-Dichloroethene	10.0	9.49	95	80-120	
trans-1,3-Dichloropropene	10.0	10.2	102	82-124	
Trichloroethene	10.0	10.1	101	80-120	
Vinyl acetate	10.0	11.4	114	63-140	
Vinyl chloride	10.0	12.3	123	77-122	*

Column to be used to flag recovery and RPD values

FORM III 8260C

FORM III
GC/MS VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Matrix: Water Level: Low Lab File ID: ZLCS8944.D

Lab ID: LCS 160-268249/15 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
1,1,1-Trichloroethane	10.0	9.74	97	85-116	
1,1,2,2-Tetrachloroethane	10.0	9.31	93	80-120	
1,1,2-Trichloroethane	10.0	9.42	94	80-120	
1,1-Dichloroethene	10.0	10.7	107	80-120	
1,1-Dichloroethane	10.0	9.97	100	80-120	
1,2,4-Trichlorobenzene	10.0	10.9	109	75-121	
1,2-Dibromo-3-Chloropropane	10.0	10.2	102	73-123	
1,2-Dichloroethane	10.0	8.96	90	80-115	
1,2-Dichloroethene, Total	20.0	20.5	103	80-120	
1,2-Dichloropropane	10.0	9.78	98	80-120	
2-Butanone	10.0	8.75	88	67-127	
2-Hexanone	10.0	9.21	92	70-123	
4-Methyl-2-pentanone	10.0	9.78	98	75-126	
Acetone	10.0	10.5	105	69-129	
Benzene	10.0	9.98	100	80-120	
Bromoform	10.0	10.6	106	80-120	
Methyl bromide	10.0	8.86	89	70-124	
Carbon disulfide	10.0	10.2	102	80-121	
Carbon tetrachloride	10.0	10.1	101	83-125	
Chlorobenzene	10.0	9.99	100	80-120	
Chlorodibromomethane	10.0	10.3	103	80-120	
Chloroethane	10.0	7.94	79	73-119	
Chloroform	10.0	9.79	98	80-120	
Chloromethane	10.0	9.03	90	72-124	
cis-1,2-Dichloroethene	10.0	10.1	101	80-120	
cis-1,3-Dichloropropene	10.0	10.1	101	80-120	
Bromodichloromethane	10.0	9.74	97	80-120	
Ethylbenzene	10.0	9.02	90	80-120	
1,2-Dibromoethane	10.0	10.3	103	80-120	
Methylene Chloride	10.0	10.1	101	80-120	
n-Butanol	250	259	104	62-128	
Styrene	10.0	11.3	113	81-133	
Tetrachloroethene	10.0	10.5	105	83-123	
Toluene	10.0	10.3	103	80-120	
trans-1,2-Dichloroethene	10.0	10.4	104	80-120	
trans-1,3-Dichloropropene	10.0	9.83	98	82-124	
Trichloroethene	10.0	9.99	100	80-120	
Vinyl acetate	10.0	9.39	94	63-140	
Vinyl chloride	10.0	7.88	79	77-122	

Column to be used to flag recovery and RPD values

FORM III 8260C

FORM III
GC/MS VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Matrix: Water Level: Low Lab File ID: LLCS4960.D

Lab ID: LCS 160-268257/8 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
1,1,1-Trichloroethane	10.0	9.23	92	85-116	
1,1,2,2-Tetrachloroethane	10.0	9.80	98	80-120	
1,1,2-Trichloroethane	10.0	9.98	100	80-120	
1,1-Dichloroethene	10.0	9.54	95	80-120	
1,1-Dichloroethane	10.0	10.1	101	80-120	
1,2,4-Trichlorobenzene	10.0	9.48	95	75-121	
1,2-Dibromo-3-Chloropropane	10.0	9.16	92	73-123	
1,2-Dichloroethane	10.0	9.24	92	80-115	
1,2-Dichloroethene, Total	20.0	19.7	99	80-120	
1,2-Dichloropropane	10.0	10.6	106	80-120	
2-Butanone	10.0	11.1	111	67-127	
2-Hexanone	10.0	11.2	112	70-123	
4-Methyl-2-pentanone	10.0	10.8	108	75-126	
Acetone	10.0	11.5	115	69-129	
Benzene	10.0	10.4	104	80-120	
Bromoform	10.0	8.84	88	80-120	
Methyl bromide	10.0	9.11	91	70-124	
Carbon disulfide	10.0	9.88	99	80-121	
Carbon tetrachloride	10.0	9.00	90	83-125	
Chlorobenzene	10.0	10.2	102	80-120	
Chlorodibromomethane	10.0	9.24	92	80-120	
Chloroethane	10.0	10.7	107	73-119	
Chloroform	10.0	9.51	95	80-120	
Chloromethane	10.0	9.16	92	72-124	
cis-1,2-Dichloroethene	10.0	9.92	99	80-120	
cis-1,3-Dichloropropene	10.0	10.3	103	80-120	
Bromodichloromethane	10.0	9.46	95	80-120	
Ethylbenzene	10.0	10.6	106	80-120	
1,2-Dibromoethane	10.0	9.47	95	80-120	
Methylene Chloride	10.0	8.82	88	80-120	
n-Butanol	250	225	90	62-128	
Styrene	10.0	11.1	111	81-133	
Tetrachloroethene	10.0	9.86	99	83-123	
Toluene	10.0	10.8	108	80-120	
trans-1,2-Dichloroethene	10.0	9.80	98	80-120	
trans-1,3-Dichloropropene	10.0	10.3	103	82-124	
Trichloroethene	10.0	10.2	102	80-120	
Vinyl acetate	10.0	10.6	106	63-140	
Vinyl chloride	10.0	10.2	102	77-122	

Column to be used to flag recovery and RPD values

FORM III 8260C

FORM III
GC/MS VOA LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Matrix: Water Level: Low Lab File ID: LLCS4851.D

Lab ID: LCSD 160-267958/7 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
1,1,1-Trichloroethane	10.0	9.94	99	1	20	85-116	
1,1,2,2-Tetrachloroethane	10.0	8.98	90	6	20	80-120	
1,1,2-Trichloroethane	10.0	9.91	99	1	20	80-120	
1,1-Dichloroethene	10.0	10.1	101	6	20	80-120	
1,1-Dichloroethane	10.0	10.4	104	5	20	80-120	
1,2,4-Trichlorobenzene	10.0	9.50	95	2	20	75-121	
1,2-Dibromo-3-Chloropropane	10.0	9.20	92	5	20	73-123	
1,2-Dichloroethane	10.0	9.87	99	2	20	80-115	
1,2-Dichloroethene, Total	20.0	20.1	101	6	20	80-120	
1,2-Dichloropropane	10.0	10.7	107	5	20	80-120	
2-Butanone	10.0	11.1	111	8	20	67-127	
2-Hexanone	10.0	10.5	105	1	20	70-123	
4-Methyl-2-pentanone	10.0	10.2	102	3	20	75-126	
Acetone	10.0	11.1	111	2	20	69-129	
Benzene	10.0	10.5	105	2	20	80-120	
Bromoform	10.0	8.34	83	3	20	80-120	
Methyl bromide	10.0	12.1	121	7	20	70-124	
Carbon disulfide	10.0	10.4	104	6	20	80-121	
Carbon tetrachloride	10.0	9.84	98	2	20	83-125	
Chlorobenzene	10.0	10.2	102	0	20	80-120	
Chlorodibromomethane	10.0	9.30	93	3	20	80-120	
Chloroethane	10.0	13.2	132	4	20	73-119	*
Chloroform	10.0	9.92	99	1	20	80-120	
Chloromethane	10.0	12.0	120	4	20	72-124	
cis-1,2-Dichloroethene	10.0	10.1	101	7	20	80-120	
cis-1,3-Dichloropropene	10.0	10.5	105	4	20	80-120	
Bromodichloromethane	10.0	9.97	100	4	20	80-120	
Ethylbenzene	10.0	10.6	106	1	20	80-120	
1,2-Dibromoethane	10.0	9.44	94	3	20	80-120	
Methylene Chloride	10.0	9.01	90	5	20	80-120	
n-Butanol	250	227	91	1	20	62-128	
Styrene	10.0	11.3	113	1	20	81-133	
Tetrachloroethene	10.0	10.4	104	3	20	83-123	
Toluene	10.0	11.0	110	2	20	80-120	
trans-1,2-Dichloroethene	10.0	10.0	100	5	20	80-120	
trans-1,3-Dichloropropene	10.0	10.3	103	0	20	82-124	
Trichloroethene	10.0	10.5	105	4	20	80-120	
Vinyl acetate	10.0	11.2	112	3	20	63-140	
Vinyl chloride	10.0	13.2	132	7	20	77-122	*

Column to be used to flag recovery and RPD values

FORM III 8260C

FORM III
GC/MS VOA LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Matrix: Water Level: Low Lab File ID: ZLCS8945.D

Lab ID: LCSD 160-268249/16 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
1,1,1-Trichloroethane	10.0	9.94	99	2	20	85-116	
1,1,2,2-Tetrachloroethane	10.0	9.44	94	1	20	80-120	
1,1,2-Trichloroethane	10.0	9.68	97	3	20	80-120	
1,1-Dichloroethene	10.0	10.7	107	0	20	80-120	
1,1-Dichloroethane	10.0	9.79	98	2	20	80-120	
1,2,4-Trichlorobenzene	10.0	10.4	104	5	20	75-121	
1,2-Dibromo-3-Chloropropane	10.0	10.0	100	1	20	73-123	
1,2-Dichloroethane	10.0	8.79	88	2	20	80-115	
1,2-Dichloroethene, Total	20.0	20.7	104	1	20	80-120	
1,2-Dichloropropane	10.0	9.86	99	1	20	80-120	
2-Butanone	10.0	8.80	88	0	20	67-127	
2-Hexanone	10.0	9.75	97	6	20	70-123	
4-Methyl-2-pentanone	10.0	10.2	102	5	20	75-126	
Acetone	10.0	9.84	98	7	20	69-129	
Benzene	10.0	9.82	98	2	20	80-120	
Bromoform	10.0	11.1	111	5	20	80-120	
Methyl bromide	10.0	8.79	88	1	20	70-124	
Carbon disulfide	10.0	10.4	104	2	20	80-121	
Carbon tetrachloride	10.0	10.2	102	1	20	83-125	
Chlorobenzene	10.0	9.92	99	1	20	80-120	
Chlorodibromomethane	10.0	10.6	106	3	20	80-120	
Chloroethane	10.0	7.72	77	3	20	73-119	
Chloroform	10.0	9.20	92	6	20	80-120	
Chloromethane	10.0	9.01	90	0	20	72-124	
cis-1,2-Dichloroethene	10.0	10.3	103	2	20	80-120	
cis-1,3-Dichloropropene	10.0	10.4	104	3	20	80-120	
Bromodichloromethane	10.0	9.80	98	1	20	80-120	
Ethylbenzene	10.0	9.03	90	0	20	80-120	
1,2-Dibromoethane	10.0	10.3	103	0	20	80-120	
Methylene Chloride	10.0	10.2	102	1	20	80-120	
n-Butanol	250	262	105	1	20	62-128	
Styrene	10.0	11.2	112	1	20	81-133	
Tetrachloroethene	10.0	10.7	107	1	20	83-123	
Toluene	10.0	10.4	104	1	20	80-120	
trans-1,2-Dichloroethene	10.0	10.4	104	0	20	80-120	
trans-1,3-Dichloropropene	10.0	10.2	102	4	20	82-124	
Trichloroethene	10.0	10.1	101	1	20	80-120	
Vinyl acetate	10.0	9.22	92	2	20	63-140	
Vinyl chloride	10.0	7.76	78	1	20	77-122	

Column to be used to flag recovery and RPD values

FORM III 8260C

FORM III
GC/MS VOA LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Matrix: Water Level: Low Lab File ID: LLCS4961.D

Lab ID: LCSD 160-268257/33 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
1,1,1-Trichloroethane	10.0	9.25	92	0	20	85-116	
1,1,2,2-Tetrachloroethane	10.0	10.0	100	2	20	80-120	
1,1,2-Trichloroethane	10.0	9.76	98	2	20	80-120	
1,1-Dichloroethene	10.0	9.73	97	2	20	80-120	
1,1-Dichloroethane	10.0	10.1	101	0	20	80-120	
1,2,4-Trichlorobenzene	10.0	9.48	95	0	20	75-121	
1,2-Dibromo-3-Chloropropane	10.0	8.86	89	3	20	73-123	
1,2-Dichloroethane	10.0	9.07	91	2	20	80-115	
1,2-Dichloroethene, Total	20.0	19.8	99	0	20	80-120	
1,2-Dichloropropane	10.0	10.6	106	1	20	80-120	
2-Butanone	10.0	10.4	104	7	20	67-127	
2-Hexanone	10.0	10.4	104	8	20	70-123	
4-Methyl-2-pentanone	10.0	10.5	105	3	20	75-126	
Acetone	10.0	10.7	107	6	20	69-129	
Benzene	10.0	10.4	104	0	20	80-120	
Bromoform	10.0	8.70	87	2	20	80-120	
Methyl bromide	10.0	9.27	93	2	20	70-124	
Carbon disulfide	10.0	9.88	99	0	20	80-121	
Carbon tetrachloride	10.0	9.01	90	0	20	83-125	
Chlorobenzene	10.0	10.3	103	1	20	80-120	
Chlorodibromomethane	10.0	8.98	90	3	20	80-120	
Chloroethane	10.0	10.7	107	0	20	73-119	
Chloroform	10.0	9.51	95	0	20	80-120	
Chloromethane	10.0	9.42	94	3	20	72-124	
cis-1,2-Dichloroethene	10.0	9.94	99	0	20	80-120	
cis-1,3-Dichloropropene	10.0	10.3	103	0	20	80-120	
Bromodichloromethane	10.0	9.34	93	1	20	80-120	
Ethylbenzene	10.0	10.8	108	2	20	80-120	
1,2-Dibromoethane	10.0	9.25	93	2	20	80-120	
Methylene Chloride	10.0	8.72	87	1	20	80-120	
n-Butanol	250	212	85	6	20	62-128	
Styrene	10.0	11.3	113	1	20	81-133	
Tetrachloroethene	10.0	10.3	103	4	20	83-123	
Toluene	10.0	11.0	110	2	20	80-120	
trans-1,2-Dichloroethene	10.0	9.83	98	0	20	80-120	
trans-1,3-Dichloropropene	10.0	10.1	101	2	20	82-124	
Trichloroethene	10.0	10.2	102	0	20	80-120	
Vinyl acetate	10.0	11.3	113	6	20	63-140	
Vinyl chloride	10.0	10.2	102	1	20	77-122	

Column to be used to flag recovery and RPD values

FORM III 8260C

FORM IV
GC/MS VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab File ID: LBLK4853.D Lab Sample ID: MB 160-267958/9

Matrix: Water Heated Purge:(Y/N) Y

Instrument ID: VMSL Date Analyzed: 09/04/2016 11:33

GC Column: RTX-VMS40 ID: 0.18(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 160-267958/6	LLCS4850.D	09/04/2016 10:18
	LCSD 160-267958/7	LLCS4851.D	09/04/2016 10:43
TB-082516	160-18852-1	LSMP4866.D	09/04/2016 17:01
GW-BR10RB-082516	160-18852-2	LSMP4867.D	09/04/2016 17:26
GW-GWJJ-082516	160-18852-3	LSMP4868.D	09/04/2016 17:51
GW-BR13JC-082516	160-18852-4	LSMP4869.D	09/04/2016 18:16
GW-BR04JC-082516	160-18852-5	LSMP4870.D	09/04/2016 18:41
GW-BR08JC-082516	160-18852-6	LSMP4871.D	09/04/2016 19:06
GW-BR04JC-082516	160-18852-5	LSMP4874.D	09/04/2016 20:22

FORM IV
GC/MS VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab File ID: LBLK4963.D Lab Sample ID: MB 160-268257/10

Matrix: Water Heated Purge:(Y/N) Y

Instrument ID: VMSL Date Analyzed: 09/07/2016 12:38

GC Column: RTX-VMS40 ID: 0.18(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 160-268257/8	LLCS4960.D	09/07/2016 11:23
	LCSD 160-268257/33	LLCS4961.D	09/07/2016 11:48
GW-BR08JC-082516-FD	160-18852-7	LSMP4964.D	09/07/2016 13:03
GW-GWJJ-082516	160-18852-3	LSMP4973.D	09/07/2016 16:50
GW-BR08JC-082516	160-18852-6	LSMP4974.D	09/07/2016 17:16
GW-BR10JC-082516	160-18852-8	LSMP4975.D	09/07/2016 17:41
GW-NB72-082516	160-18852-9	LSMP4976.D	09/07/2016 18:06
GW-NB73-082516	160-18852-10	LSMP4977.D	09/07/2016 18:31
GW-BR08JC-082516-FD	160-18852-7	LSMP4980.D	09/07/2016 19:47
GW-BR10JC-082516	160-18852-8	LSMP4981.D	09/07/2016 20:12
GW-NB72-082516	160-18852-9	LSMP4982.D	09/07/2016 20:37
GW-NB73-082516	160-18852-10	LSMP4983.D	09/07/2016 21:02

FORM IV
GC/MS VOA METHOD BLANK SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab File ID: ZBLK8947.D Lab Sample ID: MB 160-268249/18

Matrix: Water Heated Purge:(Y/N) Y

Instrument ID: VMSZ Date Analyzed: 09/07/2016 12:55

GC Column: RTX-VMS40 ID: 0.18(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 160-268249/15	ZLCS8944.D	09/07/2016 11:44
	LCSD 160-268249/16	ZLCS8945.D	09/07/2016 12:08
GW-NB34-082516	160-18852-11	ZSMP8953.D	09/07/2016 15:17
GW-NB34-082516	160-18852-11	ZSMP8958.D	09/07/2016 17:37

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab File ID: LBFB4702.D BFB Injection Date: 08/22/2016

Instrument ID: VMSL BFB Injection Time: 10:29

Analysis Batch No.: 265937

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	23.9	
75	30.0 - 60.0 % of mass 95	51.4	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.7	
173	Less than 2.0 % of mass 174	0.0	(0.0) 1
174	50.0 - 120.00 % of mass 95	79.6	
175	5.0 - 9.0 % of mass 174	6.2	(7.8) 1
176	95.0 - 101.0 % of mass 174	77.7	(97.6) 1
177	5.0 - 9.0 % of mass 176	4.7	(6.1) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	IC 160-265937/6	LICL4704.D	08/22/2016	11:18
	IC 160-265937/7	LICL4705.D	08/22/2016	11:43
	IC 160-265937/8	LICL4706.D	08/22/2016	12:08
	IC 160-265937/9	LICL4707.D	08/22/2016	12:33
	ICIS 160-265937/10	LICL4708.D	08/22/2016	12:59
	IC 160-265937/11	LICL4709.D	08/22/2016	13:24
	IC 160-265937/12	LICL4710.D	08/22/2016	13:49
	ICV 160-265937/14	LICV4712.D	08/22/2016	14:40

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab File ID: LBFB4848.D BFB Injection Date: 09/04/2016

Instrument ID: VMSL BFB Injection Time: 09:30

Analysis Batch No.: 267958

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	24.7	
75	30.0 - 60.0 % of mass 95	50.9	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.9	
173	Less than 2.0 % of mass 174	0.0	(0.0) 1
174	50.0 - 120.00 % of mass 95	75.9	
175	5.0 - 9.0 % of mass 174	5.7	(7.4) 1
176	95.0 - 101.0 % of mass 174	72.4	(95.3) 1
177	5.0 - 9.0 % of mass 176	4.9	(6.8) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 160-267958/5	LCCV4849.D	09/04/2016	09:52
	LCS 160-267958/6	LLCS4850.D	09/04/2016	10:18
	LCSD 160-267958/7	LLCS4851.D	09/04/2016	10:43
	MB 160-267958/9	LBLK4853.D	09/04/2016	11:33
TB-082516	160-18852-1	LSMP4866.D	09/04/2016	17:01
GW-BR10RB-082516	160-18852-2	LSMP4867.D	09/04/2016	17:26
GW-GWJJ-082516	160-18852-3	LSMP4868.D	09/04/2016	17:51
GW-BR13JC-082516	160-18852-4	LSMP4869.D	09/04/2016	18:16
GW-BR04JC-082516	160-18852-5	LSMP4870.D	09/04/2016	18:41
GW-BR08JC-082516	160-18852-6	LSMP4871.D	09/04/2016	19:06
GW-BR04JC-082516	160-18852-5	LSMP4874.D	09/04/2016	20:22

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab File ID: LBFB4957.D BFB Injection Date: 09/07/2016

Instrument ID: VMSL BFB Injection Time: 10:09

Analysis Batch No.: 268257

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	23.3	
75	30.0 - 60.0 % of mass 95	49.5	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.9	
173	Less than 2.0 % of mass 174	0.0	(0.0) 1
174	50.0 - 120.00 % of mass 95	79.6	
175	5.0 - 9.0 % of mass 174	5.8	(7.2) 1
176	95.0 - 101.0 % of mass 174	76.7	(96.3) 1
177	5.0 - 9.0 % of mass 176	5.0	(6.5) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	CCVIS 160-268257/7	LLCS4959.D	09/07/2016	10:58
	LCS 160-268257/8	LLCS4960.D	09/07/2016	11:23
	LCSD 160-268257/33	LLCS4961.D	09/07/2016	11:48
	MB 160-268257/10	LBLK4963.D	09/07/2016	12:38
GW-BR08JC-082516-FD	160-18852-7	LSMP4964.D	09/07/2016	13:03
GW-GWJJ-082516	160-18852-3	LSMP4973.D	09/07/2016	16:50
GW-BR08JC-082516	160-18852-6	LSMP4974.D	09/07/2016	17:16
GW-BR10JC-082516	160-18852-8	LSMP4975.D	09/07/2016	17:41
GW-NB72-082516	160-18852-9	LSMP4976.D	09/07/2016	18:06
GW-NB73-082516	160-18852-10	LSMP4977.D	09/07/2016	18:31
GW-BR08JC-082516-FD	160-18852-7	LSMP4980.D	09/07/2016	19:47
GW-BR10JC-082516	160-18852-8	LSMP4981.D	09/07/2016	20:12
GW-NB72-082516	160-18852-9	LSMP4982.D	09/07/2016	20:37
GW-NB73-082516	160-18852-10	LSMP4983.D	09/07/2016	21:02

FORM V
GC/MS VOA INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab File ID: ZBFB8932.D BFB Injection Date: 09/07/2016

Instrument ID: VMSZ BFB Injection Time: 06:52

Analysis Batch No.: 268249

M/E	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15.0 - 40.0 % of mass 95	20.7	
75	30.0 - 60.0 % of mass 95	51.3	
95	Base Peak, 100% relative abundance	100.0	
96	5.0 - 9.0 % of mass 95	6.7	
173	Less than 2.0 % of mass 174	0.7	(0.7) 1
174	50.0 - 120.00 % of mass 95	99.4	
175	5.0 - 9.0 % of mass 174	7.8	(7.9) 1
176	95.0 - 101.0 % of mass 174	96.6	(97.2) 1
177	5.0 - 9.0 % of mass 176	6.5	(6.8) 2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS AND STANDARDS:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	IC 160-268249/5	ZICL8934.D	09/07/2016	07:32
	IC 160-268249/6	ZICL8935.D	09/07/2016	07:55
	IC 160-268249/7	ZICL8936.D	09/07/2016	08:19
	IC 160-268249/8	ZICL8937.D	09/07/2016	08:43
	ICIS 160-268249/9	ZICL8938.D	09/07/2016	09:07
	IC 160-268249/10	ZICL8939.D	09/07/2016	09:30
	IC 160-268249/11	ZICL8940.D	09/07/2016	09:54
	ICV 160-268249/14	ZICV8943.D	09/07/2016	11:05
	LCS 160-268249/15	ZLCS8944.D	09/07/2016	11:44
	LCSD 160-268249/16	ZLCS8945.D	09/07/2016	12:08
	MB 160-268249/18	ZBLK8947.D	09/07/2016	12:55
GW-NB34-082516	160-18852-11	ZSMP8953.D	09/07/2016	15:17
GW-NB34-082516	160-18852-11	ZSMP8958.D	09/07/2016	17:37

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Sample No.: ICIS 160-265937/10 Date Analyzed: 08/22/2016 12:59

Instrument ID: VMSL GC Column: RTX-VMS40 ID: 0.18(mm)

Lab File ID (Standard): LICL4708.D Heated Purge: (Y/N) Y

Calibration ID: 11351

		FB		CBNZd5		DCBd4	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		1316025	9.07	906909	11.91	462775	14.09
UPPER LIMIT		2632050	9.57	1813818	12.41	925550	14.59
LOWER LIMIT		658013	8.57	453455	11.41	231388	13.59
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 160-265937/14		1217754	9.07	836797	11.91	423517	14.09

FB = Fluorobenzene
CBNZd5 = Chlorobenzene-d5
DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260C

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Sample No.: CCVIS 160-267958/5 Date Analyzed: 09/04/2016 09:52

Instrument ID: VMSL GC Column: RTX-VMS40 ID: 0.18(mm)

Lab File ID (Standard): LCCV4849.D Heated Purge: (Y/N) Y

Calibration ID: 11351

		FB		CBNZd5		DCBd4	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1312727	9.07	939500	11.91	538046	14.09
UPPER LIMIT		2625454	9.57	1879000	12.41	1076092	14.59
LOWER LIMIT		656364	8.57	469750	11.41	269023	13.59
LAB SAMPLE ID	CLIENT SAMPLE ID						
LCS 160-267958/6		1379473	9.07	978690	11.91	559981	14.09
LCSD 160-267958/7		1314969	9.07	906218	11.91	506669	14.09
MB 160-267958/9		1153161	9.07	759298	11.91	438030	14.09
160-18852-1	TB-082516	1194096	9.07	783875	11.91	368533	14.09
160-18852-2	GW-BR10RB-082516	1017004	9.07	649357	11.91	291087	14.09
160-18852-3	GW-GWJJ-082516	1121592	9.07	738807	11.91	326929	14.09
160-18852-4	GW-BR13JC-082516	1142360	9.07	747274	11.91	334832	14.09
160-18852-5	GW-BR04JC-082516	1075469	9.07	805525	11.91	336149	14.09
160-18852-6	GW-BR08JC-082516	1065249	9.07	671281	11.91	306362	14.09
160-18852-5	GW-BR04JC-082516	1106261	9.07	771287	11.91	343567	14.09

FB = Fluorobenzene
CBNZd5 = Chlorobenzene-d5
DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260C

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Sample No.: CCVIS 160-268257/7 Date Analyzed: 09/07/2016 10:58

Instrument ID: VMSL GC Column: RTX-VMS40 ID: 0.18(mm)

Lab File ID (Standard): LLCS4959.D Heated Purge: (Y/N) Y

Calibration ID: 11351

		FB		CBNZd5		DCBd4	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		1518678	9.07	1034975	11.91	517281	14.09
UPPER LIMIT		3037356	9.57	2069950	12.41	1034562	14.59
LOWER LIMIT		759339	8.57	517488	11.41	258641	13.59
LAB SAMPLE ID	CLIENT SAMPLE ID						
LCS 160-268257/8		1549631	9.07	1047289	11.91	530675	14.09
LCSD 160-268257/33		1559003	9.07	1042071	11.91	523106	14.09
MB 160-268257/10		1389703	9.07	891492	11.91	420523	14.09
160-18852-7	GW-BR08JC-082516-FD	1344721	9.07	867442	11.91	402584	14.09
160-18852-3	GW-GWJJ-082516	1363333	9.07	874166	11.91	400179	14.09
160-18852-6	GW-BR08JC-082516	1300836	9.07	854849	11.91	386017	14.09
160-18852-8	GW-BR10JC-082516	1273283	9.07	824351	11.91	378077	14.09
160-18852-9	GW-NB72-082516	1189750	9.07	761941	11.91	347806	14.09
160-18852-10	GW-NB73-082516	1262851	9.07	817556	11.91	366790	14.09
160-18852-7	GW-BR08JC-082516-FD	1243463	9.07	811725	11.91	362232	14.09
160-18852-8	GW-BR10JC-082516	1244070	9.07	811371	11.91	362229	14.09
160-18852-9	GW-NB72-082516	1237324	9.07	794093	11.91	355498	14.09
160-18852-10	GW-NB73-082516	1137033	9.07	746060	11.91	312402	14.09

FB = Fluorobenzene
CBNZd5 = Chlorobenzene-d5
DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260C

FORM VIII
GC/MS VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Sample No.: ICIS 160-268249/9 Date Analyzed: 09/07/2016 09:07

Instrument ID: VMSZ GC Column: RTX-VMS40 ID: 0.18(mm)

Lab File ID (Standard): ZICL8938.D Heated Purge: (Y/N) Y

Calibration ID: 11439

		FB		CBNZd5		DCBd4	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		2106768	8.93	1649771	11.77	909861	13.95
UPPER LIMIT		4213536	9.43	3299542	12.27	1819722	14.45
LOWER LIMIT		1053384	8.43	824886	11.27	454931	13.45
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICV 160-268249/14		3574017	8.93	2627807	11.78	1381175	13.95
LCS 160-268249/15		3595610	8.93	2735132	11.78	1442489	13.95
LCSD 160-268249/16		3842926	8.93	2885603	11.77	1488550	13.95
MB 160-268249/18		3688599	8.93	2653807	11.78	1275770	13.96
160-18852-11	GW-NB34-082516	2855960	8.93	2077744	11.78	993785	13.95
160-18852-11	GW-NB34-082516	1942327	8.93	1421129	11.78	653938	13.96

FB = Fluorobenzene
CBNZd5 = Chlorobenzene-d5
DCBd4 = 1,4-Dichlorobenzene-d4

Area Limit = 50%-200% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 8260C

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: TB-082516 | Lab Sample ID: 160-18852-1

Matrix: Water | Lab File ID: LSMP4866.D

Analysis Method: 8260C | Date Collected: 08/25/2016 07:00

Sample wt/vol: 25(mL) | Date Analyzed: 09/04/2016 17:01

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 267958 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	ND		1.0	0.17
79-34-5	1,1,2,2-Tetrachloroethane	ND		1.0	0.10
79-00-5	1,1,2-Trichloroethane	ND		1.0	0.13
75-35-4	1,1-Dichloroethene	ND		1.0	0.10
75-34-3	1,1-Dichloroethane	ND		1.0	0.070
120-82-1	1,2,4-Trichlorobenzene	ND		1.0	0.10
96-12-8	1,2-Dibromo-3-Chloropropane	ND		1.0	0.41
107-06-2	1,2-Dichloroethane	ND		1.0	0.22
540-59-0	1,2-Dichloroethene, Total	ND		2.0	0.14
78-87-5	1,2-Dichloropropane	ND		1.0	0.10
78-93-3	2-Butanone	ND		5.0	0.47
591-78-6	2-Hexanone	ND		5.0	0.25
108-10-1	4-Methyl-2-pentanone	ND		5.0	0.22
67-64-1	Acetone	ND		2.0	0.55
71-43-2	Benzene	ND		1.0	0.10
75-25-2	Bromoform	ND		1.0	0.17
74-83-9	Methyl bromide	ND		2.0	0.25
75-15-0	Carbon disulfide	ND		1.0	0.10
56-23-5	Carbon tetrachloride	ND		1.0	0.18
108-90-7	Chlorobenzene	ND		1.0	0.11
124-48-1	Chlorodibromomethane	ND		1.0	0.14
75-00-3	Chloroethane	ND	*	2.0	0.16
67-66-3	Chloroform	ND		1.0	0.10
74-87-3	Chloromethane	ND		2.0	0.10
156-59-2	cis-1,2-Dichloroethene	ND		1.0	0.10
10061-01-5	cis-1,3-Dichloropropene	ND		1.0	0.16
75-27-4	Bromodichloromethane	ND		1.0	0.14
100-41-4	Ethylbenzene	ND		1.0	0.12
106-93-4	1,2-Dibromoethane	ND		1.0	0.13
75-09-2	Methylene Chloride	ND		1.0	0.27
71-36-3	n-Butanol	ND		50	12
100-42-5	Styrene	ND		1.0	0.13
127-18-4	Tetrachloroethene	ND		1.0	0.18
108-88-3	Toluene	ND		1.0	0.14
156-60-5	trans-1,2-Dichloroethene	ND		1.0	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		1.0	0.10

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: TB-082516 | Lab Sample ID: 160-18852-1

Matrix: Water | Lab File ID: LSMP4866.D

Analysis Method: 8260C | Date Collected: 08/25/2016 07:00

Sample wt/vol: 25(mL) | Date Analyzed: 09/04/2016 17:01

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 267958 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		1.0	0.25
108-05-4	Vinyl acetate	ND		2.0	0.18
75-01-4	Vinyl chloride	ND	*	2.0	0.19
1330-20-7	Xylenes, Total	ND		3.0	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	108		75-129
460-00-4	4-Bromofluorobenzene (Surr)	111		81-130
1868-53-7	Dibromofluoromethane (Surr)	108		81-124
2037-26-5	Toluene-d8 (Surr)	109		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4866.D
Lims ID: 160-18852-A-1
Client ID: TB-082516
Sample Type: Client
Inject. Date: 04-Sep-2016 17:01:30 ALS Bottle#: 18 Worklist Smp#: 22
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008391-022
Misc. Info.: 160-18852-a-1
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:46:01 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: rhoadess Date: 06-Sep-2016 07:04:27

	Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
	3 Chloromethane	50		3.474				ND	
	4 Vinyl chloride	62		3.641				ND	
	6 Bromomethane	94		4.256				ND	
	7 Chloroethane	64		4.479				ND	
	12 1,1-Dichloroethene	96		5.541				ND	
	13 Carbon disulfide	76		5.583				ND	
S	15 1,2-Dichloroethene, Total	96		5.816				ND	
	20 Methylene Chloride	84		6.337				ND	
	21 Acetone	43		6.407				ND	
	22 trans-1,2-Dichloroethene	96		6.532				ND	
	30 1,1-Dichloroethane	63		7.259				ND	
	33 Vinyl acetate	43		7.510				ND	
	34 cis-1,2-Dichloroethene	96		7.831				ND	
	38 Chloroform	83		8.097				ND	
	40 Carbon tetrachloride	117		8.264				ND	
$	42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	94	248611		10.8
	43 1,1,1-Trichloroethane	97		8.334				ND	
	45 2-Butanone (MEK)	43		8.404				ND	
	48 Benzene	78		8.683				ND	
$	53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.809	0.014	94	263320		10.8
	54 1,2-Dichloroethane	62		8.879				ND	
*	55 Fluorobenzene	96	9.074	9.074	0.000	98	1194096		10.0
	57 Trichloroethene	95		9.228				ND	
	59 n-Butanol	56		9.451				ND	
	62 1,2-Dichloropropane	63		9.717				ND	
	63 Dichlorobromomethane	83		9.759				ND	
	67 cis-1,3-Dichloropropene	75		10.317				ND	
$	68 Toluene-d8 (Surr)	98	10.499	10.485	0.014	95	1120276		10.9
	69 Toluene	92		10.541				ND	
	71 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
	72 trans-1,3-Dichloropropene	75		10.890				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
73 Tetrachloroethene	164		10.890				ND	
75 1,1,2-Trichloroethane	83		11.043				ND	
76 Chlorodibromomethane	129		11.225				ND	
79 Ethylene Dibromide	107		11.476				ND	
80 2-Hexanone	43		11.574				ND	
* 83 Chlorobenzene-d5	117	11.909	11.909	0.000	89	783875	10.0	
82 Ethylbenzene	91		11.909				ND	
84 Chlorobenzene	112		11.923				ND	
86 m-Xylene & p-Xylene	106		12.035				ND	
88 o-Xylene	106		12.440				ND	
89 Styrene	104		12.482				ND	
90 Bromoform	173		12.552				ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	88	341988	11.1	
95 1,1,2,2-Tetrachloroethane	83		13.166				ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	368533	10.0	
115 1,2-Dibromo-3-Chloropropan	157		15.303				ND	
117 1,2,4-Trichlorobenzene	180		15.974				ND	
S 119 Xylenes, Total	106		16.500				ND	

Reagents:

I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

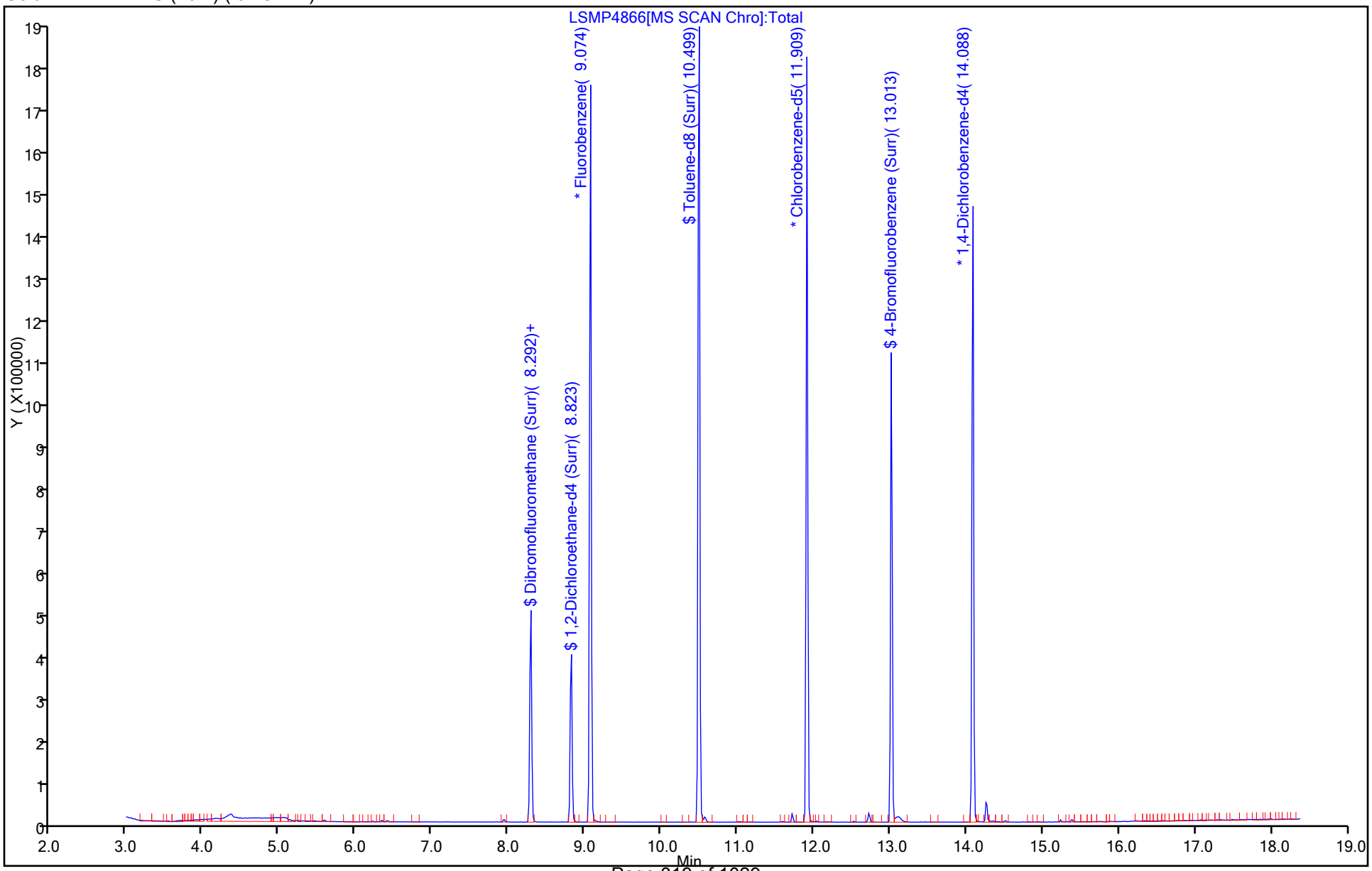
Report Date: 06-Sep-2016 08:46:27 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4866.D

Injection Date:	04-Sep-2016 17:01:30	Instrument ID:	VMSL	Operator ID:	ADB
Lims ID:	160-18852-A-1	Lab Sample ID:	160-18852-1	Worklist Smp#:	22
Client ID:	TB-082516				
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	18
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4866.D
Lims ID: 160-18852-A-1
Client ID: TB-082516
Sample Type: Client
Inject. Date: 04-Sep-2016 17:01:30 ALS Bottle#: 18 Worklist Smp#: 22
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008391-022
Misc. Info.: 160-18852-a-1
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:46:01 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: rhoadess Date: 06-Sep-2016 07:04:27

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.8	108.35
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	10.8	108.48
$ 68 Toluene-d8 (Surr)	10.0	10.9	109.48
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.1	110.59

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR10RB-082516 | Lab Sample ID: 160-18852-2

Matrix: Water | Lab File ID: LSMP4867.D

Analysis Method: 8260C | Date Collected: 08/25/2016 08:00

Sample wt/vol: 25(mL) | Date Analyzed: 09/04/2016 17:26

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 267958 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	ND		1.0	0.17
79-34-5	1,1,2,2-Tetrachloroethane	ND		1.0	0.10
79-00-5	1,1,2-Trichloroethane	ND		1.0	0.13
75-35-4	1,1-Dichloroethene	ND		1.0	0.10
75-34-3	1,1-Dichloroethane	ND		1.0	0.070
120-82-1	1,2,4-Trichlorobenzene	ND		1.0	0.10
96-12-8	1,2-Dibromo-3-Chloropropane	ND		1.0	0.41
107-06-2	1,2-Dichloroethane	ND		1.0	0.22
540-59-0	1,2-Dichloroethene, Total	ND		2.0	0.14
78-87-5	1,2-Dichloropropane	ND		1.0	0.10
78-93-3	2-Butanone	ND		5.0	0.47
591-78-6	2-Hexanone	ND		5.0	0.25
108-10-1	4-Methyl-2-pentanone	ND		5.0	0.22
67-64-1	Acetone	ND		2.0	0.55
71-43-2	Benzene	ND		1.0	0.10
75-25-2	Bromoform	ND		1.0	0.17
74-83-9	Methyl bromide	ND		2.0	0.25
75-15-0	Carbon disulfide	ND		1.0	0.10
56-23-5	Carbon tetrachloride	ND		1.0	0.18
108-90-7	Chlorobenzene	ND		1.0	0.11
124-48-1	Chlorodibromomethane	ND		1.0	0.14
75-00-3	Chloroethane	ND	*	2.0	0.16
67-66-3	Chloroform	ND		1.0	0.10
74-87-3	Chloromethane	ND		2.0	0.10
156-59-2	cis-1,2-Dichloroethene	ND		1.0	0.10
10061-01-5	cis-1,3-Dichloropropene	ND		1.0	0.16
75-27-4	Bromodichloromethane	ND		1.0	0.14
100-41-4	Ethylbenzene	ND		1.0	0.12
106-93-4	1,2-Dibromoethane	ND		1.0	0.13
75-09-2	Methylene Chloride	ND		1.0	0.27
71-36-3	n-Butanol	ND		50	12
100-42-5	Styrene	ND		1.0	0.13
127-18-4	Tetrachloroethene	ND		1.0	0.18
108-88-3	Toluene	ND		1.0	0.14
156-60-5	trans-1,2-Dichloroethene	ND		1.0	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		1.0	0.10

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR10RB-082516 | Lab Sample ID: 160-18852-2

Matrix: Water | Lab File ID: LSMP4867.D

Analysis Method: 8260C | Date Collected: 08/25/2016 08:00

Sample wt/vol: 25(mL) | Date Analyzed: 09/04/2016 17:26

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 267958 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		1.0	0.25
108-05-4	Vinyl acetate	ND		2.0	0.18
75-01-4	Vinyl chloride	ND	*	2.0	0.19
1330-20-7	Xylenes, Total	ND		3.0	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	117		75-129
460-00-4	4-Bromofluorobenzene (Surr)	112		81-130
1868-53-7	Dibromofluoromethane (Surr)	117		81-124
2037-26-5	Toluene-d8 (Surr)	111		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4867.D
Lims ID: 160-18852-C-2
Client ID: GW-BR10RB-082516
Sample Type: Client
Inject. Date: 04-Sep-2016 17:26:30 ALS Bottle#: 19 Worklist Smp#: 23
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008391-023
Misc. Info.: 160-18852-c-2
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:46:01 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: rhoadess Date: 06-Sep-2016 07:04:51

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
3 Chloromethane	50		3.474				ND	
4 Vinyl chloride	62		3.641				ND	
6 Bromomethane	94		4.256				ND	
7 Chloroethane	64		4.479				ND	
12 1,1-Dichloroethene	96		5.541				ND	
13 Carbon disulfide	76		5.583				ND	
S 15 1,2-Dichloroethene, Total	96		5.816				ND	
20 Methylene Chloride	84		6.337				ND	
21 Acetone	43		6.407				ND	
22 trans-1,2-Dichloroethene	96		6.532				ND	
30 1,1-Dichloroethane	63		7.259				ND	
33 Vinyl acetate	43		7.510				ND	
34 cis-1,2-Dichloroethene	96		7.831				ND	
38 Chloroform	83		8.097				ND	
40 Carbon tetrachloride	117		8.264				ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	229190	11.7	
43 1,1,1-Trichloroethane	97		8.334				ND	
45 2-Butanone (MEK)	43		8.404				ND	
48 Benzene	78		8.683				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.809	0.014	94	241132	11.7	
54 1,2-Dichloroethane	62		8.879				ND	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1017004	10.0	
57 Trichloroethene	95		9.228				ND	
59 n-Butanol	56		9.451				ND	
62 1,2-Dichloropropane	63		9.717				ND	
63 Dichlorobromomethane	83		9.759				ND	
67 cis-1,3-Dichloropropene	75		10.317				ND	
$ 68 Toluene-d8 (Surr)	98	10.499	10.485	0.014	95	938715	11.1	
69 Toluene	92		10.541				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
72 trans-1,3-Dichloropropene	75		10.890				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
73 Tetrachloroethene	164		10.890				ND	
75 1,1,2-Trichloroethane	83		11.043				ND	
76 Chlorodibromomethane	129		11.225				ND	
79 Ethylene Dibromide	107		11.476				ND	
80 2-Hexanone	43		11.574				ND	
* 83 Chlorobenzene-d5	117	11.909	11.909	0.000	89	649357	10.0	
82 Ethylbenzene	91		11.909				ND	
84 Chlorobenzene	112		11.923				ND	
86 m-Xylene & p-Xylene	106		12.035				ND	
88 o-Xylene	106		12.440				ND	
89 Styrene	104		12.482				ND	
90 Bromoform	173		12.552				ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	88	274541	11.2	
95 1,1,2,2-Tetrachloroethane	83		13.166				ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	291087	10.0	
115 1,2-Dibromo-3-Chloropropan	157		15.303				ND	
117 1,2,4-Trichlorobenzene	180		15.974				ND	
S 119 Xylenes, Total	106		16.500				ND	

Reagents:

I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

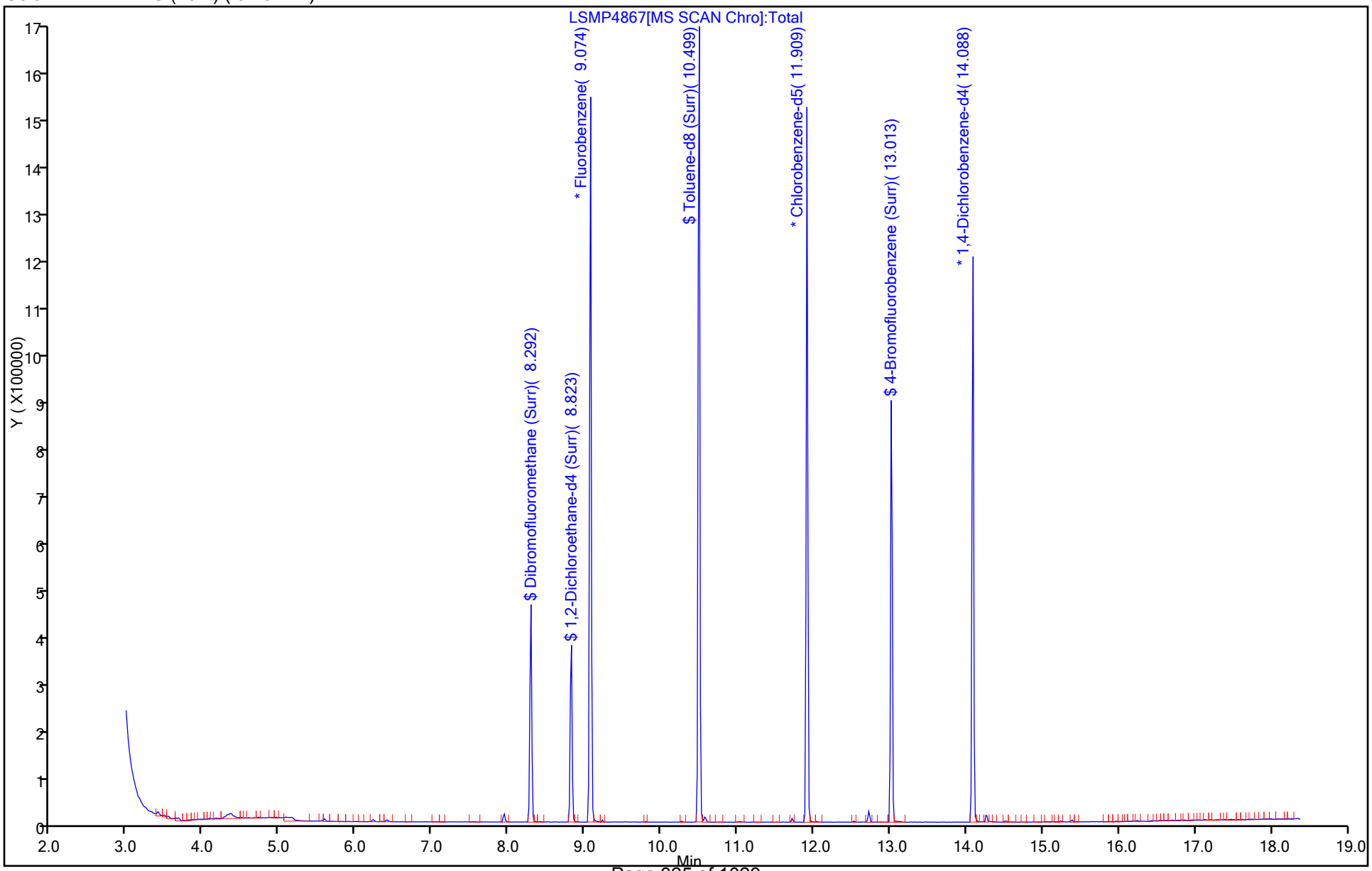
Report Date: 06-Sep-2016 08:46:25 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4867.D

Injection Date:	04-Sep-2016 17:26:30	Instrument ID:	VMSL	Operator ID:	ADB
Lims ID:	160-18852-C-2	Lab Sample ID:	160-18852-2	Worklist Smp#:	23
Client ID:	GW-BR10RB-082516				
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	19
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4867.D
Lims ID: 160-18852-C-2
Client ID: GW-BR10RB-082516
Sample Type: Client
Inject. Date: 04-Sep-2016 17:26:30 ALS Bottle#: 19 Worklist Smp#: 23
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008391-023
Misc. Info.: 160-18852-c-2
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:46:01 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: rhoadess Date: 06-Sep-2016 07:04:51

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	11.7	117.28
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	11.7	116.64
$ 68 Toluene-d8 (Surr)	10.0	11.1	110.74
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.2	112.40

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-GWJJ-082516 | Lab Sample ID: 160-18852-3

Matrix: Water | Lab File ID: LSMP4973.D

Analysis Method: 8260C | Date Collected: 08/25/2016 08:35

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 16:50

Soil Aliquot Vol: | Dilution Factor: 5

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	ND		5.0	0.86
79-34-5	1,1,2,2-Tetrachloroethane	ND		5.0	0.50
79-00-5	1,1,2-Trichloroethane	ND		5.0	0.66
75-35-4	1,1-Dichloroethene	43		5.0	0.50
75-34-3	1,1-Dichloroethane	20		5.0	0.35
120-82-1	1,2,4-Trichlorobenzene	ND		5.0	0.50
96-12-8	1,2-Dibromo-3-Chloropropane	ND		5.0	2.1
107-06-2	1,2-Dichloroethane	ND		5.0	1.1
78-87-5	1,2-Dichloropropane	ND		5.0	0.50
78-93-3	2-Butanone	20	J	25	2.3
591-78-6	2-Hexanone	ND		25	1.2
108-10-1	4-Methyl-2-pentanone	ND		25	1.1
67-64-1	Acetone	11	B	10	2.8
71-43-2	Benzene	ND		5.0	0.50
75-25-2	Bromoform	ND		5.0	0.85
74-83-9	Methyl bromide	ND		10	1.3
75-15-0	Carbon disulfide	ND		5.0	0.50
56-23-5	Carbon tetrachloride	ND		5.0	0.91
108-90-7	Chlorobenzene	ND		5.0	0.55
124-48-1	Chlorodibromomethane	ND		5.0	0.72
75-00-3	Chloroethane	ND		10	0.82
67-66-3	Chloroform	ND		5.0	0.50
74-87-3	Chloromethane	ND		10	0.51
10061-01-5	cis-1,3-Dichloropropene	ND		5.0	0.79
75-27-4	Bromodichloromethane	ND		5.0	0.69
100-41-4	Ethylbenzene	ND		5.0	0.61
106-93-4	1,2-Dibromoethane	ND		5.0	0.65
75-09-2	Methylene Chloride	ND		5.0	1.4
71-36-3	n-Butanol	ND		250	62
100-42-5	Styrene	ND		5.0	0.67
127-18-4	Tetrachloroethene	9.2		5.0	0.90
108-88-3	Toluene	ND		5.0	0.70
156-60-5	trans-1,2-Dichloroethene	24		5.0	0.52
10061-02-6	trans-1,3-Dichloropropene	ND		5.0	0.50
108-05-4	Vinyl acetate	ND		10	0.90
75-01-4	Vinyl chloride	10		10	0.97

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-GWJJ-082516 | Lab Sample ID: 160-18852-3

Matrix: Water | Lab File ID: LSMP4973.D

Analysis Method: 8260C | Date Collected: 08/25/2016 08:35

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 16:50

Soil Aliquot Vol: | Dilution Factor: 5

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1330-20-7	Xylenes, Total	ND		15	1.3

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	102		75-129
460-00-4	4-Bromofluorobenzene (Surr)	117		81-130
1868-53-7	Dibromofluoromethane (Surr)	104		81-124
2037-26-5	Toluene-d8 (Surr)	114		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4973.D
Lims ID: 160-18852-D-3
Client ID: GW-GWJJ-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 16:50:30 ALS Bottle#: 16 Worklist Smp#: 20
Purge Vol: 25.000 mL Dil. Factor: 5.0000
Sample Info: 160-0008407-020
Misc. Info.: 160-18852-d-3
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 07:14:50

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
3 Chloromethane	50		3.474				ND	
4 Vinyl chloride	62	3.641	3.642	-0.001	98	128614	2.10	
6 Bromomethane	94		4.256				ND	
7 Chloroethane	64		4.479				ND	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	94	330596	8.70	
13 Carbon disulfide	76		5.583				ND	
S 15 1,2-Dichloroethene, Total	96				0		201.4	
20 Methylene Chloride	84		6.337				ND	
21 Acetone	43	6.407	6.407	0.000	99	11259	2.13	
22 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	94	185663	4.75	
30 1,1-Dichloroethane	63	7.259	7.259	0.000	97	295253	4.05	
33 Vinyl acetate	43		7.510				ND	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	84	7189190	196.7	E
38 Chloroform	83		8.097				ND	
40 Carbon tetrachloride	117		8.264				ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	273445	10.4	
43 1,1,1-Trichloroethane	97		8.334				ND	
45 2-Butanone (MEK)	43	8.404	8.404	0.000	97	22962	3.94	
48 Benzene	78		8.683				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	94	282008	10.2	
54 1,2-Dichloroethane	62		8.879				ND	
* 55 Fluorobenzene	96	9.074	9.074	0.000	99	1363333	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	96	4705628	115.6	E
59 n-Butanol	56		9.451				ND	
62 1,2-Dichloropropane	63		9.717				ND	
63 Dichlorobromomethane	83		9.759				ND	
67 cis-1,3-Dichloropropene	75		10.317				ND	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	95	1302442	11.4	
69 Toluene	92		10.541				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
72 trans-1,3-Dichloropropene	75		10.890				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
73 Tetrachloroethene	164	10.904	10.904	0.000	98	63844	1.83	
75 1,1,2-Trichloroethane	83		11.058				ND	
76 Chlorodibromomethane	129		11.225				ND	
79 Ethylene Dibromide	107		11.477				ND	
80 2-Hexanone	43		11.588				ND	
* 83 Chlorobenzene-d5	117	11.909	11.910	-0.001	89	874166	10.0	
82 Ethylbenzene	91		11.910				ND	
84 Chlorobenzene	112		11.923				ND	
86 m-Xylene & p-Xylene	106		12.035				ND	
88 o-Xylene	106		12.440				ND	
89 Styrene	104		12.482				ND	
90 Bromoform	173		12.552				ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	87	394358	11.7	
95 1,1,2,2-Tetrachloroethane	83		13.166				ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	400179	10.0	
115 1,2-Dibromo-3-Chloropropan	157		15.303				ND	
117 1,2,4-Trichlorobenzene	180		15.974				ND	
S 119 Xylenes, Total	106		16.500				ND	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Reagents:

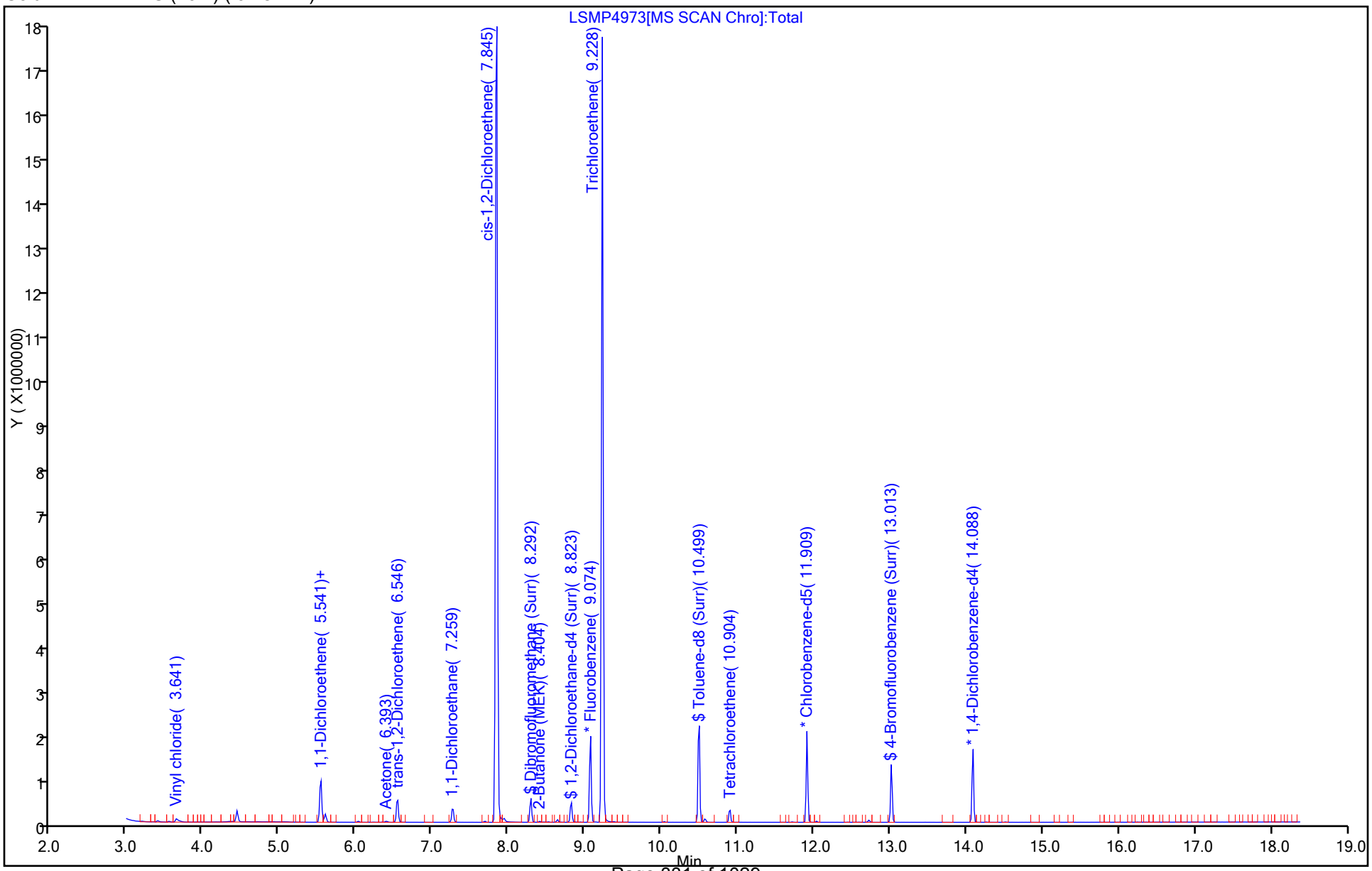
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 08-Sep-2016 08:40:01 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4973.D				
Injection Date:	07-Sep-2016 16:50:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	160-18852-D-3	Lab Sample ID:	160-18852-3	Worklist Smp#:	20
Client ID:	GW-GWJJ-082516				
Purge Vol:	25.000 mL	Dil. Factor:	5.0000	ALS Bottle#:	16
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4973.D
Lims ID: 160-18852-D-3
Client ID: GW-GWJJ-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 16:50:30 ALS Bottle#: 16 Worklist Smp#: 20
Purge Vol: 25.000 mL Dil. Factor: 5.0000
Sample Info: 160-0008407-020
Misc. Info.: 160-18852-d-3
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 07:14:50

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.4	104.38
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	10.2	101.76
$ 68 Toluene-d8 (Surr)	10.0	11.4	114.13
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.7	117.44

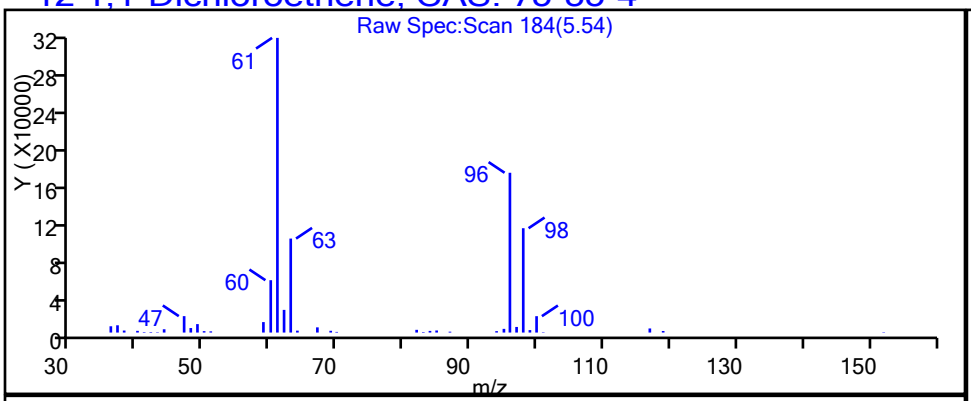
Report Date: 08-Sep-2016 08:40:02 Chrom Revision: 2.2 20-Apr-2016 13:59:46

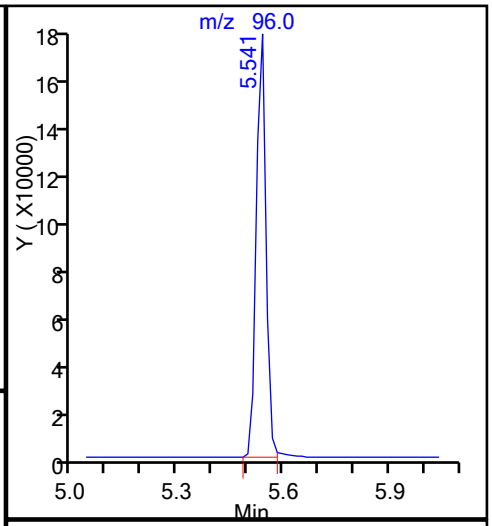
TestAmerica St. Louis

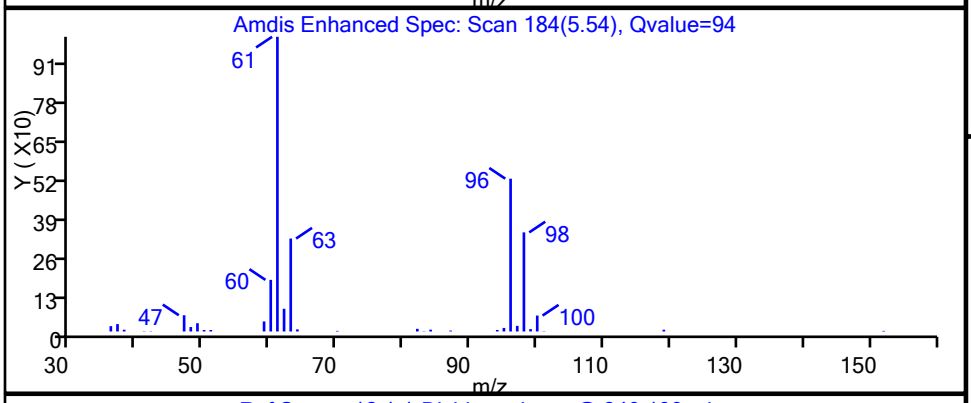
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4973.D

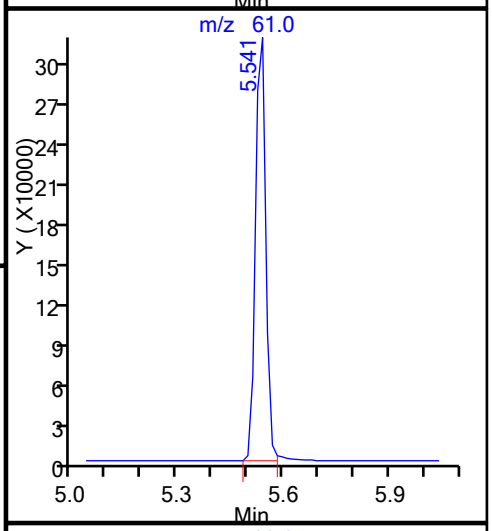
Injection Date:	07-Sep-2016 16:50:30	Instrument ID:	VMSL		
Lims ID:	160-18852-D-3	Lab Sample ID:	160-18852-3		
Client ID:	GW-GWJJ-082516				
Operator ID:	SMCR	ALS Bottle#:	16	Worklist Smp#:	20
Purge Vol:	25.000 mL	Dil. Factor:	5.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

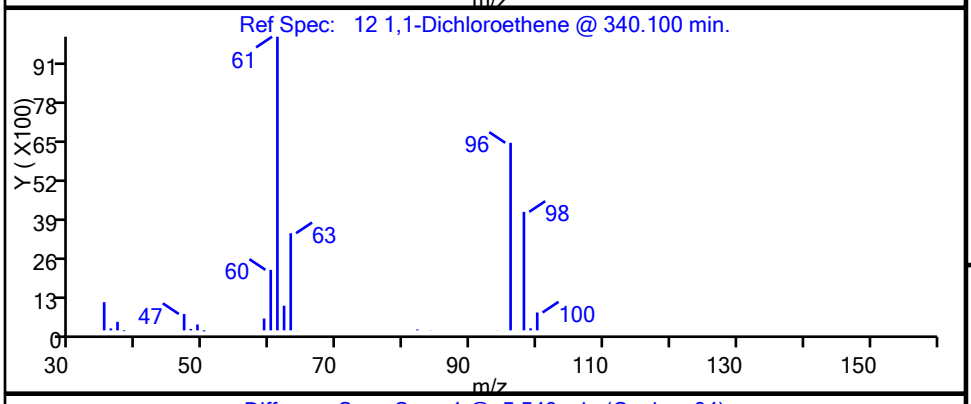
12 1,1-Dichloroethene, CAS: 75-35-4

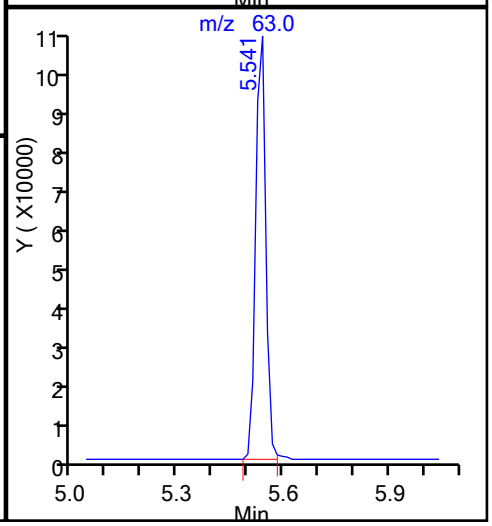


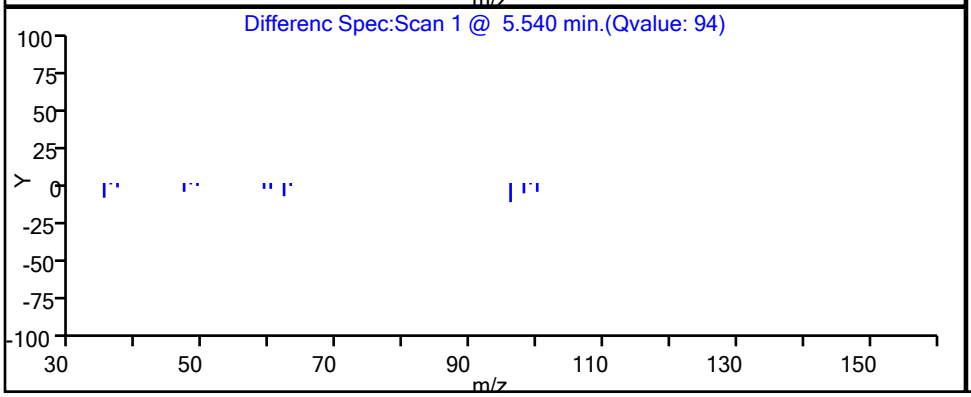












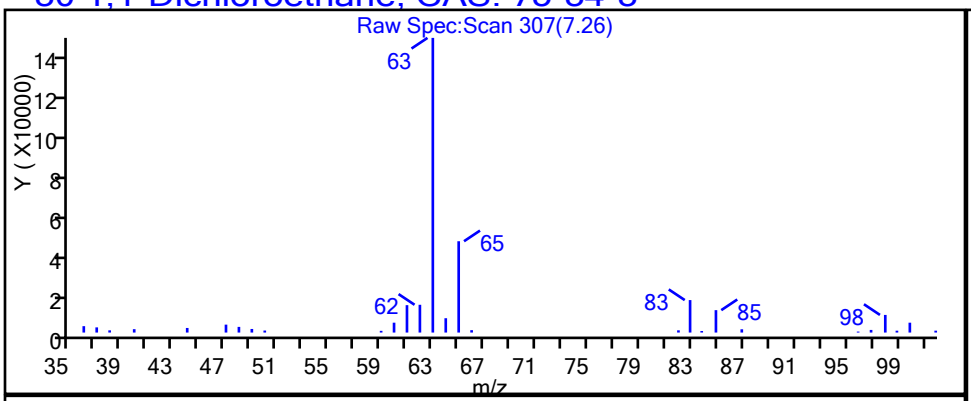
Report Date: 08-Sep-2016 08:40:02 Chrom Revision: 2.2 20-Apr-2016 13:59:46

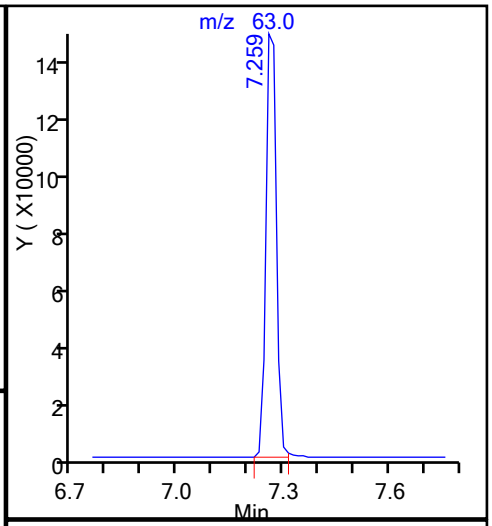
TestAmerica St. Louis

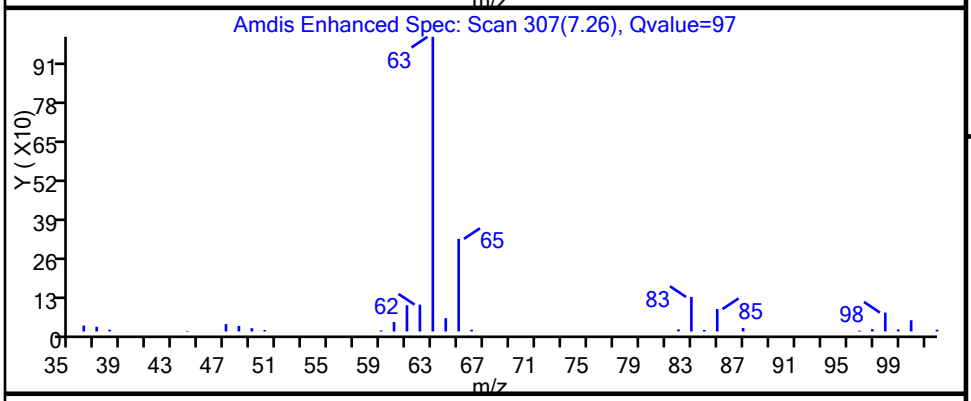
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4973.D

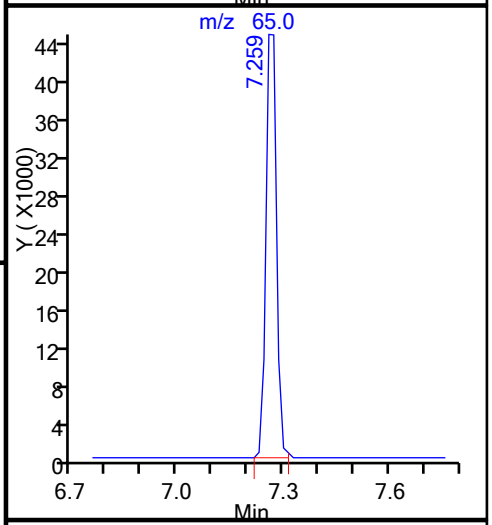
Injection Date:	07-Sep-2016 16:50:30	Instrument ID:	VMSL		
Lims ID:	160-18852-D-3	Lab Sample ID:	160-18852-3		
Client ID:	GW-GWJJ-082516				
Operator ID:	SMCR	ALS Bottle#:	16	Worklist Smp#:	20
Purge Vol:	25.000 mL	Dil. Factor:	5.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

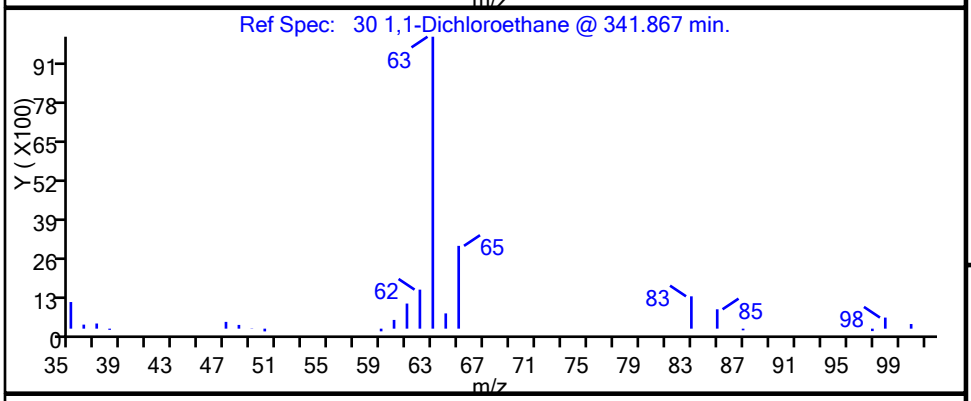
30 1,1-Dichloroethane, CAS: 75-34-3

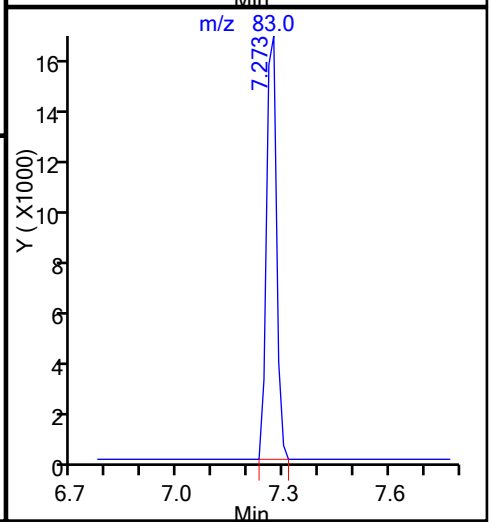


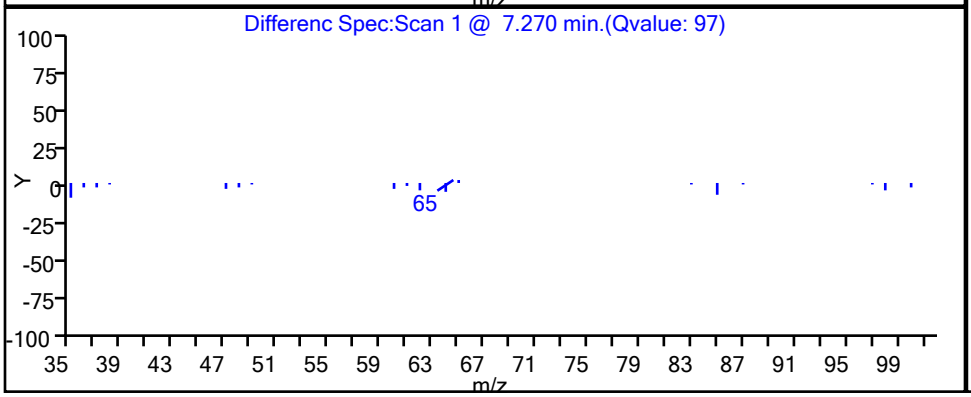












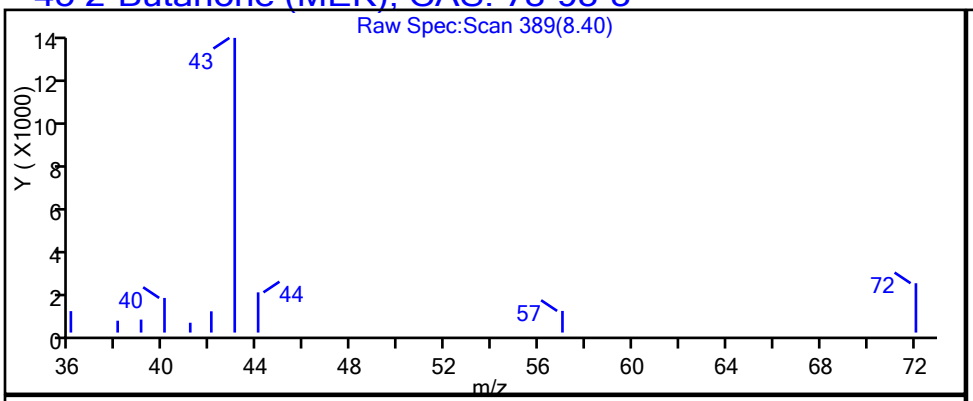
Report Date: 08-Sep-2016 08:40:02 Chrom Revision: 2.2 20-Apr-2016 13:59:46

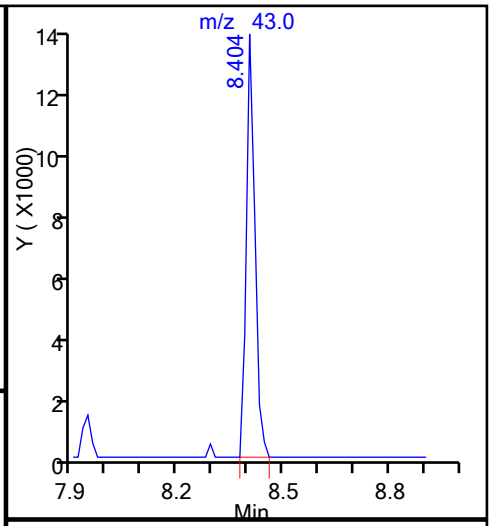
TestAmerica St. Louis

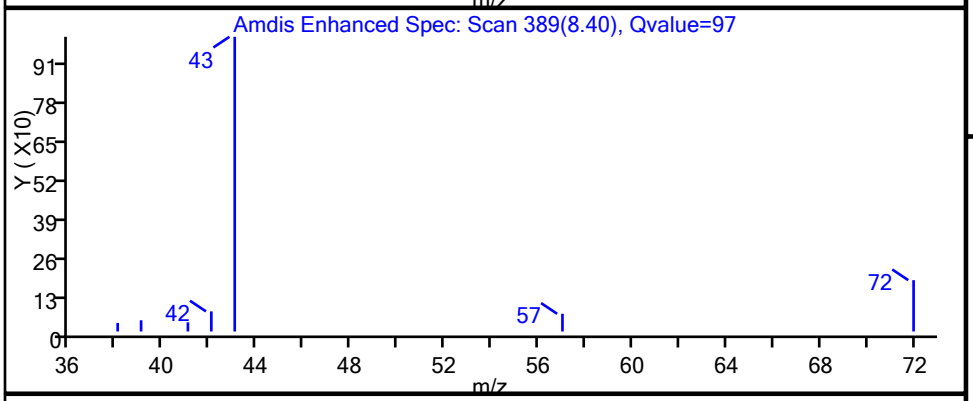
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4973.D

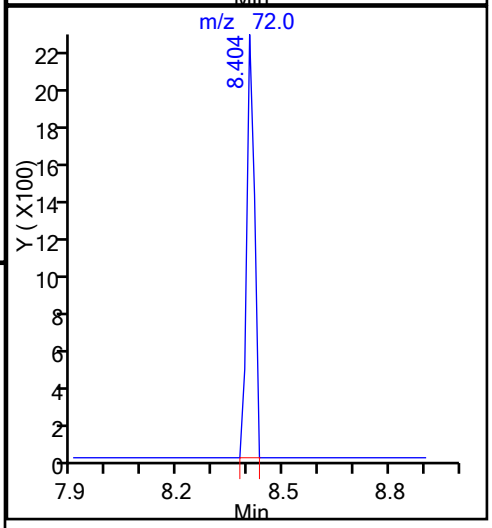
Injection Date:	07-Sep-2016 16:50:30	Instrument ID:	VMSL		
Lims ID:	160-18852-D-3	Lab Sample ID:	160-18852-3		
Client ID:	GW-GWJJ-082516				
Operator ID:	SMCR	ALS Bottle#:	16	Worklist Smp#:	20
Purge Vol:	25.000 mL	Dil. Factor:	5.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

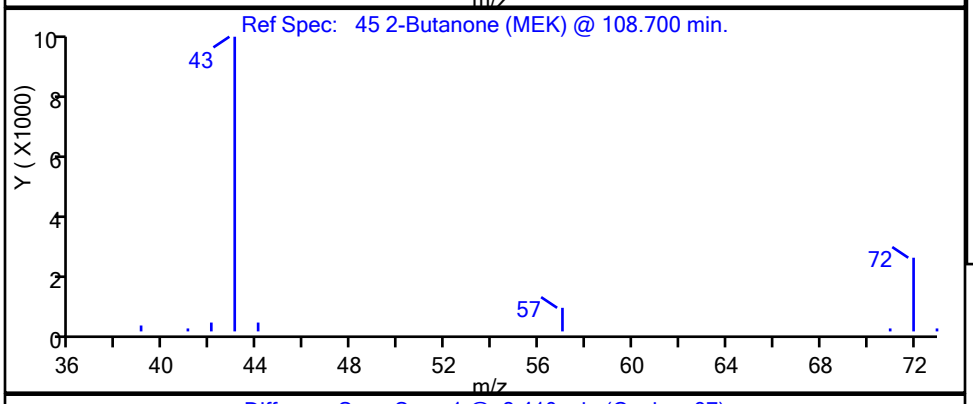
45 2-Butanone (MEK), CAS: 78-93-3

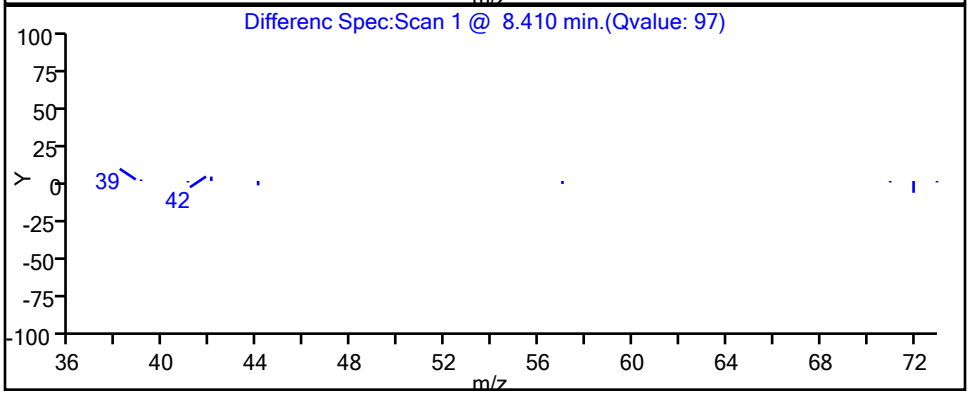










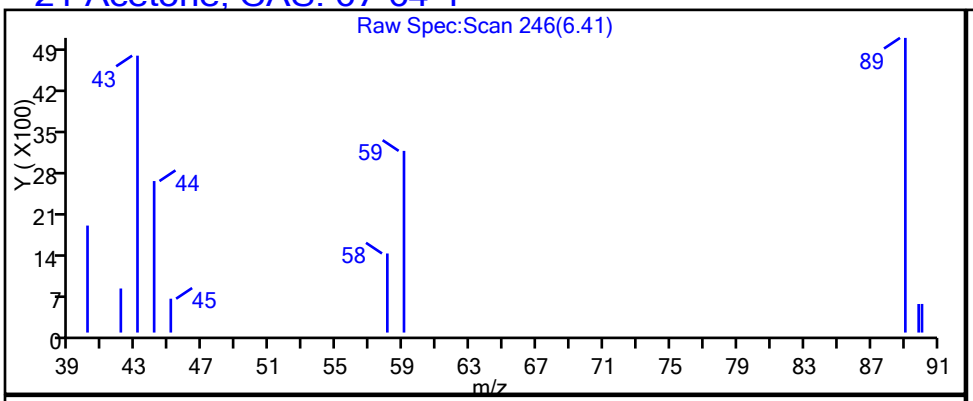


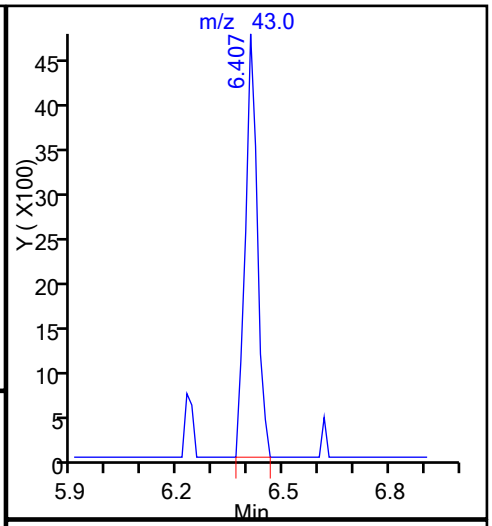
Report Date: 08-Sep-2016 08:40:02 Chrom Revision: 2.2 20-Apr-2016 13:59:46

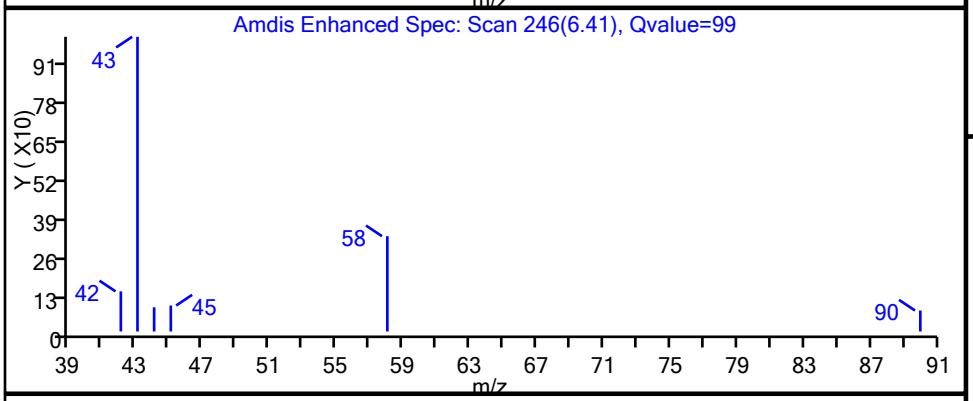
TestAmerica St. Louis

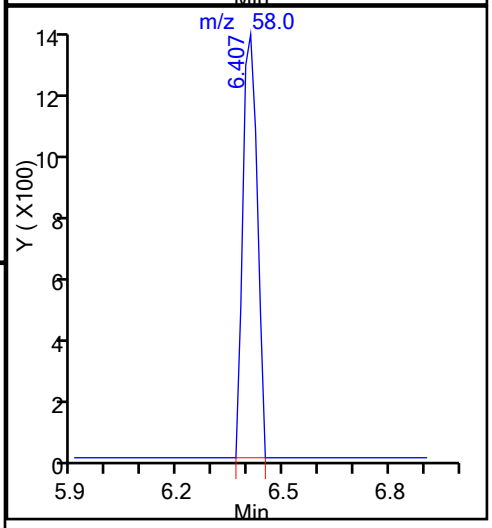
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4973.D				
Injection Date:	07-Sep-2016 16:50:30	Instrument ID:	VMSL		
Lims ID:	160-18852-D-3	Lab Sample ID:	160-18852-3		
Client ID:	GW-GWJJ-082516				
Operator ID:	SMCR	ALS Bottle#:	16	Worklist Smp#:	20
Purge Vol:	25.000 mL	Dil. Factor:	5.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

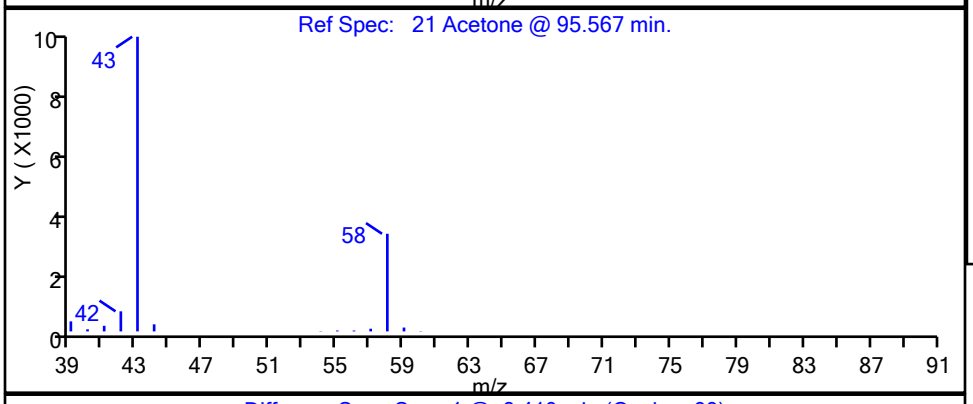
21 Acetone, CAS: 67-64-1

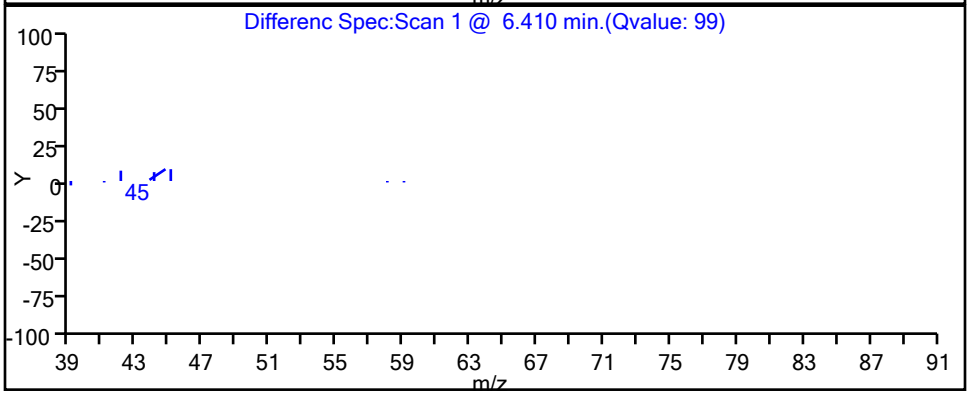












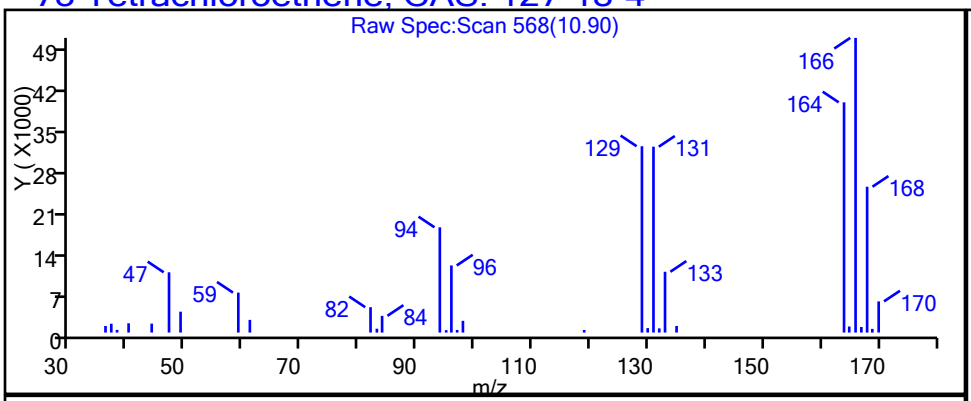
Report Date: 08-Sep-2016 08:40:02 Chrom Revision: 2.2 20-Apr-2016 13:59:46

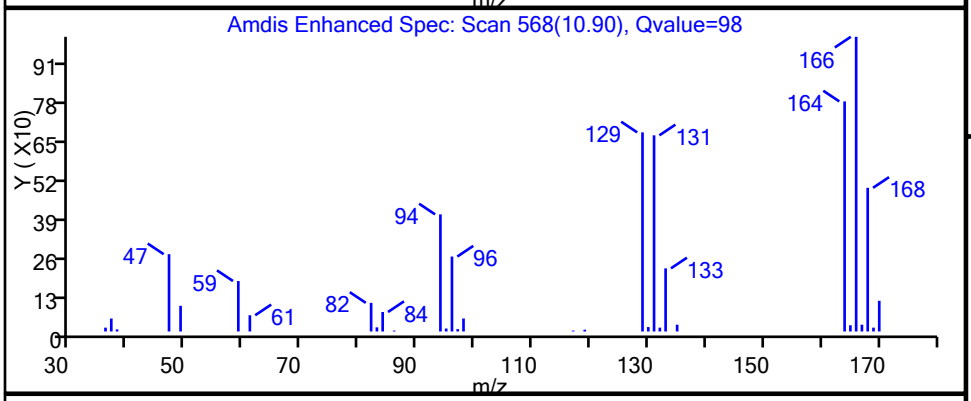
TestAmerica St. Louis

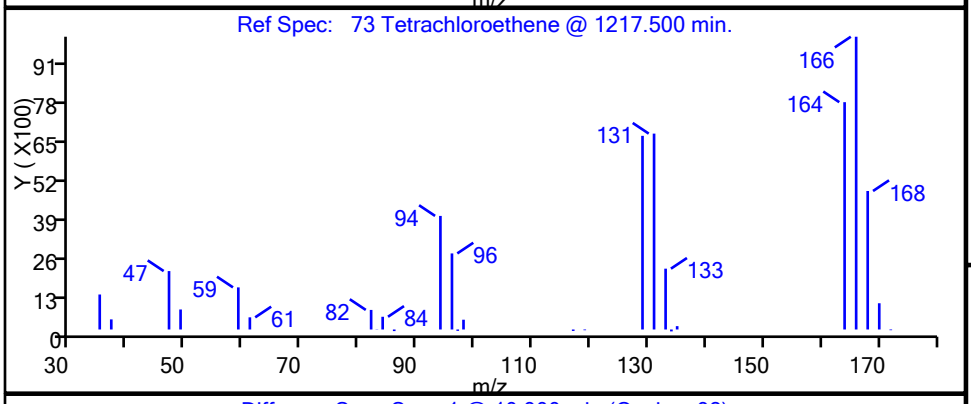
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4973.D

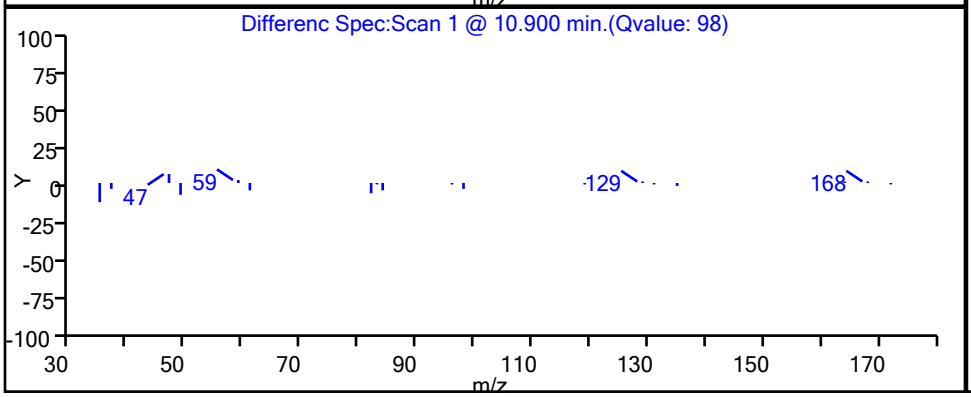
Injection Date:	07-Sep-2016 16:50:30	Instrument ID:	VMSL		
Lims ID:	160-18852-D-3	Lab Sample ID:	160-18852-3		
Client ID:	GW-GWJJ-082516				
Operator ID:	SMCR	ALS Bottle#:	16	Worklist Smp#:	20
Purge Vol:	25.000 mL	Dil. Factor:	5.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

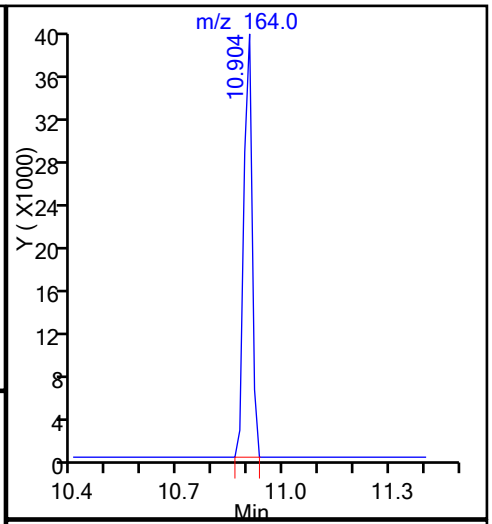
73 Tetrachloroethene, CAS: 127-18-4

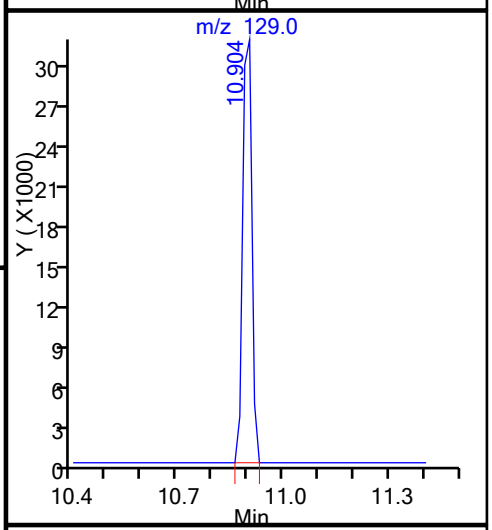


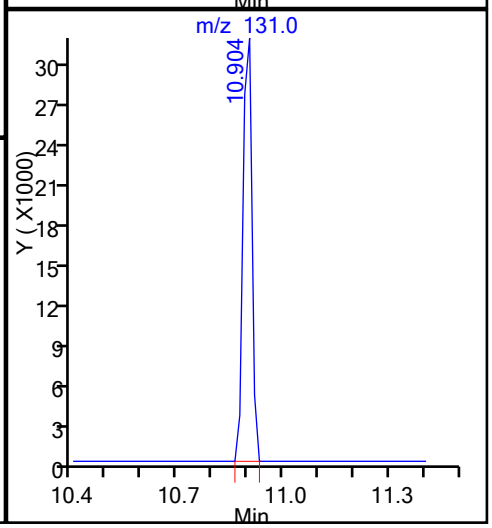












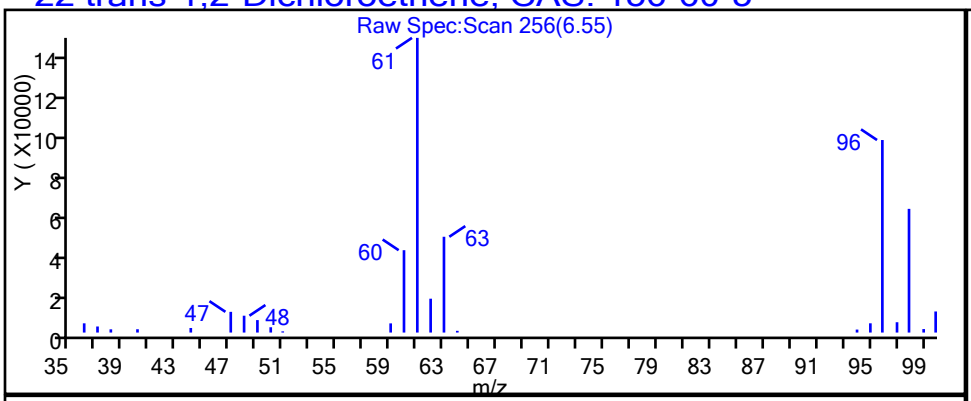
Report Date: 08-Sep-2016 08:40:02 Chrom Revision: 2.2 20-Apr-2016 13:59:46

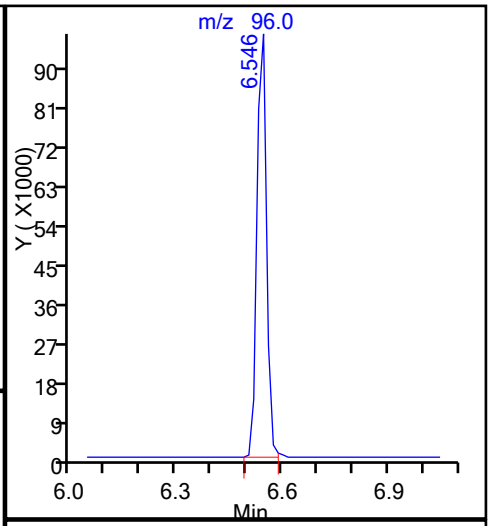
TestAmerica St. Louis

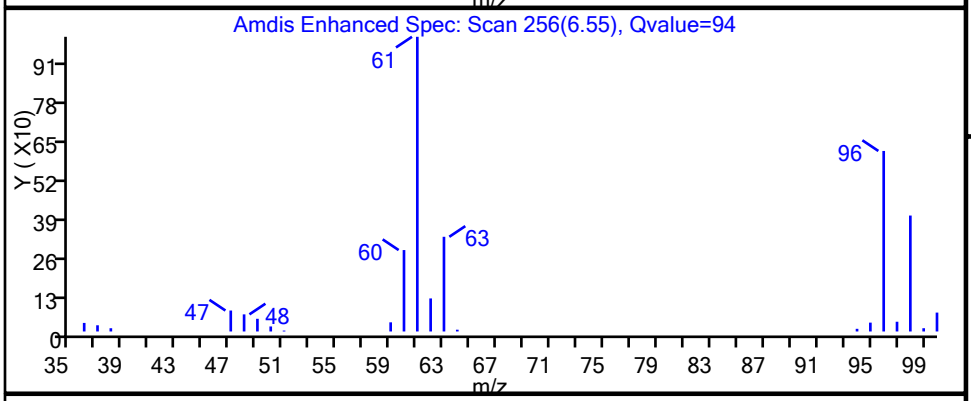
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4973.D

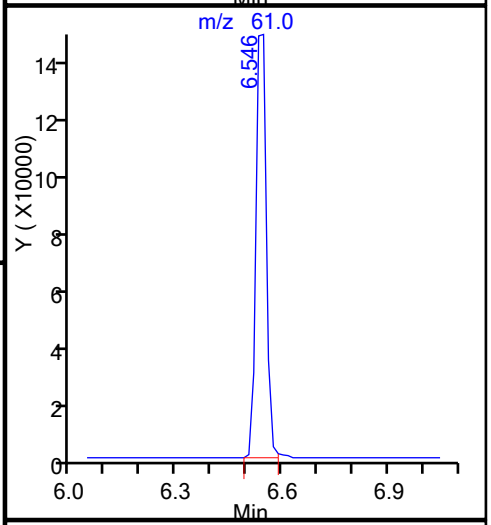
Injection Date:	07-Sep-2016 16:50:30	Instrument ID:	VMSL		
Lims ID:	160-18852-D-3	Lab Sample ID:	160-18852-3		
Client ID:	GW-GWJJ-082516				
Operator ID:	SMCR	ALS Bottle#:	16	Worklist Smp#:	20
Purge Vol:	25.000 mL	Dil. Factor:	5.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

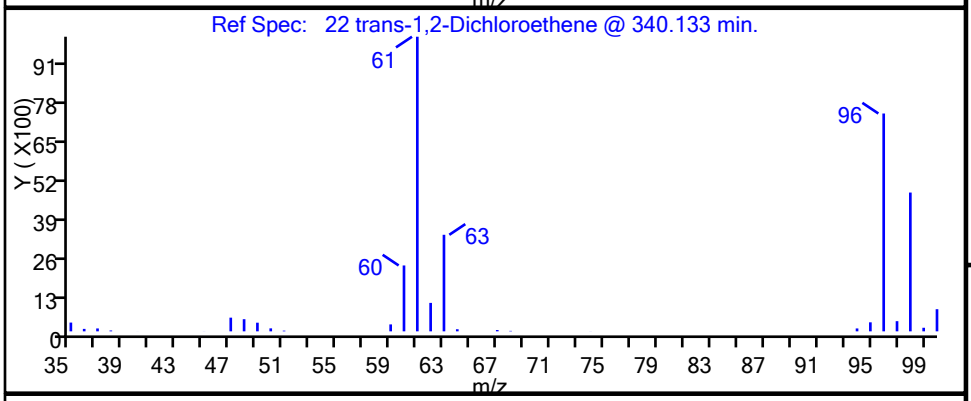
22 trans-1,2-Dichloroethene, CAS: 156-60-5

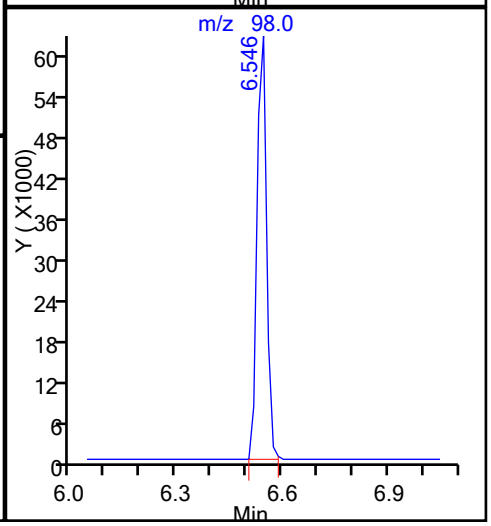


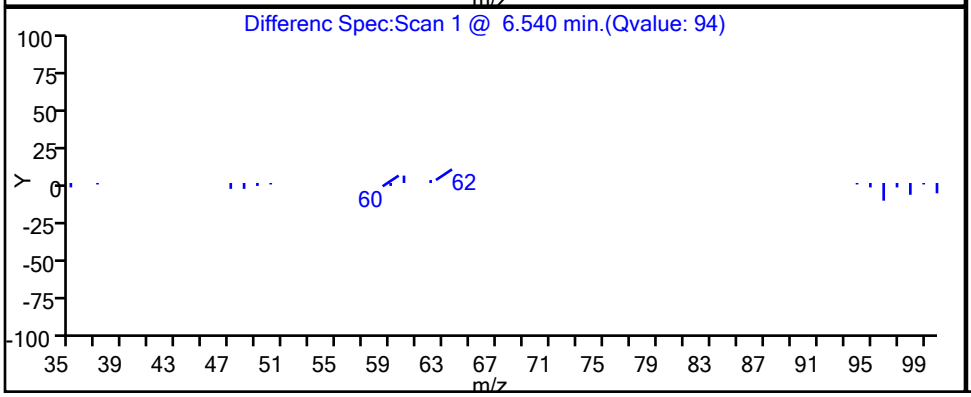












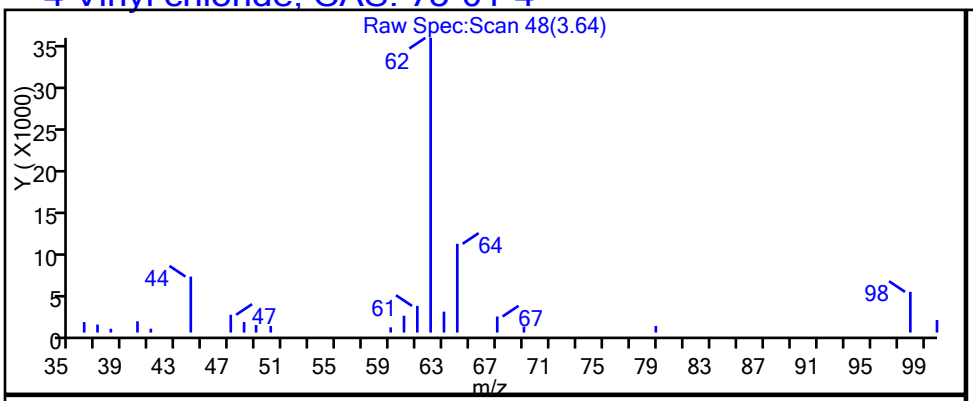
Report Date: 08-Sep-2016 08:40:02 Chrom Revision: 2.2 20-Apr-2016 13:59:46

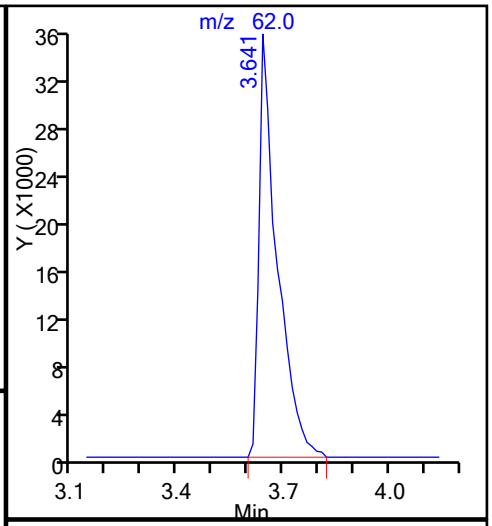
TestAmerica St. Louis

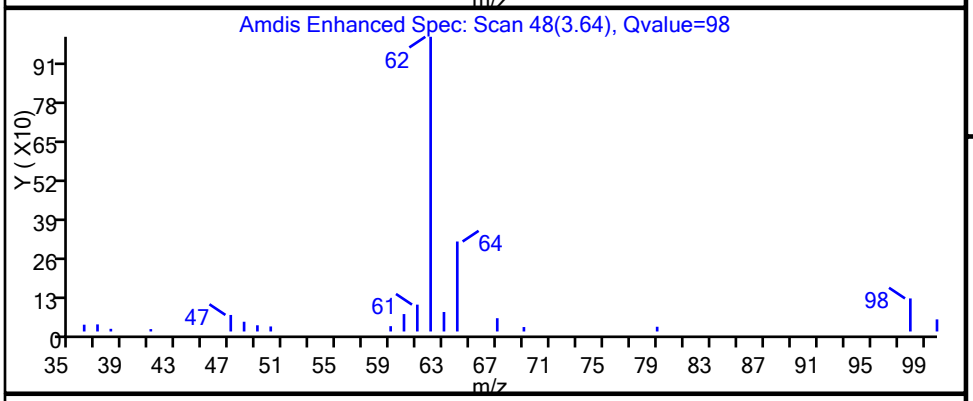
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4973.D

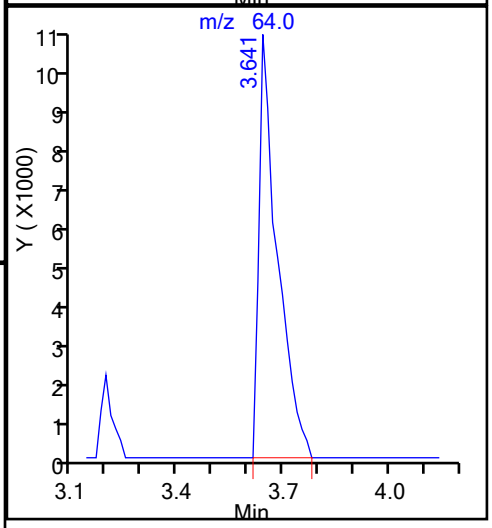
Injection Date:	07-Sep-2016 16:50:30	Instrument ID:	VMSL		
Lims ID:	160-18852-D-3	Lab Sample ID:	160-18852-3		
Client ID:	GW-GWJJ-082516				
Operator ID:	SMCR	ALS Bottle#:	16	Worklist Smp#:	20
Purge Vol:	25.000 mL	Dil. Factor:	5.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

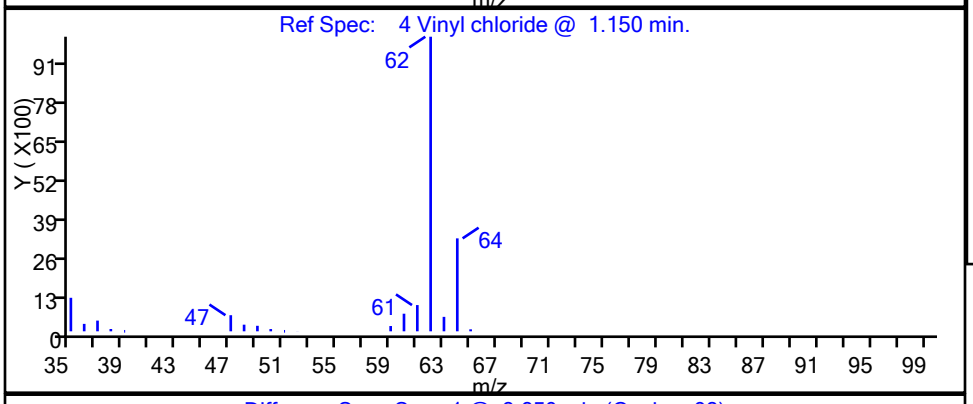
4 Vinyl chloride, CAS: 75-01-4

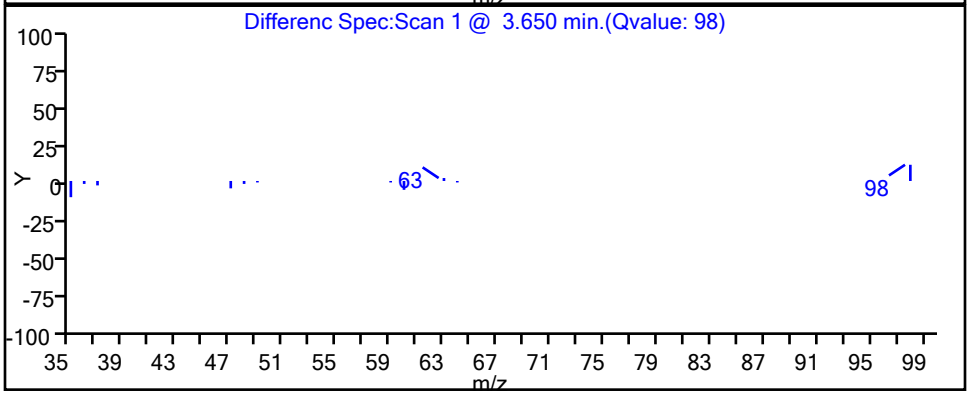












FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-GWJJ-082516 | Lab Sample ID: 160-18852-3

Matrix: Water | Lab File ID: LSMP4868.D

Analysis Method: 8260C | Date Collected: 08/25/2016 08:35

Sample wt/vol: 25(mL) | Date Analyzed: 09/04/2016 17:51

Soil Aliquot Vol: | Dilution Factor: 50

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 267958 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
540-59-0	1,2-Dichloroethene, Total	1000		100	6.9
156-59-2	cis-1,2-Dichloroethene	980		50	5.0
79-01-6	Trichloroethene	600		50	13

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	111		75-129
460-00-4	4-Bromofluorobenzene (Surr)	124		81-130
1868-53-7	Dibromofluoromethane (Surr)	113		81-124
2037-26-5	Toluene-d8 (Surr)	122		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4868.D
Lims ID: 160-18852-C-3
Client ID: GW-GWJJ-082516
Sample Type: Client
Inject. Date: 04-Sep-2016 17:51:30 ALS Bottle#: 20 Worklist Smp#: 24
Purge Vol: 25.000 mL Dil. Factor: 50.0000
Sample Info: 160-0008391-024
Misc. Info.: 160-18852-c-3
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:46:01 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: rhoadess Date: 06-Sep-2016 07:05:18

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
3 Chloromethane	50		3.474				ND	
4 Vinyl chloride	62	3.642	3.641	0.001	95	12055	0.2392	
6 Bromomethane	94		4.256				ND	
7 Chloroethane	64		4.479				ND	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	94	25535	0.8168	
13 Carbon disulfide	76		5.583				ND	
S 15 1,2-Dichloroethene, Total	96				0		20.0	
20 Methylene Chloride	84		6.337				ND	
21 Acetone	43		6.407				ND	
22 trans-1,2-Dichloroethene	96	6.547	6.532	0.015	95	13596	0.4226	
30 1,1-Dichloroethane	63	7.259	7.259	0.000	97	24570	0.4098	
33 Vinyl acetate	43		7.510				ND	
34 cis-1,2-Dichloroethene	96	7.845	7.831	0.014	84	588434	19.6	
38 Chloroform	83		8.097				ND	
40 Carbon tetrachloride	117		8.264				ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	243459	11.3	
43 1,1,1-Trichloroethane	97		8.334				ND	
45 2-Butanone (MEK)	43		8.404				ND	
48 Benzene	78		8.683				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.809	0.014	94	252117	11.1	
54 1,2-Dichloroethane	62		8.879				ND	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1121592	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	96	399527	11.9	
59 n-Butanol	56		9.451				ND	
62 1,2-Dichloropropane	63		9.717				ND	
63 Dichlorobromomethane	83		9.759				ND	
67 cis-1,3-Dichloropropene	75		10.317				ND	
$ 68 Toluene-d8 (Surr)	98	10.499	10.485	0.014	95	1181125	12.2	
69 Toluene	92		10.541				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
72 trans-1,3-Dichloropropene	75		10.890				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
73 Tetrachloroethene	164		10.890				ND	
75 1,1,2-Trichloroethane	83		11.043				ND	
76 Chlorodibromomethane	129		11.225				ND	
79 Ethylene Dibromide	107		11.476				ND	
80 2-Hexanone	43		11.574				ND	
* 83 Chlorobenzene-d5	117	11.910	11.909	0.001	88	738807	10.0	
82 Ethylbenzene	91		11.909				ND	
84 Chlorobenzene	112		11.923				ND	
86 m-Xylene & p-Xylene	106		12.035				ND	
88 o-Xylene	106		12.440				ND	
89 Styrene	104		12.482				ND	
90 Bromoform	173		12.552				ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	86	339491	12.4	
95 1,1,2,2-Tetrachloroethane	83		13.166				ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	326929	10.0	
115 1,2-Dibromo-3-Chloropropan	157		15.303				ND	
117 1,2,4-Trichlorobenzene	180		15.974				ND	
S 119 Xylenes, Total	106		16.500				ND	

Reagents:

I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

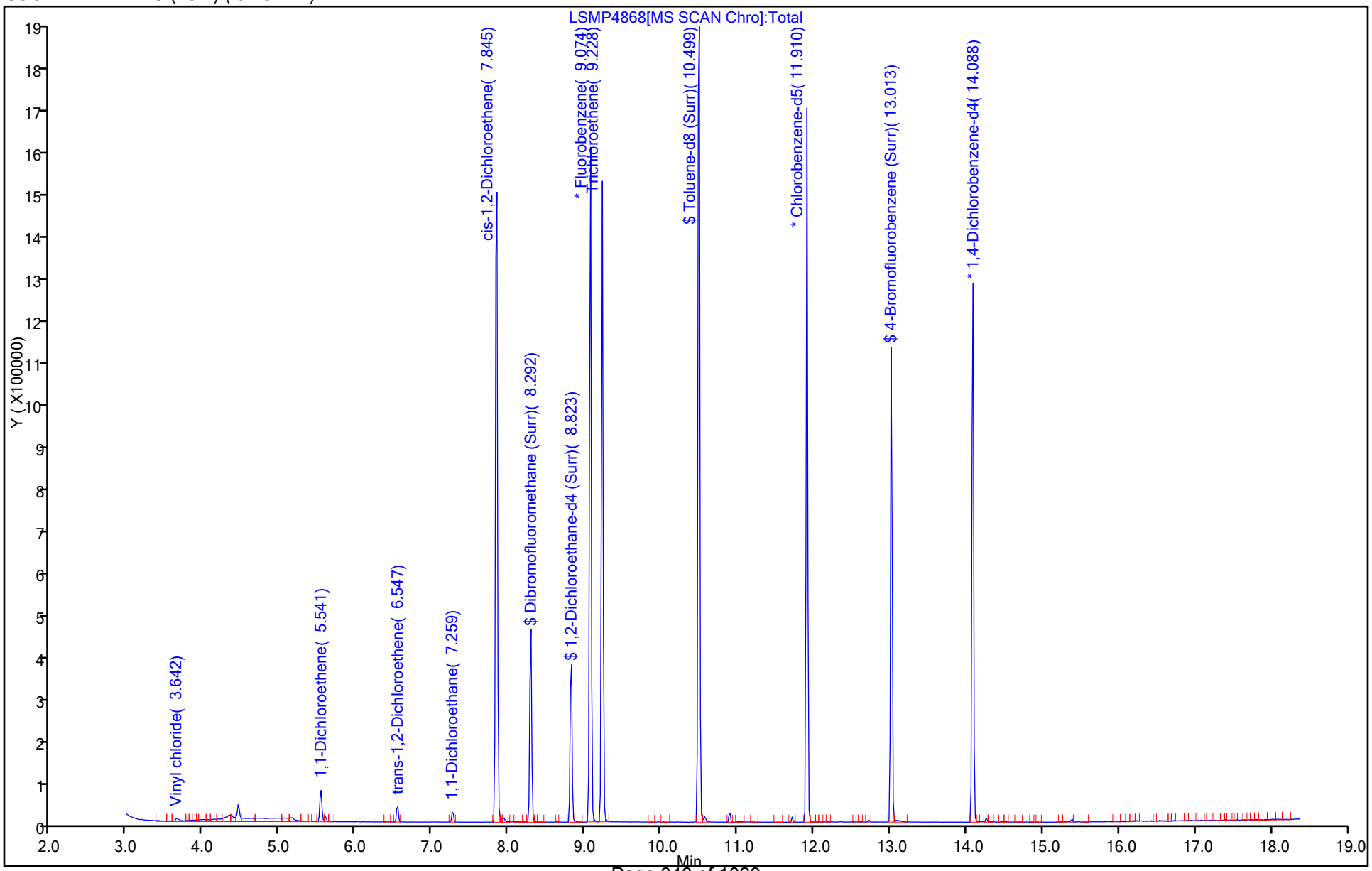
Report Date: 06-Sep-2016 08:46:22 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4868.D

Injection Date:	04-Sep-2016 17:51:30	Instrument ID:	VMSL	Operator ID:	ADB
Lims ID:	160-18852-C-3	Lab Sample ID:	160-18852-3	Worklist Smp#:	24
Client ID:	GW-GWJJ-082516				
Purge Vol:	25.000 mL	Dil. Factor:	50.0000	ALS Bottle#:	20
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4868.D
Lims ID: 160-18852-C-3
Client ID: GW-GWJJ-082516
Sample Type: Client
Inject. Date: 04-Sep-2016 17:51:30 ALS Bottle#: 20 Worklist Smp#: 24
Purge Vol: 25.000 mL Dil. Factor: 50.0000
Sample Info: 160-0008391-024
Misc. Info.: 160-18852-c-3
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:46:01 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: rhoadess Date: 06-Sep-2016 07:05:18

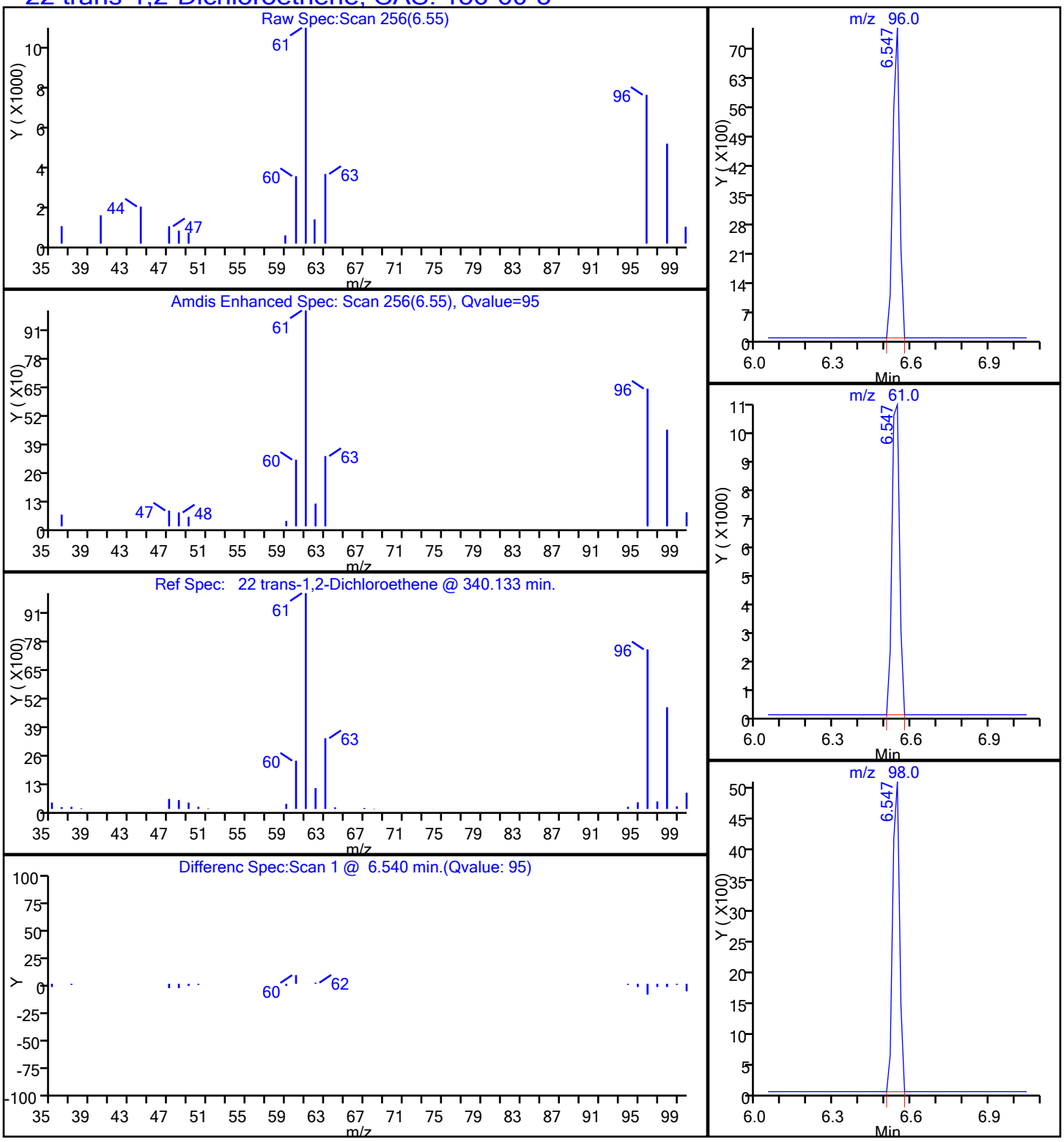
Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	11.3	112.96
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	11.1	110.58
$ 68 Toluene-d8 (Surr)	10.0	12.2	122.47
$ 92 4-Bromofluorobenzene (Surr)	10.0	12.4	123.75

Report Date: 06-Sep-2016 08:46:22 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4868.D				
Injection Date:	04-Sep-2016 17:51:30	Instrument ID:	VMSL		
Lims ID:	160-18852-C-3	Lab Sample ID:	160-18852-3		
Client ID:	GW-GWJJ-082516				
Operator ID:	ADB	ALS Bottle#:	20	Worklist Smp#:	24
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

22 trans-1,2-Dichloroethene, CAS: 156-60-5

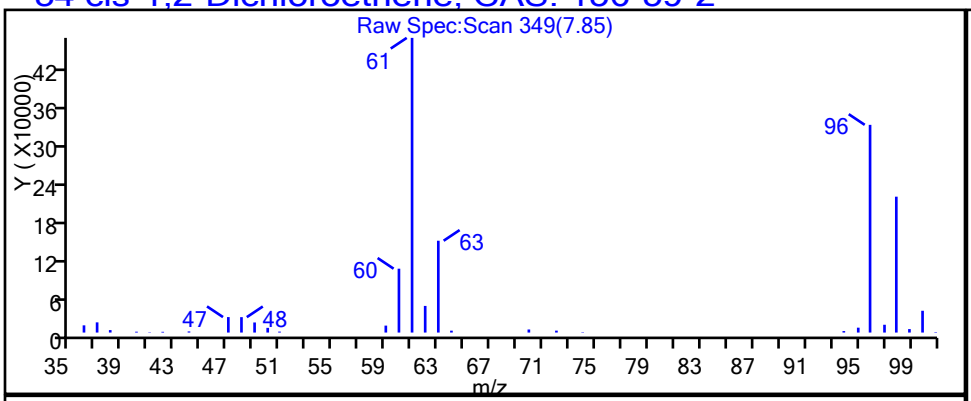


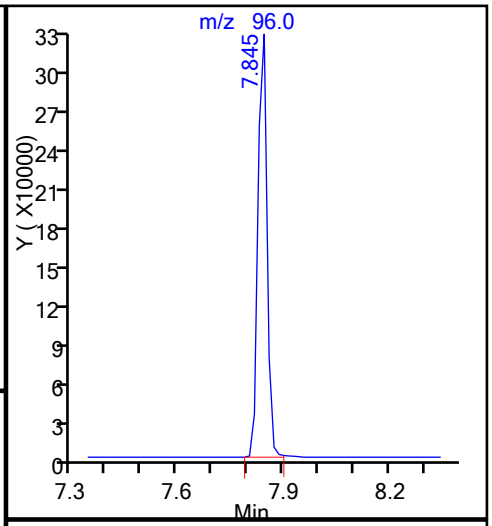
Report Date: 06-Sep-2016 08:46:22 Chrom Revision: 2.2 20-Apr-2016 13:59:46

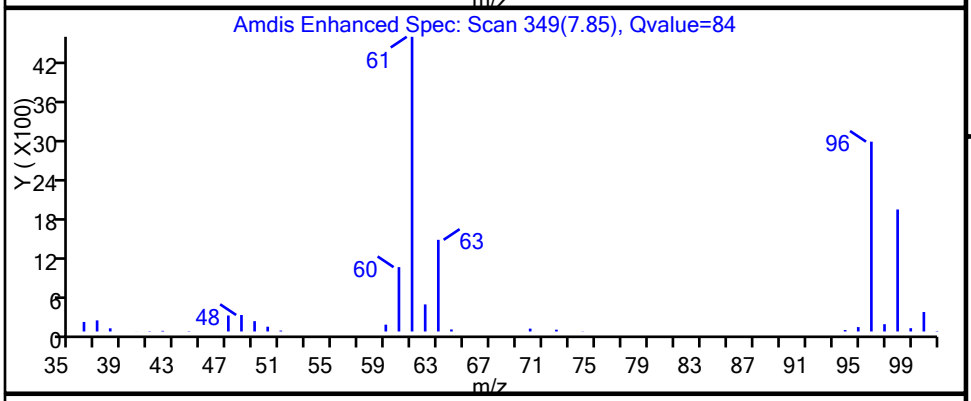
TestAmerica St. Louis

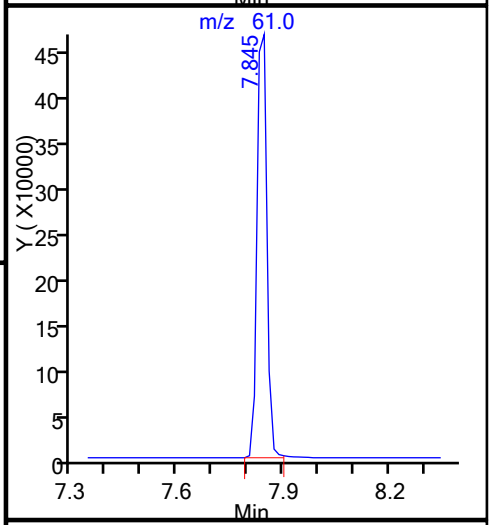
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4868.D				
Injection Date:	04-Sep-2016 17:51:30	Instrument ID:	VMSL		
Lims ID:	160-18852-C-3	Lab Sample ID:	160-18852-3		
Client ID:	GW-GWJJ-082516				
Operator ID:	ADB	ALS Bottle#:	20	Worklist Smp#:	24
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

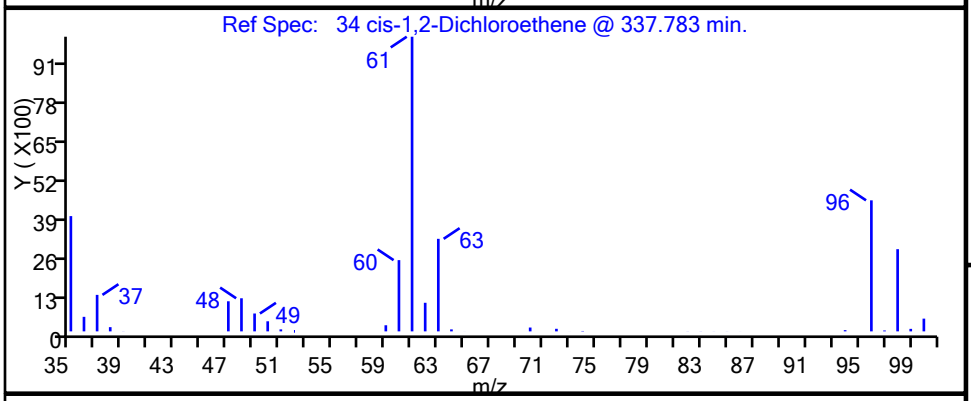
34 cis-1,2-Dichloroethene, CAS: 156-59-2

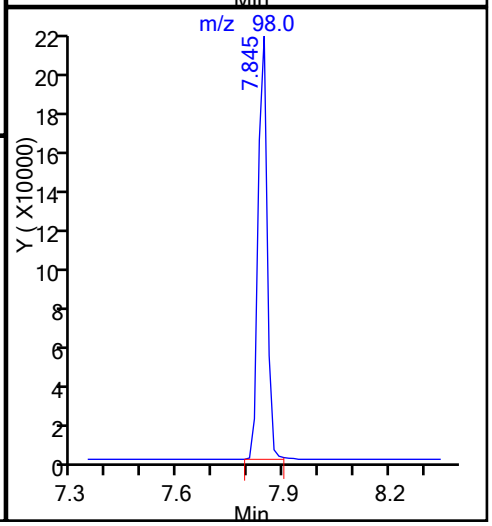


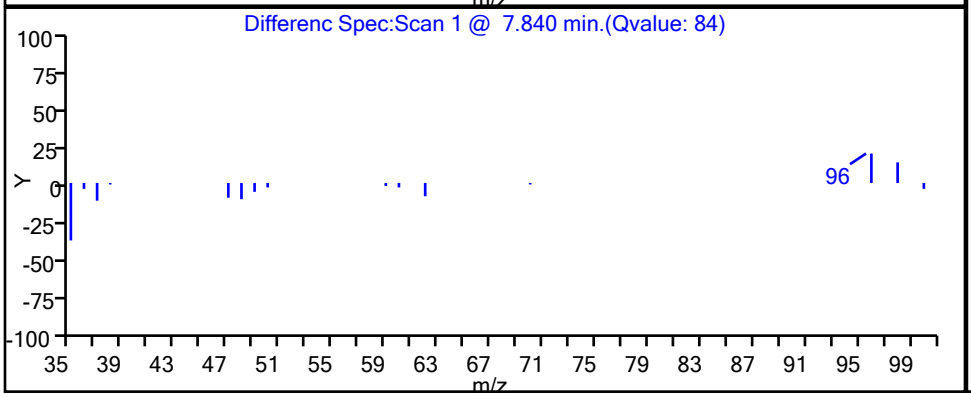










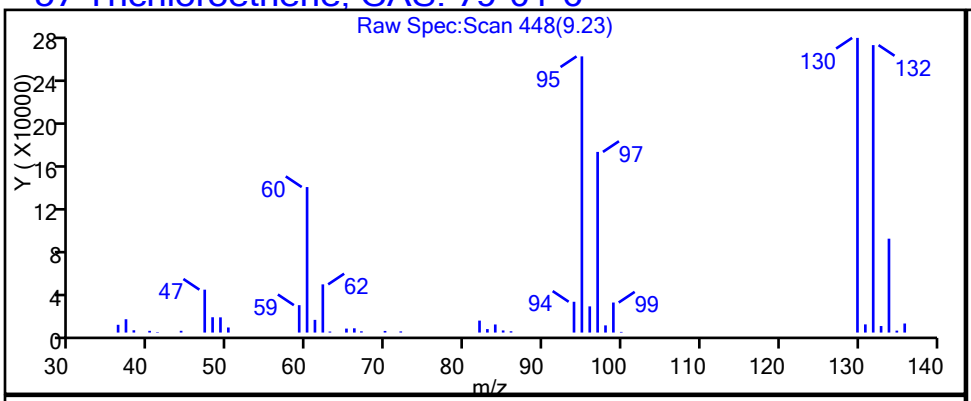


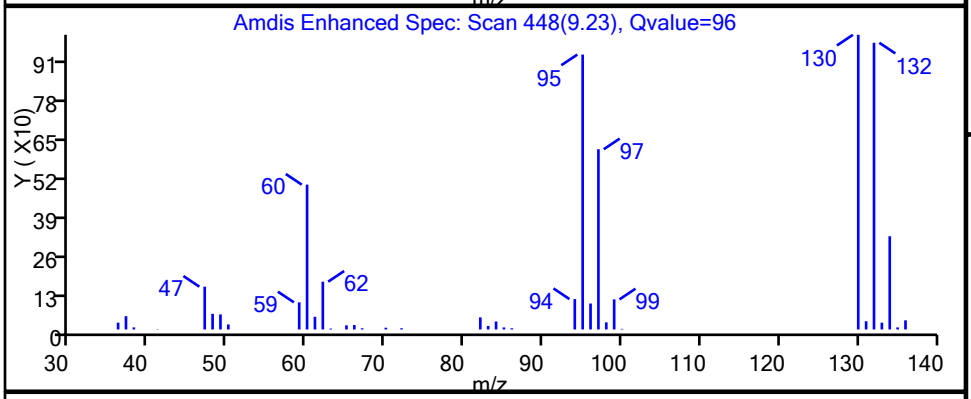
Report Date: 06-Sep-2016 08:46:22 Chrom Revision: 2.2 20-Apr-2016 13:59:46

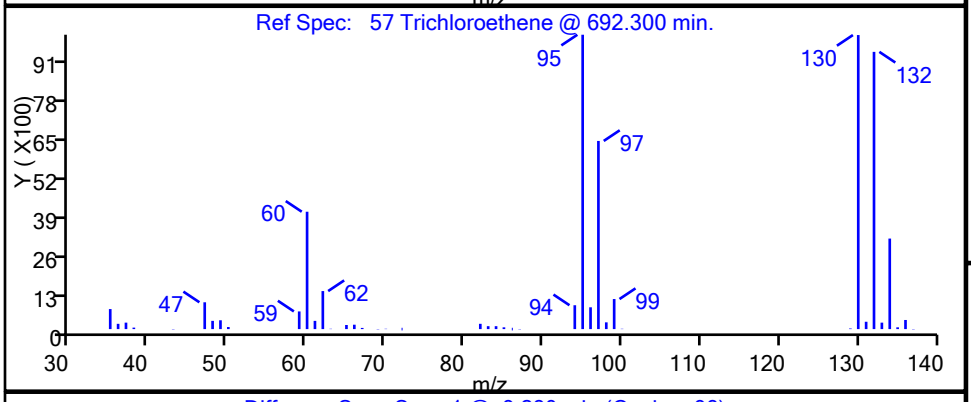
TestAmerica St. Louis

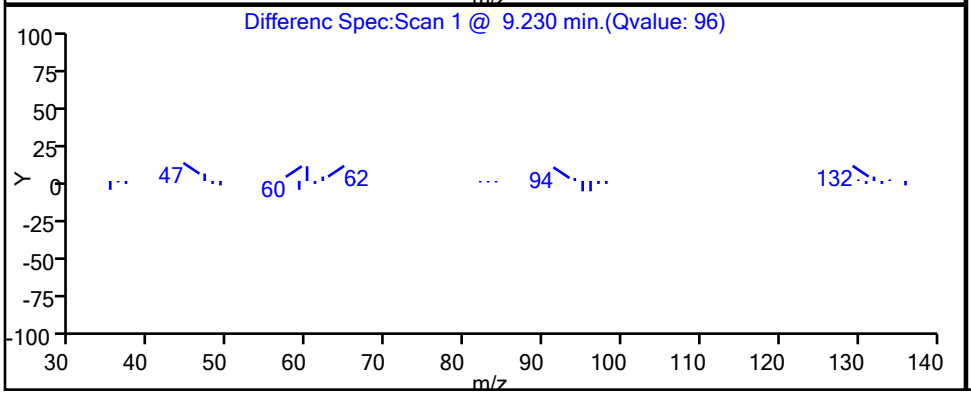
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4868.D				
Injection Date:	04-Sep-2016 17:51:30	Instrument ID:	VMSL		
Lims ID:	160-18852-C-3	Lab Sample ID:	160-18852-3		
Client ID:	GW-GWJJ-082516				
Operator ID:	ADB	ALS Bottle#:	20	Worklist Smp#:	24
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

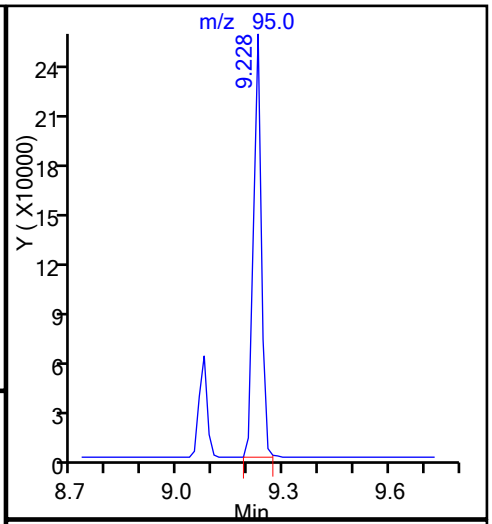
57 Trichloroethene, CAS: 79-01-6

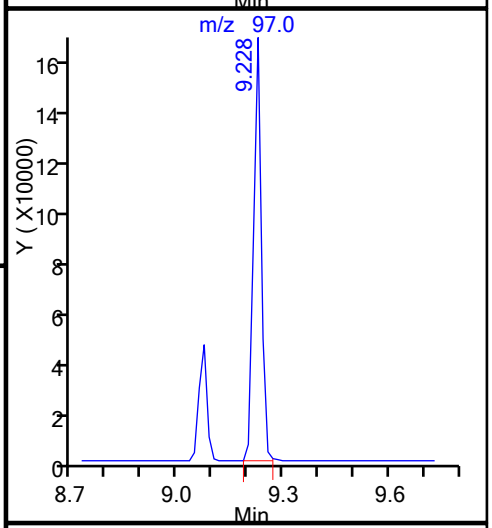


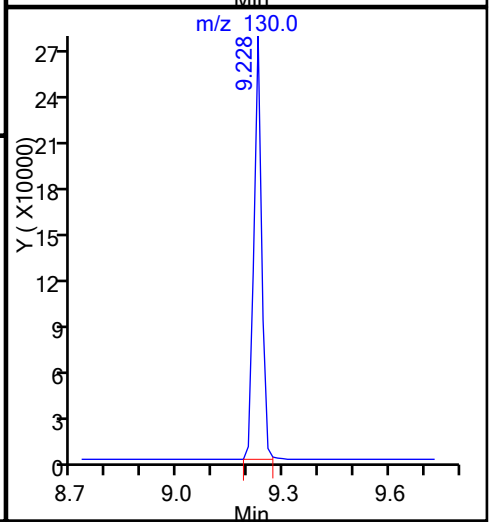












FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR13JC-082516 | Lab Sample ID: 160-18852-4

Matrix: Water | Lab File ID: LSMP4869.D

Analysis Method: 8260C | Date Collected: 08/25/2016 09:25

Sample wt/vol: 25(mL) | Date Analyzed: 09/04/2016 18:16

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 267958 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	ND		1.0	0.17
79-34-5	1,1,2,2-Tetrachloroethane	ND		1.0	0.10
79-00-5	1,1,2-Trichloroethane	ND		1.0	0.13
75-35-4	1,1-Dichloroethene	ND		1.0	0.10
75-34-3	1,1-Dichloroethane	0.34	J	1.0	0.070
120-82-1	1,2,4-Trichlorobenzene	ND		1.0	0.10
96-12-8	1,2-Dibromo-3-Chloropropane	ND		1.0	0.41
107-06-2	1,2-Dichloroethane	ND		1.0	0.22
540-59-0	1,2-Dichloroethene, Total	9.5		2.0	0.14
78-87-5	1,2-Dichloropropane	ND		1.0	0.10
78-93-3	2-Butanone	ND		5.0	0.47
591-78-6	2-Hexanone	ND		5.0	0.25
108-10-1	4-Methyl-2-pentanone	ND		5.0	0.22
67-64-1	Acetone	0.63	J	2.0	0.55
71-43-2	Benzene	ND		1.0	0.10
75-25-2	Bromoform	ND		1.0	0.17
74-83-9	Methyl bromide	ND		2.0	0.25
75-15-0	Carbon disulfide	ND		1.0	0.10
56-23-5	Carbon tetrachloride	ND		1.0	0.18
108-90-7	Chlorobenzene	ND		1.0	0.11
124-48-1	Chlorodibromomethane	ND		1.0	0.14
75-00-3	Chloroethane	ND	*	2.0	0.16
67-66-3	Chloroform	ND		1.0	0.10
74-87-3	Chloromethane	ND		2.0	0.10
156-59-2	cis-1,2-Dichloroethene	9.5		1.0	0.10
10061-01-5	cis-1,3-Dichloropropene	ND		1.0	0.16
75-27-4	Bromodichloromethane	ND		1.0	0.14
100-41-4	Ethylbenzene	ND		1.0	0.12
106-93-4	1,2-Dibromoethane	ND		1.0	0.13
75-09-2	Methylene Chloride	ND		1.0	0.27
71-36-3	n-Butanol	ND		50	12
100-42-5	Styrene	ND		1.0	0.13
127-18-4	Tetrachloroethene	0.48	J	1.0	0.18
108-88-3	Toluene	ND		1.0	0.14
156-60-5	trans-1,2-Dichloroethene	ND		1.0	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		1.0	0.10

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR13JC-082516 | Lab Sample ID: 160-18852-4

Matrix: Water | Lab File ID: LSMP4869.D

Analysis Method: 8260C | Date Collected: 08/25/2016 09:25

Sample wt/vol: 25(mL) | Date Analyzed: 09/04/2016 18:16

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 267958 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	32		1.0	0.25
108-05-4	Vinyl acetate	ND		2.0	0.18
75-01-4	Vinyl chloride	0.26	J *	2.0	0.19
1330-20-7	Xylenes, Total	ND		3.0	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	112		75-129
460-00-4	4-Bromofluorobenzene (Surr)	116		81-130
1868-53-7	Dibromofluoromethane (Surr)	116		81-124
2037-26-5	Toluene-d8 (Surr)	111		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4869.D
Lims ID: 160-18852-C-4
Client ID: GW-BR13JC-082516
Sample Type: Client
Inject. Date: 04-Sep-2016 18:16:30 ALS Bottle#: 21 Worklist Smp#: 25
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008391-025
Misc. Info.: 160-18852-c-4
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:46:01 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: rhoadess Date: 06-Sep-2016 07:05:44

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
3 Chloromethane	50		3.474				ND	
4 Vinyl chloride	62	3.642	3.641	0.001	95	13501	0.2630	
6 Bromomethane	94		4.256				ND	
7 Chloroethane	64		4.479				ND	
12 1,1-Dichloroethene	96		5.541				ND	
13 Carbon disulfide	76		5.583				ND	
S 15 1,2-Dichloroethene, Total	96				0		9.46	
20 Methylene Chloride	84		6.337				ND	
21 Acetone	43	6.407	6.407	0.000	98	4651	0.6274	
22 trans-1,2-Dichloroethene	96		6.532				ND	
30 1,1-Dichloroethane	63	7.273	7.259	0.014	97	20897	0.3422	
33 Vinyl acetate	43		7.510				ND	
34 cis-1,2-Dichloroethene	96	7.845	7.831	0.014	84	289735	9.46	
38 Chloroform	83		8.097				ND	
40 Carbon tetrachloride	117		8.264				ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	254274	11.6	
43 1,1,1-Trichloroethane	97		8.334				ND	
45 2-Butanone (MEK)	43		8.404				ND	
48 Benzene	78		8.683				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.809	0.014	94	261068	11.2	
54 1,2-Dichloroethane	62		8.879				ND	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1142360	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	96	1089162	31.9	
59 n-Butanol	56		9.451				ND	
62 1,2-Dichloropropane	63		9.717				ND	
63 Dichlorobromomethane	83		9.759				ND	
67 cis-1,3-Dichloropropene	75		10.317				ND	
$ 68 Toluene-d8 (Surr)	98	10.499	10.485	0.014	95	1080684	11.1	
69 Toluene	92		10.541				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
72 trans-1,3-Dichloropropene	75		10.890				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
73 Tetrachloroethene	164	10.904	10.890	0.014	97	14380	0.4829	
75 1,1,2-Trichloroethane	83		11.043				ND	
76 Chlorodibromomethane	129		11.225				ND	
79 Ethylene Dibromide	107		11.476				ND	
80 2-Hexanone	43		11.574				ND	
* 83 Chlorobenzene-d5	117	11.910	11.909	0.001	89	747274	10.0	
82 Ethylbenzene	91		11.909				ND	
84 Chlorobenzene	112		11.923				ND	
86 m-Xylene & p-Xylene	106		12.035				ND	
88 o-Xylene	106		12.440				ND	
89 Styrene	104		12.482				ND	
90 Bromoform	173		12.552				ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	83	325217	11.6	
95 1,1,2,2-Tetrachloroethane	83		13.166				ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	334832	10.0	
115 1,2-Dibromo-3-Chloropropan	157		15.303				ND	
117 1,2,4-Trichlorobenzene	180		15.974				ND	
S 119 Xylenes, Total	106		16.500				ND	

Reagents:

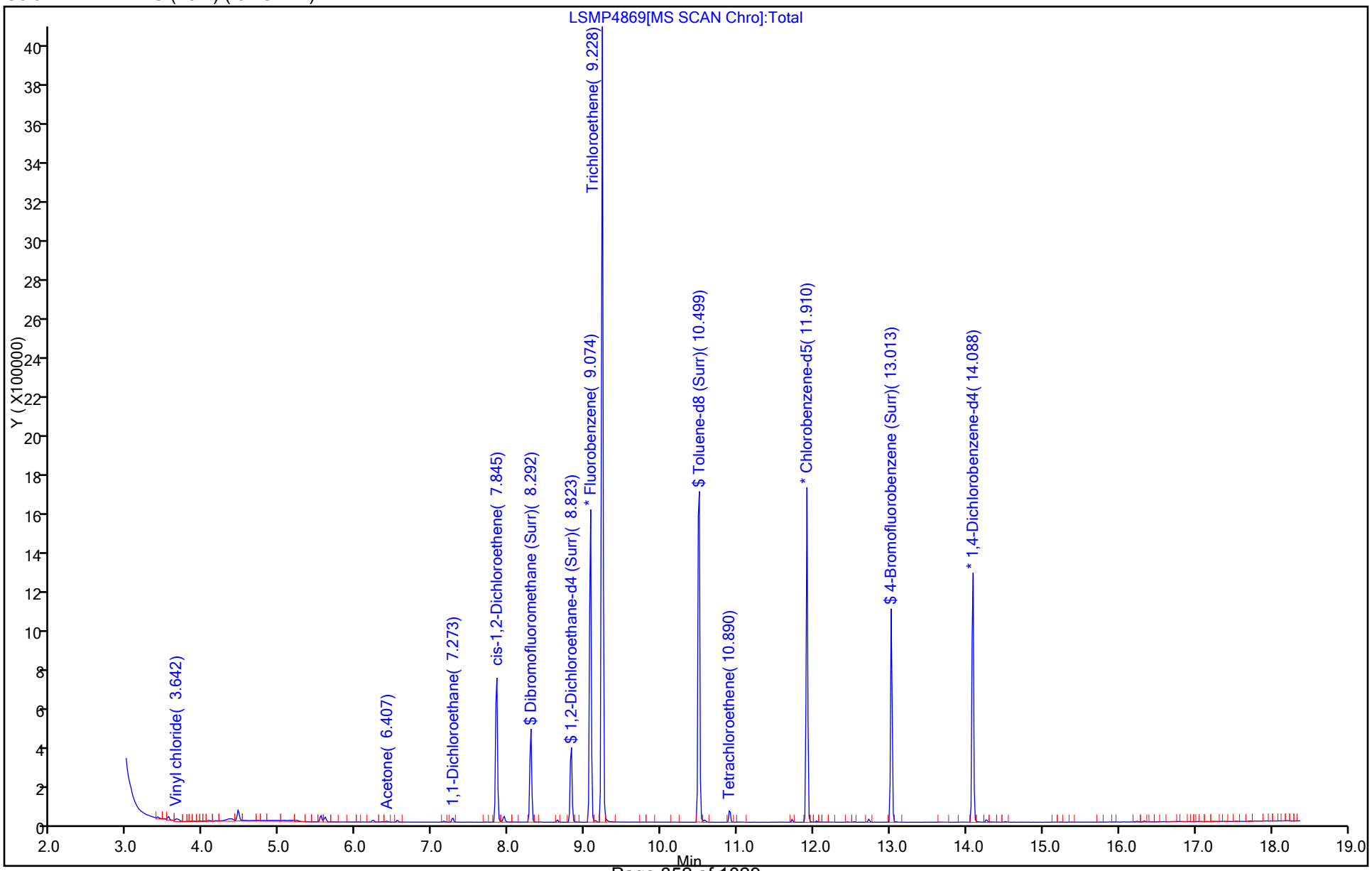
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 06-Sep-2016 08:46:20 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4869.D				
Injection Date:	04-Sep-2016 18:16:30	Instrument ID:	VMSL	Operator ID:	ADB
Lims ID:	160-18852-C-4	Lab Sample ID:	160-18852-4	Worklist Smp#:	25
Client ID:	GW-BR13JC-082516				
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	21
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4869.D
Lims ID: 160-18852-C-4
Client ID: GW-BR13JC-082516
Sample Type: Client
Inject. Date: 04-Sep-2016 18:16:30 ALS Bottle#: 21 Worklist Smp#: 25
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008391-025
Misc. Info.: 160-18852-c-4
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:46:01 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: rhoadess Date: 06-Sep-2016 07:05:44

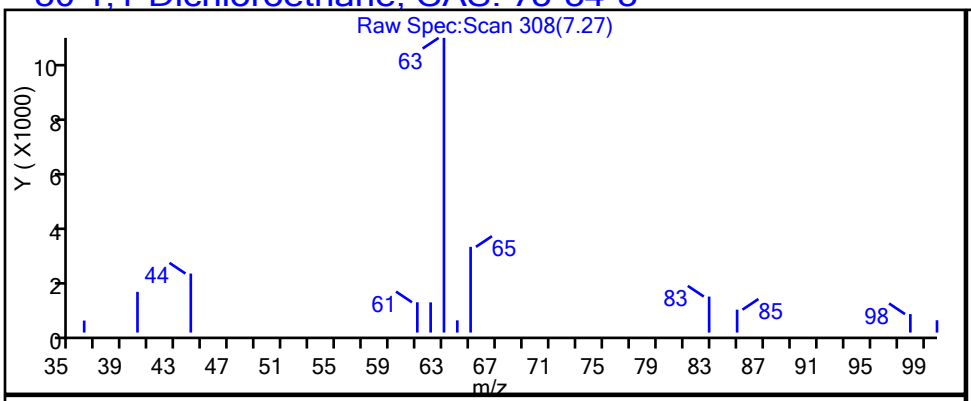
Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	11.6	115.84
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	11.2	112.42
$ 68 Toluene-d8 (Surr)	10.0	11.1	110.78
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.6	115.75

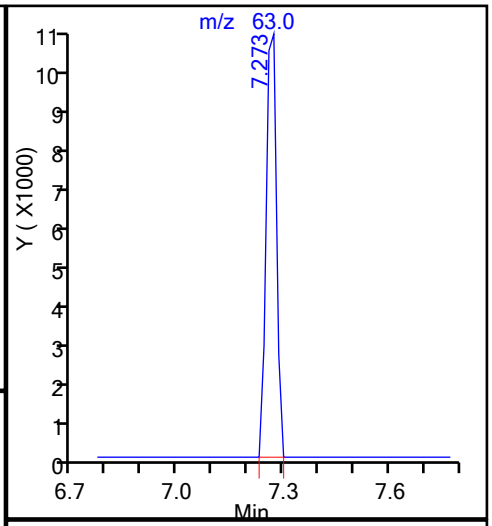
Report Date: 06-Sep-2016 08:46:20 Chrom Revision: 2.2 20-Apr-2016 13:59:46

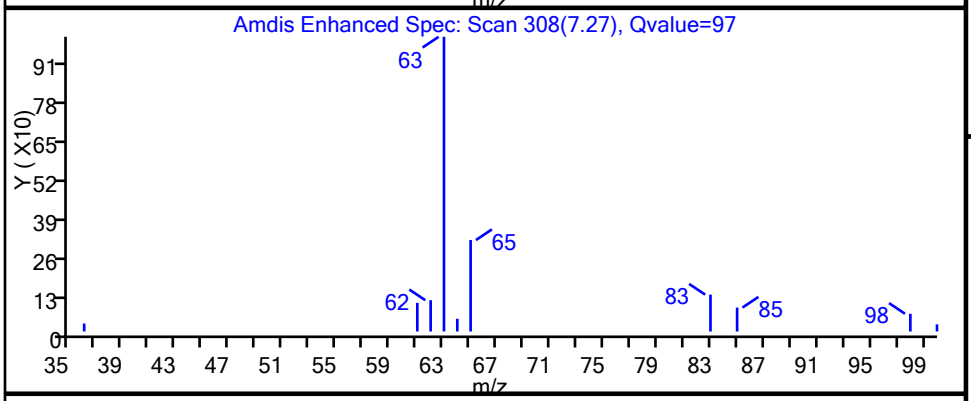
TestAmerica St. Louis

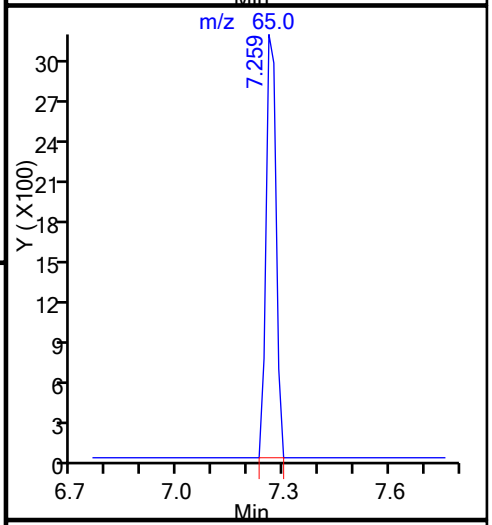
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4869.D				
Injection Date:	04-Sep-2016 18:16:30	Instrument ID:	VMSL		
Lims ID:	160-18852-C-4	Lab Sample ID:	160-18852-4		
Client ID:	GW-BR13JC-082516				
Operator ID:	ADB	ALS Bottle#:	21	Worklist Smp#:	25
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

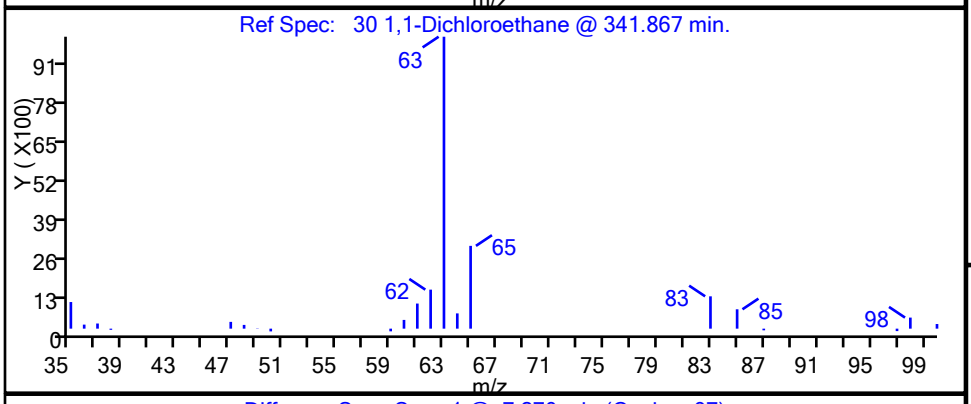
30 1,1-Dichloroethane, CAS: 75-34-3

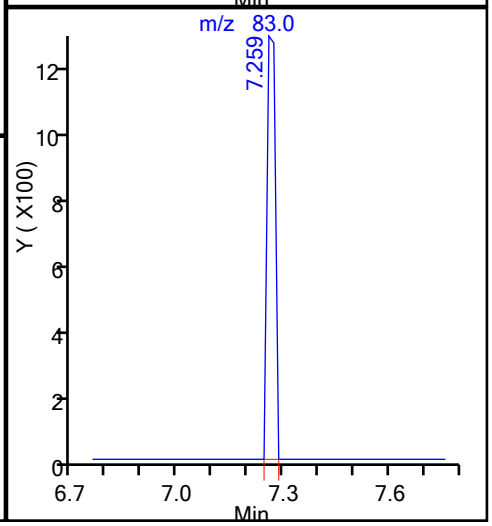


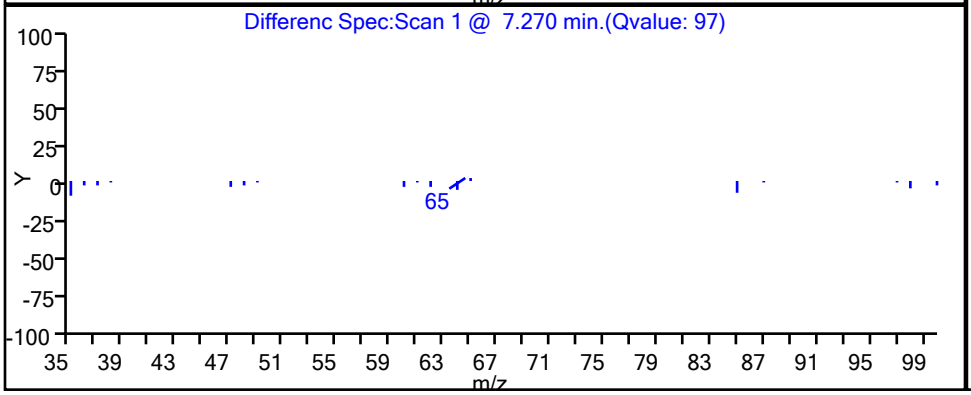












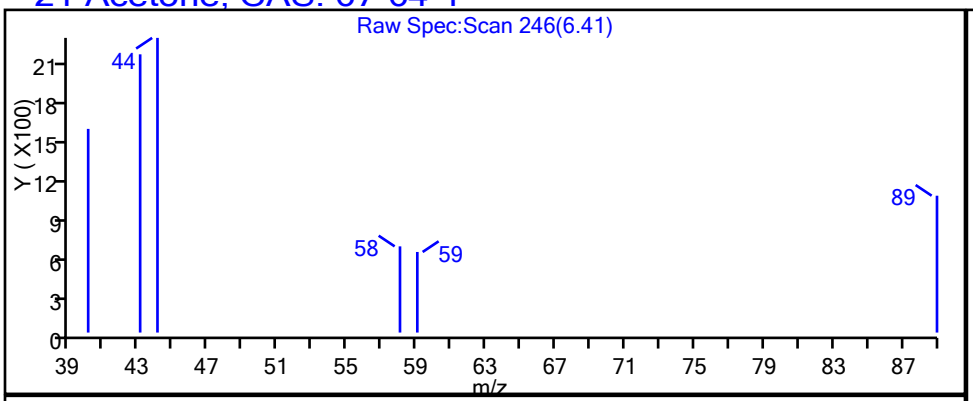
Report Date: 06-Sep-2016 08:46:20 Chrom Revision: 2.2 20-Apr-2016 13:59:46

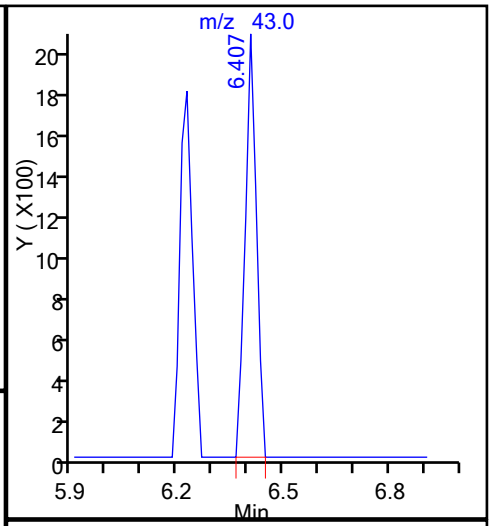
TestAmerica St. Louis

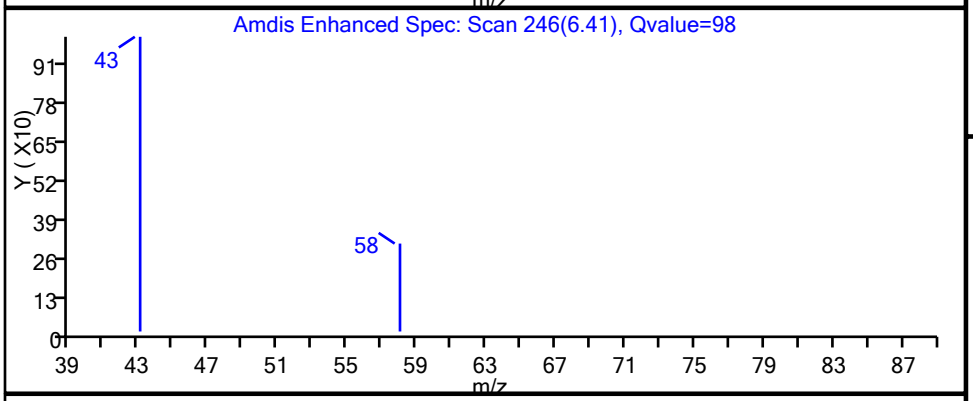
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4869.D

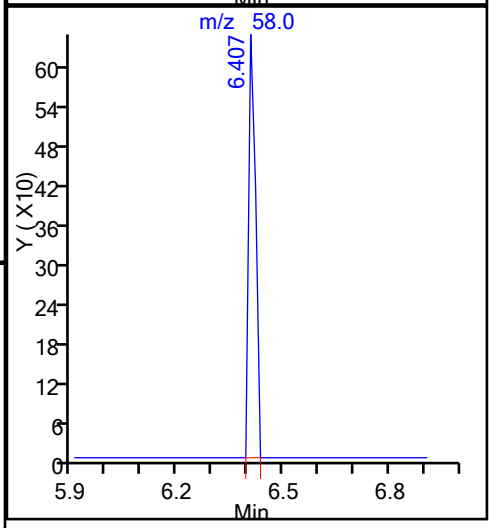
Injection Date:	04-Sep-2016 18:16:30	Instrument ID:	VMSL		
Lims ID:	160-18852-C-4	Lab Sample ID:	160-18852-4		
Client ID:	GW-BR13JC-082516				
Operator ID:	ADB	ALS Bottle#:	21	Worklist Smp#:	25
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

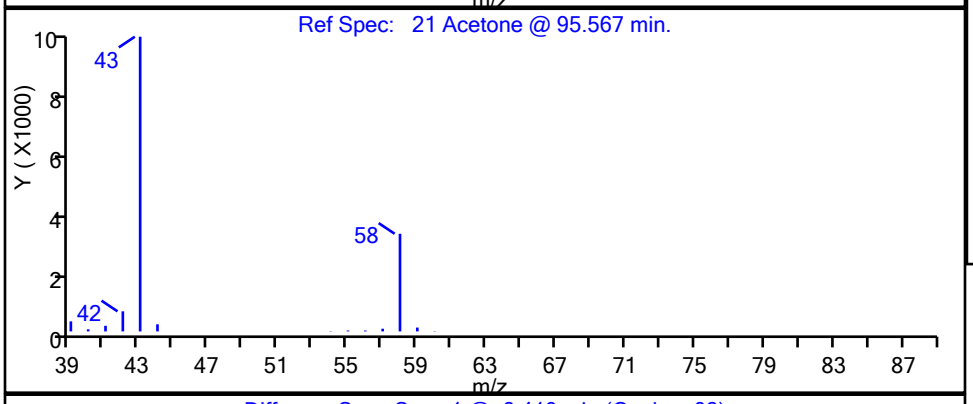
21 Acetone, CAS: 67-64-1

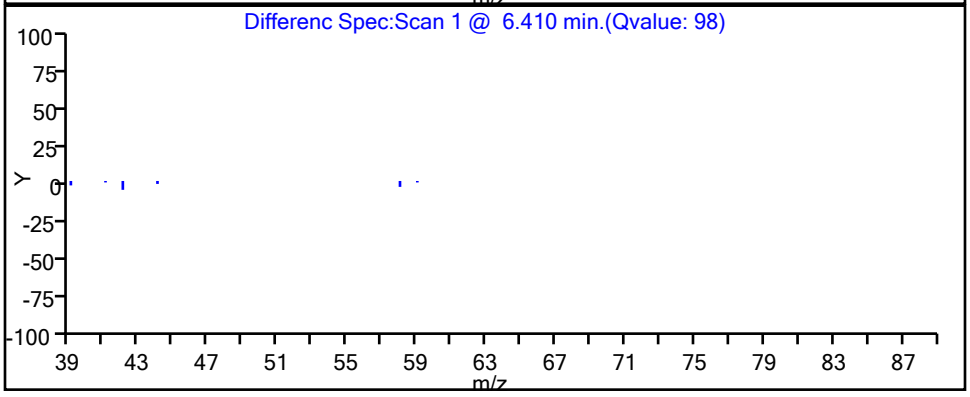










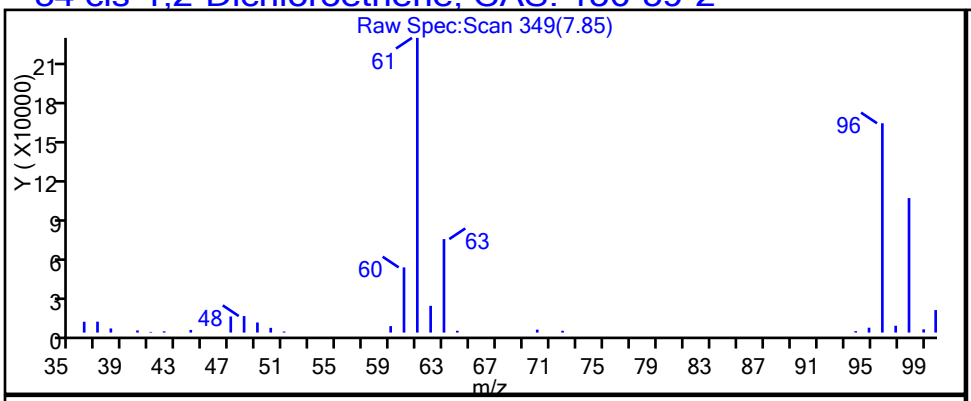


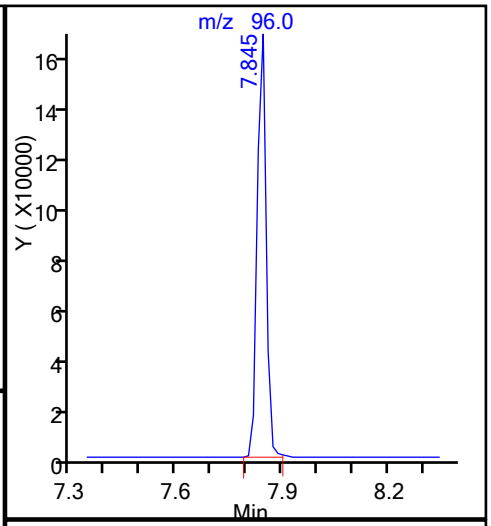
Report Date: 06-Sep-2016 08:46:20 Chrom Revision: 2.2 20-Apr-2016 13:59:46

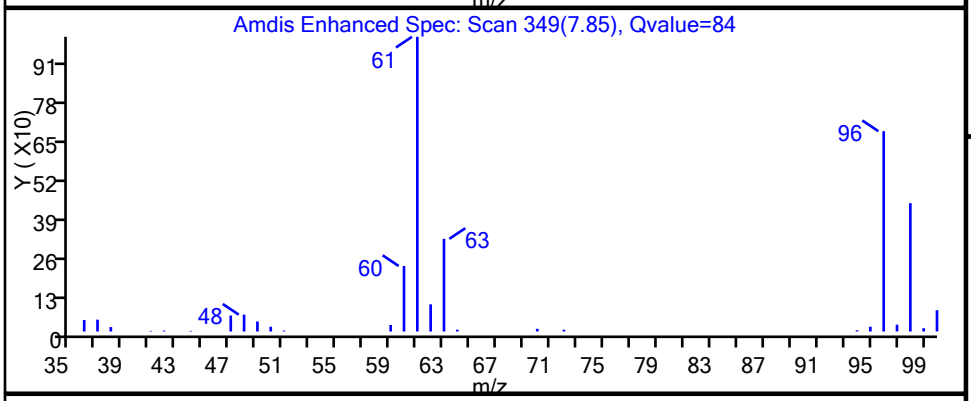
TestAmerica St. Louis

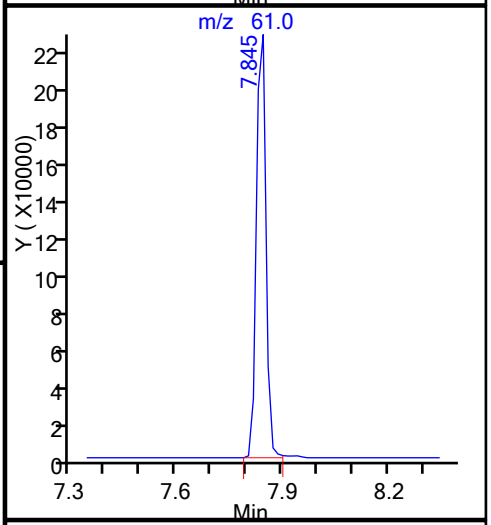
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4869.D				
Injection Date:	04-Sep-2016 18:16:30	Instrument ID:	VMSL		
Lims ID:	160-18852-C-4	Lab Sample ID:	160-18852-4		
Client ID:	GW-BR13JC-082516				
Operator ID:	ADB	ALS Bottle#:	21	Worklist Smp#:	25
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

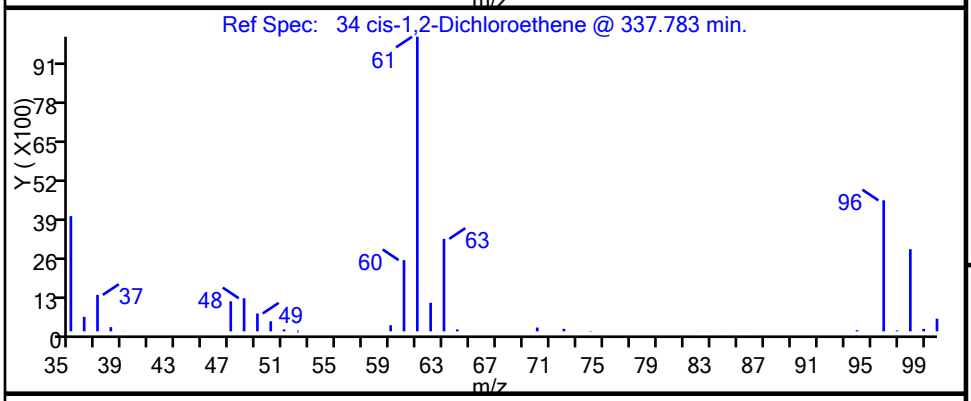
34 cis-1,2-Dichloroethene, CAS: 156-59-2

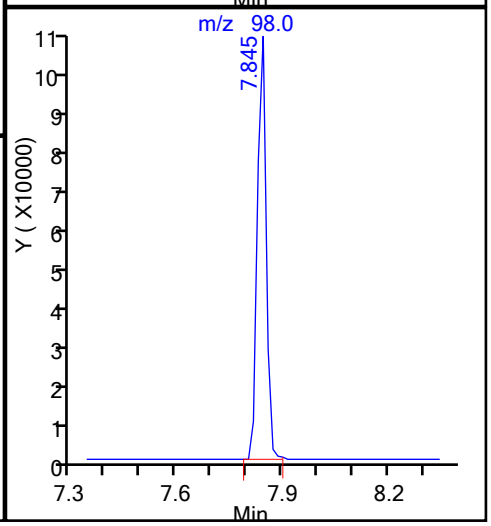


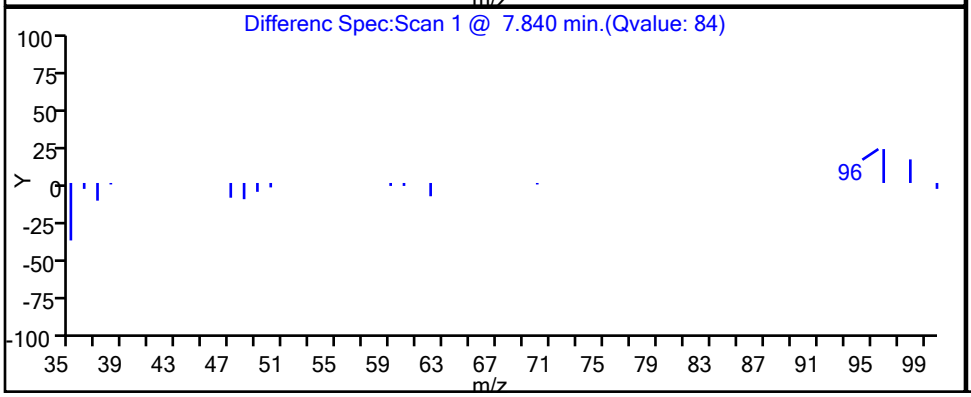












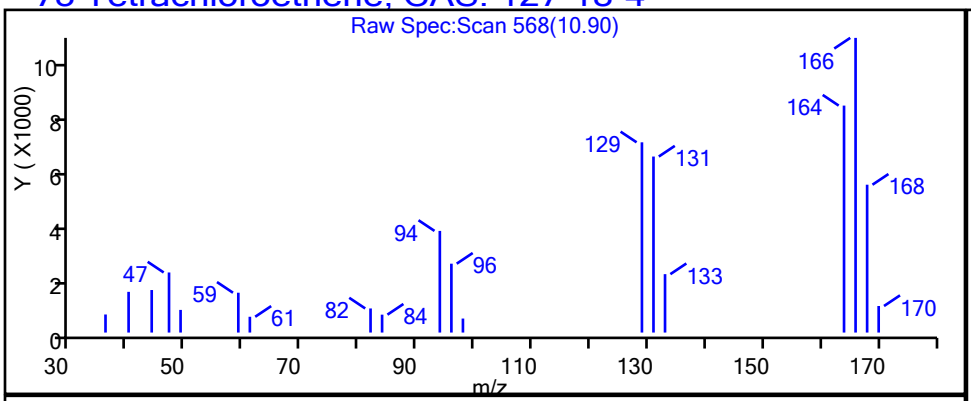
Report Date: 06-Sep-2016 08:46:20 Chrom Revision: 2.2 20-Apr-2016 13:59:46

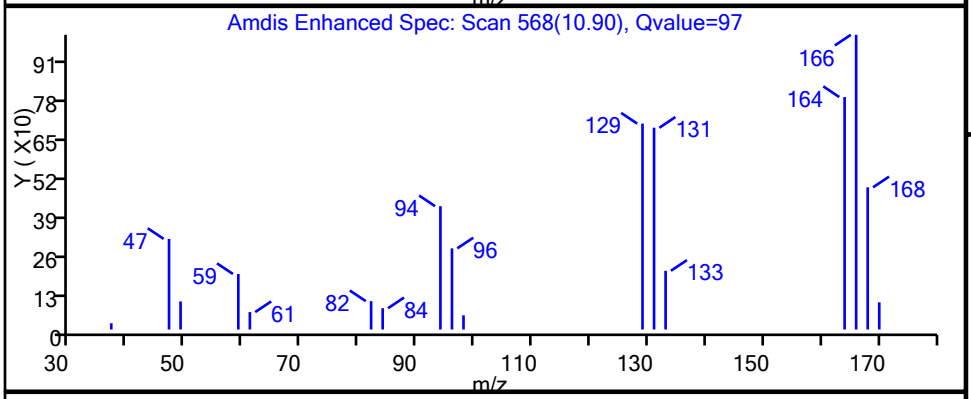
TestAmerica St. Louis

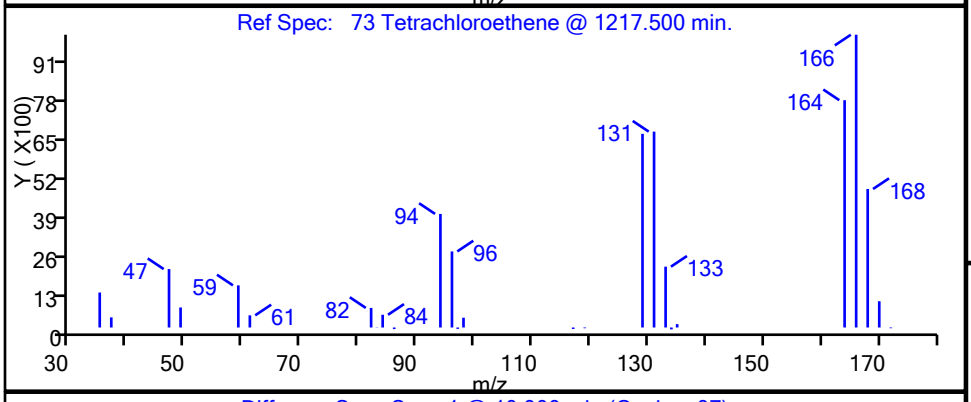
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4869.D

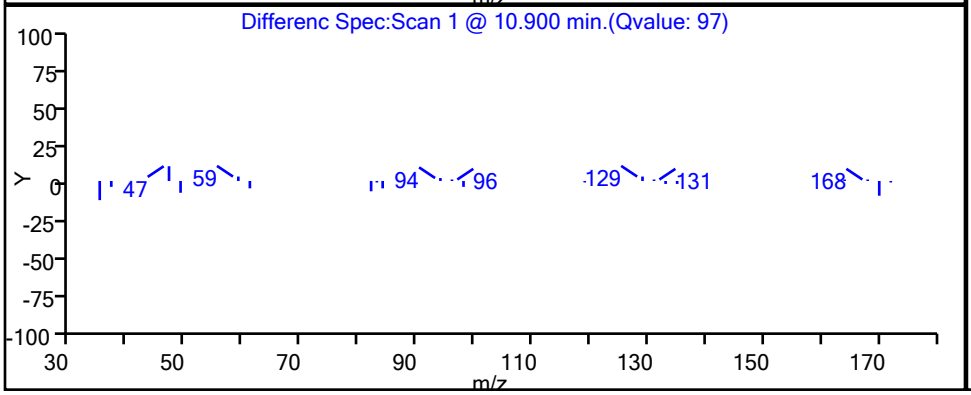
Injection Date:	04-Sep-2016 18:16:30	Instrument ID:	VMSL		
Lims ID:	160-18852-C-4	Lab Sample ID:	160-18852-4		
Client ID:	GW-BR13JC-082516				
Operator ID:	ADB	ALS Bottle#:	21	Worklist Smp#:	25
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

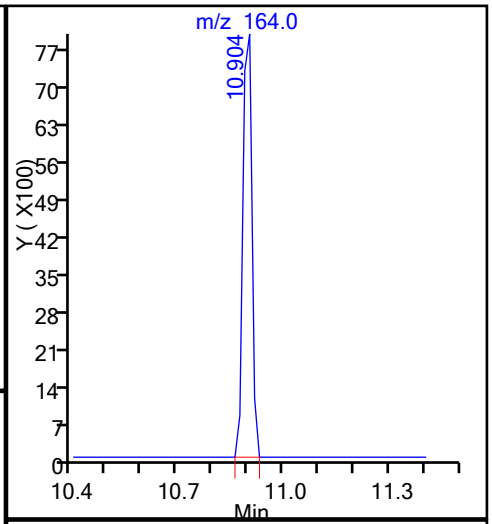
73 Tetrachloroethene, CAS: 127-18-4

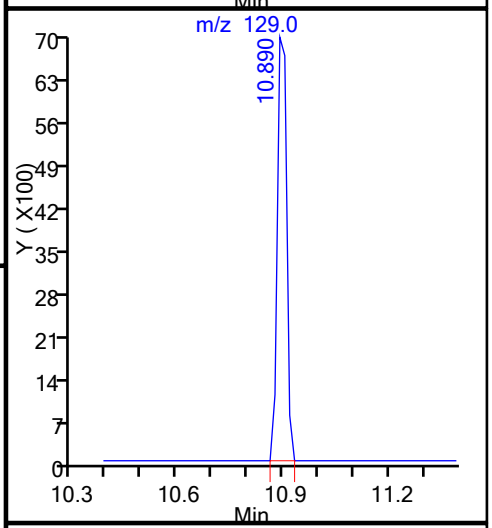


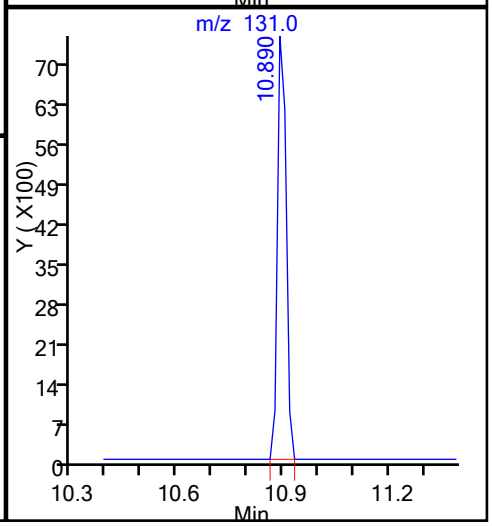












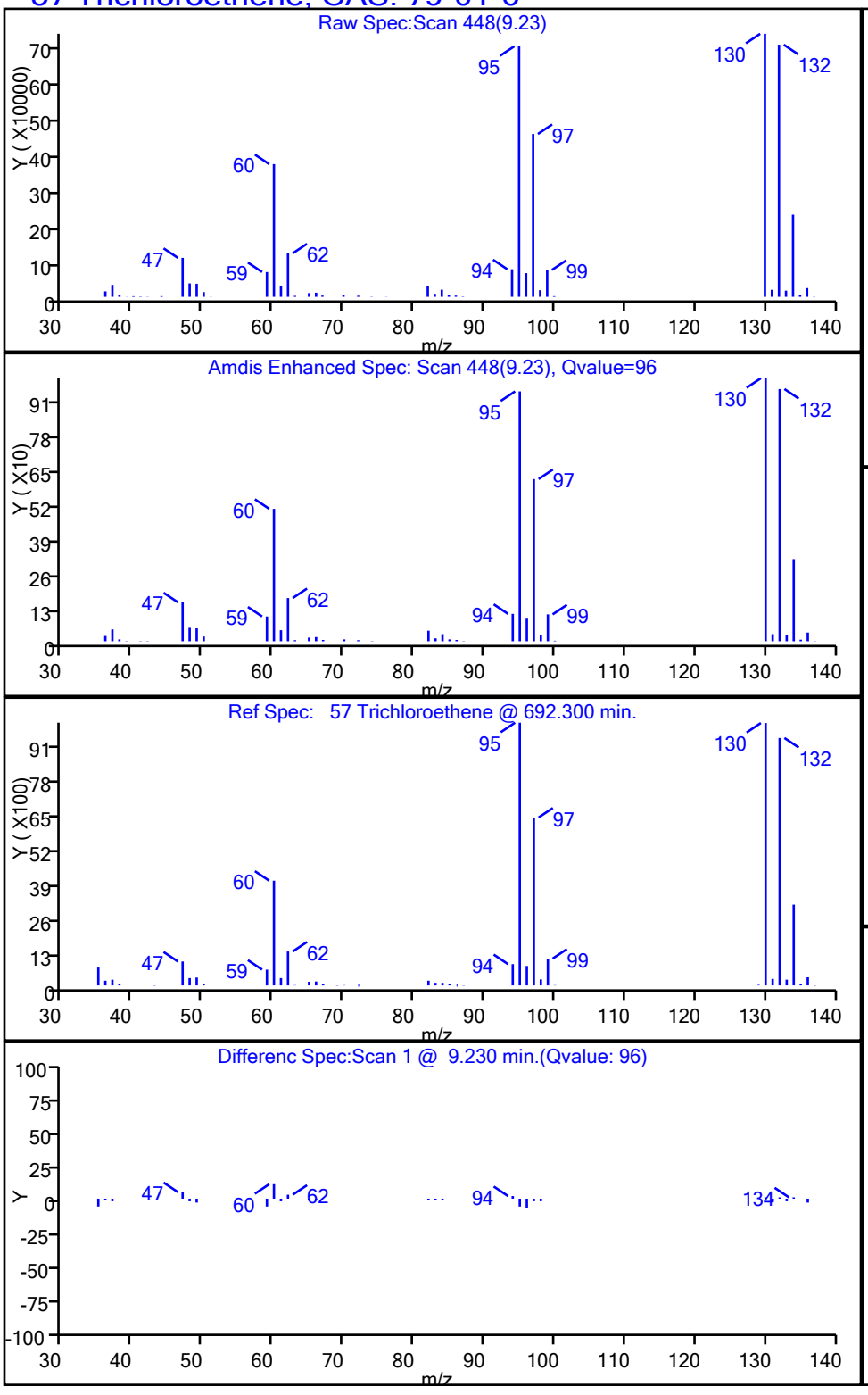
Report Date: 06-Sep-2016 08:46:20 Chrom Revision: 2.2 20-Apr-2016 13:59:46

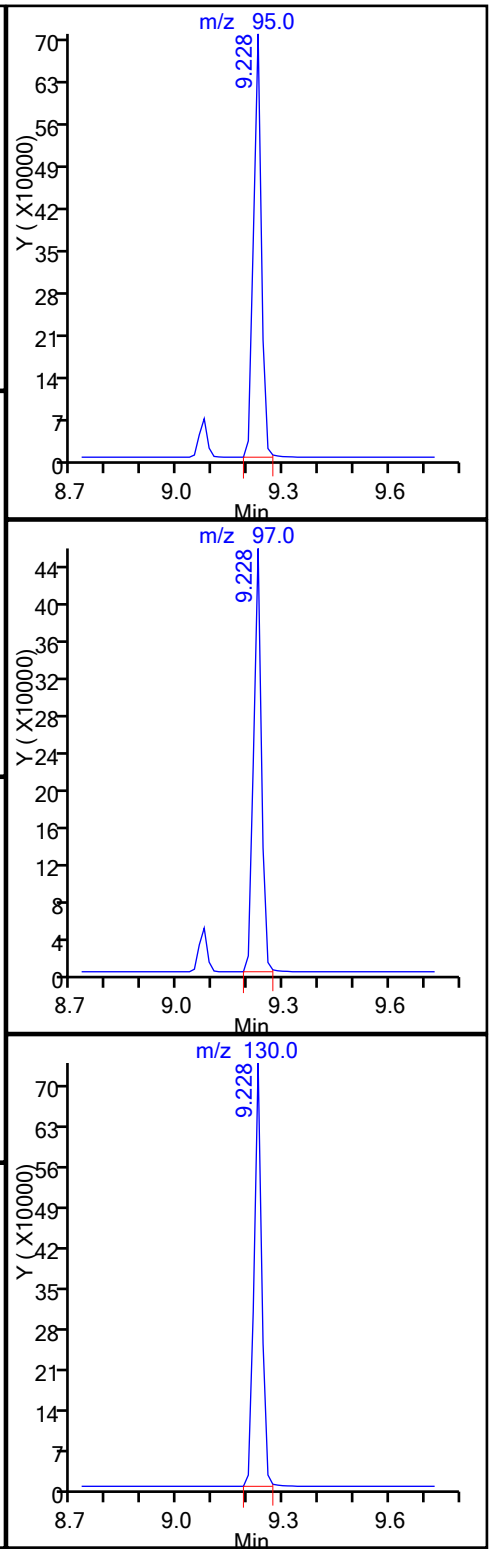
TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4869.D

Injection Date:	04-Sep-2016 18:16:30	Instrument ID:	VMSL		
Lims ID:	160-18852-C-4	Lab Sample ID:	160-18852-4		
Client ID:	GW-BR13JC-082516				
Operator ID:	ADB	ALS Bottle#:	21	Worklist Smp#:	25
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

57 Trichloroethene, CAS: 79-01-6



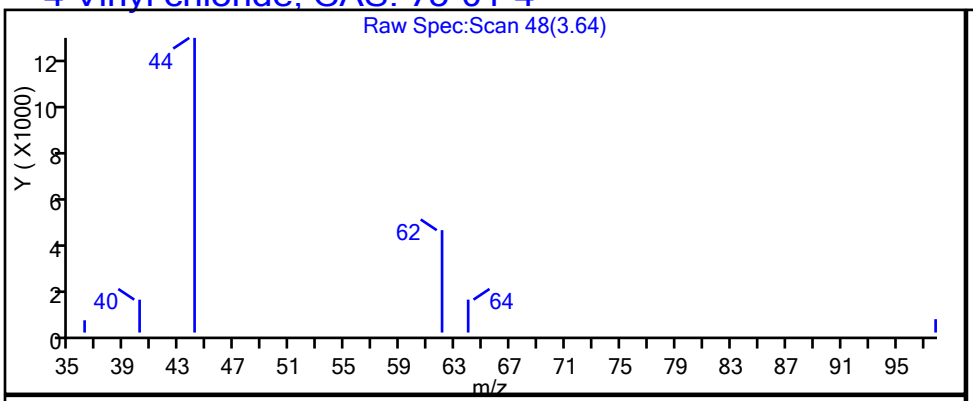


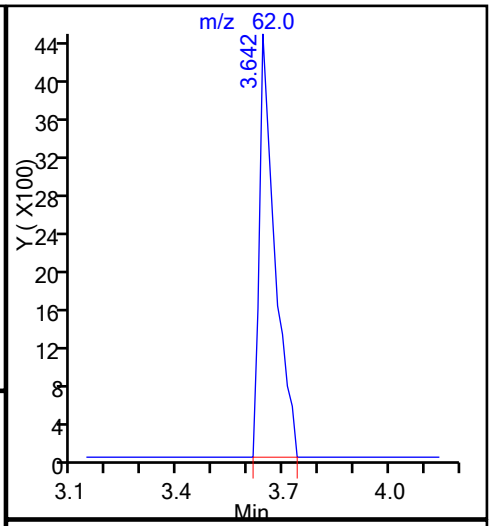
Report Date: 06-Sep-2016 08:46:20 Chrom Revision: 2.2 20-Apr-2016 13:59:46

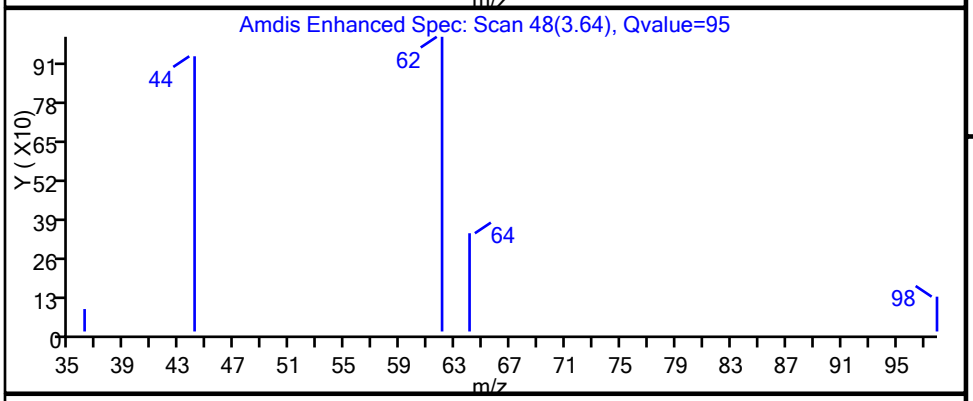
TestAmerica St. Louis

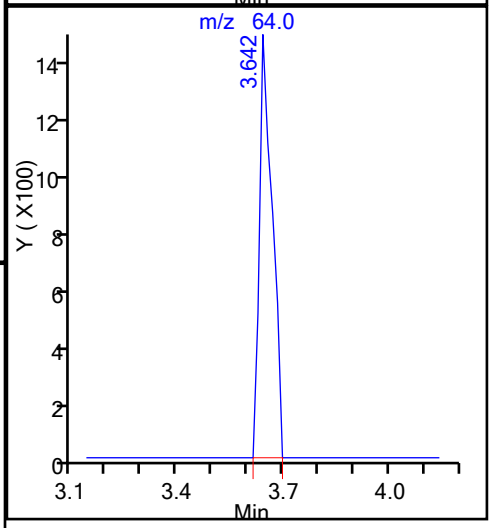
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4869.D				
Injection Date:	04-Sep-2016 18:16:30	Instrument ID:	VMSL		
Lims ID:	160-18852-C-4	Lab Sample ID:	160-18852-4		
Client ID:	GW-BR13JC-082516				
Operator ID:	ADB	ALS Bottle#:	21	Worklist Smp#:	25
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

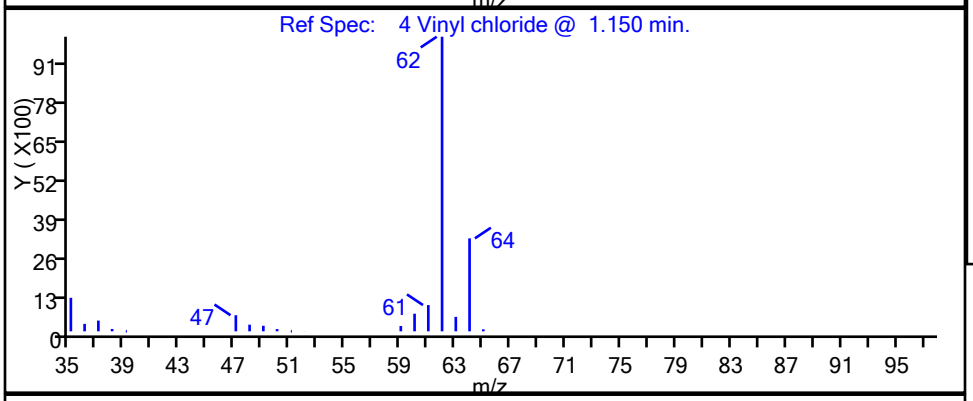
4 Vinyl chloride, CAS: 75-01-4

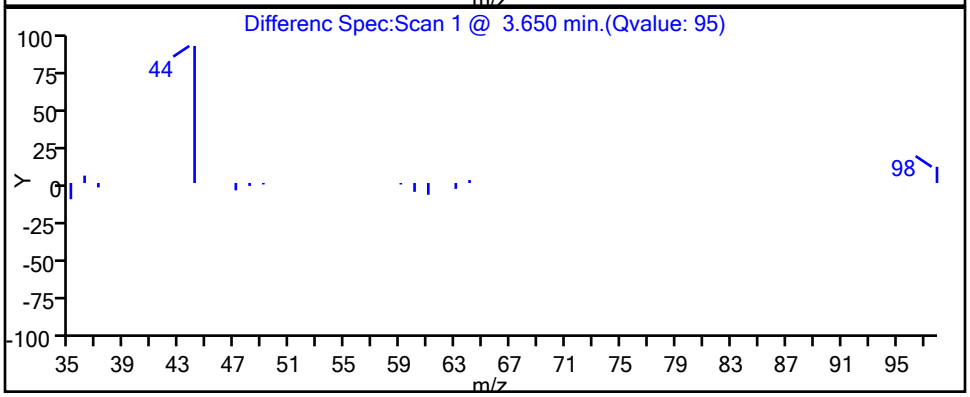












FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR04JC-082516 | Lab Sample ID: 160-18852-5

Matrix: Water | Lab File ID: LSMP4874.D

Analysis Method: 8260C | Date Collected: 08/25/2016 10:05

Sample wt/vol: 25(mL) | Date Analyzed: 09/04/2016 20:22

Soil Aliquot Vol: | Dilution Factor: 5

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 267958 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	ND		5.0	0.86
79-34-5	1,1,2,2-Tetrachloroethane	ND		5.0	0.50
79-00-5	1,1,2-Trichloroethane	ND		5.0	0.66
75-35-4	1,1-Dichloroethene	7.6		5.0	0.50
75-34-3	1,1-Dichloroethane	7.2		5.0	0.35
120-82-1	1,2,4-Trichlorobenzene	ND		5.0	0.50
96-12-8	1,2-Dibromo-3-Chloropropane	ND		5.0	2.1
107-06-2	1,2-Dichloroethane	ND		5.0	1.1
540-59-0	1,2-Dichloroethene, Total	9.1	J	10	0.69
78-87-5	1,2-Dichloropropane	ND		5.0	0.50
78-93-3	2-Butanone	ND		25	2.3
591-78-6	2-Hexanone	ND		25	1.2
108-10-1	4-Methyl-2-pentanone	ND		25	1.1
67-64-1	Acetone	ND		10	2.8
71-43-2	Benzene	ND		5.0	0.50
75-25-2	Bromoform	ND		5.0	0.85
74-83-9	Methyl bromide	ND		10	1.3
75-15-0	Carbon disulfide	ND		5.0	0.50
56-23-5	Carbon tetrachloride	ND		5.0	0.91
108-90-7	Chlorobenzene	ND		5.0	0.55
124-48-1	Chlorodibromomethane	ND		5.0	0.72
75-00-3	Chloroethane	ND	*	10	0.82
67-66-3	Chloroform	ND		5.0	0.50
74-87-3	Chloromethane	ND		10	0.51
156-59-2	cis-1,2-Dichloroethene	9.1		5.0	0.50
10061-01-5	cis-1,3-Dichloropropene	ND		5.0	0.79
75-27-4	Bromodichloromethane	ND		5.0	0.69
100-41-4	Ethylbenzene	ND		5.0	0.61
106-93-4	1,2-Dibromoethane	ND		5.0	0.65
75-09-2	Methylene Chloride	ND		5.0	1.4
71-36-3	n-Butanol	ND		250	62
100-42-5	Styrene	ND		5.0	0.67
108-88-3	Toluene	ND		5.0	0.70
156-60-5	trans-1,2-Dichloroethene	ND		5.0	0.52
10061-02-6	trans-1,3-Dichloropropene	ND		5.0	0.50
79-01-6	Trichloroethene	84		5.0	1.3

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR04JC-082516 | Lab Sample ID: 160-18852-5

Matrix: Water | Lab File ID: LSMP4874.D

Analysis Method: 8260C | Date Collected: 08/25/2016 10:05

Sample wt/vol: 25(mL) | Date Analyzed: 09/04/2016 20:22

Soil Aliquot Vol: | Dilution Factor: 5

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 267958 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
108-05-4	Vinyl acetate	ND		10	0.90
75-01-4	Vinyl chloride	ND	*	10	0.97
1330-20-7	Xylenes, Total	ND		15	1.3

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	114		75-129
460-00-4	4-Bromofluorobenzene (Surr)	108		81-130
1868-53-7	Dibromofluoromethane (Surr)	113		81-124
2037-26-5	Toluene-d8 (Surr)	104		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4874.D
Lims ID: 160-18852-C-5
Client ID: GW-BR04JC-082516
Sample Type: Client
Inject. Date: 04-Sep-2016 20:22:30 ALS Bottle#: 26 Worklist Smp#: 30
Purge Vol: 25.000 mL Dil. Factor: 5.0000
Sample Info: 160-0008391-030
Misc. Info.: 160-18852-c-5
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:46:01 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: rhoadess Date: 06-Sep-2016 07:10:43

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
3 Chloromethane	50		3.474				ND	
4 Vinyl chloride	62		3.641				ND	
6 Bromomethane	94		4.256				ND	
7 Chloroethane	64		4.479				ND	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	94	46832	1.52	
13 Carbon disulfide	76		5.583				ND	
S 15 1,2-Dichloroethene, Total	96				0		1.82	
20 Methylene Chloride	84		6.337				ND	
21 Acetone	43		6.407				ND	
22 trans-1,2-Dichloroethene	96		6.532				ND	
30 1,1-Dichloroethane	63	7.259	7.259	0.000	97	84739	1.43	
33 Vinyl acetate	43		7.510				ND	
34 cis-1,2-Dichloroethene	96	7.845	7.831	0.014	84	53978	1.82	
38 Chloroform	83		8.097				ND	
40 Carbon tetrachloride	117		8.264				ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	241140	11.3	
43 1,1,1-Trichloroethane	97		8.334				ND	
45 2-Butanone (MEK)	43		8.404				ND	
48 Benzene	78		8.683				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.809	0.014	94	255873	11.4	
54 1,2-Dichloroethane	62		8.879				ND	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1106261	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	96	554873	16.8	
59 n-Butanol	56		9.451				ND	
62 1,2-Dichloropropane	63		9.717				ND	
63 Dichlorobromomethane	83		9.759				ND	
67 cis-1,3-Dichloropropene	75		10.317				ND	
$ 68 Toluene-d8 (Surr)	98	10.499	10.485	0.014	95	1049419	10.4	
69 Toluene	92		10.541				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
72 trans-1,3-Dichloropropene	75		10.890				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
73 Tetrachloroethene	164	10.904	10.890	0.014	94	5421967	176.4	E
75 1,1,2-Trichloroethane	83		11.043				ND	
76 Chlorodibromomethane	129		11.225				ND	
79 Ethylene Dibromide	107		11.476				ND	
80 2-Hexanone	43		11.574				ND	
* 83 Chlorobenzene-d5	117	11.909	11.909	0.000	88	771287	10.0	
82 Ethylbenzene	91		11.909				ND	
84 Chlorobenzene	112		11.923				ND	
86 m-Xylene & p-Xylene	106		12.035				ND	
88 o-Xylene	106		12.440				ND	
89 Styrene	104		12.482				ND	
90 Bromoform	173		12.552				ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	83	312704	10.8	
95 1,1,2,2-Tetrachloroethane	83		13.166				ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	343567	10.0	
115 1,2-Dibromo-3-Chloropropan	157		15.303				ND	
117 1,2,4-Trichlorobenzene	180		15.974				ND	
S 119 Xylenes, Total	106		16.500				ND	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Reagents:

I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

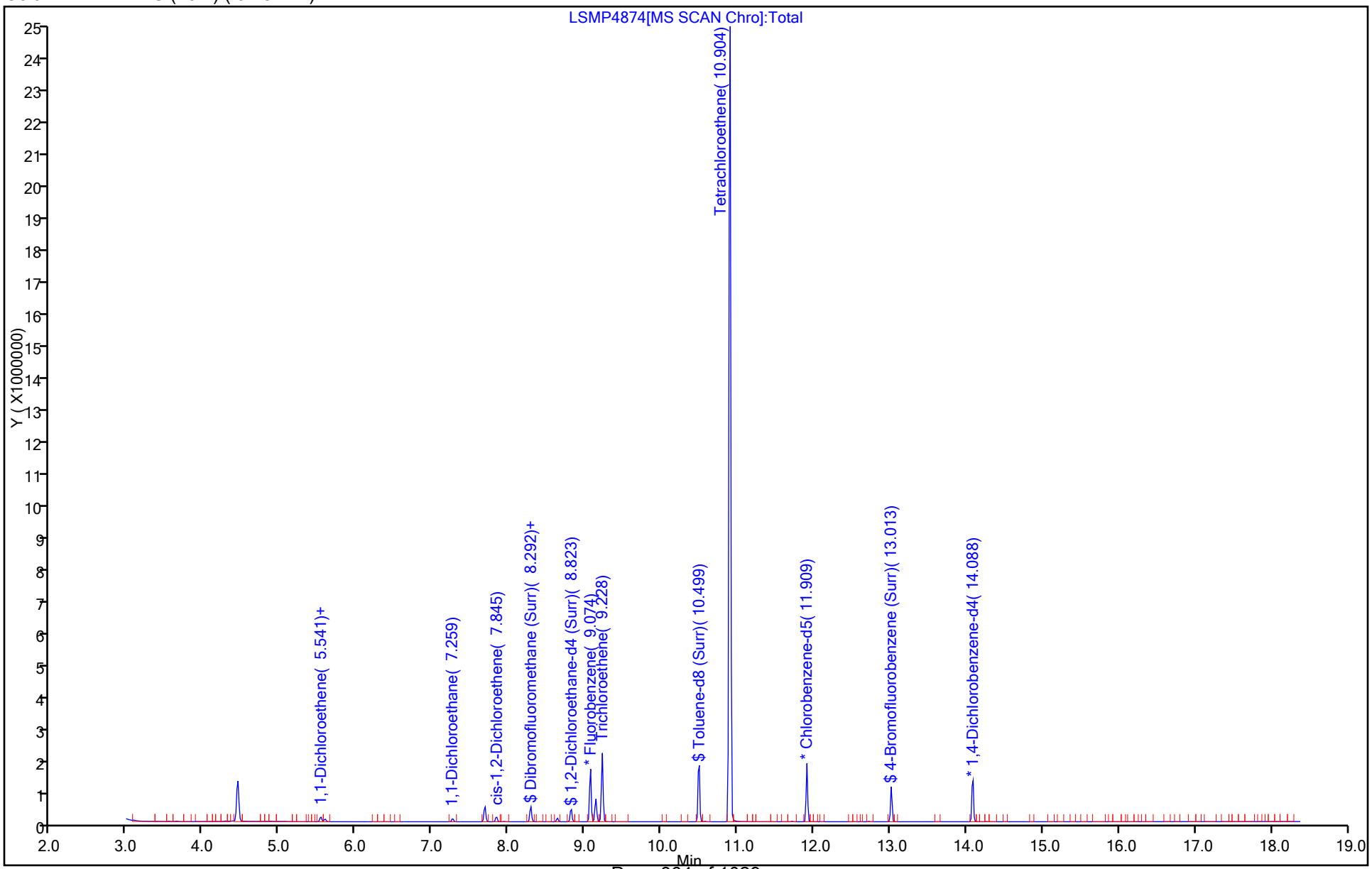
Report Date: 06-Sep-2016 08:46:08 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4874.D

Injection Date:	04-Sep-2016 20:22:30	Instrument ID:	VMSL	Operator ID:	ADB
Lims ID:	160-18852-C-5	Lab Sample ID:	160-18852-5	Worklist Smp#:	30
Client ID:	GW-BR04JC-082516				
Purge Vol:	25.000 mL	Dil. Factor:	5.0000	ALS Bottle#:	26
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4874.D
Lims ID: 160-18852-C-5
Client ID: GW-BR04JC-082516
Sample Type: Client
Inject. Date: 04-Sep-2016 20:22:30 ALS Bottle#: 26 Worklist Smp#: 30
Purge Vol: 25.000 mL Dil. Factor: 5.0000
Sample Info: 160-0008391-030
Misc. Info.: 160-18852-c-5
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:46:01 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: rhoadess Date: 06-Sep-2016 07:10:43

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	11.3	113.44
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	11.4	113.78
$ 68 Toluene-d8 (Surr)	10.0	10.4	104.23
$ 92 4-Bromofluorobenzene (Surr)	10.0	10.8	108.47

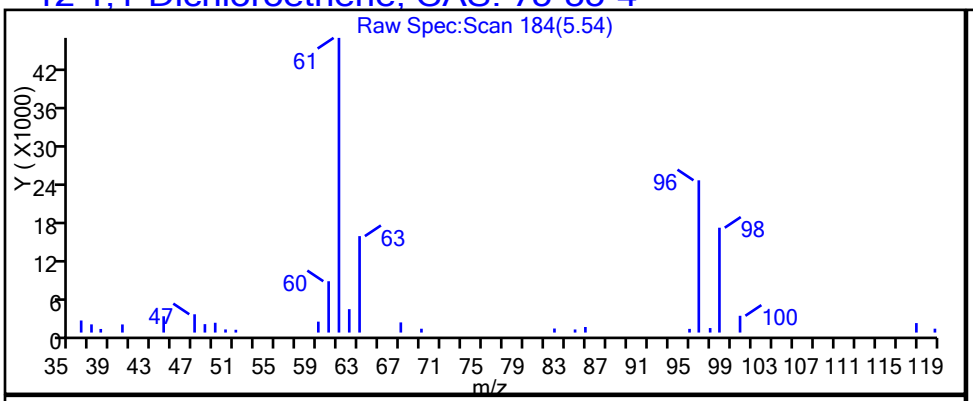
Report Date: 06-Sep-2016 08:46:08 Chrom Revision: 2.2 20-Apr-2016 13:59:46

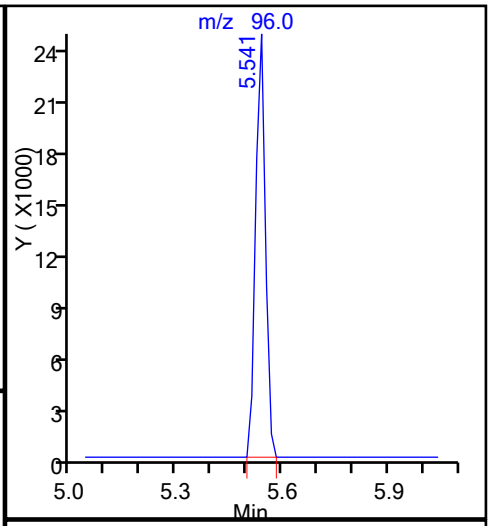
TestAmerica St. Louis

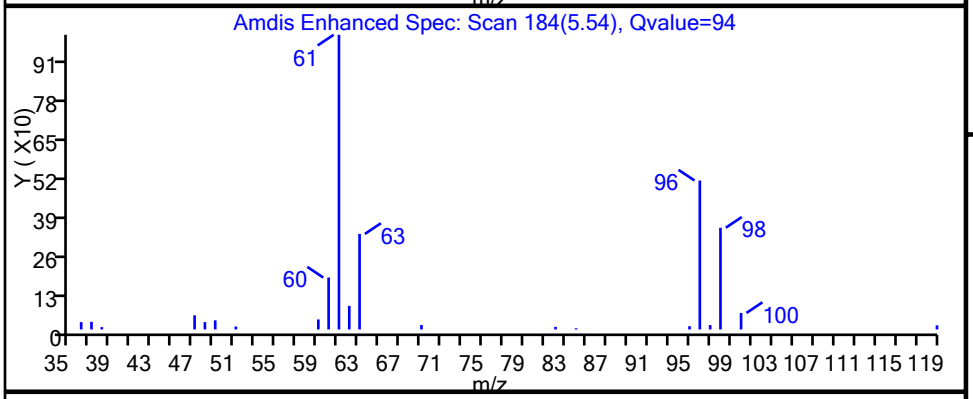
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4874.D

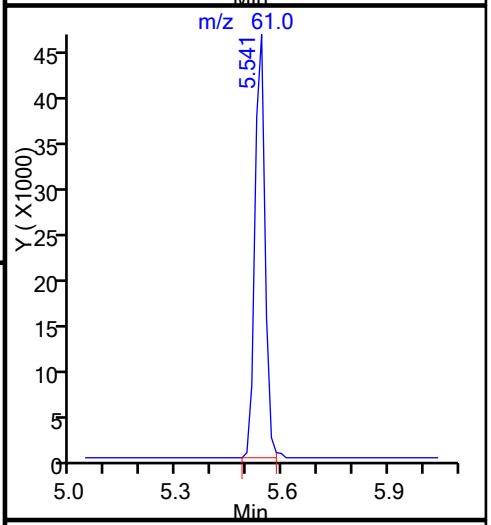
Injection Date:	04-Sep-2016 20:22:30	Instrument ID:	VMSL		
Lims ID:	160-18852-C-5	Lab Sample ID:	160-18852-5		
Client ID:	GW-BR04JC-082516				
Operator ID:	ADB	ALS Bottle#:	26	Worklist Smp#:	30
Purge Vol:	25.000 mL	Dil. Factor:	5.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

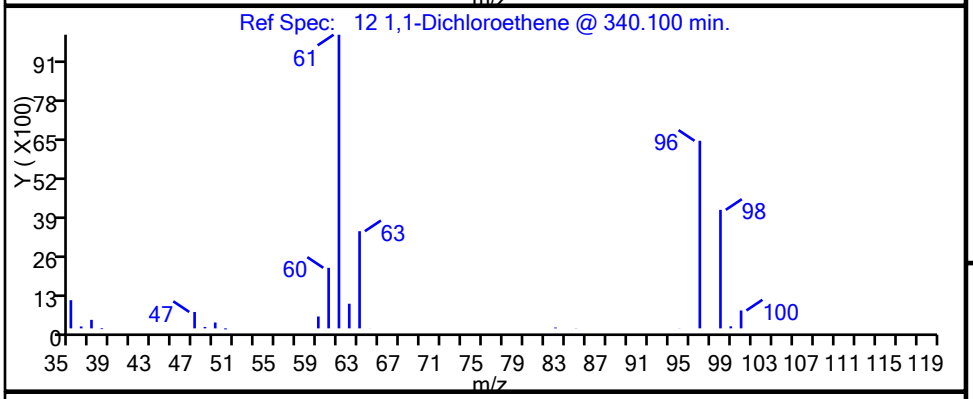
12 1,1-Dichloroethene, CAS: 75-35-4

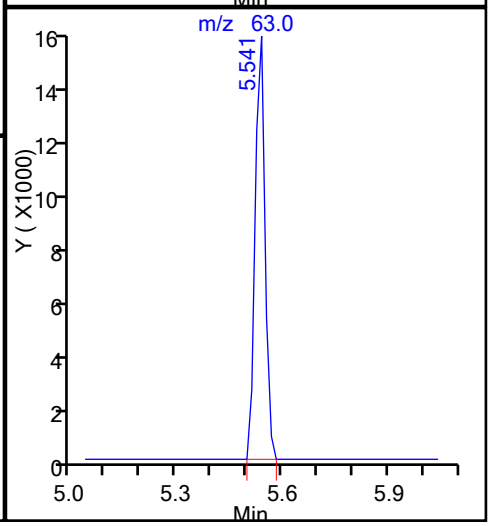


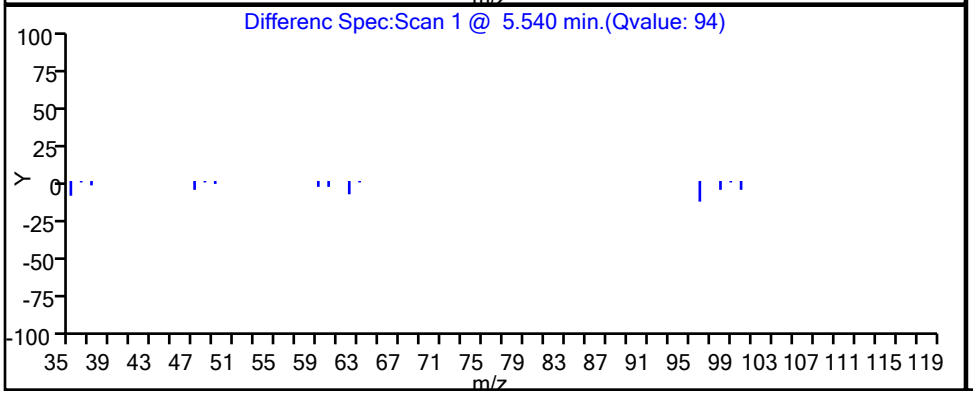










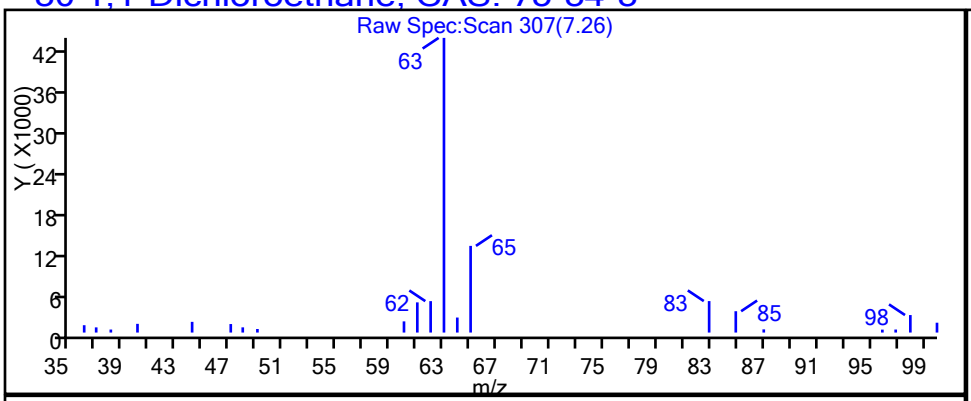


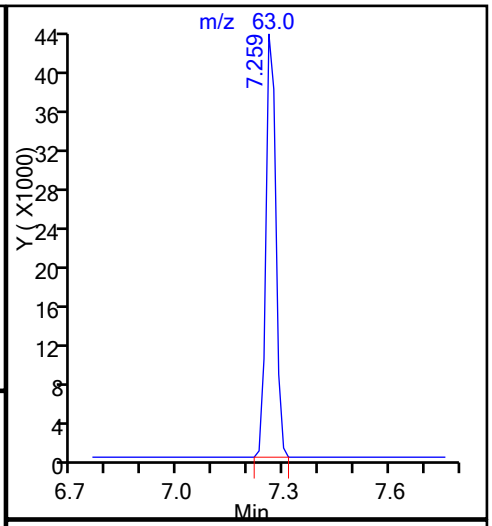
Report Date: 06-Sep-2016 08:46:08 Chrom Revision: 2.2 20-Apr-2016 13:59:46

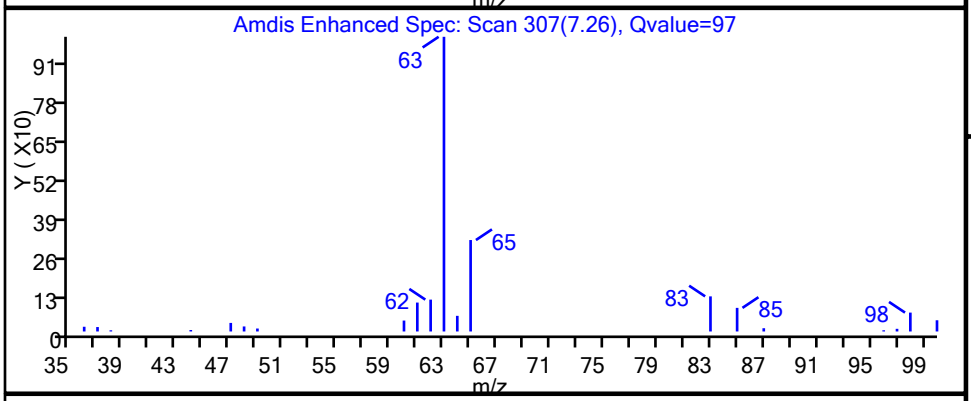
TestAmerica St. Louis

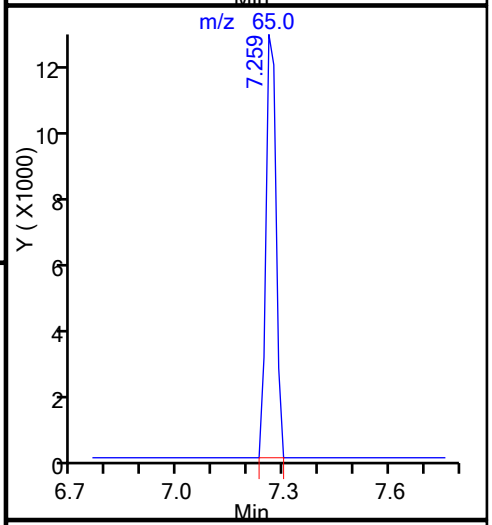
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4874.D				
Injection Date:	04-Sep-2016 20:22:30	Instrument ID:	VMSL		
Lims ID:	160-18852-C-5	Lab Sample ID:	160-18852-5		
Client ID:	GW-BR04JC-082516				
Operator ID:	ADB	ALS Bottle#:	26	Worklist Smp#:	30
Purge Vol:	25.000 mL	Dil. Factor:	5.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

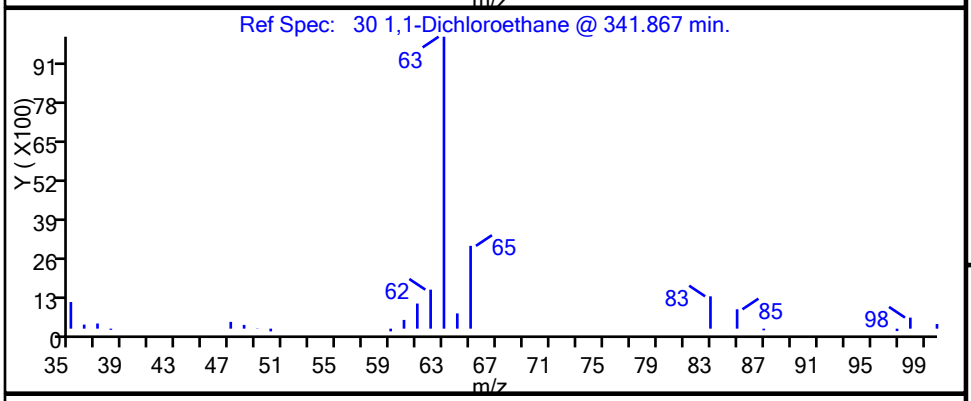
30 1,1-Dichloroethane, CAS: 75-34-3

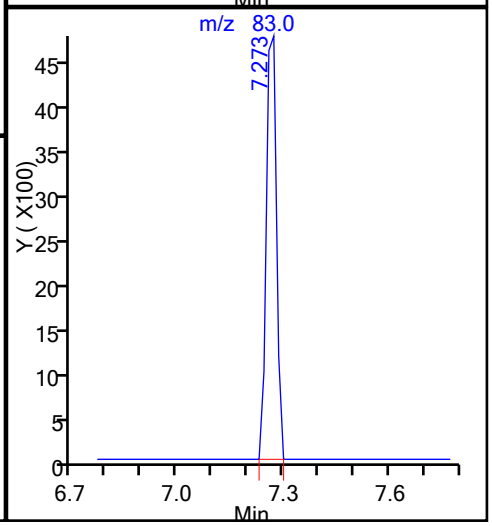


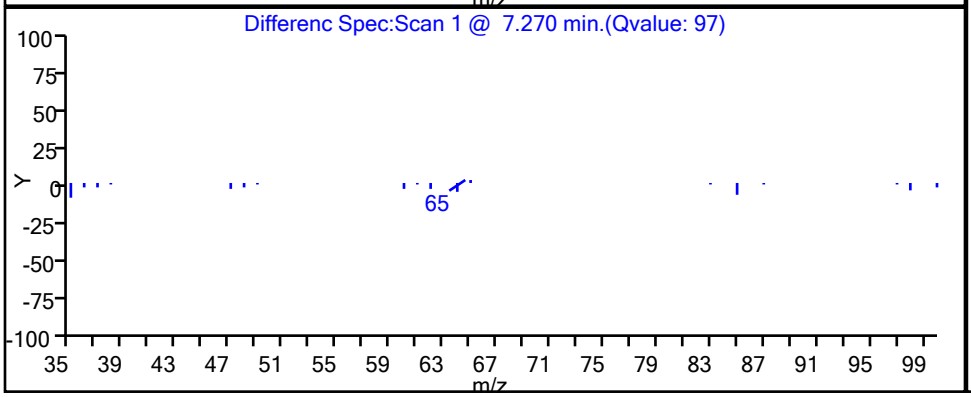










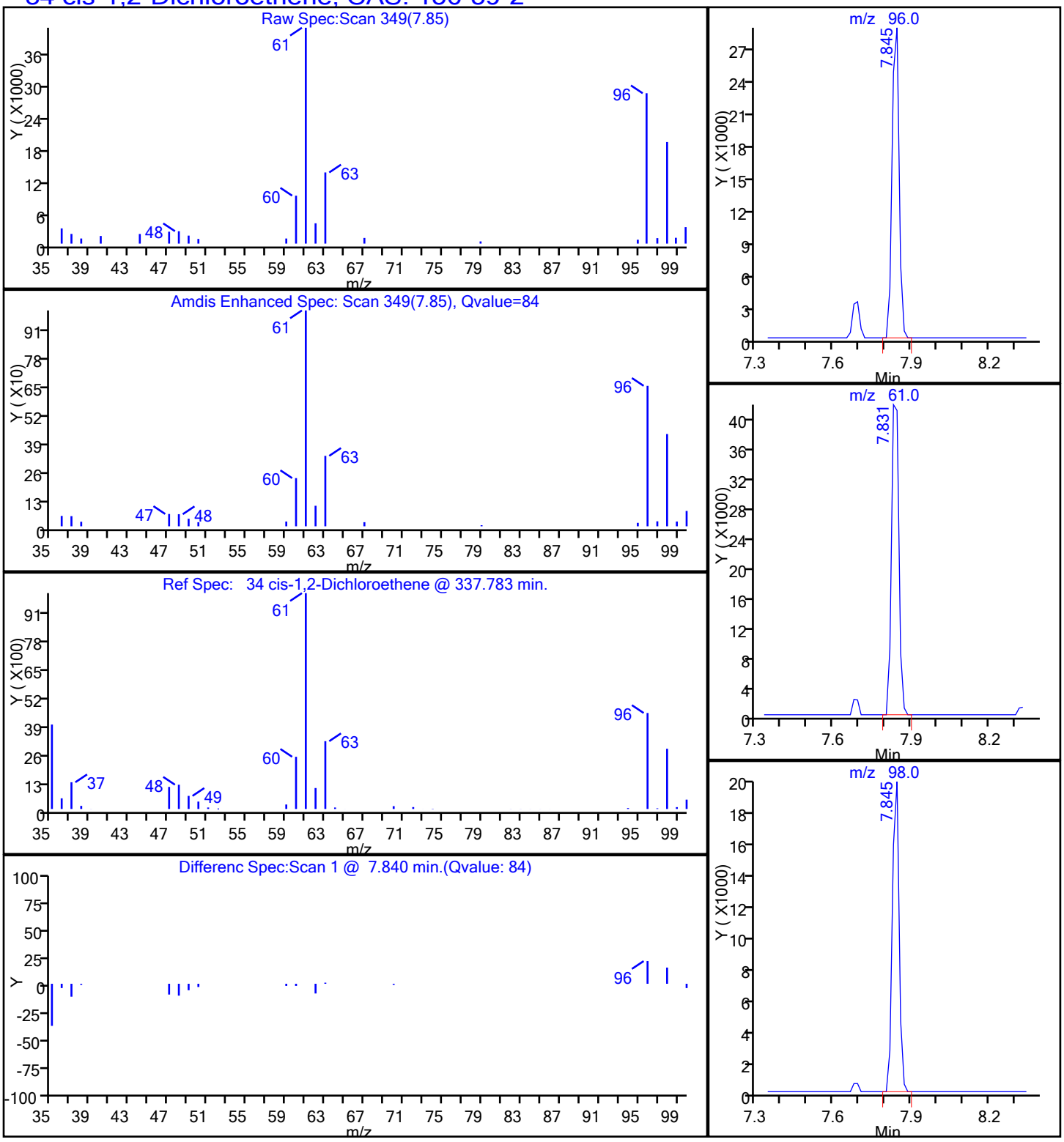


Report Date: 06-Sep-2016 08:46:09 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4874.D				
Injection Date:	04-Sep-2016 20:22:30	Instrument ID:	VMSL		
Lims ID:	160-18852-C-5	Lab Sample ID:	160-18852-5		
Client ID:	GW-BR04JC-082516				
Operator ID:	ADB	ALS Bottle#:	26	Worklist Smp#:	30
Purge Vol:	25.000 mL	Dil. Factor:	5.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

34 cis-1,2-Dichloroethene, CAS: 156-59-2



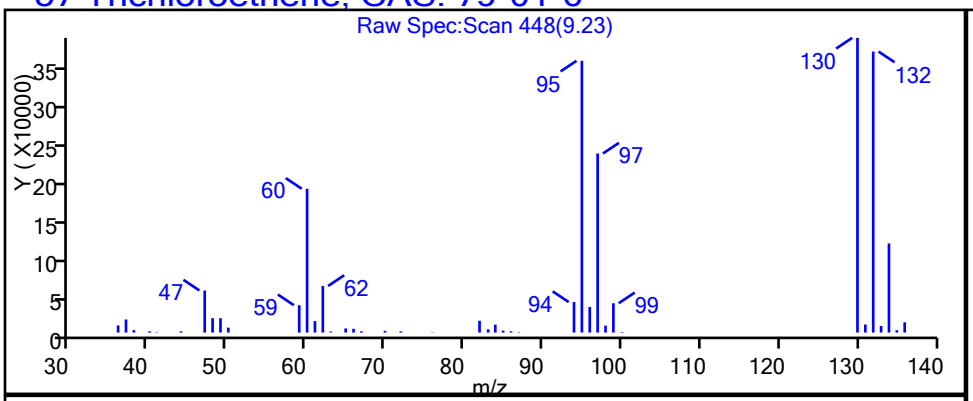
Report Date: 06-Sep-2016 08:46:09 Chrom Revision: 2.2 20-Apr-2016 13:59:46

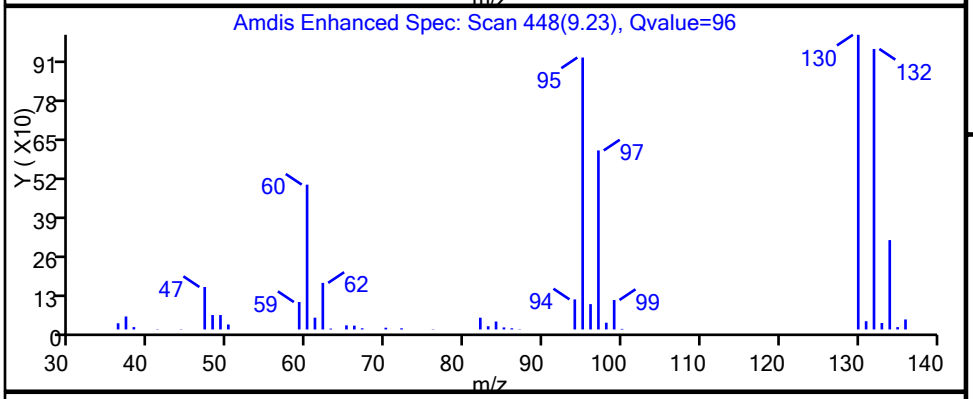
TestAmerica St. Louis

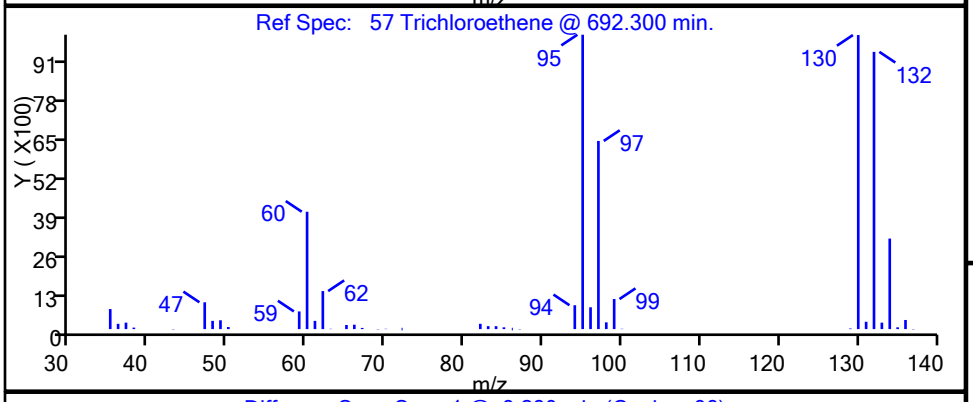
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4874.D

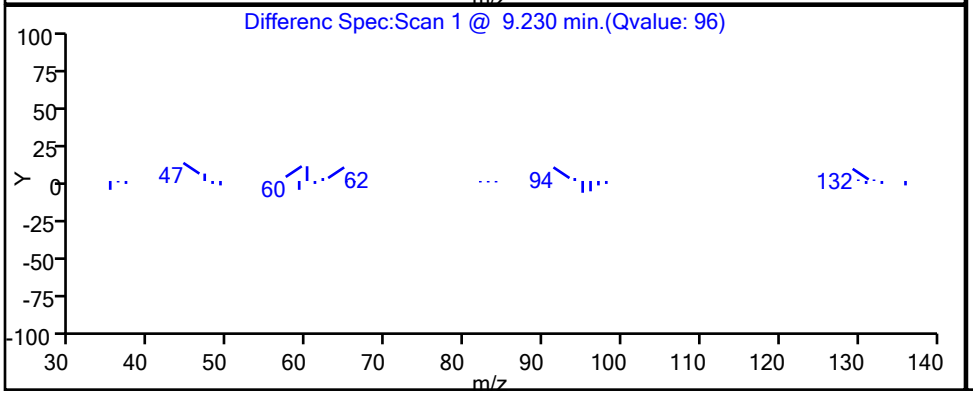
Injection Date:	04-Sep-2016 20:22:30	Instrument ID:	VMSL		
Lims ID:	160-18852-C-5	Lab Sample ID:	160-18852-5		
Client ID:	GW-BR04JC-082516				
Operator ID:	ADB	ALS Bottle#:	26	Worklist Smp#:	30
Purge Vol:	25.000 mL	Dil. Factor:	5.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

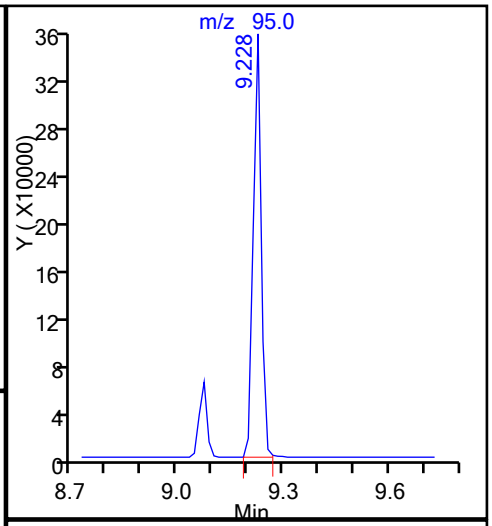
57 Trichloroethene, CAS: 79-01-6

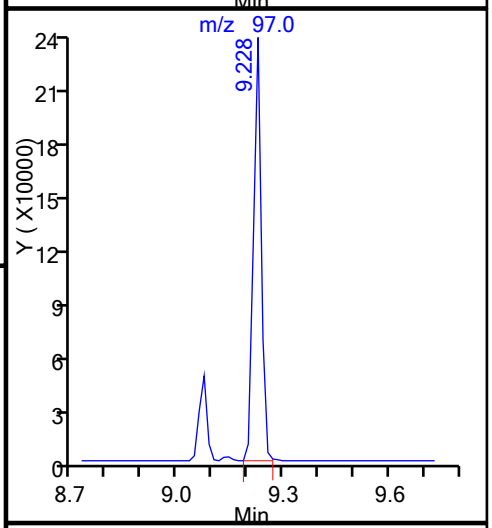


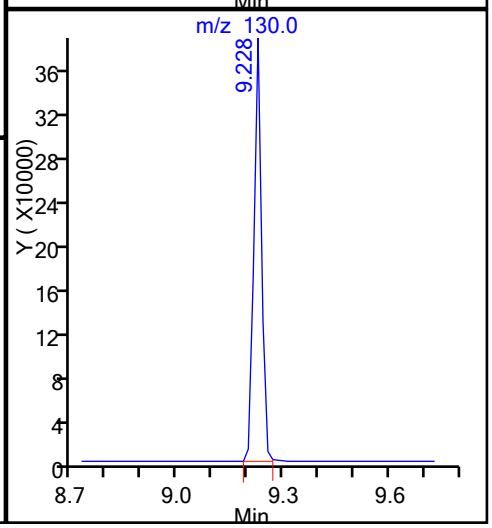












FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR04JC-082516 | Lab Sample ID: 160-18852-5

Matrix: Water | Lab File ID: LSMP4870.D

Analysis Method: 8260C | Date Collected: 08/25/2016 10:05

Sample wt/vol: 25(mL) | Date Analyzed: 09/04/2016 18:41

Soil Aliquot Vol: | Dilution Factor: 50

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 267958 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
127-18-4	Tetrachloroethene	910		50	9.0

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	114		75-129
460-00-4	4-Bromofluorobenzene (Surr)	107		81-130
1868-53-7	Dibromofluoromethane (Surr)	115		81-124
2037-26-5	Toluene-d8 (Surr)	98		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4870.D
Lims ID: 160-18852-C-5
Client ID: GW-BR04JC-082516
Sample Type: Client
Inject. Date: 04-Sep-2016 18:41:30 ALS Bottle#: 22 Worklist Smp#: 26
Purge Vol: 25.000 mL Dil. Factor: 50.0000
Sample Info: 160-0008391-026
Misc. Info.: 160-18852-c-5
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:46:01 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: rhoadess Date: 06-Sep-2016 07:06:10

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
3 Chloromethane	50		3.474				ND	
4 Vinyl chloride	62		3.641				ND	
6 Bromomethane	94		4.256				ND	
7 Chloroethane	64		4.479				ND	
12 1,1-Dichloroethene	96		5.541				ND	
13 Carbon disulfide	76		5.583				ND	
S 15 1,2-Dichloroethene, Total	96		5.816				ND	
20 Methylene Chloride	84		6.337				ND	
21 Acetone	43		6.407				ND	
22 trans-1,2-Dichloroethene	96		6.532				ND	
30 1,1-Dichloroethane	63		7.259				ND	
33 Vinyl acetate	43		7.510				ND	
34 cis-1,2-Dichloroethene	96		7.831				ND	
38 Chloroform	83		8.097				ND	
40 Carbon tetrachloride	117		8.264				ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	238294	11.5	
43 1,1,1-Trichloroethane	97		8.334				ND	
45 2-Butanone (MEK)	43		8.404				ND	
48 Benzene	78		8.683				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.809	0.014	94	249362	11.4	
54 1,2-Dichloroethane	62		8.879				ND	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1075469	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	95	52472	1.63	
59 n-Butanol	56		9.451				ND	
62 1,2-Dichloropropane	63		9.717				ND	
63 Dichlorobromomethane	83		9.759				ND	
67 cis-1,3-Dichloropropene	75		10.317				ND	
$ 68 Toluene-d8 (Surr)	98	10.499	10.485	0.014	95	1032684	9.82	
69 Toluene	92		10.541				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
72 trans-1,3-Dichloropropene	75		10.890				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
73 Tetrachloroethene	164	10.904	10.890	0.014	98	584389	18.2	
75 1,1,2-Trichloroethane	83		11.043				ND	
76 Chlorodibromomethane	129		11.225				ND	
79 Ethylene Dibromide	107		11.476				ND	
80 2-Hexanone	43		11.574				ND	
* 83 Chlorobenzene-d5	117	11.910	11.909	0.001	89	805525	10.0	
82 Ethylbenzene	91		11.909				ND	
84 Chlorobenzene	112		11.923				ND	
86 m-Xylene & p-Xylene	106		12.035				ND	
88 o-Xylene	106		12.440				ND	
89 Styrene	104		12.482				ND	
90 Bromoform	173		12.552				ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	87	302781	10.7	
95 1,1,2,2-Tetrachloroethane	83		13.166				ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	336149	10.0	
115 1,2-Dibromo-3-Chloropropan	157		15.303				ND	
117 1,2,4-Trichlorobenzene	180		15.974				ND	
S 119 Xylenes, Total	106		16.500				ND	

Reagents:

I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

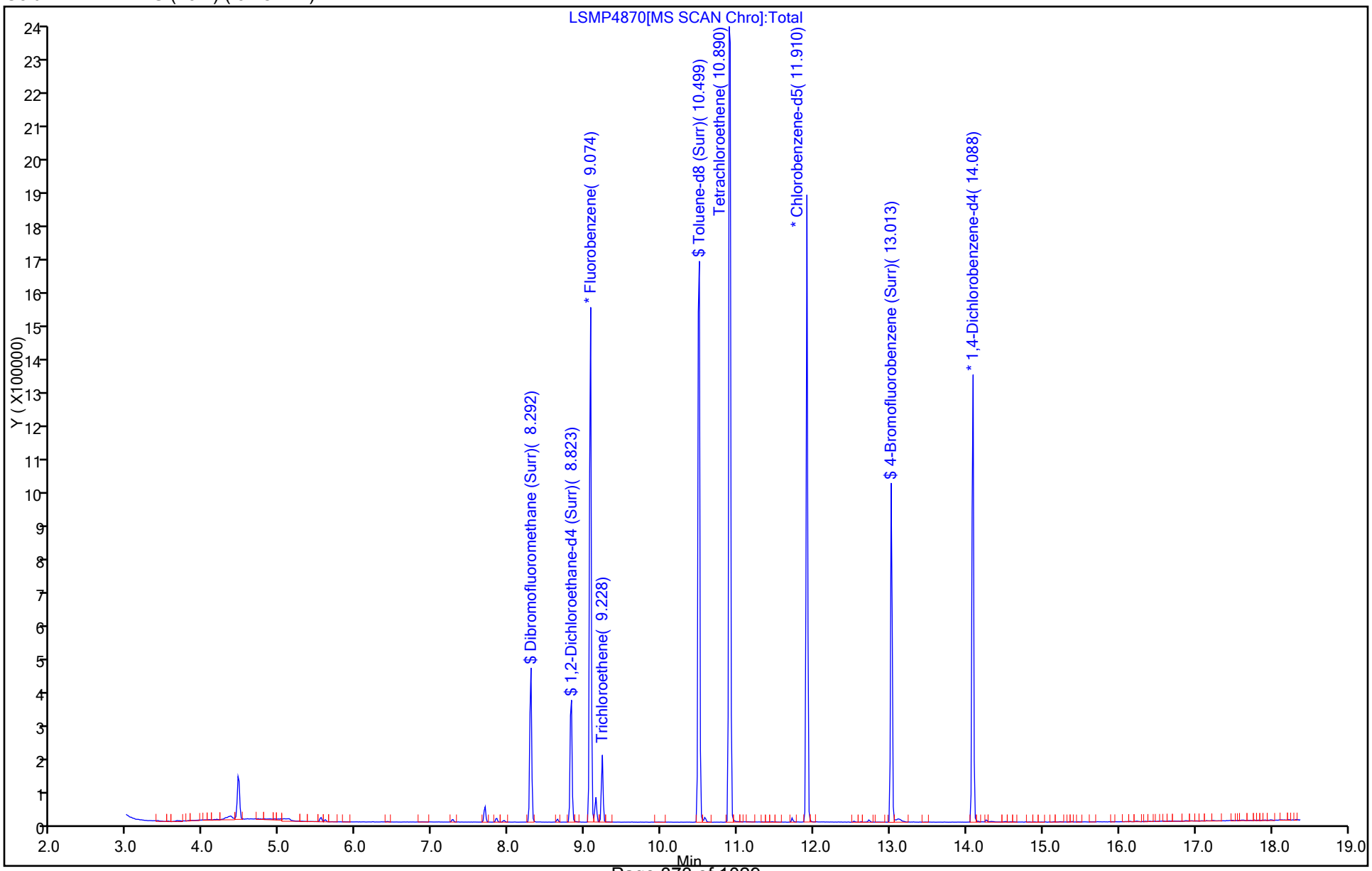
Report Date: 06-Sep-2016 08:46:18 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4870.D

Injection Date:	04-Sep-2016 18:41:30	Instrument ID:	VMSL	Operator ID:	ADB
Lims ID:	160-18852-C-5	Lab Sample ID:	160-18852-5	Worklist Smp#:	26
Client ID:	GW-BR04JC-082516				
Purge Vol:	25.000 mL	Dil. Factor:	50.0000	ALS Bottle#:	22
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4870.D
Lims ID: 160-18852-C-5
Client ID: GW-BR04JC-082516
Sample Type: Client
Inject. Date: 04-Sep-2016 18:41:30 ALS Bottle#: 22 Worklist Smp#: 26
Purge Vol: 25.000 mL Dil. Factor: 50.0000
Sample Info: 160-0008391-026
Misc. Info.: 160-18852-c-5
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:46:01 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: rhoadess Date: 06-Sep-2016 07:06:10

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	11.5	115.31
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	11.4	114.06
$ 68 Toluene-d8 (Surr)	10.0	9.82	98.21
$ 92 4-Bromofluorobenzene (Surr)	10.0	10.7	107.34

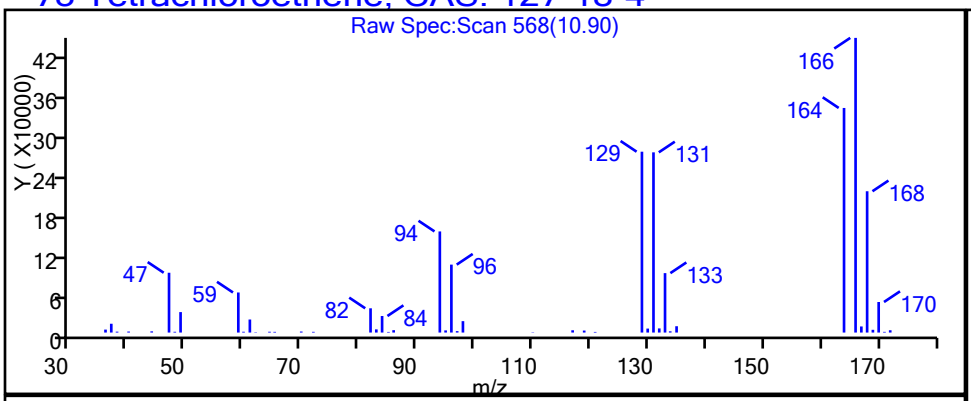
Report Date: 06-Sep-2016 08:46:19 Chrom Revision: 2.2 20-Apr-2016 13:59:46

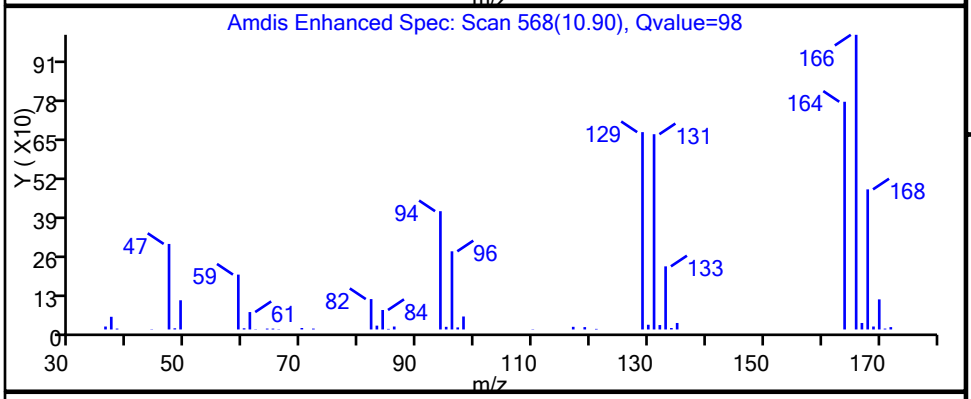
TestAmerica St. Louis

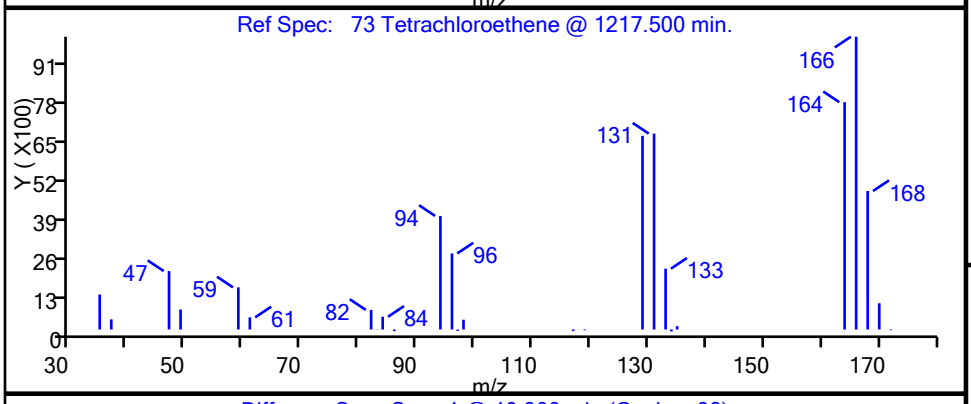
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4870.D

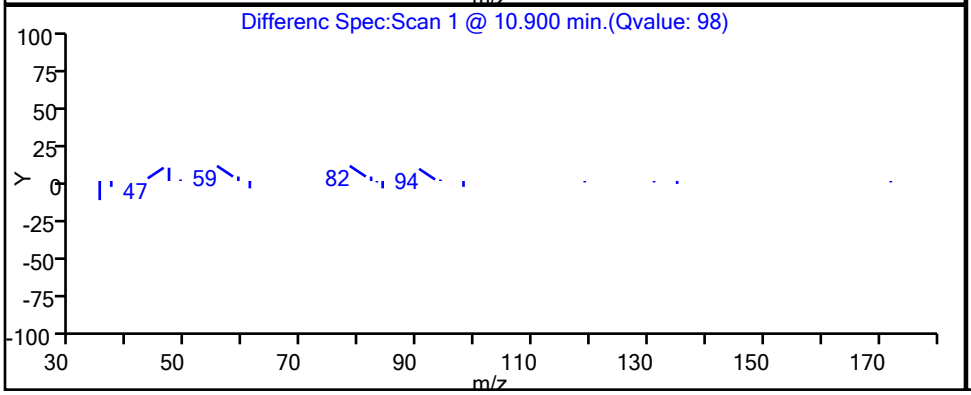
Injection Date:	04-Sep-2016 18:41:30	Instrument ID:	VMSL		
Lims ID:	160-18852-C-5	Lab Sample ID:	160-18852-5		
Client ID:	GW-BR04JC-082516				
Operator ID:	ADB	ALS Bottle#:	22	Worklist Smp#:	26
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

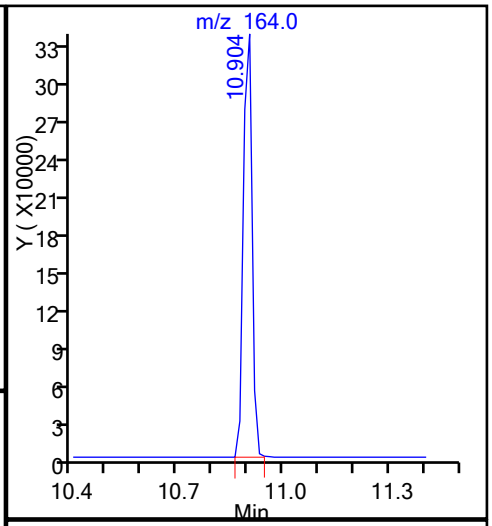
73 Tetrachloroethene, CAS: 127-18-4

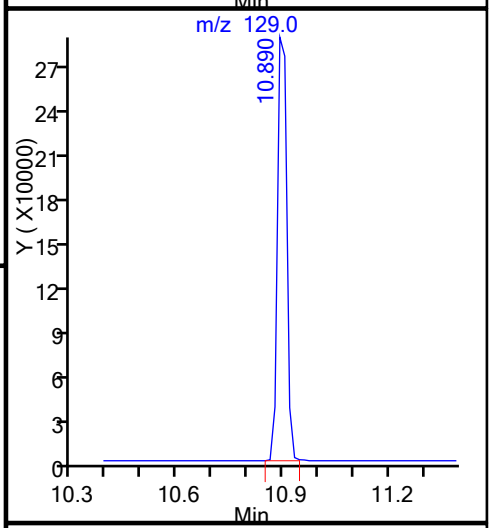


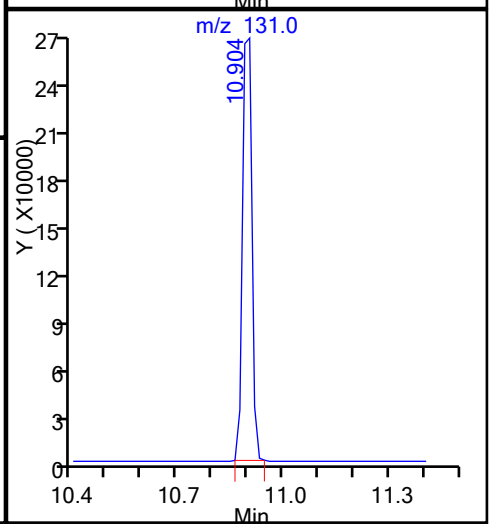












FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR08JC-082516 | Lab Sample ID: 160-18852-6

Matrix: Water | Lab File ID: LSMP4974.D

Analysis Method: 8260C | Date Collected: 08/25/2016 10:40

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 17:16

Soil Aliquot Vol: | Dilution Factor: 50

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	ND		50	8.6
79-34-5	1,1,2,2-Tetrachloroethane	ND		50	5.0
79-00-5	1,1,2-Trichloroethane	ND		50	6.6
75-35-4	1,1-Dichloroethene	120		50	5.0
75-34-3	1,1-Dichloroethane	210		50	3.5
120-82-1	1,2,4-Trichlorobenzene	ND		50	5.0
96-12-8	1,2-Dibromo-3-Chloropropane	ND		50	21
107-06-2	1,2-Dichloroethane	ND		50	11
540-59-0	1,2-Dichloroethene, Total	2000		100	6.9
78-87-5	1,2-Dichloropropane	ND		50	5.0
78-93-3	2-Butanone	ND		250	23
591-78-6	2-Hexanone	ND		250	12
108-10-1	4-Methyl-2-pentanone	ND		250	11
67-64-1	Acetone	ND		100	28
71-43-2	Benzene	ND		50	5.0
75-25-2	Bromoform	ND		50	8.5
74-83-9	Methyl bromide	ND		100	13
75-15-0	Carbon disulfide	ND		50	5.0
56-23-5	Carbon tetrachloride	ND		50	9.1
108-90-7	Chlorobenzene	ND		50	5.5
124-48-1	Chlorodibromomethane	ND		50	7.2
75-00-3	Chloroethane	14	J	100	8.2
67-66-3	Chloroform	ND		50	5.0
74-87-3	Chloromethane	ND		100	5.1
156-59-2	cis-1,2-Dichloroethene	2000		50	5.0
10061-01-5	cis-1,3-Dichloropropene	ND		50	7.9
75-27-4	Bromodichloromethane	ND		50	6.9
100-41-4	Ethylbenzene	ND		50	6.1
106-93-4	1,2-Dibromoethane	ND		50	6.5
75-09-2	Methylene Chloride	ND		50	14
71-36-3	n-Butanol	ND		2500	620
100-42-5	Styrene	ND		50	6.7
127-18-4	Tetrachloroethene	1100		50	9.0
108-88-3	Toluene	ND		50	7.0
156-60-5	trans-1,2-Dichloroethene	12	J	50	5.2
10061-02-6	trans-1,3-Dichloropropene	ND		50	5.0

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR08JC-082516 | Lab Sample ID: 160-18852-6

Matrix: Water | Lab File ID: LSMP4974.D

Analysis Method: 8260C | Date Collected: 08/25/2016 10:40

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 17:16

Soil Aliquot Vol: | Dilution Factor: 50

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
108-05-4	Vinyl acetate	ND		100	9.0
75-01-4	Vinyl chloride	140		100	9.7
1330-20-7	Xylenes, Total	ND		150	13

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	107		75-129
460-00-4	4-Bromofluorobenzene (Surr)	118		81-130
1868-53-7	Dibromofluoromethane (Surr)	109		81-124
2037-26-5	Toluene-d8 (Surr)	114		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4974.D
Lims ID: 160-18852-B-6
Client ID: GW-BR08JC-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 17:16:30 ALS Bottle#: 17 Worklist Smp#: 21
Purge Vol: 25.000 mL Dil. Factor: 50.0000
Sample Info: 160-0008407-021
Misc. Info.: 160-18852-b-6
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:11:33

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
3 Chloromethane	50		3.474				ND	
4 Vinyl chloride	62	3.641	3.642	-0.001	98	158684	2.71	
6 Bromomethane	94		4.256				ND	
7 Chloroethane	64	4.479	4.479	0.000	82	8285	0.2734	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	94	83748	2.31	
13 Carbon disulfide	76		5.583				ND	
S 15 1,2-Dichloroethene, Total	96				0		39.3	
20 Methylene Chloride	84		6.337				ND	
21 Acetone	43		6.407				ND	
22 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	91	9137	0.2449	
30 1,1-Dichloroethane	63	7.273	7.259	0.014	97	287650	4.14	
33 Vinyl acetate	43		7.510				ND	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	83	1362594	39.1	
38 Chloroform	83		8.097				ND	
40 Carbon tetrachloride	117		8.264				ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	273127	10.9	
43 1,1,1-Trichloroethane	97		8.334				ND	
45 2-Butanone (MEK)	43		8.404				ND	
48 Benzene	78		8.683				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	94	282232	10.7	
54 1,2-Dichloroethane	62		8.879				ND	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1300836	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	97	4702106	121.1	E
59 n-Butanol	56		9.451				ND	
62 1,2-Dichloropropane	63		9.717				ND	
63 Dichlorobromomethane	83		9.759				ND	
67 cis-1,3-Dichloropropene	75		10.317				ND	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	95	1267005	11.4	
69 Toluene	92		10.541				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
72 trans-1,3-Dichloropropene	75		10.890				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
73 Tetrachloroethene	164	10.904	10.904	0.000	98	727457	21.4	
75 1,1,2-Trichloroethane	83		11.058				ND	
76 Chlorodibromomethane	129		11.225				ND	
79 Ethylene Dibromide	107		11.477				ND	
80 2-Hexanone	43		11.588				ND	
* 83 Chlorobenzene-d5	117	11.909	11.910	-0.001	89	854849	10.0	
82 Ethylbenzene	91		11.910				ND	
84 Chlorobenzene	112		11.923				ND	
86 m-Xylene & p-Xylene	106		12.035				ND	
88 o-Xylene	106		12.440				ND	
89 Styrene	104		12.482				ND	
90 Bromoform	173		12.552				ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	89	383073	11.8	
95 1,1,2,2-Tetrachloroethane	83		13.166				ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	386017	10.0	
115 1,2-Dibromo-3-Chloropropan	157		15.303				ND	
117 1,2,4-Trichlorobenzene	180		15.974				ND	
S 119 Xylenes, Total	106		16.500				ND	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Reagents:

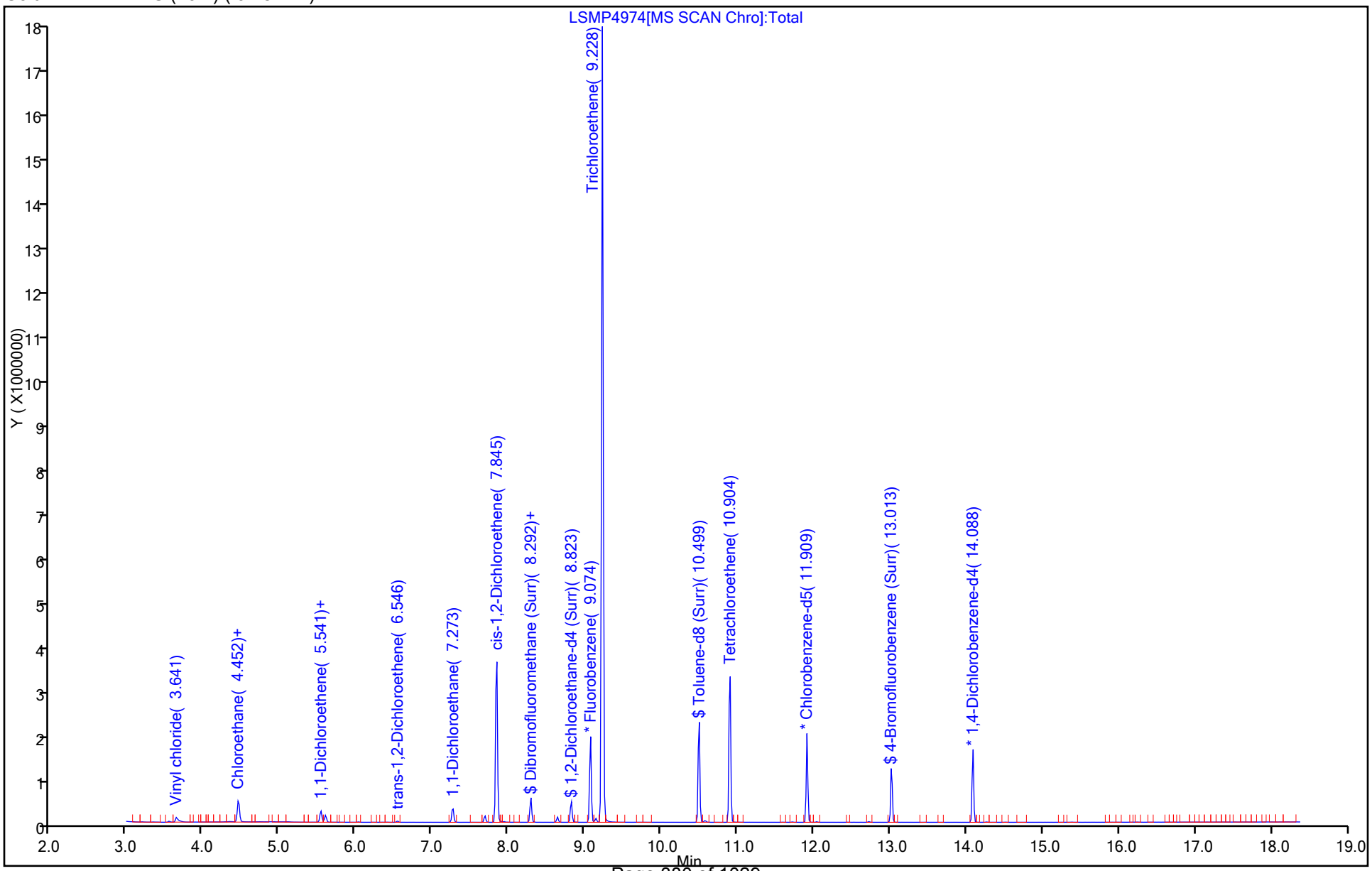
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 08-Sep-2016 08:40:03 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4974.D				
Injection Date:	07-Sep-2016 17:16:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	160-18852-B-6	Lab Sample ID:	160-18852-6	Worklist Smp#:	21
Client ID:	GW-BR08JC-082516				
Purge Vol:	25.000 mL	Dil. Factor:	50.0000	ALS Bottle#:	17
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4974.D
Lims ID: 160-18852-B-6
Client ID: GW-BR08JC-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 17:16:30 ALS Bottle#: 17 Worklist Smp#: 21
Purge Vol: 25.000 mL Dil. Factor: 50.0000
Sample Info: 160-0008407-021
Misc. Info.: 160-18852-b-6
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:11:33

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.9	109.27
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	10.7	106.73
$ 68 Toluene-d8 (Surr)	10.0	11.4	113.54
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.8	118.26

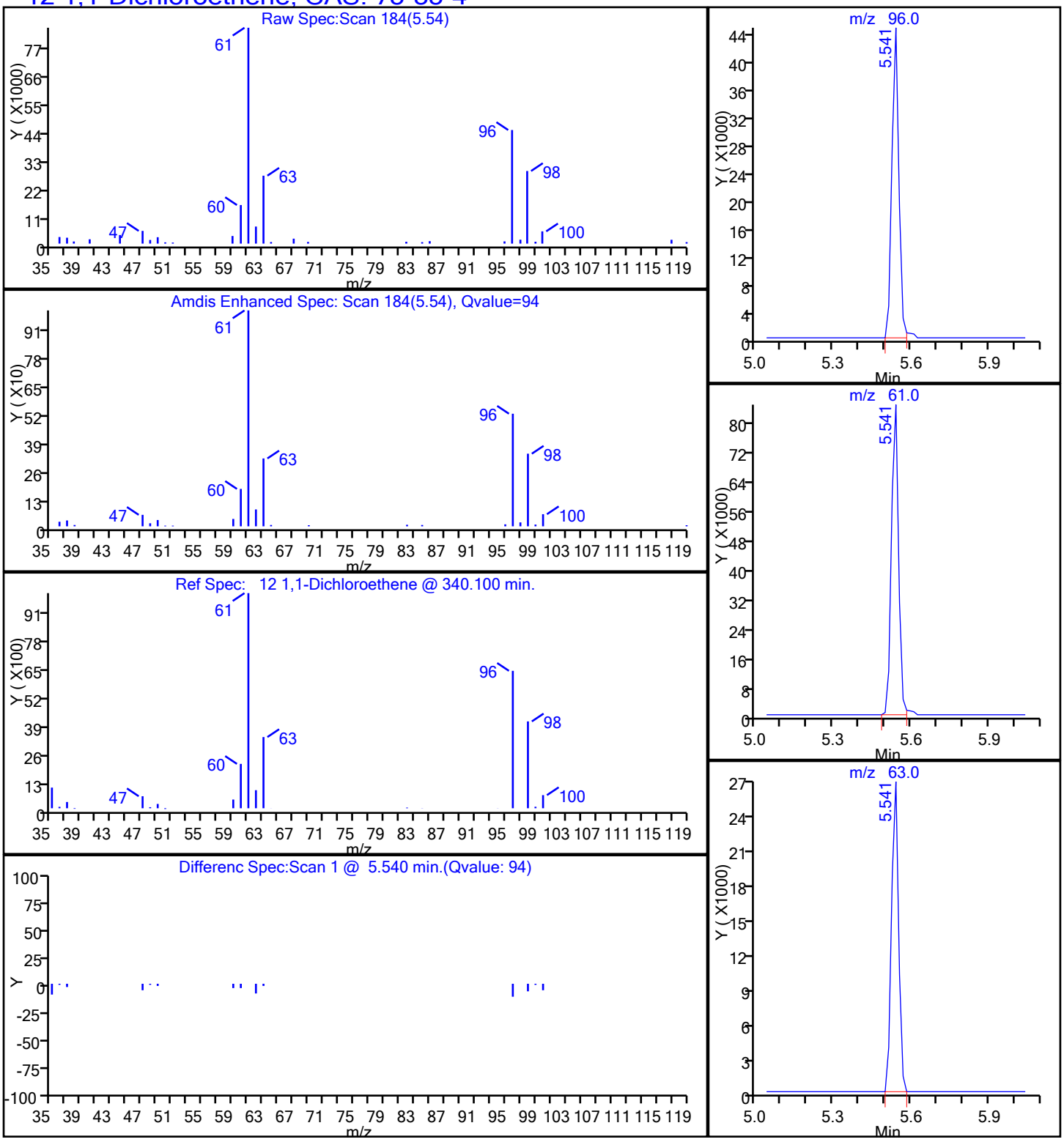
Report Date: 08-Sep-2016 08:40:03 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4974.D

Injection Date:	07-Sep-2016 17:16:30	Instrument ID:	VMSL		
Lims ID:	160-18852-B-6	Lab Sample ID:	160-18852-6		
Client ID:	GW-BR08JC-082516				
Operator ID:	SMCR	ALS Bottle#:	17	Worklist Smp#:	21
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

12 1,1-Dichloroethene, CAS: 75-35-4

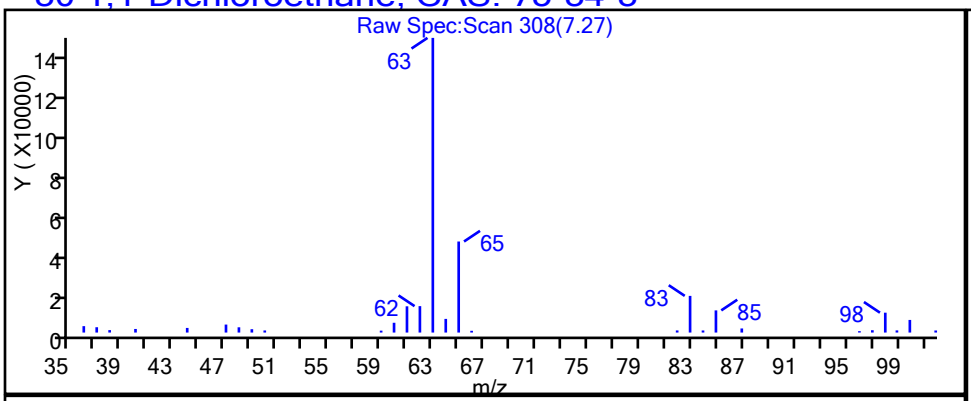


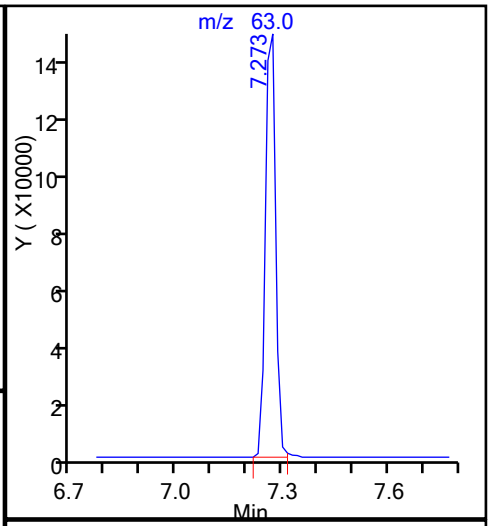
Report Date: 08-Sep-2016 08:40:03 Chrom Revision: 2.2 20-Apr-2016 13:59:46

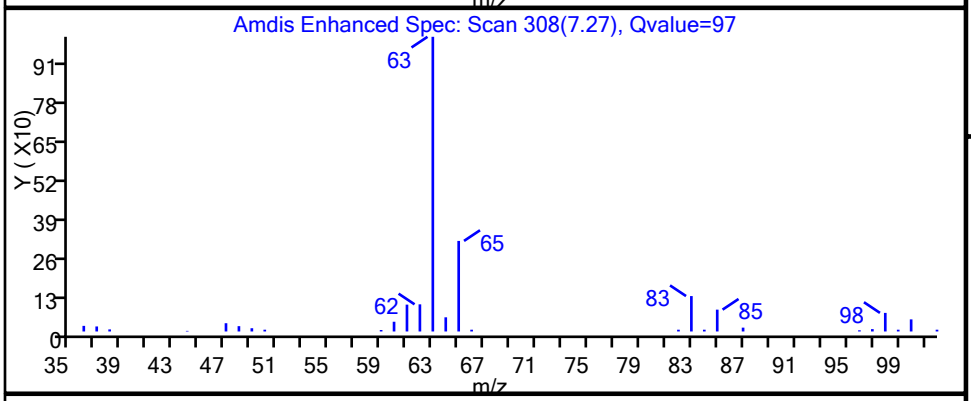
TestAmerica St. Louis

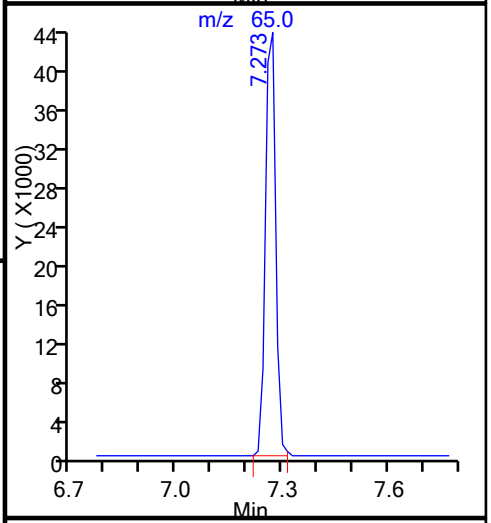
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4974.D				
Injection Date:	07-Sep-2016 17:16:30	Instrument ID:	VMSL		
Lims ID:	160-18852-B-6	Lab Sample ID:	160-18852-6		
Client ID:	GW-BR08JC-082516				
Operator ID:	SMCR	ALS Bottle#:	17	Worklist Smp#:	21
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

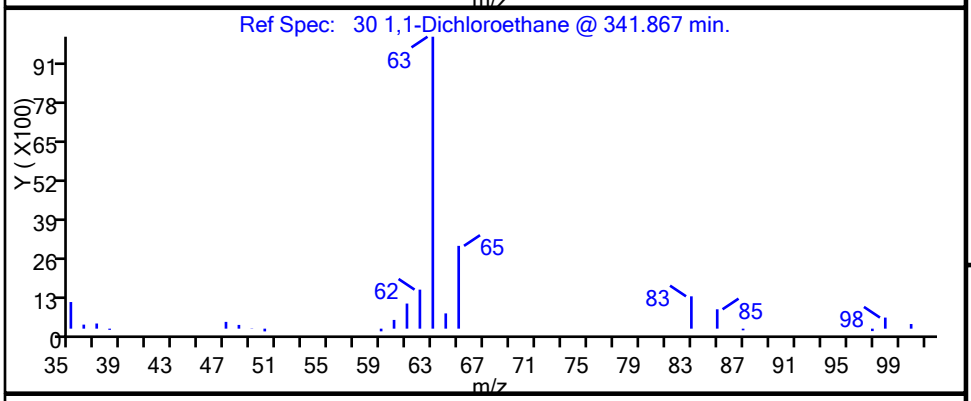
30 1,1-Dichloroethane, CAS: 75-34-3

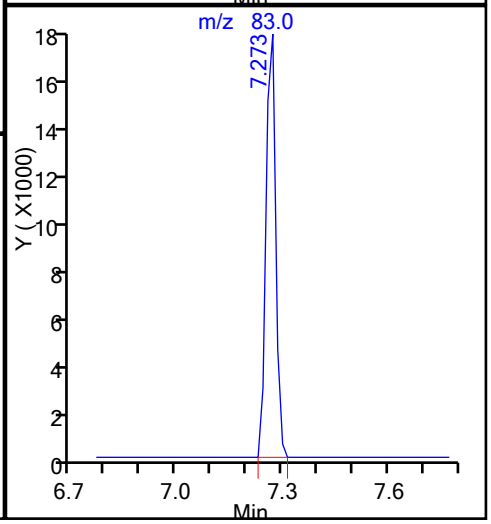


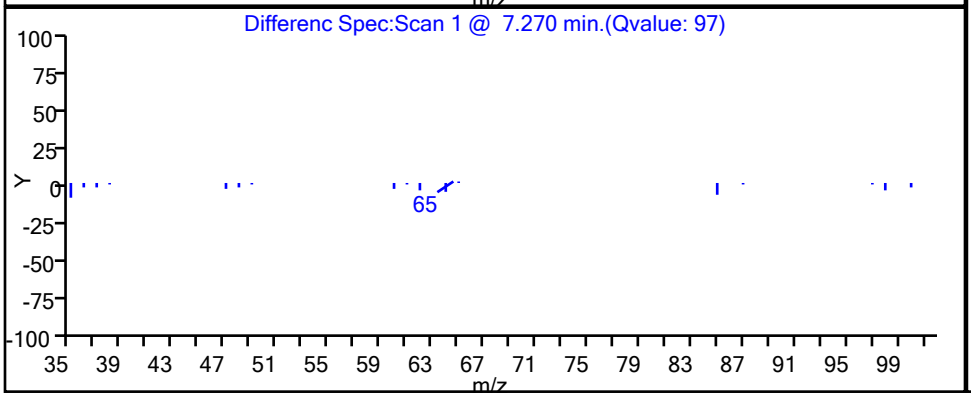










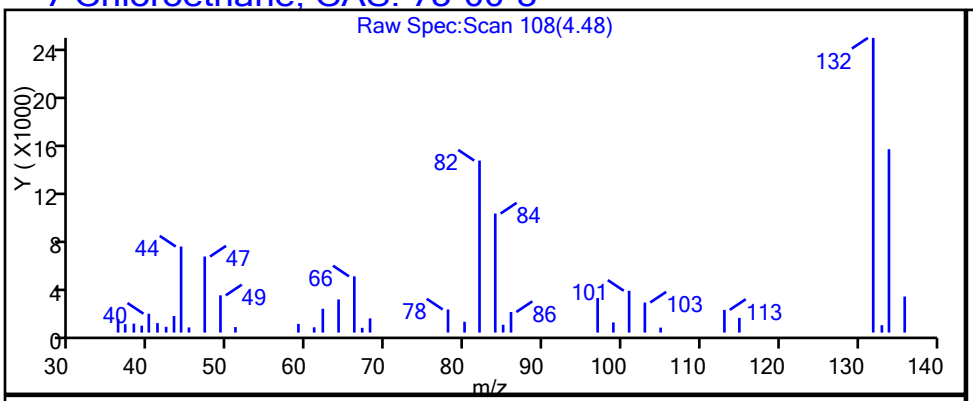


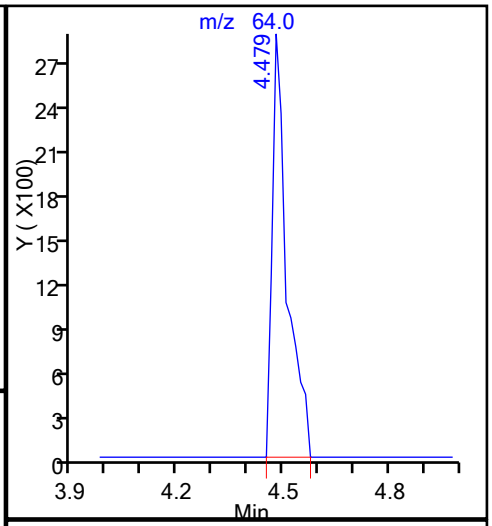
Report Date: 08-Sep-2016 08:40:03 Chrom Revision: 2.2 20-Apr-2016 13:59:46

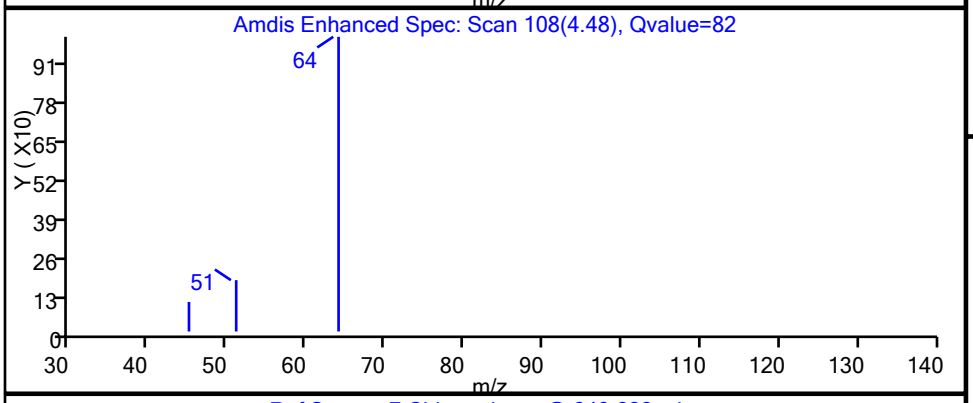
TestAmerica St. Louis

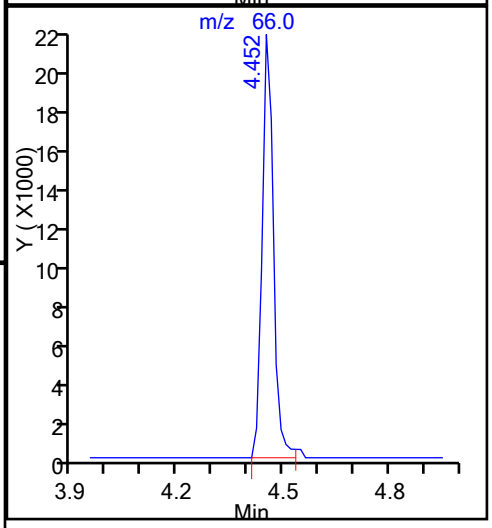
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4974.D				
Injection Date:	07-Sep-2016 17:16:30	Instrument ID:	VMSL		
Lims ID:	160-18852-B-6	Lab Sample ID:	160-18852-6		
Client ID:	GW-BR08JC-082516				
Operator ID:	SMCR	ALS Bottle#:	17	Worklist Smp#:	21
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

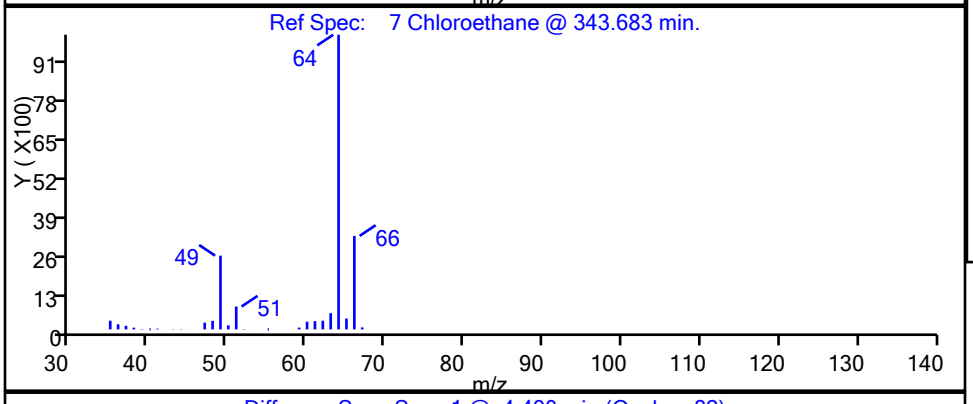
7 Chloroethane, CAS: 75-00-3

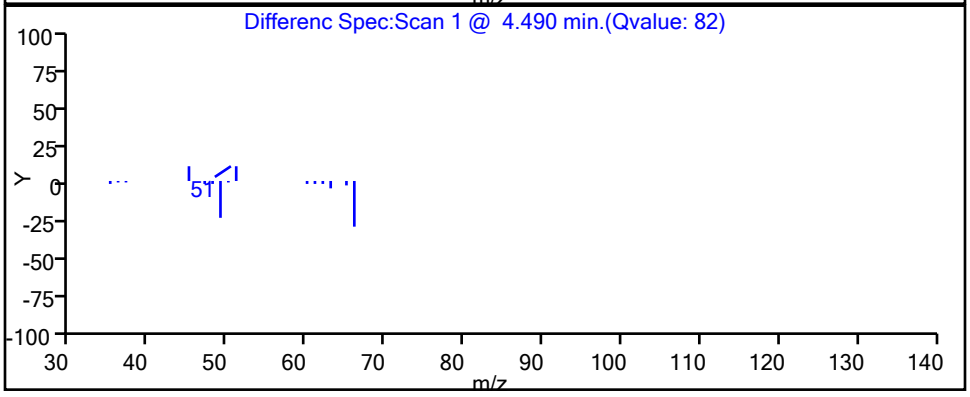










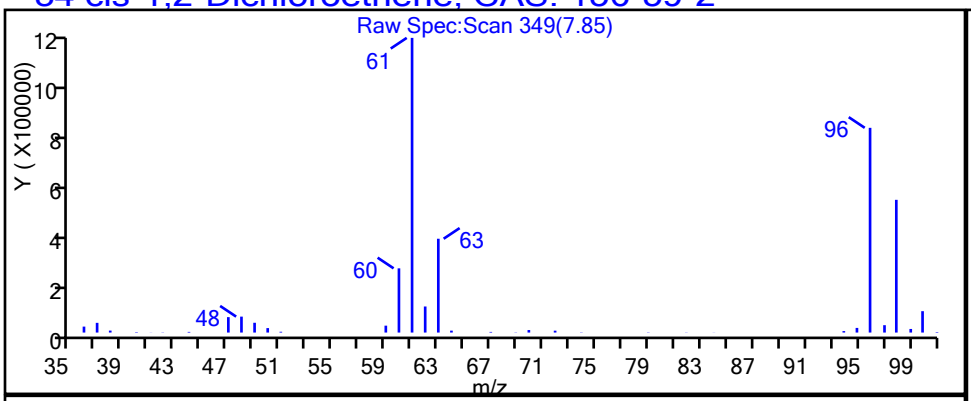


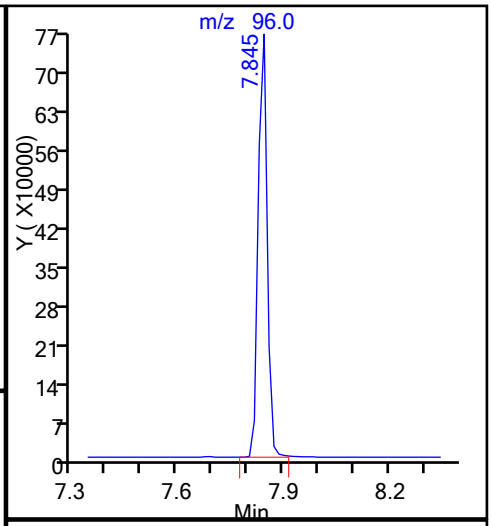
Report Date: 08-Sep-2016 08:40:03 Chrom Revision: 2.2 20-Apr-2016 13:59:46

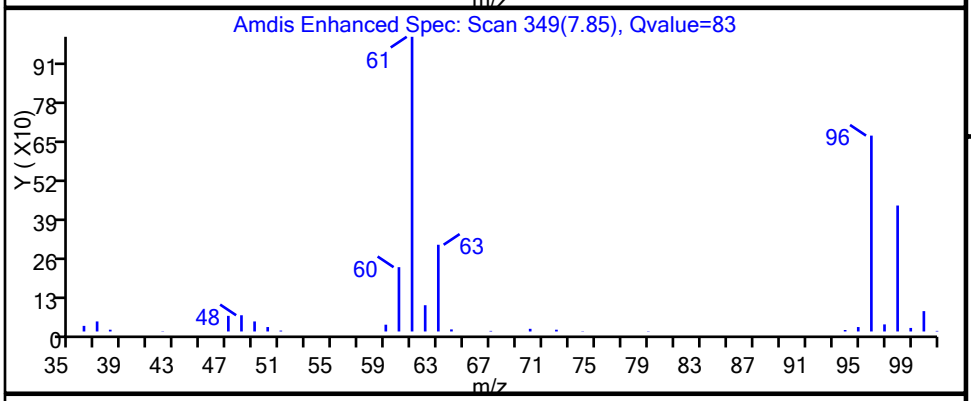
TestAmerica St. Louis

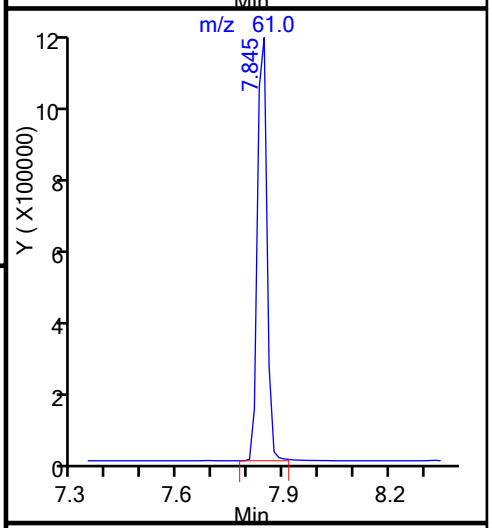
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4974.D				
Injection Date:	07-Sep-2016 17:16:30	Instrument ID:	VMSL		
Lims ID:	160-18852-B-6	Lab Sample ID:	160-18852-6		
Client ID:	GW-BR08JC-082516				
Operator ID:	SMCR	ALS Bottle#:	17	Worklist Smp#:	21
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

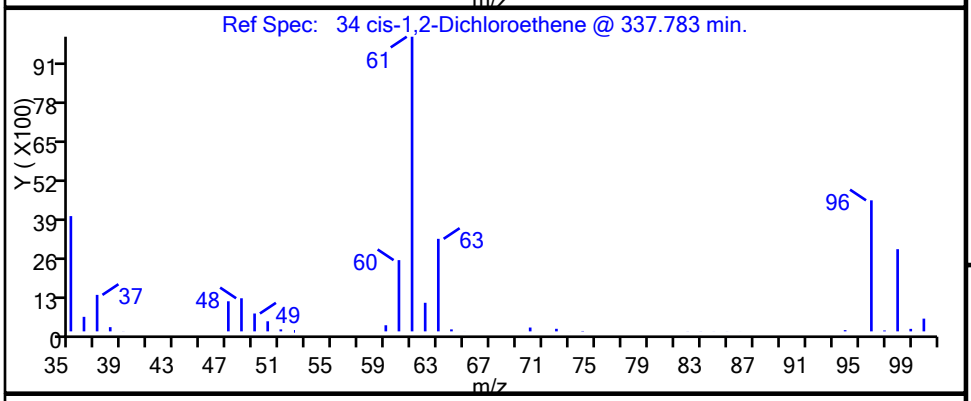
34 cis-1,2-Dichloroethene, CAS: 156-59-2

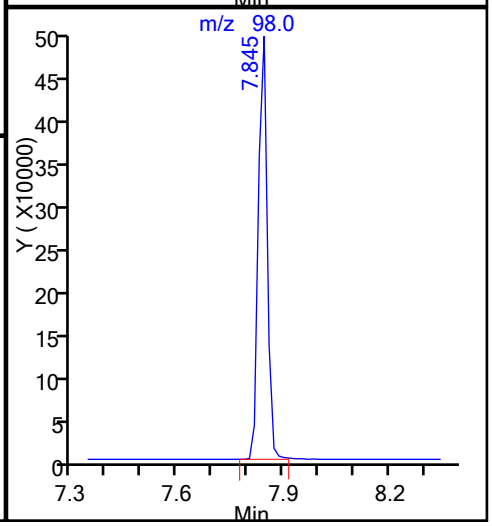


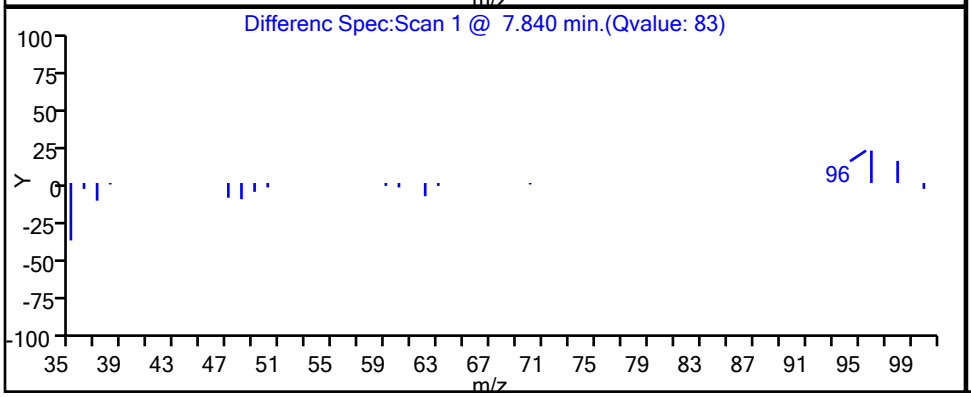












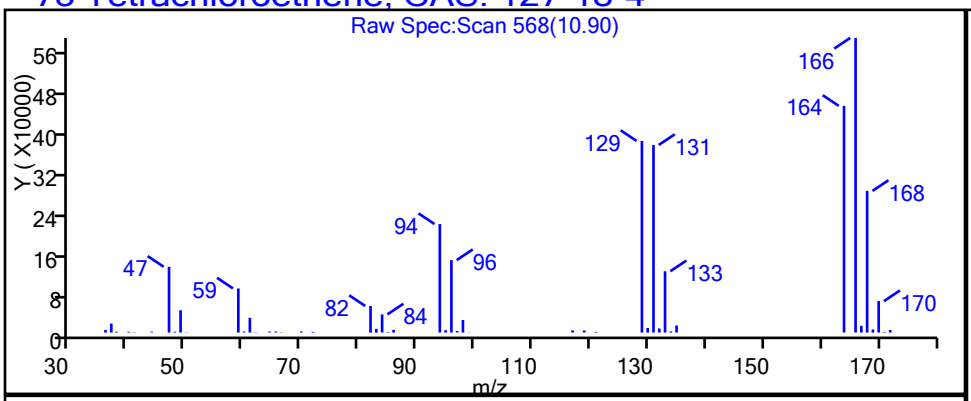
Report Date: 08-Sep-2016 08:40:03 Chrom Revision: 2.2 20-Apr-2016 13:59:46

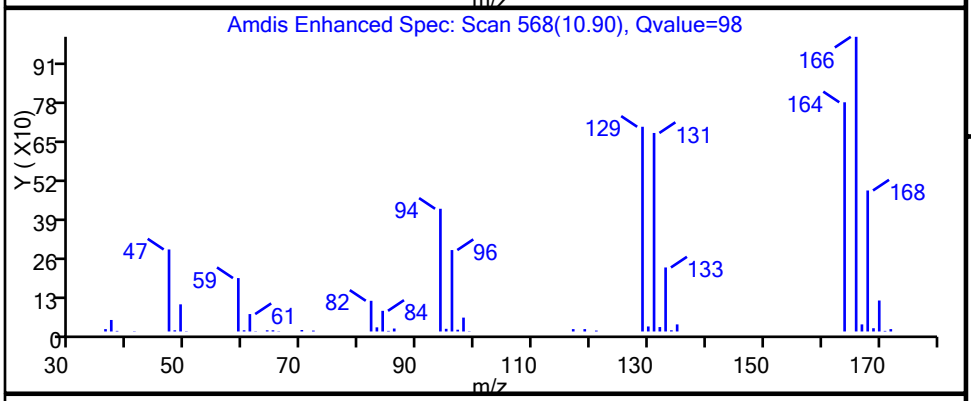
TestAmerica St. Louis

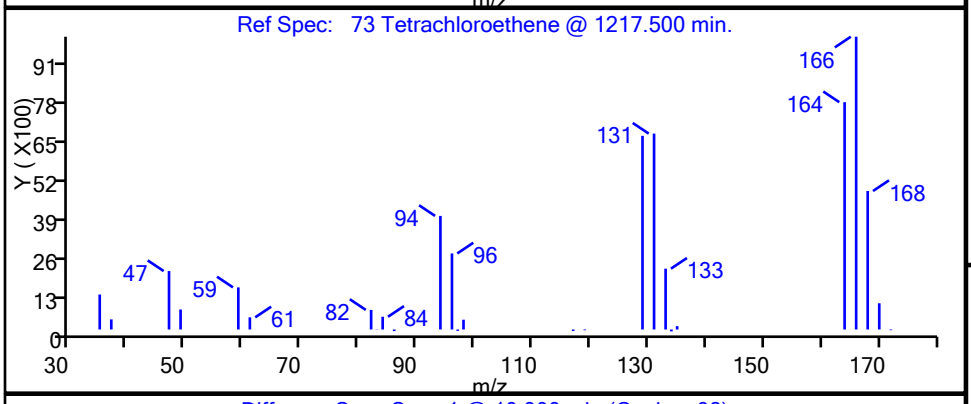
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4974.D

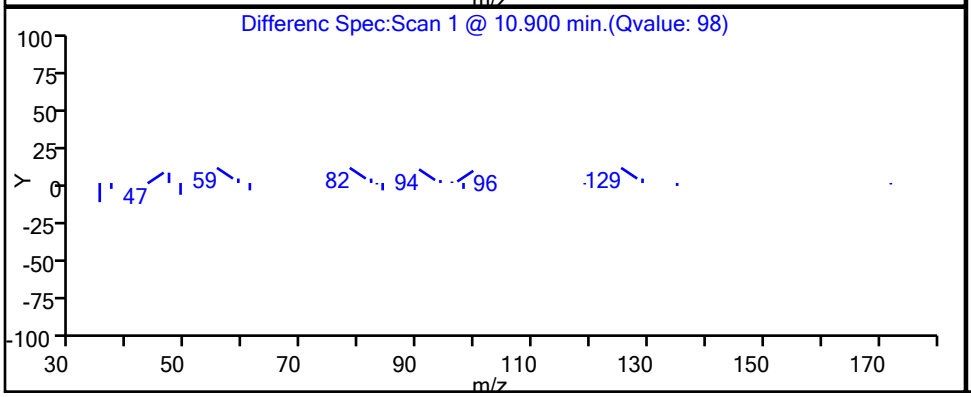
Injection Date:	07-Sep-2016 17:16:30	Instrument ID:	VMSL		
Lims ID:	160-18852-B-6	Lab Sample ID:	160-18852-6		
Client ID:	GW-BR08JC-082516				
Operator ID:	SMCR	ALS Bottle#:	17	Worklist Smp#:	21
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

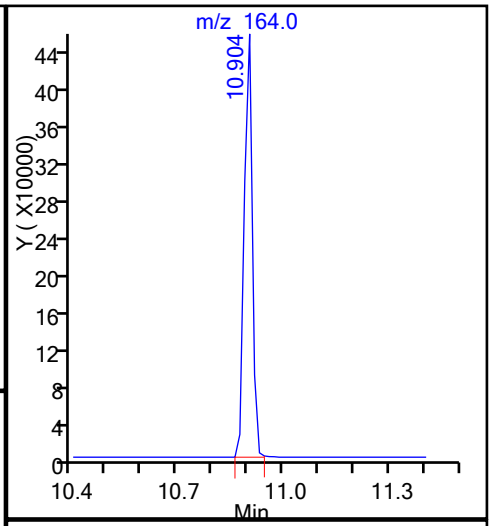
73 Tetrachloroethene, CAS: 127-18-4

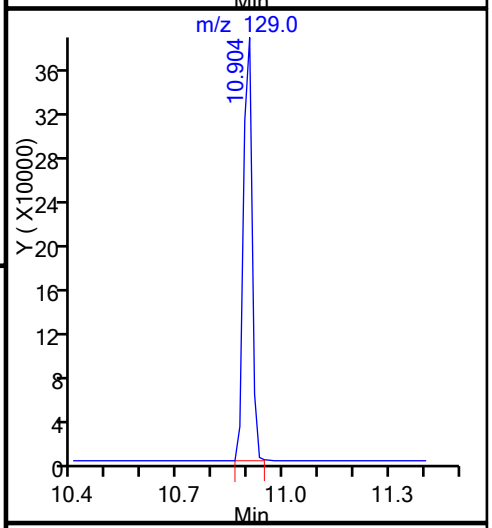


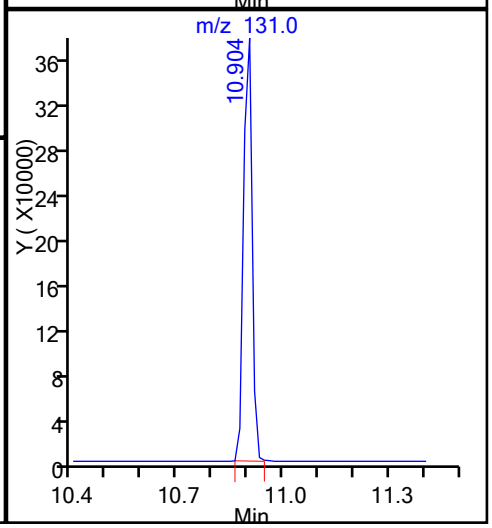












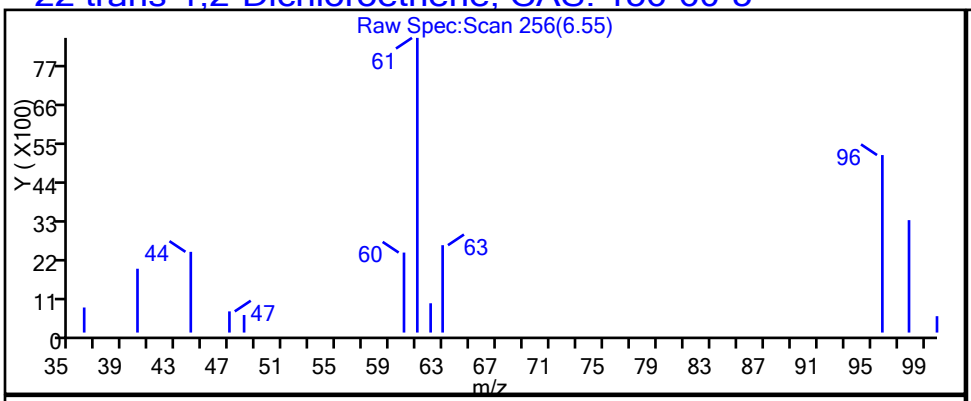
Report Date: 08-Sep-2016 08:40:03 Chrom Revision: 2.2 20-Apr-2016 13:59:46

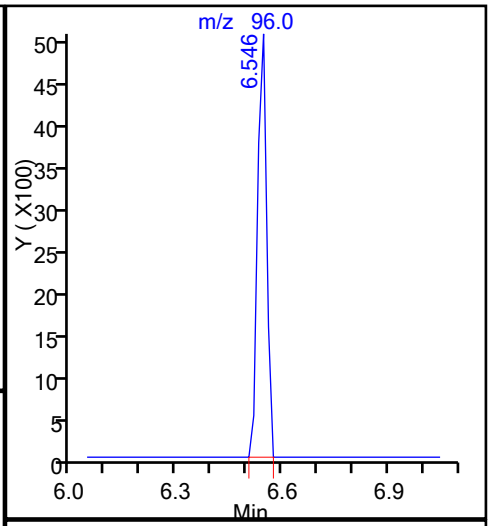
TestAmerica St. Louis

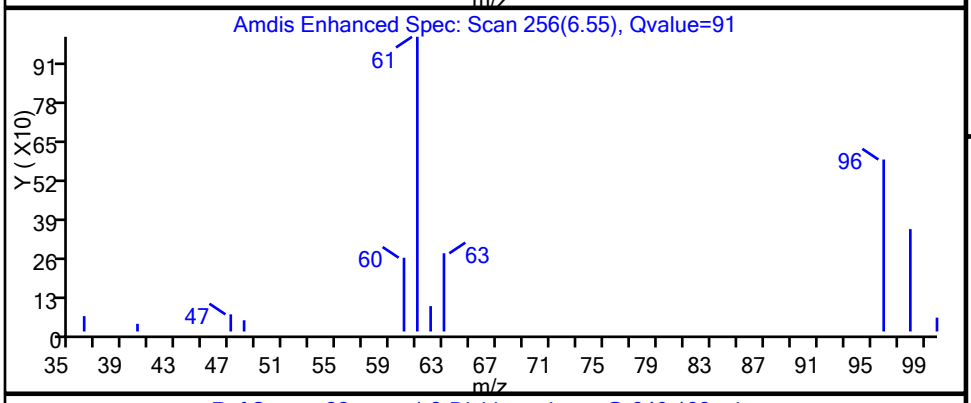
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4974.D

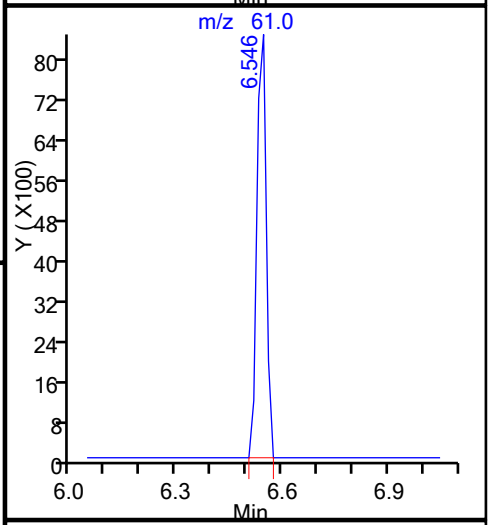
Injection Date:	07-Sep-2016 17:16:30	Instrument ID:	VMSL		
Lims ID:	160-18852-B-6	Lab Sample ID:	160-18852-6		
Client ID:	GW-BR08JC-082516				
Operator ID:	SMCR	ALS Bottle#:	17	Worklist Smp#:	21
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

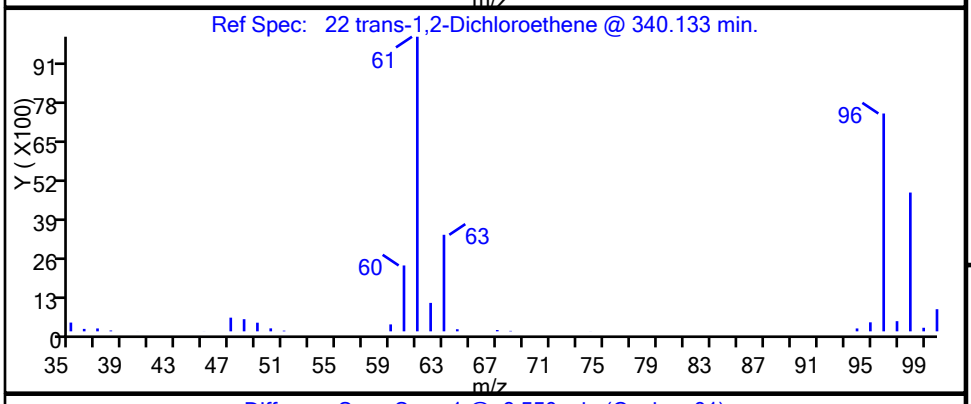
22 trans-1,2-Dichloroethene, CAS: 156-60-5

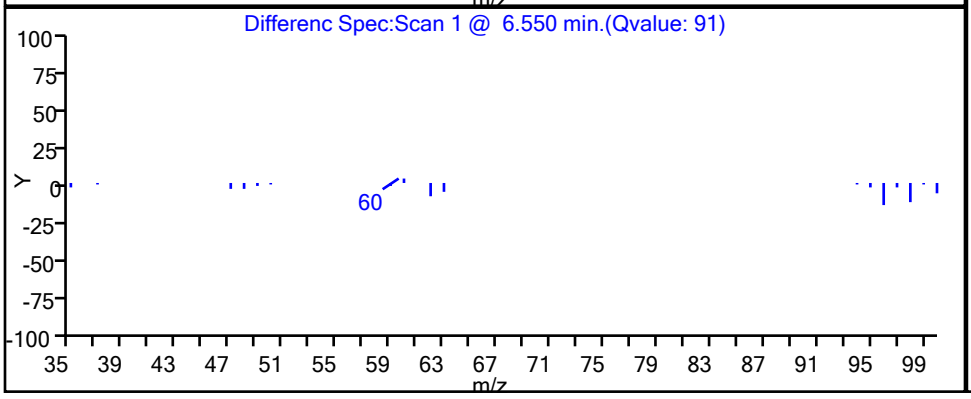


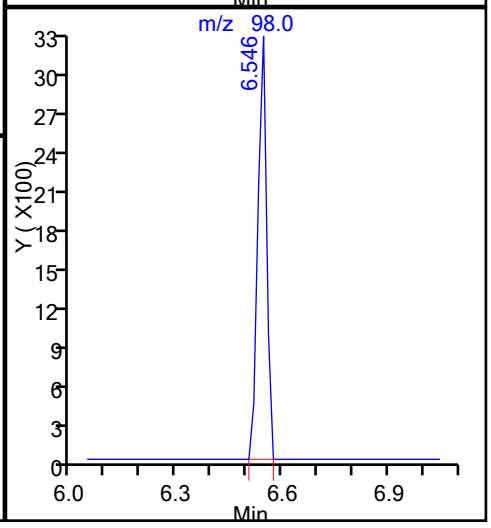










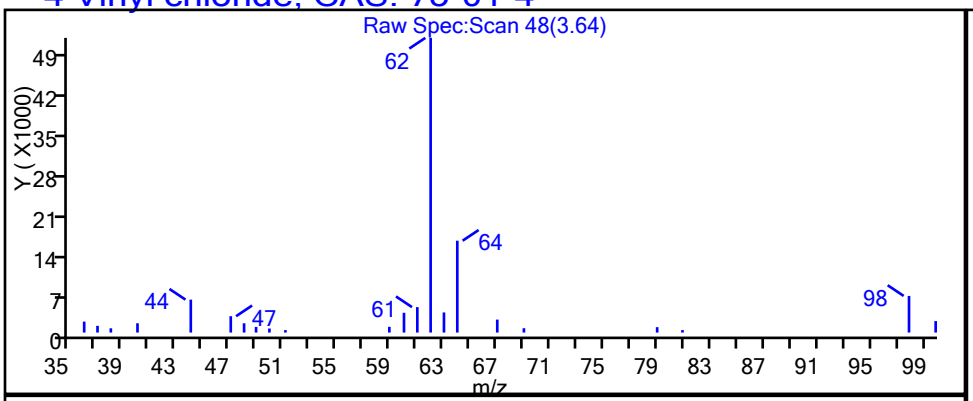


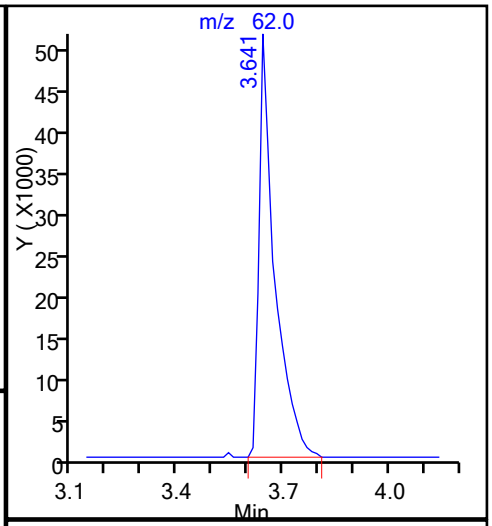
Report Date: 08-Sep-2016 08:40:03 Chrom Revision: 2.2 20-Apr-2016 13:59:46

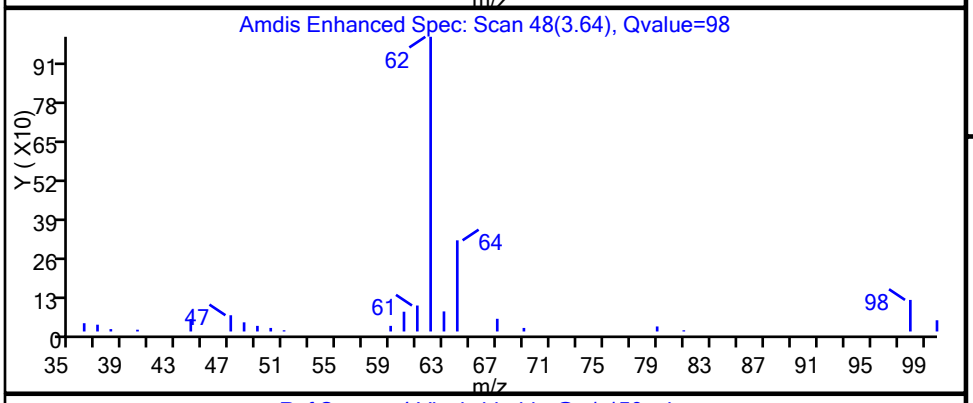
TestAmerica St. Louis

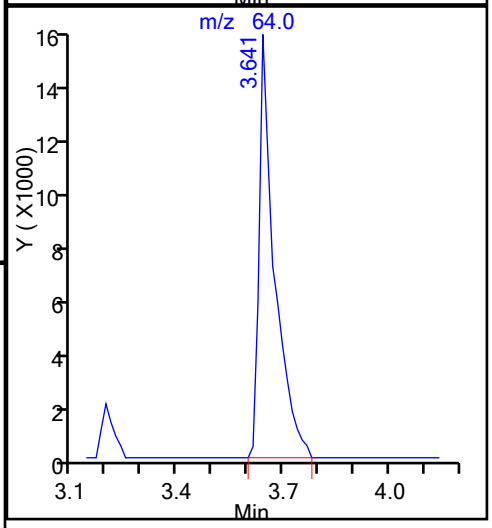
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4974.D				
Injection Date:	07-Sep-2016 17:16:30	Instrument ID:	VMSL		
Lims ID:	160-18852-B-6	Lab Sample ID:	160-18852-6		
Client ID:	GW-BR08JC-082516				
Operator ID:	SMCR	ALS Bottle#:	17	Worklist Smp#:	21
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

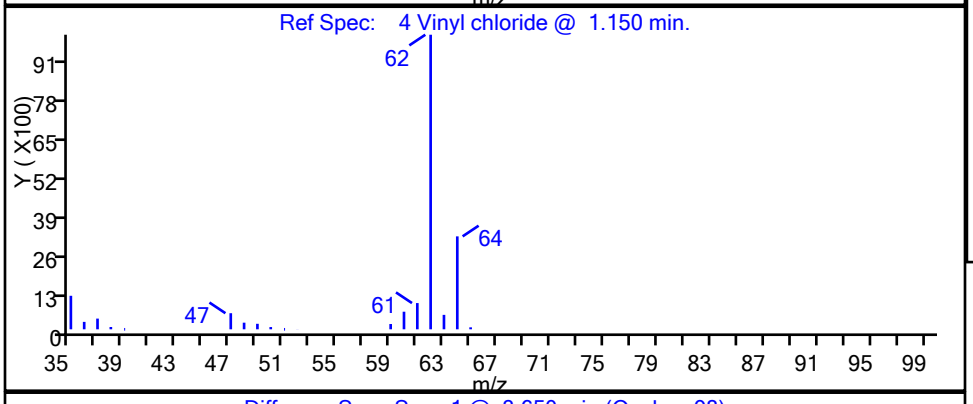
4 Vinyl chloride, CAS: 75-01-4

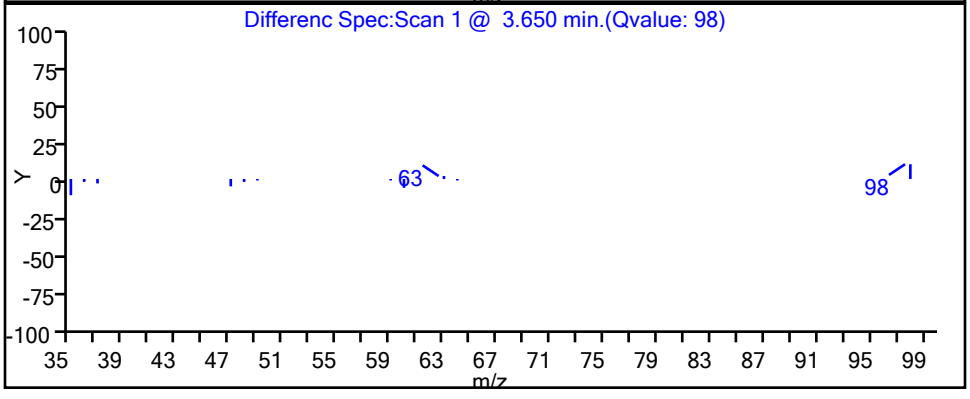












FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR08JC-082516 | Lab Sample ID: 160-18852-6

Matrix: Water | Lab File ID: LSMP4871.D

Analysis Method: 8260C | Date Collected: 08/25/2016 10:40

Sample wt/vol: 25(mL) | Date Analyzed: 09/04/2016 19:06

Soil Aliquot Vol: | Dilution Factor: 500

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 267958 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	7100		500	130

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	111		75-129
460-00-4	4-Bromofluorobenzene (Surr)	114		81-130
1868-53-7	Dibromofluoromethane (Surr)	113		81-124
2037-26-5	Toluene-d8 (Surr)	114		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4871.D
Lims ID: 160-18852-A-6
Client ID: GW-BR08JC-082516
Sample Type: Client
Inject. Date: 04-Sep-2016 19:06:30 ALS Bottle#: 23 Worklist Smp#: 27
Purge Vol: 25.000 mL Dil. Factor: 500.0000
Sample Info: 160-0008391-027
Misc. Info.: 160-18852-a-6
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:46:01 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: rhoadess Date: 06-Sep-2016 07:06:34

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
3 Chloromethane	50		3.474				ND	
4 Vinyl chloride	62	3.641	3.641	0.000	96	16885	0.3527	
6 Bromomethane	94		4.256				ND	
7 Chloroethane	64		4.479				ND	
12 1,1-Dichloroethene	96		5.541				ND	
13 Carbon disulfide	76		5.583				ND	
S 15 1,2-Dichloroethene, Total	96				0		3.41	
20 Methylene Chloride	84		6.337				ND	
21 Acetone	43		6.407				ND	
22 trans-1,2-Dichloroethene	96		6.532				ND	
30 1,1-Dichloroethane	63	7.259	7.259	0.000	97	25932	0.4554	
33 Vinyl acetate	43		7.510				ND	
34 cis-1,2-Dichloroethene	96	7.845	7.831	0.014	83	97293	3.41	
38 Chloroform	83		8.097				ND	
40 Carbon tetrachloride	117		8.264				ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	232292	11.3	
43 1,1,1-Trichloroethane	97		8.334				ND	
45 2-Butanone (MEK)	43		8.404				ND	
48 Benzene	78		8.683				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.809	0.014	94	240177	11.1	
54 1,2-Dichloroethane	62		8.879				ND	
* 55 Fluorobenzene	96	9.074	9.074	0.000	99	1065249	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	96	453133	14.2	
59 n-Butanol	56		9.451				ND	
62 1,2-Dichloropropane	63		9.717				ND	
63 Dichlorobromomethane	83		9.759				ND	
67 cis-1,3-Dichloropropene	75		10.317				ND	
$ 68 Toluene-d8 (Surr)	98	10.499	10.485	0.014	95	997431	11.4	
69 Toluene	92		10.541				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
72 trans-1,3-Dichloropropene	75		10.890				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
73 Tetrachloroethene	164	10.904	10.890	0.014	97	68469	2.56	
75 1,1,2-Trichloroethane	83		11.043				ND	
76 Chlorodibromomethane	129		11.225				ND	
79 Ethylene Dibromide	107		11.476				ND	
80 2-Hexanone	43		11.574				ND	
* 83 Chlorobenzene-d5	117	11.909	11.909	0.000	89	671281	10.0	
82 Ethylbenzene	91		11.909				ND	
84 Chlorobenzene	112		11.923				ND	
86 m-Xylene & p-Xylene	106		12.035				ND	
88 o-Xylene	106		12.440				ND	
89 Styrene	104		12.482				ND	
90 Bromoform	173		12.552				ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	83	292108	11.4	
95 1,1,2,2-Tetrachloroethane	83		13.166				ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	306362	10.0	
115 1,2-Dibromo-3-Chloropropan	157		15.303				ND	
117 1,2,4-Trichlorobenzene	180		15.974				ND	
S 119 Xylenes, Total	106		16.500				ND	

Reagents:

I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

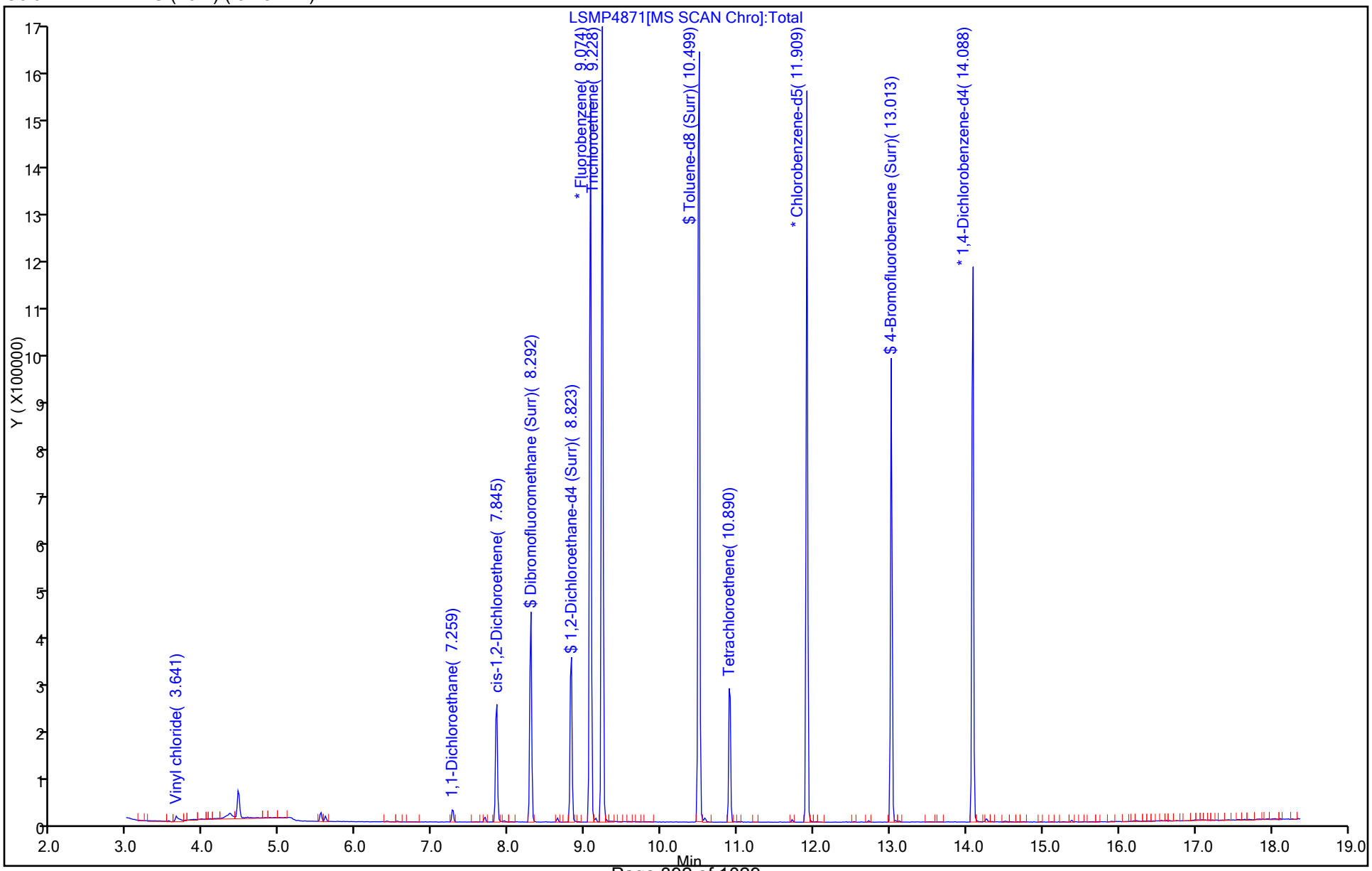
Report Date: 06-Sep-2016 08:46:16 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4871.D

Injection Date:	04-Sep-2016 19:06:30	Instrument ID:	VMSL	Operator ID:	ADB
Lims ID:	160-18852-A-6	Lab Sample ID:	160-18852-6	Worklist Smp#:	27
Client ID:	GW-BR08JC-082516				
Purge Vol:	25.000 mL	Dil. Factor:	500.0000	ALS Bottle#:	23
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4871.D
Lims ID: 160-18852-A-6
Client ID: GW-BR08JC-082516
Sample Type: Client
Inject. Date: 04-Sep-2016 19:06:30 ALS Bottle#: 23 Worklist Smp#: 27
Purge Vol: 25.000 mL Dil. Factor: 500.0000
Sample Info: 160-0008391-027
Misc. Info.: 160-18852-a-6
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:46:01 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: rhoadess Date: 06-Sep-2016 07:06:34

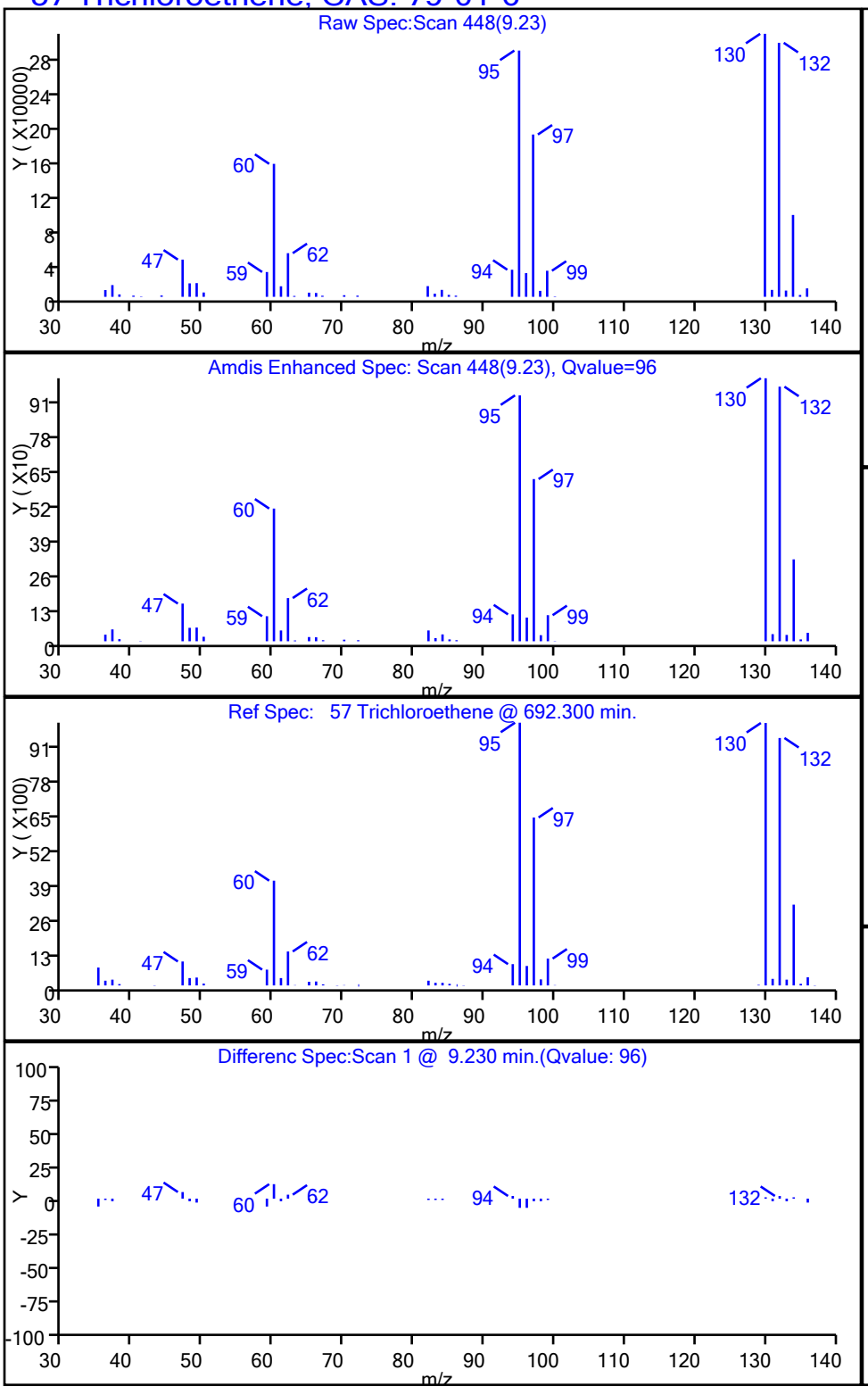
Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	11.3	113.48
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	11.1	110.92
$ 68 Toluene-d8 (Surr)	10.0	11.4	113.82
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.4	113.63

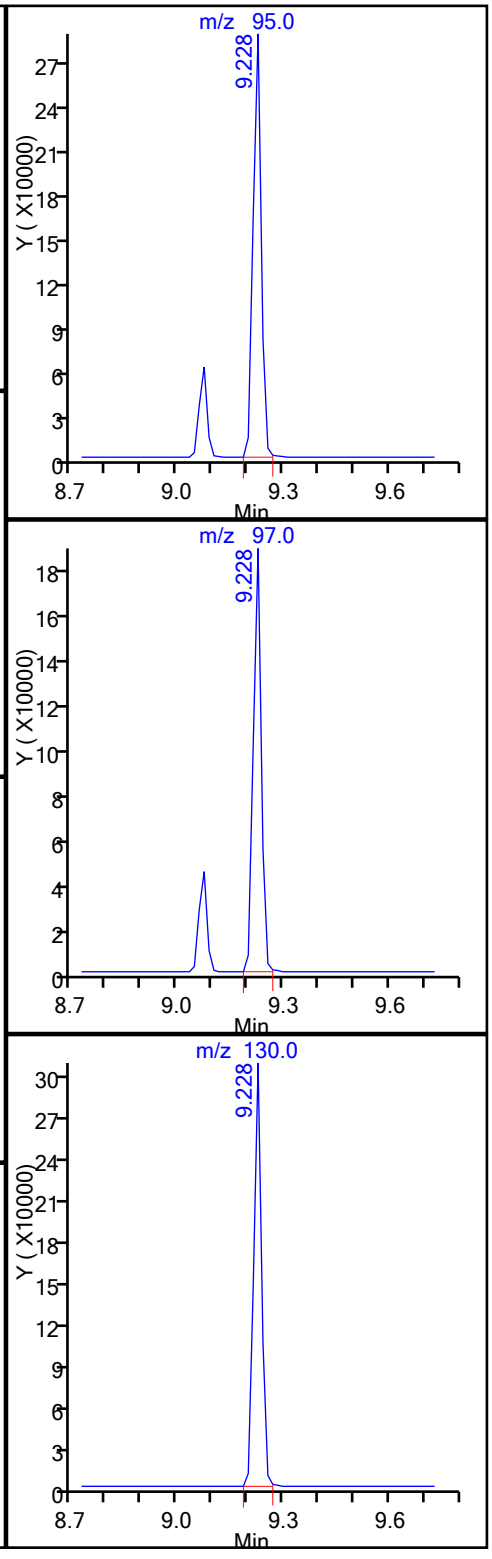
Report Date: 06-Sep-2016 08:46:16 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LSMP4871.D				
Injection Date:	04-Sep-2016 19:06:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-6	Lab Sample ID:	160-18852-6		
Client ID:	GW-BR08JC-082516				
Operator ID:	ADB	ALS Bottle#:	23	Worklist Smp#:	27
Purge Vol:	25.000 mL	Dil. Factor:	500.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

57 Trichloroethene, CAS: 79-01-6





FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR08JC-082516-FD | Lab Sample ID: 160-18852-7

Matrix: Water | Lab File ID: LSMP4980.D

Analysis Method: 8260C | Date Collected: 08/25/2016 10:40

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 19:47

Soil Aliquot Vol: | Dilution Factor: 50

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	ND		50	8.6
79-34-5	1,1,2,2-Tetrachloroethane	ND		50	5.0
79-00-5	1,1,2-Trichloroethane	ND		50	6.6
75-35-4	1,1-Dichloroethene	130		50	5.0
75-34-3	1,1-Dichloroethane	220		50	3.5
120-82-1	1,2,4-Trichlorobenzene	ND		50	5.0
96-12-8	1,2-Dibromo-3-Chloropropane	ND		50	21
107-06-2	1,2-Dichloroethane	ND		50	11
78-87-5	1,2-Dichloropropane	ND		50	5.0
78-93-3	2-Butanone	ND		250	23
591-78-6	2-Hexanone	ND		250	12
108-10-1	4-Methyl-2-pentanone	ND		250	11
67-64-1	Acetone	ND		100	28
71-43-2	Benzene	ND		50	5.0
75-25-2	Bromoform	ND		50	8.5
74-83-9	Methyl bromide	ND		100	13
75-15-0	Carbon disulfide	ND		50	5.0
56-23-5	Carbon tetrachloride	ND		50	9.1
108-90-7	Chlorobenzene	ND		50	5.5
124-48-1	Chlorodibromomethane	ND		50	7.2
75-00-3	Chloroethane	16	J	100	8.2
67-66-3	Chloroform	ND		50	5.0
74-87-3	Chloromethane	ND		100	5.1
10061-01-5	cis-1,3-Dichloropropene	ND		50	7.9
75-27-4	Bromodichloromethane	ND		50	6.9
100-41-4	Ethylbenzene	ND		50	6.1
106-93-4	1,2-Dibromoethane	ND		50	6.5
75-09-2	Methylene Chloride	ND		50	14
71-36-3	n-Butanol	ND		2500	620
100-42-5	Styrene	ND		50	6.7
127-18-4	Tetrachloroethene	1300		50	9.0
108-88-3	Toluene	ND		50	7.0
156-60-5	trans-1,2-Dichloroethene	13	J	50	5.2
10061-02-6	trans-1,3-Dichloropropene	ND		50	5.0
108-05-4	Vinyl acetate	ND		100	9.0
75-01-4	Vinyl chloride	160		100	9.7

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR08JC-082516-FD | Lab Sample ID: 160-18852-7

Matrix: Water | Lab File ID: LSMP4980.D

Analysis Method: 8260C | Date Collected: 08/25/2016 10:40

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 19:47

Soil Aliquot Vol: | Dilution Factor: 50

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1330-20-7	Xylenes, Total	ND		150	13

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	107		75-129
460-00-4	4-Bromofluorobenzene (Surr)	114		81-130
1868-53-7	Dibromofluoromethane (Surr)	108		81-124
2037-26-5	Toluene-d8 (Surr)	114		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4980.D
Lims ID: 160-18852-A-7
Client ID: GW-BR08JC-082516-FD
Sample Type: Client
Inject. Date: 07-Sep-2016 19:47:30 ALS Bottle#: 23 Worklist Smp#: 27
Purge Vol: 25.000 mL Dil. Factor: 50.0000
Sample Info: 160-0008407-027
Misc. Info.: 160-18852-a-7
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:15:20

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
3 Chloromethane	50		3.474				ND	
4 Vinyl chloride	62	3.642	3.642	0.000	98	175883	3.15	
6 Bromomethane	94		4.256				ND	
7 Chloroethane	64	4.480	4.479	0.001	88	9136	0.3154	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	94	90558	2.61	
13 Carbon disulfide	76		5.583				ND	
S 15 1,2-Dichloroethene, Total	96				0		42.4	
20 Methylene Chloride	84		6.337				ND	
21 Acetone	43		6.407				ND	
22 trans-1,2-Dichloroethene	96	6.547	6.546	0.001	92	9510	0.2666	
30 1,1-Dichloroethane	63	7.259	7.259	0.000	97	291634	4.39	
33 Vinyl acetate	43		7.510				ND	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	84	1405242	42.2	E
38 Chloroform	83		8.097				ND	
40 Carbon tetrachloride	117		8.264				ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	258178	10.8	
43 1,1,1-Trichloroethane	97		8.334				ND	
45 2-Butanone (MEK)	43		8.404				ND	
48 Benzene	78		8.683				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	94	269486	10.7	
54 1,2-Dichloroethane	62		8.879				ND	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1243463	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	96	5104701	137.5	E
59 n-Butanol	56		9.451				ND	
62 1,2-Dichloropropane	63		9.717				ND	
63 Dichlorobromomethane	83		9.759				ND	
67 cis-1,3-Dichloropropene	75		10.317				ND	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	95	1204884	11.4	
69 Toluene	92		10.541				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
72 trans-1,3-Dichloropropene	75		10.890				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
73 Tetrachloroethene	164	10.904	10.904	0.000	97	814132	25.2	
75 1,1,2-Trichloroethane	83		11.058				ND	
76 Chlorodibromomethane	129		11.225				ND	
79 Ethylene Dibromide	107		11.477				ND	
80 2-Hexanone	43		11.588				ND	
* 83 Chlorobenzene-d5	117	11.910	11.910	0.000	89	811725	10.0	
82 Ethylbenzene	91		11.910				ND	
84 Chlorobenzene	112		11.923				ND	
86 m-Xylene & p-Xylene	106		12.035				ND	
88 o-Xylene	106		12.440				ND	
89 Styrene	104		12.482				ND	
90 Bromoform	173		12.552				ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	87	347594	11.4	
95 1,1,2,2-Tetrachloroethane	83		13.166				ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	362232	10.0	
115 1,2-Dibromo-3-Chloropropan	157		15.303				ND	
117 1,2,4-Trichlorobenzene	180		15.974				ND	
S 119 Xylenes, Total	106		16.500				ND	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Reagents:

I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

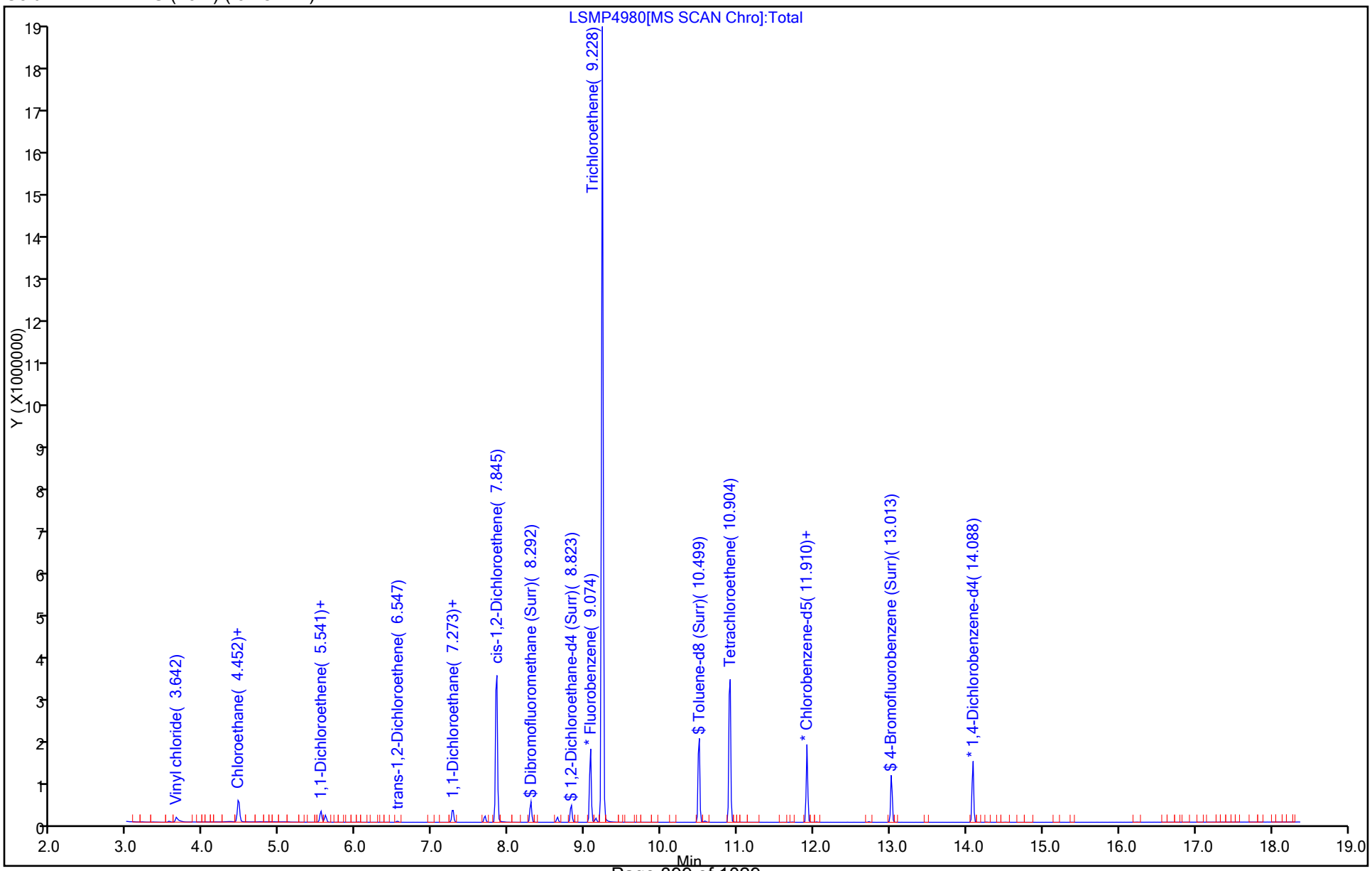
Report Date: 08-Sep-2016 08:40:11 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4980.D

Injection Date:	07-Sep-2016 19:47:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	160-18852-A-7	Lab Sample ID:	160-18852-7	Worklist Smp#:	27
Client ID:	GW-BR08JC-082516-FD				
Purge Vol:	25.000 mL	Dil. Factor:	50.0000	ALS Bottle#:	23
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4980.D
Lims ID: 160-18852-A-7
Client ID: GW-BR08JC-082516-FD
Sample Type: Client
Inject. Date: 07-Sep-2016 19:47:30 ALS Bottle#: 23 Worklist Smp#: 27
Purge Vol: 25.000 mL Dil. Factor: 50.0000
Sample Info: 160-0008407-027
Misc. Info.: 160-18852-a-7
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:15:20

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.8	108.05
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	10.7	106.61
$ 68 Toluene-d8 (Surr)	10.0	11.4	113.71
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.4	114.36

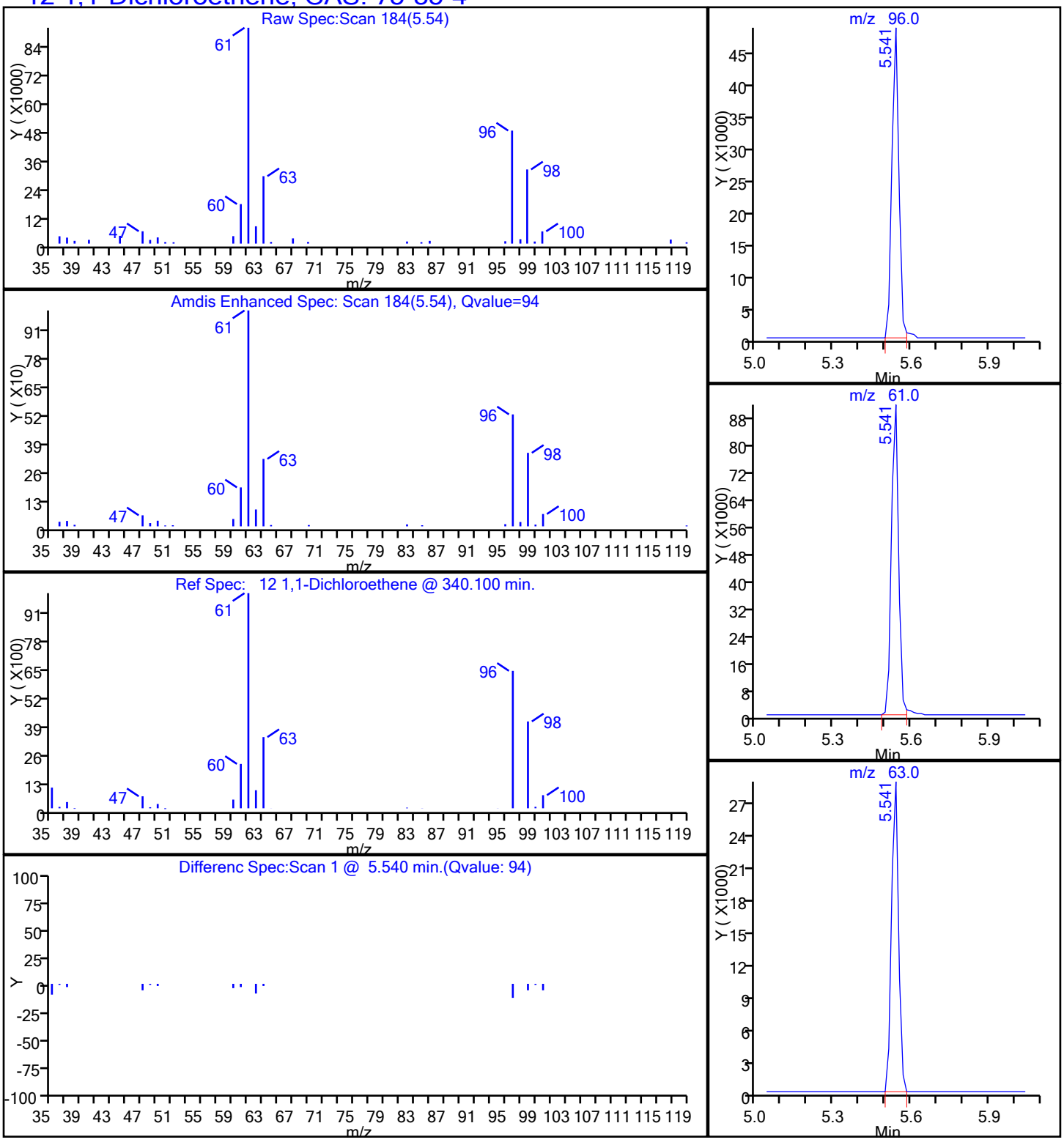
Report Date: 08-Sep-2016 08:40:11 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4980.D

Injection Date:	07-Sep-2016 19:47:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-7	Lab Sample ID:	160-18852-7		
Client ID:	GW-BR08JC-082516-FD				
Operator ID:	SMCR	ALS Bottle#:	23	Worklist Smp#:	27
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

12 1,1-Dichloroethene, CAS: 75-35-4

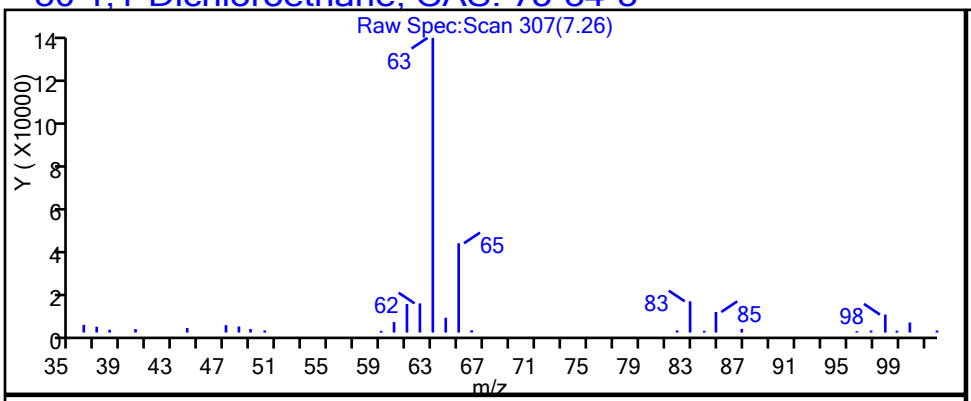


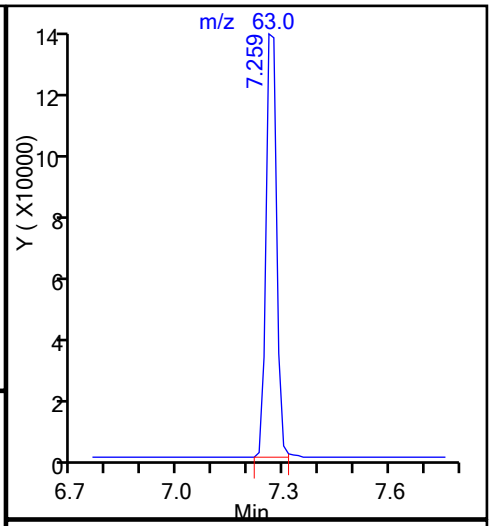
Report Date: 08-Sep-2016 08:40:11 Chrom Revision: 2.2 20-Apr-2016 13:59:46

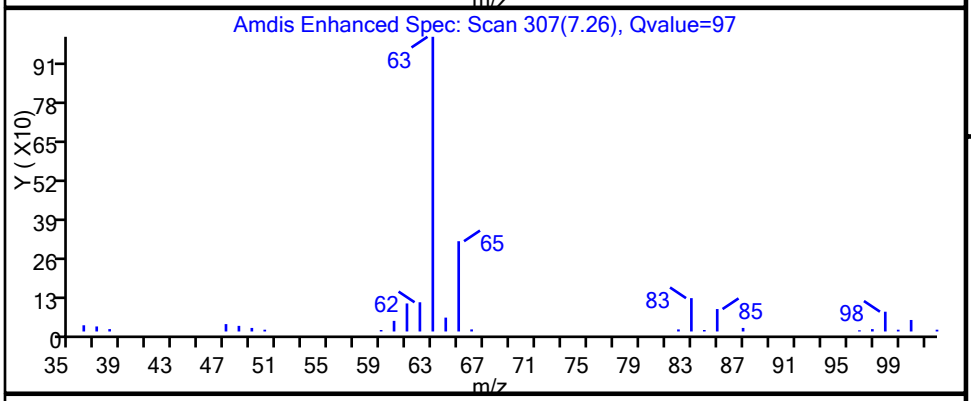
TestAmerica St. Louis

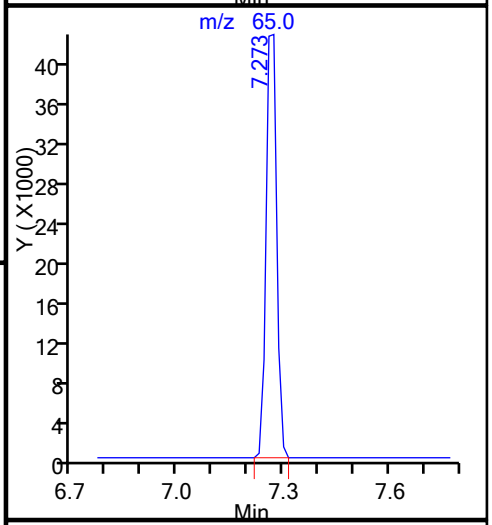
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4980.D				
Injection Date:	07-Sep-2016 19:47:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-7	Lab Sample ID:	160-18852-7		
Client ID:	GW-BR08JC-082516-FD				
Operator ID:	SMCR	ALS Bottle#:	23	Worklist Smp#:	27
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

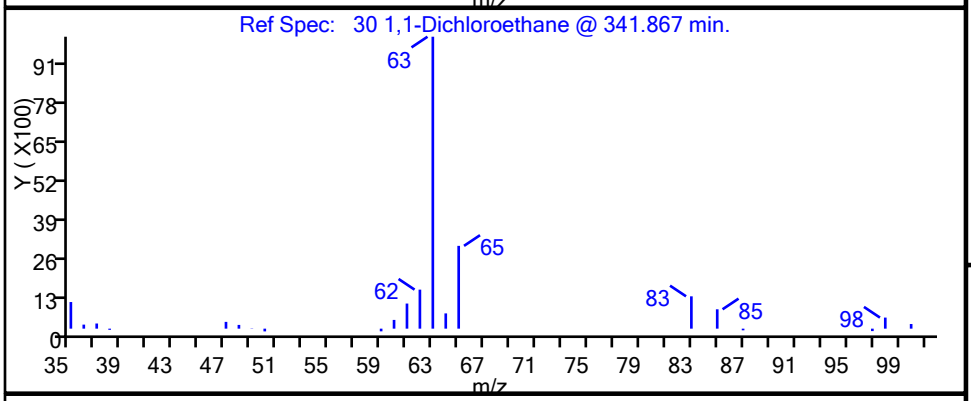
30 1,1-Dichloroethane, CAS: 75-34-3

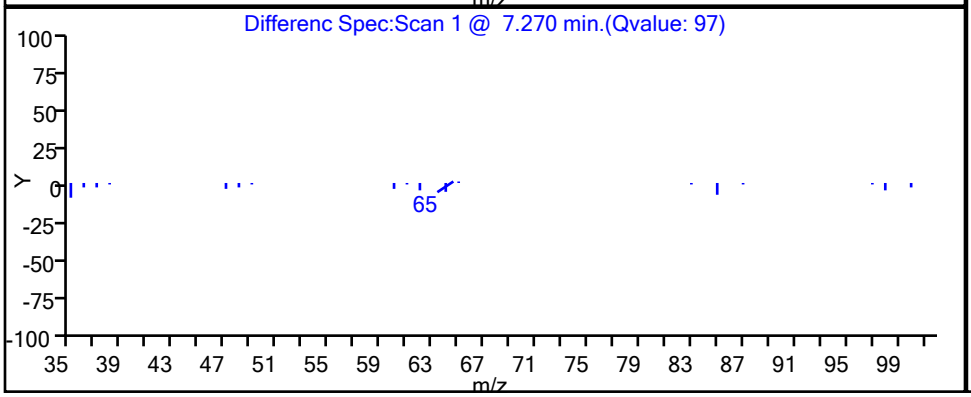


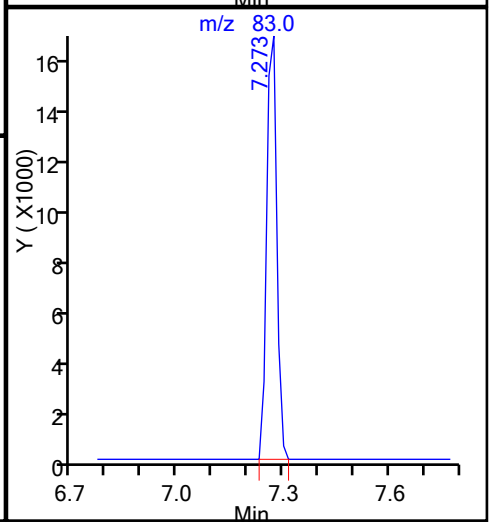












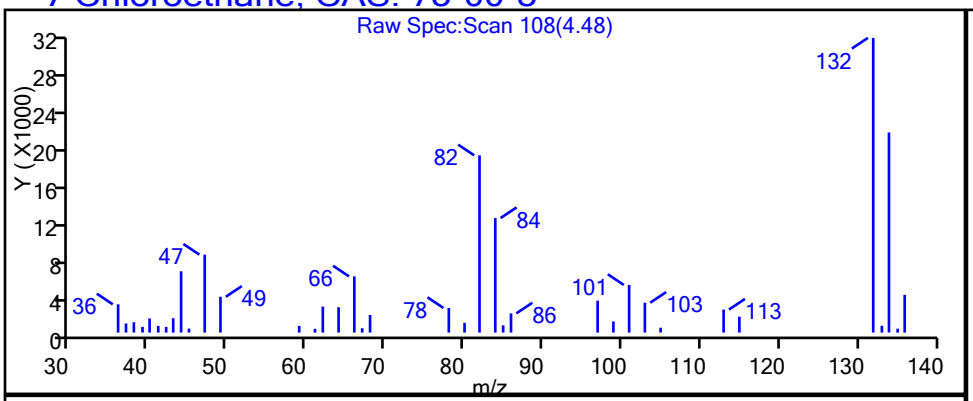
Report Date: 08-Sep-2016 08:40:11 Chrom Revision: 2.2 20-Apr-2016 13:59:46

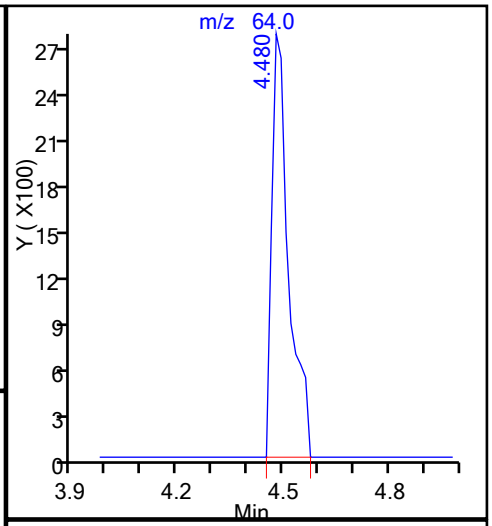
TestAmerica St. Louis

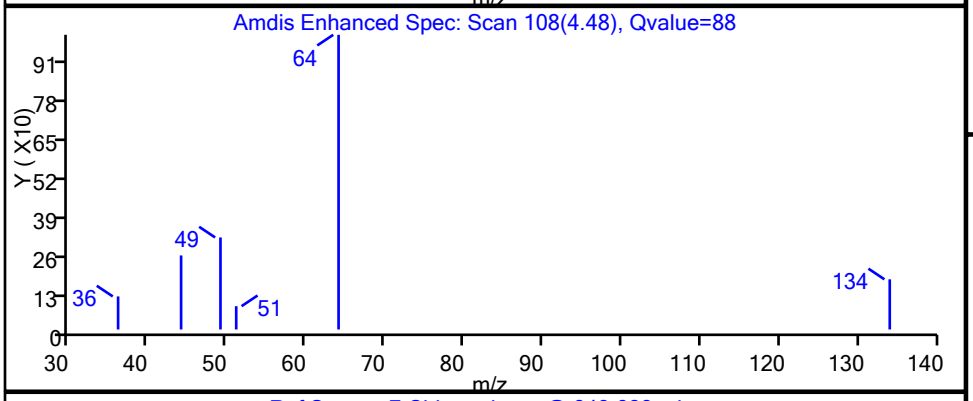
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4980.D

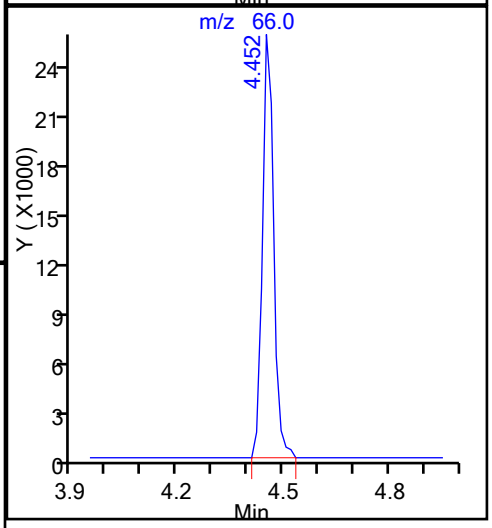
Injection Date:	07-Sep-2016 19:47:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-7	Lab Sample ID:	160-18852-7		
Client ID:	GW-BR08JC-082516-FD				
Operator ID:	SMCR	ALS Bottle#:	23	Worklist Smp#:	27
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

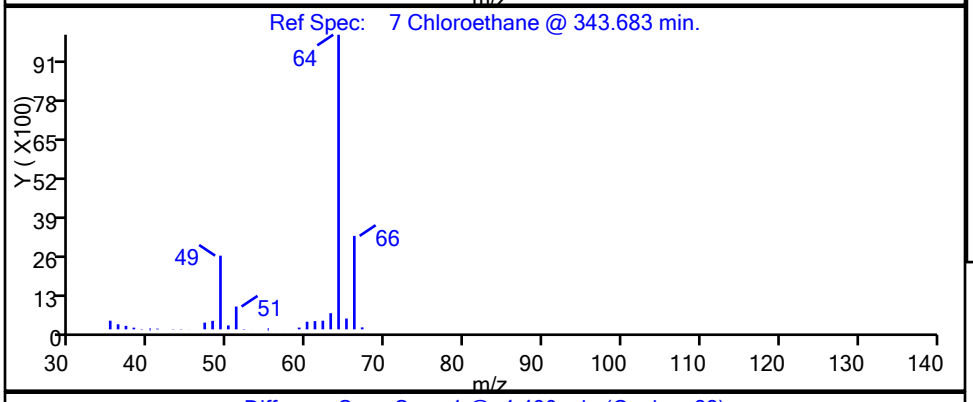
7 Chloroethane, CAS: 75-00-3

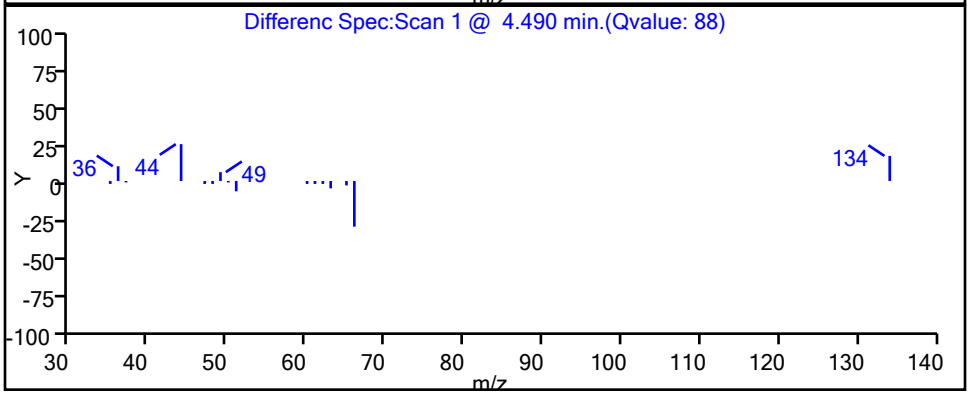












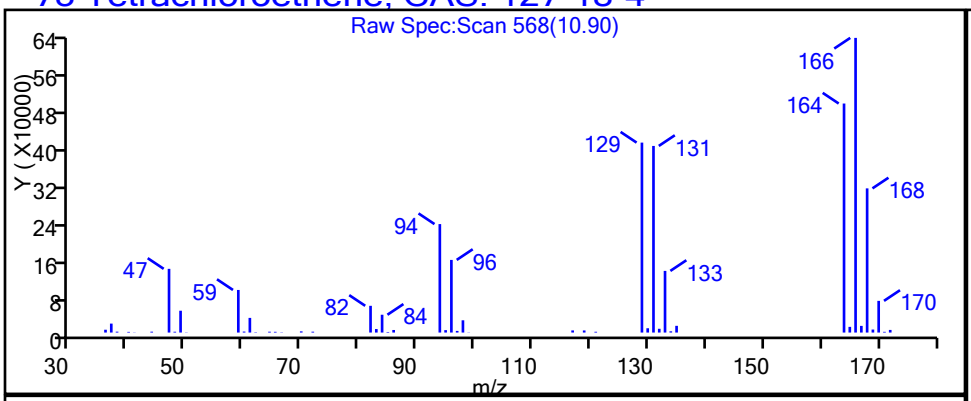
Report Date: 08-Sep-2016 08:40:11 Chrom Revision: 2.2 20-Apr-2016 13:59:46

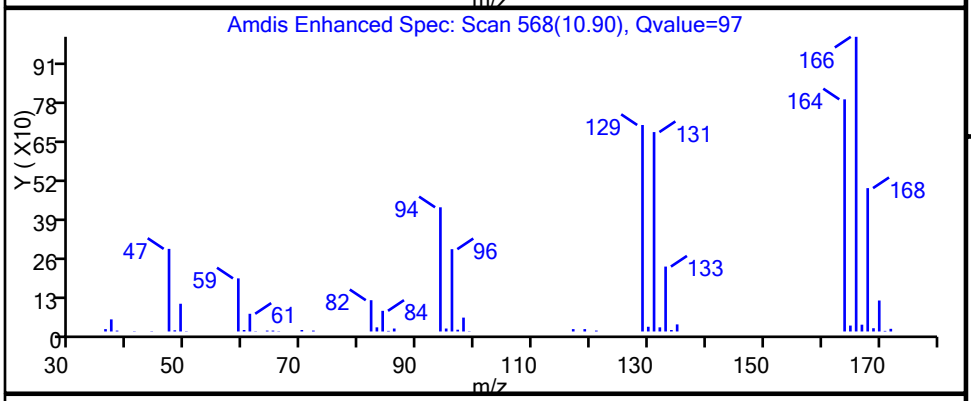
TestAmerica St. Louis

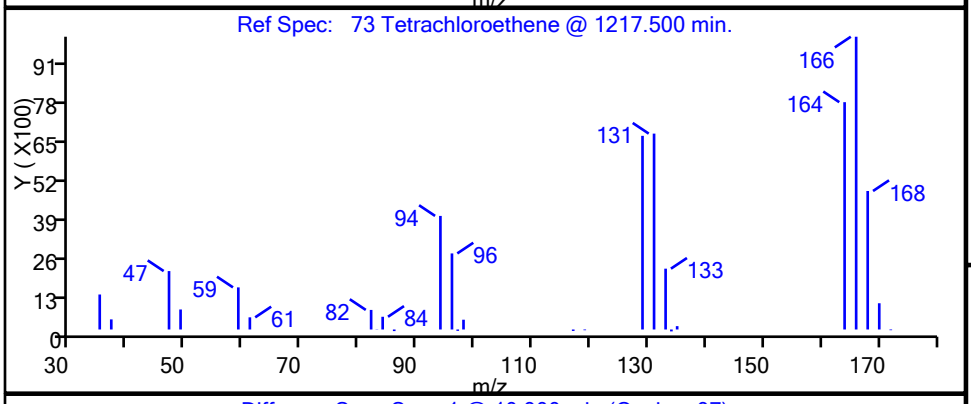
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4980.D

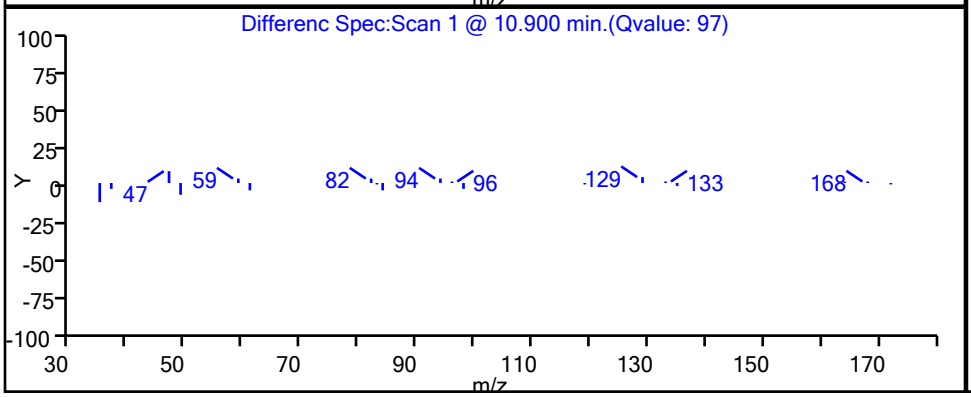
Injection Date:	07-Sep-2016 19:47:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-7	Lab Sample ID:	160-18852-7		
Client ID:	GW-BR08JC-082516-FD				
Operator ID:	SMCR	ALS Bottle#:	23	Worklist Smp#:	27
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

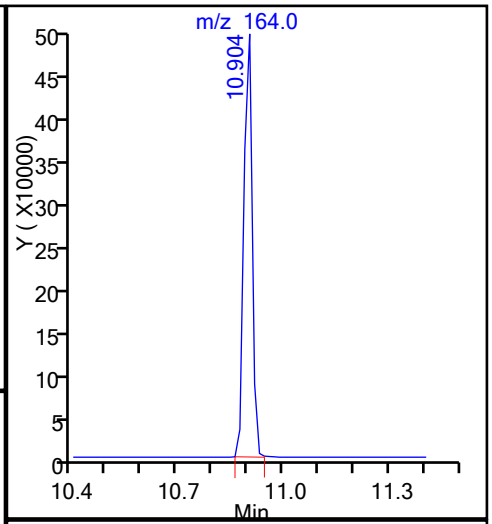
73 Tetrachloroethene, CAS: 127-18-4

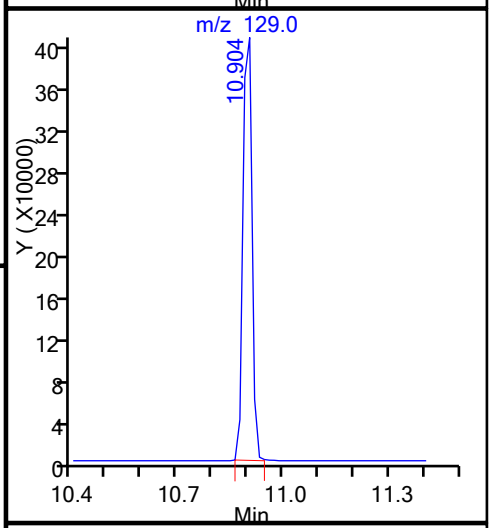


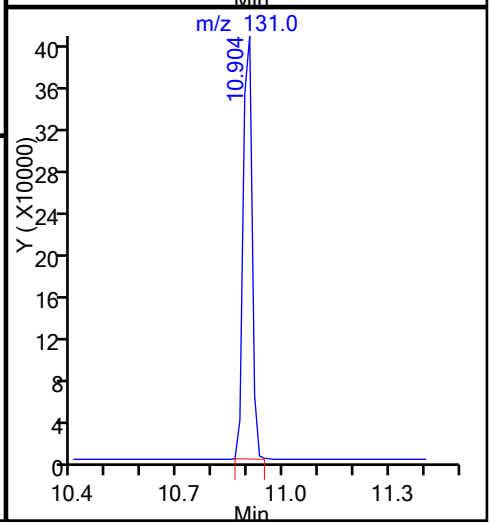












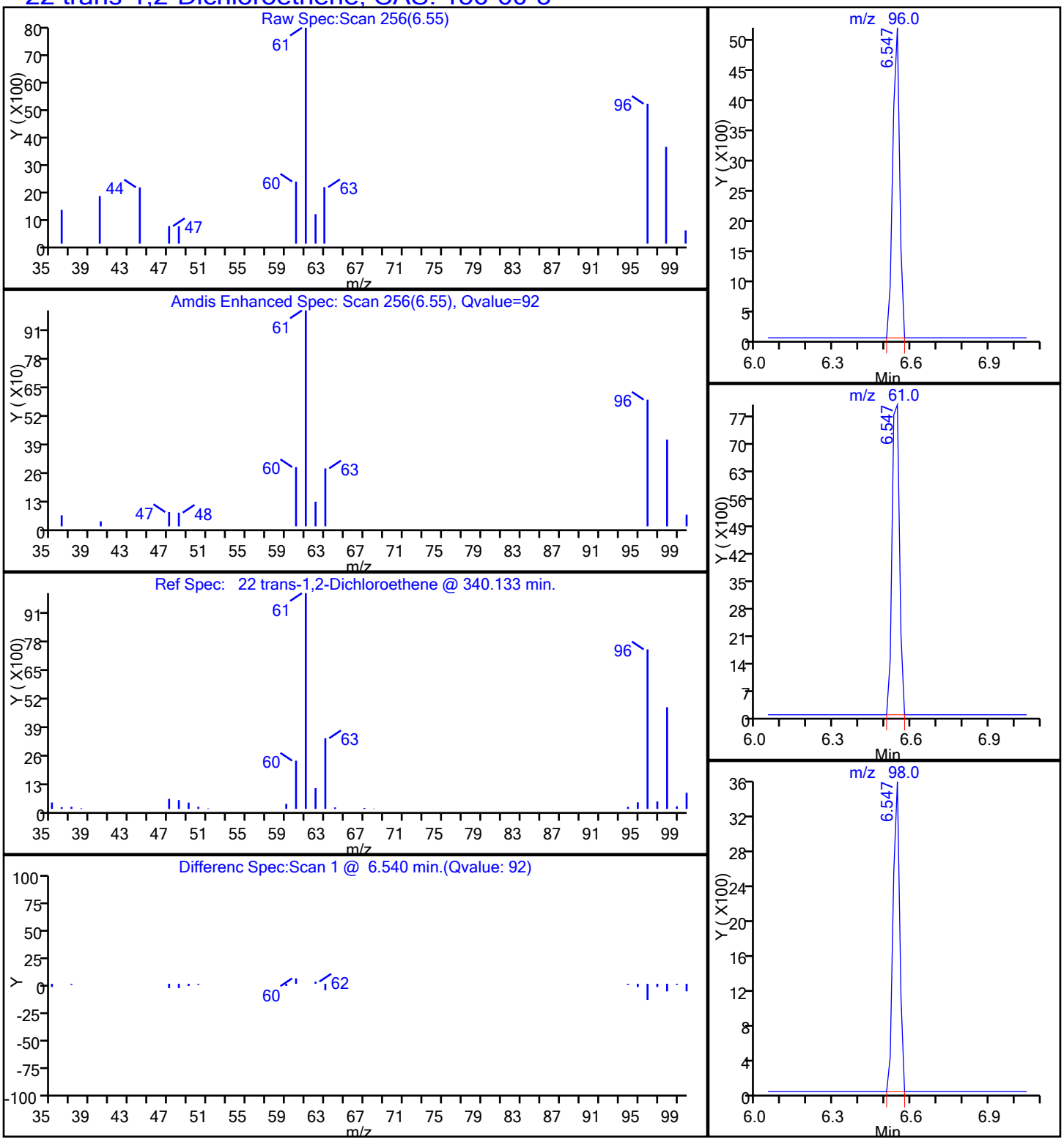
Report Date: 08-Sep-2016 08:40:11 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4980.D

Injection Date:	07-Sep-2016 19:47:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-7	Lab Sample ID:	160-18852-7		
Client ID:	GW-BR08JC-082516-FD				
Operator ID:	SMCR	ALS Bottle#:	23	Worklist Smp#:	27
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

22 trans-1,2-Dichloroethene, CAS: 156-60-5

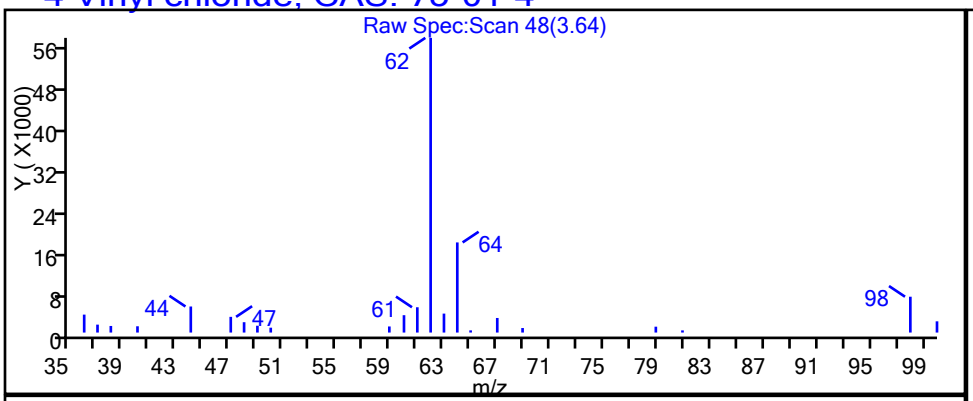


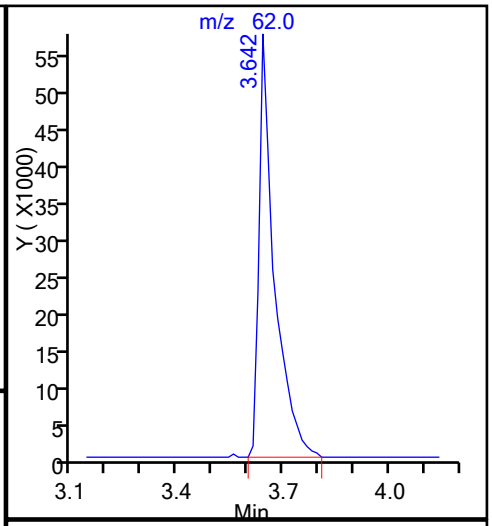
Report Date: 08-Sep-2016 08:40:11 Chrom Revision: 2.2 20-Apr-2016 13:59:46

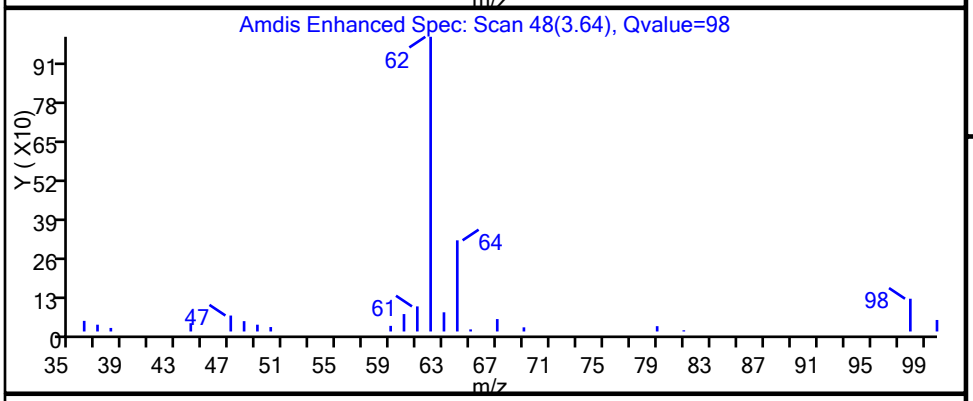
TestAmerica St. Louis

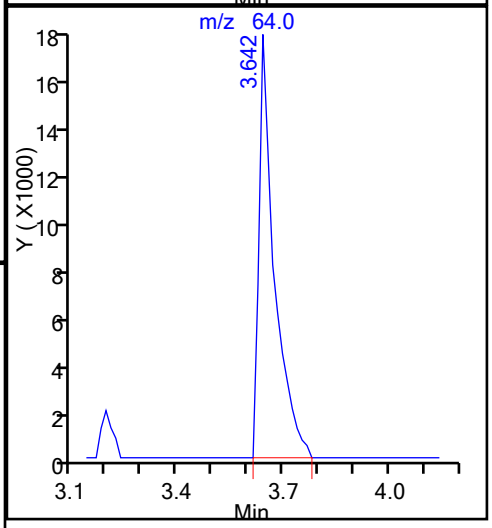
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4980.D				
Injection Date:	07-Sep-2016 19:47:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-7	Lab Sample ID:	160-18852-7		
Client ID:	GW-BR08JC-082516-FD				
Operator ID:	SMCR	ALS Bottle#:	23	Worklist Smp#:	27
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

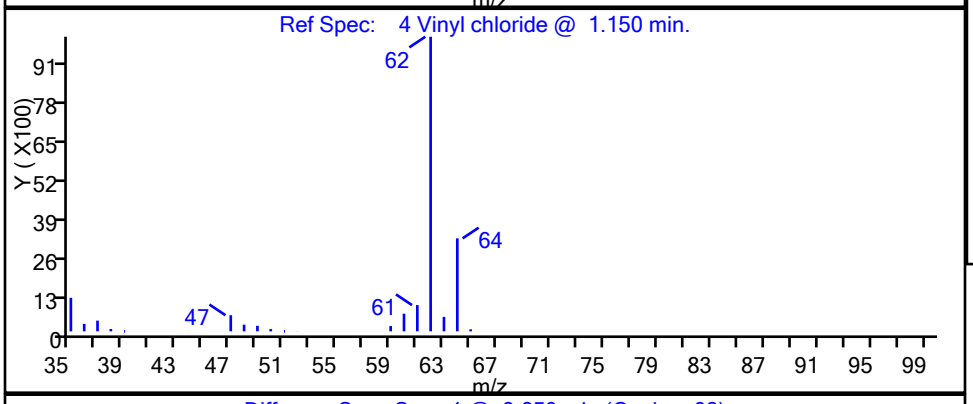
4 Vinyl chloride, CAS: 75-01-4

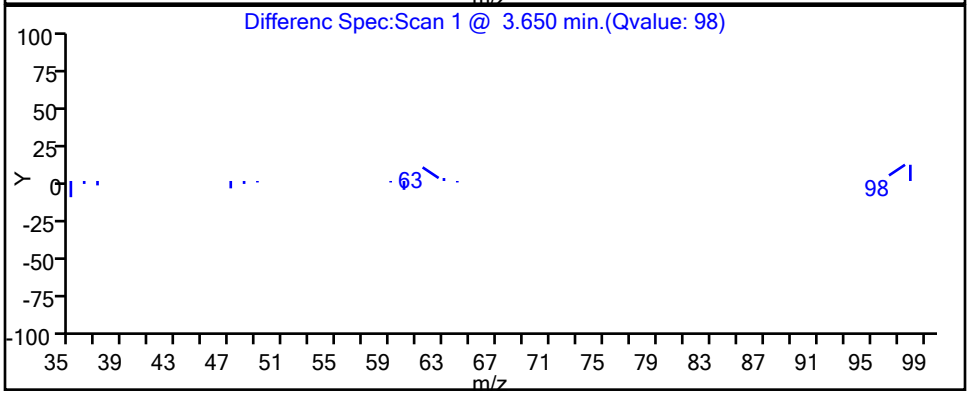












FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR08JC-082516-FD | Lab Sample ID: 160-18852-7

Matrix: Water | Lab File ID: LSMP4964.D

Analysis Method: 8260C | Date Collected: 08/25/2016 10:40

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 13:03

Soil Aliquot Vol: | Dilution Factor: 500

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
540-59-0	1,2-Dichloroethene, Total	1700		1000	69
156-59-2	cis-1,2-Dichloroethene	1700		500	50
79-01-6	Trichloroethene	6500		500	130

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	99		75-129
460-00-4	4-Bromofluorobenzene (Surr)	115		81-130
1868-53-7	Dibromofluoromethane (Surr)	102		81-124
2037-26-5	Toluene-d8 (Surr)	114		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4964.D
Lims ID: 160-18852-A-7
Client ID: GW-BR08JC-082516-FD
Sample Type: Client
Inject. Date: 07-Sep-2016 13:03:30 ALS Bottle#: 7 Worklist Smp#: 11
Purge Vol: 25.000 mL Dil. Factor: 500.0000
Sample Info: 160-0008407-011
Misc. Info.: 160-18852-a-7
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:40:20 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:05:40

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85		3.125				ND	
2 1,2-Dichloro-1,1,2,2-tetra	135		3.376				ND	
3 Chloromethane	50		3.474				ND	
4 Vinyl chloride	62	3.641	3.642	-0.001	96	17223	0.2850	
5 Butadiene	39		3.669				ND	
6 Bromomethane	94		4.256				ND	
7 Chloroethane	64		4.479				ND	
8 Trichlorofluoromethane	101		4.731				ND	
9 Dichlorofluoromethane	67		4.829				ND	
10 Ethyl ether	74		5.234				ND	
11 Ethanol	45		5.457				ND	
12 1,1-Dichloroethene	96		5.541				ND	
13 Carbon disulfide	76		5.583				ND	
14 1,1,2-Trichloro-1,2,2-trif	151		5.597				ND	
16 Iodomethane	142		5.750				ND	
S 15 1,2-Dichloroethene, Total	96				0		3.43	
17 Acrolein	56		6.030				ND	
18 3-Chloro-1-propene	39		6.197				ND	
19 Isopropyl alcohol	45	6.225	6.225	0.000	21	1184	1.50	
20 Methylene Chloride	84		6.337				ND	
21 Acetone	43		6.407				ND	
22 trans-1,2-Dichloroethene	96		6.546				ND	
23 Methyl acetate	74		6.546				ND	
24 Hexane	86		6.630				ND	
25 Methyl tert-butyl ether	73		6.658				ND	
27 Acetonitrile	41		6.979				ND	
28 Isopropyl ether	45		7.091				ND	
26 2-Methyl-2-propanol	59		7.091				ND	
29 2-Chloro-1,3-butadiene	53		7.231				ND	
30 1,1-Dichloroethane	63	7.259	7.259	0.000	96	29764	0.4140	
31 Acrylonitrile	53		7.329				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
32 Tert-butyl ethyl ether	59		7.482				ND	
33 Vinyl acetate	43		7.510				ND	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	84	123807	3.43	
35 2,2-Dichloropropane	77		7.957				ND	
37 Chlorobromomethane	128		8.055				ND	
36 Cyclohexane	84		8.055				ND	
38 Chloroform	83		8.097				ND	
39 Ethyl acetate	45		8.195				ND	
40 Carbon tetrachloride	117		8.264				ND	
41 Tetrahydrofuran	71		8.278				ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	264401	10.2	
43 1,1,1-Trichloroethane	97		8.334				ND	
45 2-Butanone (MEK)	43		8.404				ND	
47 1,1-Dichloropropene	75		8.446				ND	
44 Isooctane	57		8.516				ND	
46 n-Heptane	43		8.600				ND	
48 Benzene	78		8.683				ND	
49 Propionitrile	54		8.711				ND	
50 Methacrylonitrile	41		8.725				ND	
51 Tert-amyl methyl ether	73		8.753				ND	
52 Isobutyl alcohol	42		8.809				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	94	270549	9.90	
54 1,2-Dichloroethane	62		8.879				ND	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1344721	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	96	523317	13.0	
58 Methylcyclohexane	55		9.228				ND	
56 1,4-Difluorobenzene	114		9.256				ND	
59 n-Butanol	56		9.451				ND	
61 Dibromomethane	93		9.633				ND	
60 Ethyl acrylate	55		9.661				ND	
62 1,2-Dichloropropane	63		9.717				ND	
63 Dichlorobromomethane	83		9.759				ND	
64 Methyl methacrylate	69		9.843				ND	
65 1,4-Dioxane	88		9.940				ND	
66 2-Chloroethyl vinyl ether	63		10.234				ND	
67 cis-1,3-Dichloropropene	75		10.317				ND	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	95	1285958	11.4	
69 Toluene	92		10.541				ND	
70 2-Nitropropane	43		10.750				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
72 trans-1,3-Dichloropropene	75		10.890				ND	
73 Tetrachloroethene	164	10.904	10.904	0.000	98	82188	2.38	
74 Ethyl methacrylate	69		10.974				ND	
75 1,1,2-Trichloroethane	83		11.058				ND	
76 Chlorodibromomethane	129		11.225				ND	
77 1,3-Dichloropropane	76		11.309				ND	
78 n-Butyl acetate	43		11.449				ND	
79 Ethylene Dibromide	107		11.477				ND	
80 2-Hexanone	43		11.588				ND	
81 1-Chlorohexane	91		11.840				ND	
* 83 Chlorobenzene-d5	117	11.909	11.910	-0.001	89	867442	10.0	
82 Ethylbenzene	91		11.910				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
84 Chlorobenzene	112		11.923				ND	
85 1,1,1,2-Tetrachloroethane	131		11.965				ND	
86 m-Xylene & p-Xylene	106		12.035				ND	
88 o-Xylene	106		12.440				ND	
89 Styrene	104		12.482				ND	
90 Bromoform	173		12.552				ND	
91 Isopropylbenzene	105		12.720				ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	83	386977	11.5	
93 N-Propylbenzene	91		13.097				ND	
94 Bromobenzene	156		13.139				ND	
95 1,1,2,2-Tetrachloroethane	83		13.166				ND	
96 1,3,5-Trimethylbenzene	105		13.264				ND	
97 2-Chlorotoluene	91		13.292				ND	
99 1,2,3-Trichloropropane	110		13.320				ND	
98 trans-1,4-Dichloro-2-buten	53		13.334				ND	
100 Cyclohexanone	55		13.404				ND	
101 4-Chlorotoluene	91		13.446				ND	
102 tert-Butylbenzene	119		13.585				ND	
87 Pentachloroethane	167		13.655				ND	
103 1,2,4-Trimethylbenzene	105		13.655				ND	
104 sec-Butylbenzene	105		13.753				ND	
105 4-Isopropyltoluene	119		13.879				ND	
106 1,3-Dichlorobenzene	146		14.018				ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	402584	10.0	
107 1,2,3-Trimethylbenzene	105		14.088				ND	
109 1,4-Dichlorobenzene	146		14.102				ND	
111 n-Butylbenzene	134		14.284				ND	
110 Benzyl chloride	126		14.326				ND	
112 1,2-Dichlorobenzene	146		14.521				ND	
113 n-Nonyl Aldehyde	57		15.233				ND	
115 1,2-Dibromo-3-Chloropropan	157		15.303				ND	
114 1,3,5-Trichlorobenzene	180		15.331				ND	
116 Hexachlorobutadiene	225		15.904				ND	
117 1,2,4-Trichlorobenzene	180		15.974				ND	
118 Naphthalene	128		16.337				ND	
S 119 Xylenes, Total	106		16.500				ND	
120 1,2,3-Trichlorobenzene	180		16.532				ND	
121 2-Pentanone	1		0.000				ND	
S 130 Trihalomethanes, Total	1		0.000				ND	

Reagents:

I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

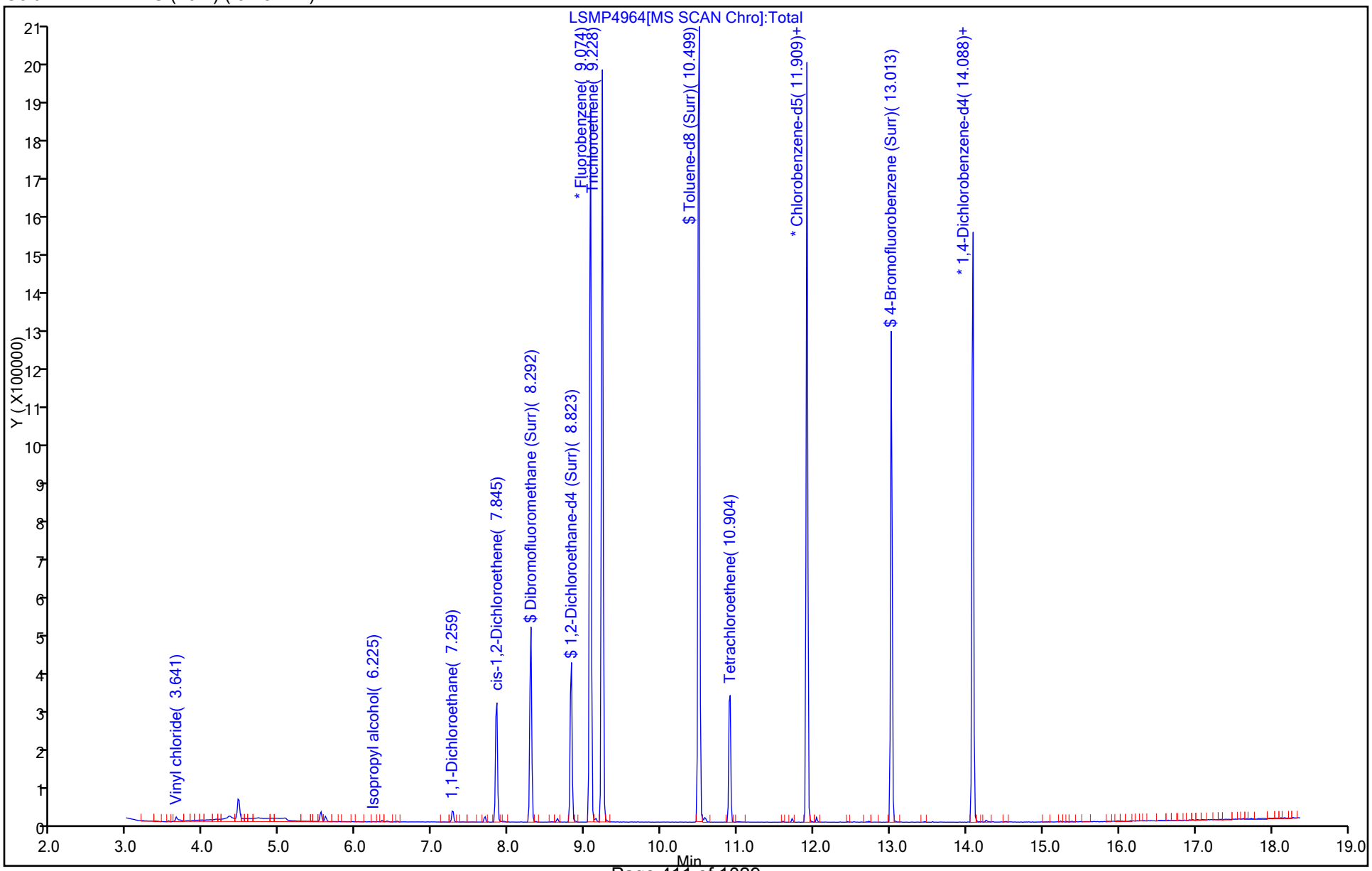
Report Date: 08-Sep-2016 08:40:24 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4964.D

Injection Date:	07-Sep-2016 13:03:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	160-18852-A-7	Lab Sample ID:	160-18852-7	Worklist Smp#:	11
Client ID:	GW-BR08JC-082516-FD				
Purge Vol:	25.000 mL	Dil. Factor:	500.0000	ALS Bottle#:	7
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4964.D
Lims ID: 160-18852-A-7
Client ID: GW-BR08JC-082516-FD
Sample Type: Client
Inject. Date: 07-Sep-2016 13:03:30 ALS Bottle#: 7 Worklist Smp#: 11
Purge Vol: 25.000 mL Dil. Factor: 500.0000
Sample Info: 160-0008407-011
Misc. Info.: 160-18852-a-7
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:40:20 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:05:40

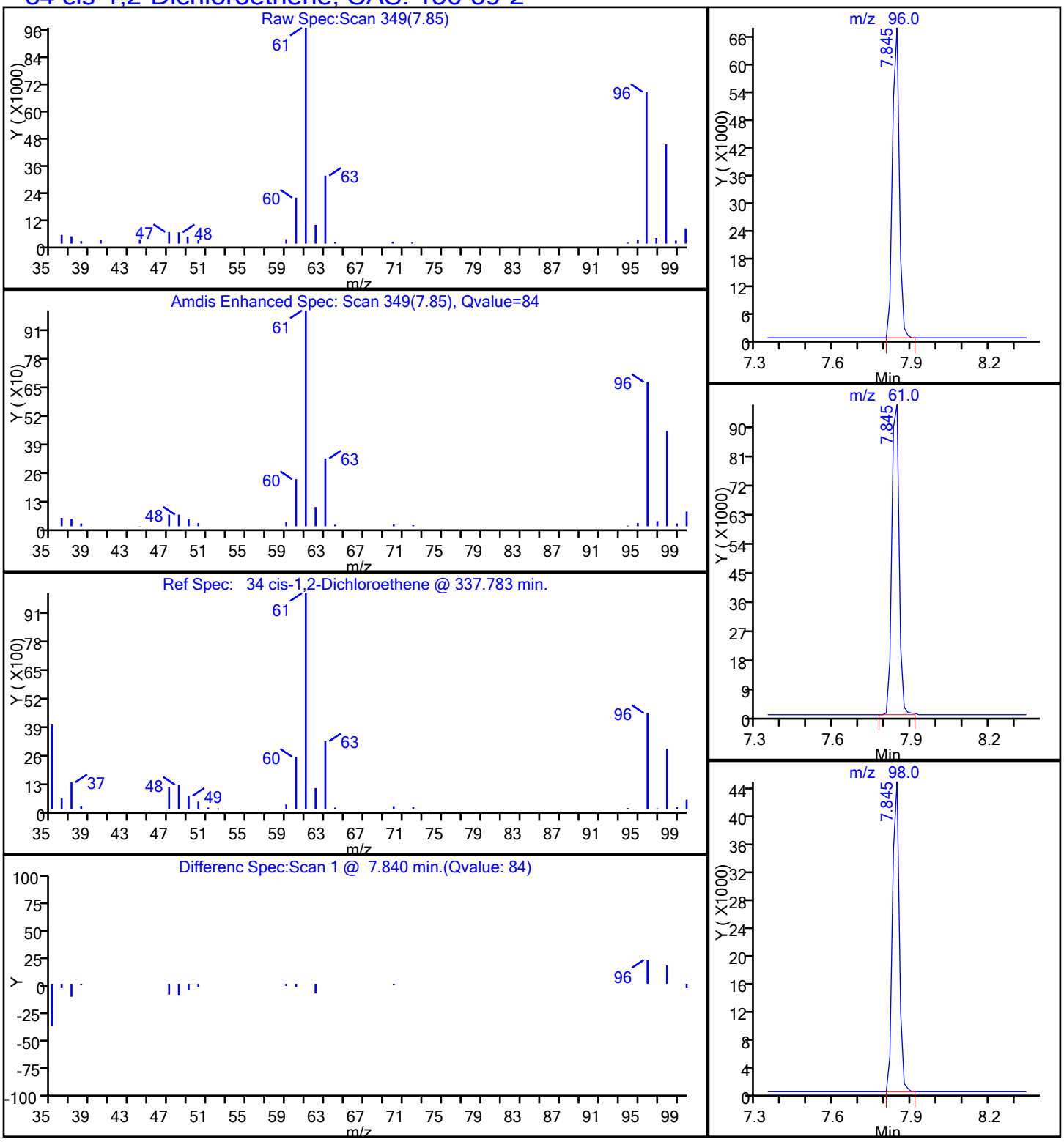
Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.2	102.32
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	9.90	98.97
$ 68 Toluene-d8 (Surr)	10.0	11.4	113.56
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.5	114.55

Report Date: 08-Sep-2016 08:40:24 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4964.D				
Injection Date:	07-Sep-2016 13:03:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-7	Lab Sample ID:	160-18852-7		
Client ID:	GW-BR08JC-082516-FD				
Operator ID:	SMCR	ALS Bottle#:	7	Worklist Smp#:	11
Purge Vol:	25.000 mL	Dil. Factor:	500.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

34 cis-1,2-Dichloroethene, CAS: 156-59-2

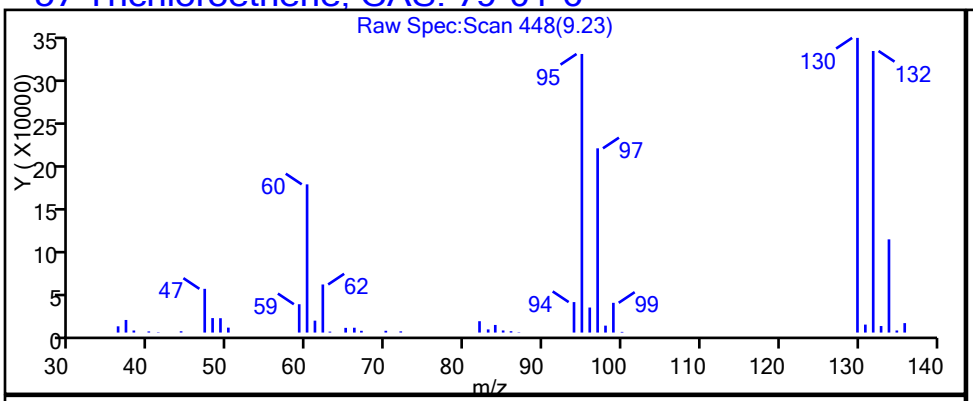


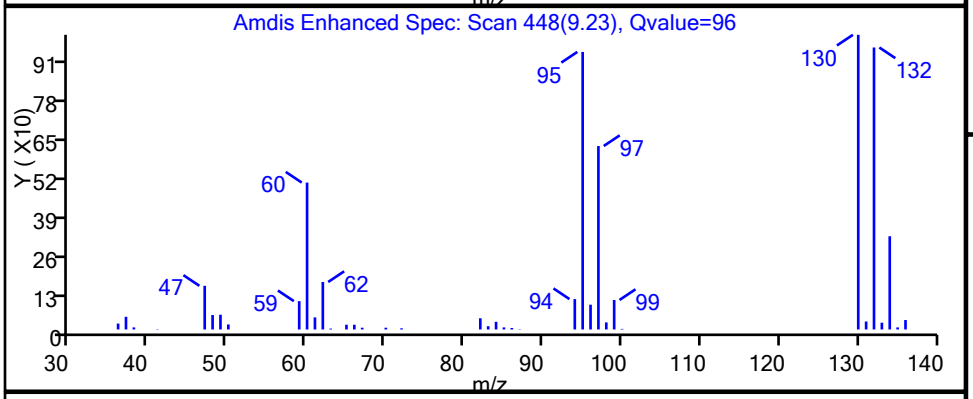
Report Date: 08-Sep-2016 08:40:24 Chrom Revision: 2.2 20-Apr-2016 13:59:46

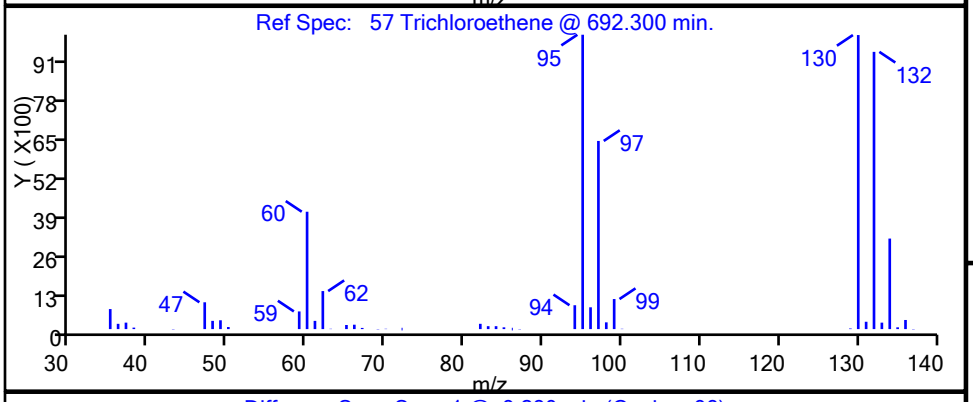
TestAmerica St. Louis

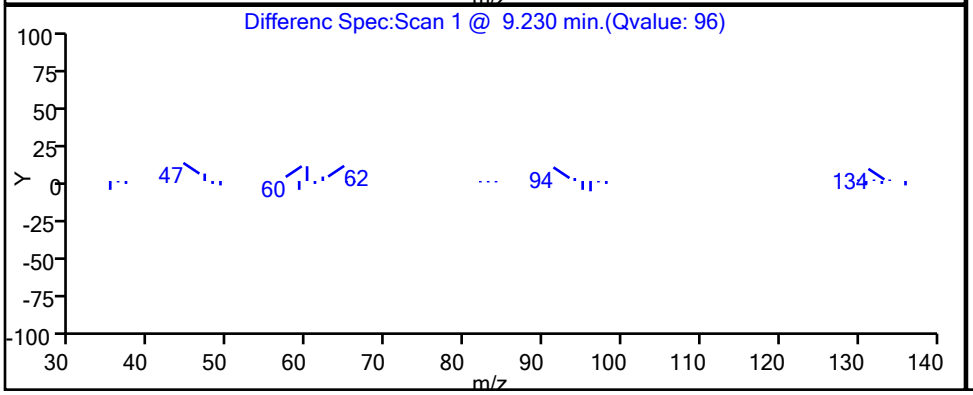
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4964.D				
Injection Date:	07-Sep-2016 13:03:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-7	Lab Sample ID:	160-18852-7		
Client ID:	GW-BR08JC-082516-FD				
Operator ID:	SMCR	ALS Bottle#:	7	Worklist Smp#:	11
Purge Vol:	25.000 mL	Dil. Factor:	500.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

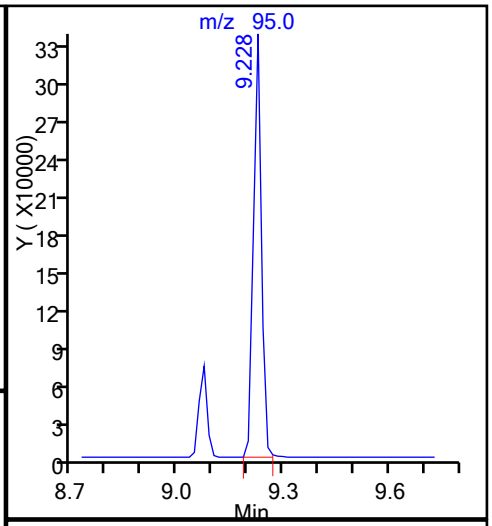
57 Trichloroethene, CAS: 79-01-6

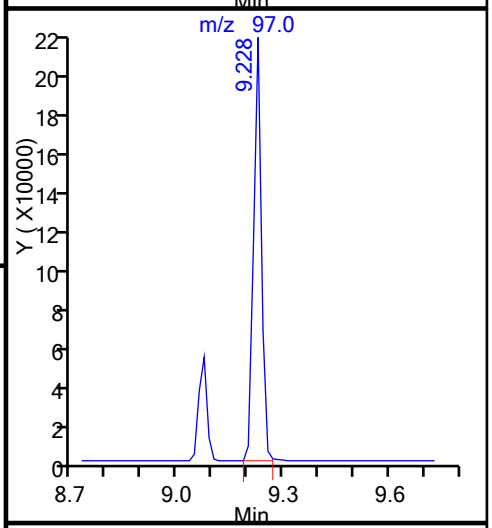


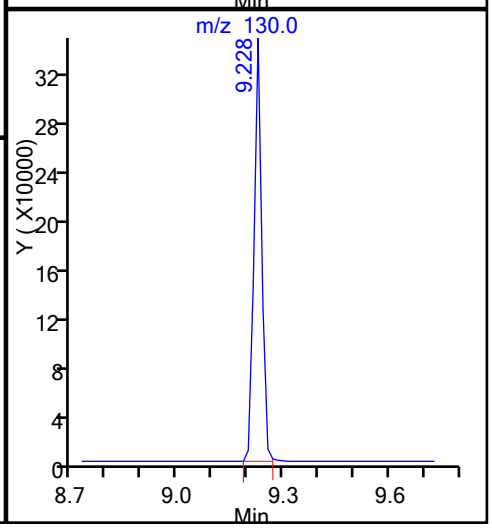












FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR10JC-082516 | Lab Sample ID: 160-18852-8

Matrix: Water | Lab File ID: LSMP4981.D

Analysis Method: 8260C | Date Collected: 08/25/2016 13:10

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 20:12

Soil Aliquot Vol: | Dilution Factor: 10

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	ND		10	1.7
79-34-5	1,1,2,2-Tetrachloroethane	ND		10	1.0
79-00-5	1,1,2-Trichloroethane	ND		10	1.3
75-35-4	1,1-Dichloroethene	37		10	1.0
75-34-3	1,1-Dichloroethane	50		10	0.70
120-82-1	1,2,4-Trichlorobenzene	ND		10	1.0
96-12-8	1,2-Dibromo-3-Chloropropane	ND		10	4.1
107-06-2	1,2-Dichloroethane	ND		10	2.2
78-87-5	1,2-Dichloropropane	ND		10	1.0
78-93-3	2-Butanone	39	J	50	4.7
591-78-6	2-Hexanone	ND		50	2.5
108-10-1	4-Methyl-2-pentanone	ND		50	2.2
67-64-1	Acetone	16	J B	20	5.5
71-43-2	Benzene	ND		10	1.0
75-25-2	Bromoform	ND		10	1.7
74-83-9	Methyl bromide	ND		20	2.5
75-15-0	Carbon disulfide	ND		10	1.0
56-23-5	Carbon tetrachloride	ND		10	1.8
108-90-7	Chlorobenzene	ND		10	1.1
124-48-1	Chlorodibromomethane	ND		10	1.4
75-00-3	Chloroethane	ND		20	1.6
67-66-3	Chloroform	ND		10	1.0
74-87-3	Chloromethane	ND		20	1.0
10061-01-5	cis-1,3-Dichloropropene	ND		10	1.6
75-27-4	Bromodichloromethane	ND		10	1.4
100-41-4	Ethylbenzene	ND		10	1.2
106-93-4	1,2-Dibromoethane	ND		10	1.3
75-09-2	Methylene Chloride	ND		10	2.7
71-36-3	n-Butanol	ND		500	120
100-42-5	Styrene	ND		10	1.3
127-18-4	Tetrachloroethene	140		10	1.8
108-88-3	Toluene	ND		10	1.4
156-60-5	trans-1,2-Dichloroethene	3.4	J	10	1.0
10061-02-6	trans-1,3-Dichloropropene	ND		10	1.0
108-05-4	Vinyl acetate	ND		20	1.8
75-01-4	Vinyl chloride	23		20	1.9

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR10JC-082516 | Lab Sample ID: 160-18852-8

Matrix: Water | Lab File ID: LSMP4981.D

Analysis Method: 8260C | Date Collected: 08/25/2016 13:10

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 20:12

Soil Aliquot Vol: | Dilution Factor: 10

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1330-20-7	Xylenes, Total	ND		30	2.6

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	104		75-129
460-00-4	4-Bromofluorobenzene (Surr)	118		81-130
1868-53-7	Dibromofluoromethane (Surr)	105		81-124
2037-26-5	Toluene-d8 (Surr)	114		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4981.D
Lims ID: 160-18852-A-8
Client ID: GW-BR10JC-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 20:12:30 ALS Bottle#: 24 Worklist Smp#: 28
Purge Vol: 25.000 mL Dil. Factor: 10.0000
Sample Info: 160-0008407-028
Misc. Info.: 160-18852-a-8
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:16:12

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
3 Chloromethane	50		3.474				ND	
4 Vinyl chloride	62	3.642	3.642	0.000	97	131199	2.35	
6 Bromomethane	94		4.256				ND	
7 Chloroethane	64		4.479				ND	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	94	127887	3.69	
13 Carbon disulfide	76		5.583				ND	
S 15 1,2-Dichloroethene, Total	96				0		64.9	
20 Methylene Chloride	84		6.337				ND	
21 Acetone	43	6.407	6.407	0.000	98	8385	1.59	
22 trans-1,2-Dichloroethene	96	6.547	6.546	0.001	94	12148	0.3404	
30 1,1-Dichloroethane	63	7.259	7.259	0.000	97	330796	4.97	
33 Vinyl acetate	43		7.510				ND	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	84	2152919	64.6	E
38 Chloroform	83		8.097				ND	
40 Carbon tetrachloride	117		8.264				ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	251890	10.5	
43 1,1,1-Trichloroethane	97		8.334				ND	
45 2-Butanone (MEK)	43	8.404	8.404	0.000	98	20796	3.91	
48 Benzene	78		8.683				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	94	263879	10.4	
54 1,2-Dichloroethane	62		8.879				ND	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1244070	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	96	4631644	124.7	E
59 n-Butanol	56		9.451				ND	
62 1,2-Dichloropropane	63		9.717				ND	
63 Dichlorobromomethane	83		9.759				ND	
67 cis-1,3-Dichloropropene	75		10.317				ND	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	95	1207528	11.4	
69 Toluene	92		10.541				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
72 trans-1,3-Dichloropropene	75		10.890				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
73 Tetrachloroethene	164	10.904	10.904	0.000	98	441758	13.7	
75 1,1,2-Trichloroethane	83		11.058				ND	
76 Chlorodibromomethane	129		11.225				ND	
79 Ethylene Dibromide	107		11.477				ND	
80 2-Hexanone	43		11.588				ND	
* 83 Chlorobenzene-d5	117	11.910	11.910	0.000	89	811371	10.0	
82 Ethylbenzene	91		11.910				ND	
84 Chlorobenzene	112		11.923				ND	
86 m-Xylene & p-Xylene	106		12.035				ND	
88 o-Xylene	106		12.440				ND	
89 Styrene	104		12.482				ND	
90 Bromoform	173		12.552				ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	87	357963	11.8	
95 1,1,2,2-Tetrachloroethane	83		13.166				ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	362229	10.0	
115 1,2-Dibromo-3-Chloropropan	157		15.303				ND	
117 1,2,4-Trichlorobenzene	180		15.974				ND	
S 119 Xylenes, Total	106		16.500				ND	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Reagents:

I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

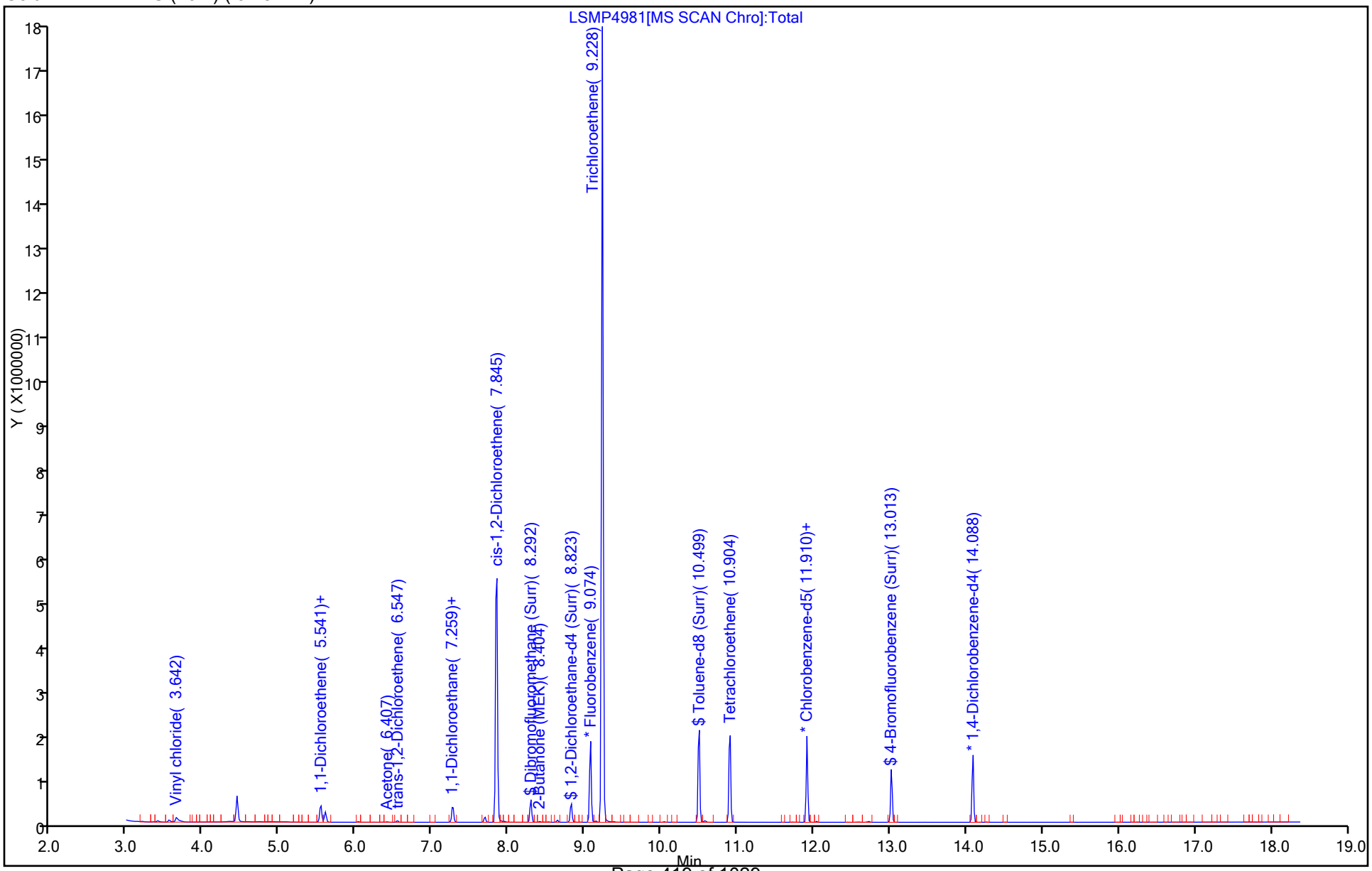
Report Date: 08-Sep-2016 08:40:12 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4981.D

Injection Date:	07-Sep-2016 20:12:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	160-18852-A-8	Lab Sample ID:	160-18852-8	Worklist Smp#:	28
Client ID:	GW-BR10JC-082516				
Purge Vol:	25.000 mL	Dil. Factor:	10.0000	ALS Bottle#:	24
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4981.D
Lims ID: 160-18852-A-8
Client ID: GW-BR10JC-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 20:12:30 ALS Bottle#: 24 Worklist Smp#: 28
Purge Vol: 25.000 mL Dil. Factor: 10.0000
Sample Info: 160-0008407-028
Misc. Info.: 160-18852-a-8
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:16:12

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.5	105.37
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	10.4	104.34
$ 68 Toluene-d8 (Surr)	10.0	11.4	114.01
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.8	117.77

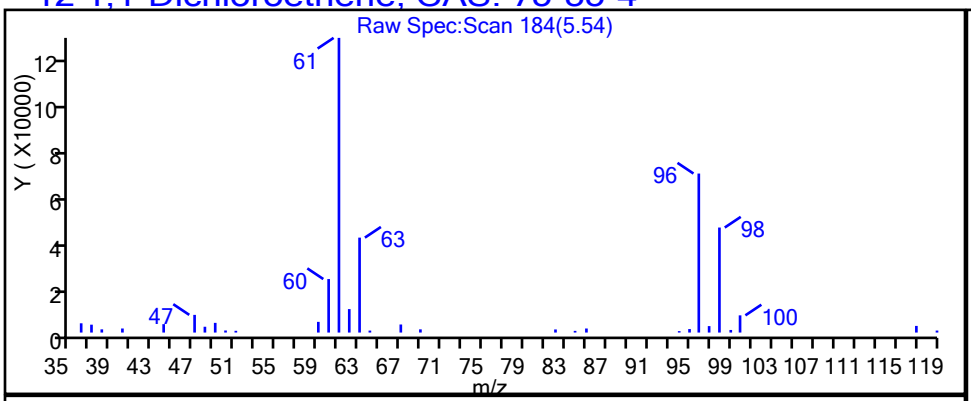
Report Date: 08-Sep-2016 08:40:12 Chrom Revision: 2.2 20-Apr-2016 13:59:46

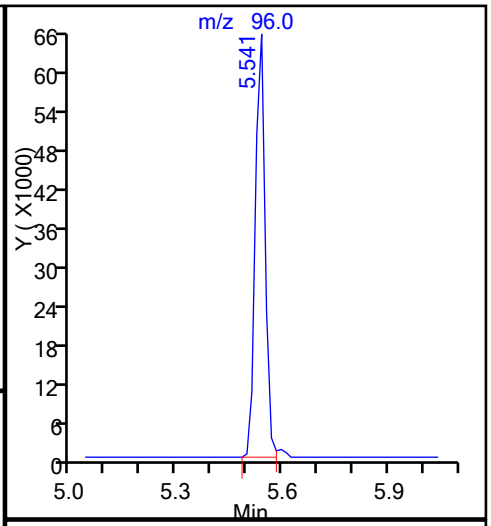
TestAmerica St. Louis

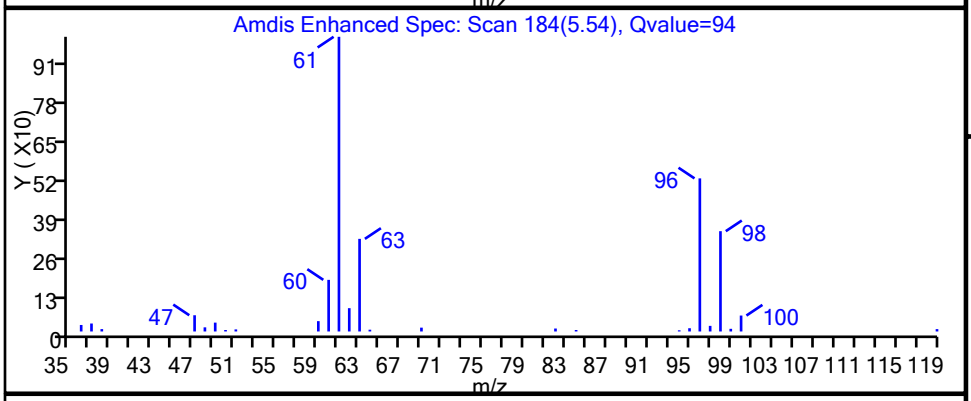
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4981.D

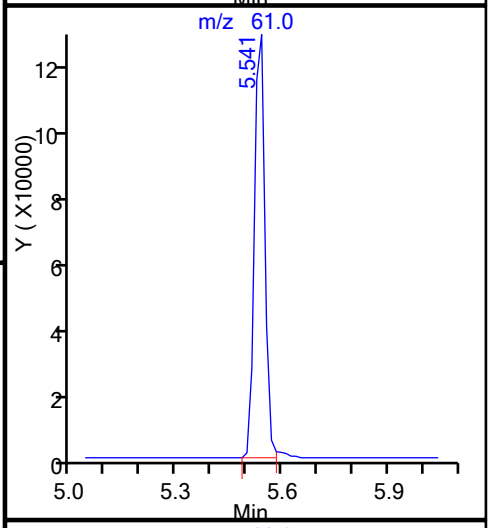
Injection Date:	07-Sep-2016 20:12:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-8	Lab Sample ID:	160-18852-8		
Client ID:	GW-BR10JC-082516				
Operator ID:	SMCR	ALS Bottle#:	24	Worklist Smp#:	28
Purge Vol:	25.000 mL	Dil. Factor:	10.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

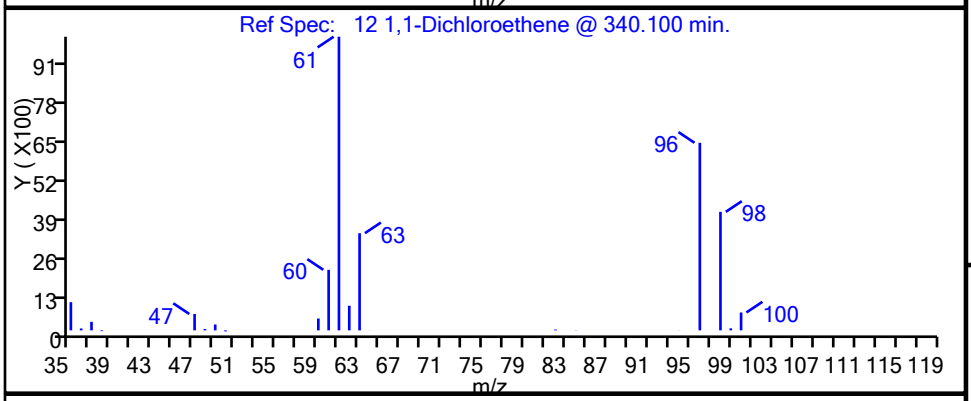
12 1,1-Dichloroethene, CAS: 75-35-4

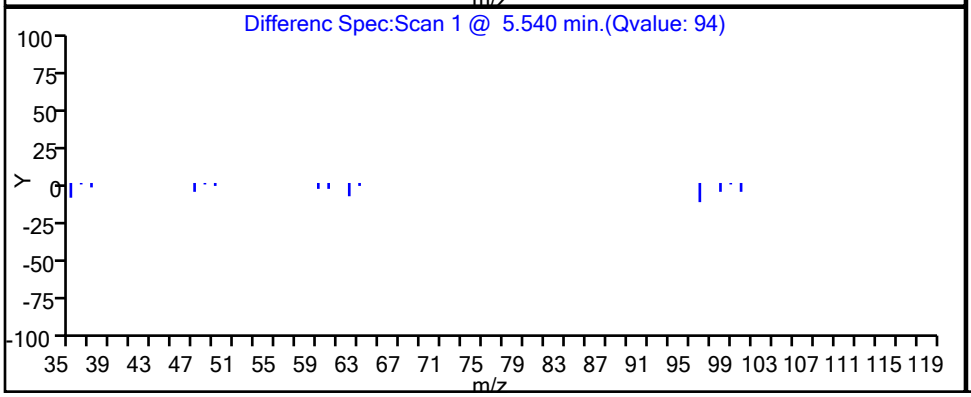


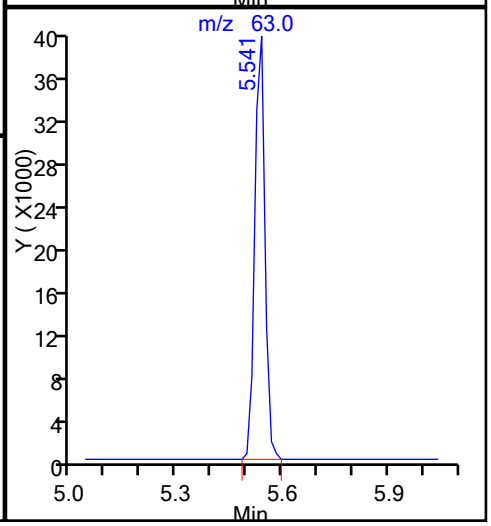












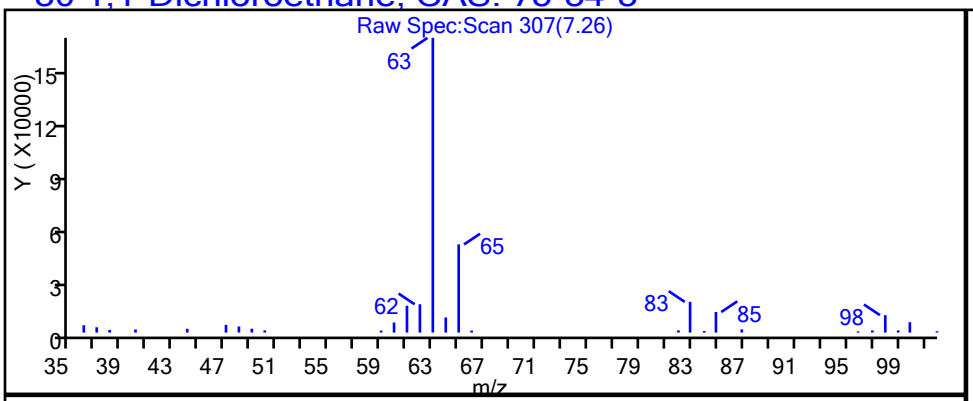
Report Date: 08-Sep-2016 08:40:12 Chrom Revision: 2.2 20-Apr-2016 13:59:46

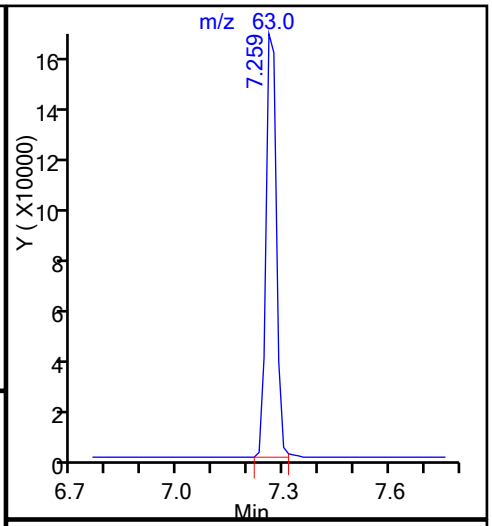
TestAmerica St. Louis

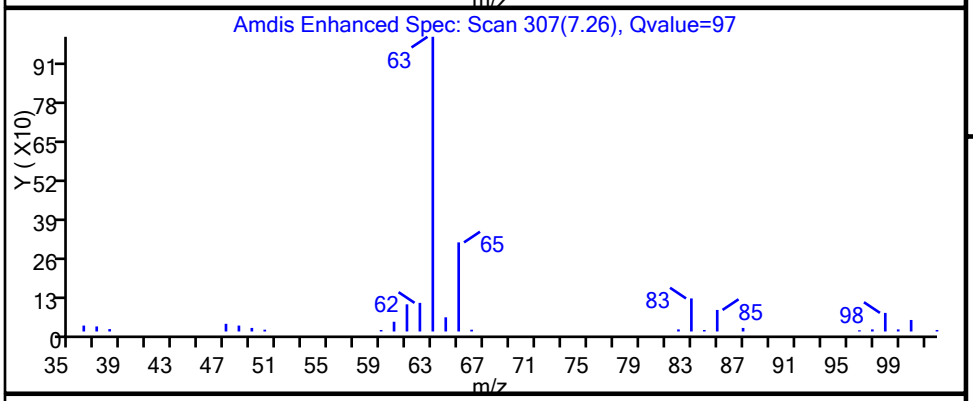
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4981.D

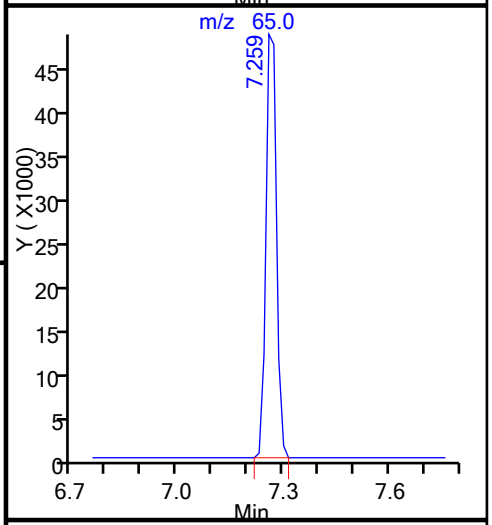
Injection Date:	07-Sep-2016 20:12:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-8	Lab Sample ID:	160-18852-8		
Client ID:	GW-BR10JC-082516				
Operator ID:	SMCR	ALS Bottle#:	24	Worklist Smp#:	28
Purge Vol:	25.000 mL	Dil. Factor:	10.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

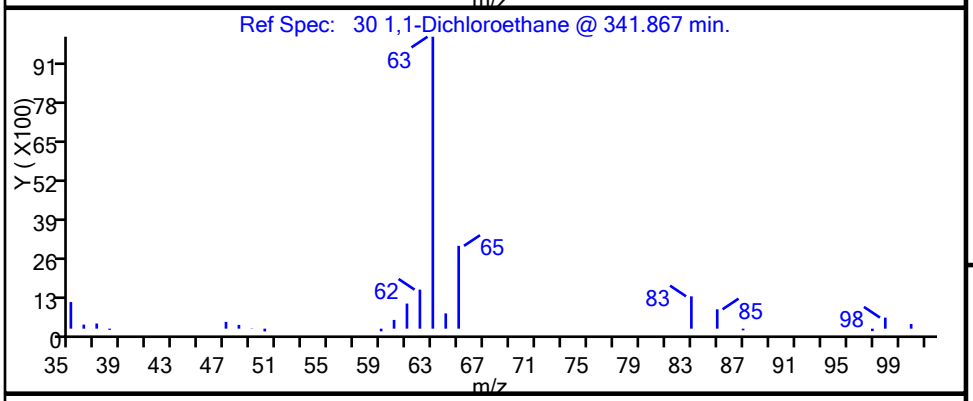
30 1,1-Dichloroethane, CAS: 75-34-3

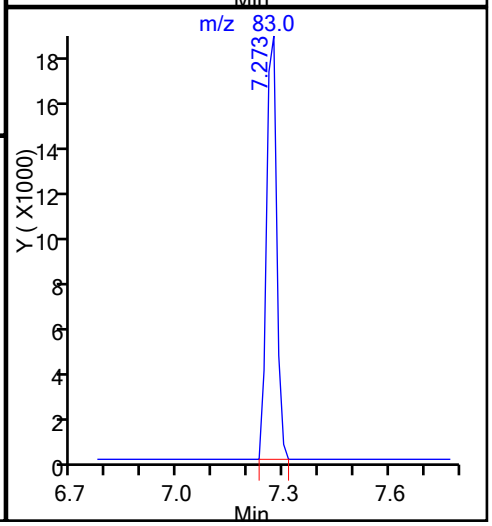


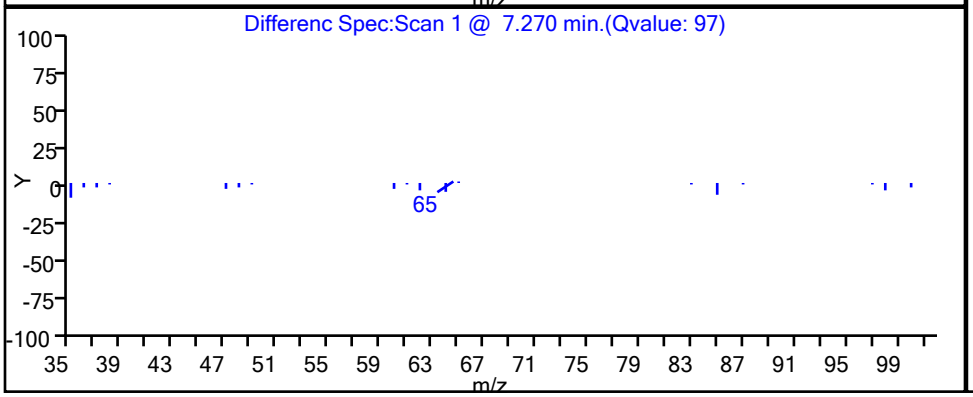










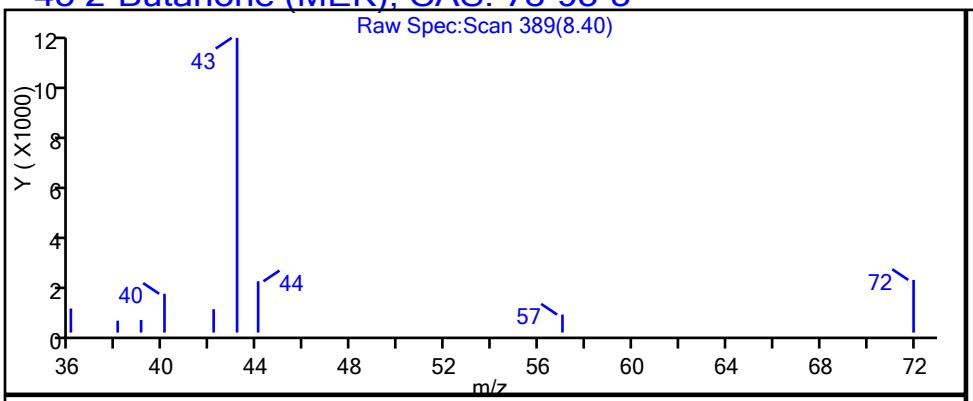


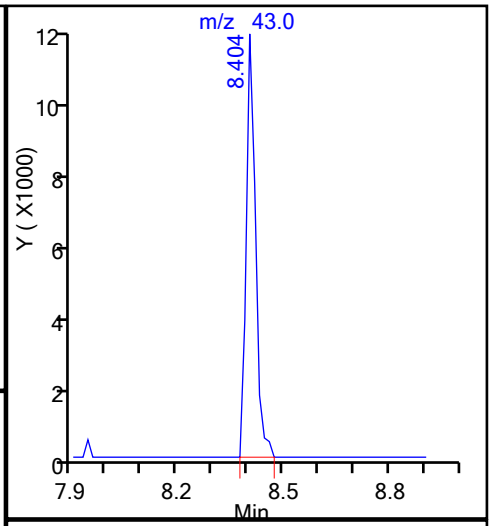
Report Date: 08-Sep-2016 08:40:12 Chrom Revision: 2.2 20-Apr-2016 13:59:46

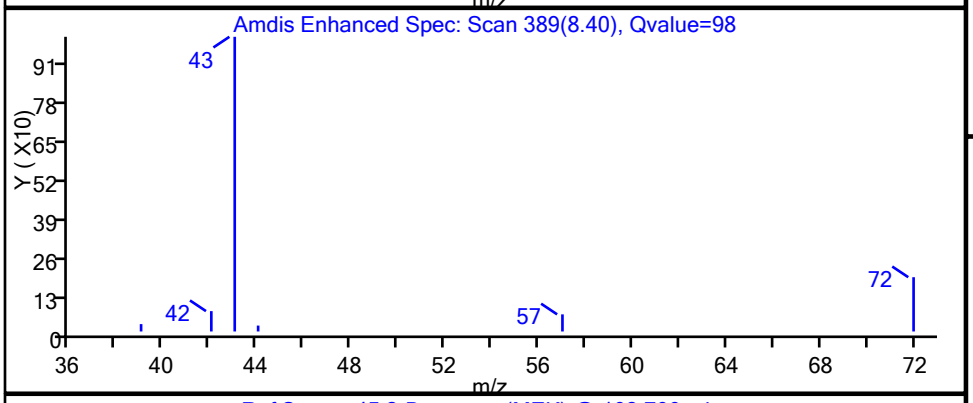
TestAmerica St. Louis

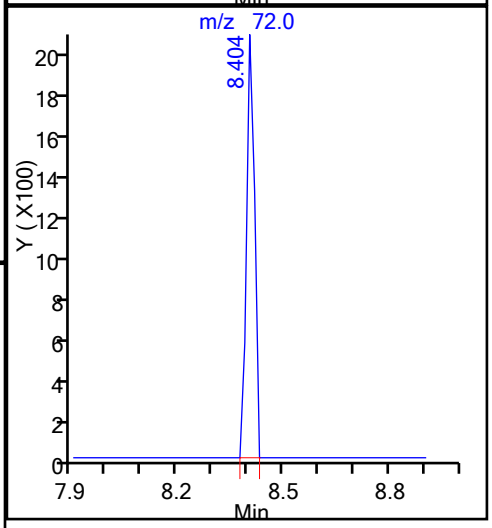
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4981.D				
Injection Date:	07-Sep-2016 20:12:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-8	Lab Sample ID:	160-18852-8		
Client ID:	GW-BR10JC-082516				
Operator ID:	SMCR	ALS Bottle#:	24	Worklist Smp#:	28
Purge Vol:	25.000 mL	Dil. Factor:	10.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

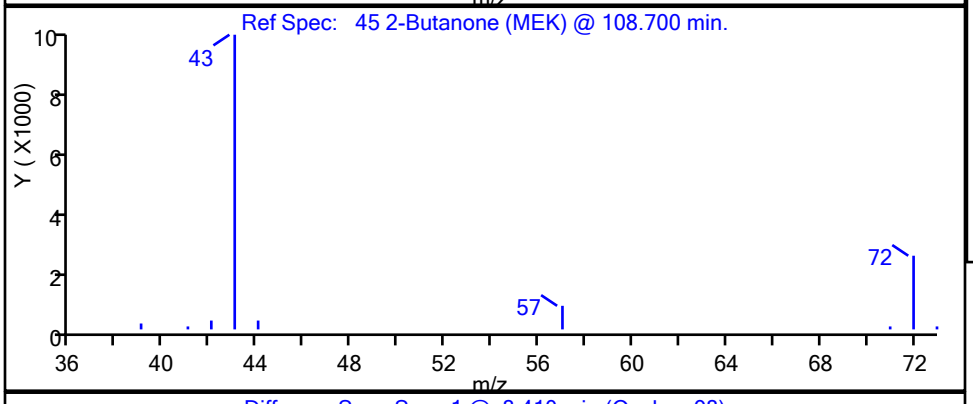
45 2-Butanone (MEK), CAS: 78-93-3

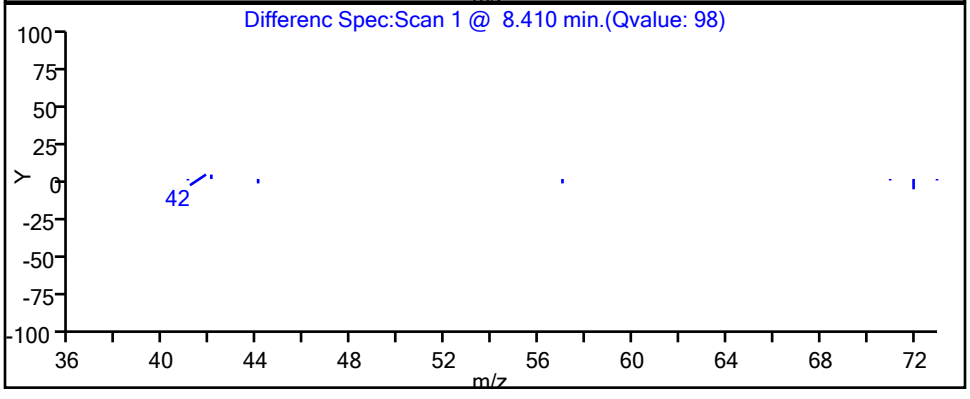










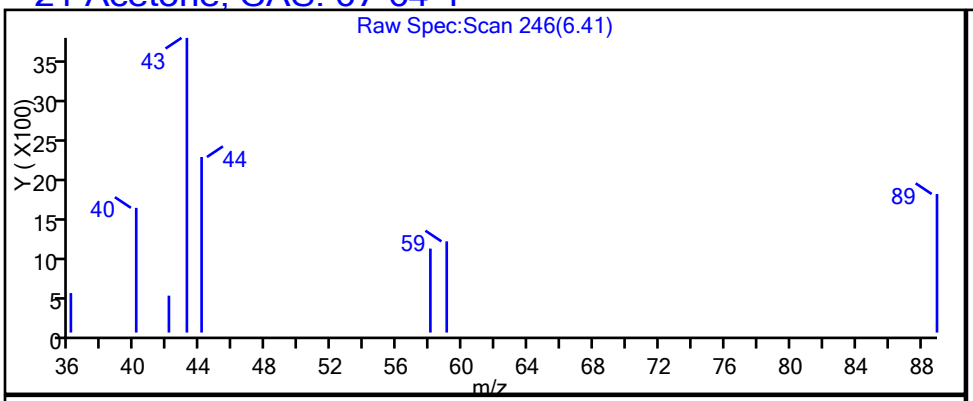


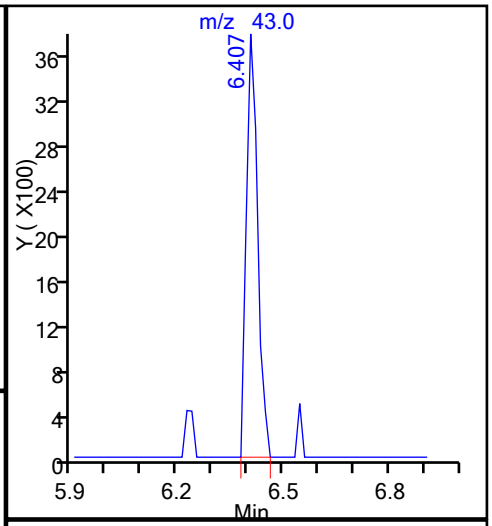
Report Date: 08-Sep-2016 08:40:12 Chrom Revision: 2.2 20-Apr-2016 13:59:46

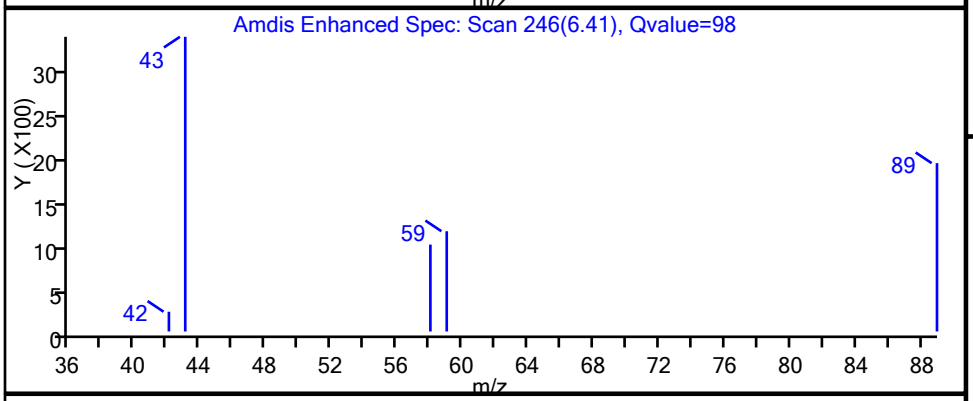
TestAmerica St. Louis

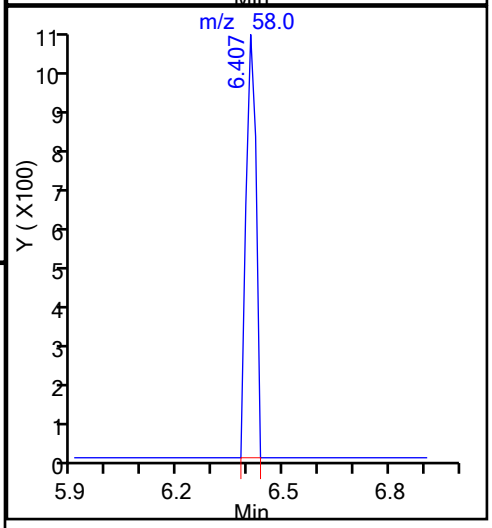
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4981.D				
Injection Date:	07-Sep-2016 20:12:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-8	Lab Sample ID:	160-18852-8		
Client ID:	GW-BR10JC-082516				
Operator ID:	SMCR	ALS Bottle#:	24	Worklist Smp#:	28
Purge Vol:	25.000 mL	Dil. Factor:	10.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

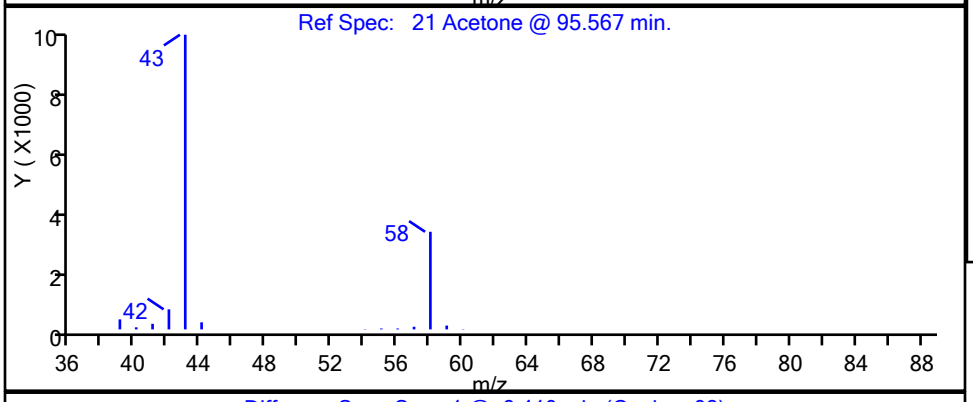
21 Acetone, CAS: 67-64-1

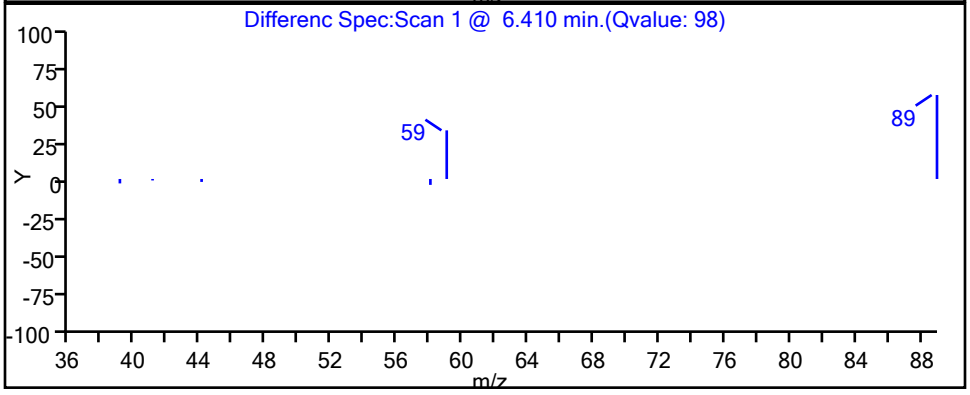












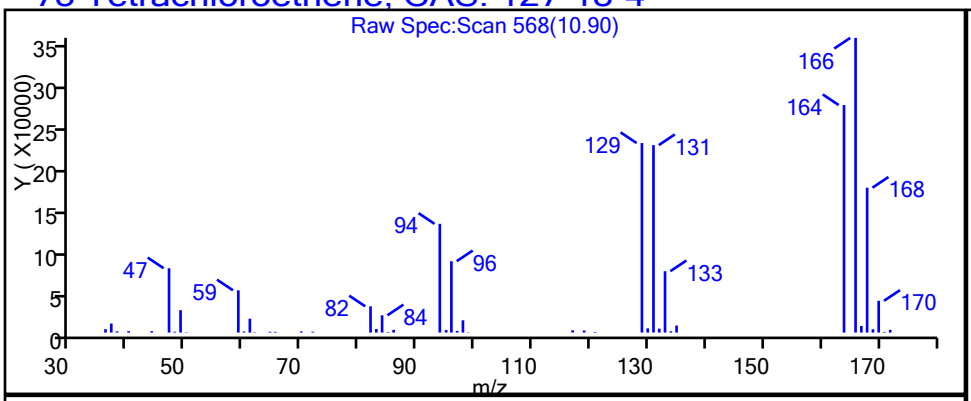
Report Date: 08-Sep-2016 08:40:12 Chrom Revision: 2.2 20-Apr-2016 13:59:46

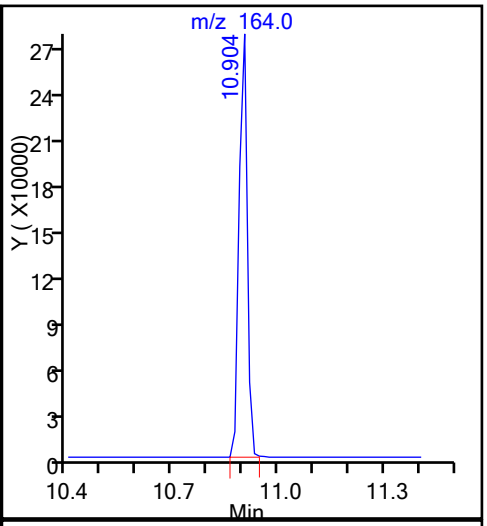
TestAmerica St. Louis

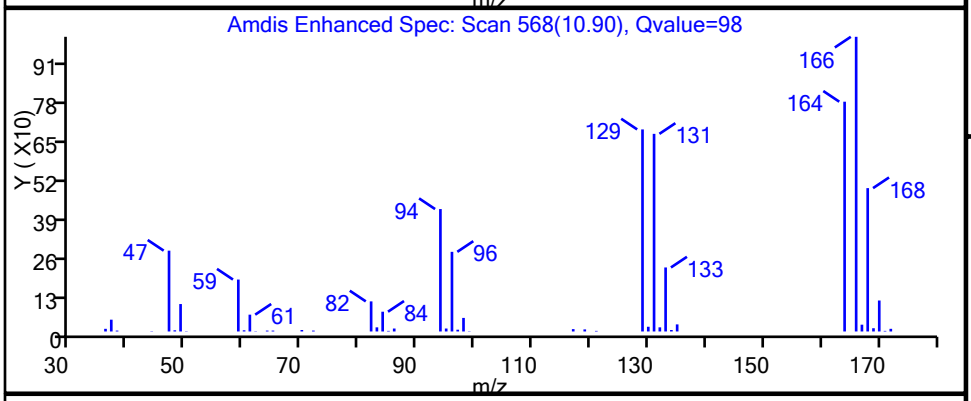
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4981.D

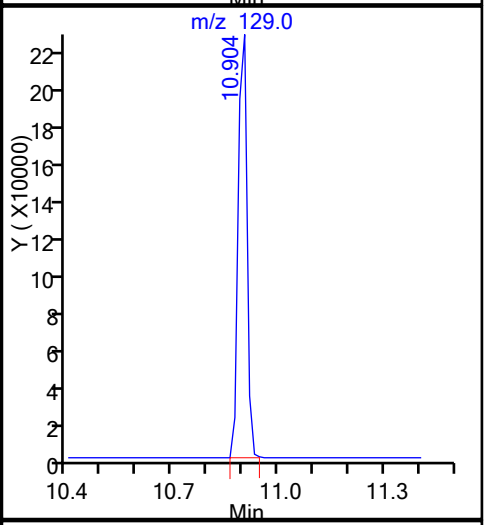
Injection Date:	07-Sep-2016 20:12:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-8	Lab Sample ID:	160-18852-8		
Client ID:	GW-BR10JC-082516				
Operator ID:	SMCR	ALS Bottle#:	24	Worklist Smp#:	28
Purge Vol:	25.000 mL	Dil. Factor:	10.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

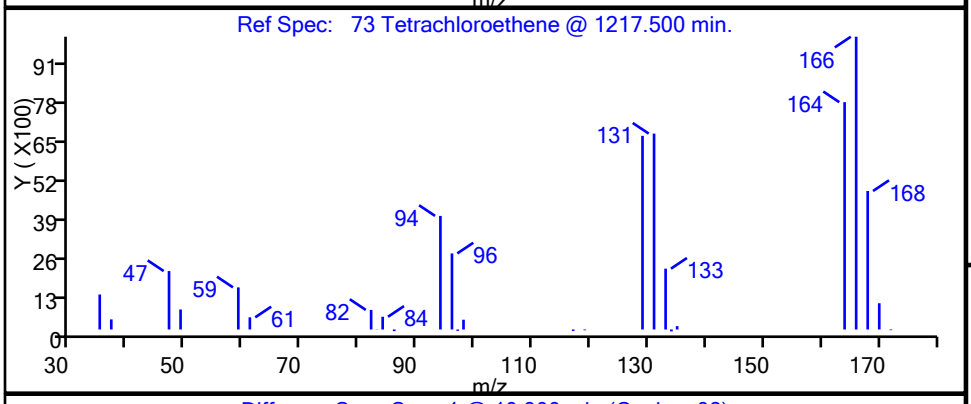
73 Tetrachloroethene, CAS: 127-18-4

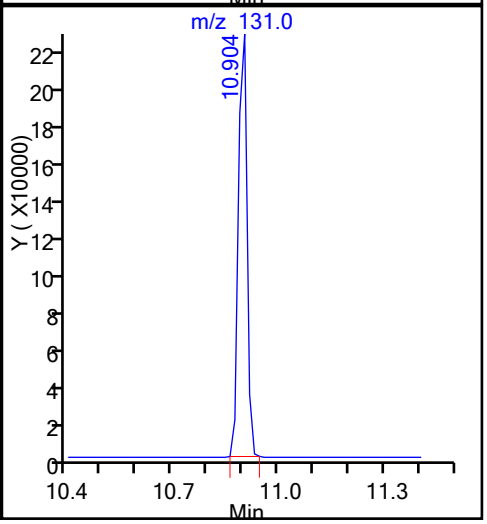


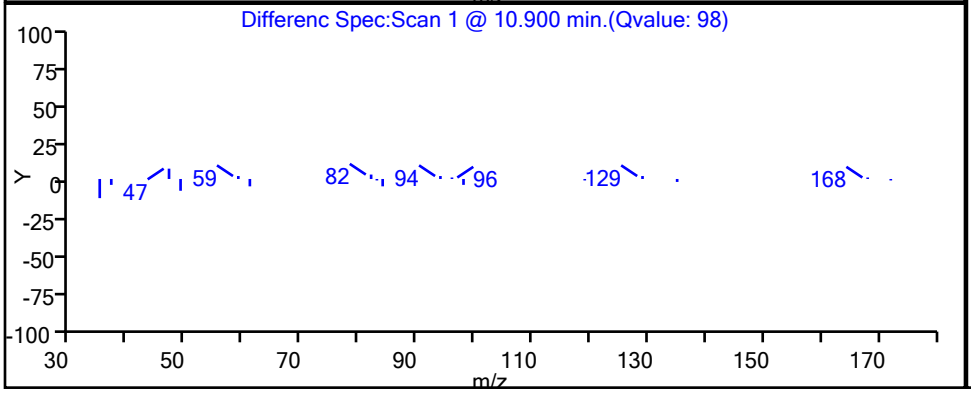












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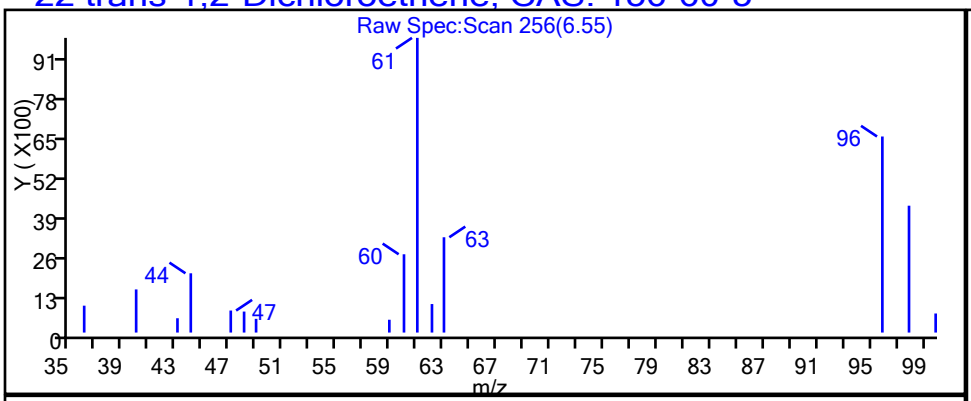
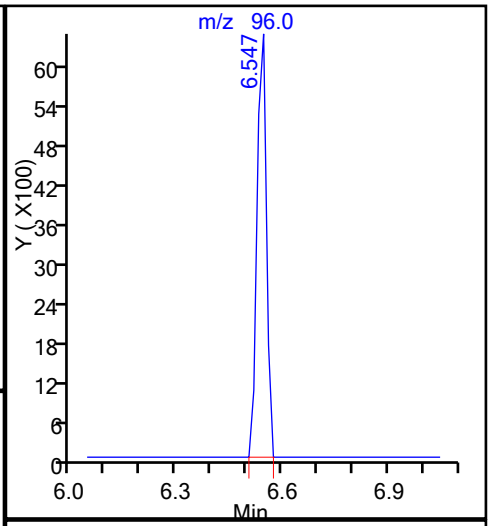
TestAmerica St. Louis

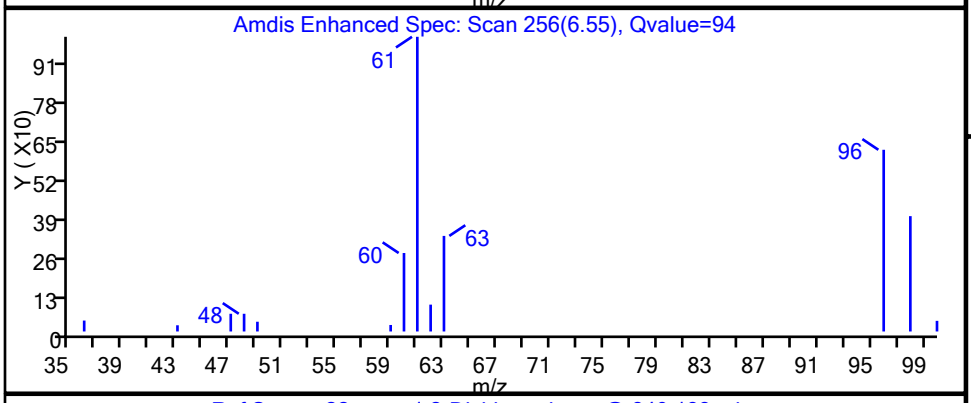
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4981.D

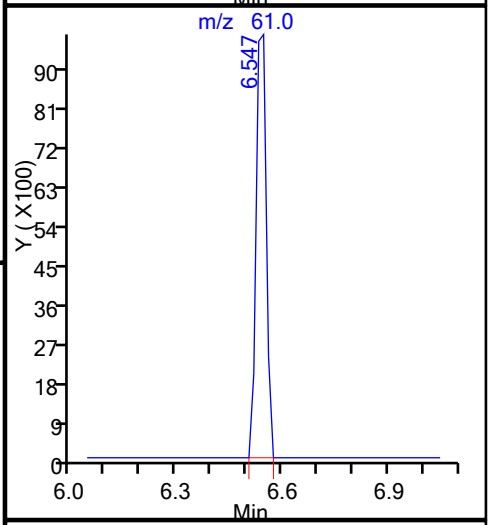
Injection Date:	07-Sep-2016 20:12:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-8	Lab Sample ID:	160-18852-8		
Client ID:	GW-BR10JC-082516				
Operator ID:	SMCR	ALS Bottle#:	24	Worklist Smp#:	28
Purge Vol:	25.000 mL	Dil. Factor:	10.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

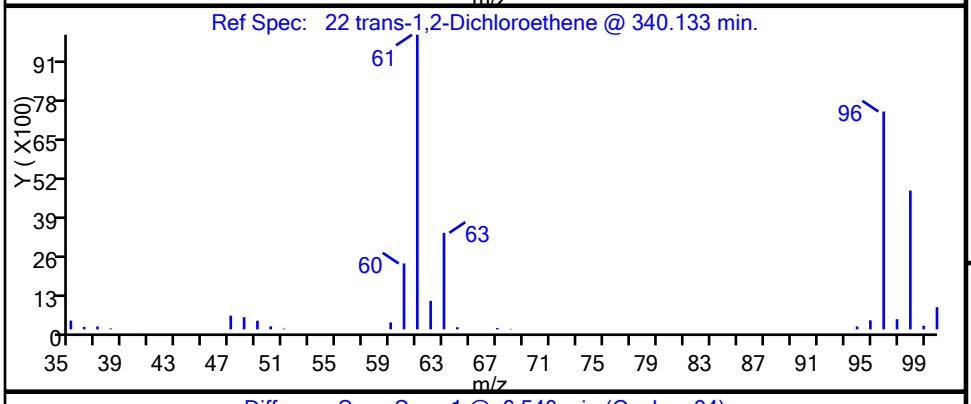
22 trans-1,2-Dichloroethene, CAS: 156-60-5

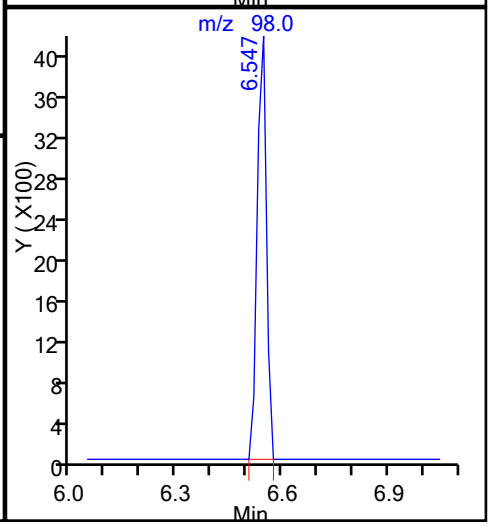


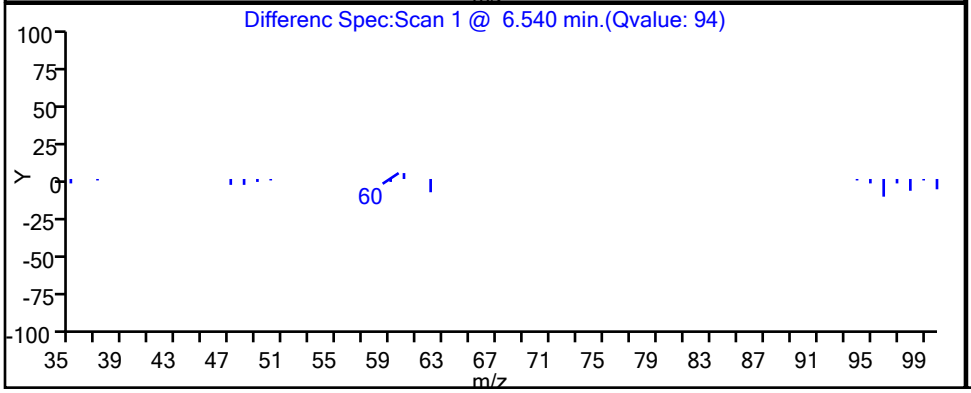










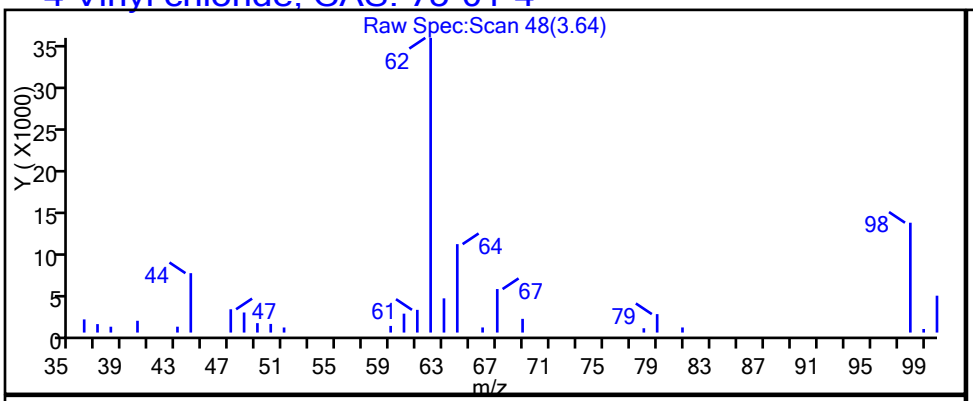


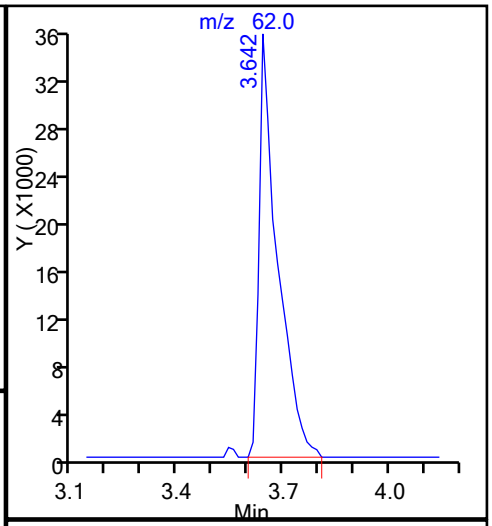
Report Date: 08-Sep-2016 08:40:12 Chrom Revision: 2.2 20-Apr-2016 13:59:46

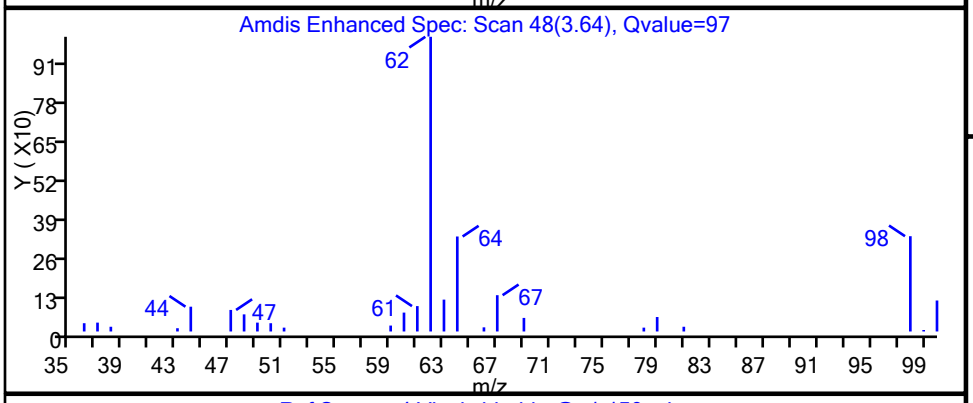
TestAmerica St. Louis

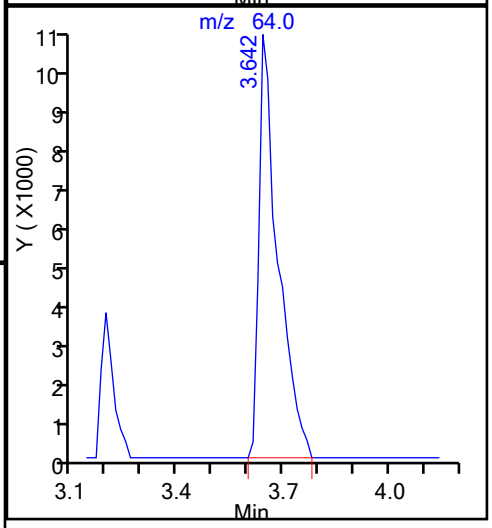
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4981.D				
Injection Date:	07-Sep-2016 20:12:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-8	Lab Sample ID:	160-18852-8		
Client ID:	GW-BR10JC-082516				
Operator ID:	SMCR	ALS Bottle#:	24	Worklist Smp#:	28
Purge Vol:	25.000 mL	Dil. Factor:	10.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

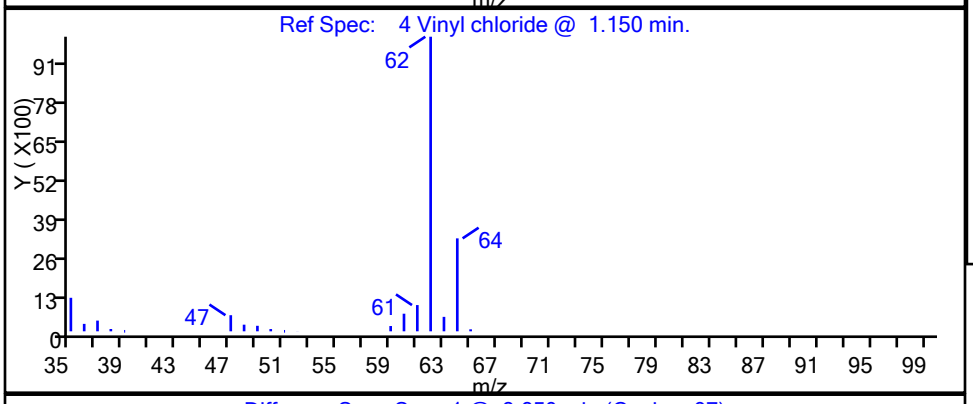
4 Vinyl chloride, CAS: 75-01-4

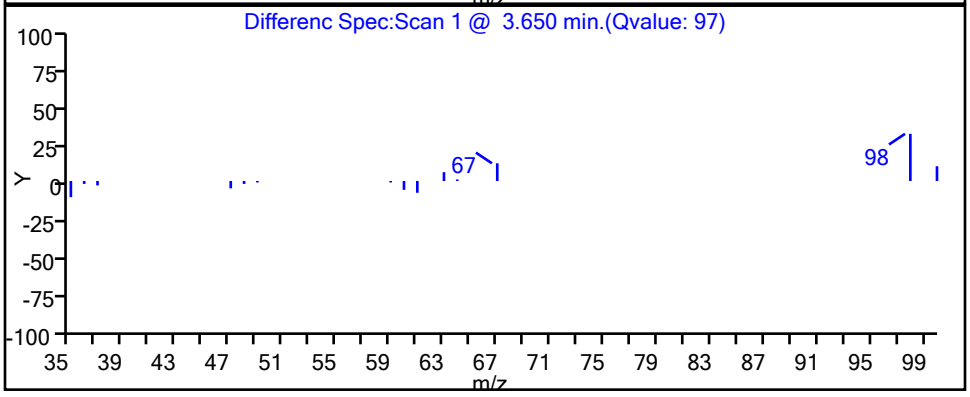












FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR10JC-082516 | Lab Sample ID: 160-18852-8

Matrix: Water | Lab File ID: LSMP4975.D

Analysis Method: 8260C | Date Collected: 08/25/2016 13:10

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 17:41

Soil Aliquot Vol: | Dilution Factor: 100

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
540-59-0	1,2-Dichloroethene, Total	550		200	14
156-59-2	cis-1,2-Dichloroethene	550		100	10
79-01-6	Trichloroethene	1200		100	25

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	106		75-129
460-00-4	4-Bromofluorobenzene (Surr)	114		81-130
1868-53-7	Dibromofluoromethane (Surr)	108		81-124
2037-26-5	Toluene-d8 (Surr)	114		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4975.D
Lims ID: 160-18852-A-8
Client ID: GW-BR10JC-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 17:41:30 ALS Bottle#: 18 Worklist Smp#: 22
Purge Vol: 25.000 mL Dil. Factor: 100.0000
Sample Info: 160-0008407-022
Misc. Info.: 160-18852-a-8
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:11:50

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
3 Chloromethane	50		3.474				ND	
4 Vinyl chloride	62		3.642				ND	
6 Bromomethane	94		4.256				ND	
7 Chloroethane	64		4.479				ND	
12 1,1-Dichloroethene	96		5.541				ND	
13 Carbon disulfide	76		5.583				ND	
S 15 1,2-Dichloroethene, Total	96				0		5.49	
20 Methylene Chloride	84		6.337				ND	
21 Acetone	43		6.407				ND	
22 trans-1,2-Dichloroethene	96		6.546				ND	
30 1,1-Dichloroethane	63	7.273	7.259	0.014	97	32504	0.4775	
33 Vinyl acetate	43		7.510				ND	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	84	187506	5.49	
38 Chloroform	83		8.097				ND	
40 Carbon tetrachloride	117		8.264				ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	264309	10.8	
43 1,1,1-Trichloroethane	97		8.334				ND	
45 2-Butanone (MEK)	43		8.404				ND	
48 Benzene	78		8.683				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	93	274561	10.6	
54 1,2-Dichloroethane	62		8.879				ND	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1273283	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	96	462853	12.2	
59 n-Butanol	56		9.451				ND	
62 1,2-Dichloropropane	63		9.717				ND	
63 Dichlorobromomethane	83		9.759				ND	
67 cis-1,3-Dichloropropene	75		10.317				ND	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	95	1227468	11.4	
69 Toluene	92		10.541				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
72 trans-1,3-Dichloropropene	75		10.890				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
73 Tetrachloroethene	164	10.904	10.904	0.000	98	41308	1.26	
75 1,1,2-Trichloroethane	83		11.058				ND	
76 Chlorodibromomethane	129		11.225				ND	
79 Ethylene Dibromide	107		11.477				ND	
80 2-Hexanone	43		11.588				ND	
* 83 Chlorobenzene-d5	117	11.910	11.910	0.000	89	824351	10.0	
82 Ethylbenzene	91		11.910				ND	
84 Chlorobenzene	112		11.923				ND	
86 m-Xylene & p-Xylene	106		12.035				ND	
88 o-Xylene	106		12.440				ND	
89 Styrene	104		12.482				ND	
90 Bromoform	173		12.552				ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	88	361406	11.4	
95 1,1,2,2-Tetrachloroethane	83		13.166				ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	378077	10.0	
115 1,2-Dibromo-3-Chloropropan	157		15.303				ND	
117 1,2,4-Trichlorobenzene	180		15.974				ND	
S 119 Xylenes, Total	106		16.500				ND	

Reagents:

I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

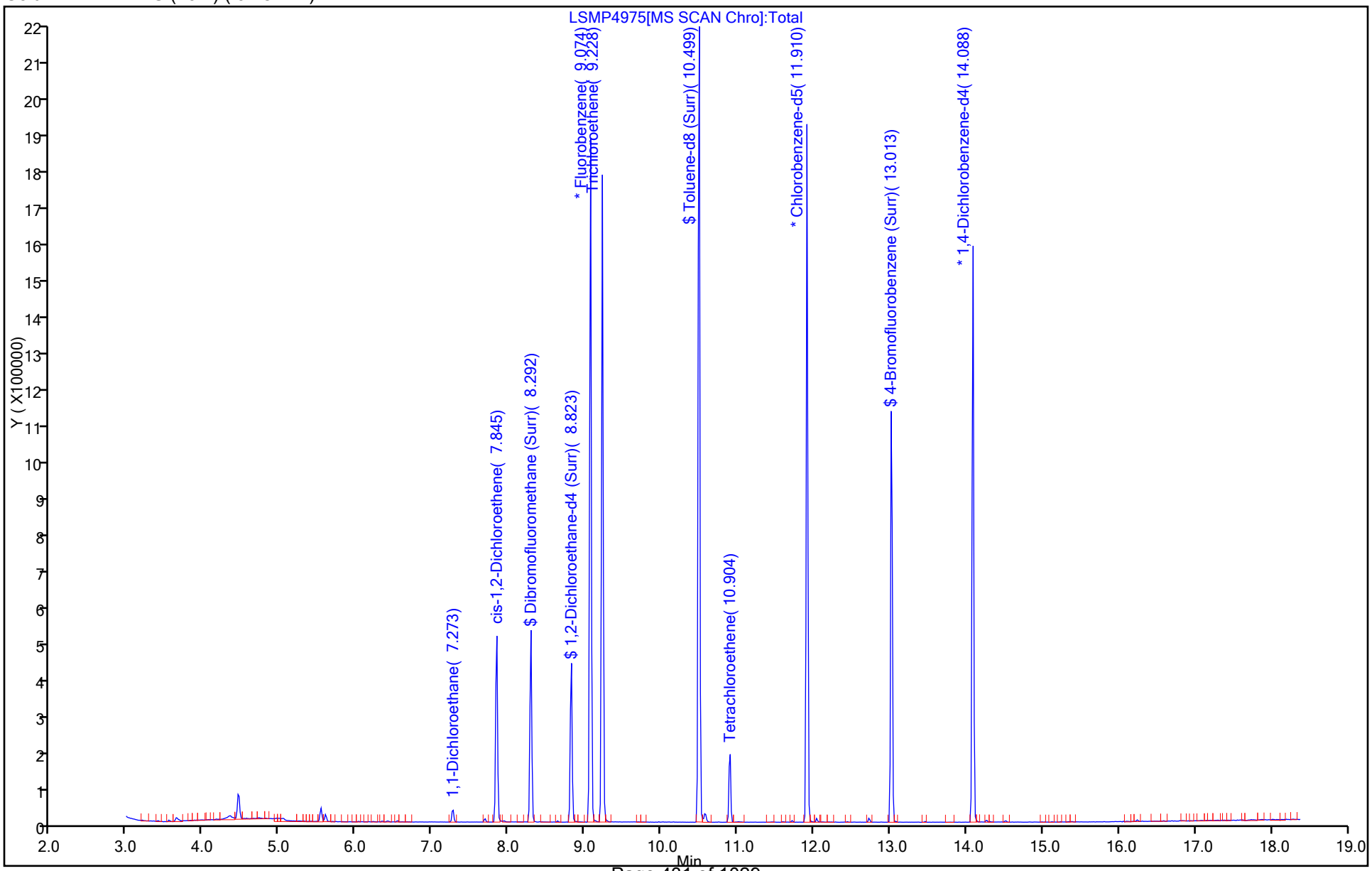
Report Date: 08-Sep-2016 08:40:04 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4975.D

Injection Date:	07-Sep-2016 17:41:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	160-18852-A-8	Lab Sample ID:	160-18852-8	Worklist Smp#:	22
Client ID:	GW-BR10JC-082516				
Purge Vol:	25.000 mL	Dil. Factor:	100.0000	ALS Bottle#:	18
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4975.D
Lims ID: 160-18852-A-8
Client ID: GW-BR10JC-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 17:41:30 ALS Bottle#: 18 Worklist Smp#: 22
Purge Vol: 25.000 mL Dil. Factor: 100.0000
Sample Info: 160-0008407-022
Misc. Info.: 160-18852-a-8
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:11:50

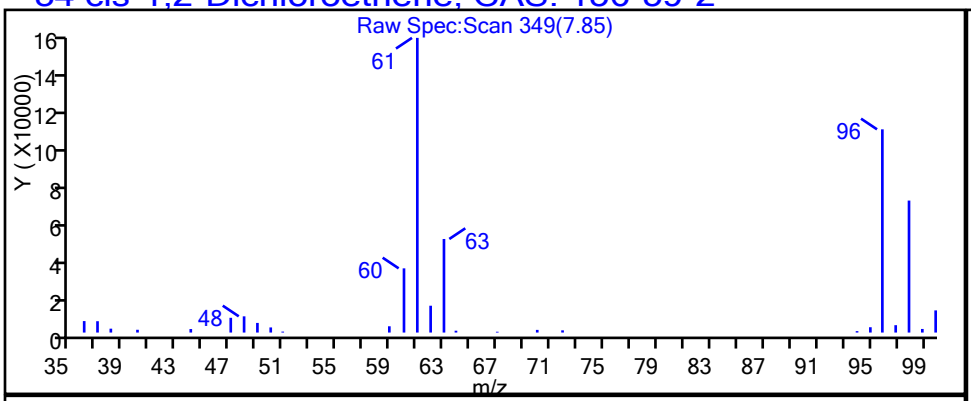
Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.8	108.03
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	10.6	106.08
$ 68 Toluene-d8 (Surr)	10.0	11.4	114.06
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.4	113.92

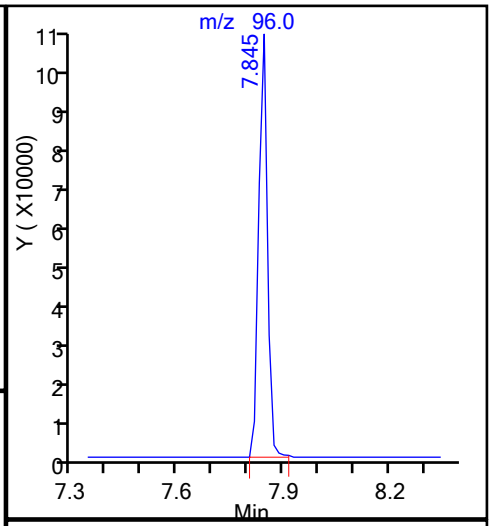
Report Date: 08-Sep-2016 08:40:04 Chrom Revision: 2.2 20-Apr-2016 13:59:46

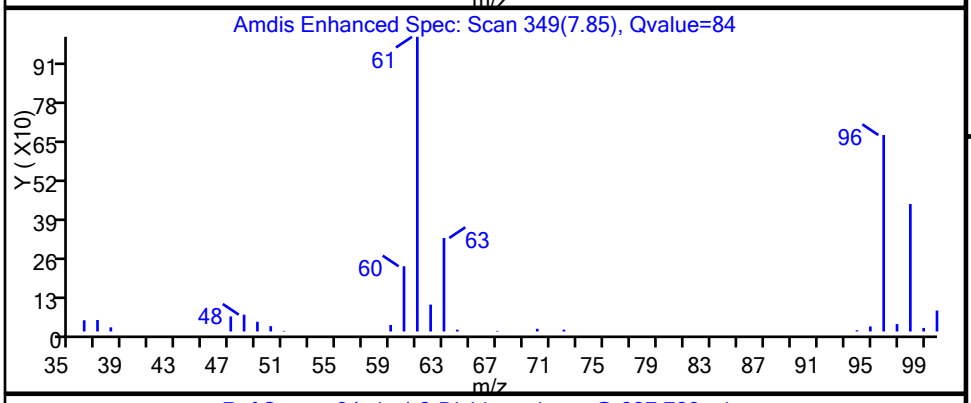
TestAmerica St. Louis

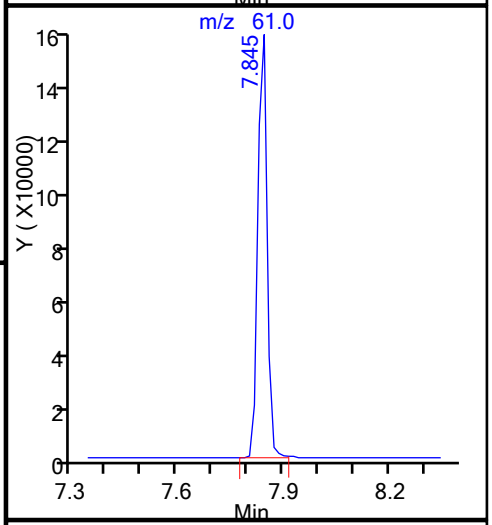
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4975.D				
Injection Date:	07-Sep-2016 17:41:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-8	Lab Sample ID:	160-18852-8		
Client ID:	GW-BR10JC-082516				
Operator ID:	SMCR	ALS Bottle#:	18	Worklist Smp#:	22
Purge Vol:	25.000 mL	Dil. Factor:	100.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

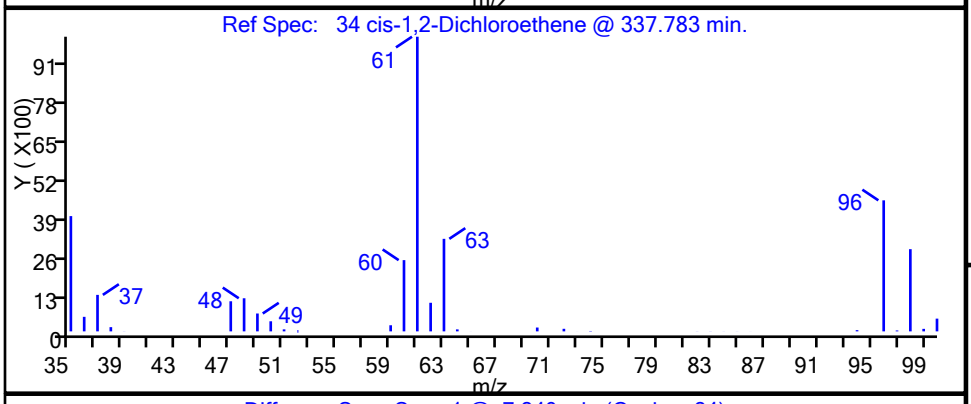
34 cis-1,2-Dichloroethene, CAS: 156-59-2

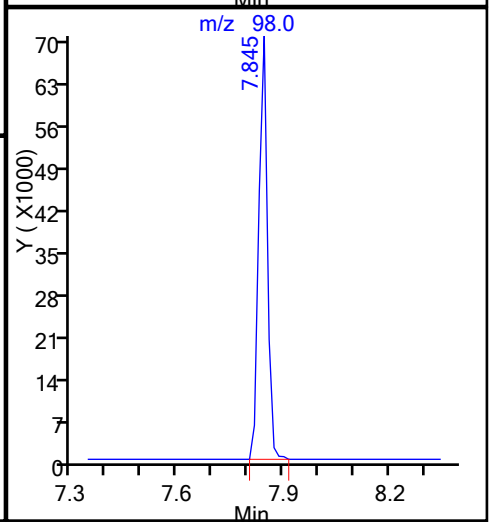


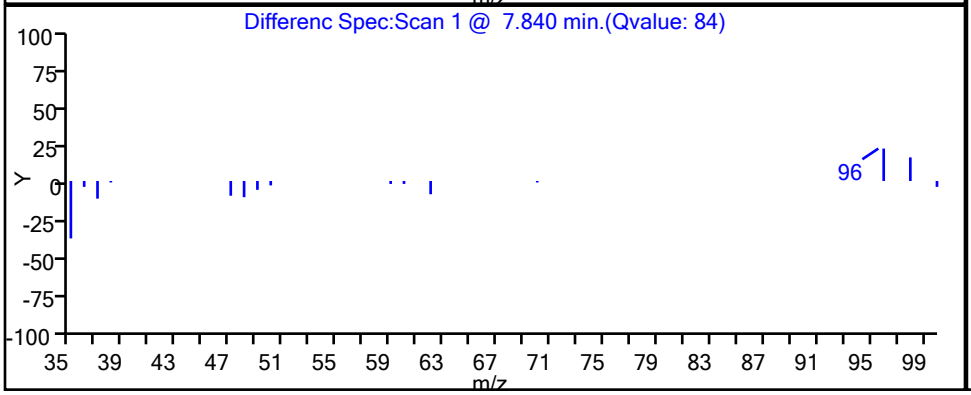












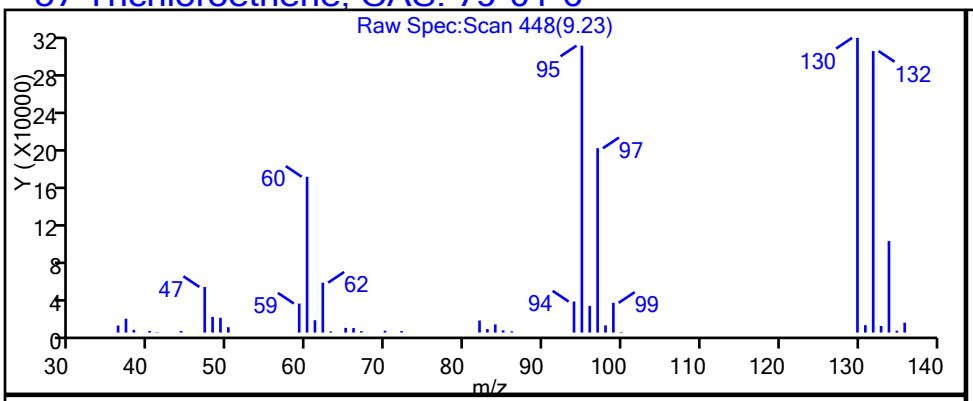
Report Date: 08-Sep-2016 08:40:04 Chrom Revision: 2.2 20-Apr-2016 13:59:46

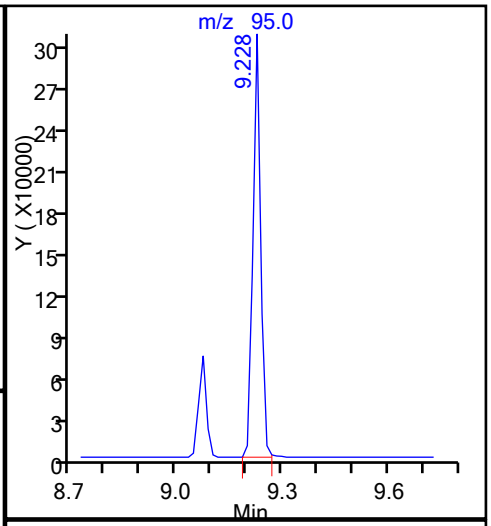
TestAmerica St. Louis

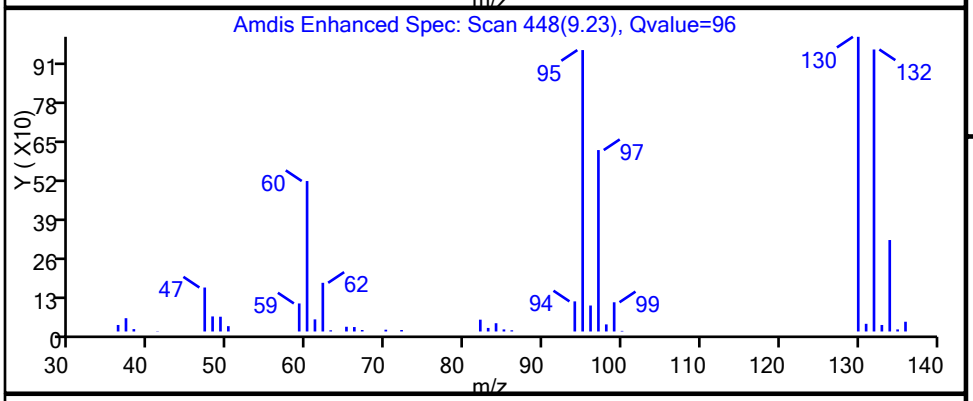
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4975.D

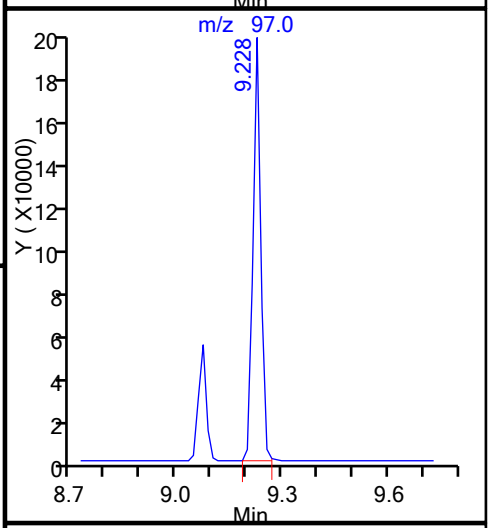
Injection Date:	07-Sep-2016 17:41:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-8	Lab Sample ID:	160-18852-8		
Client ID:	GW-BR10JC-082516				
Operator ID:	SMCR	ALS Bottle#:	18	Worklist Smp#:	22
Purge Vol:	25.000 mL	Dil. Factor:	100.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

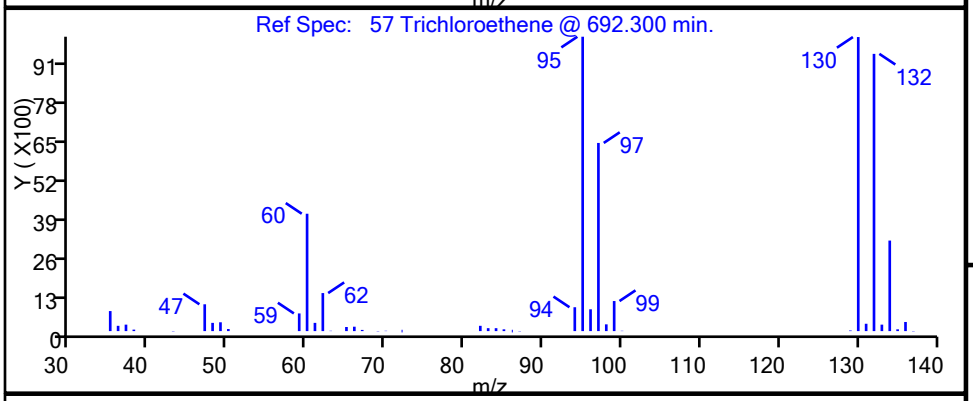
57 Trichloroethene, CAS: 79-01-6

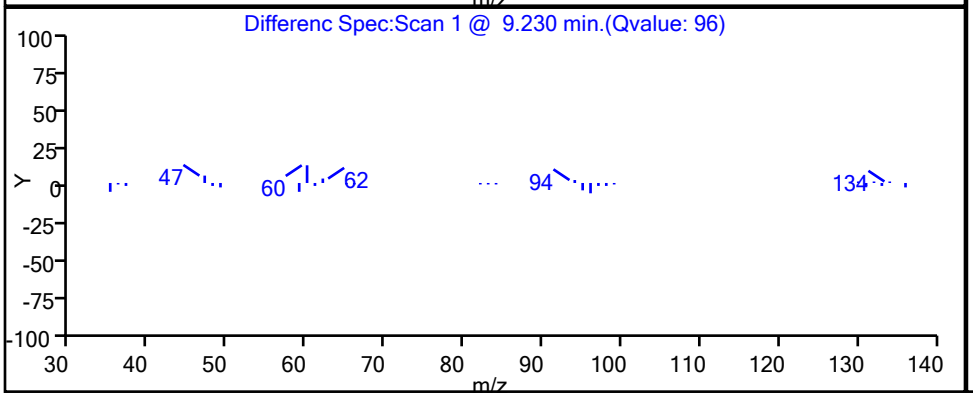


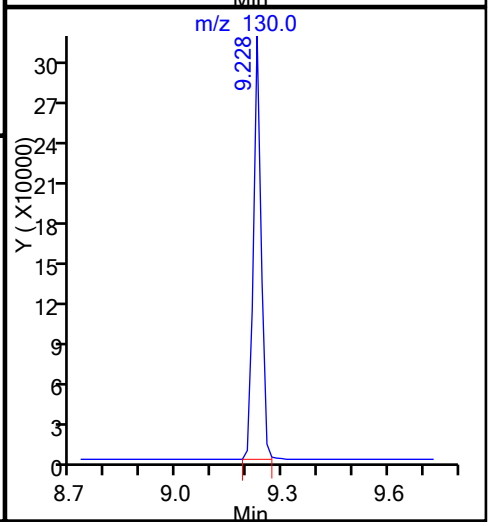












FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-NB72-082516 | Lab Sample ID: 160-18852-9

Matrix: Water | Lab File ID: LSMP4982.D

Analysis Method: 8260C | Date Collected: 08/25/2016 13:40

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 20:37

Soil Aliquot Vol: | Dilution Factor: 50

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	ND		50	8.6
79-34-5	1,1,2,2-Tetrachloroethane	ND		50	5.0
79-00-5	1,1,2-Trichloroethane	ND		50	6.6
75-35-4	1,1-Dichloroethene	120		50	5.0
75-34-3	1,1-Dichloroethane	170		50	3.5
120-82-1	1,2,4-Trichlorobenzene	ND		50	5.0
96-12-8	1,2-Dibromo-3-Chloropropane	ND		50	21
107-06-2	1,2-Dichloroethane	ND		50	11
78-87-5	1,2-Dichloropropane	ND		50	5.0
78-93-3	2-Butanone	ND		250	23
591-78-6	2-Hexanone	ND		250	12
108-10-1	4-Methyl-2-pentanone	ND		250	11
67-64-1	Acetone	ND		100	28
71-43-2	Benzene	ND		50	5.0
75-25-2	Bromoform	ND		50	8.5
74-83-9	Methyl bromide	ND		100	13
75-15-0	Carbon disulfide	ND		50	5.0
56-23-5	Carbon tetrachloride	ND		50	9.1
108-90-7	Chlorobenzene	ND		50	5.5
124-48-1	Chlorodibromomethane	ND		50	7.2
75-00-3	Chloroethane	ND		100	8.2
67-66-3	Chloroform	ND		50	5.0
74-87-3	Chloromethane	ND		100	5.1
10061-01-5	cis-1,3-Dichloropropene	ND		50	7.9
75-27-4	Bromodichloromethane	ND		50	6.9
100-41-4	Ethylbenzene	ND		50	6.1
106-93-4	1,2-Dibromoethane	ND		50	6.5
75-09-2	Methylene Chloride	ND		50	14
71-36-3	n-Butanol	ND		2500	620
100-42-5	Styrene	ND		50	6.7
127-18-4	Tetrachloroethene	170		50	9.0
108-88-3	Toluene	ND		50	7.0
156-60-5	trans-1,2-Dichloroethene	22	J	50	5.2
10061-02-6	trans-1,3-Dichloropropene	ND		50	5.0
108-05-4	Vinyl acetate	ND		100	9.0
75-01-4	Vinyl chloride	100		100	9.7

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-NB72-082516 | Lab Sample ID: 160-18852-9

Matrix: Water | Lab File ID: LSMP4982.D

Analysis Method: 8260C | Date Collected: 08/25/2016 13:40

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 20:37

Soil Aliquot Vol: | Dilution Factor: 50

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1330-20-7	Xylenes, Total	ND		150	13

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	107		75-129
460-00-4	4-Bromofluorobenzene (Surr)	116		81-130
1868-53-7	Dibromofluoromethane (Surr)	111		81-124
2037-26-5	Toluene-d8 (Surr)	116		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4982.D
Lims ID: 160-18852-A-9
Client ID: GW-NB72-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 20:37:30 ALS Bottle#: 25 Worklist Smp#: 29
Purge Vol: 25.000 mL Dil. Factor: 50.0000
Sample Info: 160-0008407-029
Misc. Info.: 160-18852-a-9
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:39:04

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
3 Chloromethane	50		3.474				ND	
4 Vinyl chloride	62	3.641	3.642	-0.001	98	113864	2.05	
6 Bromomethane	94		4.256				ND	
7 Chloroethane	64		4.479				ND	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	94	82225	2.38	
13 Carbon disulfide	76		5.583				ND	
S 15 1,2-Dichloroethene, Total	96				0		116.9	
20 Methylene Chloride	84		6.337				ND	
21 Acetone	43		6.407				ND	
22 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	94	15463	0.4357	
30 1,1-Dichloroethane	63	7.273	7.259	0.014	97	219785	3.32	
33 Vinyl acetate	43		7.510				ND	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	84	3864288	116.5	E
38 Chloroform	83		8.097				ND	
40 Carbon tetrachloride	117		8.264				ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	264372	11.1	
43 1,1,1-Trichloroethane	97		8.334				ND	
45 2-Butanone (MEK)	43		8.404				ND	
48 Benzene	78		8.683				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	94	270199	10.7	
54 1,2-Dichloroethane	62		8.879				ND	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1237324	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	96	4330419	117.2	E
59 n-Butanol	56		9.451				ND	
62 1,2-Dichloropropane	63		9.717				ND	
63 Dichlorobromomethane	83		9.759				ND	
67 cis-1,3-Dichloropropene	75		10.317				ND	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	95	1204032	11.6	
69 Toluene	92		10.541				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
72 trans-1,3-Dichloropropene	75		10.890				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
73 Tetrachloroethene	164	10.904	10.904	0.000	97	105483	3.33	
75 1,1,2-Trichloroethane	83		11.058				ND	
76 Chlorodibromomethane	129		11.225				ND	
79 Ethylene Dibromide	107		11.477				ND	
80 2-Hexanone	43		11.588				ND	
* 83 Chlorobenzene-d5	117	11.909	11.910	-0.001	89	794093	10.0	
82 Ethylbenzene	91		11.910				ND	
84 Chlorobenzene	112		11.923				ND	
86 m-Xylene & p-Xylene	106		12.035				ND	
88 o-Xylene	106		12.440				ND	
89 Styrene	104		12.482				ND	
90 Bromoform	173		12.552				ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	89	347468	11.6	
95 1,1,2,2-Tetrachloroethane	83		13.166				ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	355498	10.0	
115 1,2-Dibromo-3-Chloropropan	157		15.303				ND	
117 1,2,4-Trichlorobenzene	180		15.974				ND	
S 119 Xylenes, Total	106		16.500				ND	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Reagents:

I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

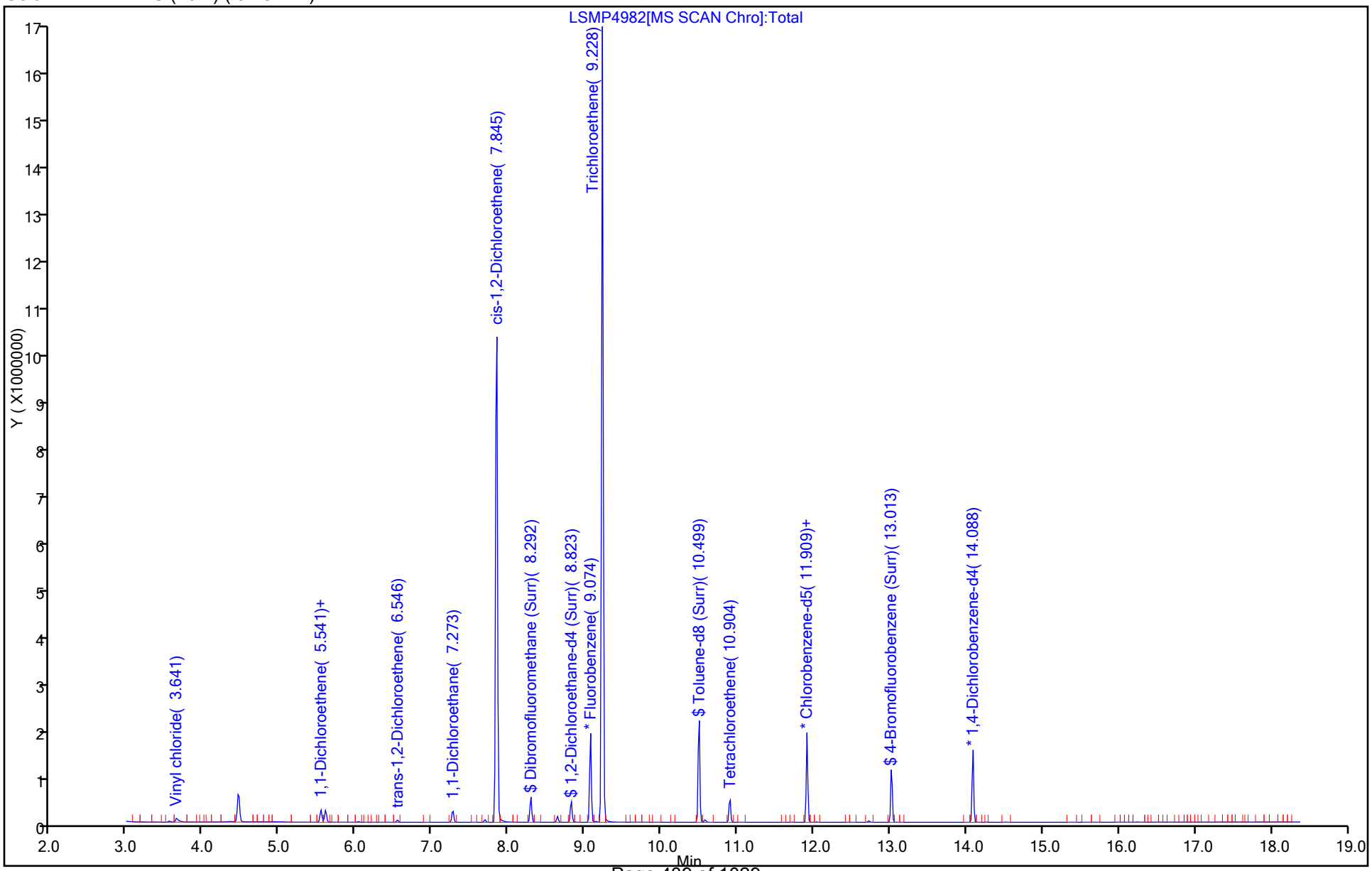
Report Date: 08-Sep-2016 08:40:13 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4982.D

Injection Date:	07-Sep-2016 20:37:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	160-18852-A-9	Lab Sample ID:	160-18852-9	Worklist Smp#:	29
Client ID:	GW-NB72-082516				
Purge Vol:	25.000 mL	Dil. Factor:	50.0000	ALS Bottle#:	25
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4982.D
Lims ID: 160-18852-A-9
Client ID: GW-NB72-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 20:37:30 ALS Bottle#: 25 Worklist Smp#: 29
Purge Vol: 25.000 mL Dil. Factor: 50.0000
Sample Info: 160-0008407-029
Misc. Info.: 160-18852-a-9
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:39:04

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	11.1	111.19
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	10.7	107.43
$ 68 Toluene-d8 (Surr)	10.0	11.6	116.15
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.6	116.48

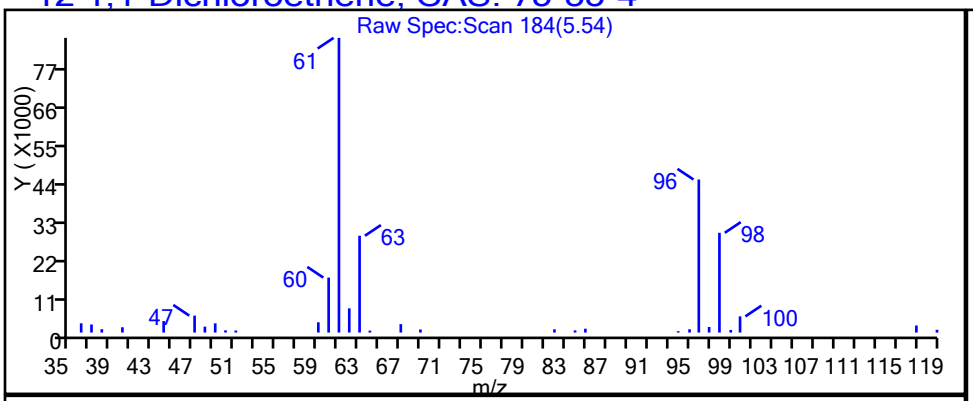
Report Date: 08-Sep-2016 08:40:13 Chrom Revision: 2.2 20-Apr-2016 13:59:46

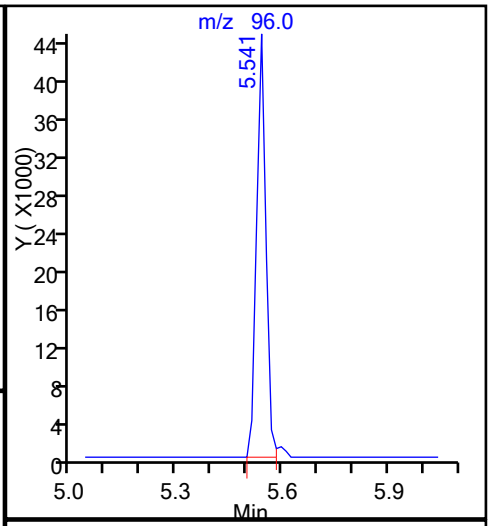
TestAmerica St. Louis

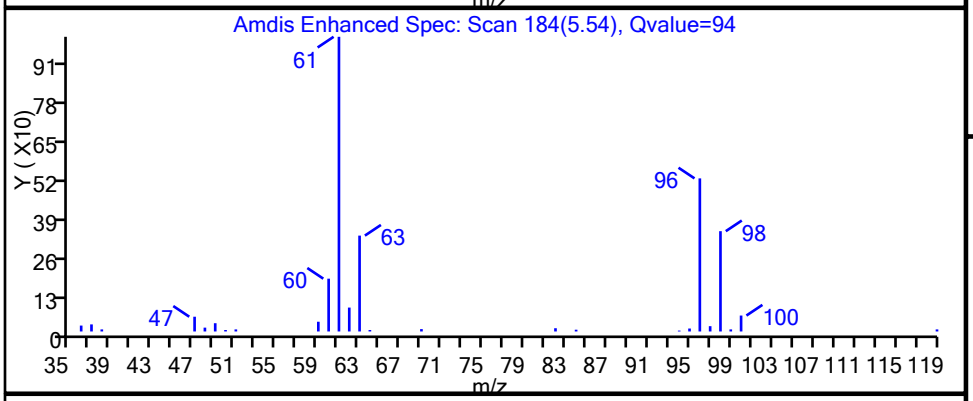
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4982.D

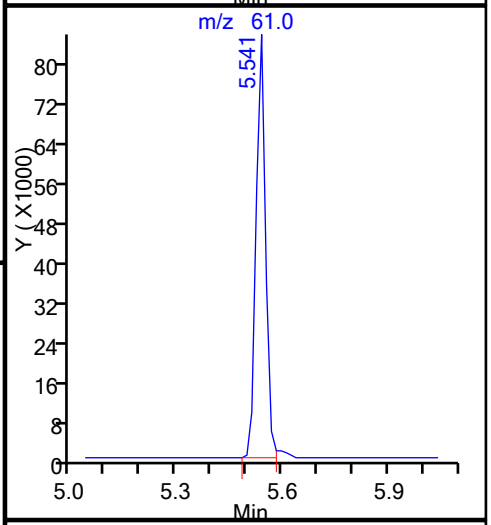
Injection Date:	07-Sep-2016 20:37:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-9	Lab Sample ID:	160-18852-9		
Client ID:	GW-NB72-082516				
Operator ID:	SMCR	ALS Bottle#:	25	Worklist Smp#:	29
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

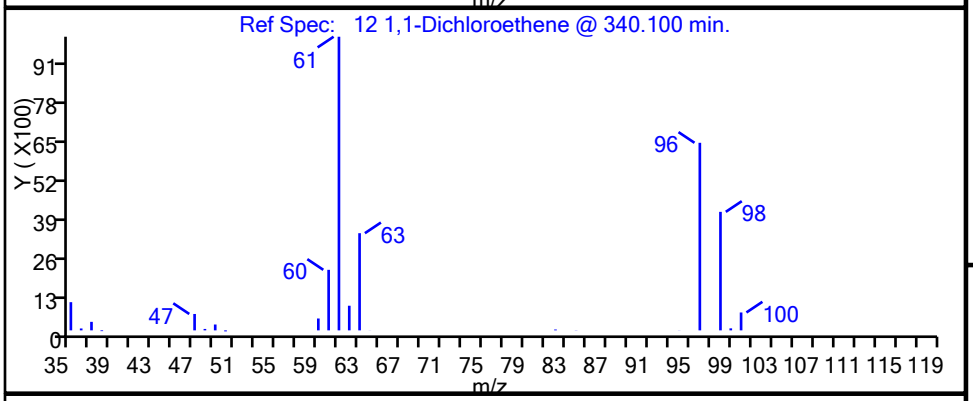
12 1,1-Dichloroethene, CAS: 75-35-4

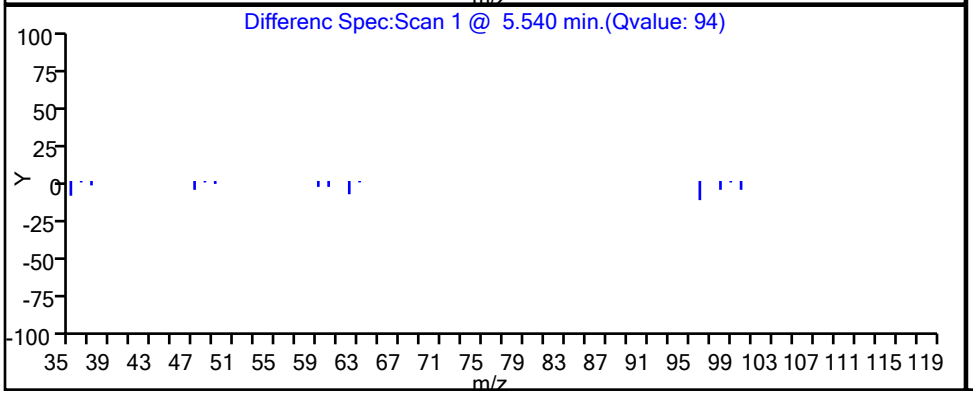


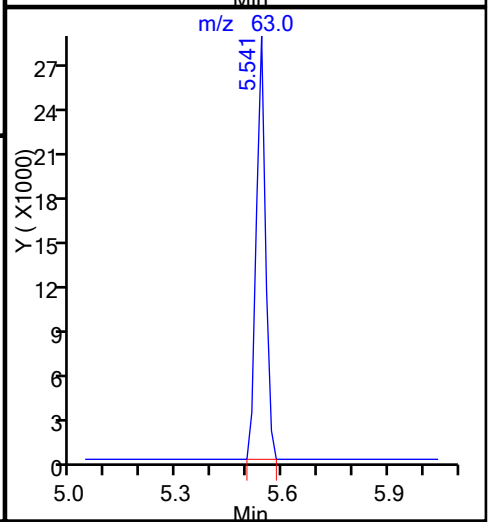












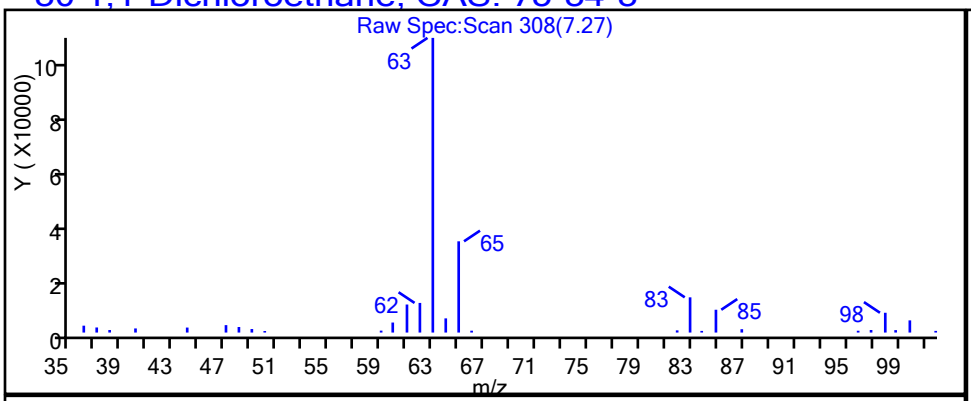
Report Date: 08-Sep-2016 08:40:13 Chrom Revision: 2.2 20-Apr-2016 13:59:46

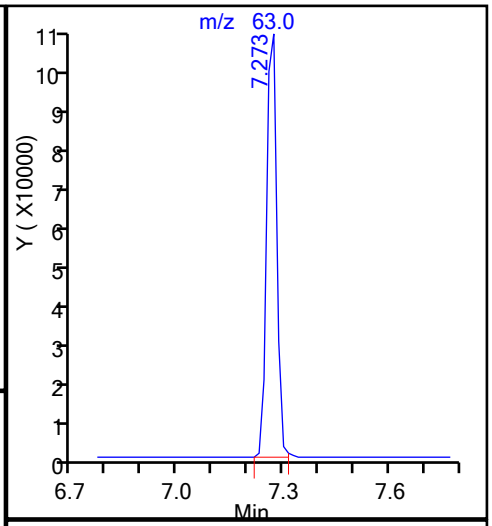
TestAmerica St. Louis

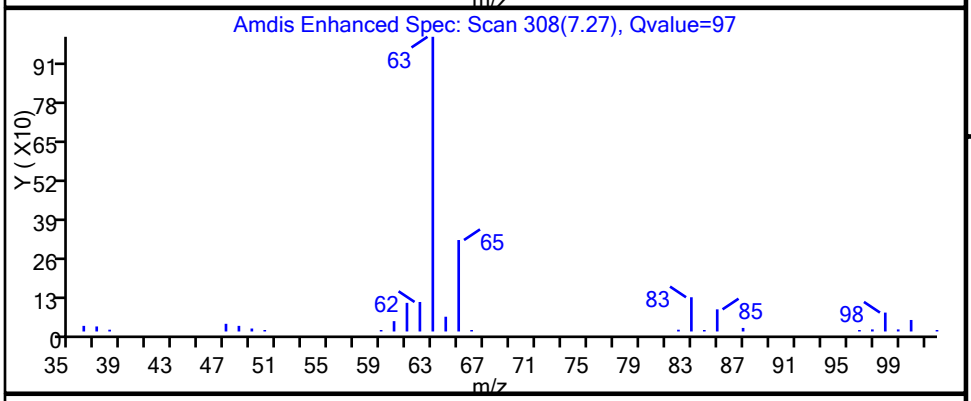
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4982.D

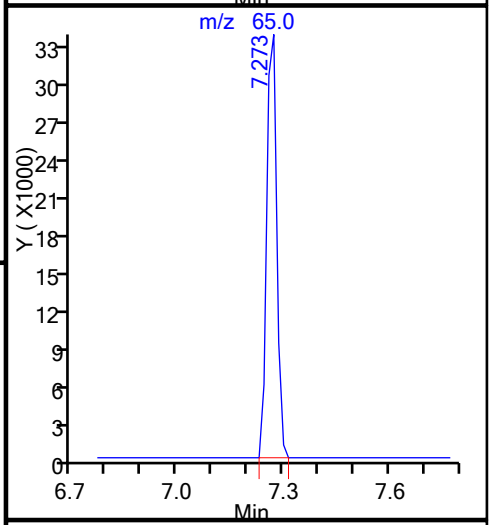
Injection Date:	07-Sep-2016 20:37:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-9	Lab Sample ID:	160-18852-9		
Client ID:	GW-NB72-082516				
Operator ID:	SMCR	ALS Bottle#:	25	Worklist Smp#:	29
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

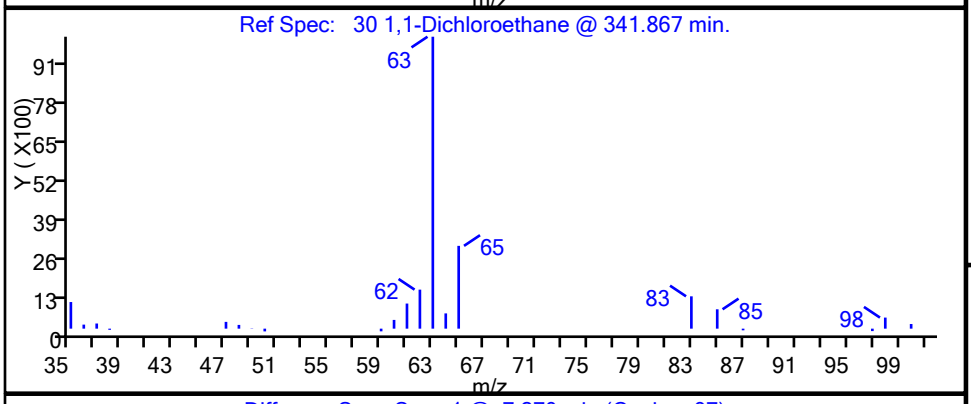
30 1,1-Dichloroethane, CAS: 75-34-3

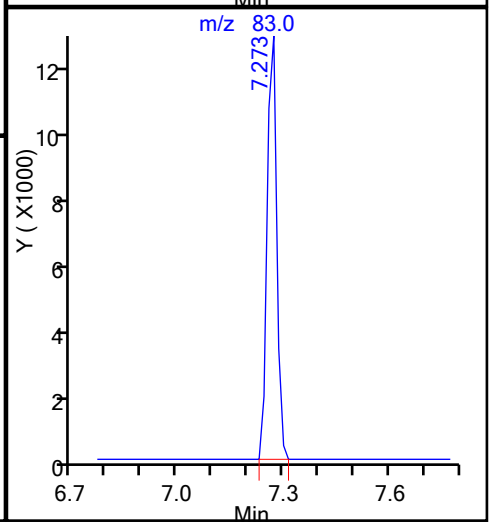


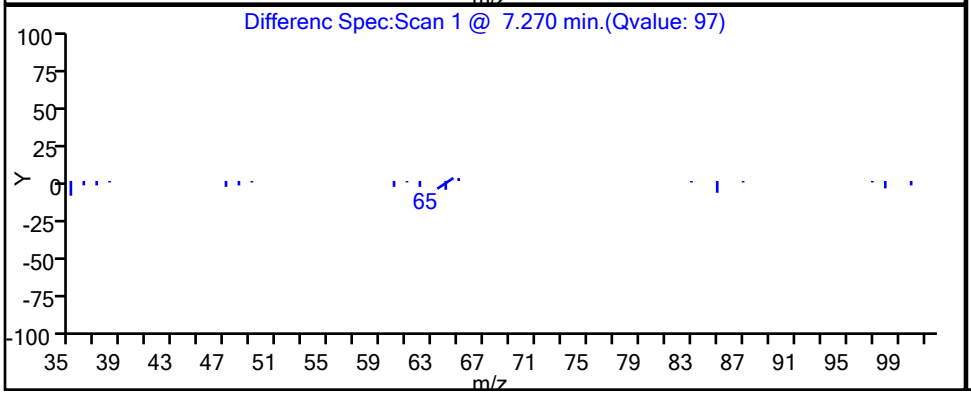












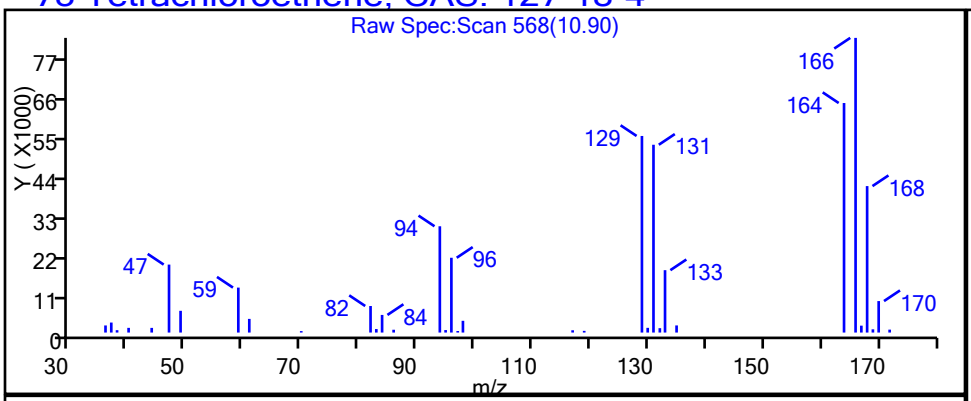
Report Date: 08-Sep-2016 08:40:13 Chrom Revision: 2.2 20-Apr-2016 13:59:46

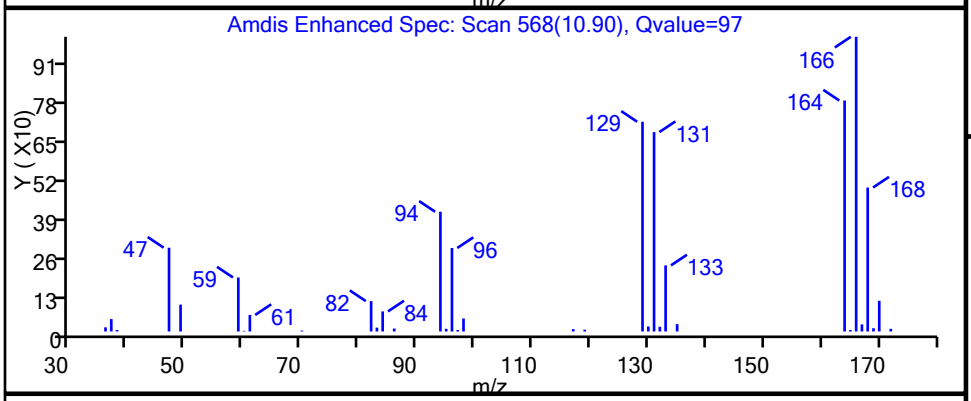
TestAmerica St. Louis

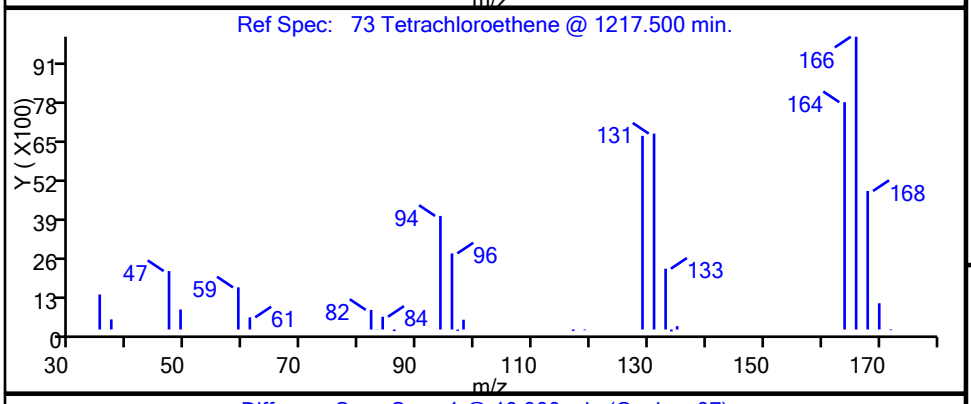
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4982.D

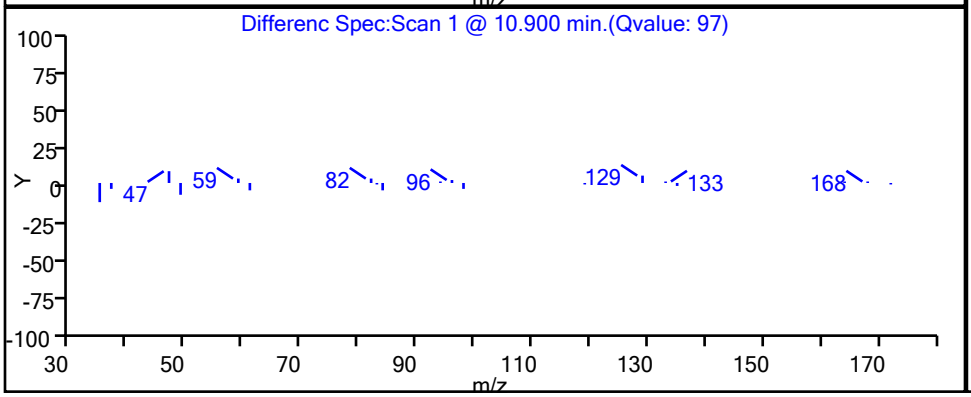
Injection Date:	07-Sep-2016 20:37:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-9	Lab Sample ID:	160-18852-9		
Client ID:	GW-NB72-082516				
Operator ID:	SMCR	ALS Bottle#:	25	Worklist Smp#:	29
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

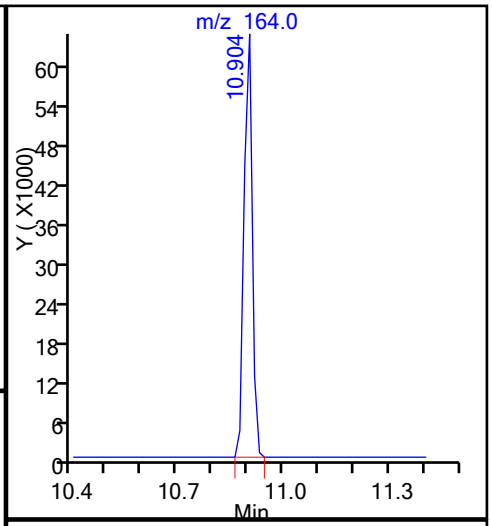
73 Tetrachloroethene, CAS: 127-18-4

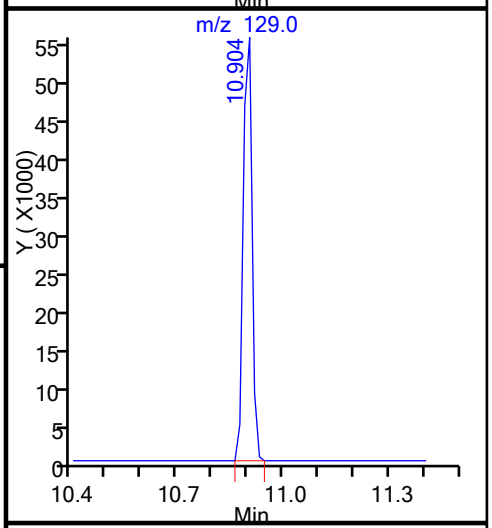


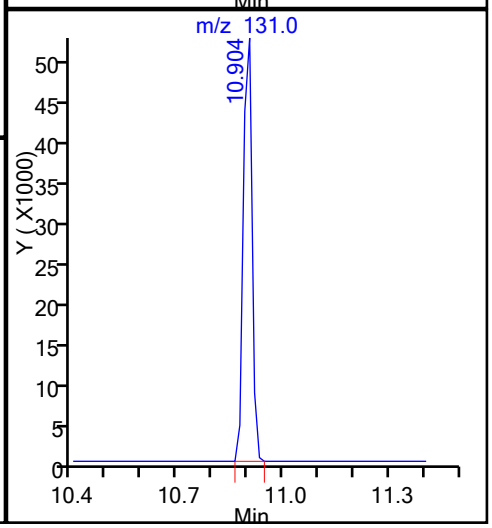












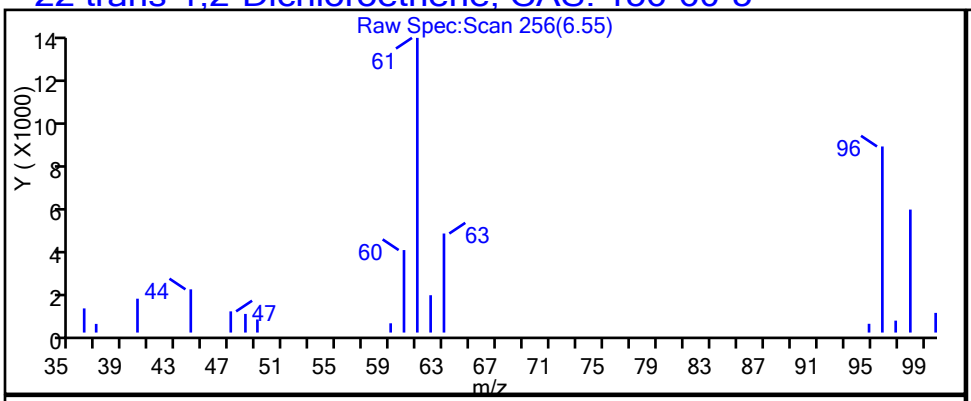
Report Date: 08-Sep-2016 08:40:13 Chrom Revision: 2.2 20-Apr-2016 13:59:46

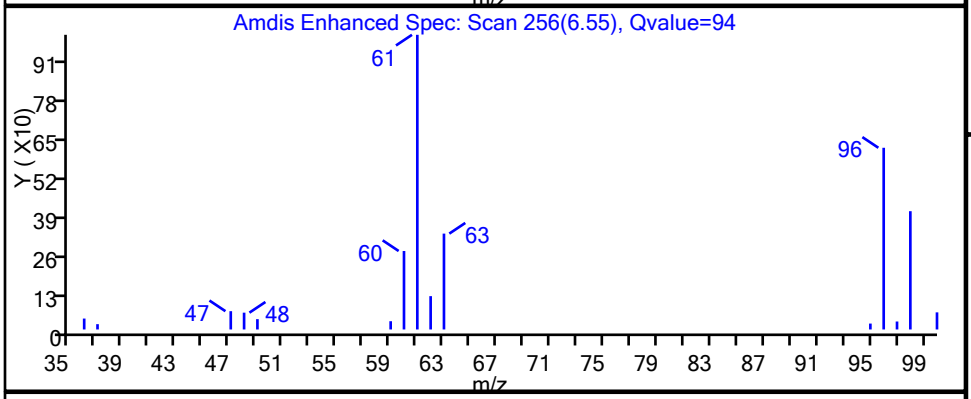
TestAmerica St. Louis

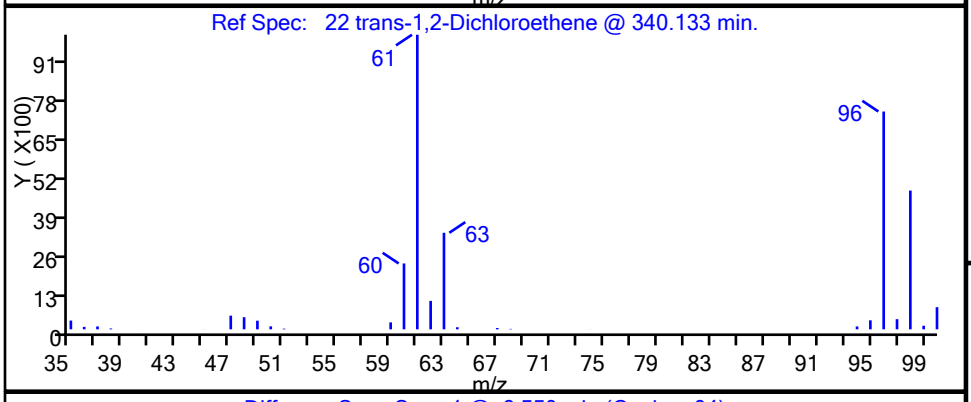
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4982.D

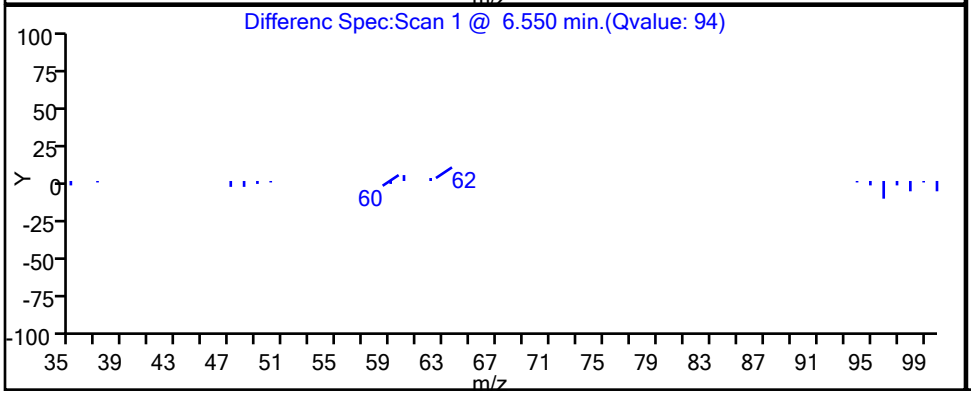
Injection Date:	07-Sep-2016 20:37:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-9	Lab Sample ID:	160-18852-9		
Client ID:	GW-NB72-082516				
Operator ID:	SMCR	ALS Bottle#:	25	Worklist Smp#:	29
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

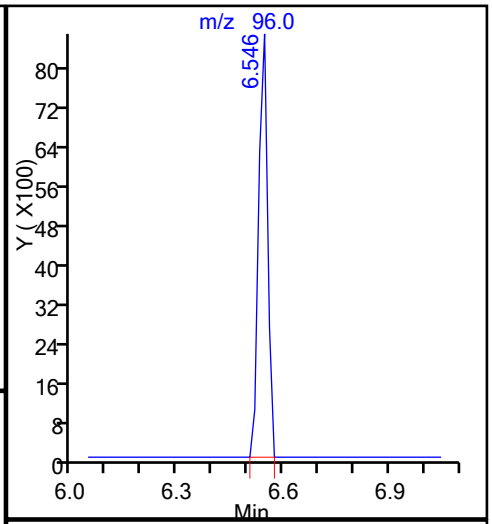
22 trans-1,2-Dichloroethene, CAS: 156-60-5

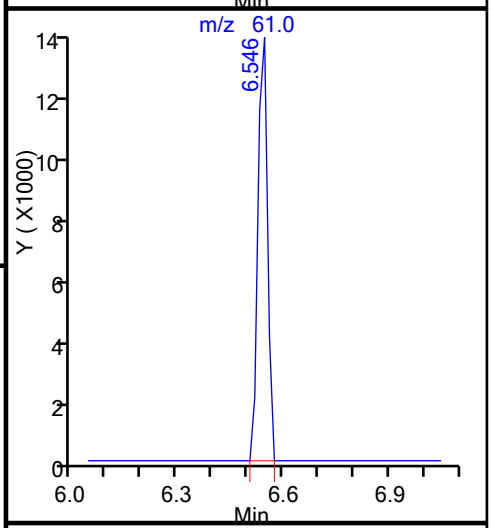


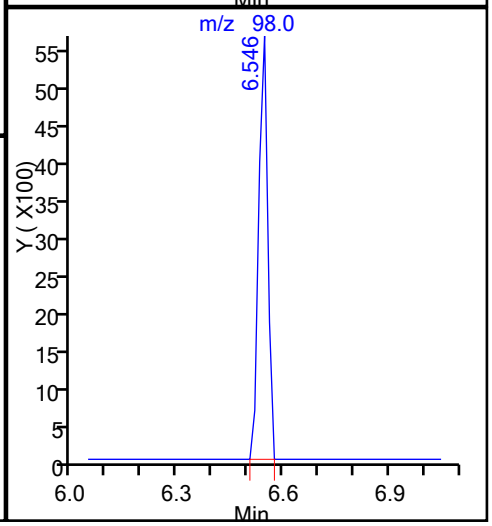










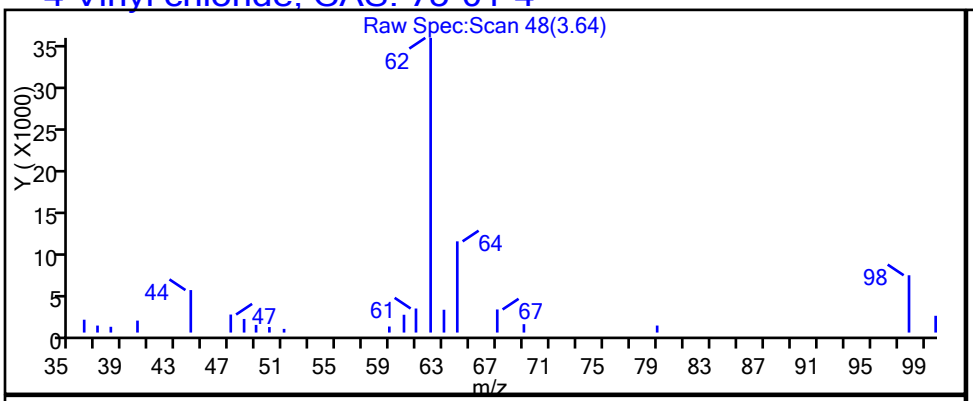


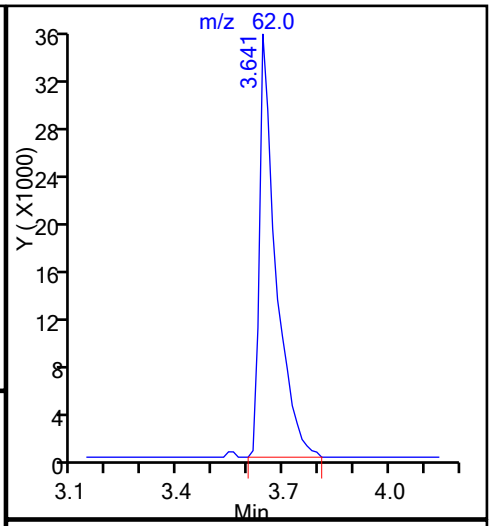
Report Date: 08-Sep-2016 08:40:13 Chrom Revision: 2.2 20-Apr-2016 13:59:46

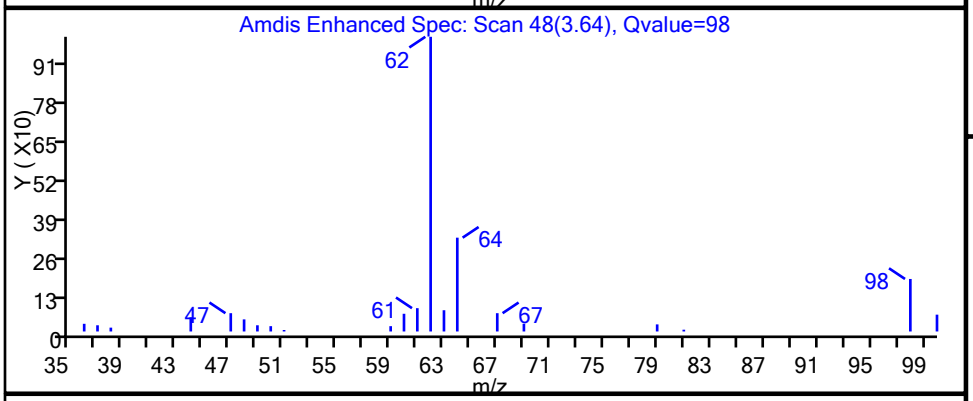
TestAmerica St. Louis

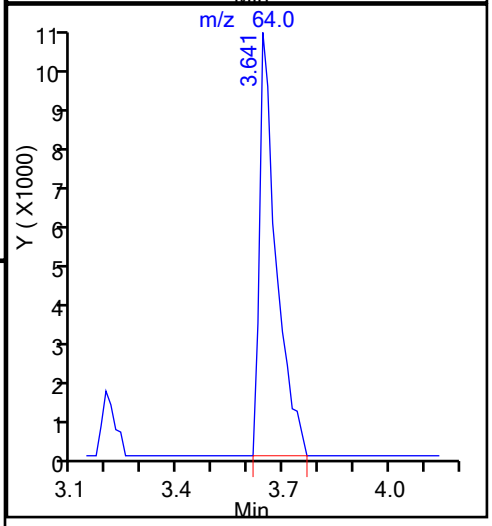
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4982.D				
Injection Date:	07-Sep-2016 20:37:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-9	Lab Sample ID:	160-18852-9		
Client ID:	GW-NB72-082516				
Operator ID:	SMCR	ALS Bottle#:	25	Worklist Smp#:	29
Purge Vol:	25.000 mL	Dil. Factor:	50.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

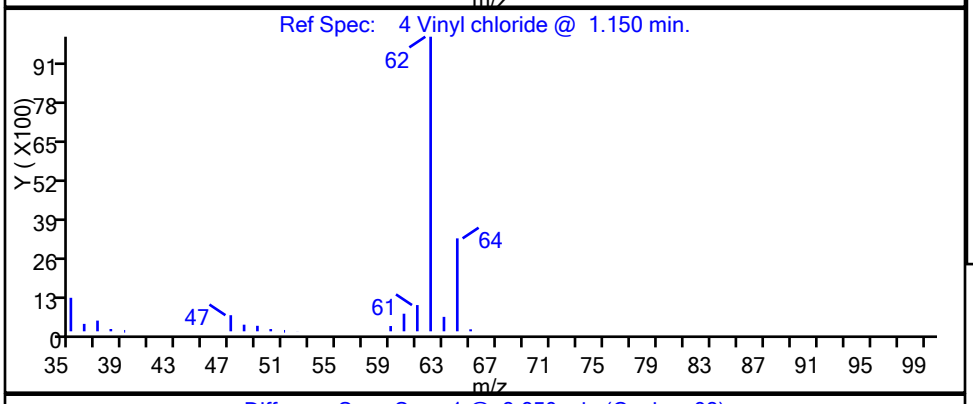
4 Vinyl chloride, CAS: 75-01-4

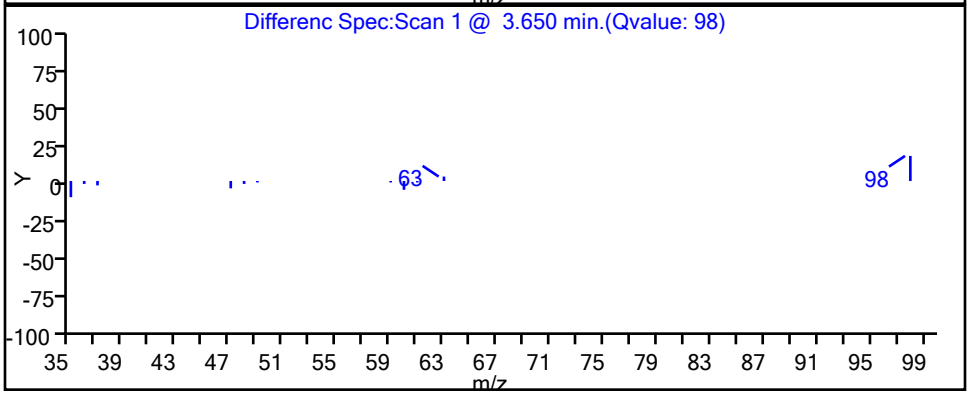












FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-NB72-082516 | Lab Sample ID: 160-18852-9

Matrix: Water | Lab File ID: LSMP4976.D

Analysis Method: 8260C | Date Collected: 08/25/2016 13:40

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 18:06

Soil Aliquot Vol: | Dilution Factor: 500

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
540-59-0	1,2-Dichloroethene, Total	5200		1000	69
156-59-2	cis-1,2-Dichloroethene	5200		500	50
79-01-6	Trichloroethene	5600		500	130

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	112		75-129
460-00-4	4-Bromofluorobenzene (Surr)	116		81-130
1868-53-7	Dibromofluoromethane (Surr)	110		81-124
2037-26-5	Toluene-d8 (Surr)	116		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4976.D
Lims ID: 160-18852-A-9
Client ID: GW-NB72-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 18:06:30 ALS Bottle#: 19 Worklist Smp#: 23
Purge Vol: 25.000 mL Dil. Factor: 500.0000
Sample Info: 160-0008407-023
Misc. Info.: 160-18852-a-9
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:12:08

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
3 Chloromethane	50		3.474				ND	
4 Vinyl chloride	62		3.642				ND	
6 Bromomethane	94		4.256				ND	
7 Chloroethane	64		4.479				ND	
12 1,1-Dichloroethene	96		5.541				ND	
13 Carbon disulfide	76		5.583				ND	
S 15 1,2-Dichloroethene, Total	96				0		10.4	
20 Methylene Chloride	84		6.337				ND	
21 Acetone	43		6.407				ND	
22 trans-1,2-Dichloroethene	96		6.546				ND	
30 1,1-Dichloroethane	63	7.273	7.259	0.014	96	21427	0.3369	
33 Vinyl acetate	43		7.510				ND	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	84	331214	10.4	
38 Chloroform	83		8.097				ND	
40 Carbon tetrachloride	117		8.264				ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	250503	11.0	
43 1,1,1-Trichloroethane	97		8.334				ND	
45 2-Butanone (MEK)	43		8.404				ND	
48 Benzene	78		8.683				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	94	270185	11.2	
54 1,2-Dichloroethane	62		8.879				ND	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1189750	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	96	397141	11.2	
59 n-Butanol	56		9.451				ND	
62 1,2-Dichloropropane	63		9.717				ND	
63 Dichlorobromomethane	83		9.759				ND	
67 cis-1,3-Dichloropropene	75		10.317				ND	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	95	1153848	11.6	
69 Toluene	92		10.541				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
72 trans-1,3-Dichloropropene	75		10.890				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
73 Tetrachloroethene	164	10.904	10.904	0.000	95	9922	0.3268	
75 1,1,2-Trichloroethane	83		11.058				ND	
76 Chlorodibromomethane	129		11.225				ND	
79 Ethylene Dibromide	107		11.477				ND	
80 2-Hexanone	43		11.588				ND	
* 83 Chlorobenzene-d5	117	11.910	11.910	0.000	89	761941	10.0	
82 Ethylbenzene	91		11.910				ND	
84 Chlorobenzene	112		11.923				ND	
86 m-Xylene & p-Xylene	106		12.035				ND	
88 o-Xylene	106		12.440				ND	
89 Styrene	104		12.482				ND	
90 Bromoform	173		12.552				ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	87	339953	11.6	
95 1,1,2,2-Tetrachloroethane	83		13.166				ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	347806	10.0	
115 1,2-Dibromo-3-Chloropropan	157		15.303				ND	
117 1,2,4-Trichlorobenzene	180		15.974				ND	
S 119 Xylenes, Total	106		16.500				ND	

Reagents:

I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

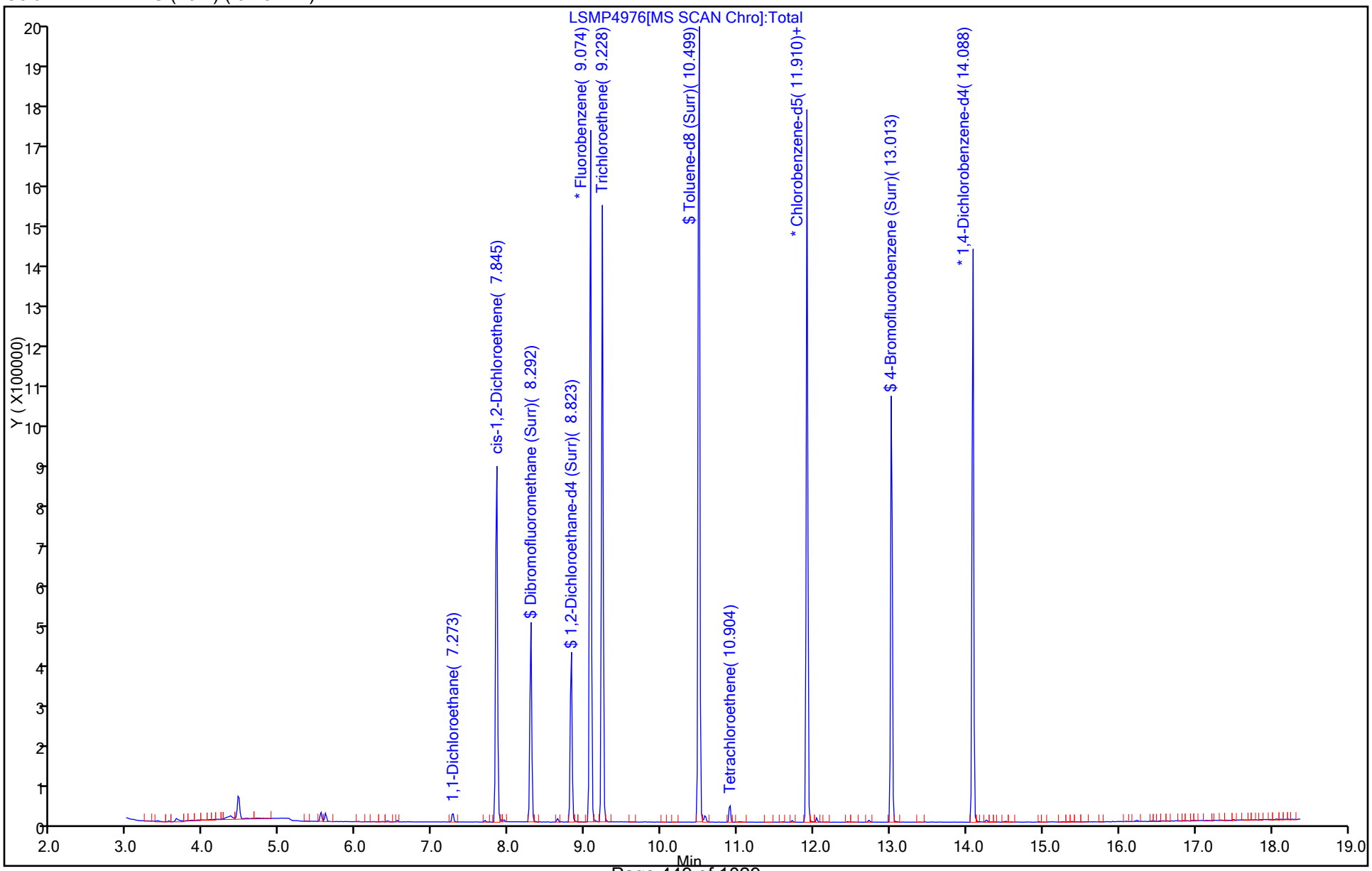
Report Date: 08-Sep-2016 08:40:06 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4976.D

Injection Date:	07-Sep-2016 18:06:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	160-18852-A-9	Lab Sample ID:	160-18852-9	Worklist Smp#:	23
Client ID:	GW-NB72-082516				
Purge Vol:	25.000 mL	Dil. Factor:	500.0000	ALS Bottle#:	19
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4976.D
Lims ID: 160-18852-A-9
Client ID: GW-NB72-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 18:06:30 ALS Bottle#: 19 Worklist Smp#: 23
Purge Vol: 25.000 mL Dil. Factor: 500.0000
Sample Info: 160-0008407-023
Misc. Info.: 160-18852-a-9
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:12:08

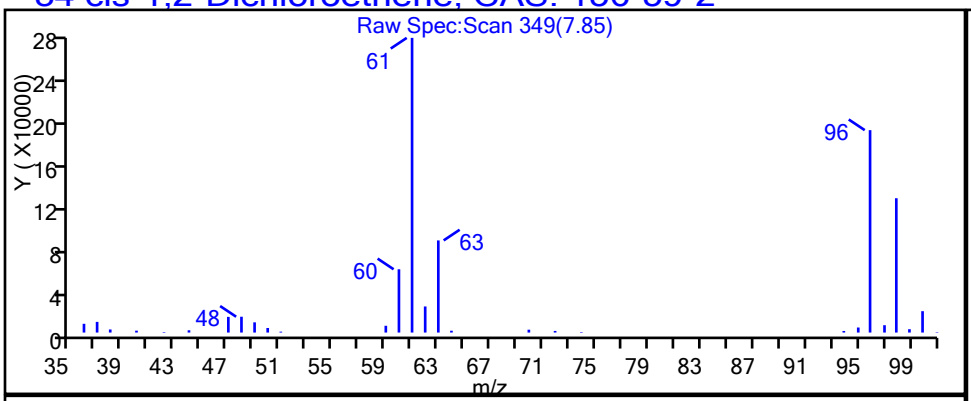
Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	11.0	109.57
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	11.2	111.72
$ 68 Toluene-d8 (Surr)	10.0	11.6	116.01
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.6	116.48

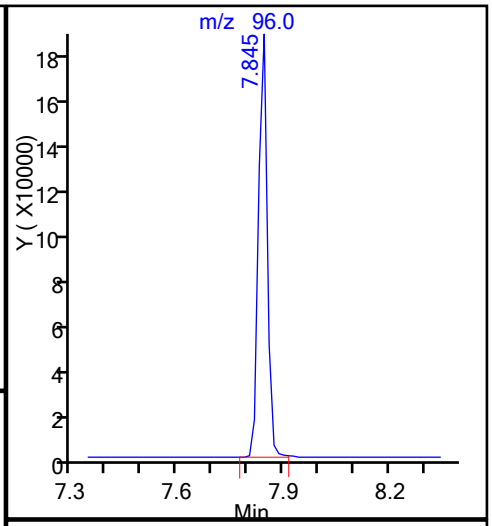
Report Date: 08-Sep-2016 08:40:06 Chrom Revision: 2.2 20-Apr-2016 13:59:46

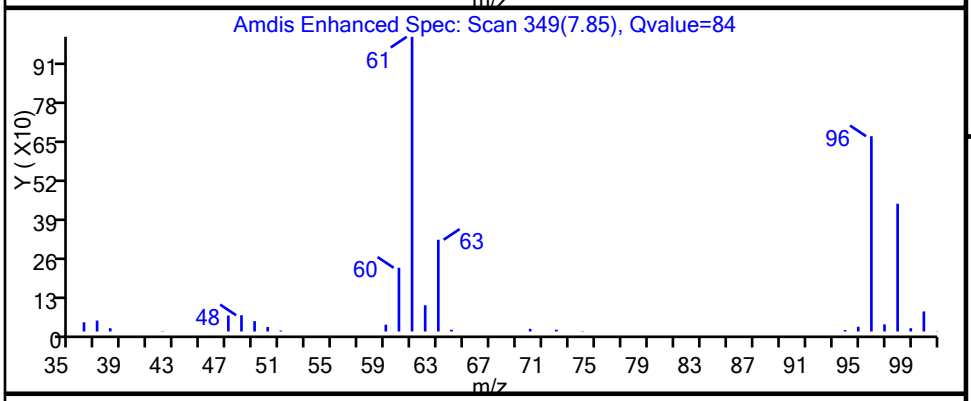
TestAmerica St. Louis

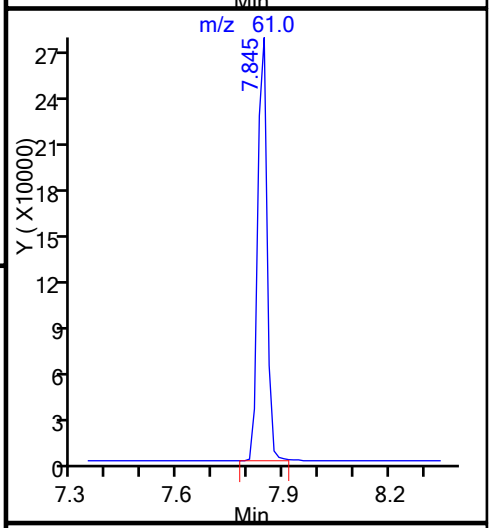
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4976.D				
Injection Date:	07-Sep-2016 18:06:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-9	Lab Sample ID:	160-18852-9		
Client ID:	GW-NB72-082516				
Operator ID:	SMCR	ALS Bottle#:	19	Worklist Smp#:	23
Purge Vol:	25.000 mL	Dil. Factor:	500.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

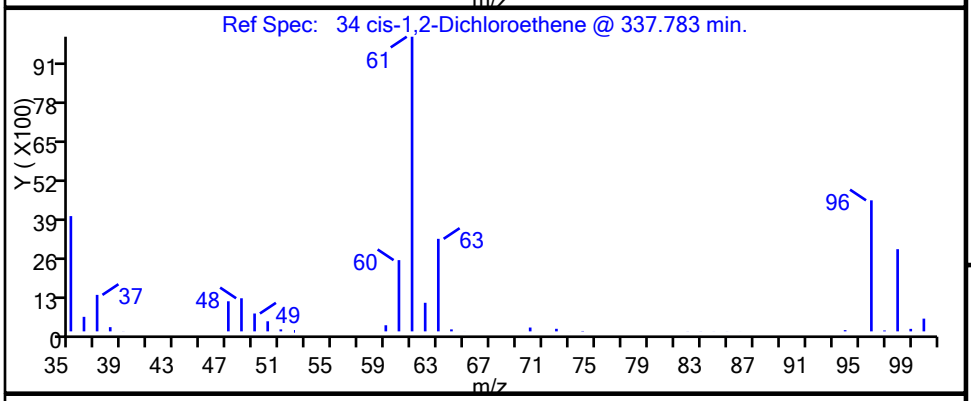
34 cis-1,2-Dichloroethene, CAS: 156-59-2

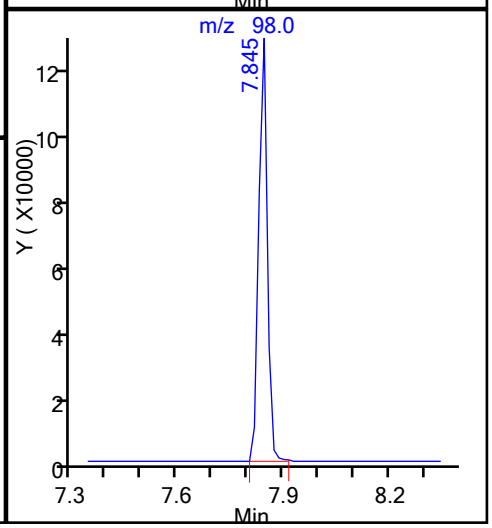


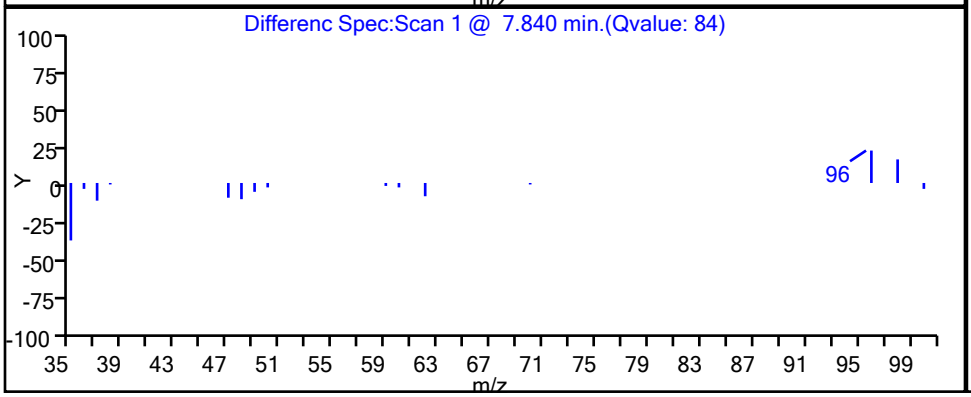










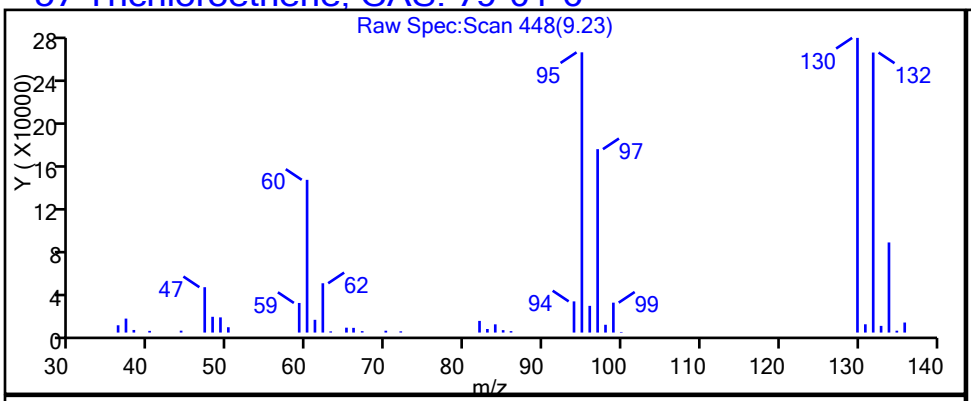


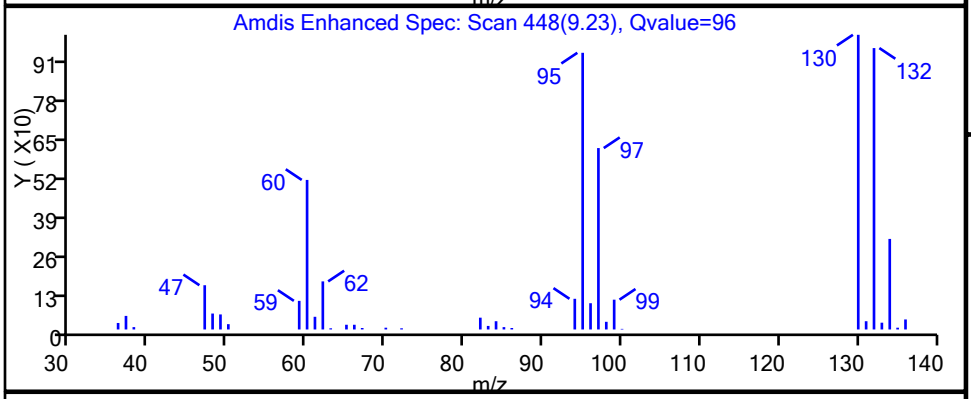
Report Date: 08-Sep-2016 08:40:06 Chrom Revision: 2.2 20-Apr-2016 13:59:46

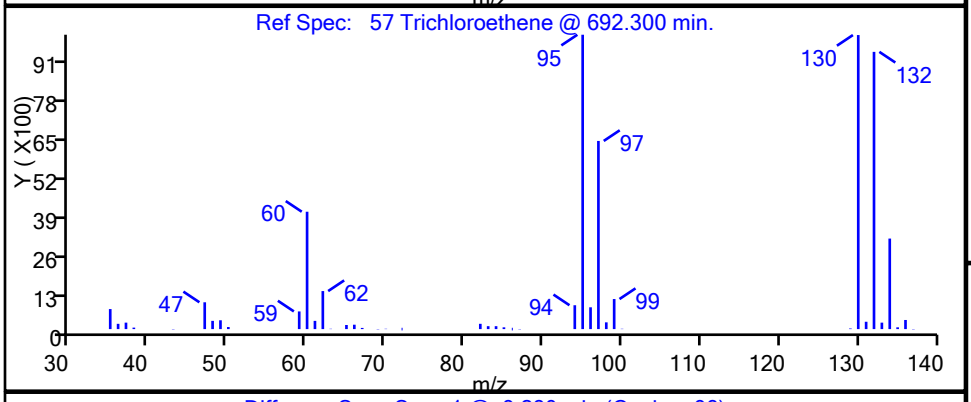
TestAmerica St. Louis

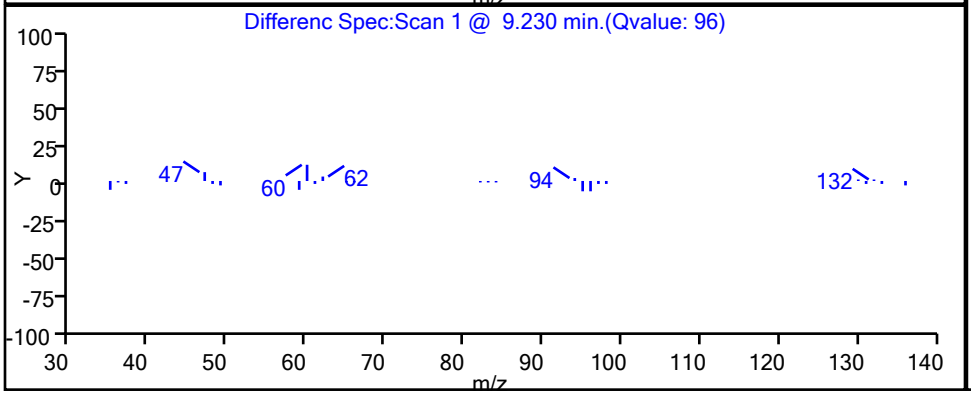
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4976.D				
Injection Date:	07-Sep-2016 18:06:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-9	Lab Sample ID:	160-18852-9		
Client ID:	GW-NB72-082516				
Operator ID:	SMCR	ALS Bottle#:	19	Worklist Smp#:	23
Purge Vol:	25.000 mL	Dil. Factor:	500.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

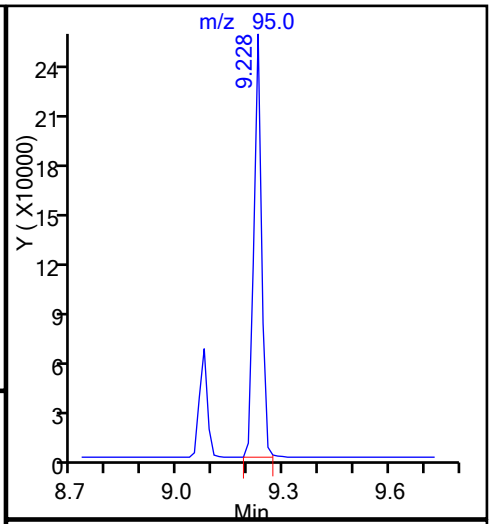
57 Trichloroethene, CAS: 79-01-6

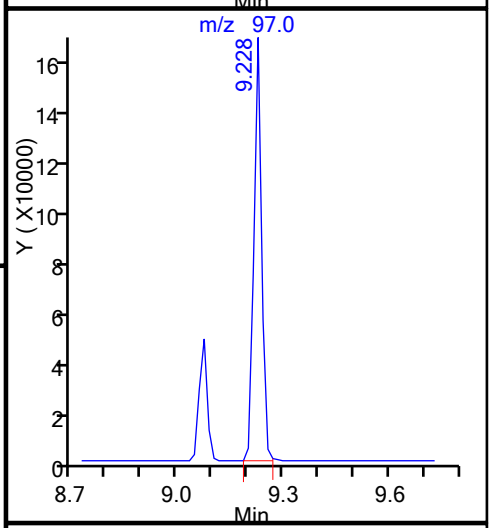


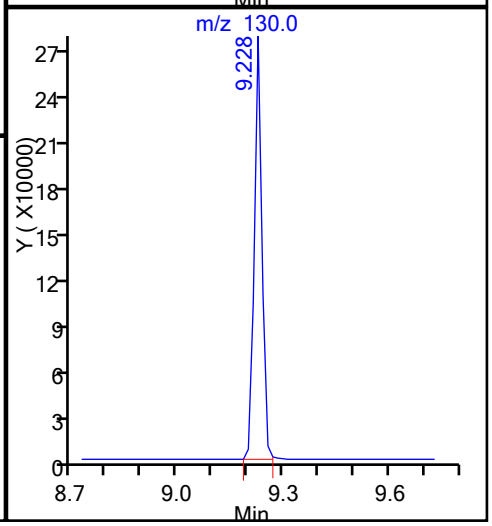












FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-NB73-082516 | Lab Sample ID: 160-18852-10

Matrix: Water | Lab File ID: LSMP4983.D

Analysis Method: 8260C | Date Collected: 08/25/2016 14:10

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 21:02

Soil Aliquot Vol: | Dilution Factor: 2.5

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	5.8		2.5	0.43
79-34-5	1,1,2,2-Tetrachloroethane	ND		2.5	0.25
79-00-5	1,1,2-Trichloroethane	ND		2.5	0.33
75-35-4	1,1-Dichloroethene	32		2.5	0.25
75-34-3	1,1-Dichloroethane	11		2.5	0.18
120-82-1	1,2,4-Trichlorobenzene	ND		2.5	0.25
96-12-8	1,2-Dibromo-3-Chloropropane	ND		2.5	1.0
107-06-2	1,2-Dichloroethane	ND		2.5	0.54
540-59-0	1,2-Dichloroethene, Total	140		5.0	0.34
78-87-5	1,2-Dichloropropane	ND		2.5	0.25
78-93-3	2-Butanone	ND		13	1.2
591-78-6	2-Hexanone	ND		13	0.62
108-10-1	4-Methyl-2-pentanone	ND		13	0.54
67-64-1	Acetone	ND		5.0	1.4
71-43-2	Benzene	ND		2.5	0.25
75-25-2	Bromoform	ND		2.5	0.43
74-83-9	Methyl bromide	ND		5.0	0.63
75-15-0	Carbon disulfide	ND		2.5	0.25
56-23-5	Carbon tetrachloride	ND		2.5	0.45
108-90-7	Chlorobenzene	ND		2.5	0.27
124-48-1	Chlorodibromomethane	ND		2.5	0.36
75-00-3	Chloroethane	ND		5.0	0.41
67-66-3	Chloroform	ND		2.5	0.25
74-87-3	Chloromethane	ND		5.0	0.26
10061-01-5	cis-1,3-Dichloropropene	ND		2.5	0.40
75-27-4	Bromodichloromethane	ND		2.5	0.35
100-41-4	Ethylbenzene	ND		2.5	0.31
106-93-4	1,2-Dibromoethane	ND		2.5	0.33
75-09-2	Methylene Chloride	ND		2.5	0.68
71-36-3	n-Butanol	ND		130	31
100-42-5	Styrene	ND		2.5	0.34
108-88-3	Toluene	ND		2.5	0.35
156-60-5	trans-1,2-Dichloroethene	8.2		2.5	0.26
10061-02-6	trans-1,3-Dichloropropene	ND		2.5	0.25
108-05-4	Vinyl acetate	ND		5.0	0.45
75-01-4	Vinyl chloride	0.95	J	5.0	0.49

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-NB73-082516 | Lab Sample ID: 160-18852-10

Matrix: Water | Lab File ID: LSMP4983.D

Analysis Method: 8260C | Date Collected: 08/25/2016 14:10

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 21:02

Soil Aliquot Vol: | Dilution Factor: 2.5

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1330-20-7	Xylenes, Total	ND		7.5	0.66

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	108		75-129
460-00-4	4-Bromofluorobenzene (Surr)	118		81-130
1868-53-7	Dibromofluoromethane (Surr)	107		81-124
2037-26-5	Toluene-d8 (Surr)	110		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4983.D
Lims ID: 160-18852-A-10
Client ID: GW-NB73-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 21:02:30 ALS Bottle#: 26 Worklist Smp#: 30
Purge Vol: 25.000 mL Dil. Factor: 2.5000
Sample Info: 160-0008407-030
Misc. Info.: 160-18852-a-10
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:39:34

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
3 Chloromethane	50		3.474				ND	
4 Vinyl chloride	62	3.641	3.642	-0.001	95	19429	0.3803	
6 Bromomethane	94		4.256				ND	
7 Chloroethane	64		4.479				ND	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	93	403281	12.7	
13 Carbon disulfide	76		5.583				ND	
S 15 1,2-Dichloroethene, Total	96				0		54.4	
20 Methylene Chloride	84		6.337				ND	
21 Acetone	43		6.407				ND	
22 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	94	106744	3.27	
30 1,1-Dichloroethane	63	7.273	7.259	0.014	97	260765	4.29	
33 Vinyl acetate	43		7.510				ND	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	84	1559482	51.2	E
38 Chloroform	83		8.097				ND	
40 Carbon tetrachloride	117		8.264				ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	233908	10.7	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	97	136683	2.33	
45 2-Butanone (MEK)	43		8.404				ND	
48 Benzene	78		8.683				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	94	248557	10.8	
54 1,2-Dichloroethane	62		8.879				ND	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1137033	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	96	2817749	83.0	E
59 n-Butanol	56		9.451				ND	
62 1,2-Dichloropropane	63		9.717				ND	
63 Dichlorobromomethane	83		9.759				ND	
67 cis-1,3-Dichloropropene	75		10.317				ND	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	95	1075627	11.0	
69 Toluene	92		10.541				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
72 trans-1,3-Dichloropropene	75		10.890				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
73 Tetrachloroethene	164	10.904	10.904	0.000	92	8043663	270.5	E
75 1,1,2-Trichloroethane	83		11.058				ND	
76 Chlorodibromomethane	129		11.225				ND	
79 Ethylene Dibromide	107		11.477				ND	
80 2-Hexanone	43		11.588				ND	
* 83 Chlorobenzene-d5	117	11.909	11.910	-0.001	89	746060	10.0	
82 Ethylbenzene	91		11.910				ND	
84 Chlorobenzene	112		11.923				ND	
86 m-Xylene & p-Xylene	106		12.035				ND	
88 o-Xylene	106		12.440				ND	
89 Styrene	104		12.482				ND	
90 Bromoform	173		12.552				ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	87	308927	11.8	
95 1,1,2,2-Tetrachloroethane	83		13.166				ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	312402	10.0	
115 1,2-Dibromo-3-Chloropropan	157		15.303				ND	
117 1,2,4-Trichlorobenzene	180		15.974				ND	
S 119 Xylenes, Total	106		16.500				ND	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Reagents:

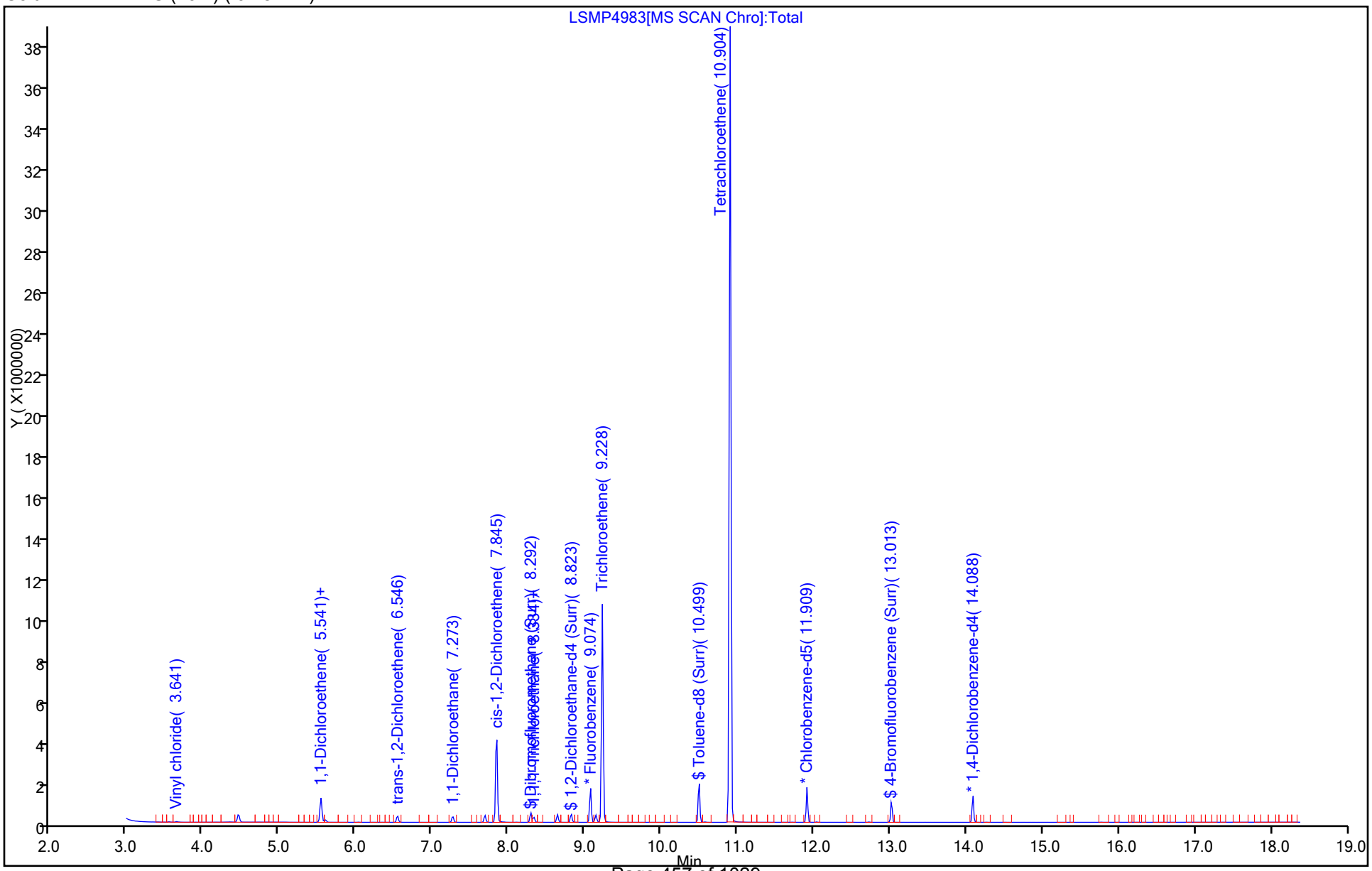
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

Report Date: 08-Sep-2016 08:40:14 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4983.D				
Injection Date:	07-Sep-2016 21:02:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	160-18852-A-10	Lab Sample ID:	160-18852-10	Worklist Smp#:	30
Client ID:	GW-NB73-082516				
Purge Vol:	25.000 mL	Dil. Factor:	2.5000	ALS Bottle#:	26
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4983.D
Lims ID: 160-18852-A-10
Client ID: GW-NB73-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 21:02:30 ALS Bottle#: 26 Worklist Smp#: 30
Purge Vol: 25.000 mL Dil. Factor: 2.5000
Sample Info: 160-0008407-030
Misc. Info.: 160-18852-a-10
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:39:34

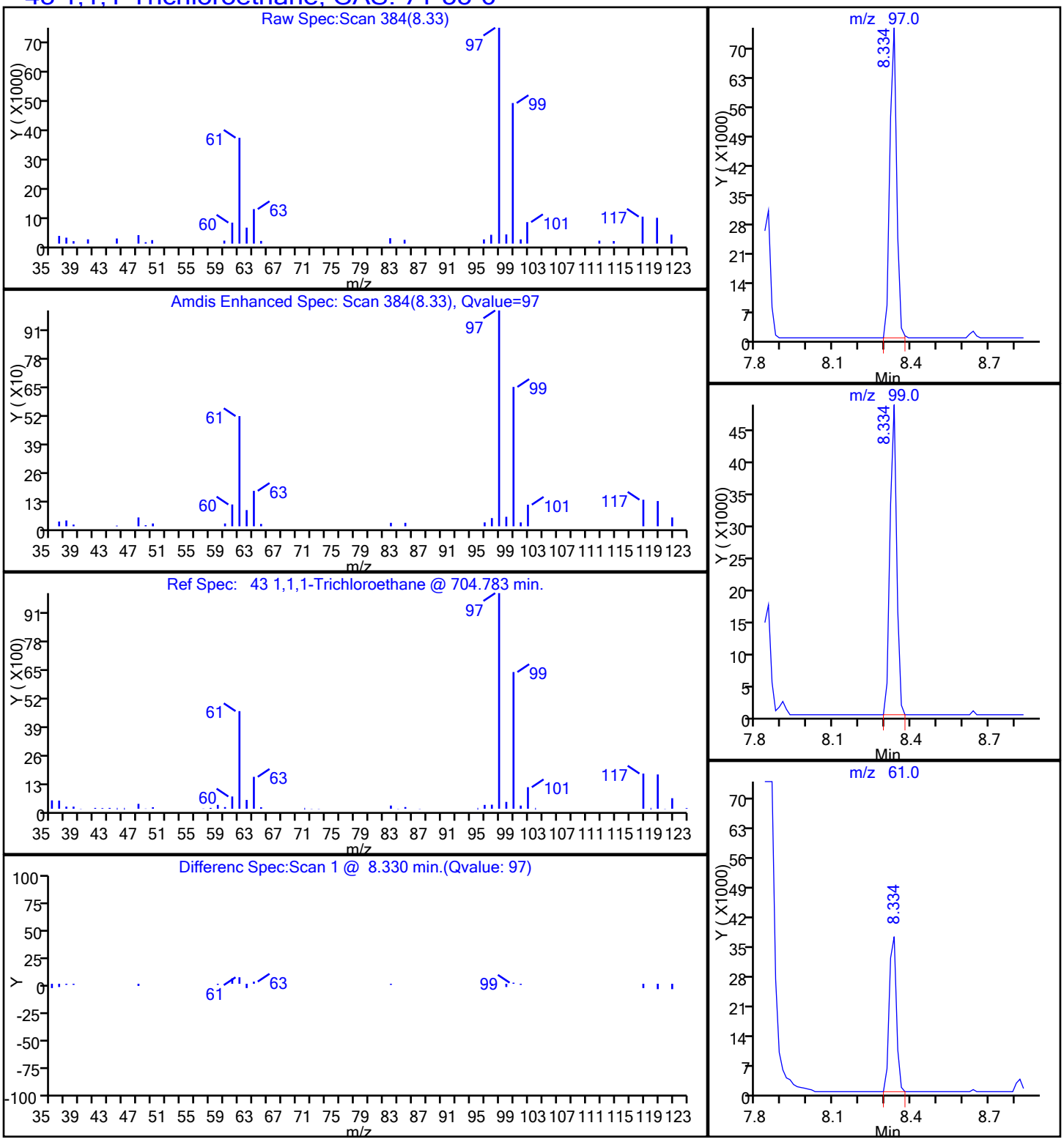
Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.7	107.06
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	10.8	107.54
$ 68 Toluene-d8 (Surr)	10.0	11.0	110.44
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.8	117.85

Report Date: 08-Sep-2016 08:40:14 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4983.D				
Injection Date:	07-Sep-2016 21:02:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-10	Lab Sample ID:	160-18852-10		
Client ID:	GW-NB73-082516				
Operator ID:	SMCR	ALS Bottle#:	26	Worklist Smp#:	30
Purge Vol:	25.000 mL	Dil. Factor:	2.5000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

43 1,1,1-Trichloroethane, CAS: 71-55-6



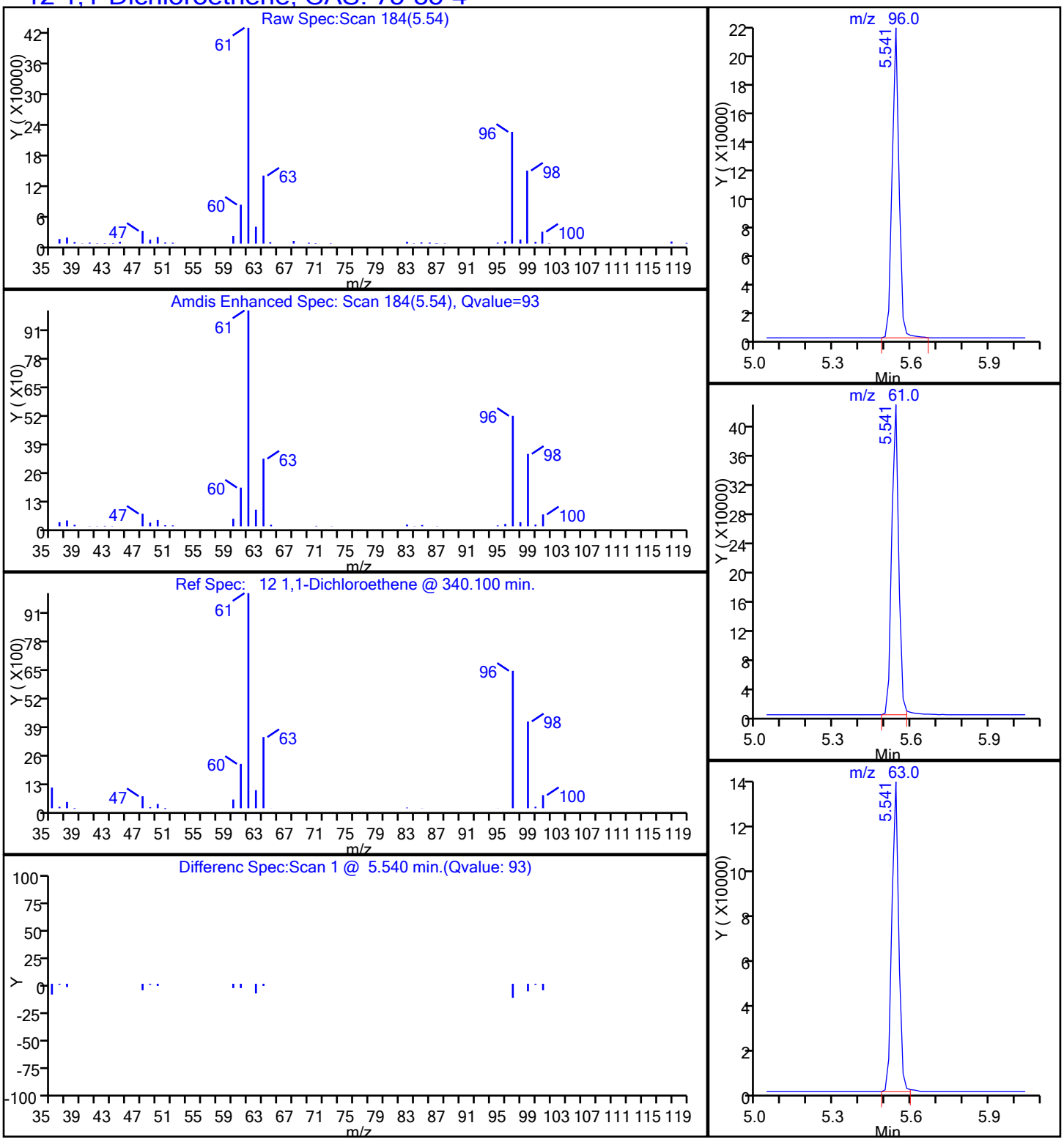
Report Date: 08-Sep-2016 08:40:14 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4983.D

Injection Date:	07-Sep-2016 21:02:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-10	Lab Sample ID:	160-18852-10		
Client ID:	GW-NB73-082516				
Operator ID:	SMCR	ALS Bottle#:	26	Worklist Smp#:	30
Purge Vol:	25.000 mL	Dil. Factor:	2.5000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

12 1,1-Dichloroethene, CAS: 75-35-4

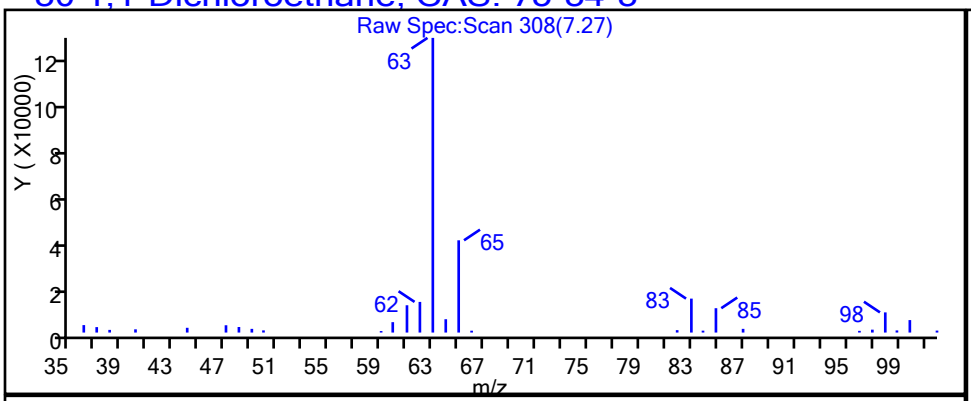


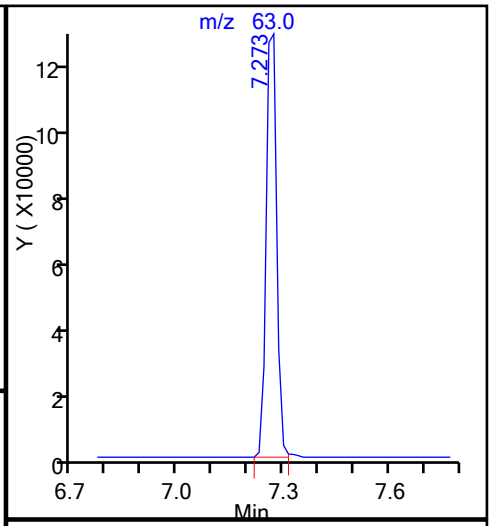
Report Date: 08-Sep-2016 08:40:14 Chrom Revision: 2.2 20-Apr-2016 13:59:46

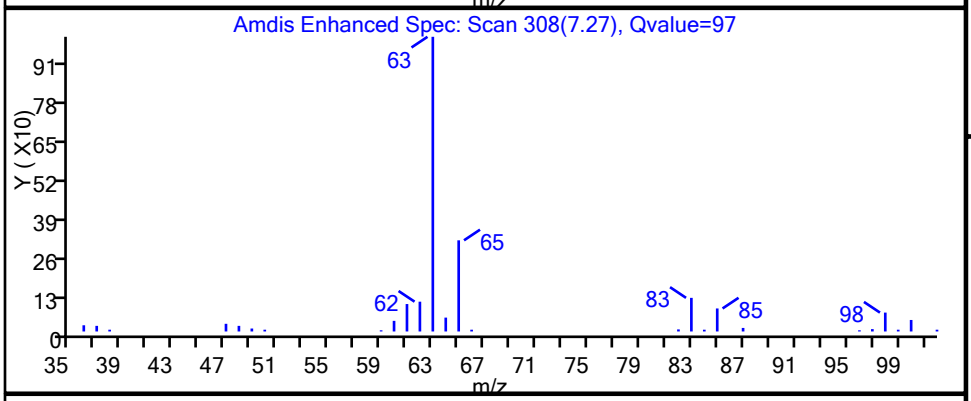
TestAmerica St. Louis

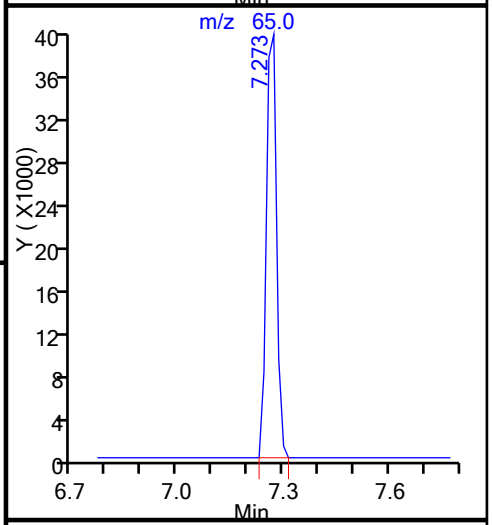
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4983.D				
Injection Date:	07-Sep-2016 21:02:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-10	Lab Sample ID:	160-18852-10		
Client ID:	GW-NB73-082516				
Operator ID:	SMCR	ALS Bottle#:	26	Worklist Smp#:	30
Purge Vol:	25.000 mL	Dil. Factor:	2.5000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

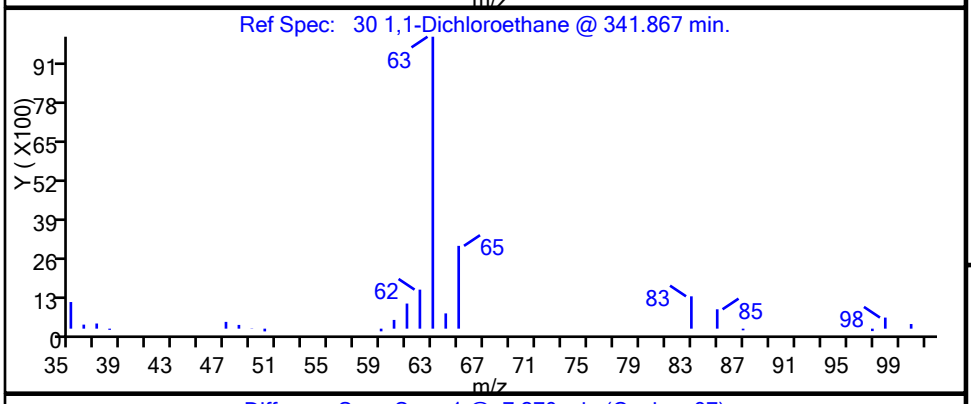
30 1,1-Dichloroethane, CAS: 75-34-3

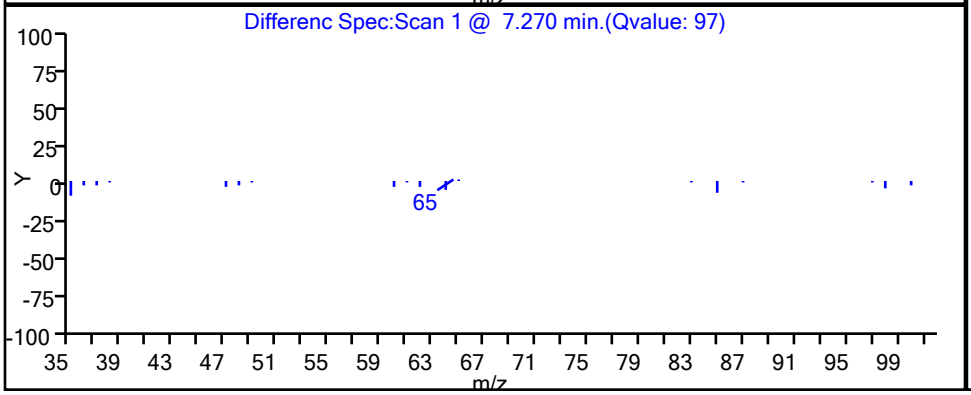


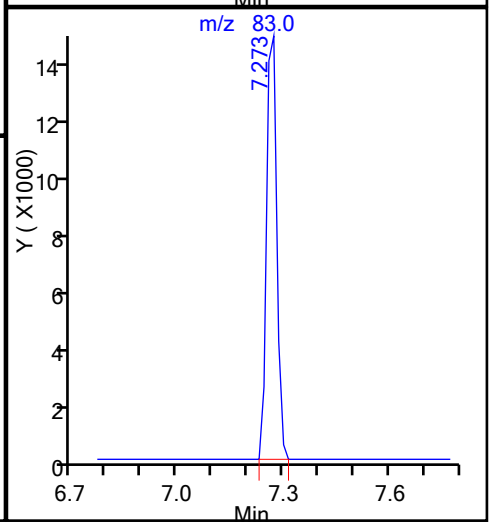












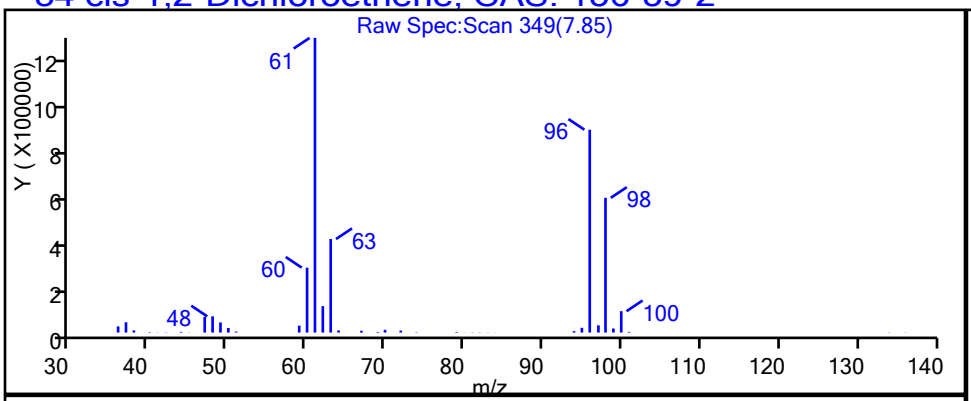
Report Date: 08-Sep-2016 08:40:14 Chrom Revision: 2.2 20-Apr-2016 13:59:46

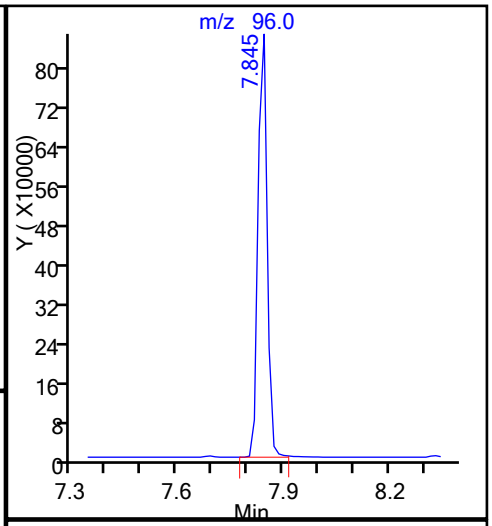
TestAmerica St. Louis

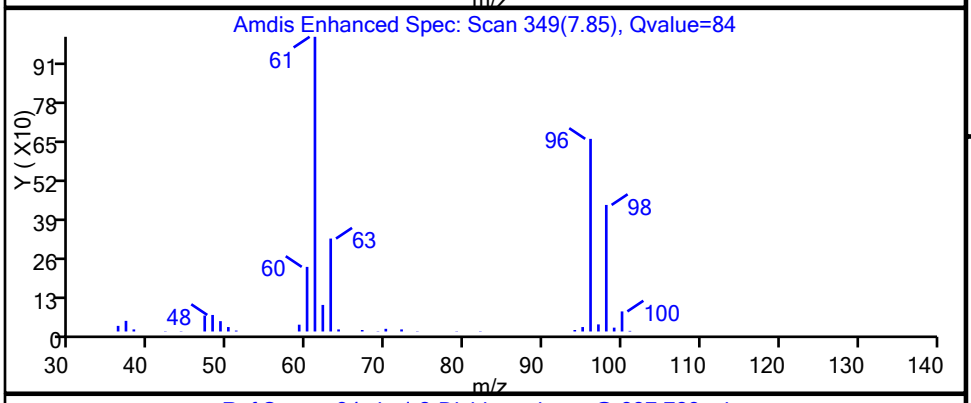
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4983.D

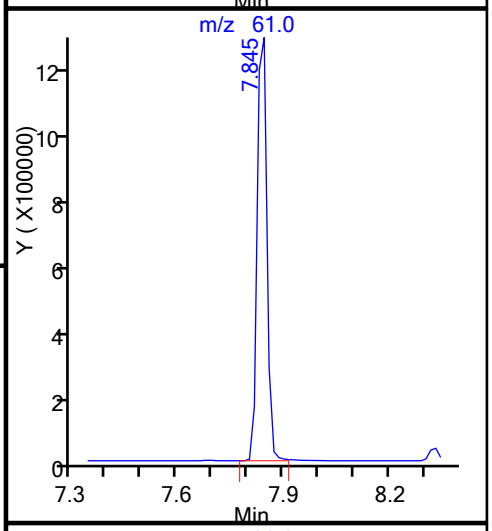
Injection Date:	07-Sep-2016 21:02:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-10	Lab Sample ID:	160-18852-10		
Client ID:	GW-NB73-082516				
Operator ID:	SMCR	ALS Bottle#:	26	Worklist Smp#:	30
Purge Vol:	25.000 mL	Dil. Factor:	2.5000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

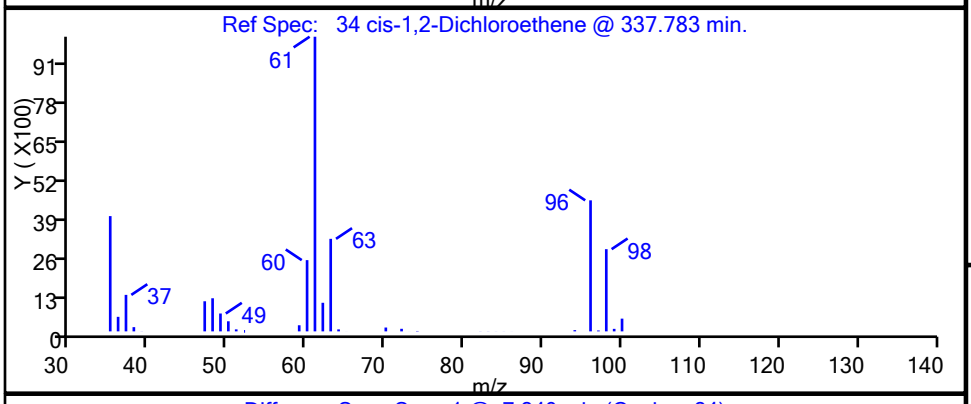
34 cis-1,2-Dichloroethene, CAS: 156-59-2

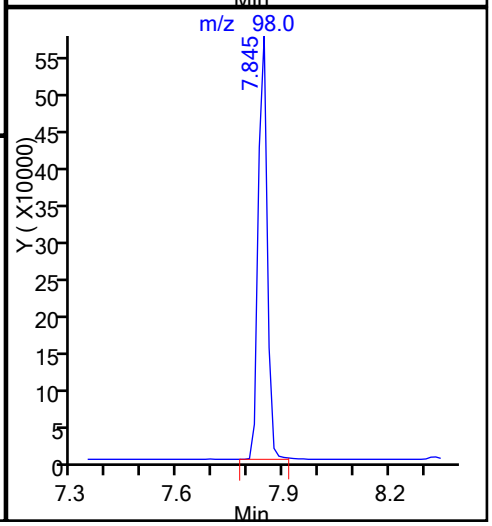


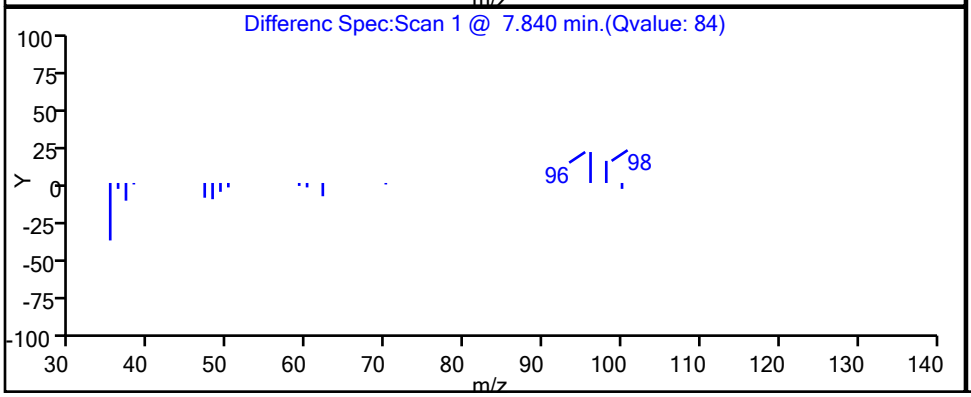










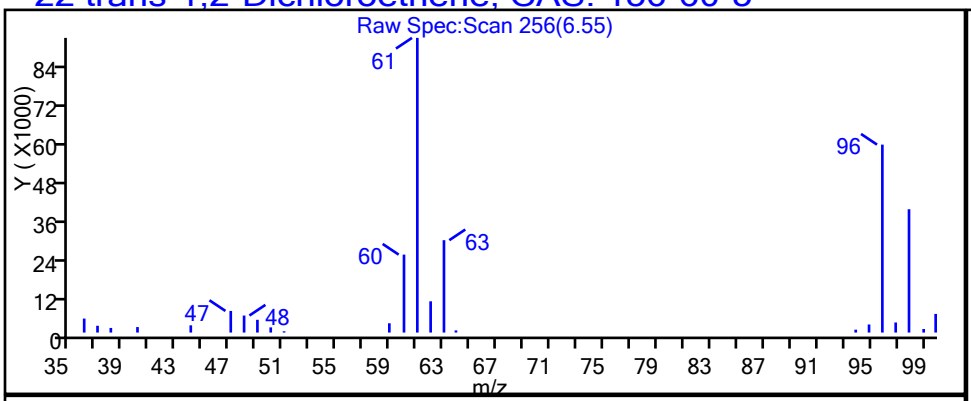


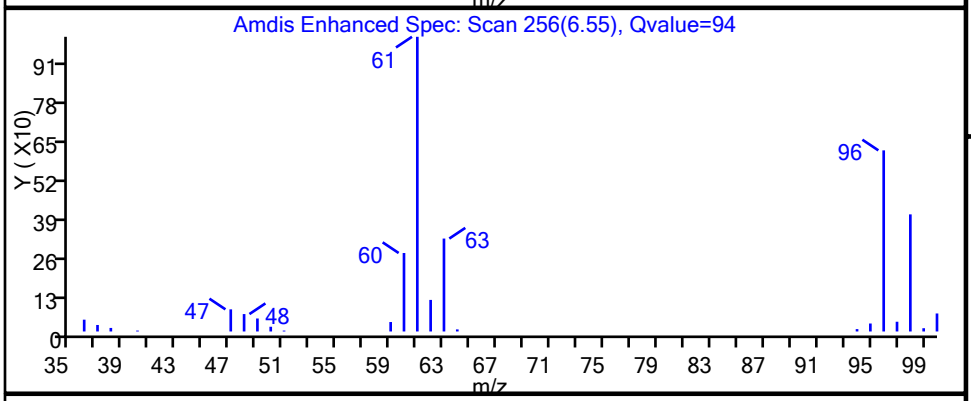
Report Date: 08-Sep-2016 08:40:14 Chrom Revision: 2.2 20-Apr-2016 13:59:46

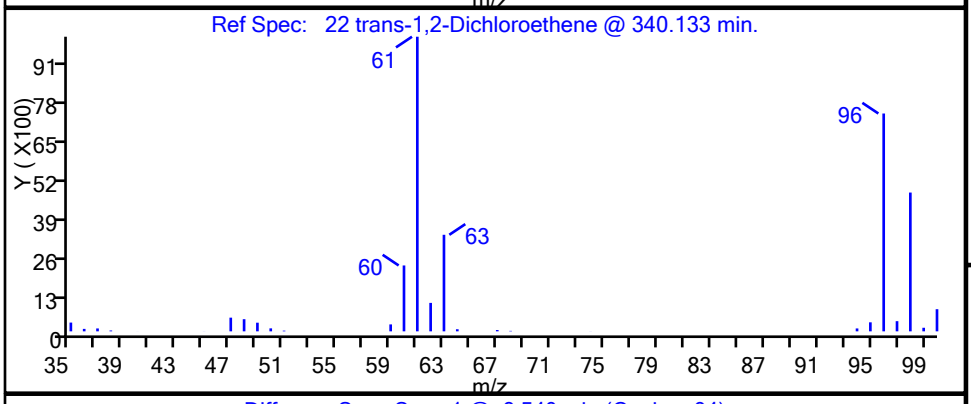
TestAmerica St. Louis

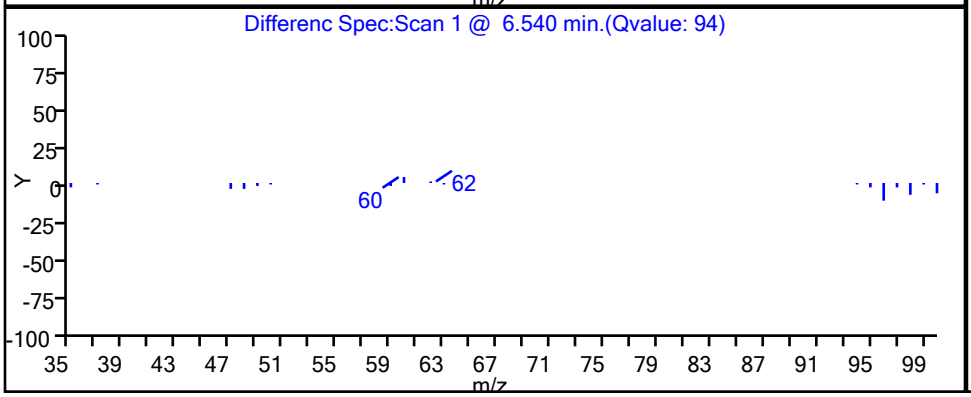
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4983.D				
Injection Date:	07-Sep-2016 21:02:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-10	Lab Sample ID:	160-18852-10		
Client ID:	GW-NB73-082516				
Operator ID:	SMCR	ALS Bottle#:	26	Worklist Smp#:	30
Purge Vol:	25.000 mL	Dil. Factor:	2.5000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

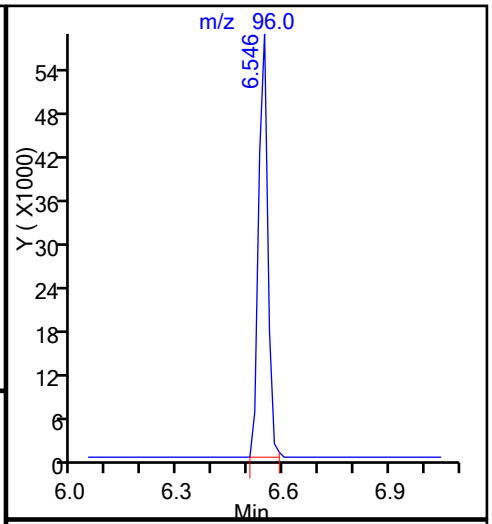
22 trans-1,2-Dichloroethene, CAS: 156-60-5

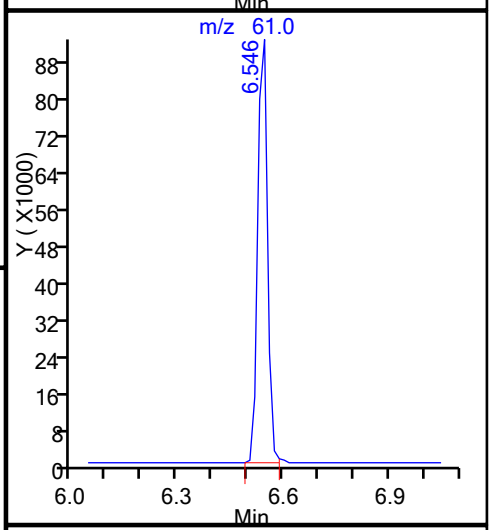


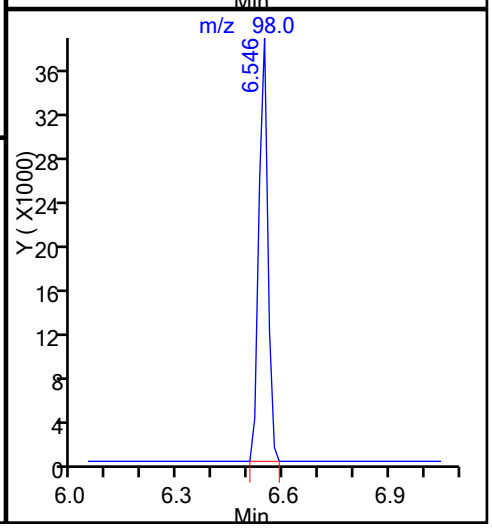












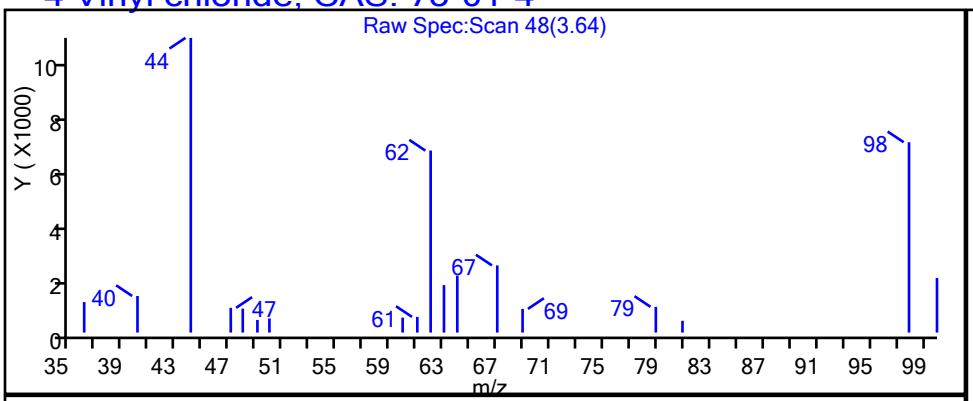
Report Date: 08-Sep-2016 08:40:14 Chrom Revision: 2.2 20-Apr-2016 13:59:46

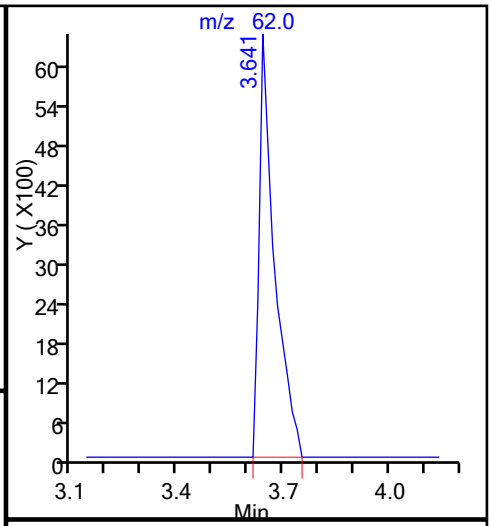
TestAmerica St. Louis

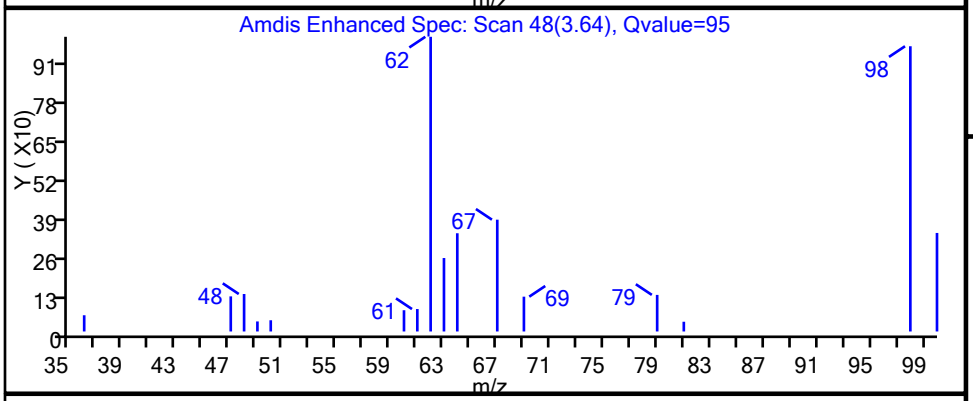
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4983.D

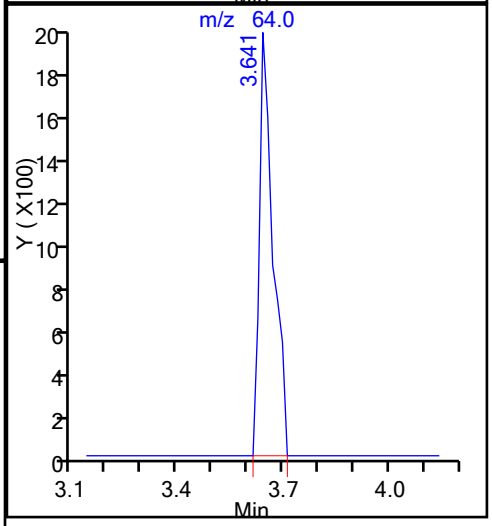
Injection Date:	07-Sep-2016 21:02:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-10	Lab Sample ID:	160-18852-10		
Client ID:	GW-NB73-082516				
Operator ID:	SMCR	ALS Bottle#:	26	Worklist Smp#:	30
Purge Vol:	25.000 mL	Dil. Factor:	2.5000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

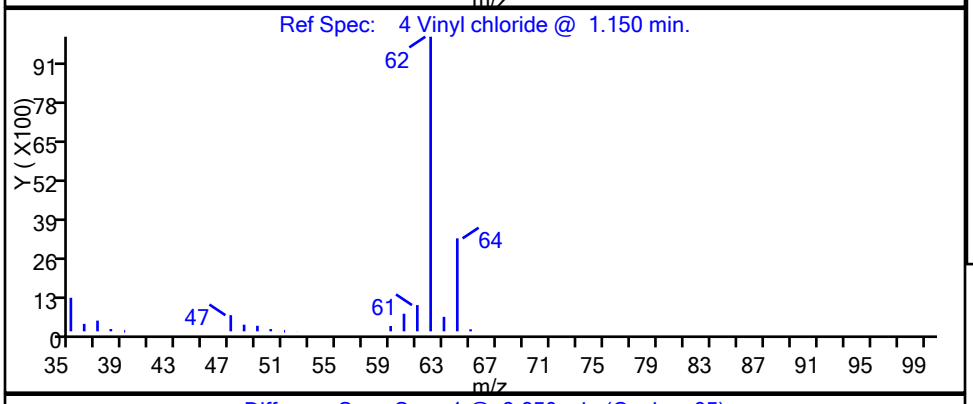
4 Vinyl chloride, CAS: 75-01-4

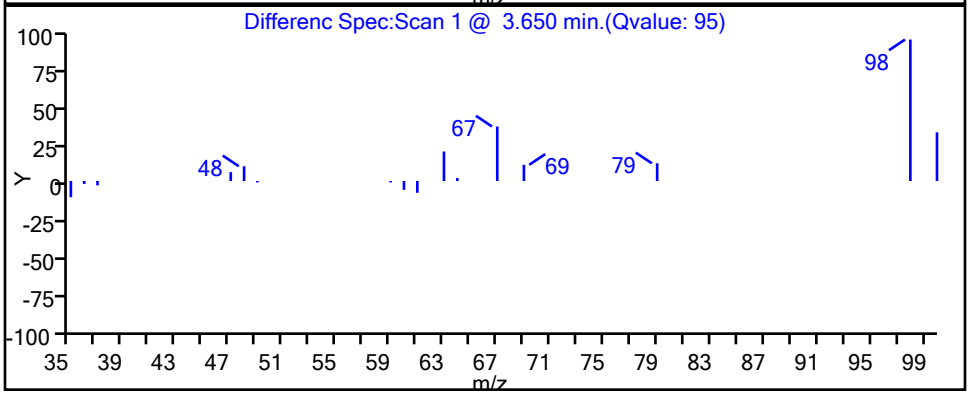












FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-NB73-082516 | Lab Sample ID: 160-18852-10

Matrix: Water | Lab File ID: LSMP4977.D

Analysis Method: 8260C | Date Collected: 08/25/2016 14:10

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 18:31

Soil Aliquot Vol: | Dilution Factor: 25

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
156-59-2	cis-1,2-Dichloroethene	100		25	2.5
127-18-4	Tetrachloroethene	710		25	4.5
79-01-6	Trichloroethene	190		25	6.3

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	108		75-129
460-00-4	4-Bromofluorobenzene (Surr)	118		81-130
1868-53-7	Dibromofluoromethane (Surr)	106		81-124
2037-26-5	Toluene-d8 (Surr)	113		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4977.D
Lims ID: 160-18852-A-10
Client ID: GW-NB73-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 18:31:30 ALS Bottle#: 20 Worklist Smp#: 24
Purge Vol: 25.000 mL Dil. Factor: 25.0000
Sample Info: 160-0008407-024
Misc. Info.: 160-18852-a-10
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:12:29

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
3 Chloromethane	50		3.474				ND	
4 Vinyl chloride	62		3.642				ND	
6 Bromomethane	94		4.256				ND	
7 Chloroethane	64		4.479				ND	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	94	37946	1.08	
13 Carbon disulfide	76		5.583				ND	
S 15 1,2-Dichloroethene, Total	96				0		4.35	
20 Methylene Chloride	84		6.337				ND	
21 Acetone	43	6.407	6.407	0.000	97	6953	1.14	
22 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	91	10302	0.2844	
30 1,1-Dichloroethane	63	7.273	7.259	0.014	96	26284	0.3893	
33 Vinyl acetate	43		7.510				ND	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	84	137661	4.07	
38 Chloroform	83		8.097				ND	
40 Carbon tetrachloride	117		8.264				ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	256540	10.6	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	96	13750	0.2115	
45 2-Butanone (MEK)	43	8.404	8.404	0.000	97	16014	2.94	
48 Benzene	78		8.683				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	94	277139	10.8	
54 1,2-Dichloroethane	62		8.879				ND	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1262851	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	96	279395	7.41	
59 n-Butanol	56		9.451				ND	
62 1,2-Dichloropropane	63		9.717				ND	
63 Dichlorobromomethane	83		9.759				ND	
67 cis-1,3-Dichloropropene	75		10.317				ND	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	95	1206179	11.3	
69 Toluene	92		10.541				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.848				ND	
72 trans-1,3-Dichloropropene	75		10.890				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
73 Tetrachloroethene	164	10.904	10.904	0.000	98	930886	28.6	
75 1,1,2-Trichloroethane	83		11.058				ND	
76 Chlorodibromomethane	129		11.225				ND	
79 Ethylene Dibromide	107		11.477				ND	
80 2-Hexanone	43		11.588				ND	
* 83 Chlorobenzene-d5	117	11.909	11.910	-0.001	89	817556	10.0	
82 Ethylbenzene	91		11.910				ND	
84 Chlorobenzene	112		11.923				ND	
86 m-Xylene & p-Xylene	106		12.035				ND	
88 o-Xylene	106		12.440				ND	
89 Styrene	104		12.482				ND	
90 Bromoform	173		12.552				ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	88	364125	11.8	
95 1,1,2,2-Tetrachloroethane	83		13.166				ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	366790	10.0	
115 1,2-Dibromo-3-Chloropropan	157		15.303				ND	
117 1,2,4-Trichlorobenzene	180		15.974				ND	
S 119 Xylenes, Total	106		16.500				ND	

Reagents:

I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

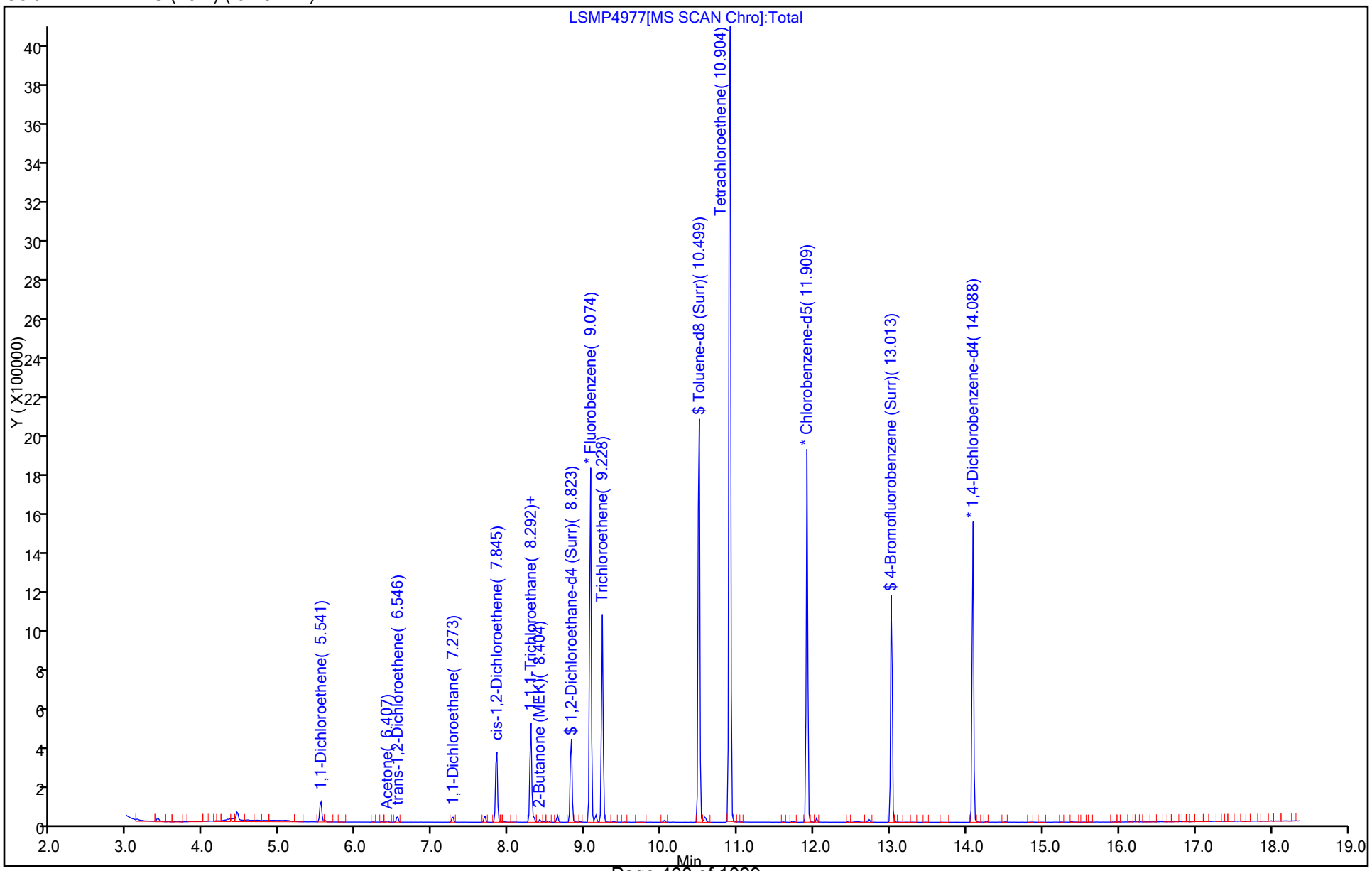
Report Date: 08-Sep-2016 08:40:07 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4977.D

Injection Date:	07-Sep-2016 18:31:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	160-18852-A-10	Lab Sample ID:	160-18852-10	Worklist Smp#:	24
Client ID:	GW-NB73-082516				
Purge Vol:	25.000 mL	Dil. Factor:	25.0000	ALS Bottle#:	20
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4977.D
Lims ID: 160-18852-A-10
Client ID: GW-NB73-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 18:31:30 ALS Bottle#: 20 Worklist Smp#: 24
Purge Vol: 25.000 mL Dil. Factor: 25.0000
Sample Info: 160-0008407-024
Misc. Info.: 160-18852-a-10
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:39:34 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:12:29

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.6	105.72
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	10.8	107.96
$ 68 Toluene-d8 (Surr)	10.0	11.3	113.02
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.8	118.31

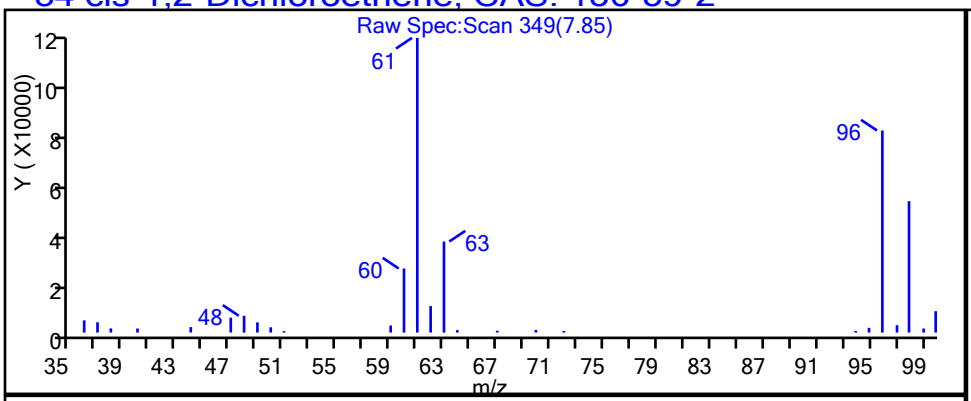
Report Date: 08-Sep-2016 08:40:07 Chrom Revision: 2.2 20-Apr-2016 13:59:46

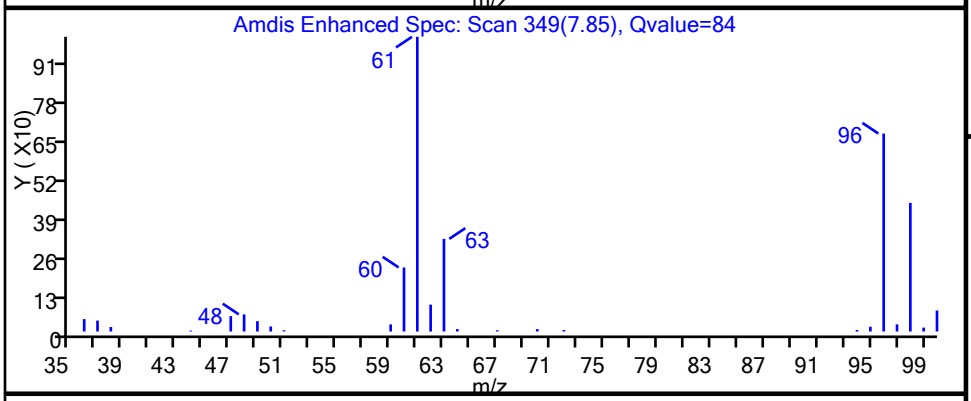
TestAmerica St. Louis

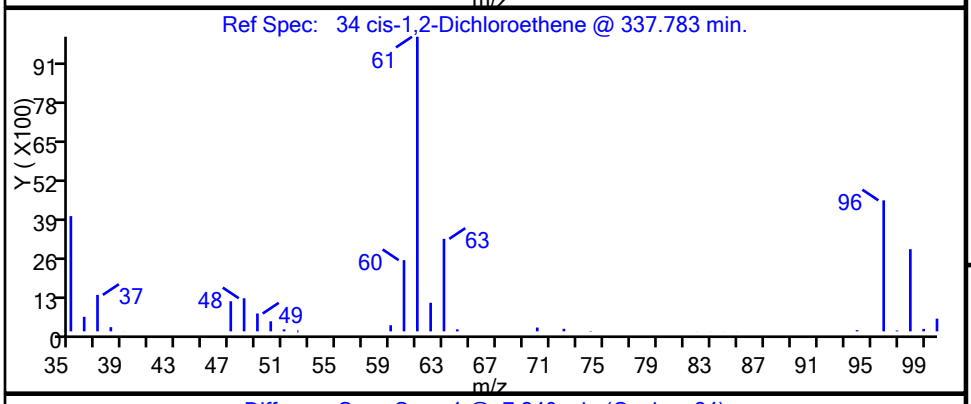
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4977.D

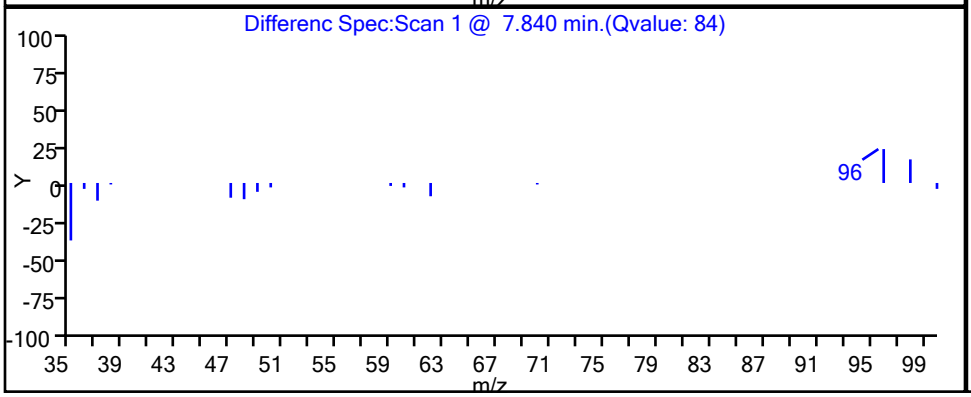
Injection Date:	07-Sep-2016 18:31:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-10	Lab Sample ID:	160-18852-10		
Client ID:	GW-NB73-082516				
Operator ID:	SMCR	ALS Bottle#:	20	Worklist Smp#:	24
Purge Vol:	25.000 mL	Dil. Factor:	25.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

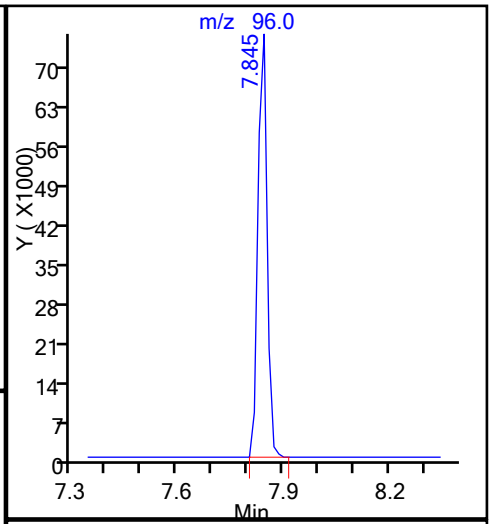
34 cis-1,2-Dichloroethene, CAS: 156-59-2

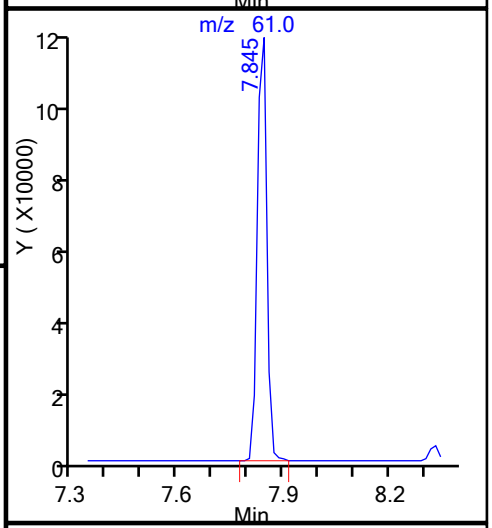


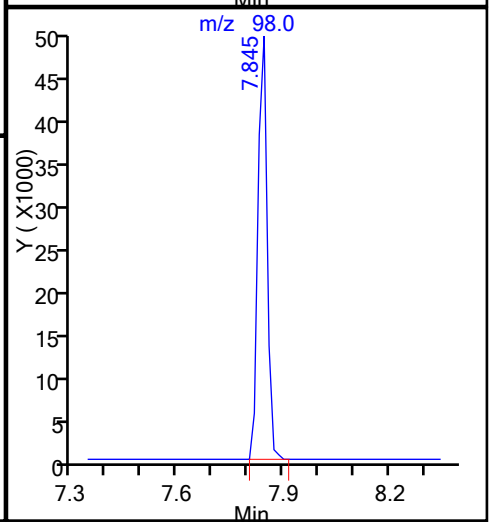












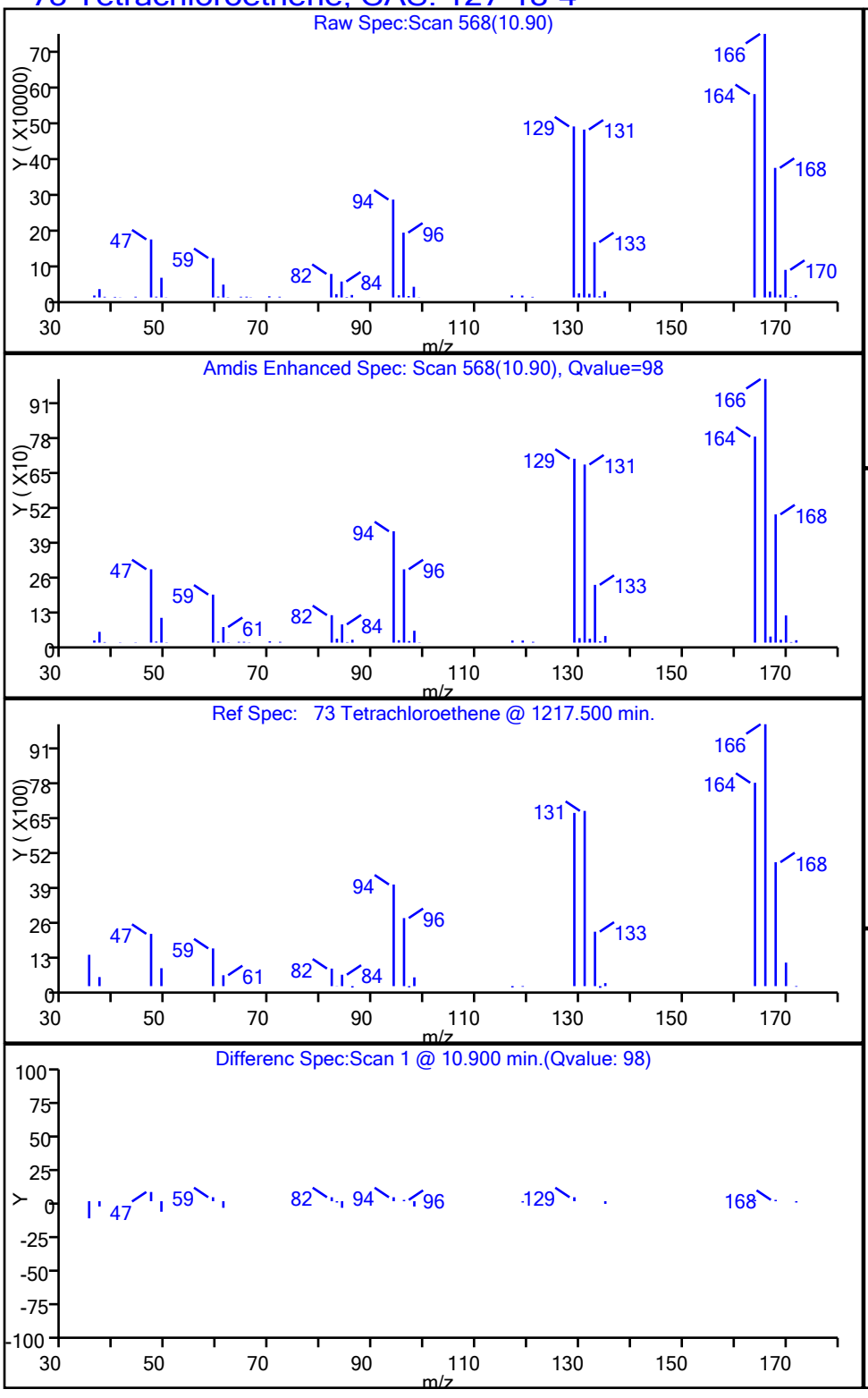
Report Date: 08-Sep-2016 08:40:07 Chrom Revision: 2.2 20-Apr-2016 13:59:46

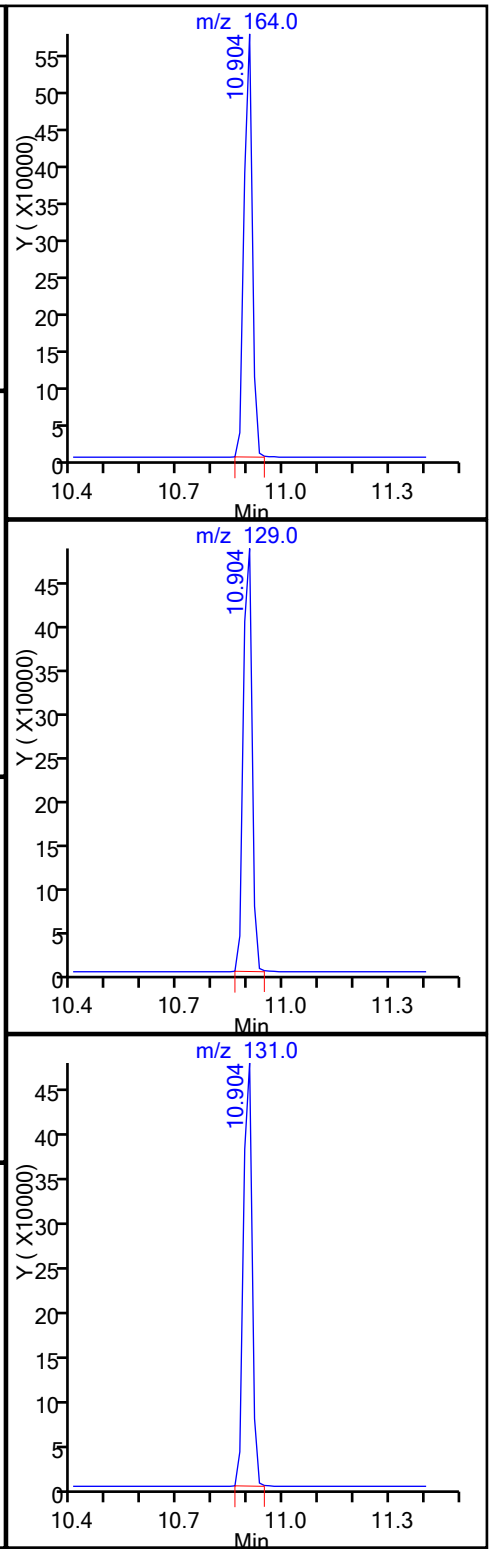
TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4977.D

Injection Date:	07-Sep-2016 18:31:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-10	Lab Sample ID:	160-18852-10		
Client ID:	GW-NB73-082516				
Operator ID:	SMCR	ALS Bottle#:	20	Worklist Smp#:	24
Purge Vol:	25.000 mL	Dil. Factor:	25.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

73 Tetrachloroethene, CAS: 127-18-4



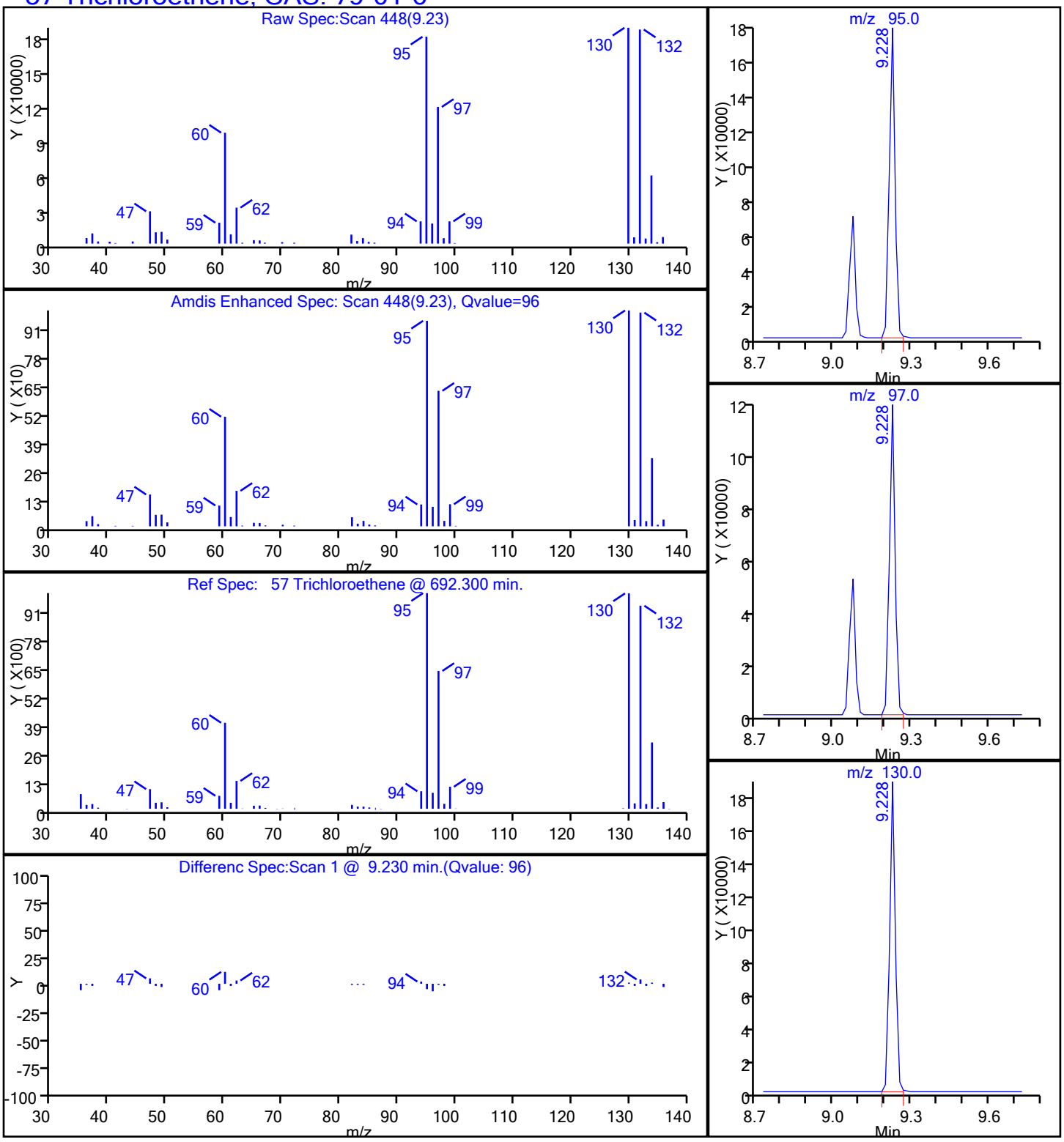


Report Date: 08-Sep-2016 08:40:07 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4977.D				
Injection Date:	07-Sep-2016 18:31:30	Instrument ID:	VMSL		
Lims ID:	160-18852-A-10	Lab Sample ID:	160-18852-10		
Client ID:	GW-NB73-082516				
Operator ID:	SMCR	ALS Bottle#:	20	Worklist Smp#:	24
Purge Vol:	25.000 mL	Dil. Factor:	25.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

57 Trichloroethene, CAS: 79-01-6



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-NB34-082516 | Lab Sample ID: 160-18852-11

Matrix: Water | Lab File ID: ZSMP8958.D

Analysis Method: 8260C | Date Collected: 08/25/2016 14:55

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 17:37

Soil Aliquot Vol: | Dilution Factor: 2.5

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268249 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	26		2.5	0.43
79-34-5	1,1,2,2-Tetrachloroethane	ND		2.5	0.25
79-00-5	1,1,2-Trichloroethane	ND		2.5	0.33
75-35-4	1,1-Dichloroethene	61		2.5	0.25
75-34-3	1,1-Dichloroethane	13		2.5	0.18
120-82-1	1,2,4-Trichlorobenzene	ND		2.5	0.25
96-12-8	1,2-Dibromo-3-Chloropropane	ND		2.5	1.0
107-06-2	1,2-Dichloroethane	0.56	J	2.5	0.54
540-59-0	1,2-Dichloroethene, Total	80		5.0	0.34
78-87-5	1,2-Dichloropropane	ND		2.5	0.25
78-93-3	2-Butanone	ND		13	1.2
591-78-6	2-Hexanone	ND		13	0.62
108-10-1	4-Methyl-2-pentanone	ND		13	0.54
67-64-1	Acetone	ND		5.0	1.4
71-43-2	Benzene	ND		2.5	0.25
75-25-2	Bromoform	ND		2.5	0.43
74-83-9	Methyl bromide	ND		5.0	0.63
75-15-0	Carbon disulfide	ND		2.5	0.25
56-23-5	Carbon tetrachloride	ND		2.5	0.45
108-90-7	Chlorobenzene	ND		2.5	0.27
124-48-1	Chlorodibromomethane	ND		2.5	0.36
75-00-3	Chloroethane	ND		5.0	0.41
67-66-3	Chloroform	0.43	J	2.5	0.25
74-87-3	Chloromethane	ND		5.0	0.26
156-59-2	cis-1,2-Dichloroethene	73		2.5	0.25
10061-01-5	cis-1,3-Dichloropropene	ND		2.5	0.40
75-27-4	Bromodichloromethane	ND		2.5	0.35
100-41-4	Ethylbenzene	ND		2.5	0.31
106-93-4	1,2-Dibromoethane	ND		2.5	0.33
75-09-2	Methylene Chloride	ND		2.5	0.68
71-36-3	n-Butanol	ND		130	31
100-42-5	Styrene	ND		2.5	0.34
108-88-3	Toluene	ND		2.5	0.35
156-60-5	trans-1,2-Dichloroethene	6.8		2.5	0.26
10061-02-6	trans-1,3-Dichloropropene	ND		2.5	0.25
108-05-4	Vinyl acetate	ND		5.0	0.45

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-NB34-082516 | Lab Sample ID: 160-18852-11

Matrix: Water | Lab File ID: ZSMP8958.D

Analysis Method: 8260C | Date Collected: 08/25/2016 14:55

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 17:37

Soil Aliquot Vol: | Dilution Factor: 2.5

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268249 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-01-4	Vinyl chloride	ND		5.0	0.49
1330-20-7	Xylenes, Total	ND		7.5	0.66

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	98		75-129
460-00-4	4-Bromofluorobenzene (Surr)	112		81-130
1868-53-7	Dibromofluoromethane (Surr)	102		81-124
2037-26-5	Toluene-d8 (Surr)	109		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZSMP8958.D
Lims ID: 160-18852-C-11
Client ID: GW-NB34-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 17:37:30 ALS Bottle#: 26 Worklist Smp#: 29
Purge Vol: 25.000 mL Dil. Factor: 2.5000
Sample Info: 160-0008404-029
Misc. Info.: 160-18852-c-11;(2.5X);
Operator ID: EF Instrument ID: VMSZ

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 07:13:43 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK012

First Level Reviewer: fishere Date: 08-Sep-2016 07:13:43

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
3 Chloromethane	50		3.325				ND	
4 Vinyl chloride	62		3.493				ND	
6 Bromomethane	94		4.079				ND	
7 Chloroethane	64		4.317				ND	
12 1,1-Dichloroethene	96	5.366	5.364	0.002	99	1367219	24.4	
13 Carbon disulfide	76		5.406				ND	
S 16 1,2-Dichloroethene, Total	96				0		31.9	
20 Methylene Chloride	84		6.174				ND	
21 Acetone	43		6.230				ND	
22 trans-1,2-Dichloroethene	96	6.371	6.370	0.001	98	156687	2.70	
30 1,1-Dichloroethane	63	7.097	7.096	0.001	97	494691	5.20	
33 Vinyl acetate	43		7.347				ND	
34 cis-1,2-Dichloroethene	96	7.684	7.682	0.002	79	1702704	29.2	
38 Chloroform	83	7.949	7.948	0.001	94	15660	0.1721	
40 Carbon tetrachloride	117		8.101				ND	
$ 42 Dibromofluoromethane (Surr	113	8.145	8.143	0.002	94	426226	10.2	
43 1,1,1-Trichloroethane	97	8.173	8.171	0.002	98	833545	10.3	
44 2-Butanone (MEK)	43		8.255				ND	
48 Benzene	78		8.534				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.676	8.674	0.002	88	353094	9.79	
54 1,2-Dichloroethane	62	8.732	8.730	0.002	95	9772	0.2228	
* 55 Fluorobenzene	96	8.927	8.925	0.002	99	1942327	10.0	
56 Trichloroethene	95	9.081	9.079	0.002	96	5506387	92.5	E
59 n-Butanol	56		9.302				ND	
62 1,2-Dichloropropane	63		9.568				ND	
63 Dichlorobromomethane	83		9.610				ND	
67 cis-1,3-Dichloropropene	75		10.182				ND	
$ 68 Toluene-d8 (Surr)	98	10.352	10.350	0.002	93	1986748	10.9	
69 Toluene	92		10.392				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.699				ND	
73 Tetrachloroethene	164	10.771	10.755	0.016	74	12858044	236.4	E

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
72 trans-1,3-Dichloropropene	75		10.755				ND	
75 1,1,2-Trichloroethane	83		10.909				ND	
76 Chlorodibromomethane	129		11.090				ND	
79 Ethylene Dibromide	107		11.342				ND	
80 2-Hexanone	43		11.439				ND	
* 83 Chlorobenzene-d5	117	11.776	11.774	0.002	84	1421129	10.0	
82 Ethylbenzene	91		11.774				ND	
84 Chlorobenzene	112		11.788				ND	
86 m-Xylene & p-Xylene	106		11.900				ND	
88 o-Xylene	106		12.305				ND	
89 Styrene	104		12.361				ND	
90 Bromoform	173		12.431				ND	
$ 92 4-Bromofluorobenzene (Surr	95	12.879	12.878	0.001	96	551140	11.2	
95 1,1,2,2-Tetrachloroethane	83		13.031				ND	
* 108 1,4-Dichlorobenzene-d4	152	13.955	13.953	0.002	93	653938	10.0	
114 1,2-Dibromo-3-Chloropropan	157		15.182				ND	
117 1,2,4-Trichlorobenzene	180		15.839				ND	
S 119 Xylenes, Total	106		16.500				ND	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Reagents:

8260 Surr 25_00065	Amount Added: 10.00	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent

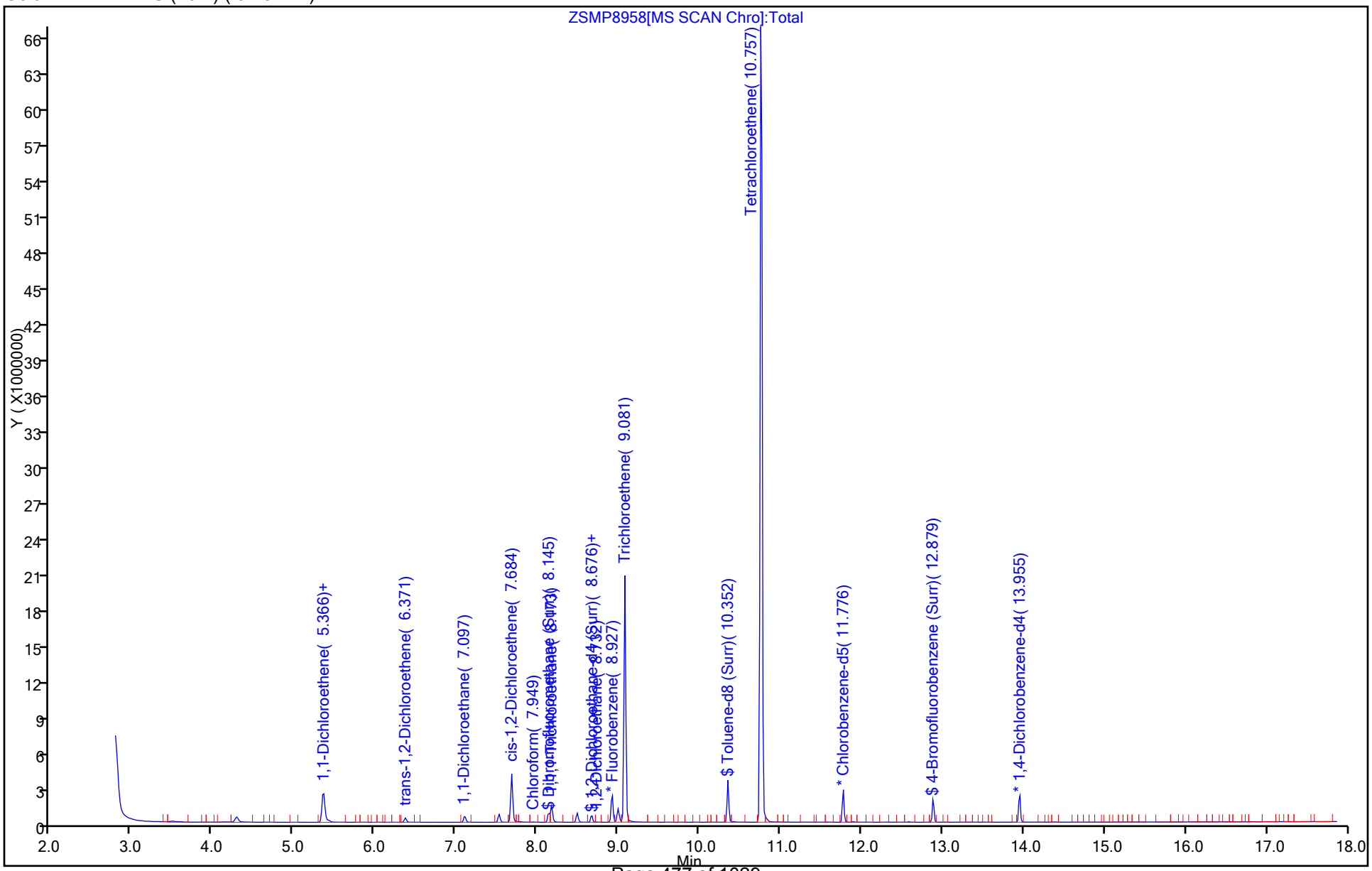
Report Date: 08-Sep-2016 07:13:43 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZSMP8958.D

Injection Date:	07-Sep-2016 17:37:30	Instrument ID:	VMSZ	Operator ID:	EF
Lims ID:	160-18852-C-11	Lab Sample ID:	160-18852-11	Worklist Smp#:	29
Client ID:	GW-NB34-082516				
Purge Vol:	25.000 mL	Dil. Factor:	2.5000	ALS Bottle#:	26
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZSMP8958.D
Lims ID: 160-18852-C-11
Client ID: GW-NB34-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 17:37:30 ALS Bottle#: 26 Worklist Smp#: 29
Purge Vol: 25.000 mL Dil. Factor: 2.5000
Sample Info: 160-0008404-029
Misc. Info.: 160-18852-c-11;(2.5X);
Operator ID: EF Instrument ID: VMSZ

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 07:13:43 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK012

First Level Reviewer: fishere Date: 08-Sep-2016 07:13:43

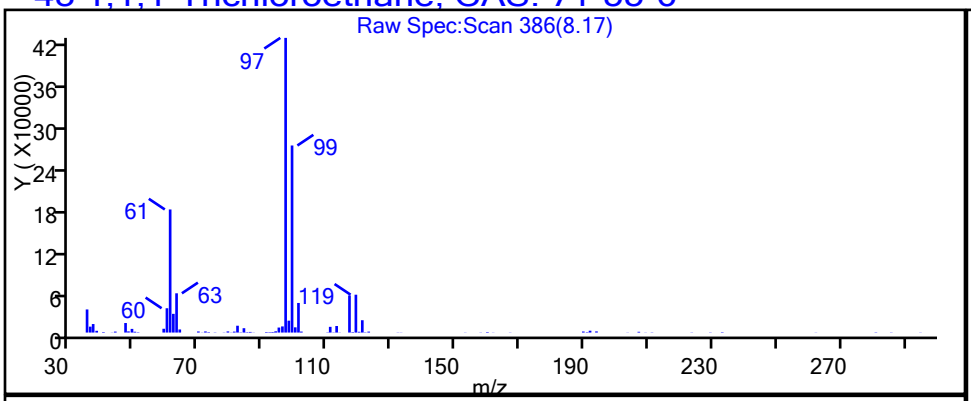
Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.2	102.09
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	9.79	97.92
$ 68 Toluene-d8 (Surr)	10.0	10.9	108.96
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.2	111.93

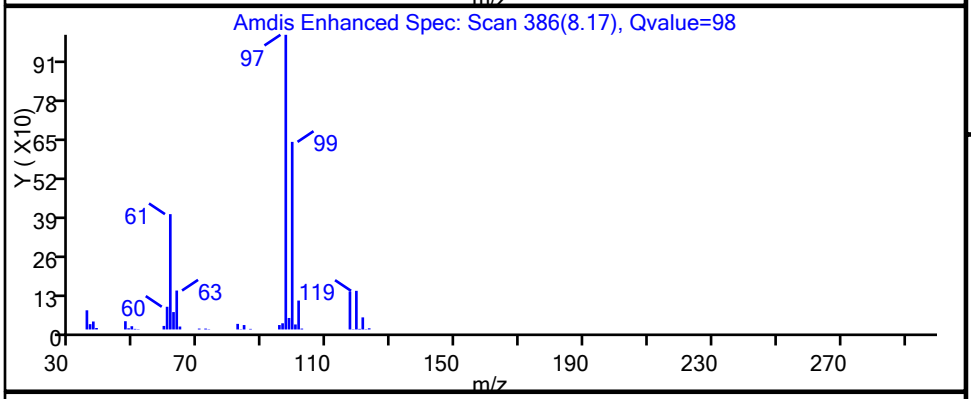
Report Date: 08-Sep-2016 07:13:44 Chrom Revision: 2.2 20-Apr-2016 13:59:46

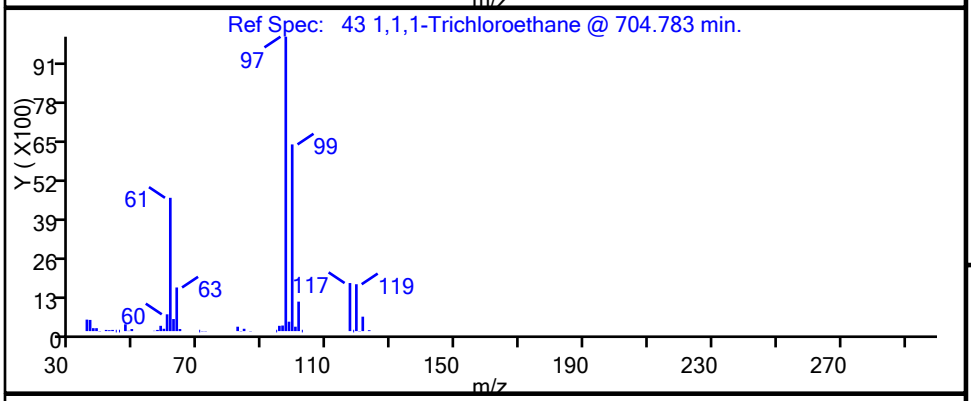
TestAmerica St. Louis

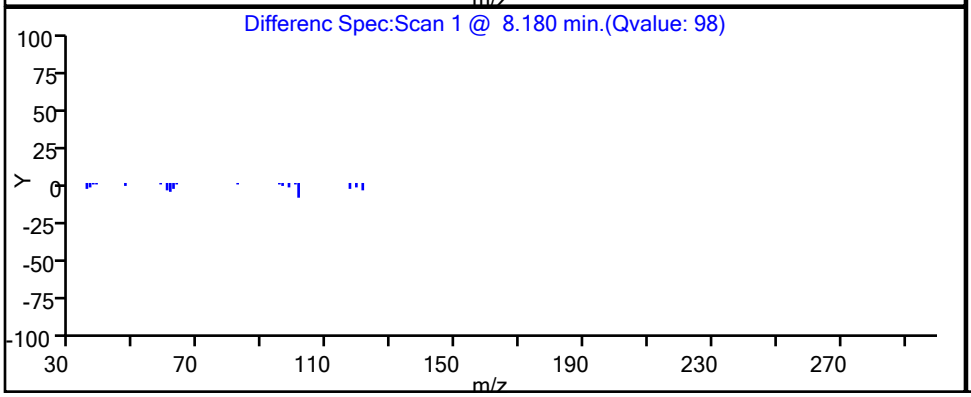
Data File:	\\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZSMP8958.D				
Injection Date:	07-Sep-2016 17:37:30	Instrument ID:	VMSZ		
Lims ID:	160-18852-C-11	Lab Sample ID:	160-18852-11		
Client ID:	GW-NB34-082516				
Operator ID:	EF	ALS Bottle#:	26	Worklist Smp#:	29
Purge Vol:	25.000 mL	Dil. Factor:	2.5000		
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

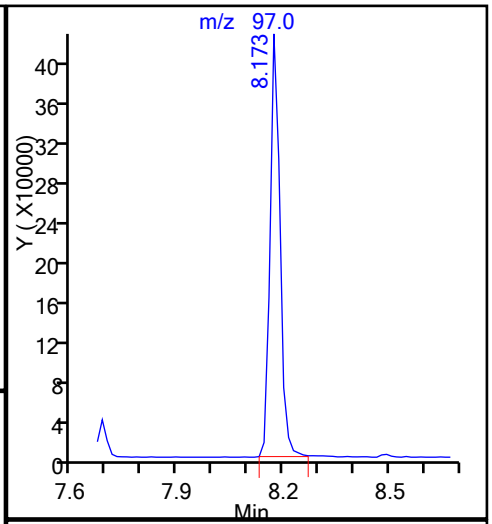
43 1,1,1-Trichloroethane, CAS: 71-55-6

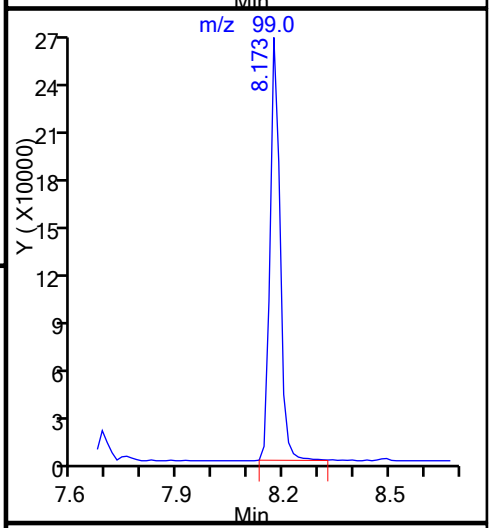


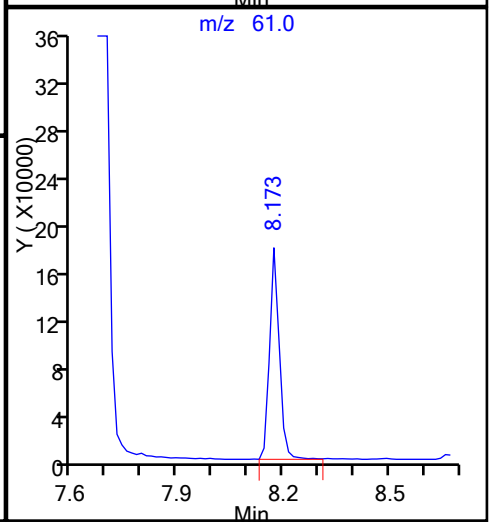












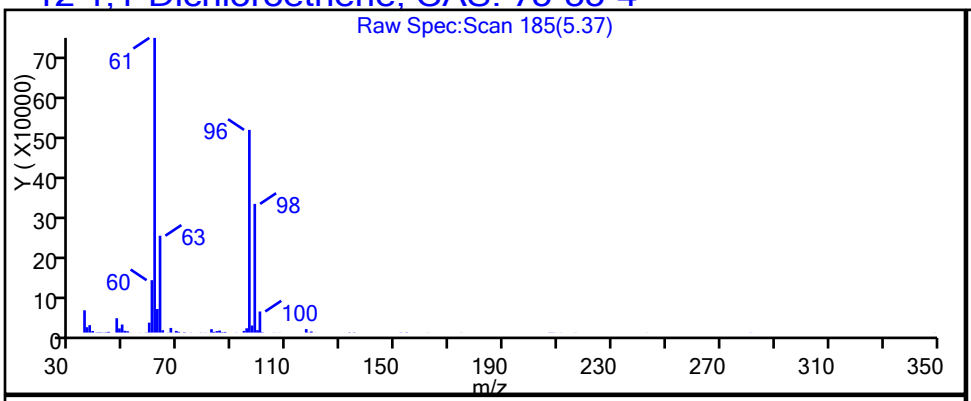
Report Date: 08-Sep-2016 07:13:43 Chrom Revision: 2.2 20-Apr-2016 13:59:46

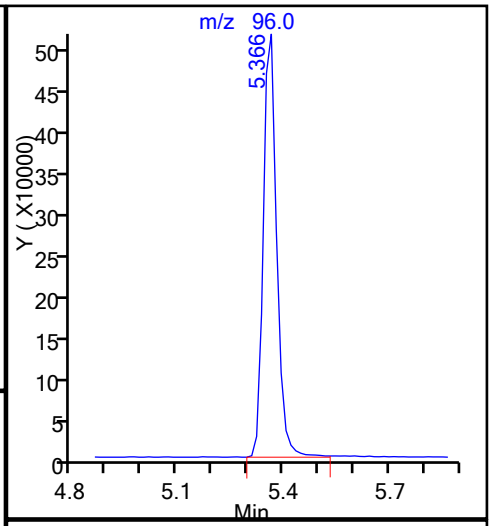
TestAmerica St. Louis

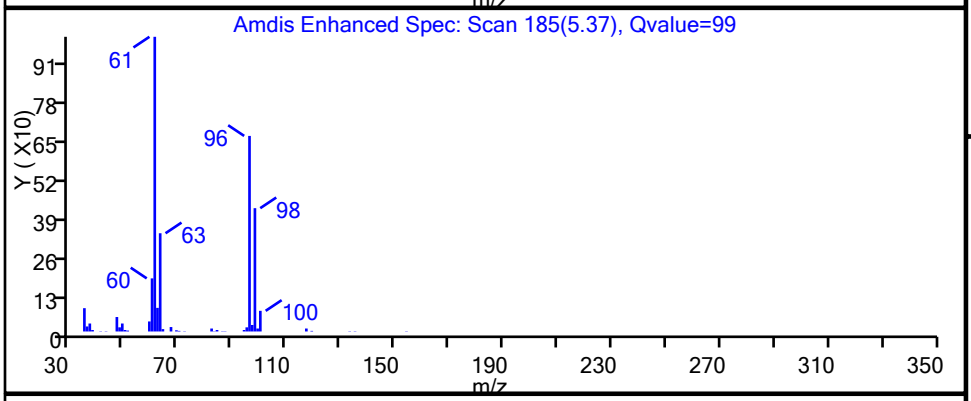
Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZSMP8958.D

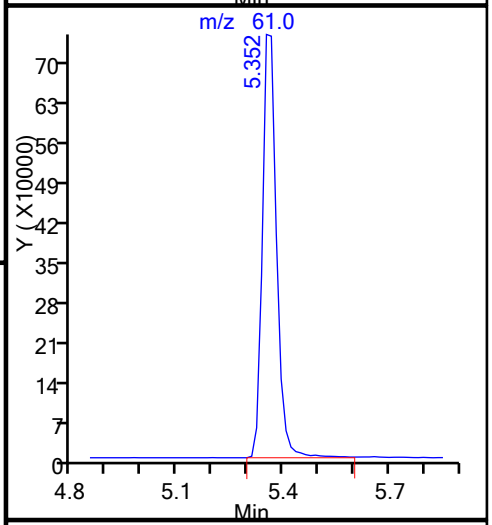
Injection Date:	07-Sep-2016 17:37:30	Instrument ID:	VMSZ		
Lims ID:	160-18852-C-11	Lab Sample ID:	160-18852-11		
Client ID:	GW-NB34-082516				
Operator ID:	EF	ALS Bottle#:	26	Worklist Smp#:	29
Purge Vol:	25.000 mL	Dil. Factor:	2.5000		
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

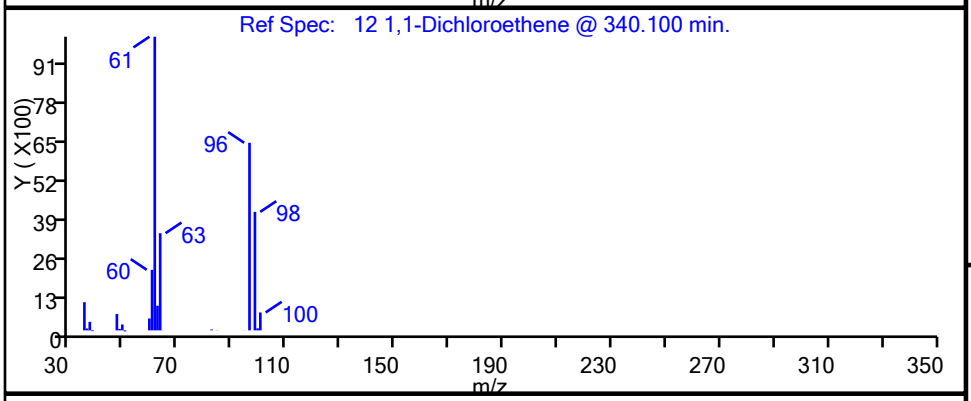
12 1,1-Dichloroethene, CAS: 75-35-4

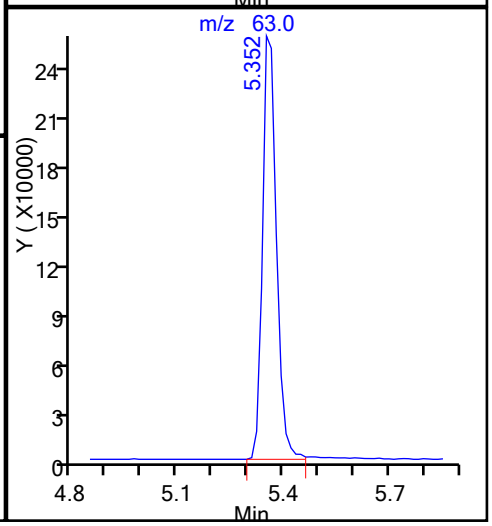


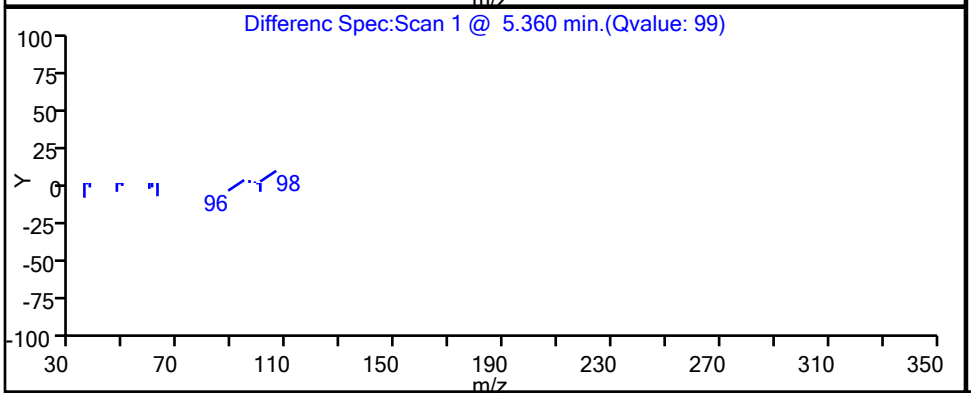












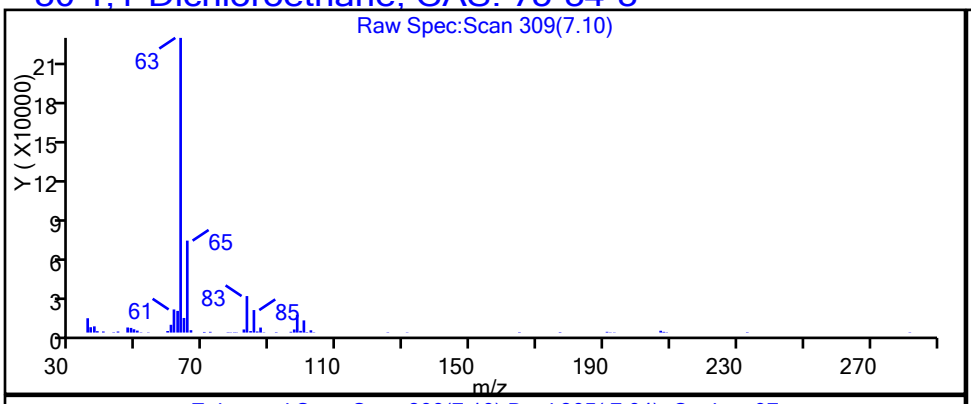
Report Date: 08-Sep-2016 07:13:44 Chrom Revision: 2.2 20-Apr-2016 13:59:46

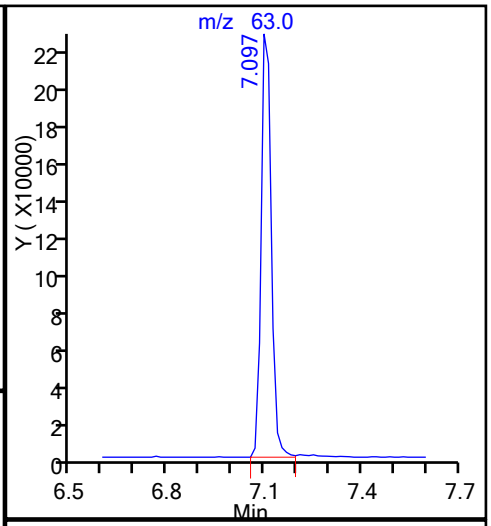
TestAmerica St. Louis

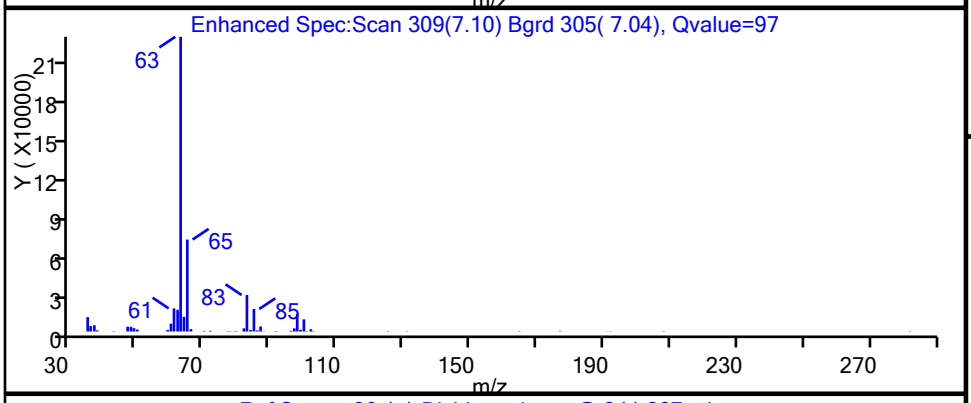
Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZSMP8958.D

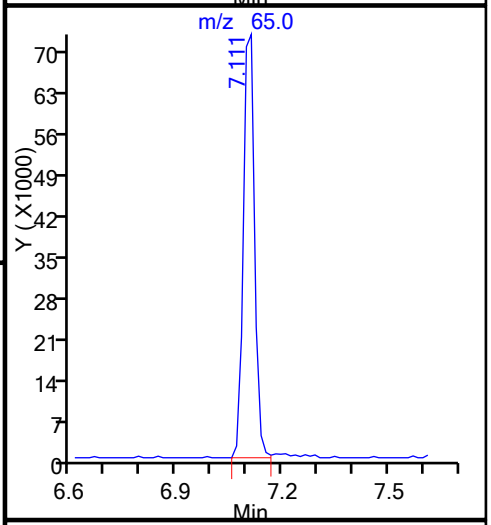
Injection Date:	07-Sep-2016 17:37:30	Instrument ID:	VMSZ		
Lims ID:	160-18852-C-11	Lab Sample ID:	160-18852-11		
Client ID:	GW-NB34-082516				
Operator ID:	EF	ALS Bottle#:	26	Worklist Smp#:	29
Purge Vol:	25.000 mL	Dil. Factor:	2.5000		
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

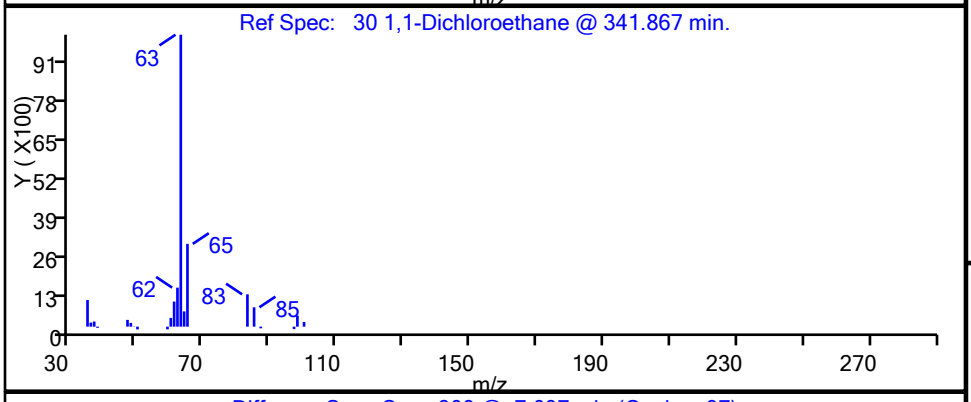
30 1,1-Dichloroethane, CAS: 75-34-3

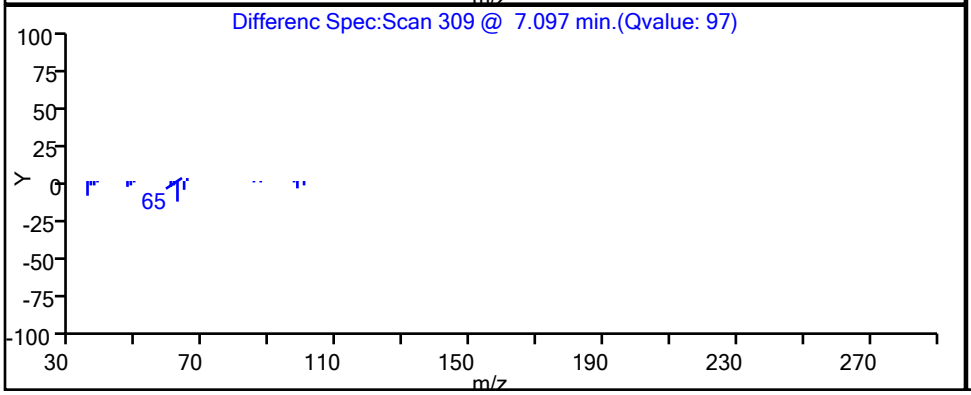


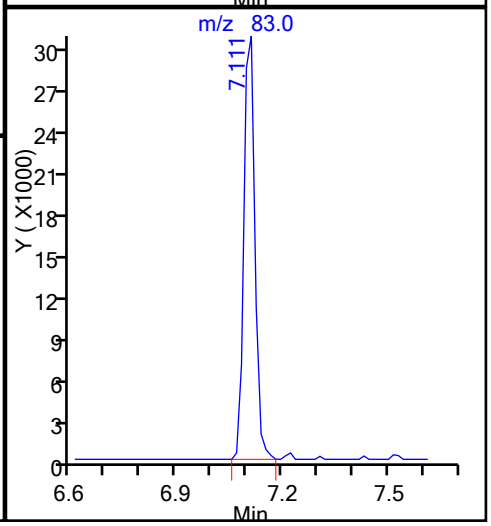










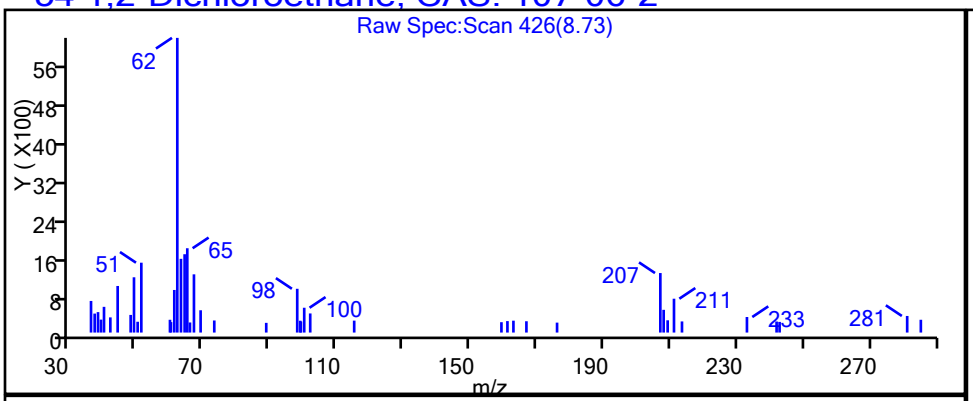


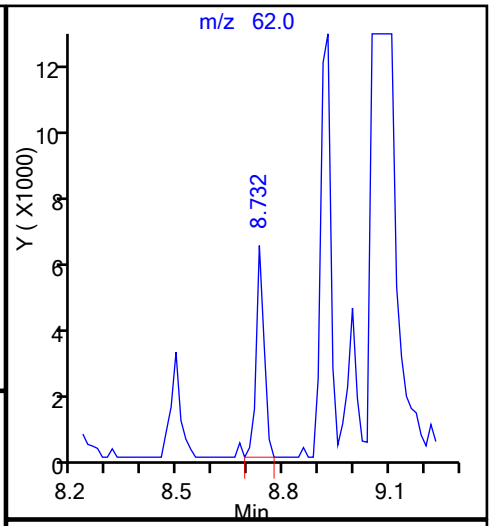
Report Date: 08-Sep-2016 07:13:44 Chrom Revision: 2.2 20-Apr-2016 13:59:46

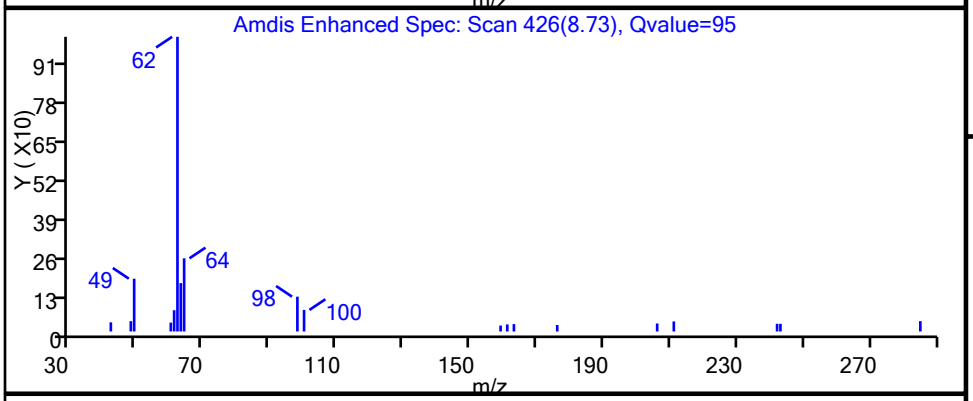
TestAmerica St. Louis

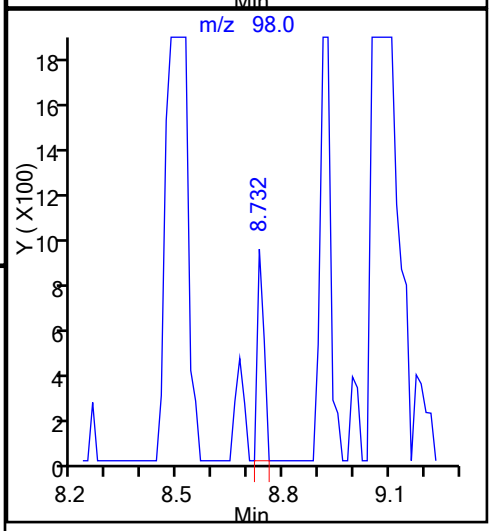
Data File:	\\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZSMP8958.D				
Injection Date:	07-Sep-2016 17:37:30	Instrument ID:	VMSZ		
Lims ID:	160-18852-C-11	Lab Sample ID:	160-18852-11		
Client ID:	GW-NB34-082516				
Operator ID:	EF	ALS Bottle#:	26	Worklist Smp#:	29
Purge Vol:	25.000 mL	Dil. Factor:	2.5000		
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

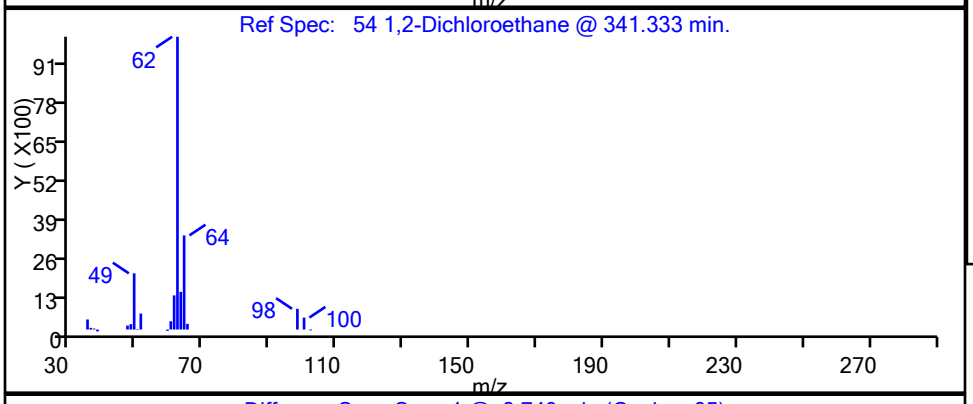
54 1,2-Dichloroethane, CAS: 107-06-2

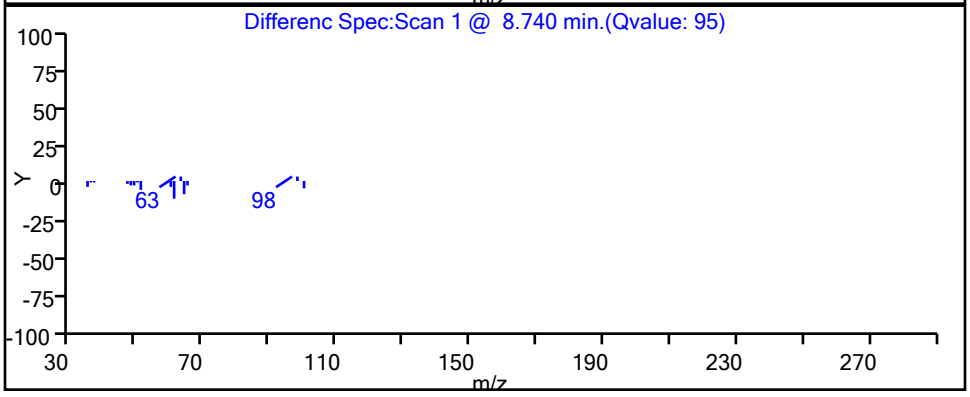












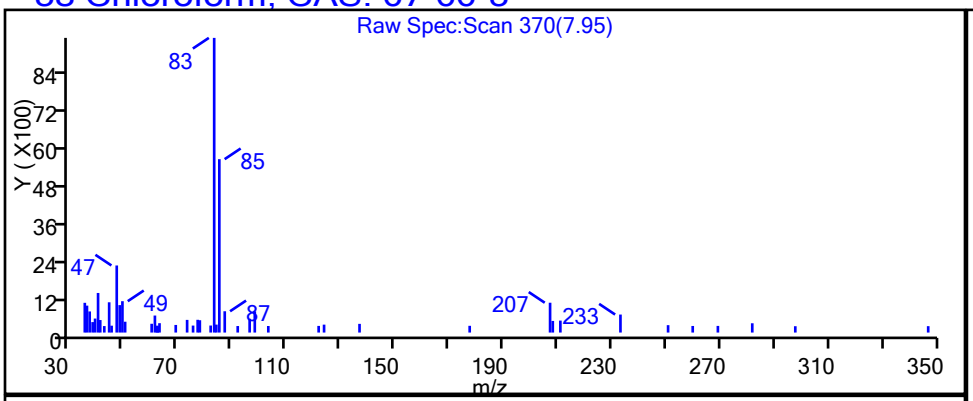
Report Date: 08-Sep-2016 07:13:44 Chrom Revision: 2.2 20-Apr-2016 13:59:46

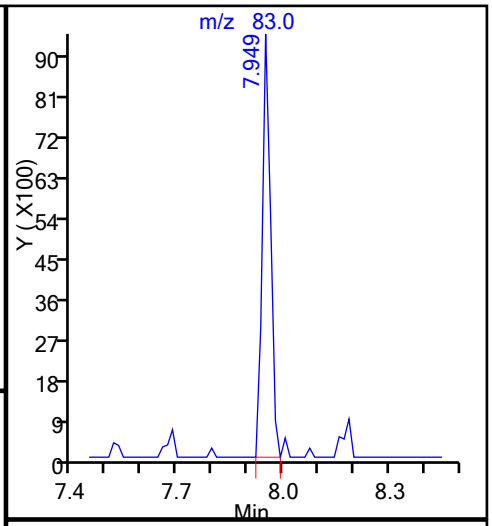
TestAmerica St. Louis

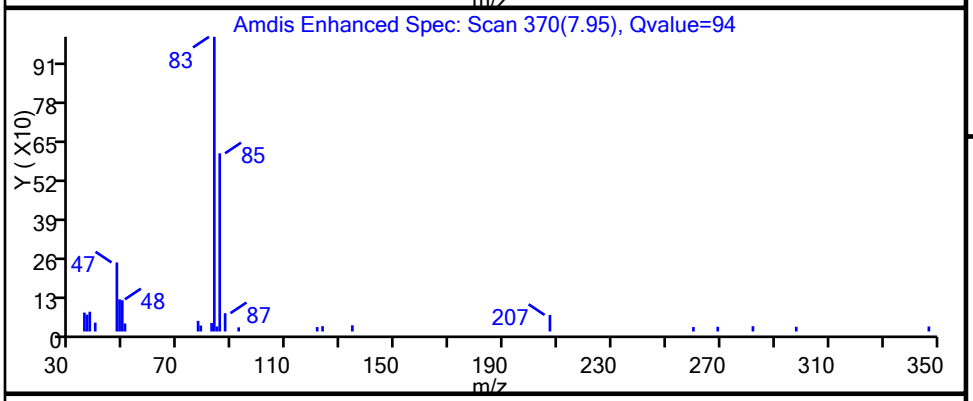
Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZSMP8958.D

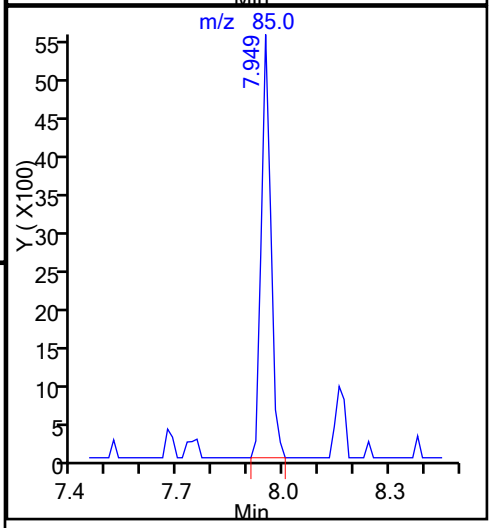
Injection Date:	07-Sep-2016 17:37:30	Instrument ID:	VMSZ		
Lims ID:	160-18852-C-11	Lab Sample ID:	160-18852-11		
Client ID:	GW-NB34-082516				
Operator ID:	EF	ALS Bottle#:	26	Worklist Smp#:	29
Purge Vol:	25.000 mL	Dil. Factor:	2.5000		
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

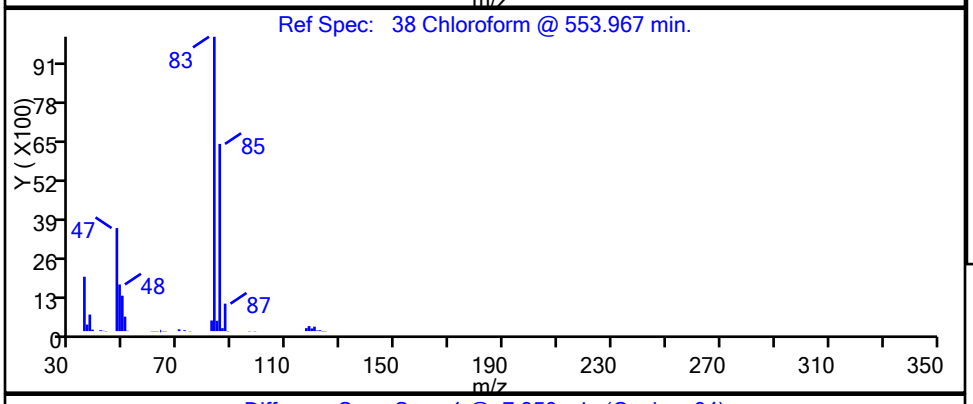
38 Chloroform, CAS: 67-66-3

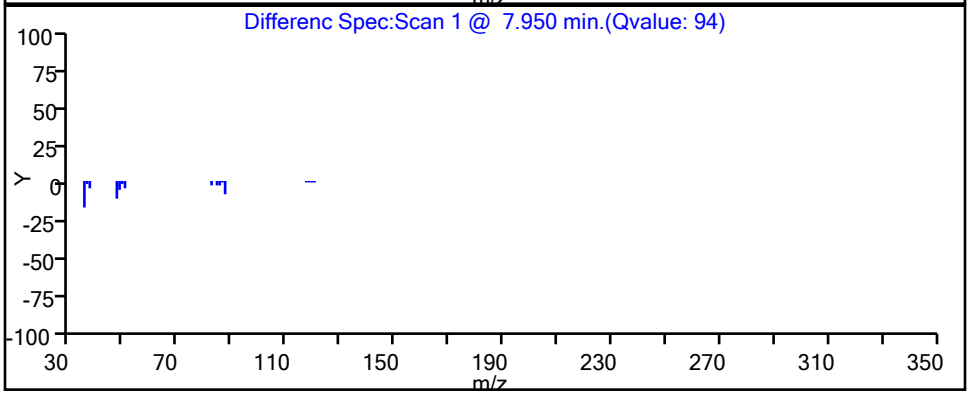










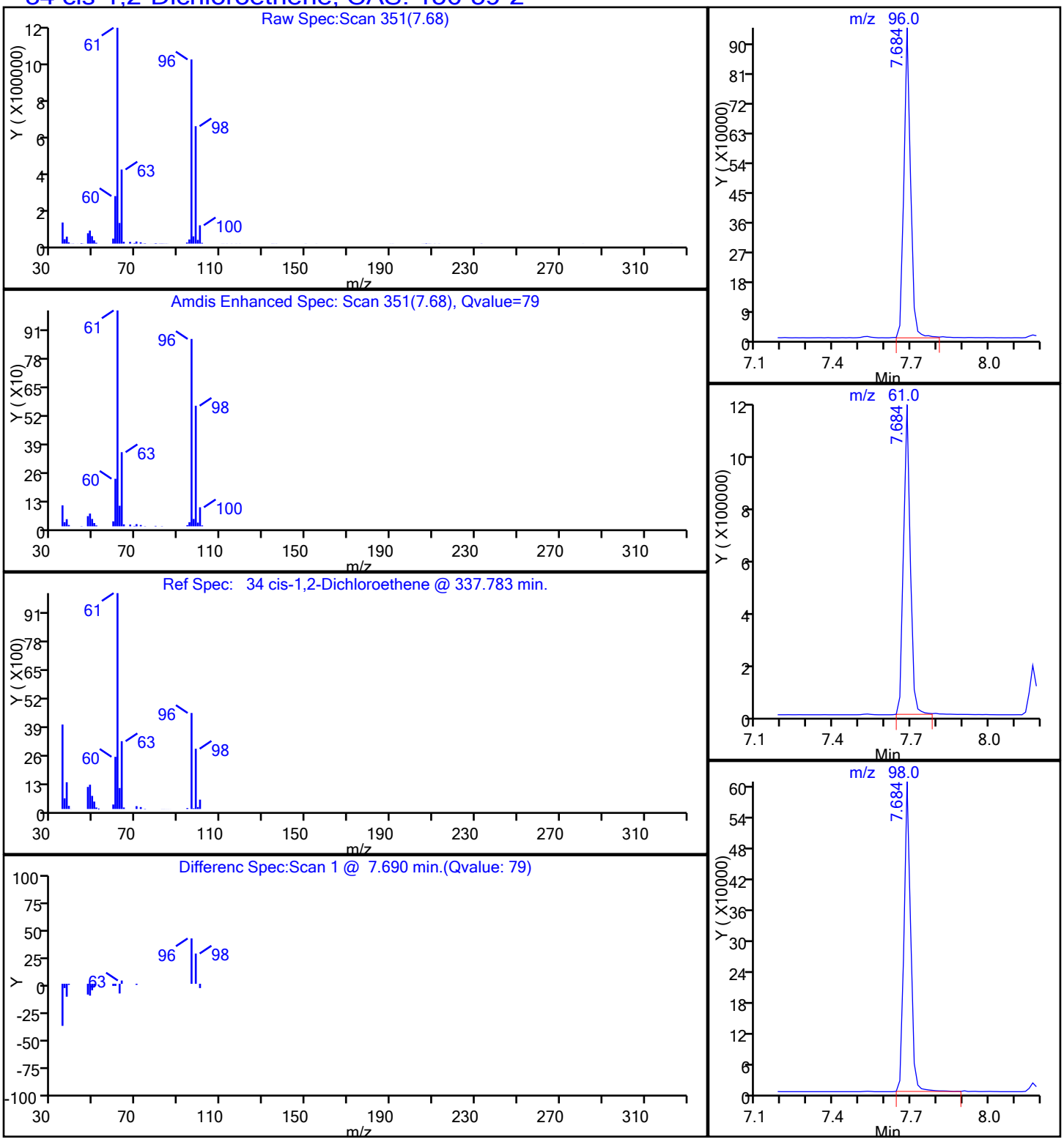


Report Date: 08-Sep-2016 07:13:44 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZSMP8958.D				
Injection Date:	07-Sep-2016 17:37:30	Instrument ID:	VMSZ		
Lims ID:	160-18852-C-11	Lab Sample ID:	160-18852-11		
Client ID:	GW-NB34-082516				
Operator ID:	EF	ALS Bottle#:	26	Worklist Smp#:	29
Purge Vol:	25.000 mL	Dil. Factor:	2.5000		
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

34 cis-1,2-Dichloroethene, CAS: 156-59-2

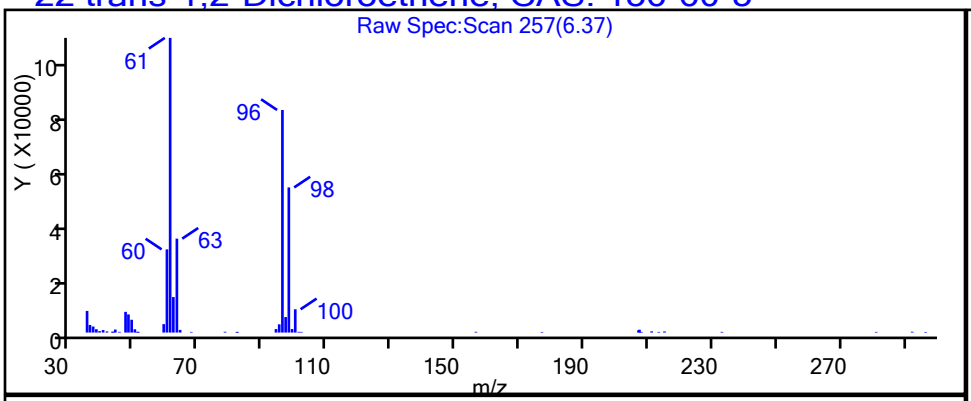


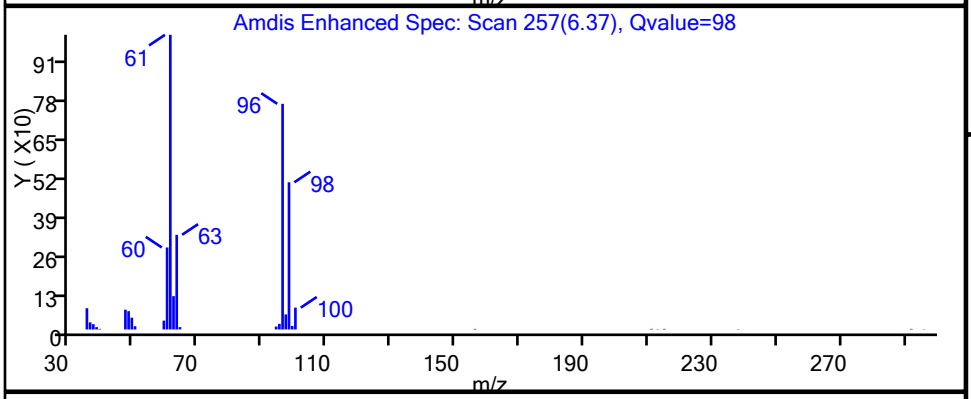
Report Date: 08-Sep-2016 07:13:43 Chrom Revision: 2.2 20-Apr-2016 13:59:46

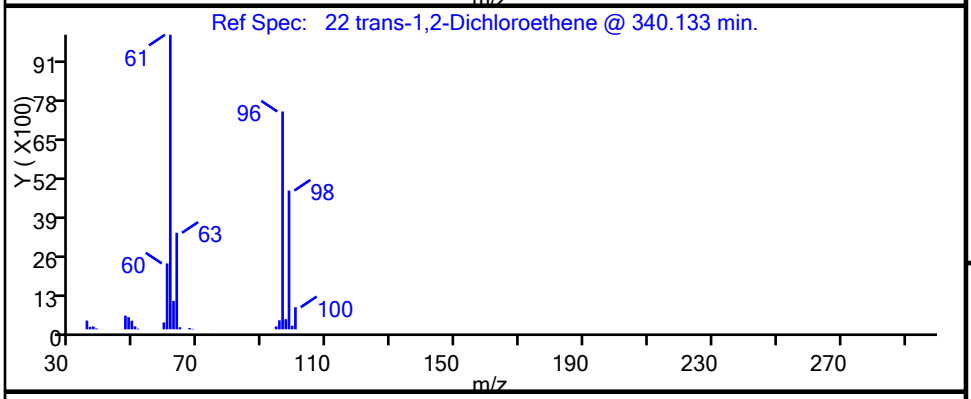
TestAmerica St. Louis

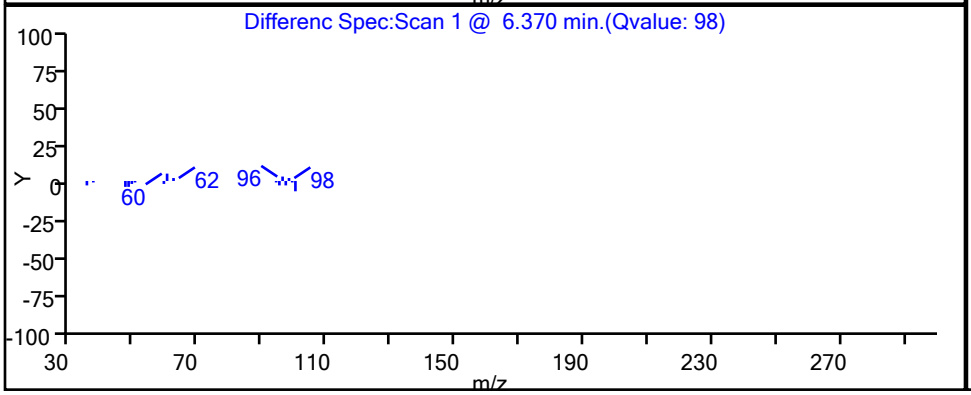
Data File:	\\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZSMP8958.D				
Injection Date:	07-Sep-2016 17:37:30	Instrument ID:	VMSZ		
Lims ID:	160-18852-C-11	Lab Sample ID:	160-18852-11		
Client ID:	GW-NB34-082516				
Operator ID:	EF	ALS Bottle#:	26	Worklist Smp#:	29
Purge Vol:	25.000 mL	Dil. Factor:	2.5000		
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

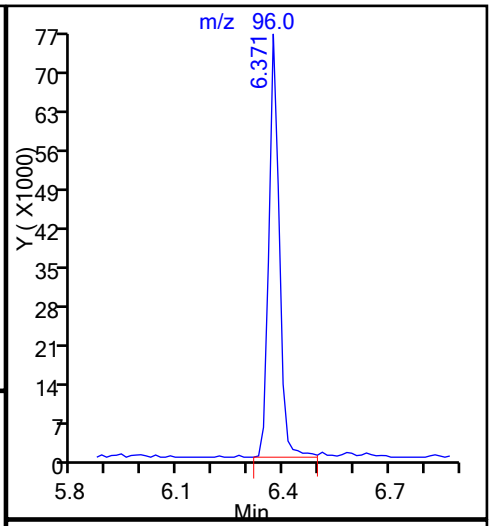
22 trans-1,2-Dichloroethene, CAS: 156-60-5

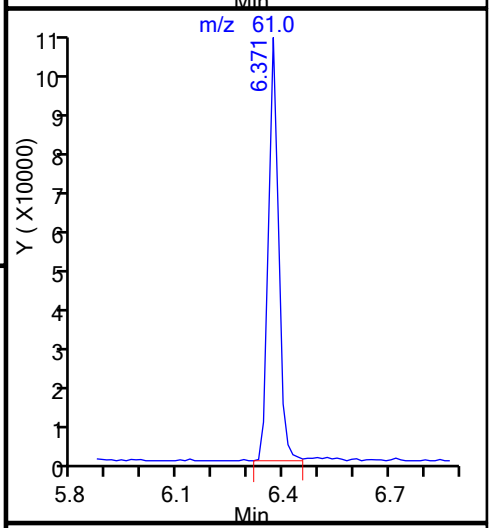


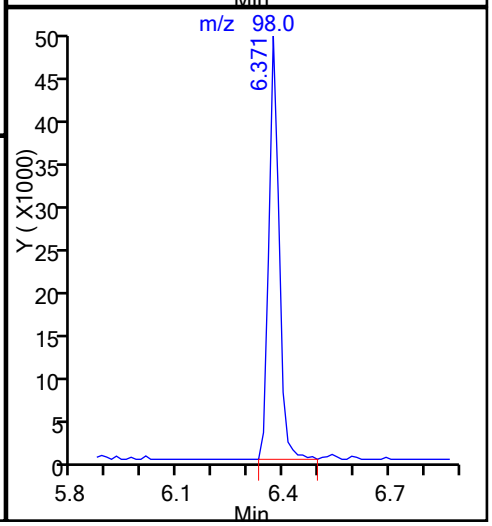












FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-NB34-082516 | Lab Sample ID: 160-18852-11

Matrix: Water | Lab File ID: ZSMP8953.D

Analysis Method: 8260C | Date Collected: 08/25/2016 14:55

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 15:17

Soil Aliquot Vol: | Dilution Factor: 25

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268249 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
127-18-4	Tetrachloroethene	950		25	4.5
79-01-6	Trichloroethene	230		25	6.3

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	94		75-129
460-00-4	4-Bromofluorobenzene (Surr)	111		81-130
1868-53-7	Dibromofluoromethane (Surr)	101		81-124
2037-26-5	Toluene-d8 (Surr)	106		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZSMP8953.D
Lims ID: 160-18852-C-11
Client ID: GW-NB34-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 15:17:30 ALS Bottle#: 21 Worklist Smp#: 24
Purge Vol: 25.000 mL Dil. Factor: 25.0000
Sample Info: 160-0008404-024
Misc. Info.: 160-18852-c-11;(25X);
Operator ID: EF Instrument ID: VMSZ

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 07-Sep-2016 15:50:53 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK006

First Level Reviewer: fishere Date: 07-Sep-2016 15:50:52

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
3 Chloromethane	50		3.325				ND	
4 Vinyl chloride	62		3.493				ND	
6 Bromomethane	94		4.079				ND	
7 Chloroethane	64		4.317				ND	
12 1,1-Dichloroethene	96	5.365	5.364	0.001	98	225835	2.74	
13 Carbon disulfide	76		5.406				ND	
S 16 1,2-Dichloroethene, Total	96				0		3.15	
20 Methylene Chloride	84		6.174				ND	
21 Acetone	43		6.230				ND	
22 trans-1,2-Dichloroethene	96	6.371	6.370	0.001	95	25164	0.2953	
30 1,1-Dichloroethane	63	7.111	7.096	0.015	96	76025	0.5435	
33 Vinyl acetate	43		7.347				ND	
34 cis-1,2-Dichloroethene	96	7.684	7.682	0.002	80	244750	2.86	
38 Chloroform	83		7.948				ND	
40 Carbon tetrachloride	117		8.101				ND	
$ 42 Dibromofluoromethane (Surr	113	8.145	8.143	0.002	94	621677	10.1	
43 1,1,1-Trichloroethane	97	8.172	8.171	0.001	97	129423	1.09	
44 2-Butanone (MEK)	43		8.255				ND	
48 Benzene	78		8.534				ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.675	8.674	0.001	89	497521	9.38	
54 1,2-Dichloroethane	62		8.730				ND	
* 55 Fluorobenzene	96	8.927	8.925	0.002	99	2855960	10.0	
56 Trichloroethene	95	9.080	9.079	0.001	96	817902	9.34	
59 n-Butanol	56		9.302				ND	
62 1,2-Dichloropropane	63		9.568				ND	
63 Dichlorobromomethane	83		9.610				ND	
67 cis-1,3-Dichloropropene	75		10.182				ND	
$ 68 Toluene-d8 (Surr)	98	10.351	10.350	0.001	92	2819394	10.6	
69 Toluene	92		10.392				ND	
71 4-Methyl-2-pentanone (MIBK	43		10.699				ND	
73 Tetrachloroethene	164	10.756	10.755	0.001	97	3007932	37.8	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/l	Flags
72 trans-1,3-Dichloropropene	75		10.755				ND	
75 1,1,2-Trichloroethane	83		10.909				ND	
76 Chlorodibromomethane	129		11.090				ND	
79 Ethylene Dibromide	107		11.342				ND	
80 2-Hexanone	43		11.439				ND	
* 83 Chlorobenzene-d5	117	11.776	11.774	0.002	84	2077744	10.0	
82 Ethylbenzene	91		11.774				ND	
84 Chlorobenzene	112		11.788				ND	
86 m-Xylene & p-Xylene	106		11.900				ND	
88 o-Xylene	106		12.305				ND	
89 Styrene	104		12.361				ND	
90 Bromoform	173		12.431				ND	
$ 92 4-Bromofluorobenzene (Surr	95	12.879	12.878	0.001	94	830882	11.1	
95 1,1,2,2-Tetrachloroethane	83		13.031				ND	
* 108 1,4-Dichlorobenzene-d4	152	13.954	13.953	0.001	92	993785	10.0	
114 1,2-Dibromo-3-Chloropropan	157		15.182				ND	
117 1,2,4-Trichlorobenzene	180		15.839				ND	
S 119 Xylenes, Total	106		16.500				ND	

Reagents:

8260 Surr 25_00065	Amount Added:	10.00	Units: uL	
I.S. Working_00135	Amount Added:	10.00	Units: uL	Run Reagent

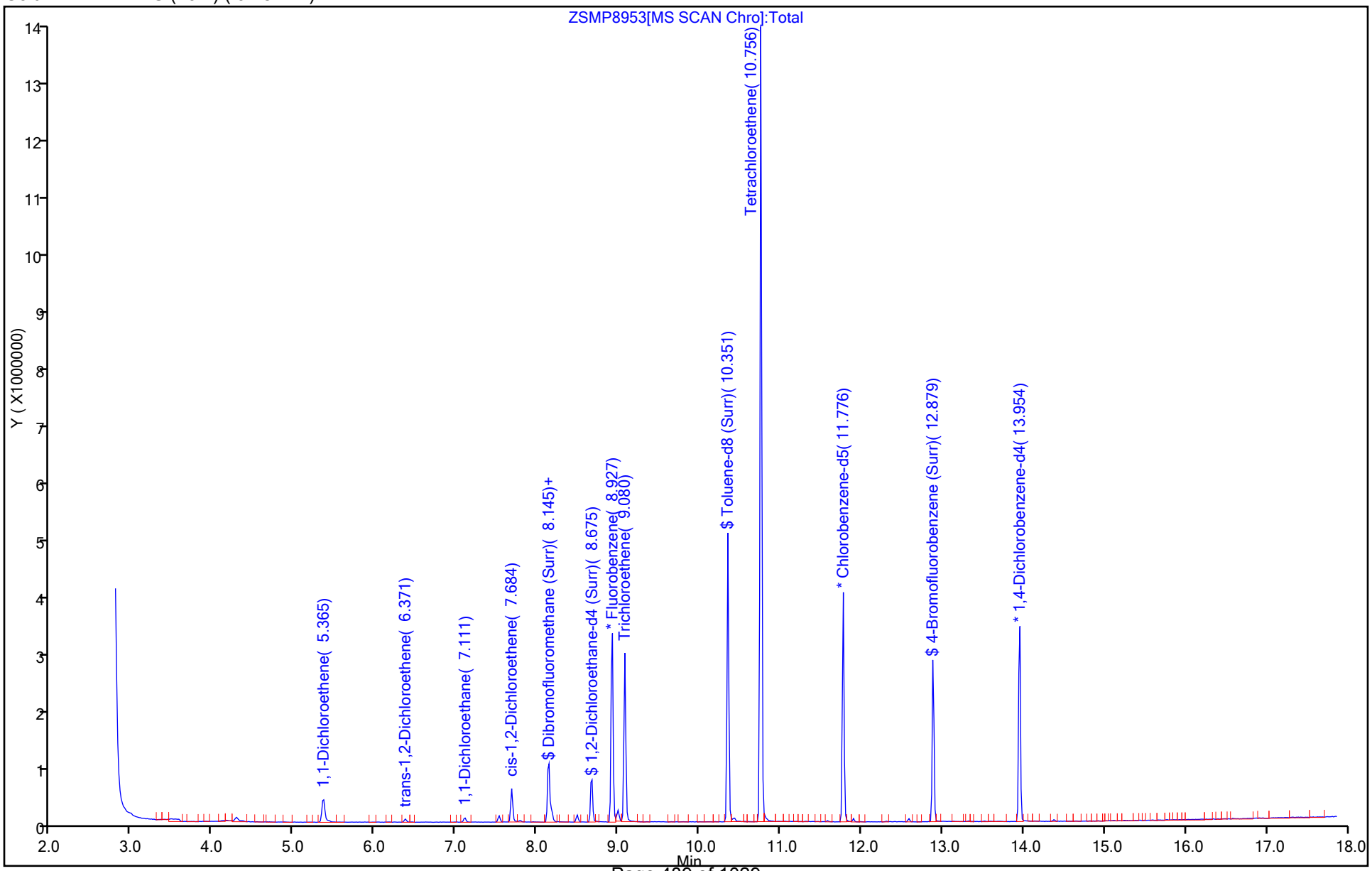
Report Date: 07-Sep-2016 15:50:54 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZSMP8953.D

Injection Date:	07-Sep-2016 15:17:30	Instrument ID:	VMSZ	Operator ID:	EF
Lims ID:	160-18852-C-11	Lab Sample ID:	160-18852-11	Worklist Smp#:	24
Client ID:	GW-NB34-082516				
Purge Vol:	25.000 mL	Dil. Factor:	25.0000	ALS Bottle#:	21
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZSMP8953.D
Lims ID: 160-18852-C-11
Client ID: GW-NB34-082516
Sample Type: Client
Inject. Date: 07-Sep-2016 15:17:30 ALS Bottle#: 21 Worklist Smp#: 24
Purge Vol: 25.000 mL Dil. Factor: 25.0000
Sample Info: 160-0008404-024
Misc. Info.: 160-18852-c-11;(25X);
Operator ID: EF Instrument ID: VMSZ

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 07-Sep-2016 15:50:53 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK006

First Level Reviewer: fishere Date: 07-Sep-2016 15:50:52

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.1	101.27
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	9.38	93.83
$ 68 Toluene-d8 (Surr)	10.0	10.6	105.76
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.1	111.04

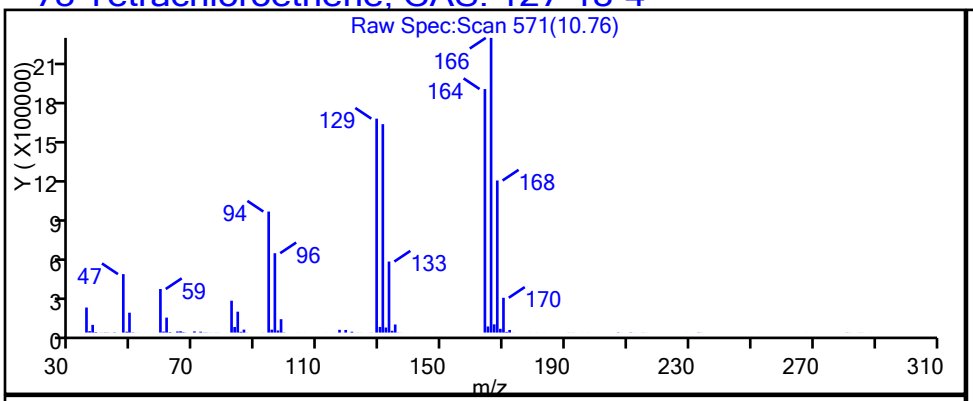
Report Date: 07-Sep-2016 15:50:54 Chrom Revision: 2.2 20-Apr-2016 13:59:46

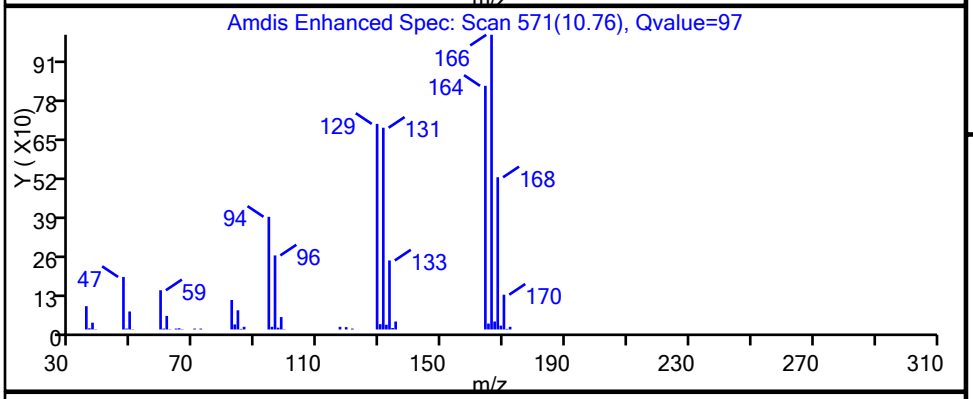
TestAmerica St. Louis

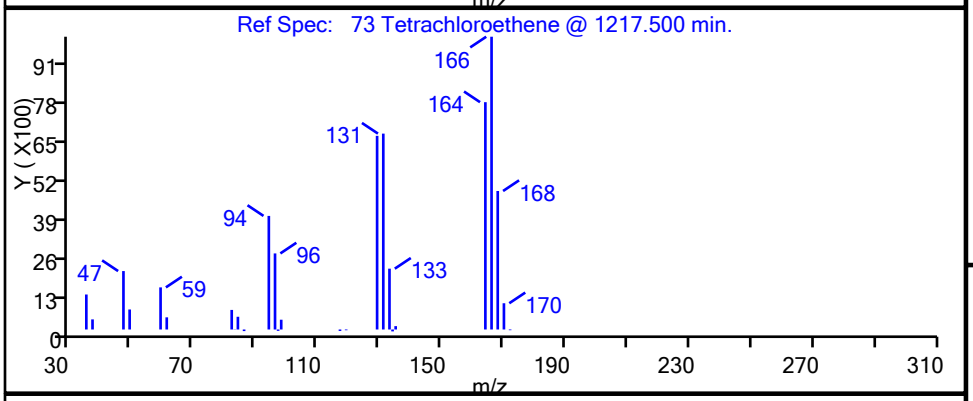
Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZSMP8953.D

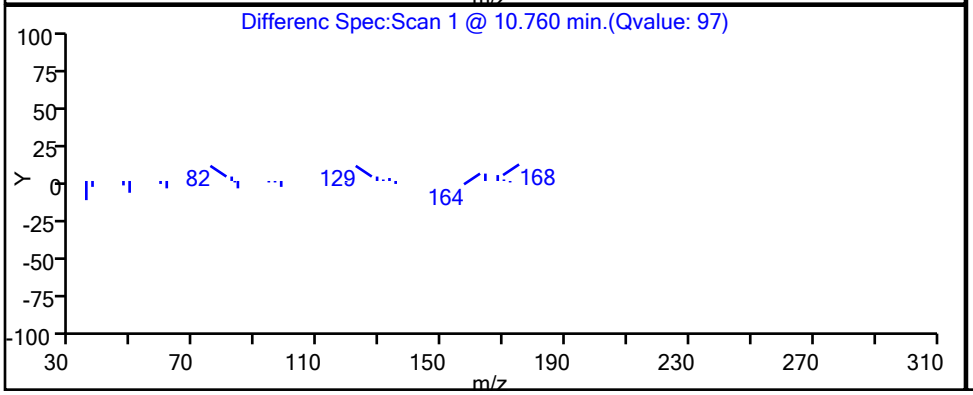
Injection Date:	07-Sep-2016 15:17:30	Instrument ID:	VMSZ		
Lims ID:	160-18852-C-11	Lab Sample ID:	160-18852-11		
Client ID:	GW-NB34-082516				
Operator ID:	EF	ALS Bottle#:	21	Worklist Smp#:	24
Purge Vol:	25.000 mL	Dil. Factor:	25.0000		
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

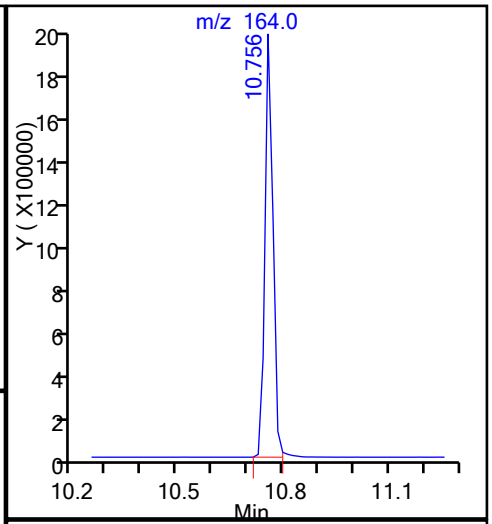
73 Tetrachloroethene, CAS: 127-18-4

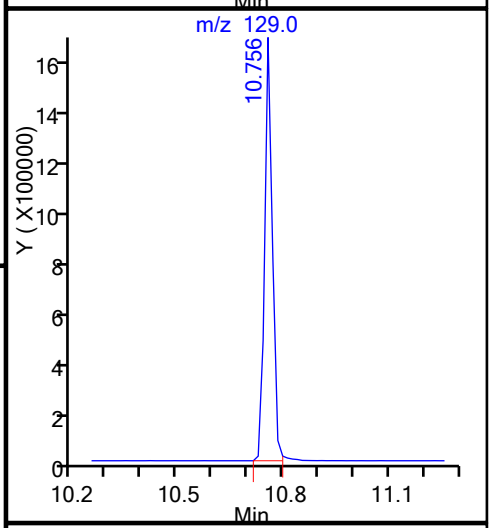


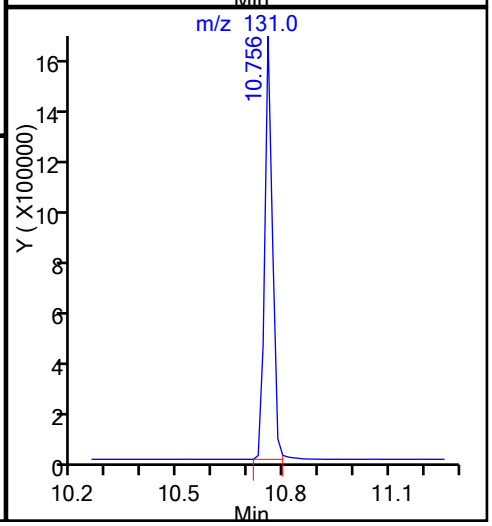










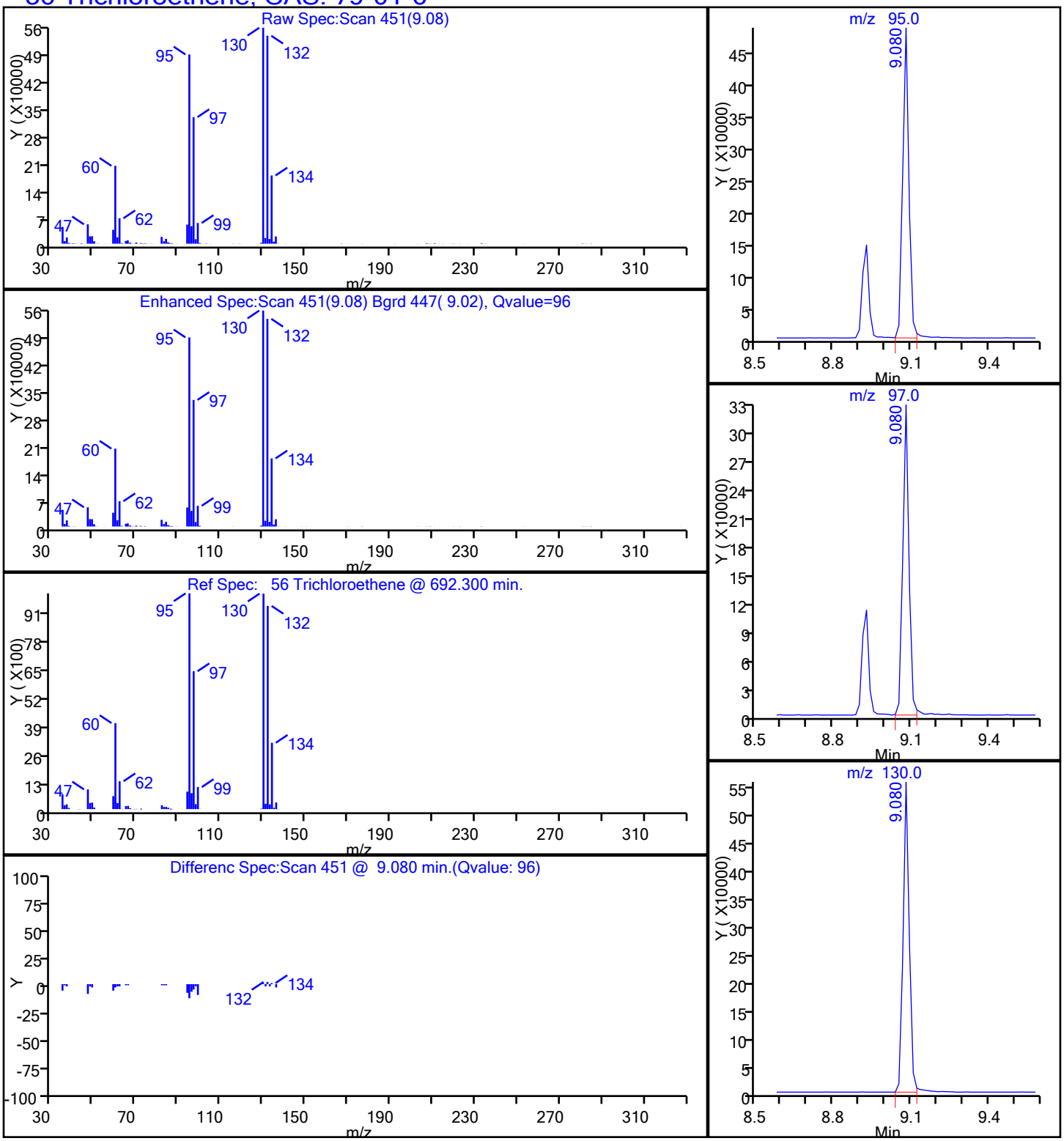


Report Date: 07-Sep-2016 15:50:54 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File:	\\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZSMP8953.D				
Injection Date:	07-Sep-2016 15:17:30	Instrument ID:	VMSZ		
Lims ID:	160-18852-C-11	Lab Sample ID:	160-18852-11		
Client ID:	GW-NB34-082516				
Operator ID:	EF	ALS Bottle#:	21	Worklist Smp#:	24
Purge Vol:	25.000 mL	Dil. Factor:	25.0000		
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

56 Trichloroethene, CAS: 79-01-6



FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 265937

SDG No.:

Instrument ID: VMSL GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 08/22/2016 11:18 Calibration End Date: 08/22/2016 13:49 Calibration ID: 11351

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-265937/6	LICL4704.D
Level 2	IC 160-265937/7	LICL4705.D
Level 3	IC 160-265937/8	LICL4706.D
Level 4	IC 160-265937/9	LICL4707.D
Level 5	ICIS 160-265937/10	LICL4708.D
Level 6	IC 160-265937/11	LICL4709.D
Level 7	IC 160-265937/12	LICL4710.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Dichlorodifluoromethane	0.5020 0.4306	0.5169 0.3863	0.4659	0.4625	0.4562	Ave		0.4601			0.1000	9.5		20.0			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	0.1901 0.2128	0.2250 0.1853	0.2229	0.2113	0.2077	Ave		0.2079			0.0100	7.3		20.0			
Chloromethane	0.6175 0.5700	0.6526 0.5331	0.5900	0.5785	0.5612	Ave		0.5861			0.1000	6.7		20.0			
Vinyl chloride	0.4582 0.4598	0.4844 0.4091	0.4428	0.4440	0.4473	Ave		0.4493			0.1000	5.1		20.0			
Butadiene	0.5243 0.5173	0.5567 0.4441	0.5027	0.5031	0.5046	Ave		0.5075			0.0100	6.7		20.0			
Methyl bromide	0.1823 0.1649	0.1945 0.1686	0.1720	0.1648	0.1548	Ave		0.1717			0.1000	7.6		20.0			
Chloroethane	0.2388 0.2263	0.2619 0.2132	0.2336	0.2342	0.2224	Ave		0.2329			0.1000	6.6		20.0			
Trichlorofluoromethane	0.5972 0.5267	0.6243 0.4909	0.5641	0.5635	0.5398	Ave		0.5581			0.1000	8.0		20.0			
Dichlorofluoromethane	0.5891 0.5329	0.6163 0.4981	0.5464	0.5450	0.5297	Ave		0.5511			0.0100	7.2		20.0			
Ethyl ether	0.1049 0.0883	0.0955 0.0923	0.0913	0.0893	0.0886	Ave		0.0929			0.0100	6.3		20.0			
Ethanol	0.0014 0.0010	0.0011 0.0010	0.0012	0.0011	0.0010	Ave		0.0011			0.0010	11.0		20.0			
1,1-Dichloroethene	0.2897 0.2790	0.3032 0.2559	0.2736	0.2747	0.2751	Ave		0.2787			0.1000	5.3		20.0			
Carbon disulfide	1.0164 0.9633	1.0892 0.8702	0.9893	0.9870	0.9623	Ave		0.9825			0.1000	6.7		20.0			
1,1,2-Trichloro-1,2,2-trifluoroethane	0.2770 0.2639	0.3142 0.2445	0.2777	0.2709	0.2660	Ave		0.2735			0.1000	7.7		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 265937

SDG No.:

Instrument ID: VMSL GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 08/22/2016 11:18 Calibration End Date: 08/22/2016 13:49 Calibration ID: 11351

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Iodomethane	0.0321 0.1948	0.0358 0.2026	0.0508	0.1054	0.1719	Lin	-0.263	0.2082			0.0100				0.9990		0.9900
Acrolein	0.0126 0.0127	0.0121 0.0134	0.0117	0.0120	0.0121	Lin1	-0.006	0.0130			0.0010				0.9980		0.9900
Allyl chloride	0.3878 0.3942	0.4081 0.3673	0.3793	0.3886	0.3896	Ave		0.3878			0.0100	3.2		20.0			
Isopropyl alcohol	0.0077 0.0055	0.0057 0.0057	0.0055	0.0057	0.0052	Ave		0.0059		*	0.0100	14.3		20.0			
Methylene Chloride	0.3101 0.2125	0.2869 0.2097	0.2535	0.2222	0.2134	Ave		0.2441			0.1000	16.6		20.0			
Acetone	0.0774 0.0287	0.0464 0.0281	0.0399	0.0336	0.0319	Lin1	0.0233	0.0278		*	0.1000				0.9990		0.9900
trans-1,2-Dichloroethene	0.3016 0.2815	0.3135 0.2633	0.2855	0.2834	0.2793	Ave		0.2869			0.1000	5.7		20.0			
Methyl acetate	0.0135 0.0120	0.0133 0.0122	0.0127	0.0125	0.0116	Ave		0.0125		*	0.1000	5.6		20.0			
Hexane	0.0948 0.1011	0.0928 0.0918	0.0931	0.0966	0.1003	Ave		0.0958			0.0100	3.9		20.0			
Methyl tert-butyl ether	0.3789 0.3793	0.3786 0.3855	0.3740	0.3675	0.3647	Ave		0.3755			0.1000	1.9		20.0			
Acetonitrile	0.0158 0.0113	0.0141 0.0116	0.0127	0.0118	0.0113	Ave		0.0126			0.0010	13.3		20.0			
Isopropyl ether	0.7666 0.8478	0.7893 0.8607	0.7647	0.8038	0.8138	Ave		0.8067			0.0100	4.6		20.0			
tert-Butyl alcohol	0.0091 0.0086	0.0081 0.0087	0.0079	0.0081	0.0080	Ave		0.0084		*	0.0100	5.2		20.0			
2-Chloro-1,3-butadiene	0.4925 0.6343	0.5555 0.5793	0.5265	0.5672	0.5925	Ave		0.5640			0.0100	8.1		20.0			
1,1-Dichloroethane	0.5532 0.5233	0.5783 0.5044	0.5378	0.5290	0.5163	Ave		0.5346			0.2000	4.6		20.0			
Acrylonitrile	0.0395 0.0356	0.0386 0.0359	0.0369	0.0354	0.0346	Ave		0.0366			0.0100	4.8		20.0			
Tert-butyl ethyl ether	0.5561 0.6174	0.5537 0.6289	0.5551	0.5773	0.5839	Ave		0.5818			0.0100	5.3		20.0			
Vinyl acetate	0.3319 0.3242	0.3457 0.3295	0.3486	0.3416	0.3279	Ave		0.3356			0.0100	2.8		20.0			
cis-1,2-Dichloroethene	0.2710 0.2713	0.2831 0.2640	0.2588	0.2640	0.2645	Ave		0.2681			0.1000	3.0		20.0			
2,2-Dichloropropane	0.5004 0.4733	0.5281 0.4469	0.4775	0.4711	0.4722	Ave		0.4813			0.0100	5.4		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 265937

SDG No.:

Instrument ID: VMSL GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 08/22/2016 11:18 Calibration End Date: 08/22/2016 13:49 Calibration ID: 11351

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Bromochloromethane	0.1004 0.0856	0.0941 0.0840	0.0951	0.0883	0.0863	Ave		0.0906			0.0100	6.7		20.0			
Cyclohexane	0.4192 0.5086	0.4881 0.4613	0.4726	0.4954	0.4992	Ave		0.4778			0.1000	6.4		20.0			
Chloroform	0.4975 0.4473	0.5096 0.4323	0.4524	0.4509	0.4448	Ave		0.4621			0.2000	6.3		20.0			
Ethyl acetate	0.0152 0.0143	0.0135 0.0148	0.0140	0.0146	0.0138	Ave		0.0143			0.0100	4.2		20.0			
Carbon tetrachloride	0.4785 0.4632	0.5029 0.4141	0.4644	0.4648	0.4560	Ave		0.4634			0.1000	5.8		20.0			
Tetrahydrofuran	+++++ 0.0079	0.0064 0.0084	0.0070	0.0076	0.0074	Lin	-0.010	0.0084			0.0010				0.9990		0.9900
1,1,1-Trichloroethane	0.5255 0.5108	0.5702 0.4662	0.5074	0.5179	0.5061	Ave		0.5149			0.1000	6.0		20.0			
2-Butanone	0.0511 0.0416	0.0456 0.0420	0.0454	0.0420	0.0413	Lin1	0.0046	0.0416		*	0.1000				1.0000		0.9900
1,1-Dichloropropene	0.3686 0.4240	0.4136 0.3773	0.3884	0.4008	0.4080	Ave		0.3972			0.0100	5.0		20.0			
Isooctane	1.2556 1.5698	1.4553 1.4264	1.3920	1.4702	1.4989	Ave		1.4383			0.0100	6.8		20.0			
n-Heptane	0.6036 0.7367	0.7036 0.6240	0.6864	0.7277	0.7272	Ave		0.6870			0.0100	7.7		20.0			
Benzene	1.1195 1.0304	1.1519 0.9659	1.0447	1.0449	1.0146	Ave		1.0531			0.5000	6.0		20.0			
Propionitrile	0.0143 0.0127	0.0143 0.0129	0.0136	0.0129	0.0124	Ave		0.0133			0.0010	5.9		20.0			
Methacrylonitrile	0.0816 0.0773	0.0800 0.0757	0.0801	0.0770	0.0740	Ave		0.0779			0.0100	3.5		20.0			
Tert-amyl methyl ether	0.4134 0.4284	0.4293 0.4377	0.4101	0.4084	0.4046	Ave		0.4188			0.0100	3.0		20.0			
Isobutanol	0.0027 0.0025	0.0024 0.0027	0.0025	0.0024	0.0024	Lin	-0.033	0.0027			0.0010				0.9980		0.9900
1,2-Dichloroethane	0.2942 0.2592	0.2917 0.2513	0.2708	0.2665	0.2560	Ave		0.2700			0.1000	6.3		20.0			
Methylcyclohexane	0.5177 0.5661	0.5735 0.4861	0.5382	0.5582	0.5585	Ave		0.5426			0.1000	5.7		20.0			
Trichloroethene	0.3015 0.3010	0.3266 0.2649	0.2945	0.3042	0.2974	Ave		0.2986			0.2000	6.1		20.0			
n-Butanol	0.0018 0.0023	0.0018 0.0027	0.0016	0.0019	0.0020	Lin	-0.071	0.0027		*	0.0100				0.9950		0.9900

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 265937

SDG No.:

Instrument ID: VMSL GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 08/22/2016 11:18 Calibration End Date: 08/22/2016 13:49 Calibration ID: 11351

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Dibromomethane	0.0966 0.0853	0.0957 0.0854	0.0896	0.0870	0.0830	Ave		0.0889			0.0100	6.0		20.0			
Ethyl acrylate	0.1161 0.1355	0.1115 0.1464	0.1108	0.1163	0.1224	Ave		0.1227			0.0100	10.9		20.0			
1,2-Dichloropropane	0.2548 0.2430	0.2499 0.2377	0.2341	0.2358	0.2320	Ave		0.2410			0.1000	3.6		20.0			
Bromodichloromethane	0.2969 0.2808	0.2800 0.2744	0.2755	0.2746	0.2689	Ave		0.2787			0.2000	3.2		20.0			
Methyl methacrylate	0.0501 0.0685	0.0550 0.0719	0.0553	0.0570	0.0621	Ave		0.0600			0.0100	13.1		20.0			
1,4-Dioxane	+++++ 0.0008	0.0008 0.0008	0.0006	0.0007	0.0007	Lin1	-0.006	0.0008		*	0.0010				0.9940		0.9900
2-Chloroethyl vinyl ether	0.0209 0.0272	0.0241 0.0227	0.0224	0.0225	0.0253	Lin1	-0.001	0.0243			0.0100				0.9920		0.9900
cis-1,3-Dichloropropene	0.2848 0.3257	0.2979 0.3232	0.2861	0.2986	0.3086	Ave		0.3036			0.2000	5.4		20.0			
Toluene	0.8996 1.0328	1.0098 0.9844	0.9595	0.9784	0.9917	Ave		0.9795			0.4000	4.3		20.0			
2-Nitropropane	0.0426 0.0466	0.0376 0.0517	0.0379	0.0383	0.0408	Ave		0.0422			0.0100	12.5		20.0			
4-Methyl-2-pentanone	0.1235 0.1420	0.1226 0.1600	0.1215	0.1255	0.1286	Ave		0.1320			0.1000	10.8		20.0			
Tetrachloroethene	0.3821 0.4105	0.4417 0.3524	0.4056	0.4001	0.3971	Ave		0.3985			0.2000	6.8		20.0			
trans-1,3-Dichloropropene	0.3287 0.3740	0.3368 0.3912	0.3389	0.3471	0.3549	Ave		0.3531			0.1000	6.3		20.0			
Ethyl methacrylate	0.1314 0.2225	0.1571 0.2497	0.1606	0.1722	0.1947	Lin1	-0.092	0.2356			0.0100				0.9910		0.9900
1,1,2-Trichloroethane	0.1663 0.1494	0.1520 0.1571	0.1441	0.1425	0.1409	Ave		0.1503			0.1000	6.0		20.0			
Chlorodibromomethane	0.2256 0.2502	0.2472 0.2647	0.2300	0.2274	0.2311	Ave		0.2395			0.1000	6.2		20.0			
1,3-Dichloropropane	0.3344 0.3379	0.3347 0.3585	0.3337	0.3165	0.3150	Ave		0.3329			0.0100	4.4		20.0			
n-Butyl acetate	0.2252 0.2746	0.2228 0.3085	0.2168	0.2191	0.2457	Ave		0.2447			0.0100	14.2		20.0			
1,2-Dibromoethane	0.1764 0.1663	0.1626 0.1759	0.1616	0.1555	0.1559	Ave		0.1649			0.1000	5.2		20.0			
2-Hexanone	0.0803 0.0936	0.0782 0.1069	0.0795	0.0800	0.0884	Ave		0.0867		*	0.1000	12.2		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 265937

SDG No.:

Instrument ID: VMSL GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 08/22/2016 11:18 Calibration End Date: 08/22/2016 13:49 Calibration ID: 11351

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Ethylbenzene	1.9592 1.9924	2.1511 1.7414	1.9387	1.9801	1.9416	Ave		1.9578			0.1000	6.1		20.0			
Chlorobenzene	1.0588 1.0122	1.1499 0.9506	1.0416	1.0284	0.9885	Ave		1.0328			0.5000	6.1		20.0			
1,1,1,2-Tetrachloroethane	0.3518 0.3572	0.3734 0.3570	0.3417	0.3444	0.3416	Ave		0.3524			0.0100	3.2		20.0			
m-Xylene & p-Xylene	0.6582 0.7834	0.7435 0.6964	0.7130	0.7369	0.7488	Ave		0.7258			0.1000	5.6		20.0			
o-Xylene	0.5102 0.7060	0.5991 0.6512	0.5924	0.6366	0.6653	Ave		0.6230			0.3000	10.1		20.0			
Styrene	0.7339 1.0754	0.8810 1.0197	0.8843	0.9429	0.9939	Ave		0.9330			0.3000	12.1		20.0			
Bromoform	0.2498 0.2579	0.2346 0.2706	0.2420	0.2323	0.2324	Ave		0.2457			0.1000	5.9		20.0			
Isopropylbenzene	3.1233 4.1132	3.7131 3.3328	3.5469	3.8582	3.9262	Ave		3.6591			0.1000	9.5		20.0			
N-Propylbenzene	3.5741 4.8255	4.3869 3.7804	4.1945	4.5452	4.5917	Ave		4.2712			0.0100	10.6		20.0			
Bromobenzene	0.7737 0.8254	0.8298 0.7841	0.7738	0.7912	0.7764	Ave		0.7935			0.0100	3.0		20.0			
1,1,2,2-Tetrachloroethane	0.3561 0.3408	0.3568 0.3593	0.3453	0.3204	0.3290	Ave		0.3440			0.3000	4.3		20.0			
1,3,5-Trimethylbenzene	2.3130 3.3076	2.8970 2.6977	2.7439	3.0785	3.1266	Ave		2.8806			0.0100	11.5		20.0			
2-Chlorotoluene	2.5914 3.0512	3.0469 2.5901	2.8854	2.9291	2.9258	Ave		2.8600			0.0100	6.8		20.0			
1,2,3-Trichloropropane	0.1260 0.1177	0.1308 0.1182	0.1136	0.1085	0.1126	Ave		0.1182			0.0100	6.6		20.0			
trans-1,4-Dichloro-2-butene	0.1202 0.1275	0.1149 0.1306	0.1190	0.1134	0.1180	Ave		0.1205			0.0100	5.2		20.0			
Cyclohexanone	0.0065 0.0085	0.0067 0.0096	0.0068	0.0072	0.0075	Ave		0.0075			0.0010	14.7		20.0			
4-Chlorotoluene	2.2069 2.7341	2.5766 2.3596	2.4511	2.5600	2.5940	Ave		2.4975			0.0100	7.0		20.0			
tert-Butylbenzene	2.2899 3.1521	2.7788 2.4888	2.6687	2.9775	3.0176	Ave		2.7676			0.0100	11.1		20.0			
1,2,4-Trimethylbenzene	2.3332 3.2837	2.9821 2.7588	2.8816	3.0959	3.1212	Ave		2.9224			0.0100	10.6		20.0			
sec-Butylbenzene	3.5502 4.6440	4.3507 3.4673	4.1350	4.4228	4.4166	Ave		4.1409			0.0100	11.0		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 265937

SDG No.:

Instrument ID: VMSL GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 08/22/2016 11:18 Calibration End Date: 08/22/2016 13:49 Calibration ID: 11351

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
4-Isopropyltoluene	2.8144 4.0448	3.5467 3.0350	3.5116	3.8169	3.8152	Ave		3.5121			0.0100	12.6		20.0			
1,3-Dichlorobenzene	1.7158 1.7579	1.8219 1.5637	1.6389	1.7027	1.6609	Ave		1.6945			0.6000	4.9		20.0			
1,2,3-Trimethylbenzene	2.7092 3.0409	2.9211 2.6574	2.6979	2.8570	2.8091	Ave		2.8132			0.0100	4.9		20.0			
1,4-Dichlorobenzene	1.8830 1.6670	1.8391 1.4869	1.6525	1.6757	1.6116	Ave		1.6880			0.5000	8.0		20.0			
n-Butylbenzene	0.7655 1.0652	0.9329 0.7852	0.9142	0.9974	1.0061	Ave		0.9238			0.0100	12.2		20.0			
Benzyl chloride	0.1393 0.1754	0.1481 0.1826	0.1456	0.1484	0.1566	Ave		0.1566			0.0100	10.4		20.0			
1,2-Dichlorobenzene	1.4136 1.4233	1.4486 1.3456	1.3225	1.3500	1.3521	Ave		1.3794			0.4000	3.5		20.0			
Nonanal	0.1718 0.3343	0.1671 0.3795	0.1468	0.1781	0.2604	Qua	-0.236	0.2812	0.0026322		0.0100				0.9990		0.9900
1,2-Dibromo-3-Chloropropane	0.0516 0.0736	0.0681 0.0764	0.0647	0.0639	0.0656	Ave		0.0663			0.0500	12.0		20.0			
1,3,5-Trichlorobenzene	1.3637 1.4242	1.4746 1.2005	1.3393	1.3543	1.3283	Ave		1.3550			0.0100	6.3		20.0			
Hexachlorobutadiene	0.8213 0.8007	0.8790 0.5756	0.7779	0.8033	0.7662	Ave		0.7749			0.0100	12.3		20.0			
1,2,4-Trichlorobenzene	1.0542 1.0947	1.0798 1.0128	0.9619	1.0310	1.0285	Ave		1.0376			0.2000	4.3		20.0			
Naphthalene	1.1754 1.2779	1.1306 1.3526	1.0244	1.0889	1.1481	Ave		1.1711			0.0100	9.5		20.0			
1,2,3-Trichlorobenzene	0.8777 0.8869	0.8429 0.8459	0.8112	0.8338	0.8209	Ave		0.8456			0.0100	3.3		20.0			
Dibromofluoromethane (Surr)	0.1924 0.1914	0.1883 0.1978	0.1897	0.1907	0.1947	Ave		0.1922			0.0100	1.7		20.0			
1,2-Dichloroethane-d4 (Surr)	0.2050 0.1958	0.2120 0.1982	0.2104	0.2005	0.2011	Ave		0.2033			0.0100	3.0		20.0			
Toluene-d8 (Surr)	1.2501 1.3796	1.2342 1.3400	1.2475	1.3039	1.3827	Ave		1.3054			0.0100	4.9		20.0			
4-Bromofluorobenzene (Surr)	0.8260 0.9147	0.7938 0.9013	0.7555	0.7996	0.8829	Ave		0.8391			0.0100	7.3		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 265937

SDG No.:

Instrument ID: VMSL GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 08/22/2016 11:18 Calibration End Date: 08/22/2016 13:49 Calibration ID: 11351

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-265937/6	LICL4704.D
Level 2	IC 160-265937/7	LICL4705.D
Level 3	IC 160-265937/8	LICL4706.D
Level 4	IC 160-265937/9	LICL4707.D
Level 5	ICIS 160-265937/10	LICL4708.D
Level 6	IC 160-265937/11	LICL4709.D
Level 7	IC 160-265937/12	LICL4710.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Dichlorodifluoromethane	FB	Ave	26655 1172161	62508 2245262	110047	236682	600378	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	FB	Ave	10095 579364	27210 1076970	52638	108125	273276	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Chloromethane	FB	Ave	32788 1551629	78923 3098616	139359	296011	738541	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Vinyl chloride	FB	Ave	24327 1251475	58574 2377743	104572	227216	588606	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Butadiene	FB	Ave	27836 1408170	67315 2581551	118726	257418	664079	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Methyl bromide	FB	Ave	9679 448897	23525 979869	40632	84322	203743	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Chloroethane	FB	Ave	12679 615932	31671 1238977	55176	119855	292713	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Trichlorofluoromethane	FB	Ave	31710 1433744	75496 2853285	133242	288324	710337	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Dichlorofluoromethane	FB	Ave	31281 1450537	74528 2895284	129039	278875	697061	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Ethyl ether	FB	Ave	5569 240342	11545 536642	21569	45711	116560	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Ethanol	FB	Ave	2871 110922	5113 241974	11333	22401	54106	20.0 800	40.0 1600	80.0	160	400
1,1-Dichloroethene	FB	Ave	15382 759326	36664 1487334	64614	140590	362019	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Carbon disulfide	FB	Ave	53967 2622126	131717 5057866	233645	505053	1266420	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,1,2-Trichloro-1,2,2-trifluoroethane	FB	Ave	14710 718429	37998 1421083	65584	138645	350007	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Iodomethane	FB	Lin	1703 530276	4334 1177582	11993	53909	226185	0.500 20.0	1.00 40.0	2.00	4.00	10.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 265937

SDG No.:

Instrument ID: VMSL GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 08/22/2016 11:18 Calibration End Date: 08/22/2016 13:49 Calibration ID: 11351

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Acrolein	FB	Lin1	3339 172694	7333 388773	13771	30680	79928	2.50 100	5.00 200	10.0	20.0	50.0
Allyl chloride	FB	Ave	20590 1073055	49352 2134873	89583	198862	512687	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Isopropyl alcohol	FB	Ave	4095 149375	6950 332720	12985	29300	68098	5.00 200	10.0 400	20.0	40.0	100
Methylene Chloride	FB	Ave	16465 578543	34700 1218803	59883	113691	280823	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Acetone	FB	Lin1	4110 78195	5606 163568	9415	17201	41951	0.500 20.0	1.00 40.0	2.00	4.00	10.0
trans-1,2-Dichloroethene	FB	Ave	16013 766278	37905 1530679	67430	144993	367503	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Methyl acetate	FB	Ave	3592 163468	8054 353272	14990	32058	76320	2.50 100	5.00 200	10.0	20.0	50.0
Hexane	FB	Ave	5031 275060	11224 533743	21981	49422	132019	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Methyl tert-butyl ether	FB	Ave	20120 1032579	45785 2240440	88343	188056	479975	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Acetonitrile	FB	Ave	8364 308724	16994 673693	29896	60452	148659	5.00 200	10.0 400	20.0	40.0	100
Isopropyl ether	FB	Ave	40705 2307759	95444 5002607	180611	411316	1071044	0.500 20.0	1.00 40.0	2.00	4.00	10.0
tert-Butyl alcohol	FB	Ave	4824 233600	9756 507350	18733	41692	105338	5.00 200	10.0 400	20.0	40.0	100
2-Chloro-1,3-butadiene	FB	Ave	26147 1726463	67173 3367326	124352	290233	779692	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,1-Dichloroethane	FB	Ave	29372 1424308	69937 2931920	127011	270677	679489	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Acrylonitrile	FB	Ave	20948 968067	46660 2086247	87041	181254	455971	5.00 200	10.0 400	20.0	40.0	100
Tert-butyl ethyl ether	FB	Ave	29524 1680530	66959 3655140	131107	295433	768471	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Vinyl acetate	FB	Ave	17622 882395	41804 1914953	82338	174803	431521	0.500 20.0	1.00 40.0	2.00	4.00	10.0
cis-1,2-Dichloroethene	FB	Ave	14390 738604	34230 1534657	61117	135072	348023	0.500 20.0	1.00 40.0	2.00	4.00	10.0
2,2-Dichloropropane	FB	Ave	26567 1288224	63856 2597733	112774	241079	621433	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Bromochloromethane	FB	Ave	5330 232990	11375 488431	22468	45209	113613	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Cyclohexane	FB	Ave	22257 1384327	59030 2681318	111631	253481	657008	0.500 20.0	1.00 40.0	2.00	4.00	10.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 265937

SDG No.:

Instrument ID: VMSL GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 08/22/2016 11:18 Calibration End Date: 08/22/2016 13:49 Calibration ID: 11351

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Chloroform	FB	Ave	26414 1217440	61630 2512611	106853	230744	585306	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Ethyl acetate	FB	Ave	1612 77669	3253 171932	6628	14935	36225	1.00 40.0	2.00 80.0	4.00	8.00	20.0
Carbon tetrachloride	FB	Ave	25408 1260880	60816 2406987	109674	237829	600092	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Tetrahydrofuran	FB	Lin	+++++ 42981	1538 97150	3318	7806	19437	+++++ 40.0	2.00 80.0	4.00	8.00	20.0
1,1,1-Trichloroethane	FB	Ave	27902 1390314	68958 2709577	119841	265002	666043	0.500 20.0	1.00 40.0	2.00	4.00	10.0
2-Butanone	FB	Lin1	2713 113173	5512 243844	10734	21487	54386	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,1-Dichloropropene	FB	Ave	19569 1154123	50019 2192777	91744	205103	536966	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Isooctane	FB	Ave	66666 4273083	175985 8290552	328761	752305	1972611	0.500 20.0	1.00 40.0	2.00	4.00	10.0
n-Heptane	FB	Ave	32051 2005288	85087 3626618	162120	372368	956972	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Benzene	FB	Ave	59439 2804850	139291 5614280	246729	534691	1335300	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Propionitrile	FB	Ave	7608 345325	17320 751491	32074	66028	163016	5.00 200	10.0 400	20.0	40.0	100
Methacrylonitrile	FB	Ave	43336 2103307	96708 4398419	189164	393822	973848	5.00 200	10.0 400	20.0	40.0	100
Tert-amyl methyl ether	FB	Ave	21951 1166066	51915 2543831	96859	208972	532499	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Isobutanol	FB	Lin	3570 171761	7358 398497	14754	30667	77701	12.5 500	25.0 1000	50.0	100	250
1,2-Dichloroethane	FB	Ave	15622 705573	35271 1460671	63962	136356	336883	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Methylcyclohexane	FB	Ave	27488 1540812	69357 2825530	127106	285621	735021	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Trichloroethene	FB	Ave	16011 819214	39495 1539406	69562	155658	391446	0.500 20.0	1.00 40.0	2.00	4.00	10.0
n-Butanol	FB	Lin	2394 157520	5430 386515	9595	23736	66065	12.5 500	25.0 1000	50.0	100	250
Dibromomethane	FB	Ave	5131 232094	11571 496571	21153	44522	109283	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Ethyl acrylate	FB	Ave	6164 368912	13479 850823	26176	59516	161126	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2-Dichloropropane	FB	Ave	13530 661384	30222 1381859	55279	120654	305371	0.500 20.0	1.00 40.0	2.00	4.00	10.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 265937

SDG No.:

Instrument ID: VMSL GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 08/22/2016 11:18 Calibration End Date: 08/22/2016 13:49 Calibration ID: 11351

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Bromodichloromethane	FB	Ave	15766 764218	33857 1594933	65076	140517	353841	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Methyl methacrylate	FB	Ave	5315 373130	13304 835272	26115	58316	163321	1.00 40.0	2.00 80.0	4.00	8.00	20.0
1,4-Dioxane	FB	Lin1	+++++ 42529	1870 98141	2696	6968	18583	+++++ 400	20.0 800	40.0	80.0	200
2-Chloroethyl vinyl ether	FB	Lin1	1108 74036	2916 131850	5282	11519	33345	0.500 20.0	1.00 40.0	2.00	4.00	10.0
cis-1,3-Dichloropropene	FB	Ave	15123 886587	36021 1878613	67568	152778	406191	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Toluene	CBNZ d5	Ave	33233 1901088	83141 3662835	157844	346871	899373	0.500 20.0	1.00 40.0	2.00	4.00	10.0
2-Nitropropane	CBNZ d5	Ave	3145 171502	6199 384919	12475	27159	73937	1.00 40.0	2.00 80.0	4.00	8.00	20.0
4-Methyl-2-pentanone	CBNZ d5	Ave	4563 261461	10095 595303	19984	44502	116623	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Tetrachloroethene	CBNZ d5	Ave	14117 755652	36368 1311151	66718	141850	360161	0.500 20.0	1.00 40.0	2.00	4.00	10.0
trans-1,3-Dichloropropene	CBNZ d5	Ave	12142 688508	27726 1455603	55746	123064	321884	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Ethyl methacrylate	CBNZ d5	Lin1	4856 409588	12933 928972	26414	61031	176599	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,1,2-Trichloroethane	CBNZ d5	Ave	6144 274932	12511 584550	23707	50505	127750	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Chlorodibromomethane	CBNZ d5	Ave	8335 460507	20351 984905	37836	80606	209615	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,3-Dichloropropane	CBNZ d5	Ave	12353 621918	27559 1334063	54900	112191	285639	0.500 20.0	1.00 40.0	2.00	4.00	10.0
n-Butyl acetate	CBNZ d5	Ave	8318 505524	18340 1147965	35666	77671	222791	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2-Dibromoethane	CBNZ d5	Ave	6518 306120	13384 654620	26581	55141	141392	0.500 20.0	1.00 40.0	2.00	4.00	10.0
2-Hexanone	CBNZ d5	Ave	2965 172305	6441 397854	13078	28346	80210	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Ethylbenzene	CBNZ d5	Ave	72376 3667539	177109 6479539	318926	701966	1760871	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Chlorobenzene	CBNZ d5	Ave	39114 1863205	94673 3537254	171343	364584	896440	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,1,1,2-Tetrachloroethane	CBNZ d5	Ave	12995 657560	30746 1328240	56211	122078	309765	0.500 20.0	1.00 40.0	2.00	4.00	10.0
m-Xylene & p-Xylene	CBNZ d5	Ave	24314 1442066	61218 2591336	117301	261255	679108	0.500 20.0	1.00 40.0	2.00	4.00	10.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 265937

SDG No.:

Instrument ID: VMSL GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 08/22/2016 11:18 Calibration End Date: 08/22/2016 13:49 Calibration ID: 11351

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
o-Xylene	CBNZ d5	Ave	18849 1299542	49329 2423134	97459	225676	603352	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Styrene	CBNZ d5	Ave	27113 1979573	72536 3794141	145471	334280	901351	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Bromoform	DCBd 4	Ave	4668 240771	9705 517777	20562	42060	107567	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Isopropylbenzene	DCBd 4	Ave	58359 3839390	153611 6377153	301346	698573	1816961	0.500 20.0	1.00 40.0	2.00	4.00	10.0
N-Propylbenzene	DCBd 4	Ave	66782 4504278	181485 7233541	356363	822970	2124920	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Bromobenzene	DCBd 4	Ave	14457 770440	34328 1500291	65739	143261	359315	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,1,2,2-Tetrachloroethane	DCBd 4	Ave	6654 318071	14761 687506	29340	58020	152239	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,3,5-Trimethylbenzene	DCBd 4	Ave	43218 3087417	119848 5161847	233122	557398	1446917	0.500 20.0	1.00 40.0	2.00	4.00	10.0
2-Chlorotoluene	DCBd 4	Ave	48419 2848085	126051 4955940	245146	530347	1353970	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2,3-Trichloropropane	DCBd 4	Ave	2355 109878	5411 226128	9654	19639	52108	0.500 20.0	1.00 40.0	2.00	4.00	10.0
trans-1,4-Dichloro-2-butene	DCBd 4	Ave	2245 119000	4753 249840	10108	20539	54630	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Cyclohexanone	DCBd 4	Ave	1216 78904	2780 182775	5742	13127	34608	5.00 200	10.0 400	20.0	40.0	100
4-Chlorotoluene	DCBd 4	Ave	41235 2552063	106594 4514876	208242	463532	1200417	0.500 20.0	1.00 40.0	2.00	4.00	10.0
tert-Butylbenzene	DCBd 4	Ave	42786 2942236	114957 4762064	226730	539127	1396469	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2,4-Trimethylbenzene	DCBd 4	Ave	43595 3065129	123367 5278766	244822	560557	1444406	0.500 20.0	1.00 40.0	2.00	4.00	10.0
sec-Butylbenzene	DCBd 4	Ave	66335 4334847	179989 6634390	351306	800806	2043898	0.500 20.0	1.00 40.0	2.00	4.00	10.0
4-Isopropyltoluene	DCBd 4	Ave	52587 3775499	146726 5807323	298340	691106	1765562	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,3-Dichlorobenzene	DCBd 4	Ave	32059 1640867	75371 2991983	139239	308301	768609	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2,3-Trimethylbenzene	DCBd 4	Ave	50620 2838471	120844 5084699	229213	517307	1300002	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,4-Dichlorobenzene	DCBd 4	Ave	35183 1556004	76085 2845087	140396	303411	745817	0.500 20.0	1.00 40.0	2.00	4.00	10.0
n-Butylbenzene	DCBd 4	Ave	14304 994316	38592 1502431	77673	180586	465595	0.500 20.0	1.00 40.0	2.00	4.00	10.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 265937

SDG No.:

Instrument ID: VMSL GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 08/22/2016 11:18 Calibration End Date: 08/22/2016 13:49 Calibration ID: 11351

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Benzyl chloride	DCBd 4	Ave	2602 163684	6127 349464	12369	26878	72452	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2-Dichlorobenzene	DCBd 4	Ave	26412 1328545	59930 2574693	112363	244436	625727	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Nonanal	DCBd 4	Qua	3210 312005	6914 726195	12476	32243	120528	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2-Dibromo-3-Chloropropane	DCBd 4	Ave	965 68720	2817 146214	5497	11578	30341	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,3,5-Trichlorobenzene	DCBd 4	Ave	25480 1329409	61003 2296982	113784	245219	614705	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Hexachlorobutadiene	DCBd 4	Ave	15346 747421	36362 1101460	66092	145452	354560	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2,4-Trichlorobenzene	DCBd 4	Ave	19698 1021835	44671 1937892	81725	186668	475957	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Naphthalene	DCBd 4	Ave	21963 1192851	46772 2588029	87033	197167	531289	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2,3-Trichlorobenzene	DCBd 4	Ave	16400 827860	34871 1618506	68915	150967	379884	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Dibromofluoromethane (Surr)	FB	Ave	10215 520936	22773 1149866	44815	97593	256228	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2-Dichloroethane-d4 (Surr)	FB	Ave	10884 532940	25638 1151783	49694	102592	264650	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Toluene-d8 (Surr)	CBNZ d5	Ave	46181 2539510	101615 4985848	205224	462235	1253966	0.500 20.0	1.00 40.0	2.00	4.00	10.0
4-Bromofluorobenzene (Surr)	DCBd 4	Ave	15433 853809	32840 1724640	64188	144775	408584	0.500 20.0	1.00 40.0	2.00	4.00	10.0

Curve Type Legend:

Ave = Average ISTD
Lin = Linear ISTD
Lin1 = Linear 1/conc ISTD
Qua = Quadratic ISTD

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4704.D
Lims ID: ic
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 22-Aug-2016 11:18:30 ALS Bottle#: 2 Worklist Smp#: 6
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: IC
Operator ID: SMCR Instrument ID: VMSL
Sublist: chrom-25mL-8260-MSL*sub17

Method: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 23-Aug-2016 11:58:40 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK027

First Level Reviewer: rhoadess Date: 22-Aug-2016 13:44:37

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	98	26655	0.5000	0.5456	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	62	10095	0.5000	0.4573	M
3 Chloromethane	50	3.488	3.488	0.000	99	32788	0.5000	0.5268	
4 Vinyl chloride	62	3.641	3.641	0.000	96	24327	0.5000	0.5098	
5 Butadiene	39	3.683	3.683	0.000	92	27836	0.5000	0.5165	
6 Bromomethane	94	4.256	4.256	0.000	94	9679	0.5000	0.5308	
7 Chloroethane	64	4.493	4.479	0.014	96	12679	0.5000	0.5126	
8 Trichlorofluoromethane	101	4.731	4.731	0.000	98	31710	0.5000	0.5351	
9 Dichlorofluoromethane	67	4.829	4.829	0.000	97	31281	0.5000	0.5345	
10 Ethyl ether	74	5.234	5.234	0.000	93	5569	0.5000	0.5646	
11 Ethanol	45	5.471	5.457	0.014	86	2871	20.0	24.3	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	94	15382	0.5000	0.5197	
13 Carbon disulfide	76	5.597	5.583	0.014	99	53967	0.5000	0.5172	
14 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	88	14710	0.5000	0.5065	
16 Iodomethane	142	5.764	5.764	0.000	50	1703	0.5000	1.34	
S 15 1,2-Dichloroethene, Total	96				0			1.03	
17 Acrolein	56	6.030	6.030	0.000	96	3339	2.50	2.86	
18 3-Chloro-1-propene	39	6.211	6.211	0.000	88	20590	0.5000	0.4999	
19 Isopropyl alcohol	45	6.225	6.225	0.000	18	4095	5.00	6.57	
20 Methylene Chloride	84	6.351	6.351	0.000	94	16465	0.5000	0.6353	
21 Acetone	43	6.407	6.407	0.000	97	4110	0.5000	0.5552	
22 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	96	16013	0.5000	0.5257	
23 Methyl acetate	74	6.560	6.546	0.014	99	3592	2.50	2.70	
24 Hexane	86	6.630	6.630	0.000	91	5031	0.5000	0.4947	
25 Methyl tert-butyl ether	73	6.672	6.672	0.000	93	20120	0.5000	0.5046	
27 Acetonitrile	41	6.993	6.979	0.014	96	8364	5.00	6.23	
28 Isopropyl ether	45	7.091	7.091	0.000	90	40705	0.5000	0.4752	
26 2-Methyl-2-propanol	59	7.091	7.091	0.000	33	4824	5.00	5.43	
29 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	94	26147	0.5000	0.4366	
30 1,1-Dichloroethane	63	7.273	7.273	0.000	97	29372	0.5000	0.5174	
31 Acrylonitrile	53	7.329	7.329	0.001	98	20948	5.00	5.39	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
32 Tert-butyl ethyl ether	59	7.496	7.496	0.000	96	29524	0.5000	0.4779	
33 Vinyl acetate	43	7.510	7.510	0.000	97	17622	0.5000	0.4944	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	81	14390	0.5000	0.5055	
35 2,2-Dichloropropane	77	7.957	7.957	0.000	93	26567	0.5000	0.5198	
37 Chlorobromomethane	128	8.055	8.055	0.000	90	5330	0.5000	0.5543	
36 Cyclohexane	84	8.055	8.055	0.000	96	22257	0.5000	0.4387	
38 Chloroform	83	8.111	8.111	0.000	94	26414	0.5000	0.5383	
39 Ethyl acetate	45	8.194	8.194	0.000	81	1612	1.00	1.06	
40 Carbon tetrachloride	117	8.264	8.264	0.000	96	25408	0.5000	0.5163	
41 Tetrahydrofuran	71		8.278				ND	ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	95	10215	0.5000	0.5006	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	96	27902	0.5000	0.5103	
45 2-Butanone (MEK)	43	8.418	8.404	0.014	38	2713	0.5000	0.5040	
47 1,1-Dichloropropene	75	8.446	8.446	0.000	91	19569	0.5000	0.4639	
44 Isooctane	57	8.530	8.530	0.000	96	66666	0.5000	0.4365	
46 n-Heptane	43	8.599	8.599	0.000	94	32051	0.5000	0.4393	
48 Benzene	78	8.697	8.697	0.000	97	59439	0.5000	0.5315	
49 Propionitrile	54	8.711	8.711	0.000	49	7608	5.00	5.38	
50 Methacrylonitrile	41	8.725	8.725	0.000	95	43336	5.00	5.24	
51 Tert-amyl methyl ether	73	8.767	8.753	0.014	91	21951	0.5000	0.4935	
52 Isobutyl alcohol	42	8.823	8.809	0.014	57	3570	12.5	24.5	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	93	10884	0.5000	0.5042	
54 1,2-Dichloroethane	62	8.893	8.893	0.000	97	15622	0.5000	0.5449	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1061914	10.0	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	75	16011	0.5000	0.5050	
58 Methylcyclohexane	55	9.228	9.228	0.000	95	27488	0.5000	0.4770	
59 n-Butanol	56	9.451	9.451	0.000	83	2394	12.5	35.3	
61 Dibromomethane	93	9.633	9.633	0.000	93	5131	0.5000	0.5432	
60 Ethyl acrylate	55	9.661	9.661	0.000	18	6164	0.5000	0.4730	
62 1,2-Dichloropropane	63	9.731	9.731	0.000	88	13530	0.5000	0.5286	
63 Dichlorobromomethane	83	9.759	9.759	0.000	96	15766	0.5000	0.5327	
64 Methyl methacrylate	69	9.856	9.856	0.000	94	5315	1.00	0.8346	
65 1,4-Dioxane	88		9.940				ND	ND	
66 2-Chloroethyl vinyl ether	63	10.234	10.233	0.001	1	1108	0.5000	0.4818	M
67 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	89	15123	0.5000	0.4691	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	46181	0.5000	0.4788	
69 Toluene	92	10.541	10.541	0.000	98	33233	0.5000	0.4592	
70 2-Nitropropane	43	10.764	10.764	0.000	95	3145	1.00	1.01	
71 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	96	4563	0.5000	0.4680	
72 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	77	12142	0.5000	0.4654	
73 Tetrachloroethene	164	10.904	10.904	0.000	95	14117	0.5000	0.4795	
74 Ethyl methacrylate	69	10.974	10.974	0.000	38	4856	0.5000	0.6695	
75 1,1,2-Trichloroethane	83	11.058	11.057	0.001	92	6144	0.5000	0.5532	
76 Chlorodibromomethane	129	11.239	11.239	0.000	90	8335	0.5000	0.4711	
77 1,3-Dichloropropane	76	11.309	11.309	0.000	98	12353	0.5000	0.5022	
78 n-Butyl acetate	43	11.463	11.463	0.001	98	8318	0.5000	0.4602	
79 Ethylene Dibromide	107	11.477	11.476	0.001	93	6518	0.5000	0.5350	
80 2-Hexanone	43	11.588	11.588	0.000	47	2965	0.5000	0.4628	
81 1-Chlorohexane	91	11.854	11.854	0.000	86	16408	0.5000	0.3928	
* 83 Chlorobenzene-d5	117	11.909	11.909	0.000	89	738848	10.0	10.0	
82 Ethylbenzene	91	11.923	11.923	0.000	92	72376	0.5000	0.5004	
84 Chlorobenzene	112	11.937	11.937	0.000	96	39114	0.5000	0.5126	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
85 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	89	12995	0.5000	0.4991	
86 m-Xylene & p-Xylene	106	12.049	12.035	0.014	98	24314	0.5000	0.4534	
88 o-Xylene	106	12.454	12.454	0.000	98	18849	0.5000	0.4095	
89 Styrene	104	12.496	12.496	0.000	95	27113	0.5000	0.3933	
90 Bromoform	173	12.566	12.566	0.000	92	4668	0.5000	0.5085	
91 Isopropylbenzene	105	12.720	12.719	0.001	97	58359	0.5000	0.4268	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	89	15433	0.5000	0.4922	
93 N-Propylbenzene	91	13.111	13.111	0.000	98	66782	0.5000	0.4184	
94 Bromobenzene	156	13.152	13.152	0.000	94	14457	0.5000	0.4876	
95 1,1,2,2-Tetrachloroethane	83	13.166	13.166	0.000	94	6654	0.5000	0.5177	
96 1,3,5-Trimethylbenzene	105	13.278	13.264	0.014	95	43218	0.5000	0.4015	
97 2-Chlorotoluene	91	13.292	13.292	0.000	96	48419	0.5000	0.4530	
99 1,2,3-Trichloropropane	110	13.334	13.334	0.000	86	2355	0.5000	0.5331	
98 trans-1,4-Dichloro-2-buten	53	13.334	13.334	0.000	70	2245	0.5000	0.4985	
100 Cyclohexanone	55	13.404	13.404	0.000	0	1216	5.00	4.32	
101 4-Chlorotoluene	91	13.446	13.446	0.000	98	41235	0.5000	0.4418	
102 tert-Butylbenzene	119	13.599	13.599	0.000	95	42786	0.5000	0.4137	
103 1,2,4-Trimethylbenzene	105	13.655	13.655	0.000	98	43595	0.5000	0.3992	
104 sec-Butylbenzene	105	13.767	13.767	0.000	95	66335	0.5000	0.4287	
105 4-Isopropyltoluene	119	13.879	13.879	0.000	97	52587	0.5000	0.4007	
106 1,3-Dichlorobenzene	146	14.018	14.018	0.000	97	32059	0.5000	0.5063	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	96	373696	10.0	10.0	
107 1,2,3-Trimethylbenzene	105	14.088	14.088	0.000	59	50620	0.5000	0.4815	
109 1,4-Dichlorobenzene	146	14.102	14.102	0.000	96	35183	0.5000	0.5578	
111 n-Butylbenzene	134	14.298	14.298	0.000	97	14304	0.5000	0.4143	
110 Benzyl chloride	126	14.326	14.326	0.000	87	2602	0.5000	0.4447	
112 1,2-Dichlorobenzene	146	14.521	14.521	0.000	97	26412	0.5000	0.5124	
113 n-Nonyl Aldehyde	57	15.247	15.247	0.000	54	3210	0.5000	1.13	
115 1,2-Dibromo-3-Chloropropan	157	15.317	15.317	0.000	1	965	0.5000	0.3896	M
114 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	96	25480	0.5000	0.5032	
116 Hexachlorobutadiene	225	15.918	15.918	0.000	96	15346	0.5000	0.5300	
117 1,2,4-Trichlorobenzene	180	15.988	15.988	0.000	93	19698	0.5000	0.5080	
118 Naphthalene	128	16.337	16.337	0.000	96	21963	0.5000	0.5018	
S 119 Xylenes, Total	106				0			0.8629	
120 1,2,3-Trichlorobenzene	180	16.532	16.532	0.000	96	16400	0.5000	0.5190	

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

Review Flags

M - Manually Integrated

Reagents:

8260 Surr 25_00064	Amount Added: 0.50	Units: uL	
8260 NewWkMix_00180	Amount Added: 0.50	Units: uL	
I.S. Working_00134	Amount Added: 10.00	Units: uL	Run Reagent

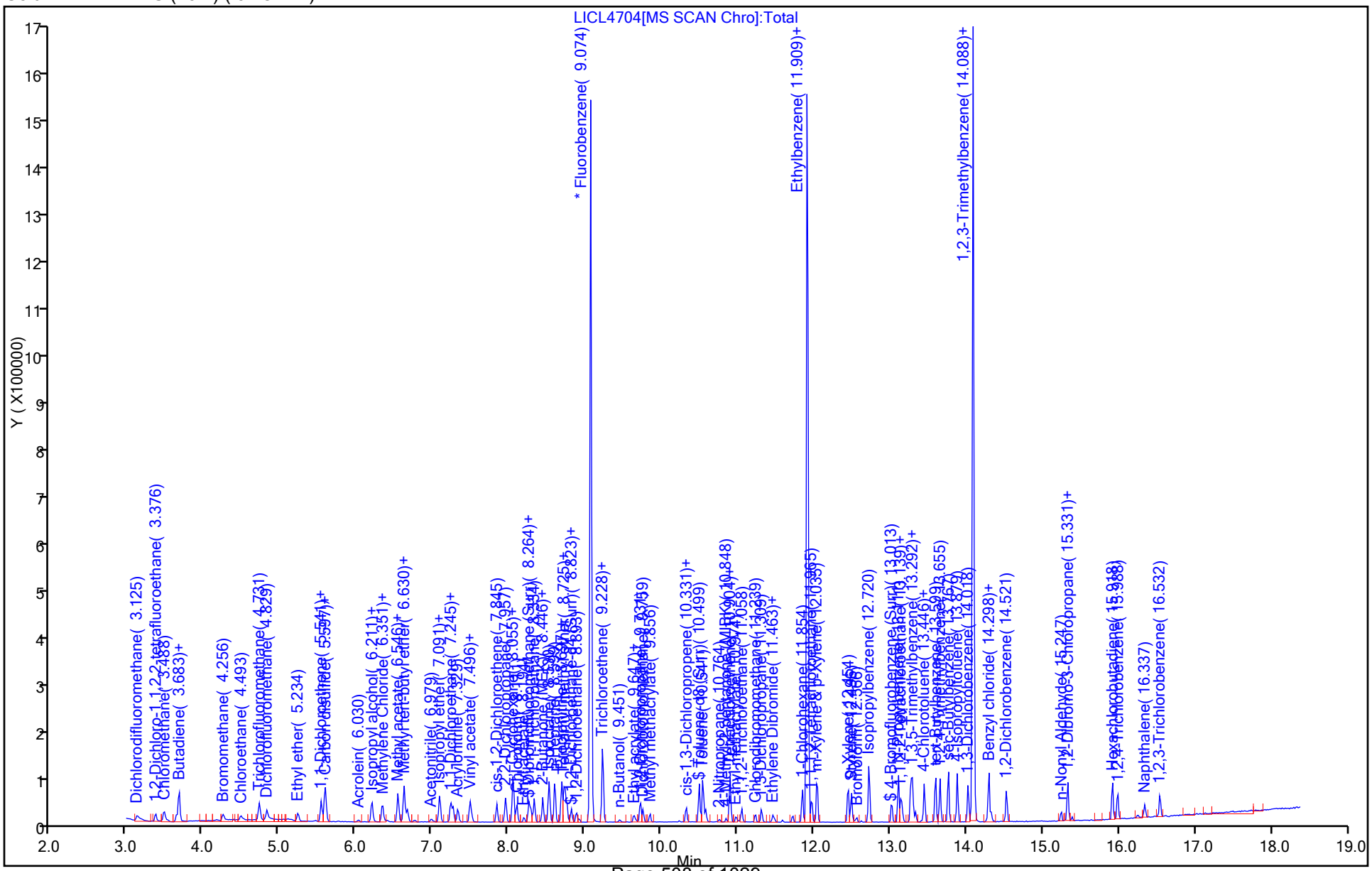
Report Date: 23-Aug-2016 11:58:40 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4704.D

Injection Date:	22-Aug-2016 11:18:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	ic			Worklist Smp#:	6
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	2
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

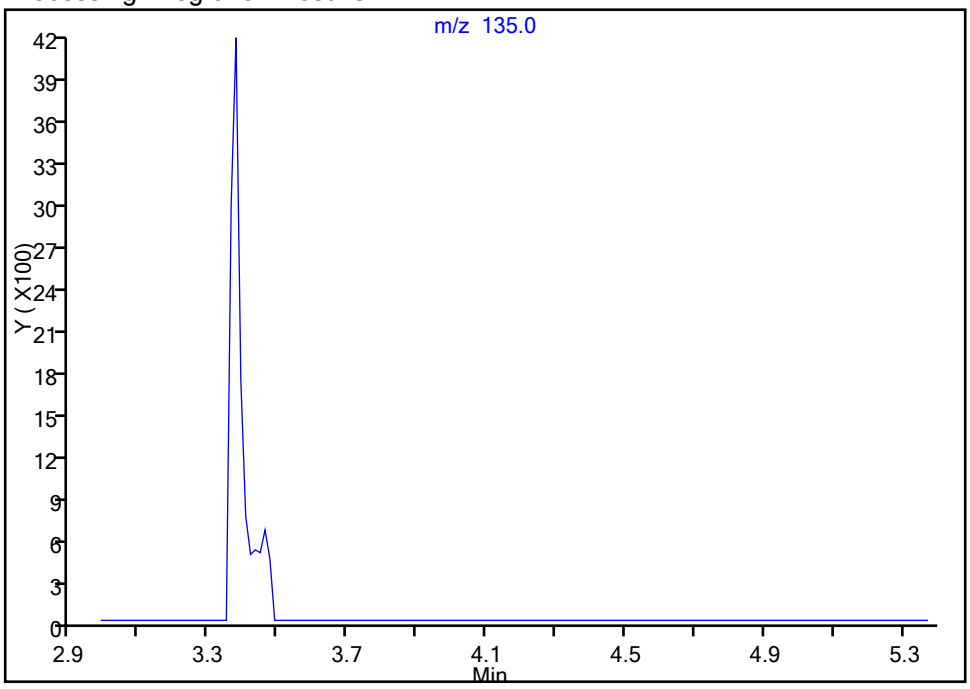
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4704.D				
Injection Date:	22-Aug-2016 11:18:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	2	Worklist Smp#:	6
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

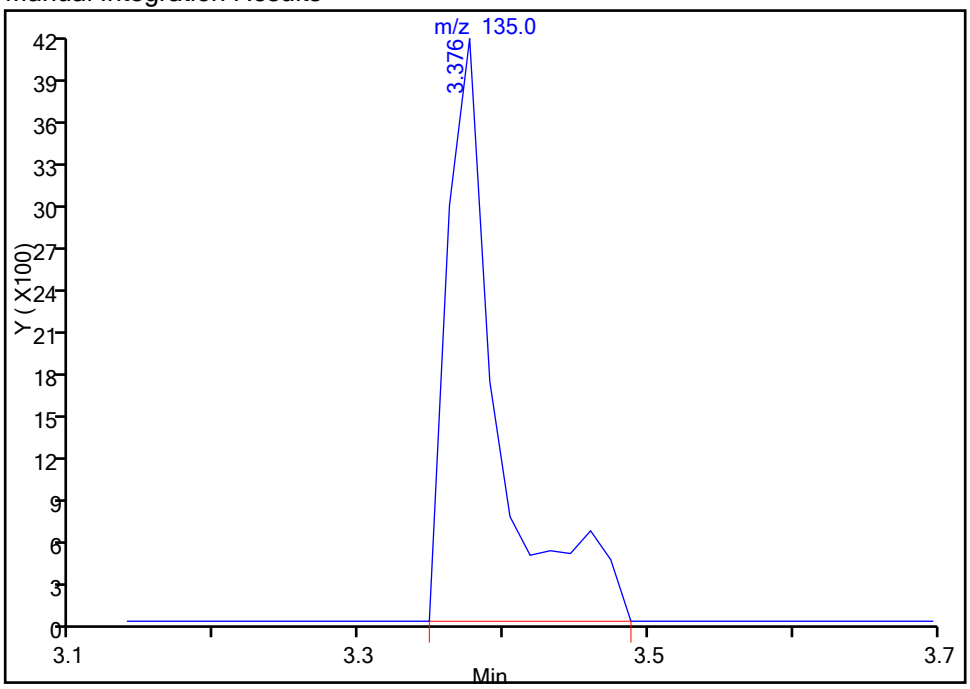
Not Detected
Expected RT: 3.38

Processing Integration Results



Manual Integration Results

RT: 3.38
Area: 10095
Amount: 0.457322
Amount Units: ug/l



Reviewer: rhoadess, 22-Aug-2016 13:44:37
Audit Action: Assigned Compound ID Audit Reason: Peak Tail

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

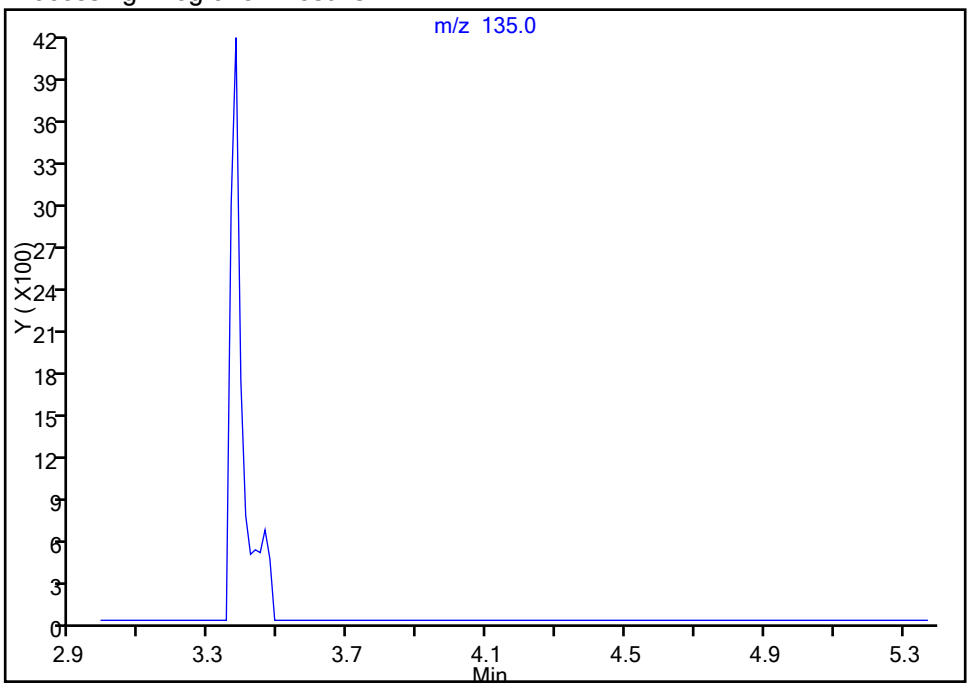
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4704.D				
Injection Date:	22-Aug-2016 11:18:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	2	Worklist Smp#:	6
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

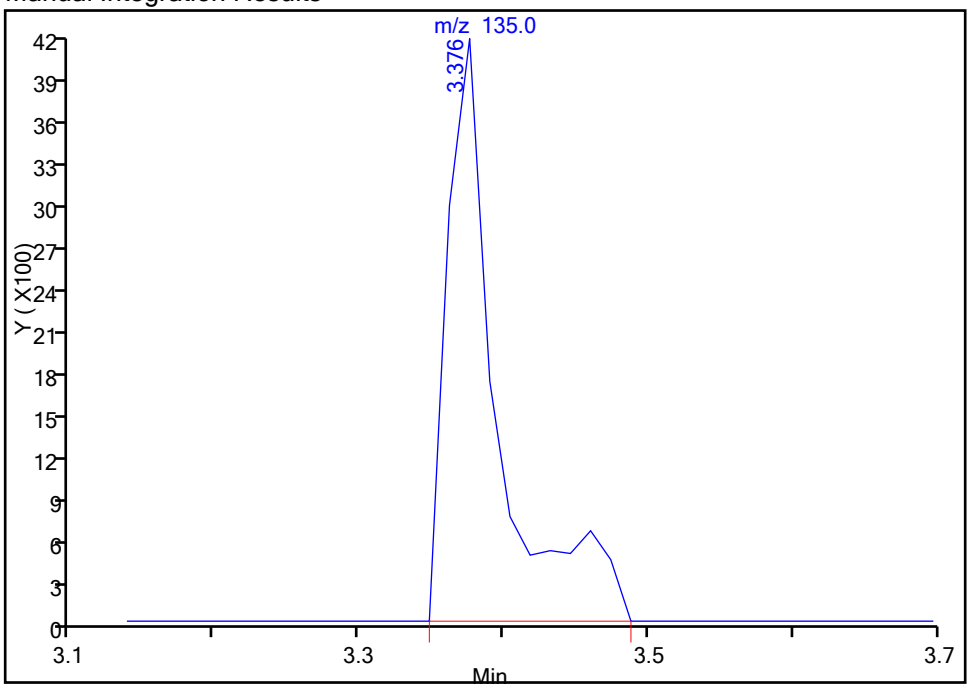
Processing Integration Results

Not Detected
Expected RT: 3.38



Manual Integration Results

RT: 3.38
Area: 10095
Amount: 0.457322
Amount Units: ug/l



Reviewer: rhoadess, 22-Aug-2016 13:44:37
Audit Action: Manually Integrated Audit Reason: Peak Tail

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

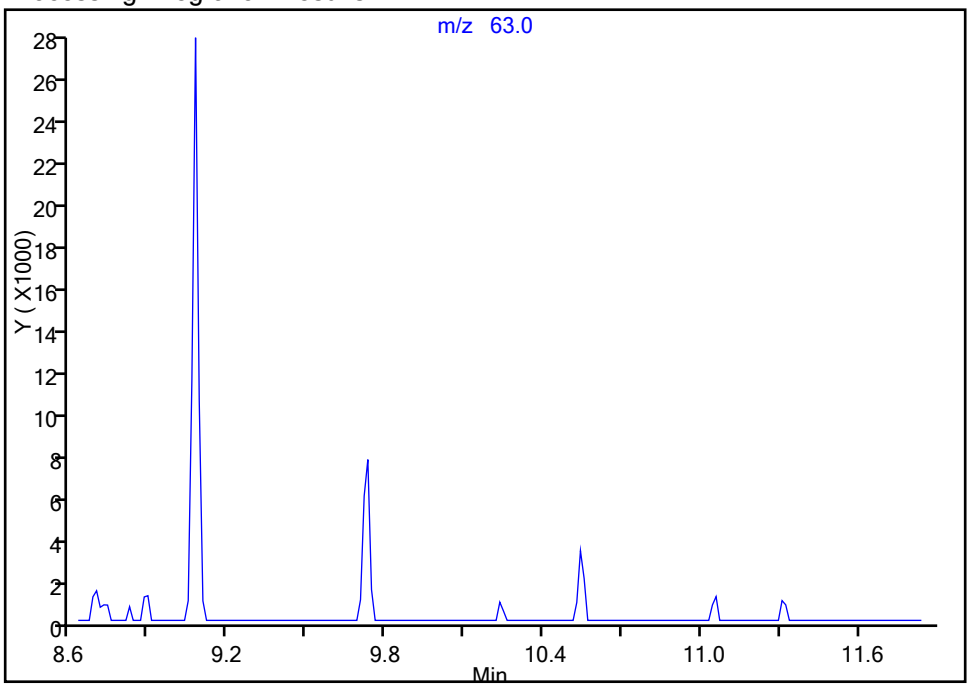
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4704.D				
Injection Date:	22-Aug-2016 11:18:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	2	Worklist Smp#:	6
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

66 2-Chloroethyl vinyl ether, CAS: 110-75-8

Signal: 1

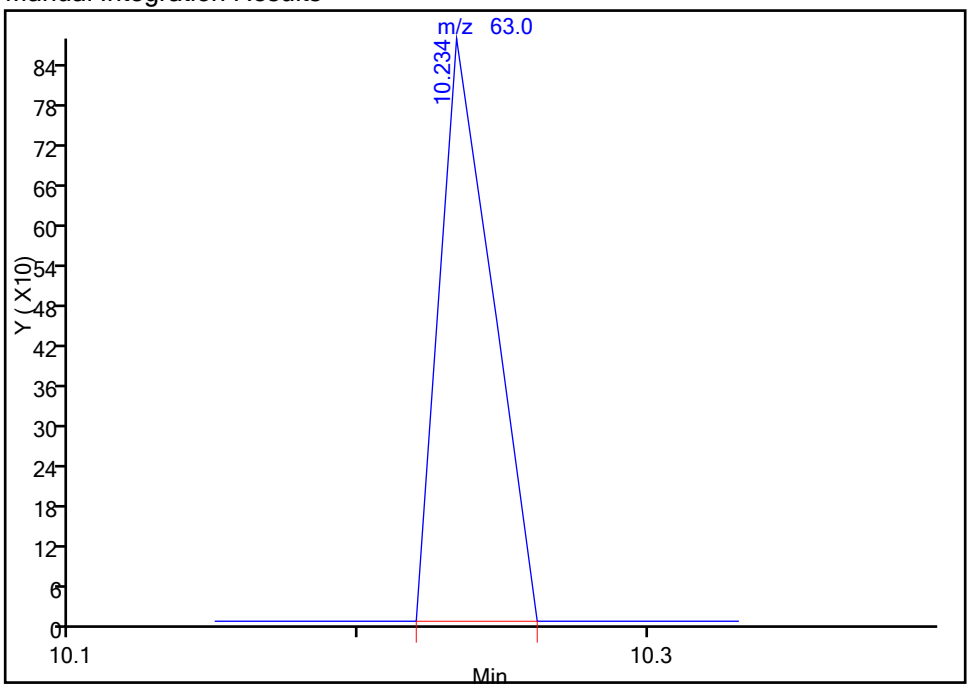
Not Detected
Expected RT: 10.23

Processing Integration Results



Manual Integration Results

RT: 10.23
Area: 1108
Amount: 0.481845
Amount Units: ug/l



Reviewer: rhoadess, 22-Aug-2016 13:44:37
Audit Action: Assigned Compound ID Audit Reason: Peak Tail

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

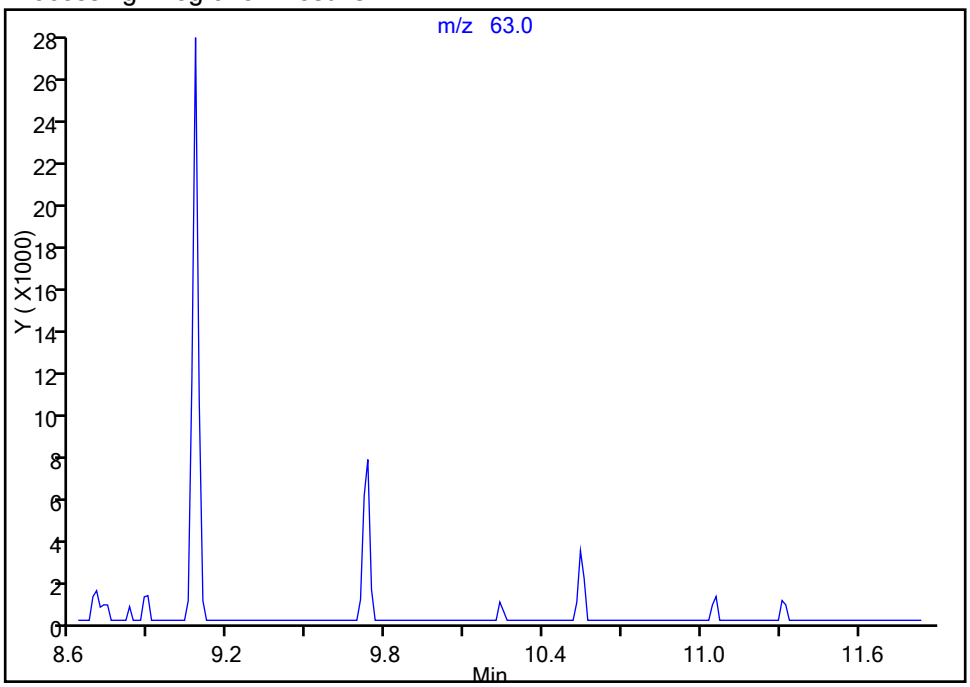
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4704.D				
Injection Date:	22-Aug-2016 11:18:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	2	Worklist Smp#:	6
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

66 2-Chloroethyl vinyl ether, CAS: 110-75-8

Signal: 1

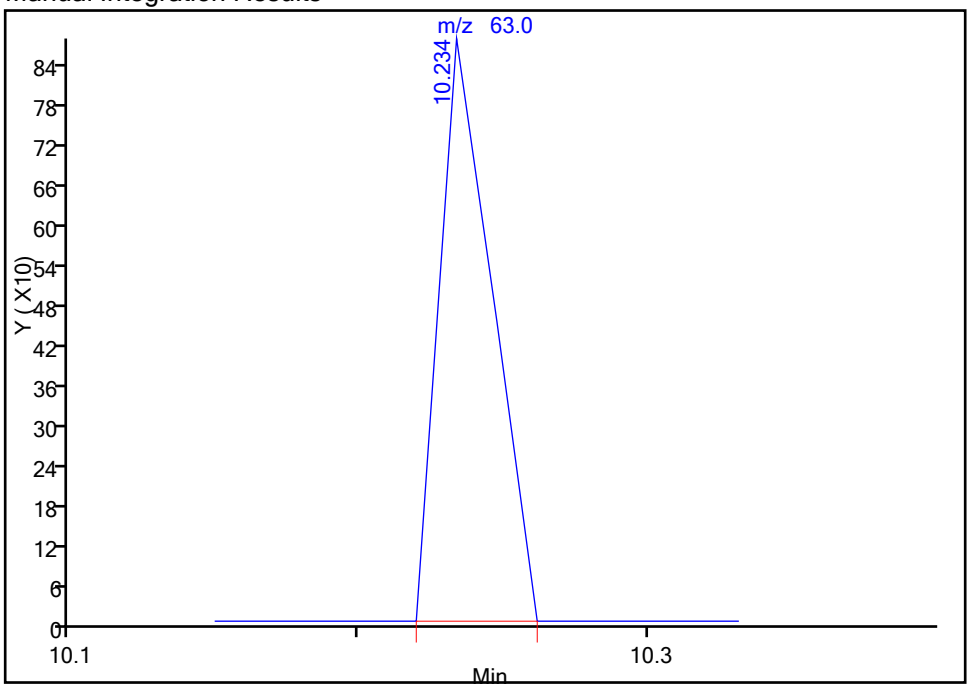
Processing Integration Results

Not Detected
Expected RT: 10.23



Manual Integration Results

RT: 10.23
Area: 1108
Amount: 0.481845
Amount Units: ug/l



Reviewer: rhoadess, 22-Aug-2016 13:44:37
Audit Action: Manually Integrated Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

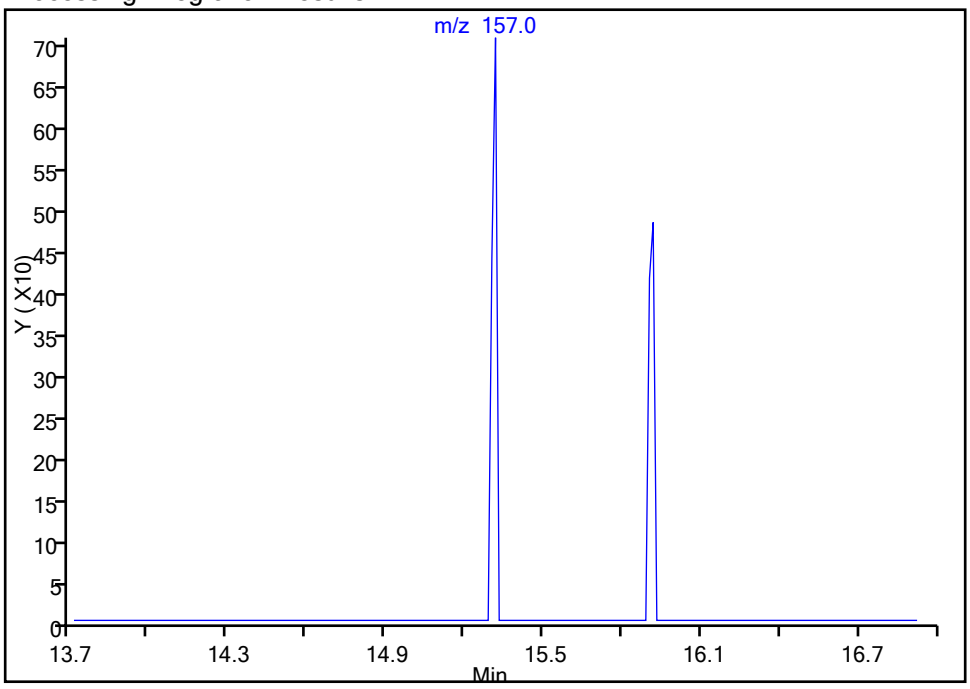
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4704.D				
Injection Date:	22-Aug-2016 11:18:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	2	Worklist Smp#:	6
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

115 1,2-Dibromo-3-Chloropropane, CAS: 96-12-8

Signal: 1

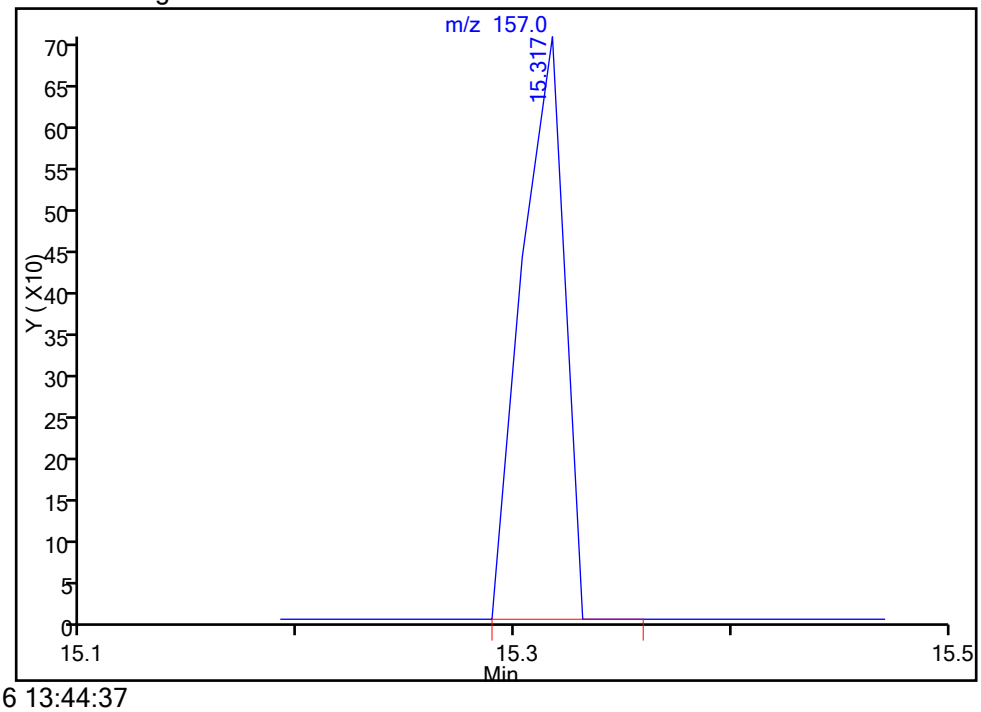
Processing Integration Results

Not Detected
Expected RT: 15.32



Manual Integration Results

RT: 15.32
Area: 965
Amount: 0.389586
Amount Units: ug/l



Reviewer: rhoadess, 22-Aug-2016 13:44:37
Audit Action: Assigned Compound ID Audit Reason: Missed Peak

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

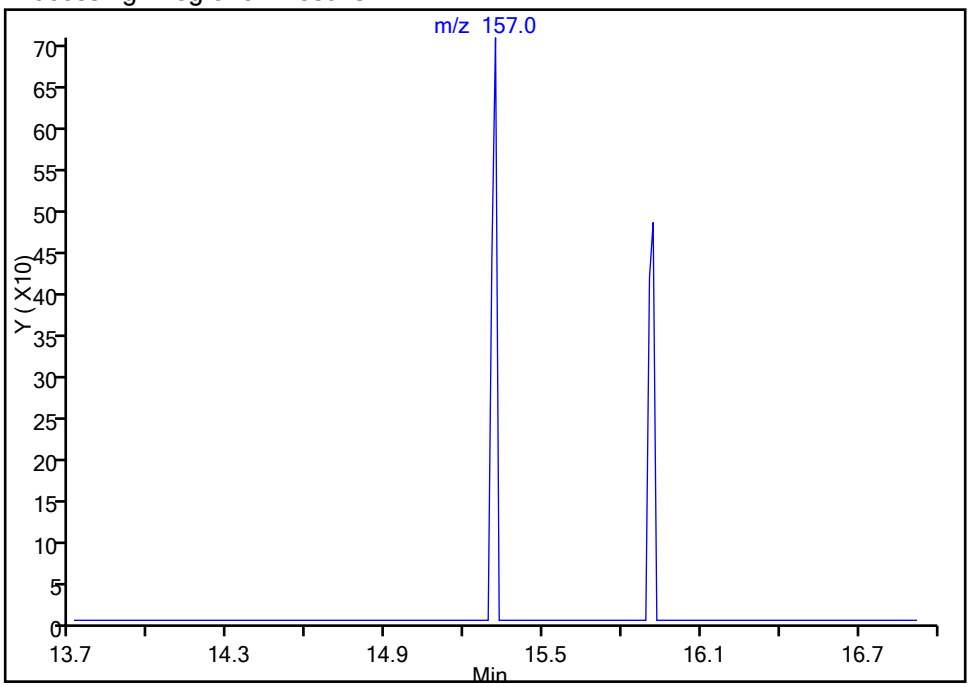
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4704.D				
Injection Date:	22-Aug-2016 11:18:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	2	Worklist Smp#:	6
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

115 1,2-Dibromo-3-Chloropropane, CAS: 96-12-8

Signal: 1

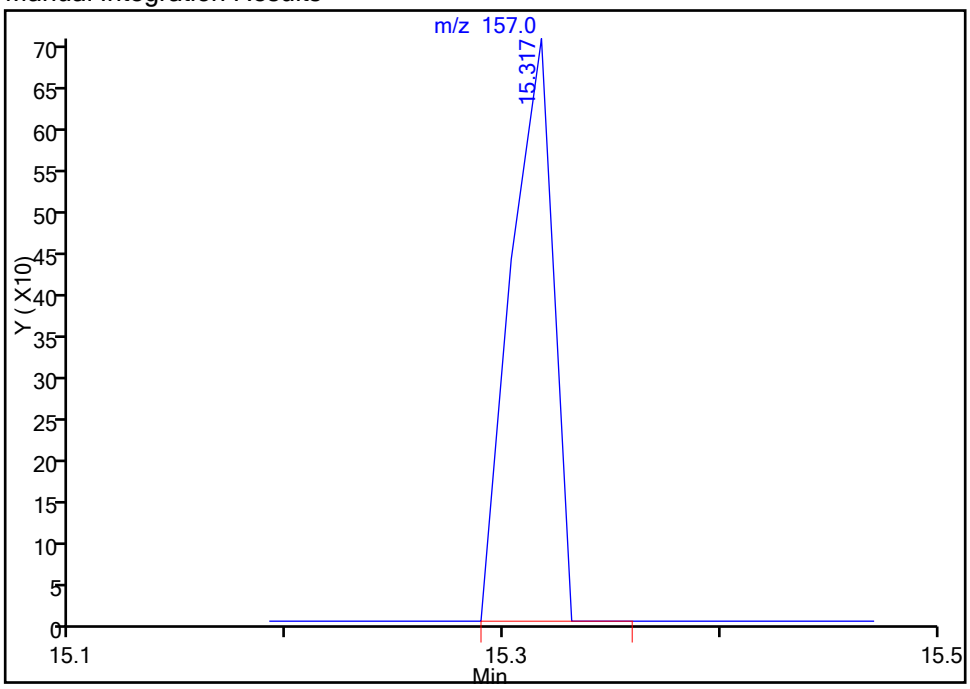
Processing Integration Results

Not Detected
Expected RT: 15.32



Manual Integration Results

RT: 15.32
Area: 965
Amount: 0.389586
Amount Units: ug/l



Reviewer: rhoadess, 22-Aug-2016 13:44:37
Audit Action: Manually Integrated Audit Reason: Missed Peak

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4705.D
Lims ID: ic
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 22-Aug-2016 11:43:30 ALS Bottle#: 3 Worklist Smp#: 7
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: IC
Operator ID: SMCR Instrument ID: VMSL
Sublist: chrom-25mL-8260-MSL*sub17

Method: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 23-Aug-2016 11:58:41 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK027

First Level Reviewer: rhoadess Date: 22-Aug-2016 13:46:44

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	62508	1.00	1.12	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	97	27210	1.00	1.08	M
3 Chloromethane	50	3.488	3.488	0.000	99	78923	1.00	1.11	
4 Vinyl chloride	62	3.642	3.641	0.001	98	58574	1.00	1.08	
5 Butadiene	39	3.683	3.683	0.000	94	67315	1.00	1.10	
6 Bromomethane	94	4.256	4.256	0.000	92	23525	1.00	1.13	
7 Chloroethane	64	4.494	4.479	0.015	97	31671	1.00	1.12	
8 Trichlorofluoromethane	101	4.731	4.731	0.000	99	75496	1.00	1.12	
9 Dichlorofluoromethane	67	4.829	4.829	0.000	98	74528	1.00	1.12	
10 Ethyl ether	74	5.234	5.234	0.000	96	11545	1.00	1.03	
11 Ethanol	45	5.457	5.457	0.000	98	5113	40.0	38.0	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	94	36664	1.00	1.09	
13 Carbon disulfide	76	5.597	5.583	0.014	100	131717	1.00	1.11	
14 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	87	37998	1.00	1.15	
16 Iodomethane	142	5.764	5.764	0.000	51	4334	1.00	1.43	
S 15 1,2-Dichloroethene, Total	96				0			2.15	
17 Acrolein	56	6.030	6.030	0.000	94	7333	5.00	5.10	
18 3-Chloro-1-propene	39	6.211	6.211	0.000	90	49352	1.00	1.05	
19 Isopropyl alcohol	45	6.225	6.225	0.000	96	6950	10.0	9.80	
20 Methylene Chloride	84	6.351	6.351	0.000	95	34700	1.00	1.18	
21 Acetone	43	6.407	6.407	0.000	96	5606	1.00	0.8304	
22 trans-1,2-Dichloroethene	96	6.547	6.546	0.001	97	37905	1.00	1.09	
23 Methyl acetate	74	6.561	6.546	0.015	99	8054	5.00	5.31	
24 Hexane	86	6.630	6.630	0.000	93	11224	1.00	0.9691	
25 Methyl tert-butyl ether	73	6.672	6.672	0.000	91	45785	1.00	1.01	
27 Acetonitrile	41	6.980	6.979	0.001	98	16994	10.0	11.1	
28 Isopropyl ether	45	7.091	7.091	0.000	93	95444	1.00	0.9784	
26 2-Methyl-2-propanol	59	7.091	7.091	0.000	32	9756	10.0	9.65	
29 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	94	67173	1.00	0.9850	
30 1,1-Dichloroethane	63	7.273	7.273	0.000	97	69937	1.00	1.08	
31 Acrylonitrile	53	7.329	7.329	0.001	98	46660	10.0	10.5	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
32 Tert-butyl ethyl ether	59	7.496	7.496	0.000	96	66959	1.00	0.9518	
33 Vinyl acetate	43	7.510	7.510	0.000	97	41804	1.00	1.03	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	82	34230	1.00	1.06	
35 2,2-Dichloropropane	77	7.957	7.957	0.000	94	63856	1.00	1.10	
37 Chlorobromomethane	128	8.055	8.055	0.000	92	11375	1.00	1.04	
36 Cyclohexane	84	8.055	8.055	0.000	96	59030	1.00	1.02	
38 Chloroform	83	8.111	8.111	0.000	95	61630	1.00	1.10	
39 Ethyl acetate	45	8.195	8.194	0.001	94	3253	2.00	1.88	
40 Carbon tetrachloride	117	8.264	8.264	0.000	98	60816	1.00	1.09	
41 Tetrahydrofuran	71	8.292	8.278	0.014	47	1538	2.00	2.68	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	95	22773	1.00	0.9800	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	99	68958	1.00	1.11	
45 2-Butanone (MEK)	43	8.418	8.404	0.014	90	5512	1.00	0.9860	
47 1,1-Dichloropropene	75	8.446	8.446	0.000	92	50019	1.00	1.04	
44 Isooctane	57	8.530	8.530	0.000	97	175985	1.00	1.01	
46 n-Heptane	43	8.600	8.599	0.001	96	85087	1.00	1.02	
48 Benzene	78	8.697	8.697	0.000	98	139291	1.00	1.09	
49 Propionitrile	54	8.711	8.711	0.000	51	17320	10.0	10.8	
50 Methacrylonitrile	41	8.725	8.725	0.000	98	96708	10.0	10.3	
51 Tert-amyl methyl ether	73	8.767	8.753	0.014	92	51915	1.00	1.02	
52 Isobutyl alcohol	42	8.823	8.809	0.014	87	7358	25.0	34.5	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	93	25638	1.00	1.04	
54 1,2-Dichloroethane	62	8.893	8.893	0.000	97	35271	1.00	1.08	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1209273	10.0	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	72	39495	1.00	1.09	
58 Methylcyclohexane	55	9.228	9.228	0.000	96	69357	1.00	1.06	
59 n-Butanol	56	9.452	9.451	0.001	94	5430	25.0	43.7	
61 Dibromomethane	93	9.633	9.633	0.000	95	11571	1.00	1.08	
60 Ethyl acrylate	55	9.661	9.661	0.000	97	13479	1.00	0.9083	
62 1,2-Dichloropropane	63	9.731	9.731	0.000	88	30222	1.00	1.04	
63 Dichlorobromomethane	83	9.759	9.759	0.000	97	33857	1.00	1.00	
64 Methyl methacrylate	69	9.857	9.856	0.001	93	13304	2.00	1.83	
65 1,4-Dioxane	88	9.940	9.940	0.000	82	1870	20.0	25.8	
66 2-Chloroethyl vinyl ether	63	10.234	10.233	0.001	84	2916	1.00	1.04	
67 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	90	36021	1.00	0.9813	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	101615	1.00	0.9454	
69 Toluene	92	10.541	10.541	0.000	98	83141	1.00	1.03	
70 2-Nitropropane	43	10.764	10.764	0.000	94	6199	2.00	1.78	
71 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	97	10095	1.00	0.9291	
72 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	75	27726	1.00	0.9538	
73 Tetrachloroethene	164	10.904	10.904	0.000	95	36368	1.00	1.11	
74 Ethyl methacrylate	69	10.974	10.974	0.000	93	12933	1.00	1.06	
75 1,1,2-Trichloroethane	83	11.058	11.057	0.001	94	12511	1.00	1.01	
76 Chlorodibromomethane	129	11.239	11.239	0.000	91	20351	1.00	1.03	
77 1,3-Dichloropropane	76	11.309	11.309	0.000	97	27559	1.00	1.01	
78 n-Butyl acetate	43	11.463	11.463	0.001	97	18340	1.00	0.9105	
79 Ethylene Dibromide	107	11.477	11.476	0.001	98	13384	1.00	0.9858	
80 2-Hexanone	43	11.588	11.588	0.000	53	6441	1.00	0.9023	
81 1-Chlorohexane	91	11.854	11.854	0.000	89	45775	1.00	0.9834	
* 83 Chlorobenzene-d5	117	11.910	11.909	0.001	91	823331	10.0	10.0	
82 Ethylbenzene	91	11.924	11.923	0.001	97	177109	1.00	1.10	
84 Chlorobenzene	112	11.938	11.937	0.001	98	94673	1.00	1.11	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
85 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	93	30746	1.00	1.06	
86 m-Xylene & p-Xylene	106	12.049	12.035	0.014	98	61218	1.00	1.02	
88 o-Xylene	106	12.454	12.454	0.000	98	49329	1.00	0.9617	
89 Styrene	104	12.496	12.496	0.000	95	72536	1.00	0.9443	
90 Bromoform	173	12.566	12.566	0.000	94	9705	1.00	0.9549	
91 Isopropylbenzene	105	12.720	12.719	0.001	98	153611	1.00	1.01	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	92	32840	1.00	0.9460	
93 N-Propylbenzene	91	13.111	13.111	0.000	98	181485	1.00	1.03	
94 Bromobenzene	156	13.153	13.152	0.001	89	34328	1.00	1.05	
95 1,1,2,2-Tetrachloroethane	83	13.167	13.166	0.001	96	14761	1.00	1.04	
96 1,3,5-Trimethylbenzene	105	13.278	13.264	0.014	94	119848	1.00	1.01	
97 2-Chlorotoluene	91	13.292	13.292	0.000	96	126051	1.00	1.07	
99 1,2,3-Trichloropropane	110	13.334	13.334	0.000	88	5411	1.00	1.11	
98 trans-1,4-Dichloro-2-buten	53	13.334	13.334	0.000	72	4753	1.00	0.9534	
100 Cyclohexanone	55	13.404	13.404	0.000	82	2780	10.0	8.92	
101 4-Chlorotoluene	91	13.446	13.446	0.000	98	106594	1.00	1.03	
102 tert-Butylbenzene	119	13.600	13.599	0.001	94	114957	1.00	1.00	
103 1,2,4-Trimethylbenzene	105	13.655	13.655	0.000	98	123367	1.00	1.02	
104 sec-Butylbenzene	105	13.767	13.767	0.000	94	179989	1.00	1.05	
105 4-Isopropyltoluene	119	13.879	13.879	0.000	97	146726	1.00	1.01	
106 1,3-Dichlorobenzene	146	14.018	14.018	0.000	98	75371	1.00	1.08	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	96	413697	10.0	10.0	
107 1,2,3-Trimethylbenzene	105	14.088	14.088	0.000	92	120844	1.00	1.04	
109 1,4-Dichlorobenzene	146	14.102	14.102	0.000	94	76085	1.00	1.09	
111 n-Butylbenzene	134	14.298	14.298	0.000	96	38592	1.00	1.01	
110 Benzyl chloride	126	14.326	14.326	0.000	92	6127	1.00	0.9460	
112 1,2-Dichlorobenzene	146	14.521	14.521	0.000	96	59930	1.00	1.05	
113 n-Nonyl Aldehyde	57	15.248	15.247	0.001	82	6914	1.00	1.41	
115 1,2-Dibromo-3-Chloropropan	157	15.317	15.317	0.000	3	2817	1.00	1.03	
114 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	98	61003	1.00	1.09	
116 Hexachlorobutadiene	225	15.918	15.918	0.000	97	36362	1.00	1.13	
117 1,2,4-Trichlorobenzene	180	15.988	15.988	0.000	94	44671	1.00	1.04	
118 Naphthalene	128	16.337	16.337	0.000	97	46772	1.00	0.9654	
S 119 Xylenes, Total	106				0			1.99	
120 1,2,3-Trichlorobenzene	180	16.532	16.532	0.000	95	34871	1.00	1.00	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260 Surr 25_00064	Amount Added: 1.00	Units: uL	
8260 NewWkMix_00180	Amount Added: 1.00	Units: uL	
I.S. Working_00134	Amount Added: 10.00	Units: uL	Run Reagent

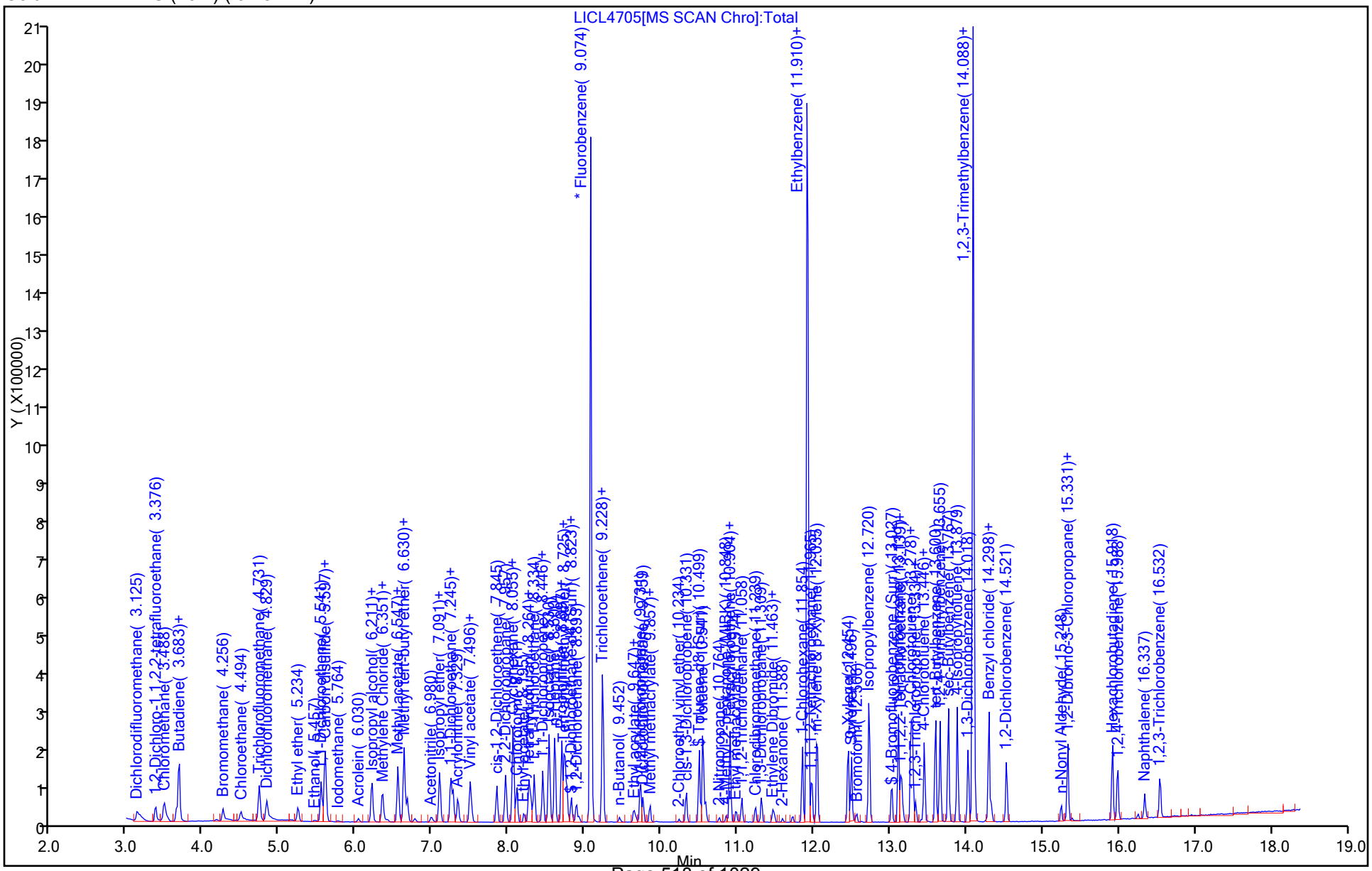
Report Date: 23-Aug-2016 11:58:42 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4705.D

Injection Date:	22-Aug-2016 11:43:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	ic			Worklist Smp#:	7
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	3
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

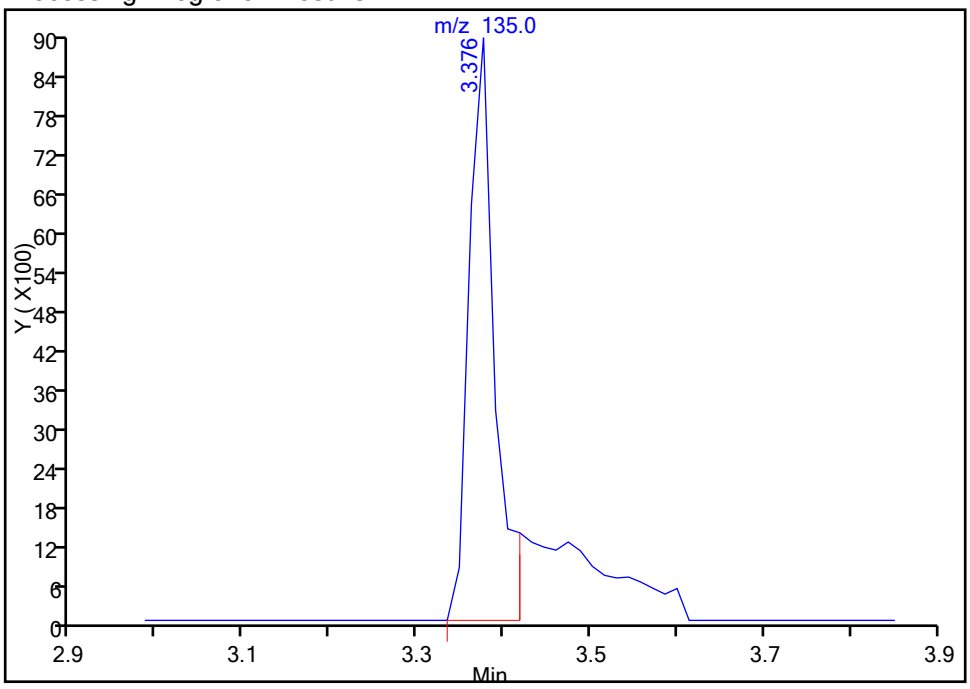
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4705.D				
Injection Date:	22-Aug-2016 11:43:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	3	Worklist Smp#:	7
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

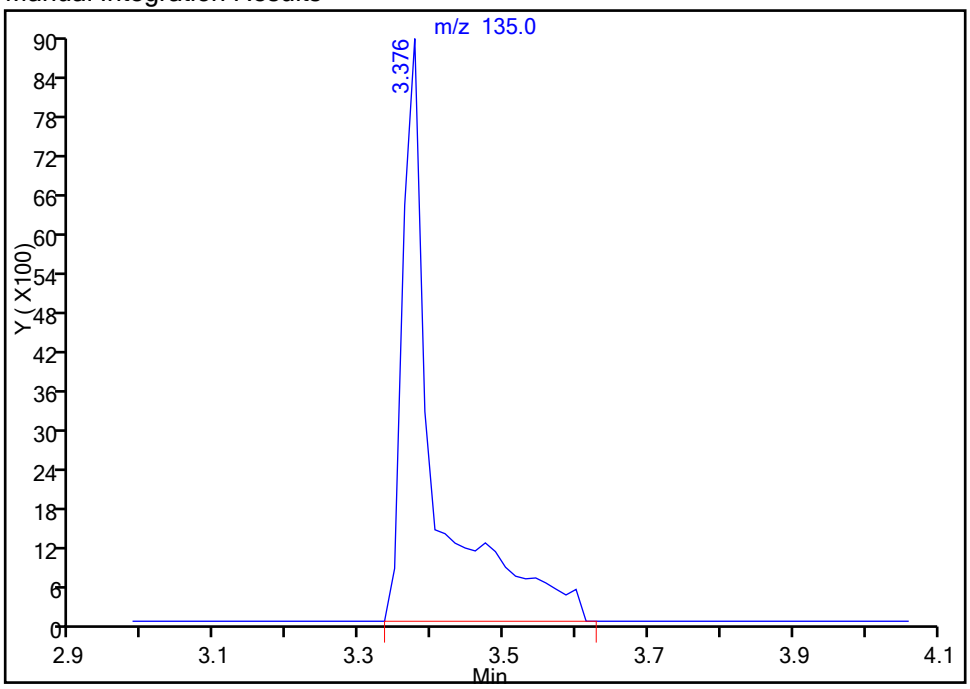
Processing Integration Results

RT: 3.38
Area: 18459
Amount: 0.982540
Amount Units: ug/l



Manual Integration Results

RT: 3.38
Area: 27210
Amount: 1.082454
Amount Units: ug/l



Reviewer: rhoadess, 22-Aug-2016 13:46:44

Audit Action: Manually Integrated Audit Reason: Peak Tail

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4706.D
Lims ID: ic
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 22-Aug-2016 12:08:30 ALS Bottle#: 4 Worklist Smp#: 8
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: IC
Operator ID: SMCR Instrument ID: VMSL
Sublist: chrom-25mL-8260-MSL*sub17

Method: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 23-Aug-2016 11:58:43 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK027

First Level Reviewer: rhoadess Date: 22-Aug-2016 13:52:59

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	110047	2.00	2.03	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	98	52638	2.00	2.14	M
3 Chloromethane	50	3.488	3.488	0.000	99	139359	2.00	2.01	
4 Vinyl chloride	62	3.641	3.641	0.000	98	104572	2.00	1.97	
5 Butadiene	39	3.683	3.683	0.000	93	118726	2.00	1.98	
6 Bromomethane	94	4.256	4.256	0.000	91	40632	2.00	2.00	
7 Chloroethane	64	4.493	4.479	0.014	98	55176	2.00	2.01	
8 Trichlorofluoromethane	101	4.731	4.731	0.000	98	133242	2.00	2.02	
9 Dichlorofluoromethane	67	4.829	4.829	0.000	98	129039	2.00	1.98	
10 Ethyl ether	74	5.234	5.234	0.000	96	21569	2.00	1.97	
11 Ethanol	45	5.457	5.457	0.000	97	11333	80.0	86.2	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	96	64614	2.00	1.96	
13 Carbon disulfide	76	5.597	5.583	0.014	100	233645	2.00	2.01	
14 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	91	65584	2.00	2.03	
16 Iodomethane	142	5.764	5.764	0.000	97	11993	2.00	1.75	
S 15 1,2-Dichloroethene, Total	96				0			3.92	
17 Acrolein	56	6.030	6.030	0.000	98	13771	10.0	9.40	
18 3-Chloro-1-propene	39	6.211	6.211	0.000	89	89583	2.00	1.96	
19 Isopropyl alcohol	45	6.225	6.225	0.000	96	12985	20.0	18.7	
20 Methylene Chloride	84	6.351	6.351	0.000	96	59883	2.00	2.08	
21 Acetone	43	6.407	6.407	0.000	99	9415	2.00	2.03	
22 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	96	67430	2.00	1.99	
23 Methyl acetate	74	6.560	6.546	0.014	99	14990	10.0	10.1	
24 Hexane	86	6.630	6.630	0.000	94	21981	2.00	1.94	
25 Methyl tert-butyl ether	73	6.672	6.672	0.000	92	88343	2.00	1.99	
27 Acetonitrile	41	6.979	6.979	0.000	100	29896	20.0	20.0	
28 Isopropyl ether	45	7.091	7.091	0.000	93	180611	2.00	1.90	
26 2-Methyl-2-propanol	59	7.091	7.091	0.000	33	18733	20.0	19.0	
29 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	94	124352	2.00	1.87	
30 1,1-Dichloroethane	63	7.273	7.273	0.000	96	127011	2.00	2.01	
31 Acrylonitrile	53	7.329	7.329	0.001	97	87041	20.0	20.1	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
32 Tert-butyl ethyl ether	59	7.496	7.496	0.000	97	131107	2.00	1.91	
33 Vinyl acetate	43	7.510	7.510	0.000	98	82338	2.00	2.08	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	82	61117	2.00	1.93	
35 2,2-Dichloropropane	77	7.957	7.957	0.000	93	112774	2.00	1.98	
37 Chlorobromomethane	128	8.055	8.055	0.000	91	22468	2.00	2.10	
36 Cyclohexane	84	8.055	8.055	0.000	96	111631	2.00	1.98	
38 Chloroform	83	8.111	8.111	0.000	95	106853	2.00	1.96	
39 Ethyl acetate	45	8.194	8.194	0.000	99	6628	4.00	3.93	
40 Carbon tetrachloride	117	8.264	8.264	0.000	98	109674	2.00	2.00	
41 Tetrahydrofuran	71	8.292	8.278	0.014	50	3318	4.00	4.51	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	95	44815	2.00	1.97	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	97	119841	2.00	1.97	
45 2-Butanone (MEK)	43	8.418	8.404	0.014	95	10734	2.00	2.08	
47 1,1-Dichloropropene	75	8.446	8.446	0.000	92	91744	2.00	1.96	
44 Isooctane	57	8.530	8.530	0.000	97	328761	2.00	1.94	
46 n-Heptane	43	8.600	8.599	0.001	97	162120	2.00	2.00	
48 Benzene	78	8.697	8.697	0.000	99	246729	2.00	1.98	
49 Propionitrile	54	8.711	8.711	0.000	94	32074	20.0	20.4	
50 Methacrylonitrile	41	8.725	8.725	0.000	98	189164	20.0	20.6	
51 Tert-amyl methyl ether	73	8.767	8.753	0.014	92	96859	2.00	1.96	
52 Isobutyl alcohol	42	8.809	8.809	0.000	90	14754	50.0	58.0	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	93	49694	2.00	2.07	
54 1,2-Dichloroethane	62	8.893	8.893	0.000	97	63962	2.00	2.01	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1180915	10.0	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	70	69562	2.00	1.97	
58 Methylcyclohexane	55	9.228	9.228	0.000	96	127106	2.00	1.98	
59 n-Butanol	56	9.451	9.451	0.000	95	9595	50.0	57.4	
61 Dibromomethane	93	9.633	9.633	0.000	93	21153	2.00	2.01	
60 Ethyl acrylate	55	9.661	9.661	0.000	98	26176	2.00	1.81	
62 1,2-Dichloropropane	63	9.731	9.731	0.000	88	55279	2.00	1.94	
63 Dichlorobromomethane	83	9.759	9.759	0.000	98	65076	2.00	1.98	
64 Methyl methacrylate	69	9.856	9.856	0.000	94	26115	4.00	3.69	
65 1,4-Dioxane	88	9.940	9.940	0.000	90	2696	40.0	34.8	
66 2-Chloroethyl vinyl ether	63	10.234	10.233	0.001	90	5282	2.00	1.89	
67 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	91	67568	2.00	1.88	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	205224	2.00	1.91	
69 Toluene	92	10.541	10.541	0.000	98	157844	2.00	1.96	
70 2-Nitropropane	43	10.764	10.764	0.000	95	12475	4.00	3.59	
71 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	96	19984	2.00	1.84	
72 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	77	55746	2.00	1.92	
73 Tetrachloroethene	164	10.904	10.904	0.000	97	66718	2.00	2.04	
74 Ethyl methacrylate	69	10.974	10.974	0.000	95	26414	2.00	1.75	
75 1,1,2-Trichloroethane	83	11.058	11.057	0.001	94	23707	2.00	1.92	
76 Chlorodibromomethane	129	11.239	11.239	0.000	92	37836	2.00	1.92	
77 1,3-Dichloropropane	76	11.309	11.309	0.000	98	54900	2.00	2.00	
78 n-Butyl acetate	43	11.463	11.463	0.001	97	35666	2.00	1.77	
79 Ethylene Dibromide	107	11.477	11.476	0.001	97	26581	2.00	1.96	
80 2-Hexanone	43	11.588	11.588	0.000	96	13078	2.00	1.83	
81 1-Chlorohexane	91	11.854	11.854	0.000	90	88836	2.00	1.91	
* 83 Chlorobenzene-d5	117	11.910	11.909	0.001	91	822538	10.0	10.0	
82 Ethylbenzene	91	11.923	11.923	0.000	96	318926	2.00	1.98	
84 Chlorobenzene	112	11.937	11.937	0.000	97	171343	2.00	2.02	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
85 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	91	56211	2.00	1.94	
86 m-Xylene & p-Xylene	106	12.049	12.035	0.014	98	117301	2.00	1.96	
88 o-Xylene	106	12.454	12.454	0.000	98	97459	2.00	1.90	
89 Styrene	104	12.496	12.496	0.000	95	145471	2.00	1.90	
90 Bromoform	173	12.566	12.566	0.000	97	20562	2.00	1.97	
91 Isopropylbenzene	105	12.720	12.719	0.001	97	301346	2.00	1.94	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	92	64188	2.00	1.80	
93 N-Propylbenzene	91	13.111	13.111	0.000	98	356363	2.00	1.96	
94 Bromobenzene	156	13.152	13.152	0.000	95	65739	2.00	1.95	
95 1,1,2,2-Tetrachloroethane	83	13.166	13.166	0.000	97	29340	2.00	2.01	
96 1,3,5-Trimethylbenzene	105	13.278	13.264	0.014	94	233122	2.00	1.91	
97 2-Chlorotoluene	91	13.292	13.292	0.000	96	245146	2.00	2.02	
99 1,2,3-Trichloropropane	110	13.334	13.334	0.000	89	9654	2.00	1.92	
98 trans-1,4-Dichloro-2-buten	53	13.334	13.334	0.000	78	10108	2.00	1.97	
100 Cyclohexanone	55	13.404	13.404	0.000	87	5742	20.0	17.9	
101 4-Chlorotoluene	91	13.446	13.446	0.000	99	208242	2.00	1.96	
102 tert-Butylbenzene	119	13.599	13.599	0.000	94	226730	2.00	1.93	
103 1,2,4-Trimethylbenzene	105	13.655	13.655	0.000	98	244822	2.00	1.97	
104 sec-Butylbenzene	105	13.767	13.767	0.000	94	351306	2.00	2.00	
105 4-Isopropyltoluene	119	13.879	13.879	0.000	97	298340	2.00	2.00	
106 1,3-Dichlorobenzene	146	14.018	14.018	0.000	98	139239	2.00	1.93	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	96	424798	10.0	10.0	
107 1,2,3-Trimethylbenzene	105	14.088	14.088	0.000	73	229213	2.00	1.92	
109 1,4-Dichlorobenzene	146	14.102	14.102	0.000	94	140396	2.00	1.96	
111 n-Butylbenzene	134	14.298	14.298	0.000	97	77673	2.00	1.98	
110 Benzyl chloride	126	14.326	14.326	0.000	87	12369	2.00	1.86	
112 1,2-Dichlorobenzene	146	14.521	14.521	0.000	97	112363	2.00	1.92	
113 n-Nonyl Aldehyde	57	15.247	15.247	0.000	84	12476	2.00	1.85	
115 1,2-Dibromo-3-Chloropropan	157	15.317	15.317	0.000	80	5497	2.00	1.95	
114 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	98	113784	2.00	1.98	
116 Hexachlorobutadiene	225	15.918	15.918	0.000	98	66092	2.00	2.01	
117 1,2,4-Trichlorobenzene	180	15.988	15.988	0.000	95	81725	2.00	1.85	
118 Naphthalene	128	16.337	16.337	0.000	97	87033	2.00	1.75	
S 119 Xylenes, Total	106				0			3.87	
120 1,2,3-Trichlorobenzene	180	16.532	16.532	0.000	95	68915	2.00	1.92	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260 Surr 25_00064	Amount Added: 2.00	Units: uL	
8260 NewWkMix_00180	Amount Added: 2.00	Units: uL	
I.S. Working_00134	Amount Added: 10.00	Units: uL	Run Reagent

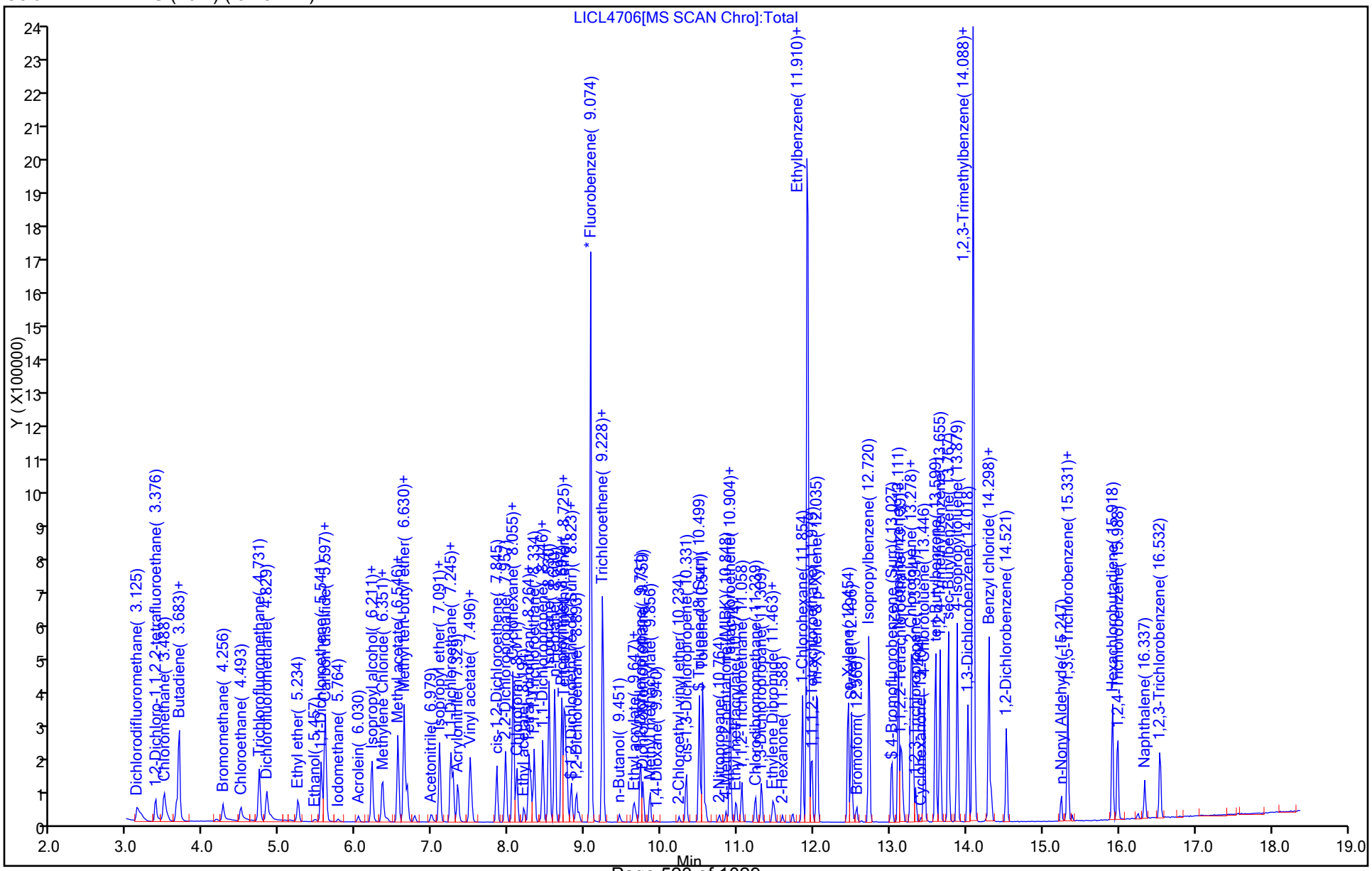
Report Date: 23-Aug-2016 11:58:44 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4706.D

Injection Date:	22-Aug-2016 12:08:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	ic			Worklist Smp#:	8
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

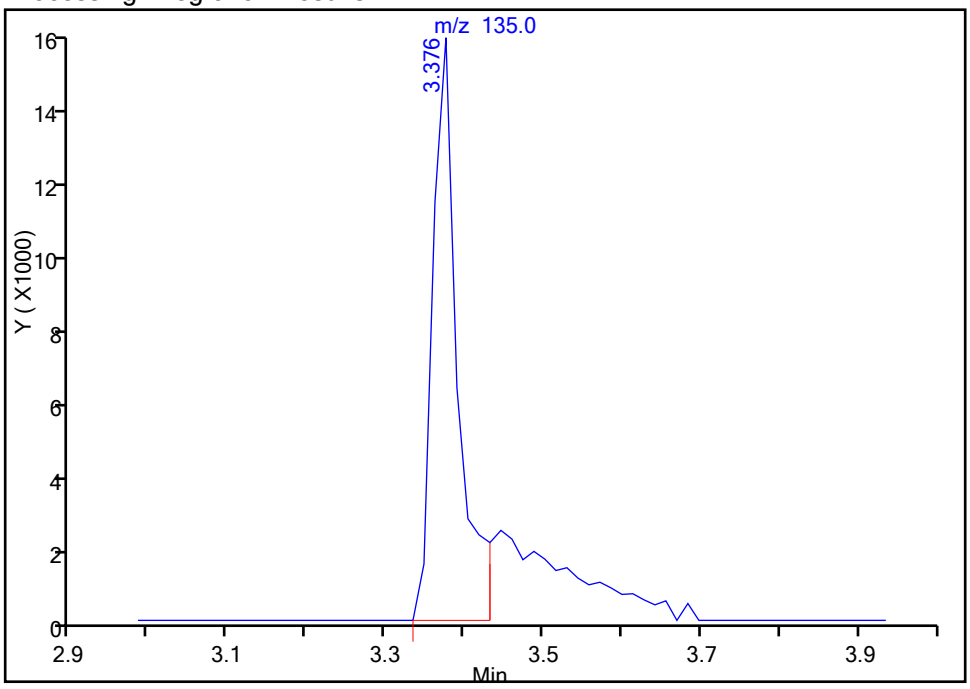
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4706.D				
Injection Date:	22-Aug-2016 12:08:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	4	Worklist Smp#:	8
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

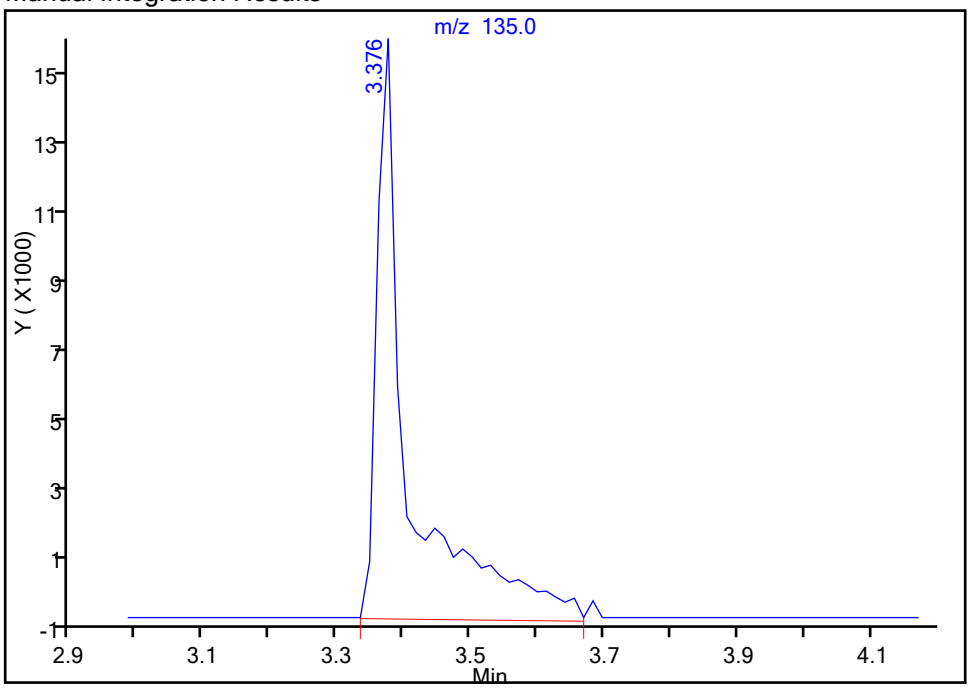
Processing Integration Results

RT: 3.38
Area: 35039
Amount: 1.710647
Amount Units: ug/l



Manual Integration Results

RT: 3.38
Area: 52638
Amount: 2.144303
Amount Units: ug/l



Reviewer: rhoadess, 22-Aug-2016 13:52:59

Audit Action: Manually Integrated Audit Reason: Peak Tail

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4707.D
Lims ID: ic
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 22-Aug-2016 12:33:30 ALS Bottle#: 5 Worklist Smp#: 9
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: IC
Operator ID: SMCR Instrument ID: VMSL
Sublist: chrom-25mL-8260-MSL*sub17

Method: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 23-Aug-2016 11:58:45 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK027

First Level Reviewer: rhoadess Date: 22-Aug-2016 13:59:34

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	236682	4.00	4.02	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	97	108125	4.00	4.07	M
3 Chloromethane	50	3.488	3.488	0.000	99	296011	4.00	3.95	
4 Vinyl chloride	62	3.641	3.641	0.000	98	227216	4.00	3.95	
5 Butadiene	39	3.683	3.683	0.000	94	257418	4.00	3.96	
6 Bromomethane	94	4.256	4.256	0.000	91	84322	4.00	3.84	
7 Chloroethane	64	4.493	4.479	0.014	98	119855	4.00	4.02	
8 Trichlorofluoromethane	101	4.731	4.731	0.000	98	288324	4.00	4.04	
9 Dichlorofluoromethane	67	4.828	4.829	-0.001	98	278875	4.00	3.96	
10 Ethyl ether	74	5.233	5.234	-0.001	97	45711	4.00	3.85	
11 Ethanol	45	5.457	5.457	0.000	99	22401	160.0	157.3	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	94	140590	4.00	3.94	
13 Carbon disulfide	76	5.597	5.583	0.014	100	505053	4.00	4.02	
14 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	90	138645	4.00	3.96	
16 Iodomethane	142	5.764	5.764	0.000	99	53909	4.00	3.29	
S 15 1,2-Dichloroethene, Total	96				0			7.89	
17 Acrolein	56	6.030	6.030	0.000	100	30680	20.0	18.9	
18 3-Chloro-1-propene	39	6.211	6.211	0.000	89	198862	4.00	4.01	
19 Isopropyl alcohol	45	6.225	6.225	0.000	96	29300	40.0	39.0	
20 Methylene Chloride	84	6.351	6.351	0.000	96	113691	4.00	3.64	
21 Acetone	43	6.407	6.407	0.000	98	17201	4.00	4.00	
22 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	96	144993	4.00	3.95	
23 Methyl acetate	74	6.560	6.546	0.014	99	32058	20.0	20.0	
24 Hexane	86	6.630	6.630	0.000	95	49422	4.00	4.03	
25 Methyl tert-butyl ether	73	6.672	6.672	0.000	90	188056	4.00	3.91	
27 Acetonitrile	41	6.979	6.979	0.000	98	60452	40.0	37.4	
28 Isopropyl ether	45	7.091	7.091	0.000	94	411316	4.00	3.99	
26 2-Methyl-2-propanol	59	7.091	7.091	0.000	33	41692	40.0	39.0	
29 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	94	290233	4.00	4.02	
30 1,1-Dichloroethane	63	7.273	7.273	0.000	96	270677	4.00	3.96	
31 Acrylonitrile	53	7.328	7.329	0.000	97	181254	40.0	38.7	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
32 Tert-butyl ethyl ether	59	7.496	7.496	0.000	97	295433	4.00	3.97	
33 Vinyl acetate	43	7.510	7.510	0.000	97	174803	4.00	4.07	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	82	135072	4.00	3.94	
35 2,2-Dichloropropane	77	7.957	7.957	0.000	94	241079	4.00	3.92	
37 Chlorobromomethane	128	8.055	8.055	0.000	93	45209	4.00	3.90	
36 Cyclohexane	84	8.055	8.055	0.000	95	253481	4.00	4.15	
38 Chloroform	83	8.111	8.111	0.000	95	230744	4.00	3.90	
39 Ethyl acetate	45	8.194	8.194	0.000	99	14935	8.00	8.17	
40 Carbon tetrachloride	117	8.264	8.264	0.000	98	237829	4.00	4.01	
41 Tetrahydrofuran	71	8.292	8.278	0.014	50	7806	8.00	8.43	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	94	97593	4.00	3.97	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	98	265002	4.00	4.02	
45 2-Butanone (MEK)	43	8.404	8.404	0.000	94	21487	4.00	3.93	
47 1,1-Dichloropropene	75	8.446	8.446	0.000	92	205103	4.00	4.04	
44 Isooctane	57	8.530	8.530	0.000	97	752305	4.00	4.09	
46 n-Heptane	43	8.599	8.599	0.000	97	372368	4.00	4.24	
48 Benzene	78	8.697	8.697	0.000	98	534691	4.00	3.97	
49 Propionitrile	54	8.711	8.711	0.000	94	66028	40.0	38.8	
50 Methacrylonitrile	41	8.725	8.725	0.000	98	393822	40.0	39.5	
51 Tert-amyl methyl ether	73	8.767	8.753	0.014	92	208972	4.00	3.90	
52 Isobutyl alcohol	42	8.809	8.809	0.000	92	30667	100.0	100.0	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	93	102592	4.00	3.95	
54 1,2-Dichloroethane	62	8.893	8.893	0.000	97	136356	4.00	3.95	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1279273	10.0	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	69	155658	4.00	4.08	
58 Methylcyclohexane	55	9.228	9.228	0.000	97	285621	4.00	4.11	
59 n-Butanol	56	9.451	9.451	0.000	95	23736	100.0	96.6	
61 Dibromomethane	93	9.633	9.633	0.000	96	44522	4.00	3.91	
60 Ethyl acrylate	55	9.661	9.661	0.000	98	59516	4.00	3.79	
62 1,2-Dichloropropane	63	9.731	9.731	0.000	88	120654	4.00	3.91	
63 Dichlorobromomethane	83	9.759	9.759	0.000	98	140517	4.00	3.94	
64 Methyl methacrylate	69	9.856	9.856	0.000	94	58316	8.00	7.60	
65 1,4-Dioxane	88	9.940	9.940	0.000	96	6968	80.0	73.6	
66 2-Chloroethyl vinyl ether	63	10.233	10.233	0.000	92	11519	4.00	3.76	
67 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	91	152778	4.00	3.93	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	462235	4.00	4.00	
69 Toluene	92	10.541	10.541	0.000	97	346871	4.00	4.00	
70 2-Nitropropane	43	10.764	10.764	0.000	98	27159	8.00	7.26	
71 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	98	44502	4.00	3.80	
72 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	77	123064	4.00	3.93	
73 Tetrachloroethene	164	10.904	10.904	0.000	98	141850	4.00	4.02	
74 Ethyl methacrylate	69	10.988	10.974	0.014	94	61031	4.00	3.31	
75 1,1,2-Trichloroethane	83	11.057	11.057	0.000	94	50505	4.00	3.79	
76 Chlorodibromomethane	129	11.239	11.239	0.000	91	80606	4.00	3.80	
77 1,3-Dichloropropane	76	11.309	11.309	0.000	99	112191	4.00	3.80	
78 n-Butyl acetate	43	11.462	11.463	0.000	98	77671	4.00	3.58	
79 Ethylene Dibromide	107	11.476	11.476	0.000	99	55141	4.00	3.77	
80 2-Hexanone	43	11.588	11.588	0.000	97	28346	4.00	3.69	
81 1-Chlorohexane	91	11.853	11.854	-0.001	90	206748	4.00	4.13	
* 83 Chlorobenzene-d5	117	11.909	11.909	0.000	90	886282	10.0	10.0	
82 Ethylbenzene	91	11.923	11.923	0.000	96	701966	4.00	4.05	
84 Chlorobenzene	112	11.937	11.937	0.000	96	364584	4.00	3.98	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
85 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	92	122078	4.00	3.91	
86 m-Xylene & p-Xylene	106	12.049	12.035	0.014	98	261255	4.00	4.06	
88 o-Xylene	106	12.454	12.454	0.000	98	225676	4.00	4.09	
89 Styrene	104	12.496	12.496	0.000	95	334280	4.00	4.04	
90 Bromoform	173	12.566	12.566	0.000	97	42060	4.00	3.78	
91 Isopropylbenzene	105	12.719	12.719	0.000	97	698573	4.00	4.22	
$ 92 4-Bromofluorobenzene (Surr	95	13.027	13.013	0.014	94	144775	4.00	3.81	
93 N-Propylbenzene	91	13.110	13.111	-0.001	98	822970	4.00	4.26	
94 Bromobenzene	156	13.152	13.152	0.000	88	143261	4.00	3.99	
95 1,1,2,2-Tetrachloroethane	83	13.166	13.166	0.000	97	58020	4.00	3.73	
96 1,3,5-Trimethylbenzene	105	13.278	13.264	0.014	95	557398	4.00	4.27	
97 2-Chlorotoluene	91	13.292	13.292	0.000	96	530347	4.00	4.10	
99 1,2,3-Trichloropropane	110	13.334	13.334	0.000	88	19639	4.00	3.67	
98 trans-1,4-Dichloro-2-buten	53	13.334	13.334	0.000	76	20539	4.00	3.77	
100 Cyclohexanone	55	13.404	13.404	0.000	93	13127	40.0	38.5	
101 4-Chlorotoluene	91	13.446	13.446	0.000	99	463532	4.00	4.10	
102 tert-Butylbenzene	119	13.599	13.599	0.000	93	539127	4.00	4.30	
103 1,2,4-Trimethylbenzene	105	13.655	13.655	0.000	97	560557	4.00	4.24	
104 sec-Butylbenzene	105	13.767	13.767	0.000	94	800806	4.00	4.27	
105 4-Isopropyltoluene	119	13.879	13.879	0.000	97	691106	4.00	4.35	
106 1,3-Dichlorobenzene	146	14.018	14.018	0.000	98	308301	4.00	4.02	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	97	452660	10.0	10.0	
107 1,2,3-Trimethylbenzene	105	14.088	14.088	0.000	83	517307	4.00	4.06	
109 1,4-Dichlorobenzene	146	14.102	14.102	0.000	94	303411	4.00	3.97	
111 n-Butylbenzene	134	14.298	14.298	0.000	96	180586	4.00	4.32	
110 Benzyl chloride	126	14.326	14.326	0.000	95	26878	4.00	3.79	
112 1,2-Dichlorobenzene	146	14.521	14.521	0.000	96	244436	4.00	3.91	
113 n-Nonyl Aldehyde	57	15.247	15.247	0.000	84	32243	4.00	3.27	
115 1,2-Dibromo-3-Chloropropan	157	15.317	15.317	0.000	80	11578	4.00	3.86	
114 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	98	245219	4.00	4.00	
116 Hexachlorobutadiene	225	15.918	15.918	0.000	97	145452	4.00	4.15	
117 1,2,4-Trichlorobenzene	180	15.987	15.988	-0.001	95	186668	4.00	3.97	
118 Naphthalene	128	16.337	16.337	0.000	97	197167	4.00	3.72	
S 119 Xylenes, Total	106				0			8.15	
120 1,2,3-Trichlorobenzene	180	16.546	16.532	0.014	96	150967	4.00	3.94	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260 Surr 25_00064	Amount Added: 4.00	Units: uL	
8260 NewWkMix_00180	Amount Added: 4.00	Units: uL	
I.S. Working_00134	Amount Added: 10.00	Units: uL	Run Reagent

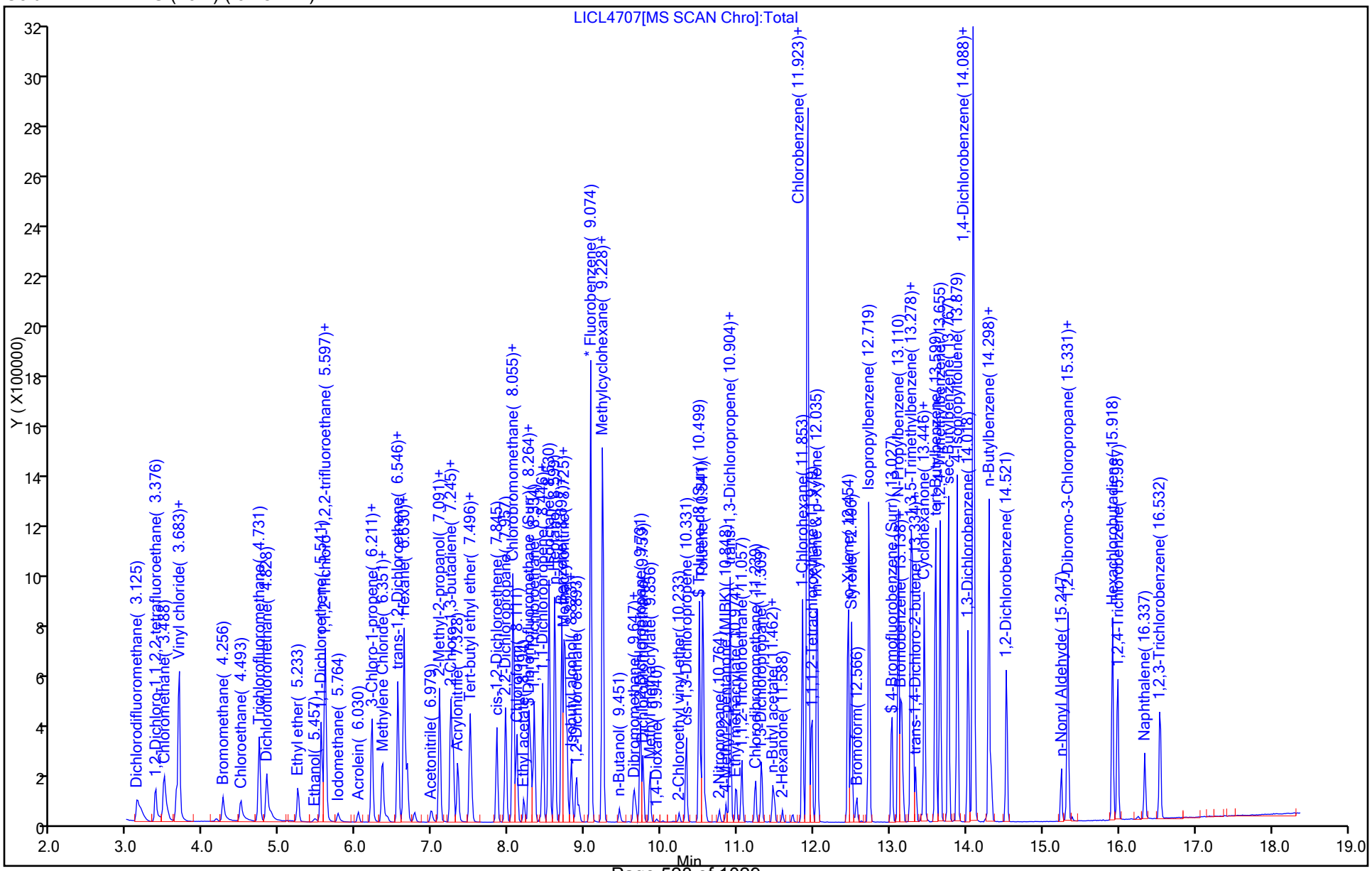
Report Date: 23-Aug-2016 11:58:46 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4707.D

Injection Date:	22-Aug-2016 12:33:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	ic			Worklist Smp#:	9
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	5
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

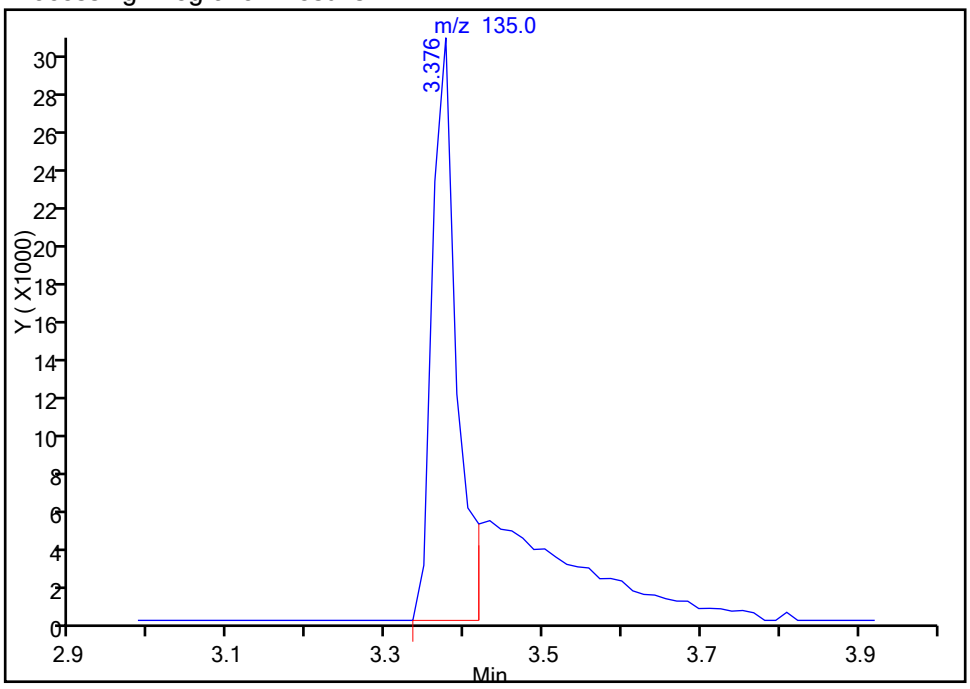
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4707.D				
Injection Date:	22-Aug-2016 12:33:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	5	Worklist Smp#:	9
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

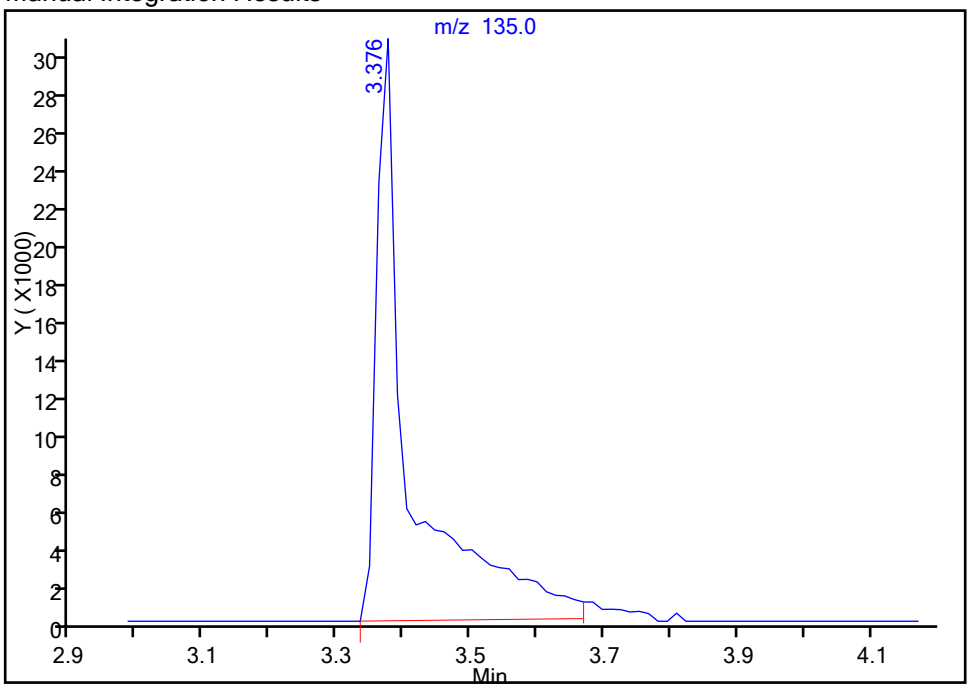
Processing Integration Results

RT: 3.38
Area: 66677
Amount: 2.713535
Amount Units: ug/l



Manual Integration Results

RT: 3.38
Area: 108125
Amount: 4.066008
Amount Units: ug/l



Reviewer: rhoadess, 22-Aug-2016 13:59:34

Audit Action: Manually Integrated Audit Reason: Peak Tail

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4708.D
Lims ID: icis
Client ID:
Sample Type: ICIS Calib Level: 5
Inject. Date: 22-Aug-2016 12:59:30 ALS Bottle#: 6 Worklist Smp#: 10
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: ICIS
Operator ID: SMCR Instrument ID: VMSL
Sublist: chrom-25mL-8260-MSL*sub17

Method: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 23-Aug-2016 11:58:47 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK027

First Level Reviewer: rhoadess Date: 22-Aug-2016 14:02:43

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	600378	10.0	9.92	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	98	273276	10.0	9.99	M
3 Chloromethane	50	3.488	3.488	0.000	99	738541	10.0	9.57	
4 Vinyl chloride	62	3.641	3.641	0.000	98	588606	10.0	9.95	
5 Butadiene	39	3.683	3.683	0.000	93	664079	10.0	9.94	
6 Bromomethane	94	4.256	4.256	0.000	92	203743	10.0	9.02	
7 Chloroethane	64	4.479	4.479	0.000	98	292713	10.0	9.55	
8 Trichlorofluoromethane	101	4.731	4.731	0.000	99	710337	10.0	9.67	
9 Dichlorofluoromethane	67	4.829	4.829	0.000	98	697061	10.0	9.61	
10 Ethyl ether	74	5.234	5.234	0.000	97	116560	10.0	9.54	
11 Ethanol	45	5.457	5.457	0.000	100	54106	400.0	369.4	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	94	362019	10.0	9.87	
13 Carbon disulfide	76	5.583	5.583	0.000	100	1266420	10.0	9.79	
14 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	89	350007	10.0	9.73	
16 Iodomethane	142	5.764	5.764	0.000	99	226185	10.0	9.52	
17 Acrolein	56	6.030	6.030	0.000	100	79928	50.0	47.1	
18 3-Chloro-1-propene	39	6.211	6.211	0.000	89	512687	10.0	10.0	
19 Isopropyl alcohol	45	6.225	6.225	0.000	97	68098	100.0	88.2	
20 Methylene Chloride	84	6.351	6.351	0.000	96	280823	10.0	8.74	
21 Acetone	43	6.407	6.407	0.000	98	41951	10.0	10.6	
22 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	97	367503	10.0	9.73	
23 Methyl acetate	74	6.546	6.546	0.000	100	76320	50.0	46.2	
24 Hexane	86	6.630	6.630	0.000	94	132019	10.0	10.5	
25 Methyl tert-butyl ether	73	6.672	6.672	0.000	83	479975	10.0	9.71	
27 Acetonitrile	41	6.979	6.979	0.000	99	148659	100.0	89.3	
28 Isopropyl ether	45	7.091	7.091	0.000	95	1071044	10.0	10.1	
26 2-Methyl-2-propanol	59	7.091	7.091	0.000	33	105338	100.0	95.7	
29 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	95	779692	10.0	10.5	
30 1,1-Dichloroethane	63	7.273	7.273	0.000	95	679489	10.0	9.66	
31 Acrylonitrile	53	7.329	7.329	0.000	98	455971	100.0	94.6	
32 Tert-butyl ethyl ether	59	7.496	7.496	0.000	97	768471	10.0	10.0	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
33 Vinyl acetate	43	7.510	7.510	0.000	97	431521	10.0	9.77	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	83	348023	10.0	9.86	
35 2,2-Dichloropropane	77	7.957	7.957	0.000	93	621433	10.0	9.81	
37 Chlorobromomethane	128	8.055	8.055	0.000	93	113613	10.0	9.53	
36 Cyclohexane	84	8.055	8.055	0.000	96	657008	10.0	10.4	
38 Chloroform	83	8.111	8.111	0.000	95	585306	10.0	9.62	
39 Ethyl acetate	45	8.194	8.194	0.000	99	36225	20.0	19.3	
40 Carbon tetrachloride	117	8.264	8.264	0.000	98	600092	10.0	9.84	
41 Tetrahydrofuran	71	8.278	8.278	0.000	93	19437	20.0	18.8	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	95	256228	10.0	10.1	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	98	666043	10.0	9.83	
45 2-Butanone (MEK)	43	8.404	8.404	0.000	95	54386	10.0	9.83	
47 1,1-Dichloropropene	75	8.446	8.446	0.000	92	536966	10.0	10.3	
44 Isooctane	57	8.530	8.530	0.000	97	1972611	10.0	10.4	
46 n-Heptane	43	8.599	8.599	0.000	98	956972	10.0	10.6	
48 Benzene	78	8.697	8.697	0.000	98	1335300	10.0	9.63	
49 Propionitrile	54	8.711	8.711	0.000	95	163016	100.0	93.1	
50 Methacrylonitrile	41	8.725	8.725	0.000	98	973848	100.0	94.9	
51 Tert-amyl methyl ether	73	8.753	8.753	0.000	93	532499	10.0	9.66	
52 Isobutyl alcohol	42	8.809	8.809	0.000	93	77701	250.0	228.6	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	93	264650	10.0	9.89	
54 1,2-Dichloroethane	62	8.893	8.893	0.000	97	336883	10.0	9.48	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1316025	10.0	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	68	391446	10.0	9.96	
58 Methylcyclohexane	55	9.228	9.228	0.000	97	735021	10.0	10.3	
59 n-Butanol	56	9.451	9.451	0.000	93	66065	250.0	215.6	
61 Dibromomethane	93	9.633	9.633	0.000	96	109283	10.0	9.34	
60 Ethyl acrylate	55	9.661	9.661	0.000	99	161126	10.0	9.98	
62 1,2-Dichloropropane	63	9.731	9.731	0.000	89	305371	10.0	9.63	
63 Dichlorobromomethane	83	9.759	9.759	0.000	98	353841	10.0	9.65	
64 Methyl methacrylate	69	9.856	9.856	0.000	94	163321	20.0	20.7	
65 1,4-Dioxane	88	9.940	9.940	0.000	97	18583	200.0	180.1	
66 2-Chloroethyl vinyl ether	63	10.233	10.233	0.000	94	33345	10.0	10.5	
67 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	91	406191	10.0	10.2	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	1253966	10.0	10.6	
69 Toluene	92	10.541	10.541	0.000	98	899373	10.0	10.1	
70 2-Nitropropane	43	10.764	10.764	0.000	99	73937	20.0	19.3	
71 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	99	116623	10.0	9.74	
72 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	79	321884	10.0	10.1	
73 Tetrachloroethene	164	10.904	10.904	0.000	97	360161	10.0	9.97	
74 Ethyl methacrylate	69	10.974	10.974	0.000	94	176599	10.0	8.65	
75 1,1,2-Trichloroethane	83	11.057	11.057	0.000	93	127750	10.0	9.37	
76 Chlorodibromomethane	129	11.239	11.239	0.000	91	209615	10.0	9.65	
77 1,3-Dichloropropane	76	11.309	11.309	0.000	99	285639	10.0	9.46	
78 n-Butyl acetate	43	11.463	11.463	0.000	98	222791	10.0	10.0	
79 Ethylene Dibromide	107	11.476	11.476	0.000	99	141392	10.0	9.45	
80 2-Hexanone	43	11.588	11.588	0.000	98	80210	10.0	10.2	
81 1-Chlorohexane	91	11.854	11.854	0.000	93	553351	10.0	10.8	
* 83 Chlorobenzene-d5	117	11.909	11.909	0.000	91	906909	10.0	10.0	
82 Ethylbenzene	91	11.923	11.923	0.000	96	1760871	10.0	9.92	
84 Chlorobenzene	112	11.937	11.937	0.000	95	896440	10.0	9.57	
85 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	93	309765	10.0	9.69	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
86 m-Xylene & p-Xylene	106	12.035	12.035	0.000	98	679108	10.0	10.3	
88 o-Xylene	106	12.454	12.454	0.000	98	603352	10.0	10.7	
89 Styrene	104	12.496	12.496	0.000	95	901351	10.0	10.7	
90 Bromoform	173	12.566	12.566	0.000	99	107567	10.0	9.46	
91 Isopropylbenzene	105	12.719	12.719	0.000	97	1816961	10.0	10.7	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	93	408584	10.0	10.5	
93 N-Propylbenzene	91	13.111	13.111	0.000	98	2124920	10.0	10.8	
94 Bromobenzene	156	13.152	13.152	0.000	94	359315	10.0	9.79	
95 1,1,2,2-Tetrachloroethane	83	13.166	13.166	0.000	96	152239	10.0	9.56	
96 1,3,5-Trimethylbenzene	105	13.264	13.264	0.000	95	1446917	10.0	10.9	
97 2-Chlorotoluene	91	13.292	13.292	0.000	96	1353970	10.0	10.2	
99 1,2,3-Trichloropropane	110	13.334	13.334	0.000	89	52108	10.0	9.53	
98 trans-1,4-Dichloro-2-buten	53	13.334	13.334	0.000	90	54630	10.0	9.80	
100 Cyclohexanone	55	13.404	13.404	0.000	92	34608	100.0	99.3	
101 4-Chlorotoluene	91	13.446	13.446	0.000	99	1200417	10.0	10.4	
102 tert-Butylbenzene	119	13.599	13.599	0.000	94	1396469	10.0	10.9	
103 1,2,4-Trimethylbenzene	105	13.655	13.655	0.000	97	1444406	10.0	10.7	
104 sec-Butylbenzene	105	13.767	13.767	0.000	94	2043898	10.0	10.7	
105 4-Isopropyltoluene	119	13.879	13.879	0.000	97	1765562	10.0	10.9	
106 1,3-Dichlorobenzene	146	14.018	14.018	0.000	99	768609	10.0	9.80	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	74	462775	10.0	10.0	
107 1,2,3-Trimethylbenzene	105	14.088	14.088	0.000	96	1300002	10.0	9.99	
109 1,4-Dichlorobenzene	146	14.102	14.102	0.000	93	745817	10.0	9.55	
111 n-Butylbenzene	134	14.298	14.298	0.000	96	465595	10.0	10.9	
110 Benzyl chloride	126	14.326	14.326	0.000	96	72452	10.0	10.0	
112 1,2-Dichlorobenzene	146	14.521	14.521	0.000	97	625727	10.0	9.80	
113 n-Nonyl Aldehyde	57	15.247	15.247	0.000	88	120528	10.0	9.29	
115 1,2-Dibromo-3-Chloropropan	157	15.317	15.317	0.000	83	30341	10.0	9.89	
114 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	98	614705	10.0	9.80	
116 Hexachlorobutadiene	225	15.918	15.918	0.000	97	354560	10.0	9.89	
117 1,2,4-Trichlorobenzene	180	15.988	15.988	0.000	95	475957	10.0	9.91	
118 Naphthalene	128	16.337	16.337	0.000	97	531289	10.0	9.80	
120 1,2,3-Trichlorobenzene	180	16.532	16.532	0.000	96	379884	10.0	9.71	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260 Surr 25_00064	Amount Added: 10.00	Units: uL	
8260 NewWkMix_00180	Amount Added: 10.00	Units: uL	
I.S. Working_00134	Amount Added: 10.00	Units: uL	Run Reagent

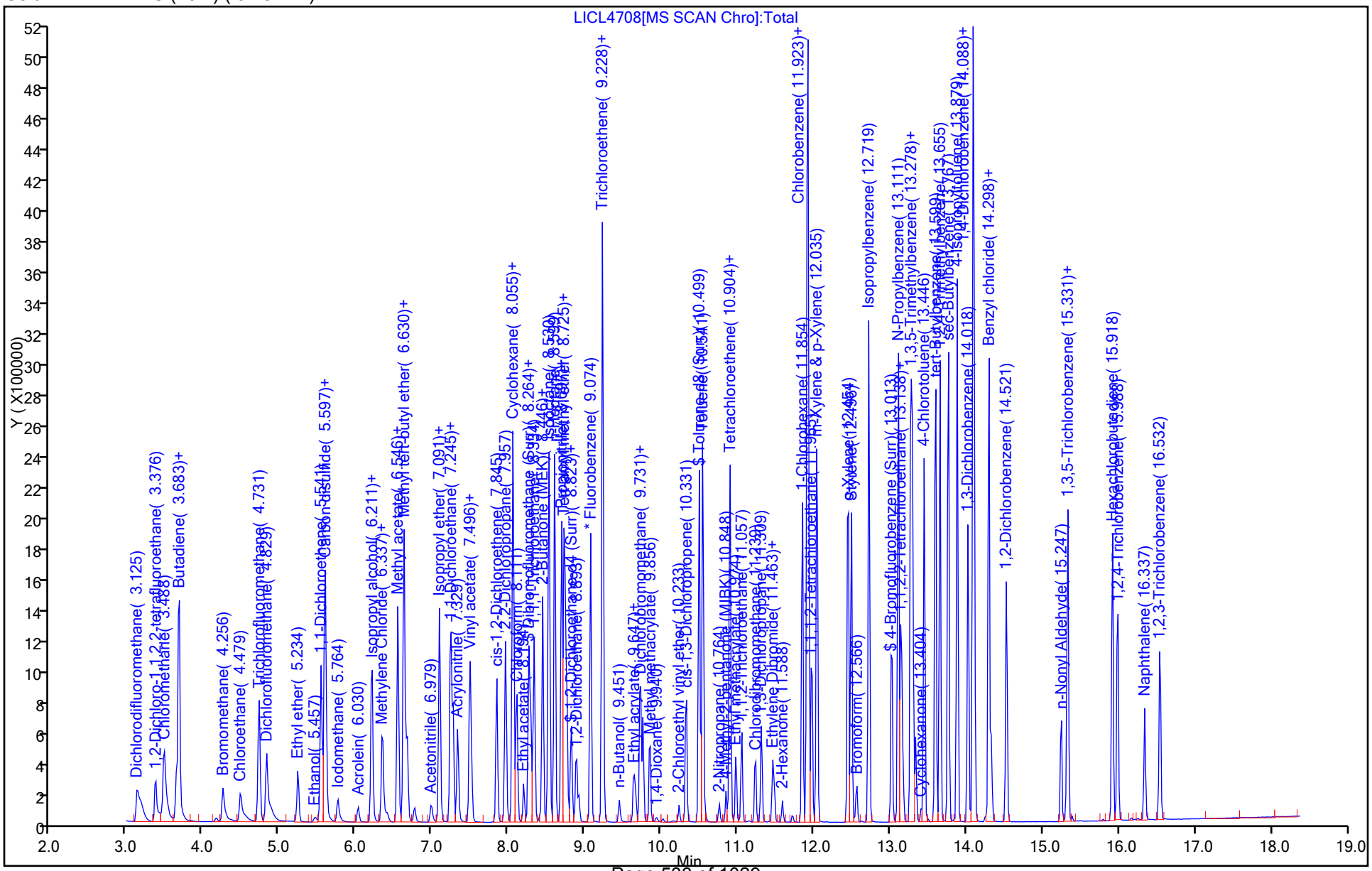
Report Date: 23-Aug-2016 11:58:48 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4708.D

Injection Date:	22-Aug-2016 12:59:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	icis			Worklist Smp#:	10
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	6
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

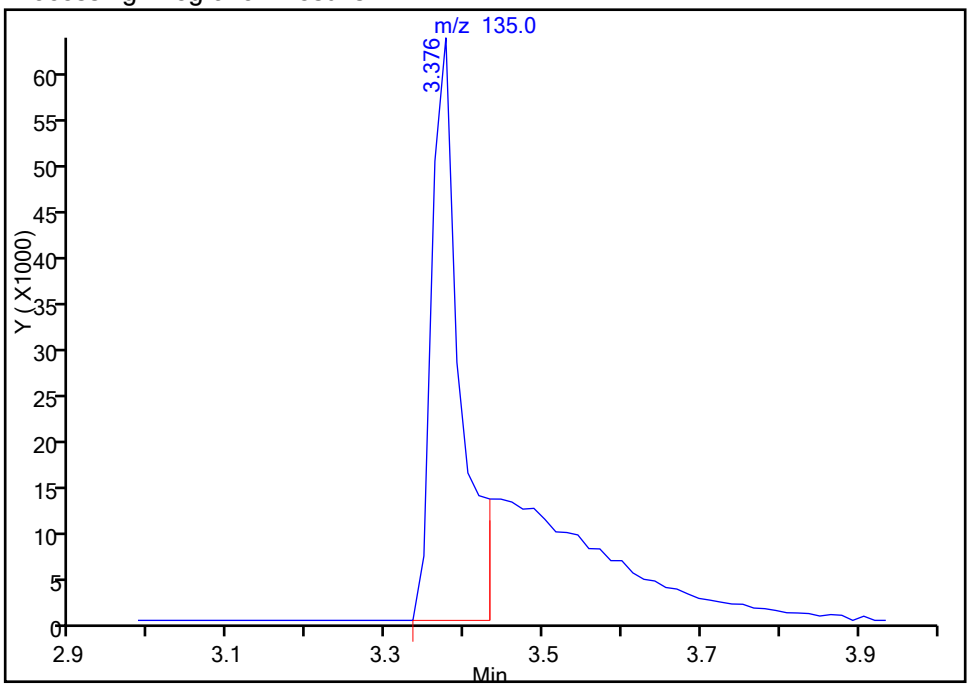
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4708.D				
Injection Date:	22-Aug-2016 12:59:30	Instrument ID:	VMSL		
Lims ID:	icis				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	6	Worklist Smp#:	10
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

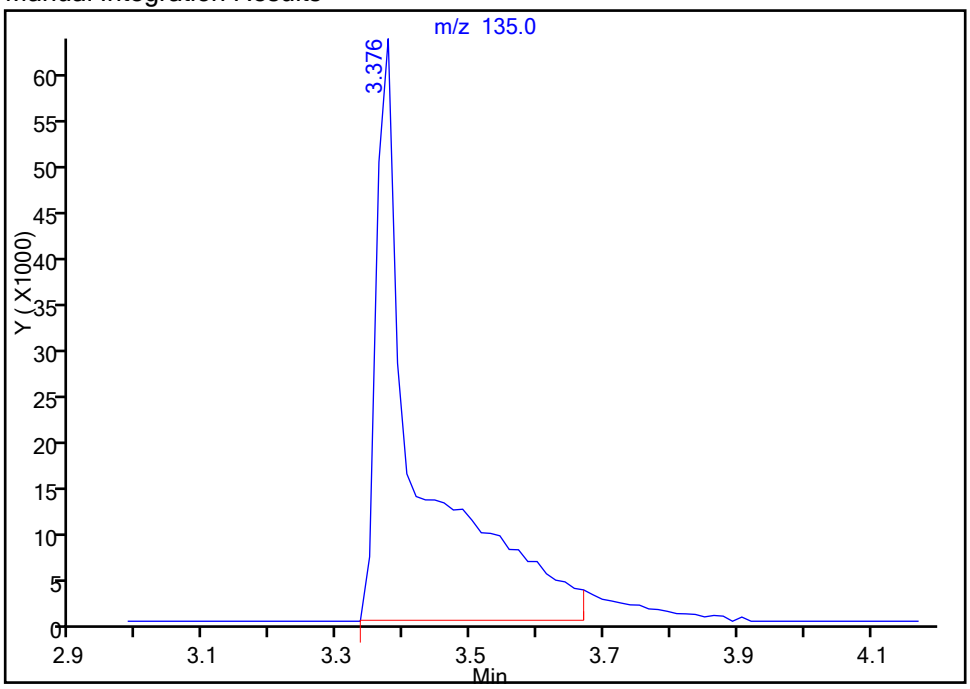
Processing Integration Results

RT: 3.38
Area: 159393
Amount: 6.141452
Amount Units: ug/l



Manual Integration Results

RT: 3.38
Area: 273276
Amount: 9.989475
Amount Units: ug/l



Reviewer: rhoadess, 22-Aug-2016 14:02:43

Audit Action: Manually Integrated Audit Reason: Peak Tail

Report Date: 23-Aug-2016 11:58:51 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4709.D
Lims ID: ic
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 22-Aug-2016 13:24:30 ALS Bottle#: 7 Worklist Smp#: 11
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: IC
Operator ID: SMCR Instrument ID: VMSL
Sublist: chrom-25mL-8260-MSL*sub17

Method: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 23-Aug-2016 11:58:50 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK027

First Level Reviewer: rhoadess Date: 22-Aug-2016 14:07:23

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	1172161	20.0	18.7	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	98	579364	20.0	20.5	
3 Chloromethane	50	3.488	3.488	0.000	99	1551629	20.0	19.5	
4 Vinyl chloride	62	3.642	3.641	0.001	98	1251475	20.0	20.5	
5 Butadiene	39	3.670	3.683	-0.013	96	1408170	20.0	20.4	
6 Bromomethane	94	4.256	4.256	0.000	91	448897	20.0	19.2	
7 Chloroethane	64	4.480	4.479	0.001	99	615932	20.0	19.4	
8 Trichlorofluoromethane	101	4.731	4.731	0.000	99	1433744	20.0	18.9	
9 Dichlorofluoromethane	67	4.829	4.829	0.000	98	1450537	20.0	19.3	
10 Ethyl ether	74	5.234	5.234	0.000	98	240342	20.0	19.0	
11 Ethanol	45	5.457	5.457	0.000	100	110922	800.0	732.3	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	94	759326	20.0	20.0	
13 Carbon disulfide	76	5.583	5.583	0.000	100	2622126	20.0	19.6	
14 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	89	718429	20.0	19.3	
16 Iodomethane	142	5.764	5.764	0.000	100	530276	20.0	20.0	
S 15 1,2-Dichloroethene, Total	96				0			39.9	
17 Acrolein	56	6.030	6.030	0.000	99	172694	100.0	98.0	
18 3-Chloro-1-propene	39	6.197	6.211	-0.014	89	1073055	20.0	20.3	
19 Isopropyl alcohol	45	6.225	6.225	0.000	98	149375	200.0	187.1	
20 Methylene Chloride	84	6.337	6.351	-0.014	96	578543	20.0	17.4	
21 Acetone	43	6.407	6.407	0.000	98	78195	20.0	19.8	
22 trans-1,2-Dichloroethene	96	6.547	6.546	0.001	95	766278	20.0	19.6	
23 Methyl acetate	74	6.547	6.546	0.001	100	163468	100.0	95.7	
24 Hexane	86	6.630	6.630	0.000	95	275060	20.0	21.1	
25 Methyl tert-butyl ether	73	6.672	6.672	0.000	82	1032579	20.0	20.2	
27 Acetonitrile	41	6.980	6.979	0.001	99	308724	200.0	179.4	
28 Isopropyl ether	45	7.091	7.091	0.000	95	2307759	20.0	21.0	
26 2-Methyl-2-propanol	59	7.091	7.091	0.000	34	233600	200.0	205.2	
29 2-Chloro-1,3-butadiene	53	7.231	7.245	-0.014	95	1726463	20.0	22.5	
30 1,1-Dichloroethane	63	7.273	7.273	0.000	95	1424308	20.0	19.6	
31 Acrylonitrile	53	7.329	7.329	0.001	98	968067	200.0	194.2	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
32 Tert-butyl ethyl ether	59	7.496	7.496	0.000	98	1680530	20.0	21.2	
33 Vinyl acetate	43	7.510	7.510	0.000	97	882395	20.0	19.3	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	83	738604	20.0	20.2	
35 2,2-Dichloropropane	77	7.957	7.957	0.000	93	1288224	20.0	19.7	
37 Chlorobromomethane	128	8.055	8.055	0.000	50	232990	20.0	18.9	
36 Cyclohexane	84	8.055	8.055	0.000	96	1384327	20.0	21.3	
38 Chloroform	83	8.111	8.111	0.000	95	1217440	20.0	19.4	
39 Ethyl acetate	45	8.195	8.194	0.001	99	77669	40.0	39.9	
40 Carbon tetrachloride	117	8.264	8.264	0.000	98	1260880	20.0	20.0	
41 Tetrahydrofuran	71	8.278	8.278	0.000	94	42981	40.0	38.8	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	95	520936	20.0	19.9	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	98	1390314	20.0	19.8	
45 2-Butanone (MEK)	43	8.404	8.404	0.000	97	113173	20.0	19.9	
47 1,1-Dichloropropene	75	8.446	8.446	0.000	92	1154123	20.0	21.3	
44 Isooctane	57	8.530	8.530	0.000	97	4273083	20.0	21.8	
46 n-Heptane	43	8.600	8.599	0.001	98	2005288	20.0	21.4	
48 Benzene	78	8.697	8.697	0.000	98	2804850	20.0	19.6	
49 Propionitrile	54	8.711	8.711	0.000	94	345325	200.0	190.7	
50 Methacrylonitrile	41	8.725	8.725	0.000	98	2103307	200.0	198.3	
51 Tert-amyl methyl ether	73	8.753	8.753	0.000	97	1166066	20.0	20.5	
52 Isobutyl alcohol	42	8.809	8.809	0.000	93	171761	500.0	474.7	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	93	532940	20.0	19.3	
54 1,2-Dichloroethane	62	8.893	8.893	0.000	97	705573	20.0	19.2	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1360993	10.0	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	69	819214	20.0	20.2	
58 Methylcyclohexane	55	9.228	9.228	0.000	97	1540812	20.0	20.9	
59 n-Butanol	56	9.452	9.451	0.001	92	157520	500.0	462.0	
61 Dibromomethane	93	9.633	9.633	0.000	95	232094	20.0	19.2	
60 Ethyl acrylate	55	9.661	9.661	0.000	99	368912	20.0	22.1	
62 1,2-Dichloropropane	63	9.731	9.731	0.000	91	661384	20.0	20.2	
63 Dichlorobromomethane	83	9.759	9.759	0.000	98	764218	20.0	20.1	
64 Methyl methacrylate	69	9.857	9.856	0.001	94	373130	40.0	45.7	
65 1,4-Dioxane	88	9.940	9.940	0.000	96	42529	400.0	390.2	
66 2-Chloroethyl vinyl ether	63	10.234	10.233	0.001	91	74036	20.0	22.4	
67 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	92	886587	20.0	21.5	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	2539510	20.0	21.1	
69 Toluene	92	10.541	10.541	0.000	98	1901088	20.0	21.1	
70 2-Nitropropane	43	10.764	10.764	0.000	98	171502	40.0	44.1	
71 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	99	261461	20.0	21.5	
72 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	78	688508	20.0	21.2	
73 Tetrachloroethene	164	10.904	10.904	0.000	97	755652	20.0	20.6	
74 Ethyl methacrylate	69	10.974	10.974	0.000	94	409588	20.0	19.3	
75 1,1,2-Trichloroethane	83	11.058	11.057	0.001	93	274932	20.0	19.9	
76 Chlorodibromomethane	129	11.239	11.239	0.000	91	460507	20.0	20.9	
77 1,3-Dichloropropane	76	11.309	11.309	0.000	99	621918	20.0	20.3	
78 n-Butyl acetate	43	11.463	11.463	0.001	99	505524	20.0	22.4	
79 Ethylene Dibromide	107	11.477	11.476	0.001	99	306120	20.0	20.2	
80 2-Hexanone	43	11.588	11.588	0.000	98	172305	20.0	21.6	
81 1-Chlorohexane	91	11.854	11.854	0.000	93	1245586	20.0	23.9	
* 83 Chlorobenzene-d5	117	11.910	11.909	0.001	91	920395	10.0	10.0	
82 Ethylbenzene	91	11.924	11.923	0.001	97	3667539	20.0	20.4	
84 Chlorobenzene	112	11.938	11.937	0.001	95	1863205	20.0	19.6	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
85 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	94	657560	20.0	20.3	
86 m-Xylene & p-Xylene	106	12.035	12.035	0.000	98	1442066	20.0	21.6	
88 o-Xylene	106	12.454	12.454	0.000	98	1299542	20.0	22.7	
89 Styrene	104	12.496	12.496	0.000	95	1979573	20.0	23.1	
90 Bromoform	173	12.566	12.566	0.000	98	240771	20.0	21.0	
91 Isopropylbenzene	105	12.720	12.719	0.001	97	3839390	20.0	22.5	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	92	853809	20.0	21.8	
93 N-Propylbenzene	91	13.111	13.111	0.000	98	4504278	20.0	22.6	
94 Bromobenzene	156	13.153	13.152	0.001	96	770440	20.0	20.8	
95 1,1,2,2-Tetrachloroethane	83	13.167	13.166	0.001	97	318071	20.0	19.8	
96 1,3,5-Trimethylbenzene	105	13.264	13.264	0.000	94	3087417	20.0	23.0	
97 2-Chlorotoluene	91	13.292	13.292	0.000	96	2848085	20.0	21.3	
99 1,2,3-Trichloropropane	110	13.334	13.334	0.000	89	109878	20.0	19.9	
98 trans-1,4-Dichloro-2-buten	53	13.334	13.334	0.000	80	119000	20.0	21.2	
100 Cyclohexanone	55	13.404	13.404	0.000	93	78904	200.0	224.5	
101 4-Chlorotoluene	91	13.446	13.446	0.000	99	2552063	20.0	21.9	
102 tert-Butylbenzene	119	13.600	13.599	0.001	94	2942236	20.0	22.8	
103 1,2,4-Trimethylbenzene	105	13.655	13.655	0.000	97	3065129	20.0	22.5	
104 sec-Butylbenzene	105	13.767	13.767	0.000	94	4334847	20.0	22.4	
105 4-Isopropyltoluene	119	13.879	13.879	0.000	97	3775499	20.0	23.0	
106 1,3-Dichlorobenzene	146	14.019	14.018	0.001	98	1640867	20.0	20.7	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	96	466713	10.0	10.0	
107 1,2,3-Trimethylbenzene	105	14.088	14.088	0.000	98	2838471	20.0	21.6	
109 1,4-Dichlorobenzene	146	14.102	14.102	0.000	93	1556004	20.0	19.8	
111 n-Butylbenzene	134	14.298	14.298	0.000	95	994316	20.0	23.1	
110 Benzyl chloride	126	14.326	14.326	0.000	97	163684	20.0	22.4	
112 1,2-Dichlorobenzene	146	14.521	14.521	0.000	97	1328545	20.0	20.6	
113 n-Nonyl Aldehyde	57	15.248	15.247	0.001	88	312005	20.0	20.6	
115 1,2-Dibromo-3-Chloropropan	157	15.317	15.317	0.000	84	68720	20.0	22.2	
114 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	98	1329409	20.0	21.0	
116 Hexachlorobutadiene	225	15.918	15.918	0.000	97	747421	20.0	20.7	
117 1,2,4-Trichlorobenzene	180	15.988	15.988	0.000	94	1021835	20.0	21.1	
118 Naphthalene	128	16.337	16.337	0.000	97	1192851	20.0	21.8	
S 119 Xylenes, Total	106				0			44.3	
120 1,2,3-Trichlorobenzene	180	16.532	16.532	0.000	96	827860	20.0	21.0	

Reagents:

8260 Surr 25_00064	Amount Added: 20.00	Units: uL	
8260NewHiWrk_00158	Amount Added: 4.00	Units: uL	
I.S. Working_00134	Amount Added: 10.00	Units: uL	Run Reagent

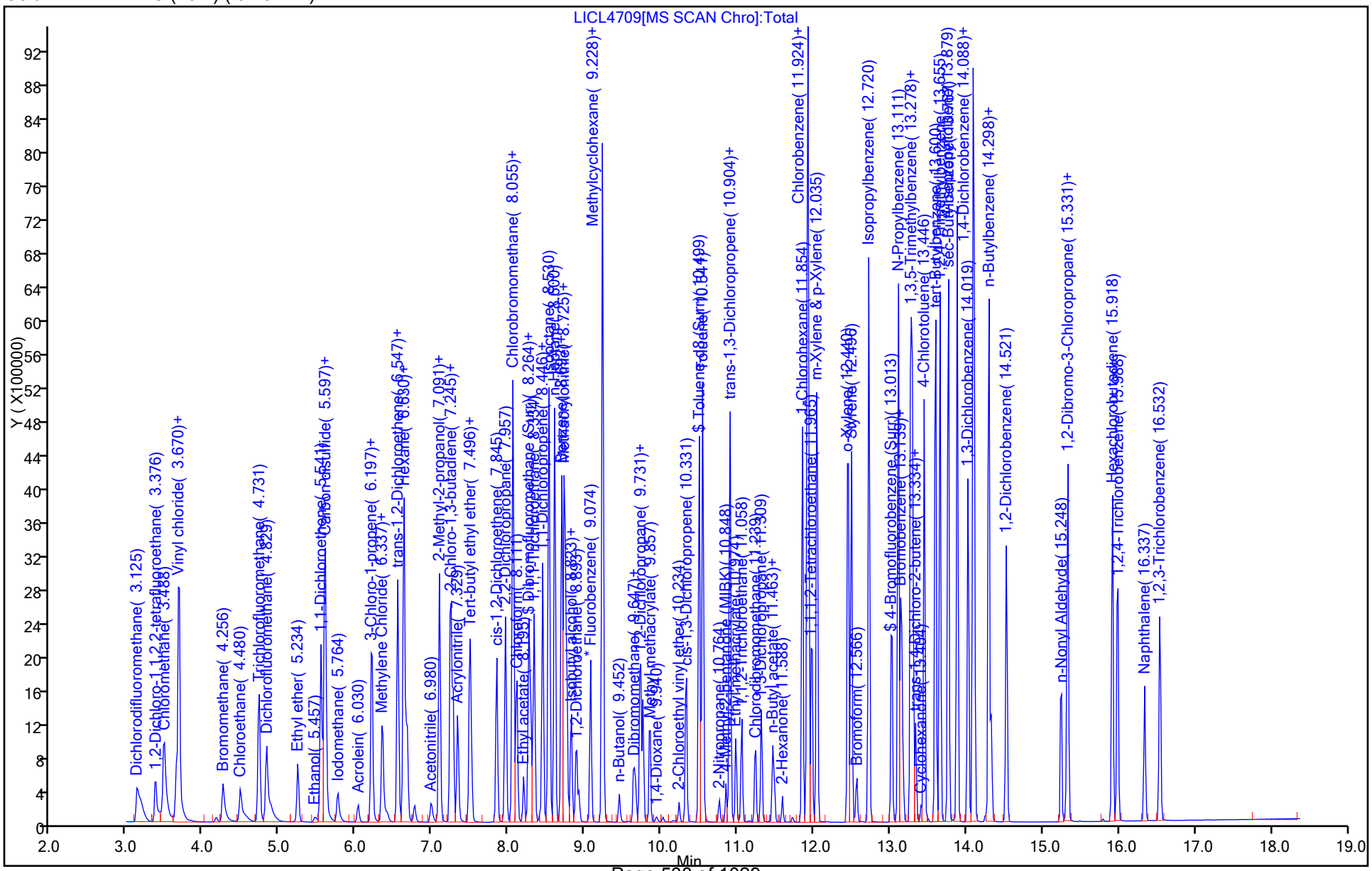
Report Date: 23-Aug-2016 11:58:51 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4709.D

Injection Date:	22-Aug-2016 13:24:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	ic			Worklist Smp#:	11
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	7
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D
Lims ID: ic
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 22-Aug-2016 13:49:30 ALS Bottle#: 8 Worklist Smp#: 12
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: IC
Operator ID: SMCR Instrument ID: VMSL
Sublist: chrom-25mL-8260-MSL*sub17

Method: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 23-Aug-2016 11:58:52 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK027

First Level Reviewer: rhoadess Date: 22-Aug-2016 14:18:20

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	2245262	40.0	33.6	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	97	1076970	40.0	35.7	M
3 Chloromethane	50	3.488	3.488	0.000	99	3098616	40.0	36.4	
4 Vinyl chloride	62	3.642	3.641	0.001	98	2377743	40.0	36.4	
5 Butadiene	39	3.683	3.683	0.000	92	2581551	40.0	35.0	
6 Bromomethane	94	4.256	4.256	0.000	91	979869	40.0	39.3	
7 Chloroethane	64	4.493	4.479	0.014	99	1238977	40.0	36.6	
8 Trichlorofluoromethane	101	4.731	4.731	0.000	99	2853285	40.0	35.2	
9 Dichlorofluoromethane	67	4.829	4.829	0.000	98	2895284	40.0	36.2	
10 Ethyl ether	74	5.234	5.234	0.000	98	536642	40.0	39.8	
11 Ethanol	45	5.457	5.457	0.000	100	241974	1600.0	1496.3	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	94	1487334	40.0	36.7	
13 Carbon disulfide	76	5.597	5.583	0.014	100	5057866	40.0	35.4	
14 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	89	1421083	40.0	35.8	
16 Iodomethane	142	5.764	5.764	0.000	99	1177582	40.0	40.2	
S 15 1,2-Dichloroethene, Total	96				0			76.1	
17 Acrolein	56	6.030	6.030	0.000	100	388773	200.0	206.1	
18 3-Chloro-1-propene	39	6.211	6.211	0.000	90	2134873	40.0	37.9	
19 Isopropyl alcohol	45	6.225	6.225	0.000	98	332720	400.0	390.3	
20 Methylene Chloride	84	6.351	6.351	0.000	96	1218803	40.0	34.4	
21 Acetone	43	6.407	6.407	0.000	98	163568	40.0	39.6	
22 trans-1,2-Dichloroethene	96	6.547	6.546	0.000	97	1530679	40.0	36.7	
23 Methyl acetate	74	6.547	6.546	0.000	100	353272	200.0	193.7	
24 Hexane	86	6.630	6.630	0.000	95	533743	40.0	38.4	
25 Methyl tert-butyl ether	73	6.658	6.672	-0.014	82	2240440	40.0	41.1	
27 Acetonitrile	41	6.979	6.979	0.000	99	673693	400.0	366.7	
28 Isopropyl ether	45	7.091	7.091	0.000	96	5002607	40.0	42.7	
26 2-Methyl-2-propanol	59	7.091	7.091	0.000	34	507350	400.0	417.5	
29 2-Chloro-1,3-butadiene	53	7.245	7.245	0.000	94	3367326	40.0	41.1	
30 1,1-Dichloroethane	63	7.273	7.273	0.000	97	2931920	40.0	37.7	
31 Acrylonitrile	53	7.329	7.329	0.001	98	2086247	400.0	391.9	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
32 Tert-butyl ethyl ether	59	7.496	7.496	0.000	98	3655140	40.0	43.2	
33 Vinyl acetate	43	7.510	7.510	0.000	98	1914953	40.0	39.3	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	83	1534657	40.0	39.4	
35 2,2-Dichloropropane	77	7.957	7.957	0.000	92	2597733	40.0	37.1	
37 Chlorobromomethane	128	8.055	8.055	0.000	92	488431	40.0	37.1	
36 Cyclohexane	84	8.055	8.055	0.000	95	2681318	40.0	38.6	
38 Chloroform	83	8.111	8.111	0.000	95	2512611	40.0	37.4	
39 Ethyl acetate	45	8.195	8.194	0.001	99	171932	80.0	82.8	
40 Carbon tetrachloride	117	8.264	8.264	0.000	98	2406987	40.0	35.7	
41 Tetrahydrofuran	71	8.278	8.278	0.000	94	97150	80.0	80.8	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	95	1149866	40.0	41.2	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	98	2709577	40.0	36.2	
45 2-Butanone (MEK)	43	8.404	8.404	0.000	98	243844	40.0	40.3	
47 1,1-Dichloropropene	75	8.446	8.446	0.000	93	2192777	40.0	38.0	
44 Isooctane	57	8.530	8.530	0.000	97	8290552	40.0	39.7	
46 n-Heptane	43	8.600	8.599	0.001	98	3626618	40.0	36.3	
48 Benzene	78	8.697	8.697	0.000	98	5614280	40.0	36.7	
49 Propionitrile	54	8.711	8.711	0.000	94	751491	400.0	388.7	
50 Methacrylonitrile	41	8.725	8.725	0.000	97	4398419	400.0	388.4	
51 Tert-amyl methyl ether	73	8.753	8.753	0.000	95	2543831	40.0	41.8	
52 Isobutyl alcohol	42	8.809	8.809	0.000	91	398497	1000.0	1017.2	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	93	1151783	40.0	39.0	
54 1,2-Dichloroethane	62	8.893	8.893	0.000	97	1460671	40.0	37.2	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1453086	10.0	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	70	1539406	40.0	35.5	
58 Methylcyclohexane	55	9.228	9.228	0.000	97	2825530	40.0	35.8	
59 n-Butanol	56	9.451	9.451	0.000	90	386515	1000.0	1026.8	
61 Dibromomethane	93	9.633	9.633	0.000	93	496571	40.0	38.4	
60 Ethyl acrylate	55	9.661	9.661	0.000	99	850823	40.0	47.7	
62 1,2-Dichloropropane	63	9.731	9.731	0.000	91	1381859	40.0	39.5	
63 Dichlorobromomethane	83	9.759	9.759	0.000	98	1594933	40.0	39.4	
64 Methyl methacrylate	69	9.857	9.856	0.000	95	835272	80.0	95.9	
65 1,4-Dioxane	88	9.940	9.940	0.000	98	98141	800.0	835.5	
66 2-Chloroethyl vinyl ether	63	10.234	10.233	0.001	93	131850	40.0	37.4	
67 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	92	1878613	40.0	42.6	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	4985848	40.0	41.1	
69 Toluene	92	10.541	10.541	0.000	99	3662835	40.0	40.2	
70 2-Nitropropane	43	10.764	10.764	0.000	97	384919	80.0	98.0	
71 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	98	595303	40.0	48.5	
72 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	87	1455603	40.0	44.3	
73 Tetrachloroethene	164	10.904	10.904	0.000	97	1311151	40.0	35.4	
74 Ethyl methacrylate	69	10.974	10.974	0.000	94	928972	40.0	42.8	
75 1,1,2-Trichloroethane	83	11.058	11.057	0.001	93	584550	40.0	41.8	
76 Chlorodibromomethane	129	11.239	11.239	0.000	91	984905	40.0	44.2	
77 1,3-Dichloropropane	76	11.309	11.309	0.000	98	1334063	40.0	43.1	
78 n-Butyl acetate	43	11.463	11.463	0.001	99	1147965	40.0	50.4	
79 Ethylene Dibromide	107	11.477	11.476	0.001	99	654620	40.0	42.7	
80 2-Hexanone	43	11.588	11.588	0.000	98	397854	40.0	49.3	
81 1-Chlorohexane	91	11.854	11.854	0.000	93	2036416	40.0	38.7	
* 83 Chlorobenzene-d5	117	11.910	11.909	0.001	91	930226	10.0	10.0	
82 Ethylbenzene	91	11.924	11.923	0.001	98	6479539	40.0	35.6	
84 Chlorobenzene	112	11.937	11.937	0.000	95	3537254	40.0	36.8	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
85 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	94	1328240	40.0	40.5	
86 m-Xylene & p-Xylene	106	12.049	12.035	0.014	98	2591336	40.0	38.4	
88 o-Xylene	106	12.454	12.454	0.000	98	2423134	40.0	41.8	
89 Styrene	104	12.496	12.496	0.000	95	3794141	40.0	43.7	
90 Bromoform	173	12.566	12.566	0.000	98	517777	40.0	44.1	
91 Isopropylbenzene	105	12.720	12.719	0.001	97	6377153	40.0	36.4	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	91	1724640	40.0	43.0	
93 N-Propylbenzene	91	13.111	13.111	0.000	98	7233541	40.0	35.4	
94 Bromobenzene	156	13.153	13.152	0.001	87	1500291	40.0	39.5	
95 1,1,2,2-Tetrachloroethane	83	13.167	13.166	0.000	97	687506	40.0	41.8	
96 1,3,5-Trimethylbenzene	105	13.278	13.264	0.014	96	5161847	40.0	37.5	
97 2-Chlorotoluene	91	13.292	13.292	0.000	96	4955940	40.0	36.2	
99 1,2,3-Trichloropropane	110	13.334	13.334	0.000	88	226128	40.0	40.0	
98 trans-1,4-Dichloro-2-buten	53	13.334	13.334	0.000	80	249840	40.0	43.3	
100 Cyclohexanone	55	13.404	13.404	0.000	93	182775	400.0	507.3	
101 4-Chlorotoluene	91	13.446	13.446	0.000	99	4514876	40.0	37.8	
102 tert-Butylbenzene	119	13.599	13.599	0.000	93	4762064	40.0	36.0	
103 1,2,4-Trimethylbenzene	105	13.655	13.655	0.000	98	5278766	40.0	37.8	
104 sec-Butylbenzene	105	13.767	13.767	0.000	94	6634390	40.0	33.5	
105 4-Isopropyltoluene	119	13.879	13.879	0.000	97	5807323	40.0	34.6	
106 1,3-Dichlorobenzene	146	14.018	14.018	0.000	98	2991983	40.0	36.9	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	85	478356	10.0	10.0	
107 1,2,3-Trimethylbenzene	105	14.088	14.088	0.000	98	5084699	40.0	37.8	
109 1,4-Dichlorobenzene	146	14.102	14.102	0.000	93	2845087	40.0	35.2	
111 n-Butylbenzene	134	14.298	14.298	0.000	95	1502431	40.0	34.0	
110 Benzyl chloride	126	14.326	14.326	0.000	98	349464	40.0	46.7	
112 1,2-Dichlorobenzene	146	14.521	14.521	0.000	97	2574693	40.0	39.0	
113 n-Nonyl Aldehyde	57	15.247	15.247	0.000	90	726195	40.0	39.9	
115 1,2-Dibromo-3-Chloropropan	157	15.317	15.317	0.000	84	146214	40.0	46.1	
114 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	98	2296982	40.0	35.4	
116 Hexachlorobutadiene	225	15.918	15.918	0.000	97	1101460	40.0	29.7	
117 1,2,4-Trichlorobenzene	180	15.988	15.988	0.000	95	1937892	40.0	39.0	
118 Naphthalene	128	16.337	16.337	0.000	97	2588029	40.0	46.2	
S 119 Xylenes, Total	106				0			80.2	
120 1,2,3-Trichlorobenzene	180	16.532	16.532	0.000	95	1618506	40.0	40.0	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260_Surr_00038	Amount Added: 0.40	Units: uL	
8260NewHiWrk_00158	Amount Added: 8.00	Units: uL	
I.S. Working_00134	Amount Added: 10.00	Units: uL	Run Reagent

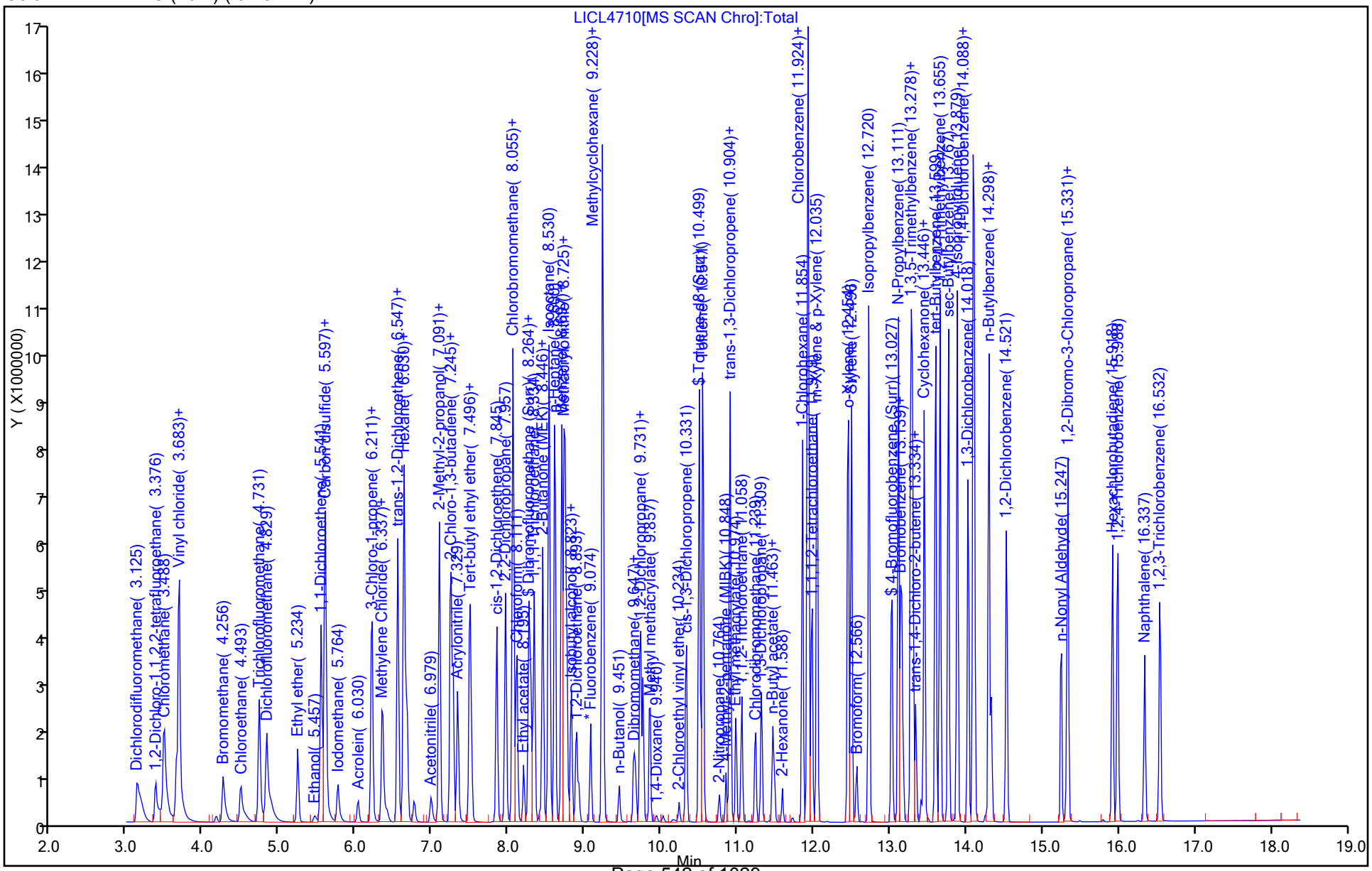
Report Date: 23-Aug-2016 11:58:53 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Injection Date:	22-Aug-2016 13:49:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	ic			Worklist Smp#:	12
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	8
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

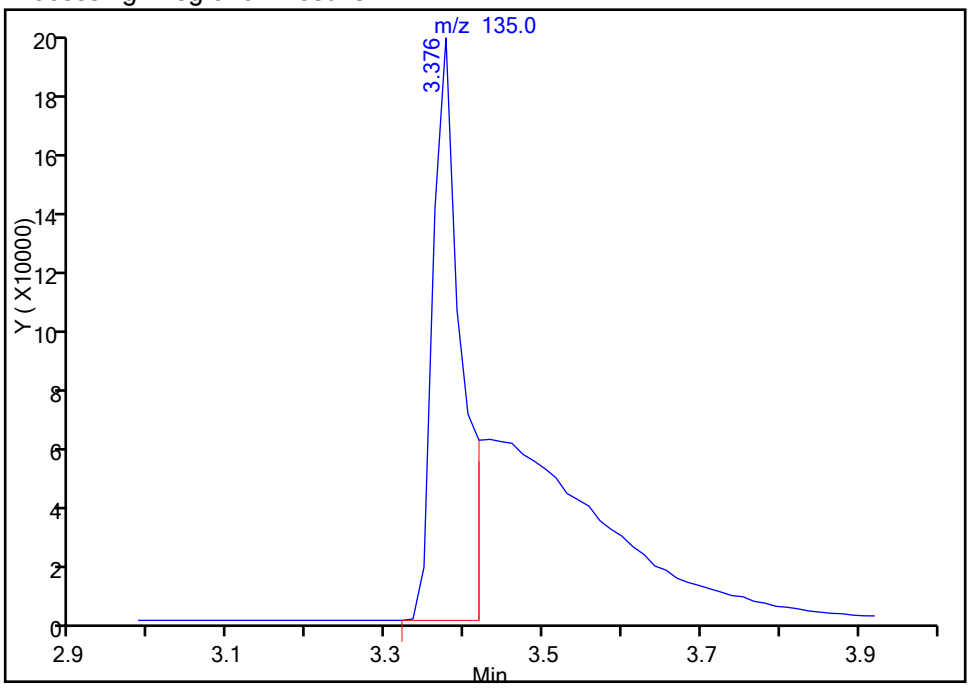
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D				
Injection Date:	22-Aug-2016 13:49:30	Instrument ID:	VMSL		
Lims ID:	ic				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	8	Worklist Smp#:	12
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

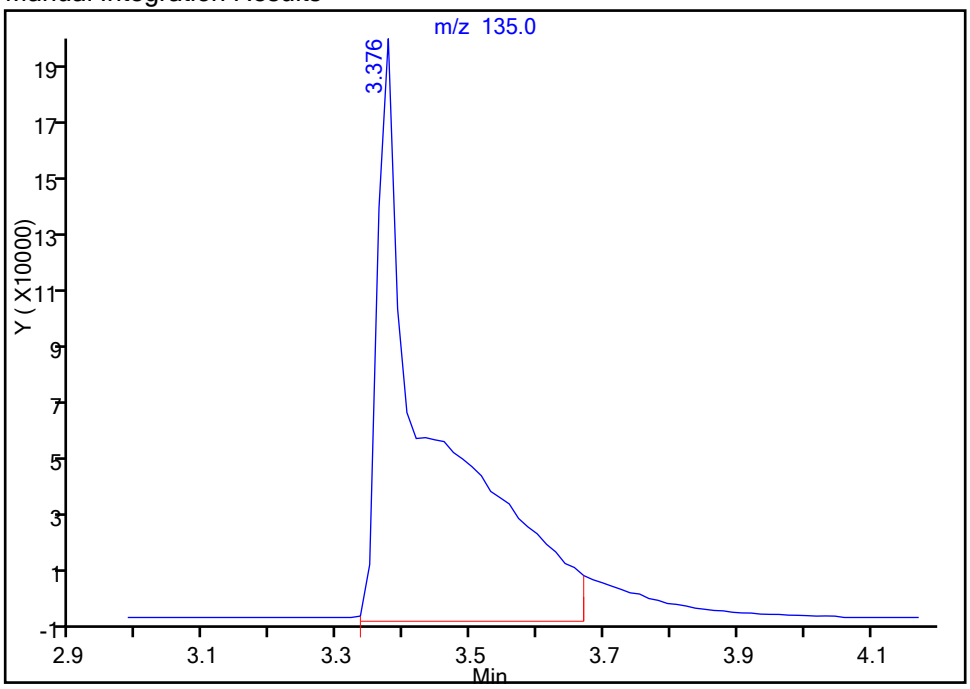
Processing Integration Results

RT: 3.38
Area: 479735
Amount: 17.089134
Amount Units: ug/l



Manual Integration Results

RT: 3.38
Area: 1076970
Amount: 35.654767
Amount Units: ug/l



Reviewer: rhoadess, 22-Aug-2016 14:36:45

Audit Action: Manually Integrated Audit Reason: Peak Tail

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 268249

SDG No.:

Instrument ID: VMSZ GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 09/07/2016 07:32 Calibration End Date: 09/07/2016 09:54 Calibration ID: 11439

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-268249/5	ZICL8934.D
Level 2	IC 160-268249/6	ZICL8935.D
Level 3	IC 160-268249/7	ZICL8936.D
Level 4	IC 160-268249/8	ZICL8937.D
Level 5	ICIS 160-268249/9	ZICL8938.D
Level 6	IC 160-268249/10	ZICL8939.D
Level 7	IC 160-268249/11	ZICL8940.D

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Dichlorodifluoromethane	0.4059 0.3452	0.3593 0.3071	0.4212	0.4325	0.3857	Ave		0.3796			0.1000	11.8		20.0			
1,2-Dichloro-1,1,2,2-tetrafluoroethane	0.2229 0.1641	0.1592 +++++	0.1852	0.1762	0.1834	Qua	-0.025	0.2007	-0.001758		0.0100				0.9990		0.9900
Chloromethane	0.4952 0.4338	0.4620 0.3865	0.4675	0.4748	0.4558	Ave		0.4536			0.1000	7.7		20.0			
Vinyl chloride	0.6037 0.4942	0.5204 +++++	0.6151	0.5886	0.5531	Lin	0.2176	0.4938			0.1000				0.9960		0.9900
Butadiene	0.5777 0.4391	0.5377 +++++	0.5858	0.5612	0.5102	Lin	0.2898	0.4370			0.0100				0.9930		0.9900
Methyl bromide	0.2802 0.2115	0.2478 +++++	0.2626	0.2420	0.2368	Lin	0.0945	0.2110			0.1000				0.9970		0.9900
Chloroethane	0.3297 0.2508	0.2753 +++++	0.3176	0.2974	0.2822	Lin	0.1199	0.2502			0.1000				0.9960		0.9900
Trichlorofluoromethane	0.4551 0.4080	0.3715 0.4146	0.4291	0.4147	0.4120	Ave		0.4150			0.1000	6.0		20.0			
Dichlorofluoromethane	0.5187 0.4562	0.4435 0.4380	0.5048	0.4575	0.4468	Ave		0.4665			0.0100	6.8		20.0			
Ethyl ether	0.1049 0.1083	0.1030 0.1083	0.1299	0.1011	0.0976	Ave		0.1076			0.0100	9.8		20.0			
Ethanol	0.0008 0.0008	0.0007 0.0008	0.0008	0.0007	0.0007	Ave		0.0008		*	0.0010	7.1		20.0			
1,1-Dichloroethene	0.2916 0.2979	0.2734 0.2968	0.2966	0.2904	0.2729	Ave		0.2885			0.1000	3.8		20.0			
Carbon disulfide	1.0197 0.9684	0.9102 0.8699	0.9921	0.9630	0.9262	Ave		0.9499			0.1000	5.4		20.0			
1,1,2-Trichloro-1,2,2-trifluoroethane	0.2863 0.2656	0.2188 0.2599	0.2593	0.2496	0.2495	Ave		0.2556			0.1000	8.0		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 268249

SDG No.:

Instrument ID: VMSZ GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 09/07/2016 07:32 Calibration End Date: 09/07/2016 09:54 Calibration ID: 11439

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Iodomethane	0.4564 0.4506	0.4177 0.4347	0.4483	0.4195	0.4095	Ave		0.4338			0.0100	4.3		20.0			
Acrolein	0.0119 0.0158	0.0160 0.0153	0.0157	0.0136	0.0139	Ave		0.0146			0.0010	10.3		20.0			
Allyl chloride	0.3207 0.2985	0.3021 0.2638	0.3066	0.2976	0.2925	Ave		0.2974			0.0100	5.8		20.0			
Isopropyl alcohol	0.0052 0.0046	0.0052 0.0047	0.0052	0.0040	0.0041	Ave		0.0047		*	0.0100	11.3		20.0			
Methylene Chloride	0.2602 0.2432	0.2635 0.2346	0.2559	0.2313	0.2315	Ave		0.2457			0.1000	5.7		20.0			
Acetone	0.0767 0.0243	0.0635 0.0207	0.0364	0.0264	0.0250	Lin1	0.0323	0.0209		*	0.1000				0.9900		0.9900
trans-1,2-Dichloroethene	0.3269 0.3054	0.2649 0.2977	0.3054	0.3012	0.2869	Ave		0.2984			0.1000	6.4		20.0			
Methyl acetate	0.0145 0.0152	0.0160 0.0153	0.0160	0.0138	0.0137	Ave		0.0149		*	0.1000	6.3		20.0			
Hexane	0.0962 0.1019	0.0787 0.1036	0.0929	0.0913	0.0945	Ave		0.0942			0.0100	8.7		20.0			
Methyl tert-butyl ether	0.3797 0.4222	0.4427 0.3939	0.4733	0.3977	0.3920	Ave		0.4145			0.1000	8.1		20.0			
tert-Butyl alcohol	0.0081 0.0078	0.0088 0.0074	0.0089	0.0061	0.0066	Ave		0.0077		*	0.0100	14.1		20.0			
Acetonitrile	0.0096 0.0095	0.0098 0.0092	0.0105	0.0080	0.0082	Ave		0.0092			0.0010	9.6		20.0			
Isopropyl ether	0.6849 0.7438	0.6827 0.6411	0.7307	0.6689	0.6845	Ave		0.6909			0.0100	5.1		20.0			
2-Chloro-1,3-butadiene	0.3628 0.4524	0.3390 0.4132	0.4119	0.4118	0.4226	Ave		0.4020			0.0100	9.5		20.0			
1,1-Dichloroethane	0.4992 0.4995	0.4931 0.4543	0.5132	0.4865	0.4827	Ave		0.4898			0.2000	3.8		20.0			
Acrylonitrile	0.0342 0.0345	0.0373 0.0318	0.0365	0.0313	0.0318	Ave		0.0339			0.0100	7.1		20.0			
Tert-butyl ethyl ether	0.5608 0.6036	0.5891 0.5389	0.6057	0.5354	0.5475	Ave		0.5687			0.0100	5.3		20.0			
Vinyl acetate	0.2883 0.3130	0.3383 0.2957	0.3273	0.2905	0.2929	Ave		0.3066			0.0100	6.5		20.0			
cis-1,2-Dichloroethene	0.2988 0.3055	0.3161 0.2884	0.3146	0.2866	0.2892	Ave		0.2999			0.1000	4.2		20.0			
2,2-Dichloropropane	0.3580 0.2884	0.2877 0.2606	0.3234	0.3074	0.2935	Ave		0.3027			0.0100	10.3		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 268249

SDG No.:

Instrument ID: VMSZ GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 09/07/2016 07:32 Calibration End Date: 09/07/2016 09:54 Calibration ID: 11439

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Bromochloromethane	0.1052 0.1110	0.1186 0.1130	0.1172	0.1054	0.1028	Ave		0.1105			0.0100	5.6		20.0			
Cyclohexane	0.4363 0.5425	0.4393 0.5080	0.5223	0.5076	0.5180	Ave		0.4963			0.1000	8.4		20.0			
Chloroform	0.5186 0.4604	0.4859 0.4253	0.4992	0.4456	0.4437	Ave		0.4684			0.2000	7.2		20.0			
Ethyl acetate	0.0138 0.0134	0.0154 0.0126	0.0143	0.0110	0.0120	Ave		0.0132			0.0100	11.0		20.0			
Carbon tetrachloride	0.3757 0.3935	0.3269 0.3741	0.4096	0.3711	0.3766	Ave		0.3753			0.1000	6.8		20.0			
Tetrahydrofuran	0.0088 0.0111	0.0127 0.0111	0.0105	0.0104	0.0108	Ave		0.0108			0.0010	10.9		20.0			
1,1,1-Trichloroethane	0.4669 0.4177	0.3851 0.3821	0.4293	0.4204	0.4077	Ave		0.4156			0.1000	6.9		20.0			
2-Butanone	0.0487 0.0391	0.0457 0.0372	0.0441	0.0390	0.0387	Ave		0.0418		*	0.1000	10.4		20.0			
1,1-Dichloropropene	0.3843 0.4181	0.3405 0.3840	0.3948	0.4003	0.4059	Ave		0.3897			0.0100	6.4		20.0			
Isooctane	1.2451 1.2552	1.1293 0.9962	1.3021	1.2828	1.2704	Ave		1.2116			0.0100	9.1		20.0			
n-Heptane	0.5092 0.5579	0.4589 0.4801	0.5303	0.5263	0.5273	Ave		0.5129			0.0100	6.5		20.0			
Benzene	1.2380 1.0586	1.1582 0.8086	1.2185	1.1381	1.0849	Ave		1.1007			0.5000	13.1		20.0			
Propionitrile	0.0115 0.0130	0.0136 0.0128	0.0126	0.0112	0.0116	Ave		0.0123			0.0010	7.3		20.0			
Methacrylonitrile	0.0639 0.0671	0.0728 0.0571	0.0747	0.0644	0.0652	Ave		0.0665			0.0100	8.9		20.0			
Tert-amyl methyl ether	0.4380 0.5242	0.5000 0.4668	0.5276	0.4731	0.4554	Ave		0.4836			0.0100	7.1		20.0			
Isobutanol	0.0020 0.0025	0.0024 0.0024	0.0022	0.0018	0.0019	Ave		0.0022			0.0010	12.4		20.0			
1,2-Dichloroethane	0.2295 0.2140	0.2561 0.1963	0.2594	0.2133	0.2117	Ave		0.2258			0.1000	10.6		20.0			
Methylcyclohexane	0.3990 0.4696	0.3919 0.4322	0.4484	0.4458	0.4625	Ave		0.4356			0.1000	6.9		20.0			
Trichloroethene	0.3021 0.3223	0.2887 0.3053	0.3233	0.2958	0.3082	Ave		0.3065			0.2000	4.2		20.0			
n-Butanol	0.0018 0.0025	0.0018 0.0024	0.0022	0.0017	0.0021	Ave		0.0021		*	0.0100	14.8		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 268249

SDG No.:

Instrument ID: VMSZ GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 09/07/2016 07:32 Calibration End Date: 09/07/2016 09:54 Calibration ID: 11439

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Dibromomethane	0.1131 0.0961	0.1020 0.0932	0.1058	0.0940	0.0942	Ave		0.0998			0.0100	7.6		20.0			
Ethyl acrylate	0.1008 0.1357	0.1167 0.1322	0.1241	0.1097	0.1194	Ave		0.1198			0.0100	10.2		20.0			
1,2-Dichloropropane	0.2492 0.2574	0.2546 0.2403	0.2601	0.2414	0.2446	Ave		0.2497			0.1000	3.2		20.0			
Bromodichloromethane	0.2695 0.2900	0.2864 0.2736	0.3019	0.2819	0.2810	Ave		0.2835			0.2000	3.8		20.0			
Methyl methacrylate	0.0617 0.0846	0.0663 0.0814	0.0779	0.0669	0.0740	Ave		0.0733			0.0100	11.7		20.0			
1,4-Dioxane	0.0012 0.0009	0.0011 0.0009	0.0010	0.0009	0.0009	Ave		0.0010		*	0.0010	13.2		20.0			
2-Chloroethyl vinyl ether	0.0182 0.0264	0.0217 0.0271	0.0191	0.0218	0.0231	Ave		0.0225			0.0100	14.9		20.0			
cis-1,3-Dichloropropene	0.3358 0.3678	0.3375 0.3396	0.3608	0.3344	0.3487	Ave		0.3464			0.2000	3.8		20.0			
Toluene	0.9433 0.9266	0.9299 0.7534	1.0614	0.9933	0.9451	Ave		0.9361			0.4000	10.0		20.0			
2-Nitropropane	0.0397 0.0314	0.0322 0.0299	0.0329	0.0296	0.0288	Ave		0.0321			0.0100	11.4		20.0			
4-Methyl-2-pentanone	0.1007 0.1151	0.1227 0.1102	0.1194	0.1073	0.1058	Ave		0.1116			0.1000	7.0		20.0			
Tetrachloroethene	0.3699 0.3882	0.3513 0.3661	0.4129	0.4035	0.3873	Ave		0.3827			0.2000	5.7		20.0			
trans-1,3-Dichloropropene	0.3339 0.3746	0.3637 0.3443	0.3921	0.3408	0.3588	Ave		0.3583			0.1000	5.7		20.0			
Ethyl methacrylate	0.1906 0.2303	0.2040 0.2196	0.1912	0.1808	0.2034	Ave		0.2028			0.0100	8.6		20.0			
1,1,2-Trichloroethane	0.1779 0.1545	0.1987 0.1472	0.1686	0.1627	0.1541	Ave		0.1662			0.1000	10.6		20.0			
Chlorodibromomethane	0.2417 0.2497	0.2532 0.2372	0.2554	0.2301	0.2303	Ave		0.2425			0.1000	4.3		20.0			
1,3-Dichloropropane	0.3716 0.3327	0.3678 0.3053	0.3798	0.3340	0.3275	Ave		0.3455			0.0100	8.0		20.0			
n-Butyl acetate	0.1876 0.2286	0.2001 0.2133	0.2284	0.1881	0.2104	Ave		0.2081			0.0100	8.2		20.0			
1,2-Dibromoethane	0.1601 0.1722	0.2009 0.1645	0.1824	0.1584	0.1670	Ave		0.1722			0.1000	8.7		20.0			
2-Hexanone	0.0836 0.0790	0.0826 0.0740	0.0912	0.0752	0.0751	Ave		0.0801		*	0.1000	7.7		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 268249

SDG No.:

Instrument ID: VMSZ GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 09/07/2016 07:32 Calibration End Date: 09/07/2016 09:54 Calibration ID: 11439

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Ethylbenzene	2.0798 1.6179	1.8409 +++++	2.0961	1.9783	1.8932	Ave		1.9177			0.1000	9.3		20.0			
Chlorobenzene	1.1990 0.9847	1.1157 0.7840	1.1675	1.0678	1.0490	Ave		1.0525			0.5000	13.2		20.0			
1,1,1,2-Tetrachloroethane	0.3246 0.3318	0.3386 0.3179	0.3708	0.3334	0.3287	Ave		0.3351			0.0100	5.1		20.0			
m-Xylene & p-Xylene	0.7755 0.7515	0.7188 0.6263	0.8432	0.7829	0.7581	Ave		0.7509			0.1000	8.9		20.0			
o-Xylene	0.6033 0.6802	0.6611 0.5870	0.7267	0.6794	0.6997	Ave		0.6625			0.3000	7.6		20.0			
Styrene	0.7936 0.9898	0.8530 0.7871	1.0064	0.9657	1.0102	Ave		0.9151			0.3000	11.0		20.0			
Bromoform	0.2616 0.2594	0.2780 0.2557	0.2743	0.2292	0.2352	Ave		0.2562			0.1000	7.1		20.0			
Isopropylbenzene	3.6433 2.9945	3.4040 +++++	3.7755	3.6423	3.4525	Ave		3.4854			0.1000	7.9		20.0			
N-Propylbenzene	4.3793 3.3900	4.0627 +++++	4.4896	4.2425	4.0201	Ave		4.0974			0.0100	9.5		20.0			
Bromobenzene	0.9082 0.7582	0.8611 0.7079	0.8573	0.7818	0.7386	Ave		0.8019			0.0100	9.3		20.0			
1,1,2,2-Tetrachloroethane	0.4884 0.3680	0.4432 0.3414	0.4347	0.3783	0.3617	Ave		0.4022			0.3000	13.3		20.0			
1,3,5-Trimethylbenzene	2.7038 2.5235	2.6461 1.7765	2.8698	2.8173	2.7537	Ave		2.5844			0.0100	14.5		20.0			
2-Chlorotoluene	2.7161 2.3910	2.6350 1.8658	2.8942	2.6192	2.5343	Ave		2.5222			0.0100	13.0		20.0			
1,2,3-Trichloropropane	0.1661 0.1130	0.1433 0.1099	0.1226	0.1092	0.1092	Lin1	0.0278	0.1092			0.0100				0.9990		0.9900
trans-1,4-Dichloro-2-butene	0.1131 0.0941	0.1092 0.0875	0.0971	0.0955	0.0880	Ave		0.0978			0.0100	10.1		20.0			
Cyclohexanone	0.0076 0.0077	0.0070 0.0076	0.0081	0.0061	0.0066	Ave		0.0073			0.0010	9.8		20.0			
4-Chlorotoluene	2.1967 2.0785	2.2600 1.5741	2.4411	2.3411	2.2061	Ave		2.1568			0.0100	13.0		20.0			
tert-Butylbenzene	2.6656 2.4027	2.5568 1.7399	2.8179	2.7179	2.6293	Ave		2.5043			0.0100	14.4		20.0			
1,2,4-Trimethylbenzene	2.7950 2.4815	2.8619 +++++	3.0231	2.8150	2.7642	Ave		2.7901			0.0100	6.3		20.0			
sec-Butylbenzene	4.2041 3.2555	3.9414 +++++	4.3303	4.1902	3.9463	Ave		3.9780			0.0100	9.7		20.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 268249

SDG No.:

Instrument ID: VMSZ GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 09/07/2016 07:32 Calibration End Date: 09/07/2016 09:54 Calibration ID: 11439

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
4-Isopropyltoluene	3.3475 2.8189	3.2963 +++++	3.5365	3.5159	3.3071	Ave		3.3037			0.0100	7.8		20.0			
1,3-Dichlorobenzene	1.7348 1.4955	1.7127 1.2449	1.7727	1.6222	1.5508	Ave		1.5905			0.6000	11.5		20.0			
1,2,3-Trimethylbenzene	2.8400 2.3928	2.9453 +++++	3.0242	2.7979	2.6625	Ave		2.7771			0.0100	8.1		20.0			
1,4-Dichlorobenzene	1.8115 1.5006	1.8221 1.2709	1.8522	1.6437	1.5526	Ave		1.6362			0.5000	13.0		20.0			
n-Butylbenzene	0.9109 0.9474	0.8560 0.8681	0.9730	0.9503	0.9538	Ave		0.9228			0.0100	4.9		20.0			
Benzyl chloride	0.2023 0.1737	0.2055 0.1692	0.1861	0.1561	0.1572	Ave		0.1786			0.0100	11.2		20.0			
1,2-Dichlorobenzene	1.4164 1.2374	1.4223 1.0651	1.5344	1.3302	1.3141	Ave		1.3314			0.4000	11.3		20.0			
Nonanal	0.1363 0.2408	0.1774 0.2447	0.1880	0.1860	0.2229	Lin1	-0.075	0.2416			0.0100				0.9980		0.9900
1,2-Dibromo-3-Chloropropane	0.0724 0.0646	0.0667 0.0646	0.0629	0.0630	0.0637	Ave		0.0654			0.0500	5.1		20.0			
1,3,5-Trichlorobenzene	1.1925 1.0508	1.1333 0.9469	1.2648	1.1418	1.1031	Ave		1.1190			0.0100	9.1		20.0			
Hexachlorobutadiene	0.6414 0.5575	0.6109 0.5600	0.6045	0.6043	0.5948	Ave		0.5962			0.0100	4.9		20.0			
1,2,4-Trichlorobenzene	0.7347 0.6858	0.7435 0.6354	0.7881	0.7299	0.7120	Ave		0.7185			0.2000	6.7		20.0			
Naphthalene	0.8421 0.7955	0.8991 0.7317	0.8860	0.7950	0.8274	Ave		0.8253			0.0100	7.0		20.0			
1,2,3-Trichlorobenzene	0.5150 0.4124	0.5229 0.3845	0.4886	0.4537	0.4360	Ave		0.4590			0.0100	11.4		20.0			
Dibromofluoromethane (Surr)	0.2252 0.2258	0.1884 0.2169	0.2092	0.2233	0.2158	Ave		0.2149			0.0100	6.1		20.0			
1,2-Dichloroethane-d4 (Surr)	0.2112 0.1795	0.1987 0.1681	0.1811	0.1836	0.1775	Ave		0.1857			0.0100	7.8		20.0			
Toluene-d8 (Surr)	1.2347 1.2330	1.2718 +++++	1.2896	1.3563	1.3131	Ave		1.2831			0.0100	3.7		20.0			
4-Bromofluorobenzene (Surr)	0.7417 0.7729	0.7396 +++++	0.6967	0.7357	0.7249	Lin1	-0.032	0.7558			0.0100				0.9990		0.9900

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 268249

SDG No.:

Instrument ID: VMSZ GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 09/07/2016 07:32 Calibration End Date: 09/07/2016 09:54 Calibration ID: 11439

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 160-268249/5	ZICL8934.D
Level 2	IC 160-268249/6	ZICL8935.D
Level 3	IC 160-268249/7	ZICL8936.D
Level 4	IC 160-268249/8	ZICL8937.D
Level 5	ICIS 160-268249/9	ZICL8938.D
Level 6	IC 160-268249/10	ZICL8939.D
Level 7	IC 160-268249/11	ZICL8940.D

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Dichlorodifluoromethane	FB	Ave	33040 1849017	59631 3970863	148385	311111	812646	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	FB	Qua	18144 878635	26422 +++++	65226	126732	386452	0.500 20.0	1.00 +++++	2.00	4.00	10.0
Chloromethane	FB	Ave	40314 2323219	76672 4997824	164676	341511	960260	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Vinyl chloride	FB	Lin	49142 2646720	86373 +++++	216694	423378	1165331	0.500 20.0	1.00 +++++	2.00	4.00	10.0
Butadiene	FB	Lin	47027 2351547	89248 +++++	206370	403640	1074946	0.500 20.0	1.00 +++++	2.00	4.00	10.0
Methyl bromide	FB	Lin	22811 1132721	41120 +++++	92492	174048	498886	0.500 20.0	1.00 +++++	2.00	4.00	10.0
Chloroethane	FB	Lin	26837 1343115	45692 +++++	111884	213928	594431	0.500 20.0	1.00 +++++	2.00	4.00	10.0
Trichlorofluoromethane	FB	Ave	37050 2184979	61660 5361735	151148	298286	867885	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Dichlorofluoromethane	FB	Ave	42220 2443374	73611 5664822	177818	329065	941326	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Ethyl ether	FB	Ave	8540 579886	17093 1401018	45772	72688	205707	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Ethanol	FB	Ave	2588 169637	4979 397354	11903	21167	56536	20.0 800	40.0 1600	80.0	160	400
1,1-Dichloroethene	FB	Ave	23740 1595299	45369 3838717	104492	208883	574930	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Carbon disulfide	FB	Ave	83010 5186275	151057 11250174	349508	692713	1951386	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,1,2-Trichloro-1,2,2-trifluoroethane	FB	Ave	23305 1422428	36306 3360897	91332	179541	525647	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Iodomethane	FB	Ave	37152 2413149	69325 5622114	157917	301765	862706	0.500 20.0	1.00 40.0	2.00	4.00	10.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 268249

SDG No.:

Instrument ID: VMSZ GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 09/07/2016 07:32 Calibration End Date: 09/07/2016 09:54 Calibration ID: 11439

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Acrolein	FB	Ave	4860 423601	13244 990710	27728	48906	146921	2.50 100	5.00 200	10.0	20.0	50.0
Allyl chloride	FB	Ave	26108 1598679	50142 3411225	108012	214089	616237	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Isopropyl alcohol	FB	Ave	4249 248397	8679 606604	18322	28518	86248	5.00 200	10.0 400	20.0	40.0	100
Methylene Chloride	FB	Ave	21179 1302502	43739 3034449	90149	166351	487701	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Acetone	FB	Lin1	6241 129997	10534 268072	12834	18971	52622	0.500 20.0	1.00 40.0	2.00	4.00	10.0
trans-1,2-Dichloroethene	FB	Ave	26612 1635749	43959 3850264	107588	216656	604485	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Methyl acetate	FB	Ave	5906 406704	13254 990177	28173	49658	144641	2.50 100	5.00 200	10.0	20.0	50.0
Hexane	FB	Ave	7829 545623	13069 1339923	32723	65683	199029	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Methyl tert-butyl ether	FB	Ave	30906 2261260	73474 5093569	166747	286084	825793	0.500 20.0	1.00 40.0	2.00	4.00	10.0
tert-Butyl alcohol	FB	Ave	6634 416161	14668 958418	31360	43570	138473	5.00 200	10.0 400	20.0	40.0	100
Acetonitrile	FB	Ave	7825 506218	16205 1187935	36942	57473	172522	5.00 200	10.0 400	20.0	40.0	100
Isopropyl ether	FB	Ave	55755 3983306	113308 8290307	257422	481110	1442183	0.500 20.0	1.00 40.0	2.00	4.00	10.0
2-Chloro-1,3-butadiene	FB	Ave	29536 2423059	56266 5344074	145099	296237	890250	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,1-Dichloroethane	FB	Ave	40640 2675254	81839 5875098	180789	349977	1016913	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Acrylonitrile	FB	Ave	27858 1849916	61987 4113734	128624	224791	670905	5.00 200	10.0 400	20.0	40.0	100
Tert-butyl ethyl ether	FB	Ave	45653 3232820	97769 6969479	213387	385144	1153369	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Vinyl acetate	FB	Ave	23466 1676475	56150 3823436	115306	208975	617126	0.500 20.0	1.00 40.0	2.00	4.00	10.0
cis-1,2-Dichloroethene	FB	Ave	24319 1635921	52456 3729663	110836	206161	609240	0.500 20.0	1.00 40.0	2.00	4.00	10.0
2,2-Dichloropropane	FB	Ave	29140 1544459	47744 3370123	113915	221105	618407	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Bromochloromethane	FB	Ave	8561 594483	19685 1461544	41297	75836	216490	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Cyclohexane	FB	Ave	35512 2905240	72908 6569416	184009	365132	1091229	0.500 20.0	1.00 40.0	2.00	4.00	10.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 268249

SDG No.:

Instrument ID: VMSZ GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 09/07/2016 07:32 Calibration End Date: 09/07/2016 09:54 Calibration ID: 11439

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Chloroform	FB	Ave	42212 2465549	80642 5500437	175843	320534	934746	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Ethyl acetate	FB	Ave	2251 143433	5101 326541	10056	15889	50681	1.00 40.0	2.00 80.0	4.00	8.00	20.0
Carbon tetrachloride	FB	Ave	30581 2107309	54251 4837378	144280	266963	793479	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Tetrahydrofuran	FB	Ave	1433 119143	4231 287040	7418	14939	45379	1.00 40.0	2.00 80.0	4.00	8.00	20.0
1,1,1-Trichloroethane	FB	Ave	38006 2237215	63920 4941687	151242	302413	858980	0.500 20.0	1.00 40.0	2.00	4.00	10.0
2-Butanone	FB	Ave	3968 209514	7577 481458	15533	28050	81503	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,1-Dichloropropene	FB	Ave	31283 2239389	56519 4965560	139093	287938	855101	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Isooctane	FB	Ave	101354 6722165	187426 12883394	458705	922725	2676487	0.500 20.0	1.00 40.0	2.00	4.00	10.0
n-Heptane	FB	Ave	41454 2988057	76167 6208578	186803	378606	1110975	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Benzene	FB	Ave	100780 5669223	192223 10457079	429240	818653	2285552	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Propionitrile	FB	Ave	9334 693755	22539 1660386	44478	80707	243677	5.00 200	10.0 400	20.0	40.0	100
Methacrylonitrile	FB	Ave	52026 3592412	120831 7381733	262987	463415	1373877	5.00 200	10.0 400	20.0	40.0	100
Tert-amyl methyl ether	FB	Ave	35656 2807295	82978 6037198	185859	340328	959444	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Isobutanol	FB	Ave	3999 334375	9839 763642	19005	32152	101966	12.5 500	25.0 1000	50.0	100	250
1,2-Dichloroethane	FB	Ave	18679 1146076	42505 2538440	91383	153458	446073	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Methylcyclohexane	FB	Ave	32476 2514857	65048 5589704	157974	320679	974312	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Trichloroethene	FB	Ave	24594 1726241	47914 3948206	113907	212761	649349	0.500 20.0	1.00 40.0	2.00	4.00	10.0
n-Butanol	FB	Ave	3729 331350	7669 786067	19323	30183	109837	12.5 500	25.0 1000	50.0	100	250
Dibromomethane	FB	Ave	9210 514555	16933 1205422	37283	67586	198478	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Ethyl acrylate	FB	Ave	8205 726999	19361 1710023	43720	78881	251534	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2-Dichloropropane	FB	Ave	20288 1378720	42255 3107788	91624	173630	515223	0.500 20.0	1.00 40.0	2.00	4.00	10.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 268249

SDG No.:

Instrument ID: VMSZ GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 09/07/2016 07:32 Calibration End Date: 09/07/2016 09:54 Calibration ID: 11439

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Bromodichloromethane	FB	Ave	21942 1553044	47535 3538679	106340	202775	591934	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Methyl methacrylate	FB	Ave	10049 906248	22018 2104326	54902	96305	311917	1.00 40.0	2.00 80.0	4.00	8.00	20.0
1,4-Dioxane	FB	Ave	1892 92324	3706 225273	7024	12924	36292	10.0 400	20.0 800	40.0	80.0	200
2-Chloroethyl vinyl ether	FB	Ave	1483 141366	3600 349882	6719	15666	48656	0.500 20.0	1.00 40.0	2.00	4.00	10.0
cis-1,3-Dichloropropene	FB	Ave	27332 1969631	56020 4391285	127116	240564	734545	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Toluene	CBNZ d5	Ave	56009 3944906	114529 7913539	279059	532431	1559167	0.500 20.0	1.00 40.0	2.00	4.00	10.0
2-Nitropropane	CBNZ d5	Ave	4710 267658	7943 627133	17317	31764	95120	1.00 40.0	2.00 80.0	4.00	8.00	20.0
4-Methyl-2-pentanone	CBNZ d5	Ave	5979 490027	15111 1158032	31401	57535	174528	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Tetrachloroethene	CBNZ d5	Ave	21963 1652488	43263 3845697	108554	216283	638978	0.500 20.0	1.00 40.0	2.00	4.00	10.0
trans-1,3-Dichloropropene	CBNZ d5	Ave	19828 1594922	44799 3616478	103096	182662	591921	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Ethyl methacrylate	CBNZ d5	Ave	11316 980492	25123 2306744	50272	96937	335605	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,1,2-Trichloroethane	CBNZ d5	Ave	10563 657605	24471 1546227	44339	87217	254303	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Chlorodibromomethane	CBNZ d5	Ave	14350 1062937	31190 2492058	67158	123342	379880	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,3-Dichloropropane	CBNZ d5	Ave	22064 1416388	45300 3206953	99863	179041	540325	0.500 20.0	1.00 40.0	2.00	4.00	10.0
n-Butyl acetate	CBNZ d5	Ave	11142 973219	24650 2240494	60050	100821	347080	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2-Dibromoethane	CBNZ d5	Ave	9509 732924	24745 1727821	47952	84912	275521	0.500 20.0	1.00 40.0	2.00	4.00	10.0
2-Hexanone	CBNZ d5	Ave	4966 336215	10168 776969	23989	40330	123962	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Ethylbenzene	CBNZ d5	Ave	123494 6887626	226735 +++++	551127	1060400	3123284	0.500 20.0	1.00 +++++	2.00	4.00	10.0
Chlorobenzene	CBNZ d5	Ave	71196 4192101	137417 8235070	306974	572338	1730612	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,1,1,2-Tetrachloroethane	CBNZ d5	Ave	19276 1412612	41701 3338940	97485	178732	542208	0.500 20.0	1.00 40.0	2.00	4.00	10.0
m-Xylene & p-Xylene	CBNZ d5	Ave	46048 3199112	88537 6578804	221696	419634	1250609	0.500 20.0	1.00 40.0	2.00	4.00	10.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 268249

SDG No.:

Instrument ID: VMSZ GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 09/07/2016 07:32 Calibration End Date: 09/07/2016 09:54 Calibration ID: 11439

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
o-Xylene	CBNZ d5	Ave	35820 2895860	81429 6166084	191065	364170	1154275	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Styrene	CBNZ d5	Ave	47122 4213780	105064 8267950	264619	517648	1666582	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Bromoform	DCBd 4	Ave	7609 582215	17004 1420539	38096	66065	213980	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Isopropylbenzene	DCBd 4	Ave	105989 6722028	208243 +++++	524359	1049793	3141252	0.500 20.0	1.00 +++++	2.00	4.00	10.0
N-Propylbenzene	DCBd 4	Ave	127400 7609744	248542 +++++	623530	1222784	3657713	0.500 20.0	1.00 +++++	2.00	4.00	10.0
Bromobenzene	DCBd 4	Ave	26422 1701937	52681 3933441	119062	225342	672037	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,1,2,2-Tetrachloroethane	DCBd 4	Ave	14209 826054	27114 1896818	60371	109030	329077	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,3,5-Trimethylbenzene	DCBd 4	Ave	78656 5664734	161878 9870605	398575	812008	2505481	0.500 20.0	1.00 40.0	2.00	4.00	10.0
2-Chlorotoluene	DCBd 4	Ave	79015 5367227	161198 10366927	401959	754917	2305826	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2,3-Trichloropropane	DCBd 4	Lin1	4832 253561	8765 610382	17030	31462	99380	0.500 20.0	1.00 40.0	2.00	4.00	10.0
trans-1,4-Dichloro-2-butene	DCBd 4	Ave	3290 211334	6683 486015	13491	27539	80111	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Cyclohexanone	DCBd 4	Ave	2225 172446	4300 423908	11277	17654	59596	5.00 200	10.0 400	20.0	40.0	100
4-Chlorotoluene	DCBd 4	Ave	63906 4665824	138260 8746146	339025	674744	2007263	0.500 20.0	1.00 40.0	2.00	4.00	10.0
tert-Butylbenzene	DCBd 4	Ave	77546 5393452	156413 9667578	391365	783367	2392261	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2,4-Trimethylbenzene	DCBd 4	Ave	81310 5570322	175081 +++++	419863	811349	2515063	0.500 20.0	1.00 +++++	2.00	4.00	10.0
sec-Butylbenzene	DCBd 4	Ave	122303 7307960	241116 +++++	601407	1207705	3590616	0.500 20.0	1.00 +++++	2.00	4.00	10.0
4-Isopropyltoluene	DCBd 4	Ave	97383 6327756	201653 +++++	491168	1013346	3008960	0.500 20.0	1.00 +++++	2.00	4.00	10.0
1,3-Dichlorobenzene	DCBd 4	Ave	50469 3357062	104779 6916746	246206	467541	1410993	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2,3-Trimethylbenzene	DCBd 4	Ave	82618 5371287	180180 +++++	420018	806412	2422520	0.500 20.0	1.00 +++++	2.00	4.00	10.0
1,4-Dichlorobenzene	DCBd 4	Ave	52699 3368570	111467 7061208	257246	473745	1412676	0.500 20.0	1.00 40.0	2.00	4.00	10.0
n-Butylbenzene	DCBd 4	Ave	26499 2126793	52368 4823599	135138	273889	867823	0.500 20.0	1.00 40.0	2.00	4.00	10.0

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1 Analy Batch No.: 268249

SDG No.:

Instrument ID: VMSZ GC Column: RTX-VMS40 ID: 0.18(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 09/07/2016 07:32 Calibration End Date: 09/07/2016 09:54 Calibration ID: 11439

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Benzyl chloride	DCBd 4	Ave	5886 389818	12573 940383	25842	44996	143052	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2-Dichlorobenzene	DCBd 4	Ave	41204 2777684	87010 5917890	213100	383381	1195648	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Nonanal	DCBd 4	Lin1	3966 540591	10854 1359805	26114	53622	202788	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2-Dibromo-3-Chloropropane	DCBd 4	Ave	2107 144961	4082 358685	8731	18166	57914	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,3,5-Trichlorobenzene	DCBd 4	Ave	34690 2358839	69329 5261189	175657	329089	1003646	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Hexachlorobutadiene	DCBd 4	Ave	18660 1251479	37372 3111545	83962	174175	541223	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2,4-Trichlorobenzene	DCBd 4	Ave	21374 1539557	45485 3530228	109455	210386	647808	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Naphthalene	DCBd 4	Ave	24498 1785619	55004 4065732	123048	229138	752844	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2,3-Trichlorobenzene	DCBd 4	Ave	14983 925740	31990 2136508	67860	130757	396737	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Dibromofluoromethane (Surr)	FB	Ave	18329 1209377	31264 2804722	73700	160620	454700	0.500 20.0	1.00 40.0	2.00	4.00	10.0
1,2-Dichloroethane-d4 (Surr)	FB	Ave	17192 961229	32977 2173918	63781	132064	373848	0.500 20.0	1.00 40.0	2.00	4.00	10.0
Toluene-d8 (Surr)	CBNZ d5	Ave	73312 5249272	156639 +++++	339059	726979	2166377	0.500 20.0	1.00 +++++	2.00	4.00	10.0
4-Bromofluorobenzene (Surr)	DCBd 4	Lin1	21576 1734982	45247 +++++	96766	212051	659526	0.500 20.0	1.00 +++++	2.00	4.00	10.0

Curve Type Legend:

Ave = Average ISTD
Lin = Linear ISTD
Lin1 = Linear 1/conc ISTD
Qua = Quadratic ISTD

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8934.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 07-Sep-2016 07:32:30 ALS Bottle#: 2 Worklist Smp#: 5
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008404-005
Misc. Info.: VSTD0005
Operator ID: EF Instrument ID: VMSZ
Sublist: chrom-25mL-8260-MSZ*sub12

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 07-Sep-2016 12:30:20 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: fishere Date: 07-Sep-2016 12:30:20

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.002	3.004	-0.002	96	33040	0.5000	0.5347	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.254	3.255	-0.001	95	18144	0.5000	0.6835	M
3 Chloromethane	50	3.324	3.325	-0.001	99	40314	0.5000	0.5459	
4 Vinyl chloride	62	3.491	3.493	-0.002	97	49142	0.5000	0.1707	
5 Butadiene	39	3.519	3.520	-0.001	90	47027	0.5000	-0.002200	
6 Bromomethane	94	4.078	4.079	-0.001	92	22811	0.5000	0.2163	
7 Chloroethane	64	4.315	4.317	-0.002	98	26837	0.5000	0.1795	
8 Trichlorofluoromethane	101	4.553	4.554	-0.001	99	37050	0.5000	0.5484	
9 Dichlorofluoromethane	67	4.650	4.652	-0.002	98	42220	0.5000	0.5559	
10 Ethyl ether	74	5.041	5.043	-0.002	94	8540	0.5000	0.4875	
11 Ethanol	45	5.265	5.266	-0.001	63	2588	20.0	20.8	
12 1,1-Dichloroethene	96	5.363	5.364	-0.001	96	23740	0.5000	0.5054	
13 Carbon disulfide	76	5.405	5.406	-0.001	100	83010	0.5000	0.5367	
14 1,1,2-Trichloro-1,2,2-trif	151	5.432	5.434	-0.002	89	23305	0.5000	0.5601	
15 Iodomethane	142	5.572	5.574	-0.002	97	37152	0.5000	0.5260	
S 16 1,2-Dichloroethene, Total	96				0			1.05	
17 Acrolein	56	5.851	5.839	0.012	88	4860	2.50	2.04	
18 3-Chloro-1-propene	39	6.033	6.020	0.013	92	26108	0.5000	0.5392	
19 Isopropyl alcohol	45	6.033	6.034	-0.001	8	4249	5.00	5.53	
20 Methylene Chloride	84	6.173	6.174	-0.001	96	21179	0.5000	0.5294	
21 Acetone	43	6.229	6.230	-0.001	64	6241	0.5000	0.2895	
22 trans-1,2-Dichloroethene	96	6.368	6.370	-0.002	97	26612	0.5000	0.5479	
23 Methyl acetate	74	6.368	6.370	-0.002	73	5906	2.50	2.43	
24 Hexane	86	6.452	6.453	-0.001	89	7829	0.5000	0.5107	
25 Methyl tert-butyl ether	73	6.494	6.481	0.013	82	30906	0.5000	0.4580	
26 2-Methyl-2-propanol	59	6.606	6.593	0.013	31	6634	5.00	5.31	
27 Acetonitrile	41	6.829	6.817	0.013	95	7825	5.00	5.20	
28 Isopropyl ether	45	6.913	6.914	-0.001	96	55755	0.5000	0.4956	
29 2-Chloro-1,3-butadiene	53	7.067	7.068	-0.002	92	29536	0.5000	0.4513	
30 1,1-Dichloroethane	63	7.108	7.096	0.012	95	40640	0.5000	0.5096	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
31 Acrylonitrile	53	7.164	7.166	-0.002	99	27858	5.00	5.04	
32 Tert-butyl ethyl ether	59	7.318	7.319	-0.001	97	45653	0.5000	0.4931	
33 Vinyl acetate	43	7.360	7.347	0.013	98	23466	0.5000	0.4701	
34 cis-1,2-Dichloroethene	96	7.681	7.682	-0.001	83	24319	0.5000	0.4981	
35 2,2-Dichloropropane	77	7.793	7.794	-0.001	90	29140	0.5000	0.5913	
37 Chlorobromomethane	128	7.891	7.892	-0.002	60	8561	0.5000	0.4761	
36 Cyclohexane	84	7.904	7.892	0.012	89	35512	0.5000	0.4395	
38 Chloroform	83	7.946	7.948	-0.002	94	42212	0.5000	0.5536	
39 Ethyl acetate	45	8.044	8.032	0.012	100	2251	1.00	1.05	
40 Carbon tetrachloride	117	8.100	8.101	-0.001	98	30581	0.5000	0.5004	
41 Tetrahydrofuran	71	8.128	8.115	0.013	57	1433	1.00	0.8166	
$ 42 Dibromofluoromethane (Surr	113	8.142	8.143	-0.001	86	18329	0.5000	0.5238	
43 1,1,1-Trichloroethane	97	8.184	8.171	0.013	94	38006	0.5000	0.5617	
44 2-Butanone (MEK)	43	8.254	8.255	-0.001	70	3968	0.5000	0.5832	
45 1,1-Dichloropropene	75	8.296	8.283	0.013	95	31283	0.5000	0.4931	
46 Isooctane	57	8.365	8.367	-0.002	97	101354	0.5000	0.5138	
47 n-Heptane	43	8.449	8.451	-0.002	89	41454	0.5000	0.4965	
48 Benzene	78	8.533	8.534	-0.001	95	100780	0.5000	0.5624	
50 Propionitrile	54	8.561	8.562	-0.001	59	9334	5.00	4.65	
49 Methacrylonitrile	41	8.575	8.576	-0.001	90	52026	5.00	4.81	
51 Tert-amyl methyl ether	73	8.603	8.604	-0.001	96	35656	0.5000	0.4529	
52 Isobutyl alcohol	42	8.659	8.660	-0.001	5	3999	12.5	11.4	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.673	8.674	-0.001	92	17192	0.5000	0.5688	
54 1,2-Dichloroethane	62	8.728	8.730	-0.002	94	18679	0.5000	0.5082	
* 55 Fluorobenzene	96	8.924	8.925	-0.001	99	1628050	10.0	10.0	
57 Methylcyclohexane	55	9.078	9.079	-0.001	87	32476	0.5000	0.4579	
56 Trichloroethene	95	9.078	9.079	-0.001	68	24594	0.5000	0.4928	
59 n-Butanol	56	9.315	9.302	0.013	63	3729	12.5	11.0	
60 Dibromomethane	93	9.497	9.484	0.013	95	9210	0.5000	0.5670	
61 Ethyl acrylate	55	9.511	9.512	-0.001	76	8205	0.5000	0.4207	M
62 1,2-Dichloropropane	63	9.580	9.568	0.012	91	20288	0.5000	0.4991	
63 Dichlorobromomethane	83	9.622	9.610	0.012	95	21942	0.5000	0.4754	
64 Methyl methacrylate	69	9.706	9.707	-0.001	91	10049	1.00	0.8424	
65 1,4-Dioxane	88	9.790	9.777	0.013	46	1892	10.0	12.0	
66 2-Chloroethyl vinyl ether	63	10.097	10.085	0.012	25	1483	0.5000	0.4053	
67 cis-1,3-Dichloropropene	75	10.181	10.182	-0.001	92	27332	0.5000	0.4847	
$ 68 Toluene-d8 (Surr)	98	10.349	10.350	-0.001	94	73312	0.5000	0.4811	
69 Toluene	92	10.404	10.392	0.012	97	56009	0.5000	0.5038	
70 2-Nitropropane	43	10.628	10.615	0.013	86	4710	1.00	1.24	
71 4-Methyl-2-pentanone (MIBK	43	10.712	10.699	0.013	93	5979	0.5000	0.4511	
73 Tetrachloroethene	164	10.754	10.755	-0.001	95	21963	0.5000	0.4832	
72 trans-1,3-Dichloropropene	75	10.754	10.755	-0.001	73	19828	0.5000	0.4660	
74 Ethyl methacrylate	69	10.837	10.839	-0.002	88	11316	0.5000	0.4698	
75 1,1,2-Trichloroethane	83	10.921	10.909	0.012	91	10563	0.5000	0.5350	
76 Chlorodibromomethane	129	11.103	11.090	0.013	87	14350	0.5000	0.4983	
77 1,3-Dichloropropane	76	11.173	11.174	-0.001	91	22064	0.5000	0.5377	
78 n-Butyl acetate	43	11.326	11.314	0.012	91	11142	0.5000	0.4509	
79 Ethylene Dibromide	107	11.340	11.342	-0.002	97	9509	0.5000	0.4650	
80 2-Hexanone	43	11.452	11.439	0.013	70	4966	0.5000	0.5220	
81 1-Chlorohexane	91	11.717	11.705	0.012	95	30807	0.5000	0.4611	
* 83 Chlorobenzene-d5	117	11.773	11.774	-0.001	85	1187544	10.0	10.0	
82 Ethylbenzene	91	11.773	11.774	-0.001	55	123494	0.5000	0.5423	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
84 Chlorobenzene	112	11.787	11.788	-0.001	93	71196	0.5000	0.5696	
85 1,1,1,2-Tetrachloroethane	131	11.829	11.830	-0.001	89	19276	0.5000	0.4844	
86 m-Xylene & p-Xylene	106	11.899	11.900	-0.001	98	46048	0.5000	0.5164	
88 o-Xylene	106	12.304	12.305	-0.001	97	35820	0.5000	0.4553	
89 Styrene	104	12.360	12.361	-0.001	92	47122	0.5000	0.4336	
90 Bromoform	173	12.429	12.431	-0.002	93	7609	0.5000	0.5105	
91 Isopropylbenzene	105	12.583	12.585	-0.001	94	105989	0.5000	0.5227	
$ 92 4-Bromofluorobenzene (Surr	95	12.876	12.878	-0.002	89	21576	0.5000	0.5325	
93 N-Propylbenzene	91	12.974	12.976	-0.002	98	127400	0.5000	0.5344	
94 Bromobenzene	156	13.016	13.003	0.013	87	26422	0.5000	0.5663	
95 1,1,2,2-Tetrachloroethane	83	13.030	13.031	-0.001	91	14209	0.5000	0.6071	
96 1,3,5-Trimethylbenzene	105	13.128	13.129	-0.001	94	78656	0.5000	0.5231	
97 2-Chlorotoluene	91	13.156	13.157	-0.001	97	79015	0.5000	0.5384	
98 1,2,3-Trichloropropane	110	13.198	13.199	-0.001	84	4832	0.5000	0.5061	
99 trans-1,4-Dichloro-2-buten	53	13.198	13.199	-0.001	68	3290	0.5000	0.5781	
100 Cyclohexanone	55	13.267	13.269	-0.002	13	2225	5.00	5.27	
101 4-Chlorotoluene	91	13.309	13.311	-0.002	96	63906	0.5000	0.5093	
102 tert-Butylbenzene	119	13.449	13.450	-0.001	92	77546	0.5000	0.5322	
103 1,2,4-Trimethylbenzene	105	13.519	13.520	-0.001	96	81310	0.5000	0.5009	
104 sec-Butylbenzene	105	13.617	13.618	-0.001	93	122303	0.5000	0.5284	
105 4-Isopropyltoluene	119	13.742	13.744	-0.002	97	97383	0.5000	0.5066	
106 1,3-Dichlorobenzene	146	13.882	13.883	-0.001	98	50469	0.5000	0.5454	
107 1,2,3-Trimethylbenzene	105	13.952	13.953	-0.001	51	82618	0.5000	0.5113	
* 108 1,4-Dichlorobenzene-d4	152	13.952	13.953	-0.001	94	581827	10.0	10.0	
109 1,4-Dichlorobenzene	146	13.966	13.967	-0.001	95	52699	0.5000	0.5536	
110 n-Butylbenzene	134	14.161	14.163	-0.002	97	26499	0.5000	0.4935	
111 Benzyl chloride	126	14.189	14.191	-0.002	87	5886	0.5000	0.5664	
112 1,2-Dichlorobenzene	146	14.385	14.386	-0.001	98	41204	0.5000	0.5319	
113 n-Nonyl Aldehyde	57	15.097	15.098	-0.001	76	3966	0.5000	0.5934	
114 1,2-Dibromo-3-Chloropropan	157	15.181	15.182	-0.001	30	2107	0.5000	0.5537	
115 1,3,5-Trichlorobenzene	180	15.195	15.196	-0.001	96	34690	0.5000	0.5328	
116 Hexachlorobutadiene	225	15.767	15.769	-0.002	95	18660	0.5000	0.5379	
117 1,2,4-Trichlorobenzene	180	15.837	15.839	-0.002	90	21374	0.5000	0.5113	
118 Naphthalene	128	16.186	16.188	-0.002	95	24498	0.5000	0.5102	
120 1,2,3-Trichlorobenzene	180	16.382	16.383	-0.001	94	14983	0.5000	0.5610	
S 119 Xylenes, Total	106				0			0.9717	
S 130 Trihalomethanes, Total	1				0			2.04	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260 Surr 25_00065	Amount Added: 0.50	Units: uL	
8260 NewWkMix_00182	Amount Added: 0.50	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent

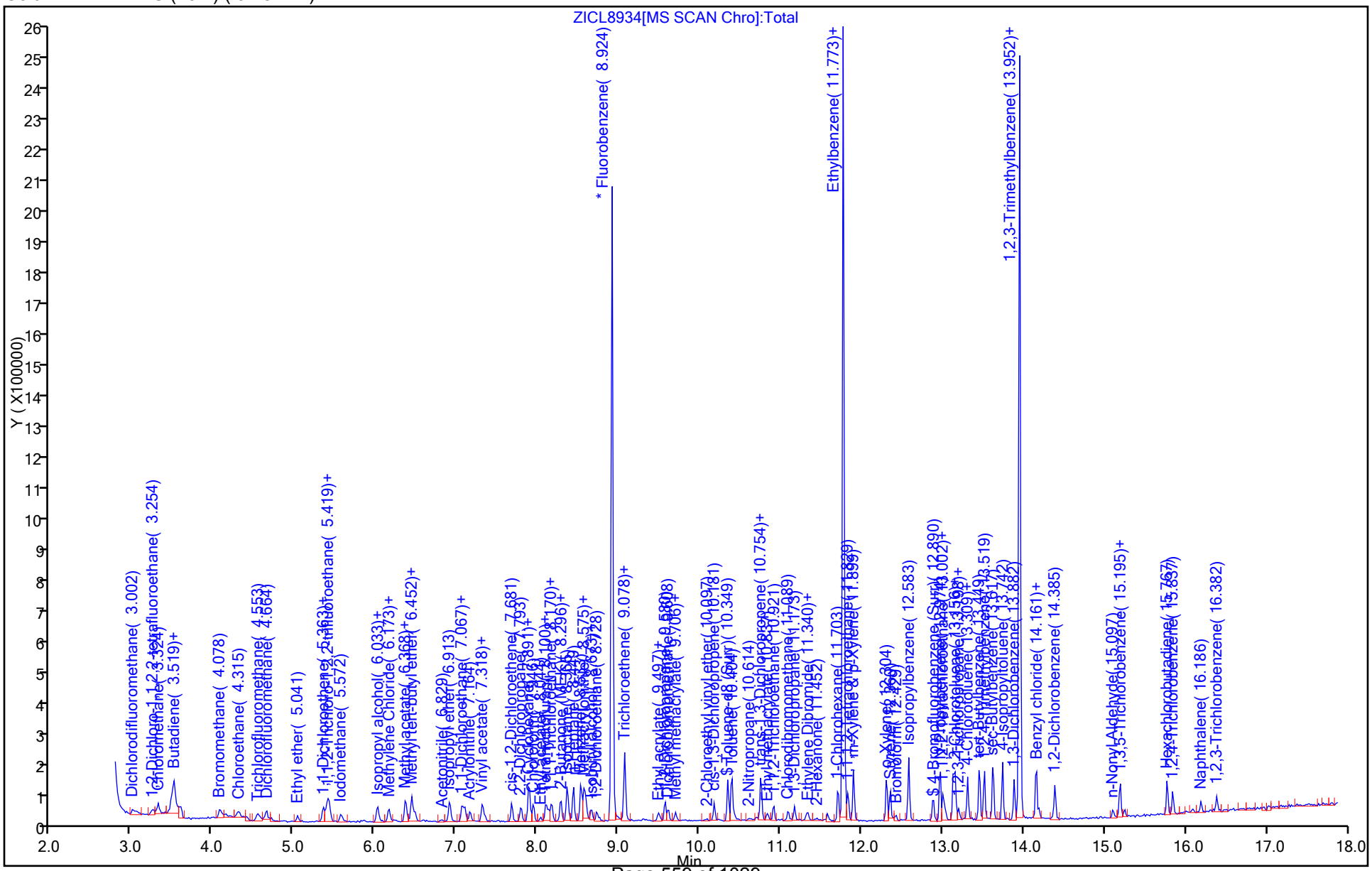
Report Date: 07-Sep-2016 12:30:21 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8934.D

Injection Date:	07-Sep-2016 07:32:30	Instrument ID:	VMSZ	Operator ID:	EF
Lims ID:	IC			Worklist Smp#:	5
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	2
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

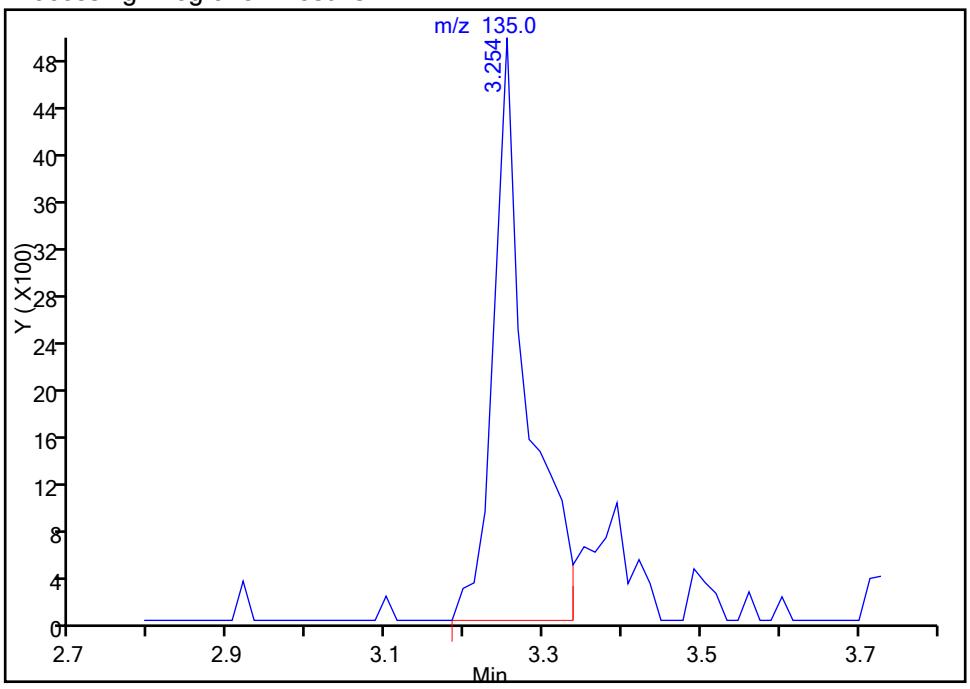
Data File:	\\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8934.D				
Injection Date:	07-Sep-2016 07:32:30	Instrument ID:	VMSZ		
Lims ID:	IC				
Client ID:					
Operator ID:	EF	ALS Bottle#:	2	Worklist Smp#:	5
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

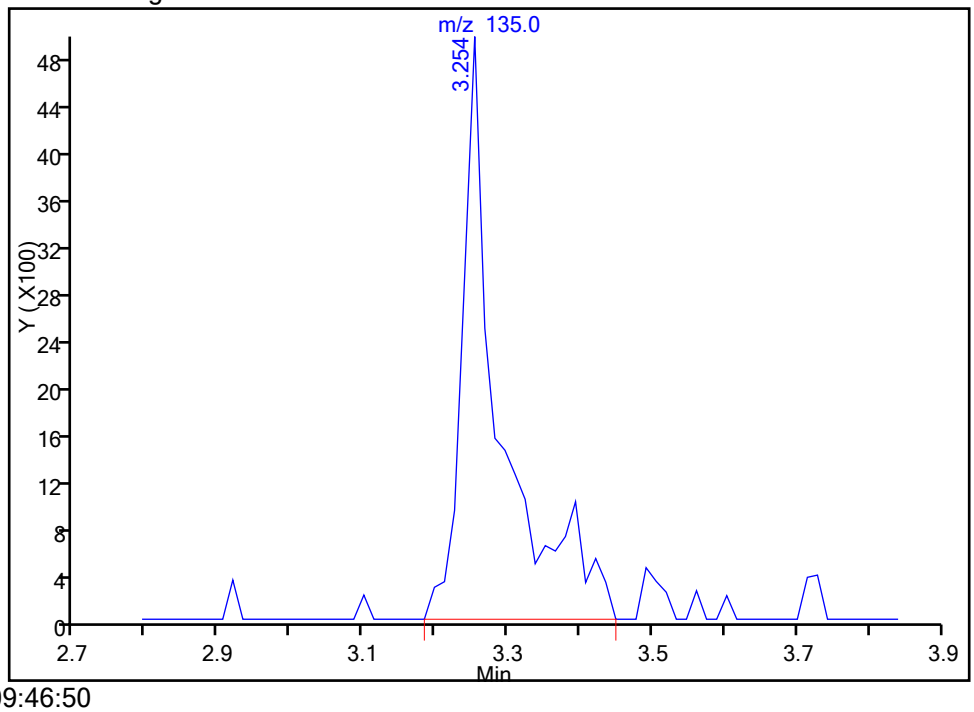
Processing Integration Results

RT: 3.25
Area: 14742
Amount: 0.511541
Amount Units: ug/l



Manual Integration Results

RT: 3.25
Area: 18144
Amount: 0.683459
Amount Units: ug/l



Reviewer: fishere, 07-Sep-2016 09:46:50

Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica St. Louis

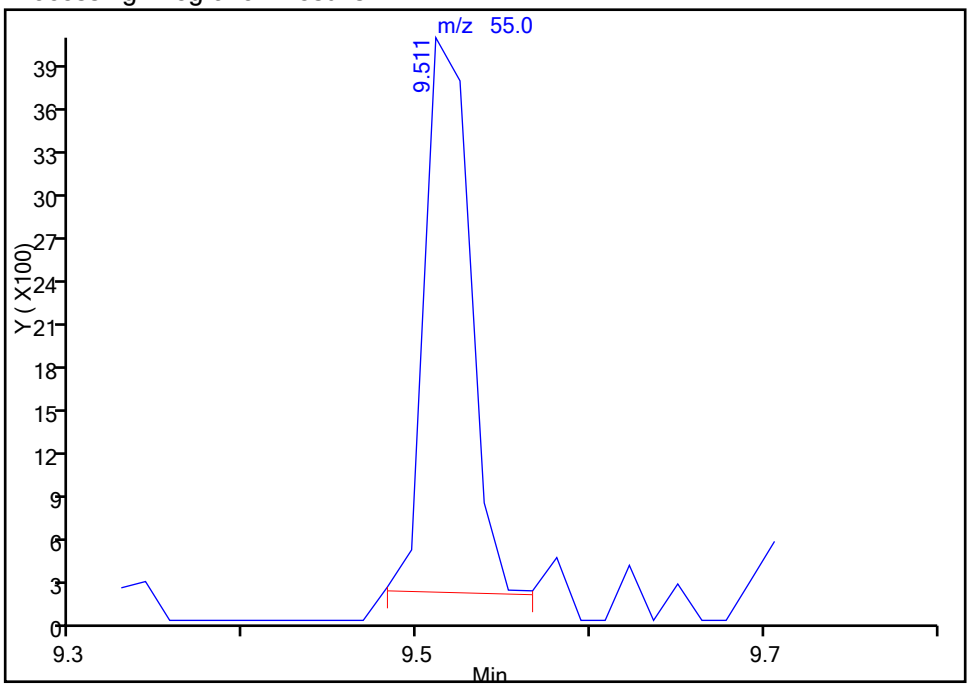
Data File:	\\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8934.D				
Injection Date:	07-Sep-2016 07:32:30	Instrument ID:	VMSZ		
Lims ID:	IC				
Client ID:					
Operator ID:	EF	ALS Bottle#:	2	Worklist Smp#:	5
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

61 Ethyl acrylate, CAS: 140-88-5

Signal: 1

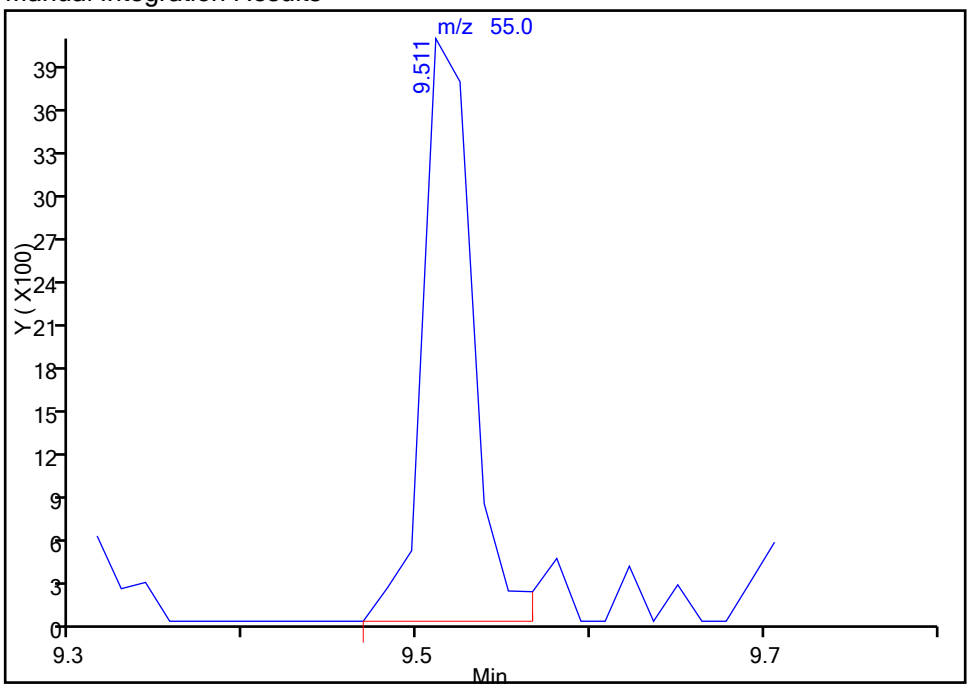
Processing Integration Results

RT: 9.51
Area: 7076
Amount: 0.390334
Amount Units: ug/l



Manual Integration Results

RT: 9.51
Area: 8205
Amount: 0.420688
Amount Units: ug/l



Reviewer: fishere, 07-Sep-2016 09:46:50

Audit Action: Split an Integrated Peak Audit Reason: Baseline

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8935.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 07-Sep-2016 07:55:30 ALS Bottle#: 3 Worklist Smp#: 6
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008404-006
Misc. Info.: VSTD001
Operator ID: EF Instrument ID: VMSZ
Sublist: chrom-25mL-8260-MSZ*sub12

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 07-Sep-2016 12:30:32 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: fishere Date: 07-Sep-2016 12:30:32

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.019	3.004	0.015	99	59631	1.00	0.9466	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.256	3.255	0.001	97	26422	1.00	0.9248	M
3 Chloromethane	50	3.326	3.325	0.001	99	76672	1.00	1.02	
4 Vinyl chloride	62	3.494	3.493	0.001	98	86373	1.00	0.6133	
5 Butadiene	39	3.522	3.520	0.002	93	89248	1.00	0.5673	
6 Bromomethane	94	4.080	4.079	0.001	91	41120	1.00	0.7265	
7 Chloroethane	64	4.318	4.317	0.001	97	45692	1.00	0.6210	
8 Trichlorofluoromethane	101	4.555	4.554	0.001	97	61660	1.00	0.8952	
9 Dichlorofluoromethane	67	4.653	4.652	0.001	98	73611	1.00	0.9507	
10 Ethyl ether	74	5.044	5.043	0.001	96	17093	1.00	0.9572	
11 Ethanol	45	5.281	5.266	0.015	76	4979	40.0	39.2	
12 1,1-Dichloroethene	96	5.365	5.364	0.001	97	45369	1.00	0.9475	
13 Carbon disulfide	76	5.407	5.406	0.001	100	151057	1.00	0.9581	
14 1,1,2-Trichloro-1,2,2-trif	151	5.435	5.434	0.001	92	36306	1.00	0.8560	
15 Iodomethane	142	5.575	5.574	0.001	97	69325	1.00	0.9628	
S 16 1,2-Dichloroethene, Total	96				0			1.94	
17 Acrolein	56	5.840	5.839	0.001	97	13244	5.00	5.46	
18 3-Chloro-1-propene	39	6.022	6.020	0.002	91	50142	1.00	1.02	
19 Isopropyl alcohol	45	6.036	6.034	0.002	14	8679	10.0	11.1	
20 Methylene Chloride	84	6.175	6.174	0.001	92	43739	1.00	1.07	
21 Acetone	43	6.231	6.230	0.001	94	10534	1.00	1.49	
22 trans-1,2-Dichloroethene	96	6.371	6.370	0.001	95	43959	1.00	0.8877	
23 Methyl acetate	74	6.385	6.370	0.015	94	13254	5.00	5.35	
24 Hexane	86	6.455	6.453	0.001	93	13069	1.00	0.8363	
25 Methyl tert-butyl ether	73	6.482	6.481	0.001	82	73474	1.00	1.07	
26 2-Methyl-2-propanol	59	6.594	6.593	0.001	98	14668	10.0	11.5	
27 Acetonitrile	41	6.818	6.817	0.002	97	16205	10.0	10.6	
28 Isopropyl ether	45	6.915	6.914	0.001	92	113308	1.00	0.9881	
29 2-Chloro-1,3-butadiene	53	7.069	7.068	0.001	90	56266	1.00	0.8434	
30 1,1-Dichloroethane	63	7.097	7.096	0.001	97	81839	1.00	1.01	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
31 Acrylonitrile	53	7.167	7.166	0.001	100	61987	10.0	11.0	
32 Tert-butyl ethyl ether	59	7.320	7.319	0.001	98	97769	1.00	1.04	
33 Vinyl acetate	43	7.348	7.347	0.001	97	56150	1.00	1.10	
34 cis-1,2-Dichloroethene	96	7.684	7.682	0.002	81	52456	1.00	1.05	
35 2,2-Dichloropropane	77	7.795	7.794	0.001	91	47744	1.00	0.9503	
37 Chlorobromomethane	128	7.893	7.892	0.001	90	19685	1.00	1.07	
36 Cyclohexane	84	7.893	7.892	0.001	90	72908	1.00	0.8852	
38 Chloroform	83	7.949	7.948	0.001	95	80642	1.00	1.04	
39 Ethyl acetate	45	8.047	8.032	0.015	98	5101	2.00	2.32	
40 Carbon tetrachloride	117	8.103	8.101	0.001	96	54251	1.00	0.8709	
41 Tetrahydrofuran	71	8.116	8.115	0.001	44	4231	2.00	2.37	
$ 42 Dibromofluoromethane (Surr	113	8.144	8.143	0.001	92	31264	1.00	0.8764	
43 1,1,1-Trichloroethane	97	8.172	8.171	0.001	98	63920	1.00	0.9266	
44 2-Butanone (MEK)	43	8.256	8.255	0.001	83	7577	1.00	1.09	
45 1,1-Dichloropropene	75	8.284	8.283	0.001	97	56519	1.00	0.8738	
46 Isooctane	57	8.368	8.367	0.001	96	187426	1.00	0.9321	
47 n-Heptane	43	8.438	8.451	-0.013	93	76167	1.00	0.8948	
48 Benzene	78	8.535	8.534	0.001	97	192223	1.00	1.05	
50 Propionitrile	54	8.563	8.562	0.001	45	22539	10.0	11.0	
49 Methacrylonitrile	41	8.577	8.576	0.001	92	120831	10.0	11.0	
51 Tert-amyl methyl ether	73	8.605	8.604	0.001	98	82978	1.00	1.03	
52 Isobutyl alcohol	42	8.661	8.660	0.001	56	9839	25.0	27.5	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.661	8.674	-0.013	91	32977	1.00	1.07	
54 1,2-Dichloroethane	62	8.731	8.730	0.001	97	42505	1.00	1.13	
* 55 Fluorobenzene	96	8.927	8.925	0.001	99	1659693	10.0	10.0	
57 Methylcyclohexane	55	9.080	9.079	0.001	88	65048	1.00	0.8997	
56 Trichloroethene	95	9.080	9.079	0.001	70	47914	1.00	0.9418	
59 n-Butanol	56	9.304	9.302	0.002	89	7669	25.0	22.2	
60 Dibromomethane	93	9.499	9.484	0.015	92	16933	1.00	1.02	
61 Ethyl acrylate	55	9.513	9.512	0.001	95	19361	1.00	0.9738	
62 1,2-Dichloropropane	63	9.583	9.568	0.015	93	42255	1.00	1.02	
63 Dichlorobromomethane	83	9.611	9.610	0.001	98	47535	1.00	1.01	
64 Methyl methacrylate	69	9.709	9.707	0.002	94	22018	2.00	1.81	
65 1,4-Dioxane	88	9.778	9.777	0.001	64	3706	20.0	23.1	
66 2-Chloroethyl vinyl ether	63	10.086	10.085	0.001	49	3600	1.00	0.9652	
67 cis-1,3-Dichloropropene	75	10.183	10.182	0.001	95	56020	1.00	0.9745	
$ 68 Toluene-d8 (Surr)	98	10.351	10.350	0.001	92	156639	1.00	0.99	
69 Toluene	92	10.393	10.392	0.001	99	114529	1.00	0.99	
70 2-Nitropropane	43	10.616	10.615	0.001	85	7943	2.00	2.01	
71 4-Methyl-2-pentanone (MIBK	43	10.700	10.699	0.001	95	15111	1.00	1.10	
73 Tetrachloroethene	164	10.756	10.755	0.001	97	43263	1.00	0.9178	
72 trans-1,3-Dichloropropene	75	10.756	10.755	0.001	82	44799	1.00	1.02	
74 Ethyl methacrylate	69	10.840	10.839	0.001	86	25123	1.00	1.01	
75 1,1,2-Trichloroethane	83	10.924	10.909	0.015	89	24471	1.00	1.20	
76 Chlorodibromomethane	129	11.091	11.090	0.001	87	31190	1.00	1.04	
77 1,3-Dichloropropane	76	11.175	11.174	0.001	93	45300	1.00	1.06	
78 n-Butyl acetate	43	11.315	11.314	0.001	98	24650	1.00	0.9618	
79 Ethylene Dibromide	107	11.343	11.342	0.001	95	24745	1.00	1.17	
80 2-Hexanone	43	11.454	11.439	0.015	92	10168	1.00	1.03	
81 1-Chlorohexane	91	11.706	11.705	0.001	97	59404	1.00	0.8572	
* 83 Chlorobenzene-d5	117	11.776	11.774	0.002	85	1231657	10.0	10.0	
82 Ethylbenzene	91	11.776	11.774	0.002	68	226735	1.00	0.9599	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
84 Chlorobenzene	112	11.790	11.788	0.002	95	137417	1.00	1.06	
85 1,1,1,2-Tetrachloroethane	131	11.831	11.830	0.001	94	41701	1.00	1.01	
86 m-Xylene & p-Xylene	106	11.901	11.900	0.001	100	88537	1.00	0.9573	
88 o-Xylene	106	12.306	12.305	0.001	97	81429	1.00	1.00	
89 Styrene	104	12.348	12.361	-0.013	94	105064	1.00	0.9321	
90 Bromoform	173	12.418	12.431	-0.013	94	17004	1.00	1.09	
91 Isopropylbenzene	105	12.586	12.585	0.002	94	208243	1.00	0.9767	
$ 92 4-Bromofluorobenzene (Surr	95	12.879	12.878	0.001	94	45247	1.00	1.02	
93 N-Propylbenzene	91	12.963	12.976	-0.013	98	248542	1.00	0.99	
94 Bromobenzene	156	13.005	13.003	0.002	90	52681	1.00	1.07	
95 1,1,2,2-Tetrachloroethane	83	13.033	13.031	0.002	94	27114	1.00	1.10	
96 1,3,5-Trimethylbenzene	105	13.130	13.129	0.001	96	161878	1.00	1.02	
97 2-Chlorotoluene	91	13.158	13.157	0.001	98	161198	1.00	1.04	
98 1,2,3-Trichloropropane	110	13.200	13.199	0.001	85	8765	1.00	1.06	
99 trans-1,4-Dichloro-2-buten	53	13.200	13.199	0.001	71	6683	1.00	1.12	
100 Cyclohexanone	55	13.270	13.269	0.001	63	4300	10.0	9.69	
101 4-Chlorotoluene	91	13.312	13.311	0.001	96	138260	1.00	1.05	
102 tert-Butylbenzene	119	13.452	13.450	0.002	93	156413	1.00	1.02	
103 1,2,4-Trimethylbenzene	105	13.521	13.520	0.001	96	175081	1.00	1.03	
104 sec-Butylbenzene	105	13.619	13.618	0.001	94	241116	1.00	0.99	
105 4-Isopropyltoluene	119	13.745	13.744	0.001	97	201653	1.00	1.00	
106 1,3-Dichlorobenzene	146	13.884	13.883	0.001	98	104779	1.00	1.08	
107 1,2,3-Trimethylbenzene	105	13.954	13.953	0.001	56	180180	1.00	1.06	
* 108 1,4-Dichlorobenzene-d4	152	13.954	13.953	0.001	93	611759	10.0	10.0	
109 1,4-Dichlorobenzene	146	13.968	13.967	0.001	96	111467	1.00	1.11	
110 n-Butylbenzene	134	14.150	14.163	-0.013	98	52368	1.00	0.9276	
111 Benzyl chloride	126	14.192	14.191	0.001	68	12573	1.00	1.15	
112 1,2-Dichlorobenzene	146	14.387	14.386	0.001	97	87010	1.00	1.07	
113 n-Nonyl Aldehyde	57	15.100	15.098	0.002	84	10854	1.00	1.05	
114 1,2-Dibromo-3-Chloropropan	157	15.169	15.182	-0.013	56	4082	1.00	1.02	
115 1,3,5-Trichlorobenzene	180	15.197	15.196	0.001	97	69329	1.00	1.01	
116 Hexachlorobutadiene	225	15.770	15.769	0.001	96	37372	1.00	1.02	
117 1,2,4-Trichlorobenzene	180	15.840	15.839	0.001	93	45485	1.00	1.03	
118 Naphthalene	128	16.189	16.188	0.001	96	55004	1.00	1.09	
120 1,2,3-Trichlorobenzene	180	16.384	16.383	0.001	96	31990	1.00	1.14	
S 119 Xylenes, Total	106				0			1.96	
S 130 Trihalomethanes, Total	1				0			4.18	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260 NewWkMix_00182	Amount Added: 1.00	Units: uL	
8260 Surr 25_00065	Amount Added: 1.00	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent

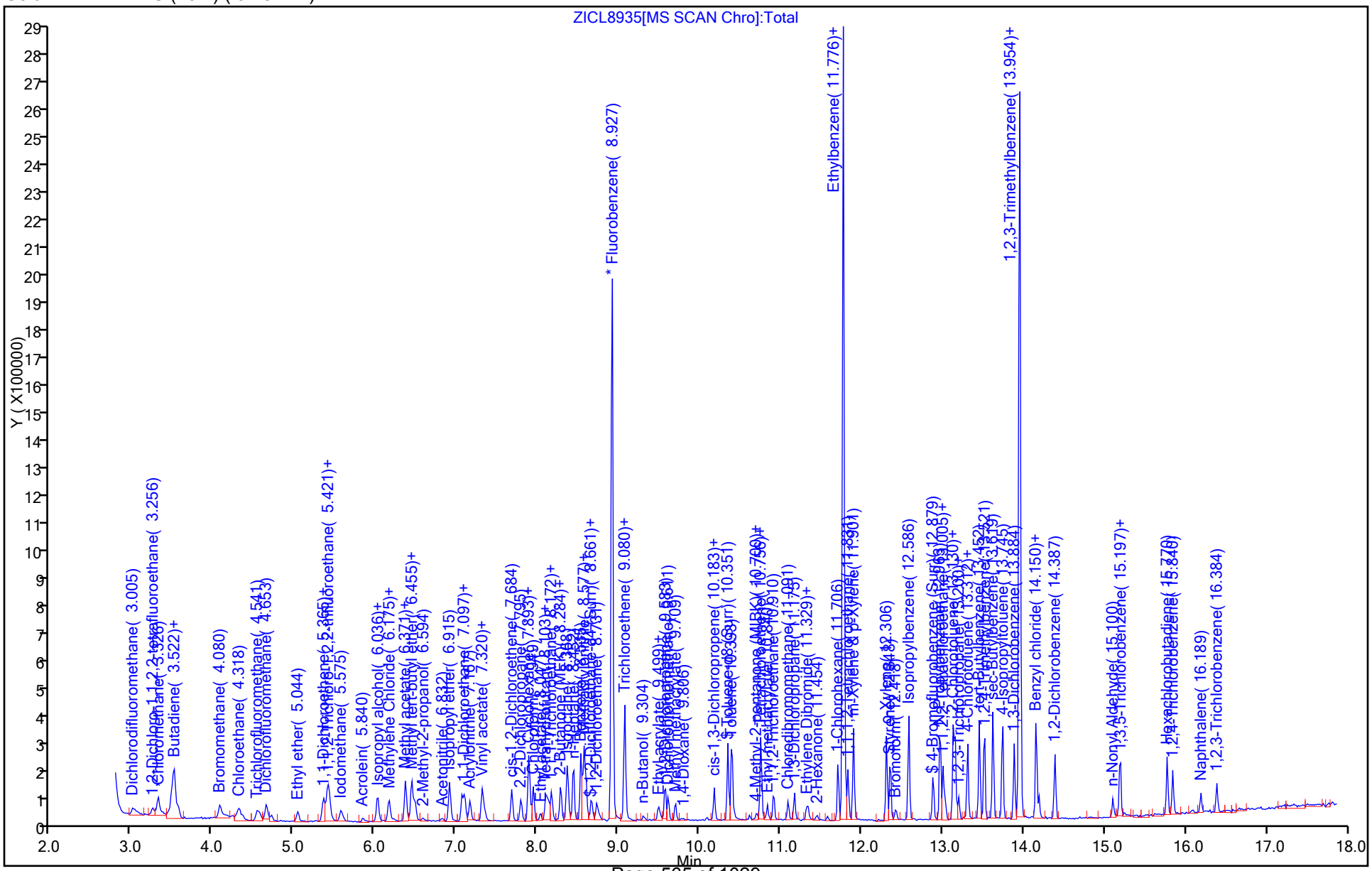
Report Date: 07-Sep-2016 12:30:33 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8935.D

Injection Date:	07-Sep-2016 07:55:30	Instrument ID:	VMSZ	Operator ID:	EF
Lims ID:	IC			Worklist Smp#:	6
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	3
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

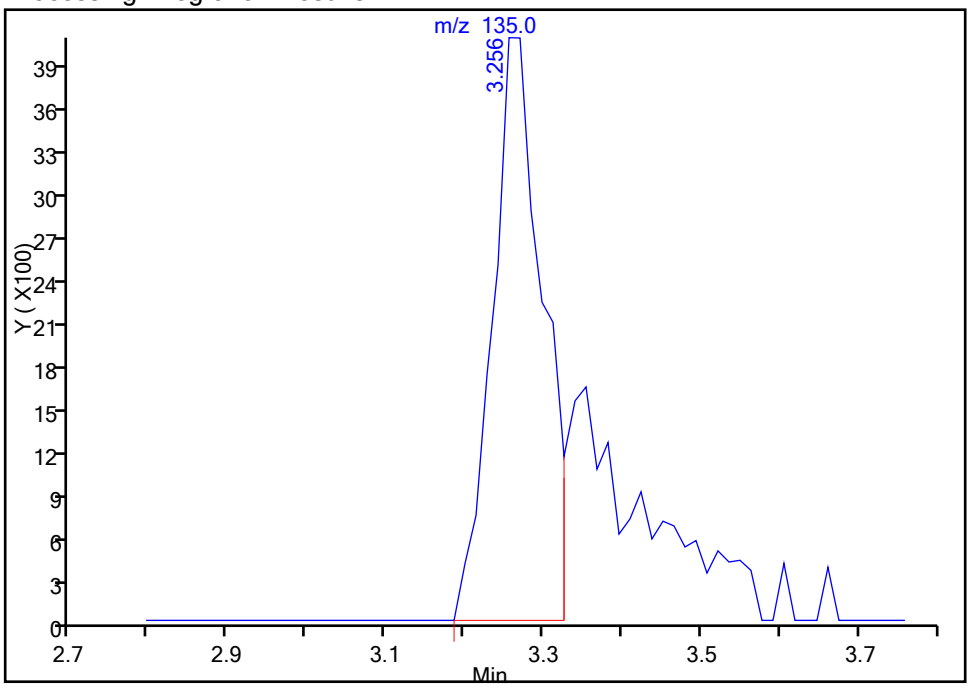
Data File:	\\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8935.D				
Injection Date:	07-Sep-2016 07:55:30	Instrument ID:	VMSZ		
Lims ID:	IC				
Client ID:					
Operator ID:	EF	ALS Bottle#:	3	Worklist Smp#:	6
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

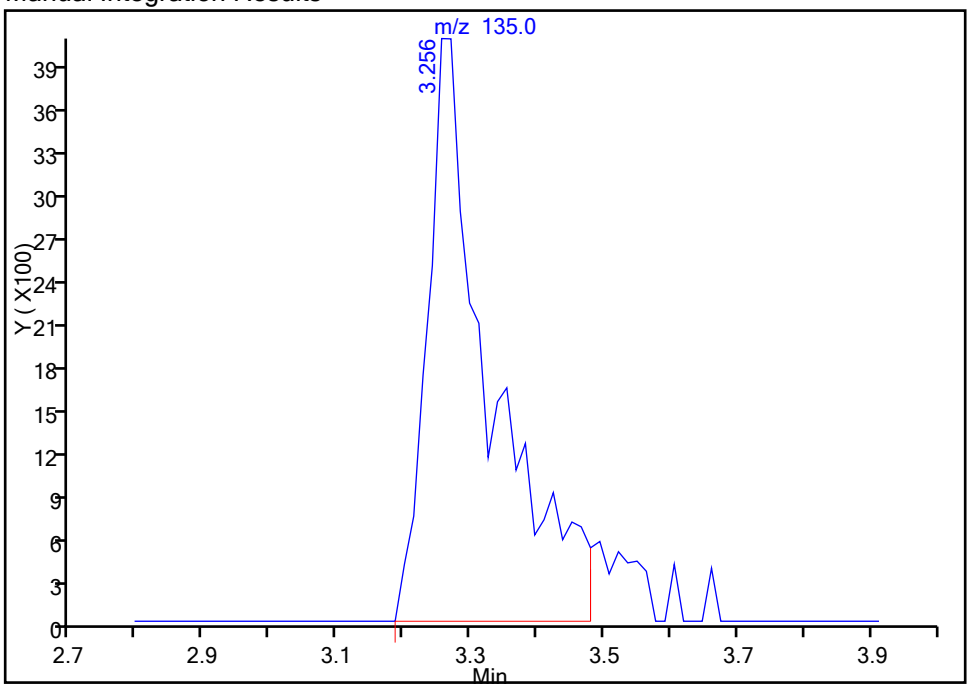
Processing Integration Results

RT: 3.26
Area: 18051
Amount: 0.651549
Amount Units: ug/l



Manual Integration Results

RT: 3.26
Area: 26422
Amount: 0.924760
Amount Units: ug/l



Reviewer: fishere, 07-Sep-2016 09:43:29

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8936.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 07-Sep-2016 08:19:30 ALS Bottle#: 4 Worklist Smp#: 7
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008404-007
Misc. Info.: VSTD002
Operator ID: EF Instrument ID: VMSZ
Sublist: chrom-25mL-8260-MSZ*sub12

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 07-Sep-2016 12:30:49 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: fishere Date: 07-Sep-2016 12:30:49

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.003	3.004	-0.001	99	148385	2.00	2.22	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.254	3.255	-0.001	98	65226	2.00	2.00	M
3 Chloromethane	50	3.324	3.325	-0.001	100	164676	2.00	2.06	
4 Vinyl chloride	62	3.492	3.493	-0.001	99	216694	2.00	2.05	
5 Butadiene	39	3.520	3.520	0.000	91	206370	2.00	2.02	
6 Bromomethane	94	4.078	4.079	-0.001	88	92492	2.00	2.04	
7 Chloroethane	64	4.316	4.317	-0.001	100	111884	2.00	2.06	
8 Trichlorofluoromethane	101	4.567	4.554	0.013	98	151148	2.00	2.07	
9 Dichlorofluoromethane	67	4.665	4.652	0.013	97	177818	2.00	2.16	
10 Ethyl ether	74	5.042	5.043	-0.001	88	45772	2.00	2.42	
11 Ethanol	45	5.266	5.266	0.000	90	11903	80.0	88.3	
12 1,1-Dichloroethene	96	5.363	5.364	-0.001	97	104492	2.00	2.06	
13 Carbon disulfide	76	5.405	5.406	-0.001	99	349508	2.00	2.09	
14 1,1,2-Trichloro-1,2,2-trif	151	5.433	5.434	-0.001	89	91332	2.00	2.03	
15 Iodomethane	142	5.573	5.574	-0.001	99	157917	2.00	2.07	
S 16 1,2-Dichloroethene, Total	96				0			4.15	
17 Acrolein	56	5.838	5.839	-0.001	99	27728	10.0	10.8	
18 3-Chloro-1-propene	39	6.020	6.020	0.000	91	108012	2.00	2.06	
19 Isopropyl alcohol	45	6.034	6.034	0.000	8	18322	20.0	22.0	
20 Methylene Chloride	84	6.173	6.174	-0.001	96	90149	2.00	2.08	
21 Acetone	43	6.229	6.230	-0.001	98	12834	2.00	1.94	
22 trans-1,2-Dichloroethene	96	6.369	6.370	-0.001	98	107588	2.00	2.05	
23 Methyl acetate	74	6.383	6.370	0.013	97	28173	10.0	10.7	
24 Hexane	86	6.453	6.453	0.000	95	32723	2.00	1.97	
25 Methyl tert-butyl ether	73	6.481	6.481	0.000	81	166747	2.00	2.28	
26 2-Methyl-2-propanol	59	6.592	6.593	-0.001	98	31360	20.0	23.2	
27 Acetonitrile	41	6.816	6.817	0.000	99	36942	20.0	22.7	
28 Isopropyl ether	45	6.914	6.914	0.000	93	257422	2.00	2.12	
29 2-Chloro-1,3-butadiene	53	7.067	7.068	-0.001	92	145099	2.00	2.05	
30 1,1-Dichloroethane	63	7.109	7.096	0.013	96	180789	2.00	2.10	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
31 Acrylonitrile	53	7.165	7.166	-0.001	99	128624	20.0	21.5	
32 Tert-butyl ethyl ether	59	7.319	7.319	0.000	95	213387	2.00	2.13	
33 Vinyl acetate	43	7.346	7.347	-0.001	97	115306	2.00	2.14	
34 cis-1,2-Dichloroethene	96	7.682	7.682	0.000	82	110836	2.00	2.10	
35 2,2-Dichloropropane	77	7.793	7.794	-0.001	91	113915	2.00	2.14	
37 Chlorobromomethane	128	7.891	7.892	-0.001	95	41297	2.00	2.12	
36 Cyclohexane	84	7.891	7.892	-0.001	90	184009	2.00	2.11	
38 Chloroform	83	7.947	7.948	-0.001	95	175843	2.00	2.13	
39 Ethyl acetate	45	8.031	8.032	-0.001	99	10056	4.00	4.32	
40 Carbon tetrachloride	117	8.101	8.101	0.000	95	144280	2.00	2.18	
41 Tetrahydrofuran	71	8.129	8.115	0.014	94	7418	4.00	3.91	
$ 42 Dibromofluoromethane (Surr	113	8.143	8.143	0.000	95	73700	2.00	1.95	
43 1,1,1-Trichloroethane	97	8.170	8.171	-0.001	99	151242	2.00	2.07	
44 2-Butanone (MEK)	43	8.254	8.255	-0.001	95	15533	2.00	2.11	
45 1,1-Dichloropropene	75	8.282	8.283	-0.001	97	139093	2.00	2.03	
46 Isooctane	57	8.366	8.367	-0.001	96	458705	2.00	2.15	
47 n-Heptane	43	8.450	8.451	-0.001	92	186803	2.00	2.07	
48 Benzene	78	8.534	8.534	0.000	96	429240	2.00	2.21	
50 Propionitrile	54	8.562	8.562	0.000	47	44478	20.0	20.5	
49 Methacrylonitrile	41	8.575	8.576	-0.001	93	262987	20.0	22.5	
51 Tert-amyl methyl ether	73	8.603	8.604	-0.001	98	185859	2.00	2.18	
52 Isobutyl alcohol	42	8.659	8.660	-0.001	96	19005	50.0	50.1	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.673	8.674	-0.001	90	63781	2.00	1.95	
54 1,2-Dichloroethane	62	8.729	8.730	-0.001	96	91383	2.00	2.30	
* 55 Fluorobenzene	96	8.925	8.925	0.000	99	1761405	10.0	10.0	
57 Methylcyclohexane	55	9.078	9.079	-0.001	88	157974	2.00	2.06	
56 Trichloroethene	95	9.078	9.079	-0.001	70	113907	2.00	2.11	
59 n-Butanol	56	9.302	9.302	0.000	91	19323	50.0	52.8	
60 Dibromomethane	93	9.497	9.484	0.013	93	37283	2.00	2.12	
61 Ethyl acrylate	55	9.511	9.512	-0.001	97	43720	2.00	2.07	
62 1,2-Dichloropropane	63	9.581	9.568	0.013	95	91624	2.00	2.08	
63 Dichlorobromomethane	83	9.609	9.610	-0.001	98	106340	2.00	2.13	
64 Methyl methacrylate	69	9.707	9.707	0.000	88	54902	4.00	4.25	
65 1,4-Dioxane	88	9.791	9.777	0.014	92	7024	40.0	41.2	
66 2-Chloroethyl vinyl ether	63	10.084	10.085	-0.001	89	6719	2.00	1.70	
67 cis-1,3-Dichloropropene	75	10.182	10.182	0.000	95	127116	2.00	2.08	
$ 68 Toluene-d8 (Surr)	98	10.349	10.350	-0.001	93	339059	2.00	2.01	
69 Toluene	92	10.405	10.392	0.013	99	279059	2.00	2.27	
70 2-Nitropropane	43	10.615	10.615	0.000	98	17317	4.00	4.11	
71 4-Methyl-2-pentanone (MIBK	43	10.698	10.699	-0.001	96	31401	2.00	2.14	
73 Tetrachloroethene	164	10.754	10.755	-0.001	96	108554	2.00	2.16	
72 trans-1,3-Dichloropropene	75	10.754	10.755	-0.001	82	103096	2.00	2.19	
74 Ethyl methacrylate	69	10.838	10.839	-0.001	90	50272	2.00	1.89	
75 1,1,2-Trichloroethane	83	10.922	10.909	0.013	92	44339	2.00	2.03	
76 Chlorodibromomethane	129	11.089	11.090	-0.001	92	67158	2.00	2.11	
77 1,3-Dichloropropane	76	11.173	11.174	-0.001	90	99863	2.00	2.20	
78 n-Butyl acetate	43	11.327	11.314	0.013	98	60050	2.00	2.20	
79 Ethylene Dibromide	107	11.341	11.342	-0.001	99	47952	2.00	2.12	
80 2-Hexanone	43	11.453	11.439	0.013	99	23989	2.00	2.28	
81 1-Chlorohexane	91	11.718	11.705	0.013	99	155212	2.00	2.10	
* 83 Chlorobenzene-d5	117	11.774	11.774	0.000	86	1314637	10.0	10.0	
82 Ethylbenzene	91	11.774	11.774	0.000	93	551127	2.00	2.19	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
84 Chlorobenzene	112	11.788	11.788	0.000	95	306974	2.00	2.22	
85 1,1,1,2-Tetrachloroethane	131	11.830	11.830	0.000	95	97485	2.00	2.21	
86 m-Xylene & p-Xylene	106	11.899	11.900	-0.001	99	221696	2.00	2.25	
88 o-Xylene	106	12.304	12.305	-0.001	97	191065	2.00	2.19	
89 Styrene	104	12.360	12.361	-0.001	95	264619	2.00	2.20	
90 Bromoform	173	12.430	12.431	-0.001	96	38096	2.00	2.14	
91 Isopropylbenzene	105	12.584	12.585	0.000	95	524359	2.00	2.17	
$ 92 4-Bromofluorobenzene (Surr	95	12.877	12.878	-0.001	95	96766	2.00	1.89	
93 N-Propylbenzene	91	12.975	12.976	-0.001	98	623530	2.00	2.19	
94 Bromobenzene	156	13.003	13.003	0.000	93	119062	2.00	2.14	
95 1,1,2,2-Tetrachloroethane	83	13.031	13.031	0.000	94	60371	2.00	2.16	
96 1,3,5-Trimethylbenzene	105	13.128	13.129	-0.001	95	398575	2.00	2.22	
97 2-Chlorotoluene	91	13.156	13.157	-0.001	98	401959	2.00	2.29	
98 1,2,3-Trichloropropane	110	13.198	13.199	-0.001	84	17030	2.00	1.99	
99 trans-1,4-Dichloro-2-buten	53	13.198	13.199	-0.001	77	13491	2.00	1.99	
100 Cyclohexanone	55	13.268	13.269	-0.001	80	11277	20.0	22.4	
101 4-Chlorotoluene	91	13.310	13.311	-0.001	96	339025	2.00	2.26	
102 tert-Butylbenzene	119	13.450	13.450	0.000	93	391365	2.00	2.25	
103 1,2,4-Trimethylbenzene	105	13.519	13.520	-0.001	96	419863	2.00	2.17	
104 sec-Butylbenzene	105	13.617	13.618	-0.001	94	601407	2.00	2.18	
105 4-Isopropyltoluene	119	13.743	13.744	-0.001	97	491168	2.00	2.14	
106 1,3-Dichlorobenzene	146	13.883	13.883	0.000	99	246206	2.00	2.23	
107 1,2,3-Trimethylbenzene	105	13.952	13.953	-0.001	95	420018	2.00	2.18	
* 108 1,4-Dichlorobenzene-d4	152	13.952	13.953	-0.001	94	694422	10.0	10.0	
109 1,4-Dichlorobenzene	146	13.966	13.967	-0.001	97	257246	2.00	2.26	
110 n-Butylbenzene	134	14.162	14.163	-0.001	97	135138	2.00	2.11	
111 Benzyl chloride	126	14.190	14.191	-0.001	81	25842	2.00	2.08	
112 1,2-Dichlorobenzene	146	14.385	14.386	-0.001	98	213100	2.00	2.30	
113 n-Nonyl Aldehyde	57	15.098	15.098	0.000	88	26114	2.00	1.87	
114 1,2-Dibromo-3-Chloropropan	157	15.181	15.182	-0.001	81	8731	2.00	1.92	
115 1,3,5-Trichlorobenzene	180	15.195	15.196	-0.001	97	175657	2.00	2.26	
116 Hexachlorobutadiene	225	15.768	15.769	-0.001	97	83962	2.00	2.03	
117 1,2,4-Trichlorobenzene	180	15.838	15.839	-0.001	92	109455	2.00	2.19	
118 Naphthalene	128	16.187	16.188	-0.001	96	123048	2.00	2.15	
120 1,2,3-Trichlorobenzene	180	16.383	16.383	0.000	95	67860	2.00	2.13	
S 119 Xylenes, Total	106				0			4.44	
S 130 Trihalomethanes, Total	1				0			8.51	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260 Surr 25_00065	Amount Added: 2.00	Units: uL	
8260 NewWkMix_00182	Amount Added: 2.00	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent

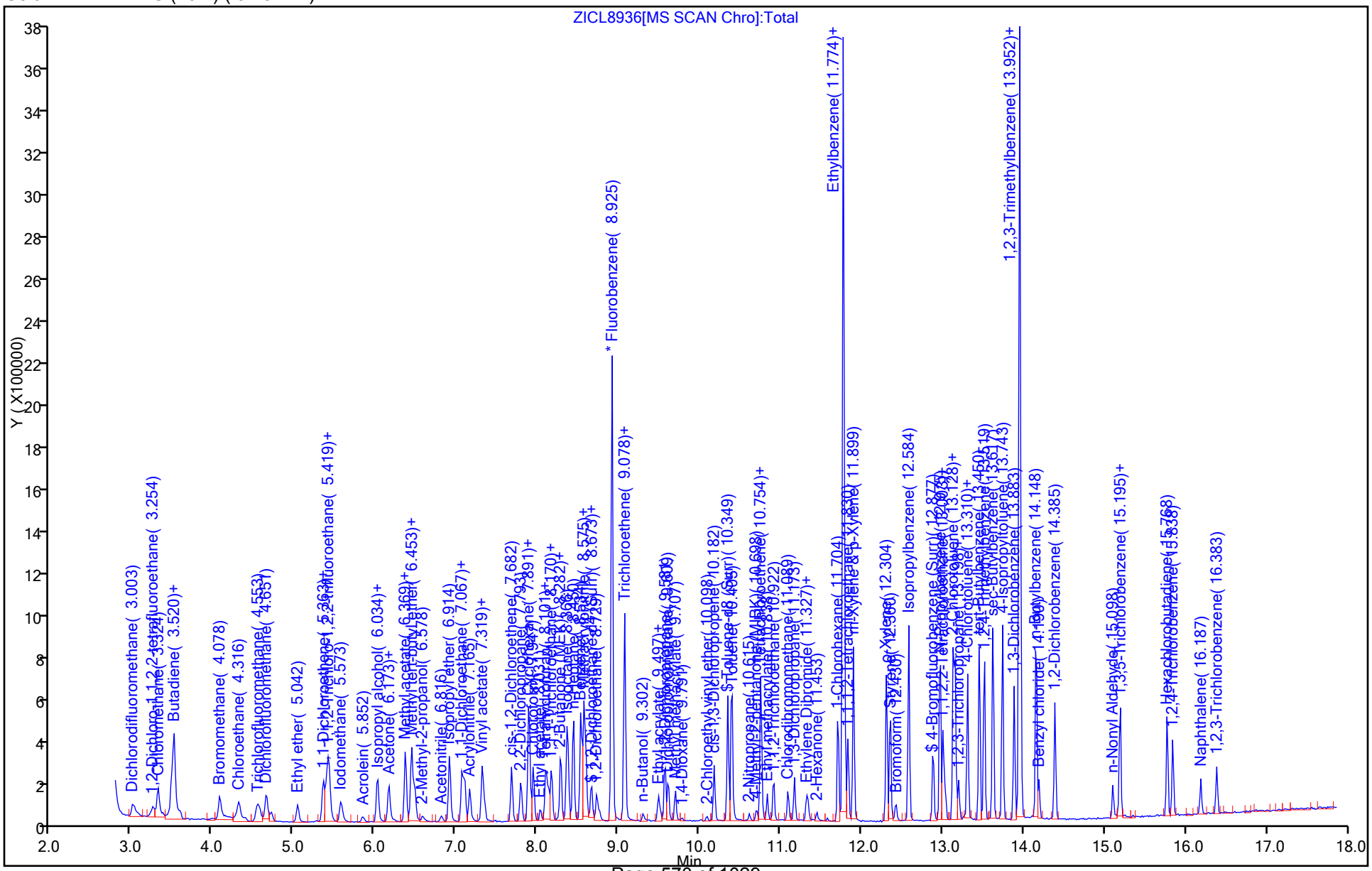
Report Date: 07-Sep-2016 12:30:50 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8936.D

Injection Date:	07-Sep-2016 08:19:30	Instrument ID:	VMSZ	Operator ID:	EF
Lims ID:	IC			Worklist Smp#:	7
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

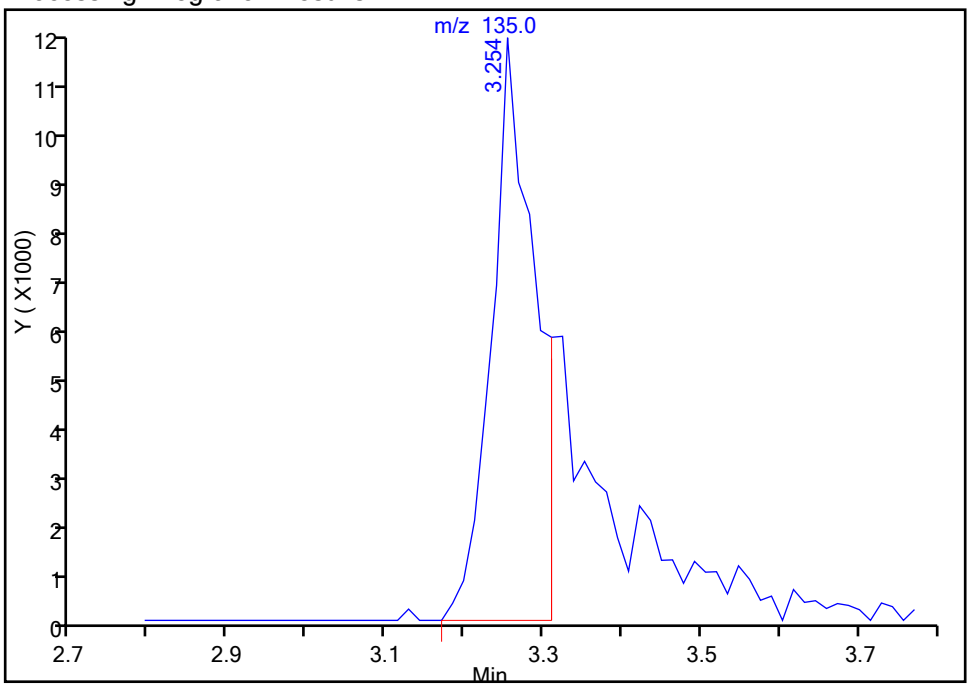
Data File:	\\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8936.D				
Injection Date:	07-Sep-2016 08:19:30	Instrument ID:	VMSZ		
Lims ID:	IC				
Client ID:					
Operator ID:	EF	ALS Bottle#:	4	Worklist Smp#:	7
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

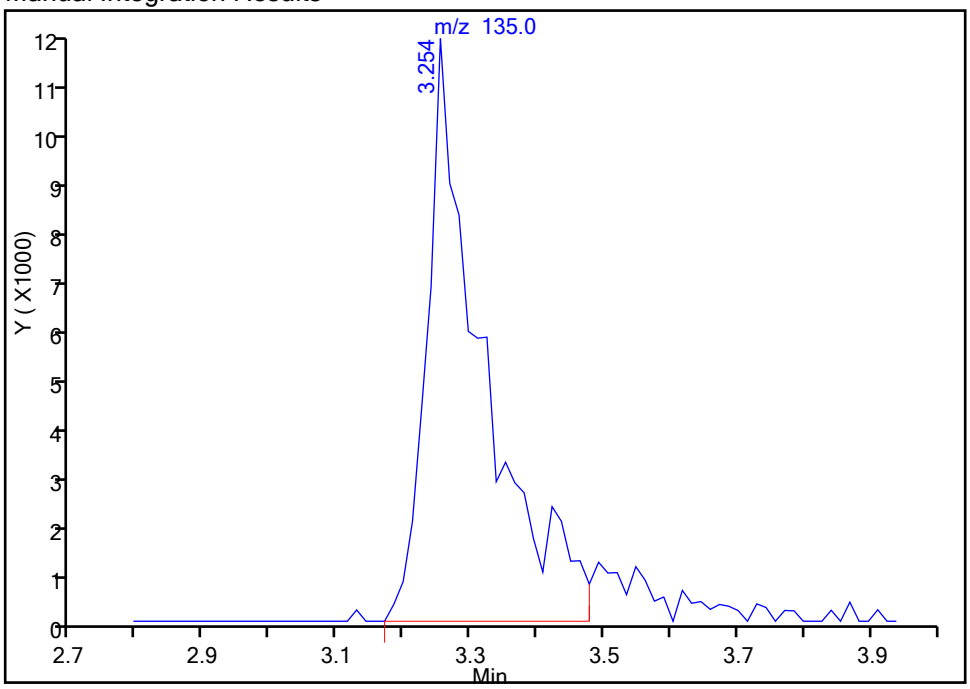
Processing Integration Results

RT: 3.25
Area: 43484
Amount: 1.604643
Amount Units: ug/l



Manual Integration Results

RT: 3.25
Area: 65226
Amount: 2.004200
Amount Units: ug/l



Reviewer: fishere, 07-Sep-2016 09:40:47

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8937.D
Lims ID: IC
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 07-Sep-2016 08:43:30 ALS Bottle#: 5 Worklist Smp#: 8
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008404-008
Misc. Info.: VSTD004
Operator ID: EF Instrument ID: VMSZ
Sublist: chrom-25mL-8260-MSZ*sub12

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 07-Sep-2016 12:31:01 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: fishere Date: 07-Sep-2016 12:31:00

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.003	3.004	-0.001	100	311111	4.00	4.56	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.255	3.255	0.000	98	126732	4.00	3.76	M
3 Chloromethane	50	3.324	3.325	-0.001	100	341511	4.00	4.19	
4 Vinyl chloride	62	3.492	3.493	-0.001	98	423378	4.00	4.33	
5 Butadiene	39	3.520	3.520	0.000	91	403640	4.00	4.47	
6 Bromomethane	94	4.079	4.079	0.000	89	174048	4.00	4.14	
7 Chloroethane	64	4.316	4.317	-0.001	100	213928	4.00	4.28	
8 Trichlorofluoromethane	101	4.553	4.554	-0.001	99	298286	4.00	4.00	
9 Dichlorofluoromethane	67	4.651	4.652	-0.001	98	329065	4.00	3.92	
10 Ethyl ether	74	5.042	5.043	-0.001	92	72688	4.00	3.76	
11 Ethanol	45	5.280	5.266	0.014	99	21167	160.0	153.8	
12 1,1-Dichloroethene	96	5.363	5.364	-0.001	98	208883	4.00	4.03	
13 Carbon disulfide	76	5.405	5.406	-0.001	99	692713	4.00	4.06	
14 1,1,2-Trichloro-1,2,2-trif	151	5.433	5.434	-0.001	91	179541	4.00	3.91	
15 Iodomethane	142	5.573	5.574	-0.001	97	301765	4.00	3.87	
S 16 1,2-Dichloroethene, Total	96				0			7.86	
17 Acrolein	56	5.852	5.839	0.013	98	48906	20.0	18.6	
18 3-Chloro-1-propene	39	6.020	6.020	0.000	91	214089	4.00	4.00	
19 Isopropyl alcohol	45	6.034	6.034	0.000	13	28518	40.0	33.6	
20 Methylene Chloride	84	6.173	6.174	-0.001	91	166351	4.00	3.76	
21 Acetone	43	6.229	6.230	-0.001	99	18971	4.00	3.51	
22 trans-1,2-Dichloroethene	96	6.369	6.370	-0.001	98	216656	4.00	4.04	
23 Methyl acetate	74	6.383	6.370	0.013	97	49658	20.0	18.5	
24 Hexane	86	6.453	6.453	0.000	94	65683	4.00	3.88	
25 Methyl tert-butyl ether	73	6.481	6.481	0.000	82	286084	4.00	3.84	
26 2-Methyl-2-propanol	59	6.592	6.593	-0.001	98	43570	40.0	31.6	
27 Acetonitrile	41	6.816	6.817	0.000	97	57473	40.0	34.6	
28 Isopropyl ether	45	6.914	6.914	0.000	92	481110	4.00	3.87	
29 2-Chloro-1,3-butadiene	53	7.067	7.068	-0.001	92	296237	4.00	4.10	
30 1,1-Dichloroethane	63	7.109	7.096	0.013	97	349977	4.00	3.97	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
31 Acrylonitrile	53	7.165	7.166	-0.001	97	224791	40.0	36.8	
32 Tert-butyl ethyl ether	59	7.319	7.319	0.000	97	385144	4.00	3.77	
33 Vinyl acetate	43	7.347	7.347	0.000	98	208975	4.00	3.79	
34 cis-1,2-Dichloroethene	96	7.682	7.682	0.000	80	206161	4.00	3.82	
35 2,2-Dichloropropane	77	7.794	7.794	0.000	90	221105	4.00	4.06	
37 Chlorobromomethane	128	7.891	7.892	-0.001	95	75836	4.00	3.82	
36 Cyclohexane	84	7.891	7.892	-0.001	90	365132	4.00	4.09	
38 Chloroform	83	7.947	7.948	-0.001	95	320534	4.00	3.81	
39 Ethyl acetate	45	8.031	8.032	-0.001	99	15889	8.00	6.68	
40 Carbon tetrachloride	117	8.101	8.101	0.000	98	266963	4.00	3.96	
41 Tetrahydrofuran	71	8.115	8.115	0.000	84	14939	8.00	7.71	
$ 42 Dibromofluoromethane (Surr	113	8.143	8.143	0.000	94	160620	4.00	4.16	
43 1,1,1-Trichloroethane	97	8.171	8.171	0.000	97	302413	4.00	4.05	
44 2-Butanone (MEK)	43	8.254	8.255	-0.001	99	28050	4.00	3.73	
45 1,1-Dichloropropene	75	8.282	8.283	-0.001	96	287938	4.00	4.11	
46 Isooctane	57	8.366	8.367	-0.001	96	922725	4.00	4.24	
47 n-Heptane	43	8.450	8.451	-0.001	91	378606	4.00	4.11	
48 Benzene	78	8.534	8.534	0.000	96	818653	4.00	4.14	
50 Propionitrile	54	8.562	8.562	0.000	93	80707	40.0	36.4	
49 Methacrylonitrile	41	8.576	8.576	0.000	92	463415	40.0	38.8	
51 Tert-amyl methyl ether	73	8.604	8.604	0.000	98	340328	4.00	3.91	
52 Isobutyl alcohol	42	8.659	8.660	-0.001	86	32152	100.0	83.0	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.673	8.674	-0.001	92	132064	4.00	3.96	
54 1,2-Dichloroethane	62	8.729	8.730	-0.001	96	153458	4.00	3.78	
* 55 Fluorobenzene	96	8.925	8.925	0.000	99	1798268	10.0	10.0	
57 Methylcyclohexane	55	9.078	9.079	-0.001	87	320679	4.00	4.09	
56 Trichloroethene	95	9.078	9.079	-0.001	67	212761	4.00	3.86	
59 n-Butanol	56	9.302	9.302	0.000	94	30183	100.0	80.8	
60 Dibromomethane	93	9.497	9.484	0.013	94	67586	4.00	3.77	
61 Ethyl acrylate	55	9.511	9.512	-0.001	98	78881	4.00	3.66	
62 1,2-Dichloropropane	63	9.581	9.568	0.013	95	173630	4.00	3.87	
63 Dichlorobromomethane	83	9.609	9.610	-0.001	99	202775	4.00	3.98	
64 Methyl methacrylate	69	9.707	9.707	0.000	90	96305	8.00	7.31	
65 1,4-Dioxane	88	9.777	9.777	0.000	82	12924	80.0	74.3	
66 2-Chloroethyl vinyl ether	63	10.098	10.085	0.013	91	15666	4.00	3.88	
67 cis-1,3-Dichloropropene	75	10.182	10.182	0.000	96	240564	4.00	3.86	
$ 68 Toluene-d8 (Surr)	98	10.349	10.350	-0.001	93	726979	4.00	4.23	
69 Toluene	92	10.405	10.392	0.013	99	532431	4.00	4.24	
70 2-Nitropropane	43	10.615	10.615	0.000	96	31764	8.00	7.39	
71 4-Methyl-2-pentanone (MIBK	43	10.698	10.699	-0.001	97	57535	4.00	3.85	
73 Tetrachloroethene	164	10.754	10.755	-0.001	97	216283	4.00	4.22	
72 trans-1,3-Dichloropropene	75	10.754	10.755	-0.001	80	182662	4.00	3.80	
74 Ethyl methacrylate	69	10.838	10.839	-0.001	90	96937	4.00	3.57	
75 1,1,2-Trichloroethane	83	10.908	10.909	-0.001	92	87217	4.00	3.91	
76 Chlorodibromomethane	129	11.090	11.090	0.000	90	123342	4.00	3.80	
77 1,3-Dichloropropane	76	11.173	11.174	-0.001	90	179041	4.00	3.87	
78 n-Butyl acetate	43	11.313	11.314	-0.001	97	100821	4.00	3.62	
79 Ethylene Dibromide	107	11.341	11.342	-0.001	99	84912	4.00	3.68	
80 2-Hexanone	43	11.453	11.439	0.014	96	40330	4.00	3.76	
81 1-Chlorohexane	91	11.704	11.705	-0.001	98	319200	4.00	4.23	
* 83 Chlorobenzene-d5	117	11.774	11.774	0.000	86	1340021	10.0	10.0	
82 Ethylbenzene	91	11.774	11.774	0.000	89	1060400	4.00	4.13	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
84 Chlorobenzene	112	11.788	11.788	0.000	95	572338	4.00	4.06	
85 1,1,1,2-Tetrachloroethane	131	11.830	11.830	0.000	95	178732	4.00	3.98	
86 m-Xylene & p-Xylene	106	11.900	11.900	0.000	99	419634	4.00	4.17	
88 o-Xylene	106	12.305	12.305	0.000	97	364170	4.00	4.10	
89 Styrene	104	12.360	12.361	-0.001	95	517648	4.00	4.22	
90 Bromoform	173	12.430	12.431	-0.001	97	66065	4.00	3.58	
91 Isopropylbenzene	105	12.584	12.585	0.000	95	1049793	4.00	4.18	
$ 92 4-Bromofluorobenzene (Surr	95	12.877	12.878	-0.001	95	212051	4.00	3.94	
93 N-Propylbenzene	91	12.975	12.976	-0.001	98	1222784	4.00	4.14	
94 Bromobenzene	156	13.003	13.003	0.000	92	225342	4.00	3.90	
95 1,1,2,2-Tetrachloroethane	83	13.031	13.031	0.000	95	109030	4.00	3.76	
96 1,3,5-Trimethylbenzene	105	13.129	13.129	0.000	95	812008	4.00	4.36	
97 2-Chlorotoluene	91	13.157	13.157	0.000	98	754917	4.00	4.15	
98 1,2,3-Trichloropropane	110	13.198	13.199	-0.001	84	31462	4.00	3.75	
99 trans-1,4-Dichloro-2-buten	53	13.198	13.199	-0.001	80	27539	4.00	3.91	
100 Cyclohexanone	55	13.268	13.269	-0.001	82	17654	40.0	33.8	
101 4-Chlorotoluene	91	13.310	13.311	-0.001	97	674744	4.00	4.34	
102 tert-Butylbenzene	119	13.450	13.450	0.000	93	783367	4.00	4.34	
103 1,2,4-Trimethylbenzene	105	13.520	13.520	0.000	96	811349	4.00	4.04	
104 sec-Butylbenzene	105	13.617	13.618	-0.001	94	1207705	4.00	4.21	
105 4-Isopropyltoluene	119	13.743	13.744	-0.001	97	1013346	4.00	4.26	
106 1,3-Dichlorobenzene	146	13.883	13.883	0.000	99	467541	4.00	4.08	
107 1,2,3-Trimethylbenzene	105	13.953	13.953	0.000	87	806412	4.00	4.03	
* 108 1,4-Dichlorobenzene-d4	152	13.953	13.953	0.000	94	720554	10.0	10.0	
109 1,4-Dichlorobenzene	146	13.967	13.967	0.000	97	473745	4.00	4.02	
110 n-Butylbenzene	134	14.162	14.163	-0.001	97	273889	4.00	4.12	
111 Benzyl chloride	126	14.190	14.191	-0.001	83	44996	4.00	3.50	
112 1,2-Dichlorobenzene	146	14.386	14.386	0.000	99	383381	4.00	4.00	
113 n-Nonyl Aldehyde	57	15.098	15.098	0.000	87	53622	4.00	3.39	
114 1,2-Dibromo-3-Chloropropan	157	15.182	15.182	0.000	43	18166	4.00	3.85	
115 1,3,5-Trichlorobenzene	180	15.196	15.196	0.000	97	329089	4.00	4.08	
116 Hexachlorobutadiene	225	15.768	15.769	-0.001	96	174175	4.00	4.05	
117 1,2,4-Trichlorobenzene	180	15.838	15.839	-0.001	94	210386	4.00	4.06	
118 Naphthalene	128	16.187	16.188	-0.001	96	229138	4.00	3.85	
120 1,2,3-Trichlorobenzene	180	16.383	16.383	0.000	96	130757	4.00	3.95	
S 119 Xylenes, Total	106				0			8.27	
S 130 Trihalomethanes, Total	1				0			15.2	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260 Surr 25_00065	Amount Added: 4.00	Units: uL	
8260 NewWkMix_00182	Amount Added: 4.00	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent

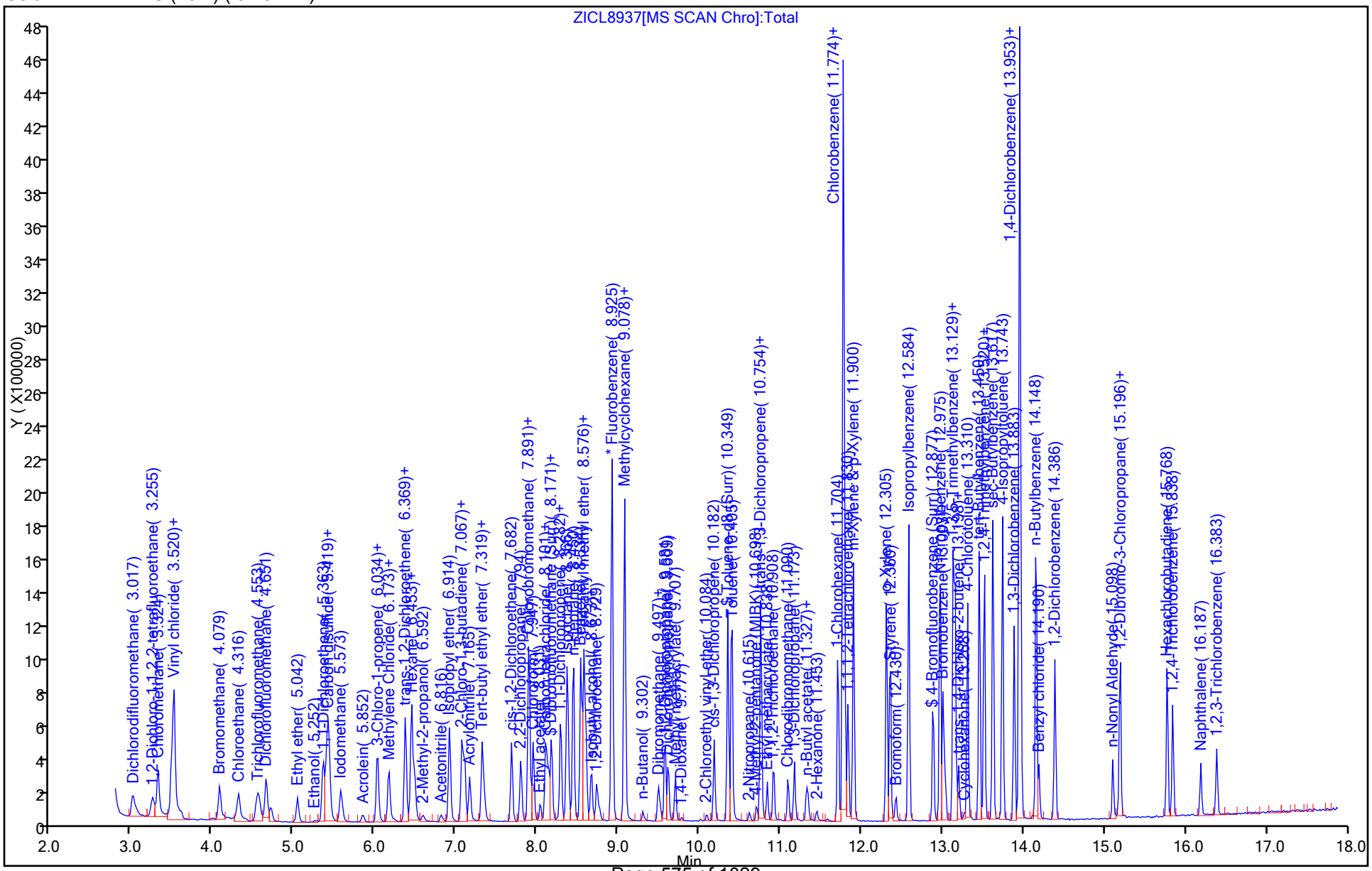
Report Date: 07-Sep-2016 12:31:02 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8937.D

Injection Date:	07-Sep-2016 08:43:30	Instrument ID:	VMSZ	Operator ID:	EF
Lims ID:	IC			Worklist Smp#:	8
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	5
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

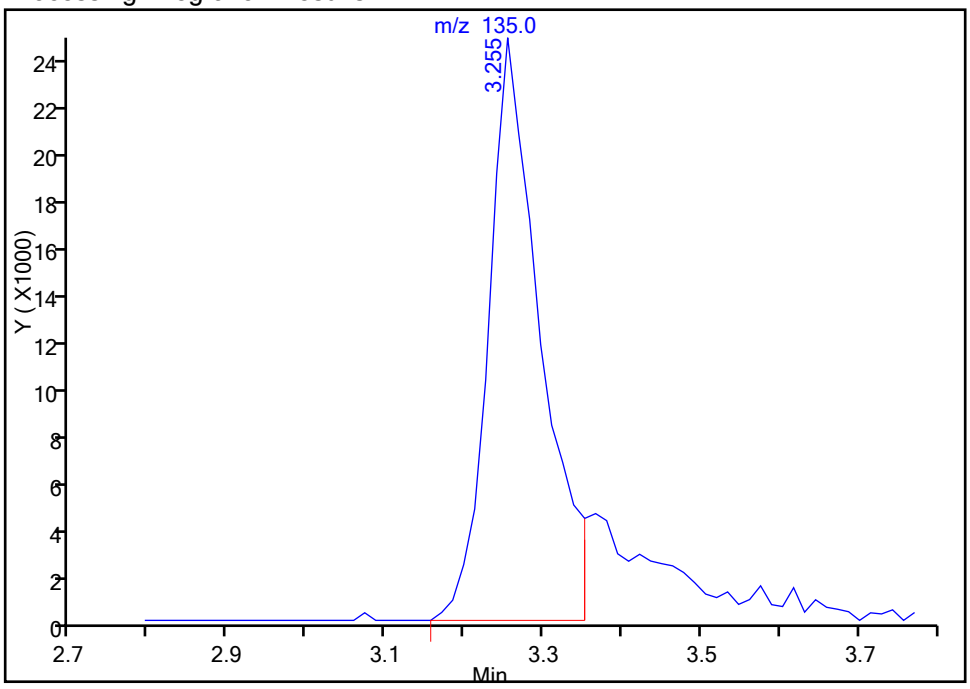
Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8937.D
Injection Date: 07-Sep-2016 08:43:30 Instrument ID: VMSZ
Lims ID: IC
Client ID:
Operator ID: EF ALS Bottle#: 5 Worklist Smp#: 8
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Method: 25mL-8260-MSZ Limit Group: MSV-8260
Column: RTX-VMS (40m) (0.18 mm) Detector MS SCAN

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

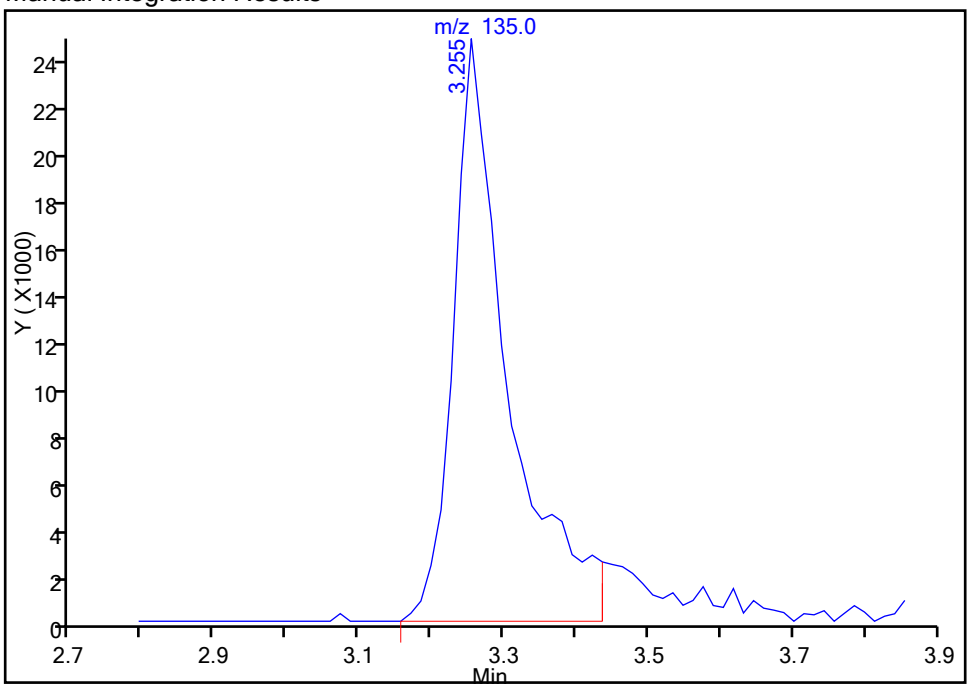
Processing Integration Results

RT: 3.25
Area: 110871
Amount: 3.696849
Amount Units: ug/l



Manual Integration Results

RT: 3.25
Area: 126732
Amount: 3.758953
Amount Units: ug/l



Reviewer: fishere, 07-Sep-2016 09:41:31
Audit Action: Split an Integrated Peak Audit Reason: Split Peak

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8938.D
Lims ID: ICIS
Client ID:
Sample Type: ICIS Calib Level: 5
Inject. Date: 07-Sep-2016 09:07:30 ALS Bottle#: 6 Worklist Smp#: 9
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008404-009
Misc. Info.: VSTD010
Operator ID: EF Instrument ID: VMSZ
Sublist: chrom-25mL-8260-MSZ*sub12

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 07-Sep-2016 12:31:14 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: fishere Date: 07-Sep-2016 12:31:14

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.018	3.018	0.000	100	812646	10.0	10.2	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.255	3.255	0.000	98	386452	10.0	10.2	
3 Chloromethane	50	3.325	3.325	0.000	99	960260	10.0	10.0	
4 Vinyl chloride	62	3.493	3.493	0.000	98	1165331	10.0	10.8	
5 Butadiene	39	3.521	3.521	0.000	90	1074946	10.0	11.0	
6 Bromomethane	94	4.079	4.079	0.000	90	498886	10.0	10.8	
7 Chloroethane	64	4.317	4.317	0.000	100	594431	10.0	10.8	
8 Trichlorofluoromethane	101	4.554	4.554	0.000	99	867885	10.0	9.93	
9 Dichlorofluoromethane	67	4.652	4.652	0.000	98	941326	10.0	9.58	
10 Ethyl ether	74	5.043	5.043	0.000	94	205707	10.0	9.08	
11 Ethanol	45	5.280	5.280	0.000	98	56536	400.0	350.7	
12 1,1-Dichloroethene	96	5.364	5.364	0.000	99	574930	10.0	9.46	
13 Carbon disulfide	76	5.406	5.406	0.000	99	1951386	10.0	9.75	
14 1,1,2-Trichloro-1,2,2-trif	151	5.434	5.434	0.000	93	525647	10.0	9.76	
15 Iodomethane	142	5.574	5.574	0.000	98	862706	10.0	9.44	
17 Acrolein	56	5.853	5.853	0.000	99	146921	50.0	47.7	
18 3-Chloro-1-propene	39	6.034	6.034	0.000	91	616237	10.0	9.84	
19 Isopropyl alcohol	45	6.034	6.034	0.000	97	86248	100.0	86.7	
20 Methylene Chloride	84	6.174	6.174	0.000	92	487701	10.0	9.42	
21 Acetone	43	6.230	6.230	0.000	100	52622	10.0	10.4	
22 trans-1,2-Dichloroethene	96	6.370	6.370	0.000	99	604485	10.0	9.62	
23 Methyl acetate	74	6.370	6.370	0.000	98	144641	50.0	46.0	
24 Hexane	86	6.453	6.453	0.000	92	199029	10.0	10.0	
25 Methyl tert-butyl ether	73	6.481	6.481	0.000	82	825793	10.0	9.46	
26 2-Methyl-2-propanol	59	6.593	6.593	0.000	98	138473	100.0	85.7	
27 Acetonitrile	41	6.817	6.817	0.000	99	172522	100.0	88.6	
28 Isopropyl ether	45	6.914	6.914	0.000	94	1442183	10.0	9.91	
29 2-Chloro-1,3-butadiene	53	7.068	7.068	0.000	92	890250	10.0	10.5	
30 1,1-Dichloroethane	63	7.110	7.110	0.000	96	1016913	10.0	9.85	
31 Acrylonitrile	53	7.166	7.166	0.000	100	670905	100.0	93.8	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
32 Tert-butyl ethyl ether	59	7.319	7.319	0.000	97	1153369	10.0	9.63	
33 Vinyl acetate	43	7.347	7.347	0.000	97	617126	10.0	9.55	
34 cis-1,2-Dichloroethene	96	7.682	7.682	0.000	80	609240	10.0	9.64	
35 2,2-Dichloropropane	77	7.794	7.794	0.000	90	618407	10.0	9.70	
37 Chlorobromomethane	128	7.892	7.892	0.000	89	216490	10.0	9.30	
36 Cyclohexane	84	7.892	7.892	0.000	90	1091229	10.0	10.4	
38 Chloroform	83	7.948	7.948	0.000	96	934746	10.0	9.47	
39 Ethyl acetate	45	8.032	8.032	0.000	99	50681	20.0	18.2	
40 Carbon tetrachloride	117	8.101	8.101	0.000	98	793479	10.0	10.0	
41 Tetrahydrofuran	71	8.115	8.115	0.000	90	45379	20.0	20.0	
$ 42 Dibromofluoromethane (Surr	113	8.143	8.143	0.000	95	454700	10.0	10.0	
43 1,1,1-Trichloroethane	97	8.171	8.171	0.000	97	858980	10.0	9.81	
44 2-Butanone (MEK)	43	8.255	8.255	0.000	98	81503	10.0	9.26	
45 1,1-Dichloropropene	75	8.283	8.283	0.000	97	855101	10.0	10.4	
46 Isooctane	57	8.367	8.367	0.000	95	2676487	10.0	10.5	
47 n-Heptane	43	8.451	8.451	0.000	90	1110975	10.0	10.3	
48 Benzene	78	8.534	8.534	0.000	97	2285552	10.0	9.86	
50 Propionitrile	54	8.562	8.562	0.000	45	243677	100.0	93.9	
49 Methacrylonitrile	41	8.576	8.576	0.000	92	1373877	100.0	98.1	
51 Tert-amyl methyl ether	73	8.604	8.604	0.000	97	959444	10.0	9.42	
52 Isobutyl alcohol	42	8.660	8.660	0.000	87	101966	250.0	224.7	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.674	8.674	0.000	92	373848	10.0	9.56	
54 1,2-Dichloroethane	62	8.730	8.730	0.000	96	446073	10.0	9.38	
* 55 Fluorobenzene	96	8.925	8.925	0.000	99	2106768	10.0	10.0	
57 Methylcyclohexane	55	9.079	9.079	0.000	88	974312	10.0	10.6	
56 Trichloroethene	95	9.079	9.079	0.000	67	649349	10.0	10.1	
59 n-Butanol	56	9.302	9.302	0.000	88	109837	250.0	250.9	
60 Dibromomethane	93	9.484	9.484	0.000	93	198478	10.0	9.44	
61 Ethyl acrylate	55	9.512	9.512	0.000	99	251534	10.0	9.97	
62 1,2-Dichloropropane	63	9.582	9.582	0.000	96	515223	10.0	9.80	
63 Dichlorobromomethane	83	9.610	9.610	0.000	99	591934	10.0	9.91	
64 Methyl methacrylate	69	9.708	9.708	0.000	91	311917	20.0	20.2	
65 1,4-Dioxane	88	9.791	9.791	0.000	91	36292	200.0	178.2	
66 2-Chloroethyl vinyl ether	63	10.085	10.085	0.000	92	48656	10.0	10.3	
67 cis-1,3-Dichloropropene	75	10.182	10.182	0.000	96	734545	10.0	10.1	
$ 68 Toluene-d8 (Surr)	98	10.350	10.350	0.000	93	2166377	10.0	10.2	
69 Toluene	92	10.406	10.406	0.000	99	1559167	10.0	10.1	
70 2-Nitropropane	43	10.615	10.615	0.000	96	95120	20.0	18.0	
71 4-Methyl-2-pentanone (MIBK	43	10.699	10.699	0.000	96	174528	10.0	9.48	
73 Tetrachloroethene	164	10.755	10.755	0.000	98	638978	10.0	10.1	
72 trans-1,3-Dichloropropene	75	10.755	10.755	0.000	81	591921	10.0	10.0	
74 Ethyl methacrylate	69	10.839	10.839	0.000	89	335605	10.0	10.0	
75 1,1,2-Trichloroethane	83	10.909	10.909	0.000	90	254303	10.0	9.27	
76 Chlorodibromomethane	129	11.090	11.090	0.000	90	379880	10.0	9.49	
77 1,3-Dichloropropane	76	11.174	11.174	0.000	90	540325	10.0	9.48	
78 n-Butyl acetate	43	11.314	11.314	0.000	98	347080	10.0	10.1	
79 Ethylene Dibromide	107	11.342	11.342	0.000	98	275521	10.0	9.70	
80 2-Hexanone	43	11.453	11.453	0.000	97	123962	10.0	9.38	
81 1-Chlorohexane	91	11.705	11.705	0.000	98	1001461	10.0	10.8	
* 83 Chlorobenzene-d5	117	11.774	11.774	0.000	68	1649771	10.0	10.0	
82 Ethylbenzene	91	11.774	11.774	0.000	97	3123284	10.0	9.87	
84 Chlorobenzene	112	11.788	11.788	0.000	94	1730612	10.0	9.97	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
85 1,1,1,2-Tetrachloroethane	131	11.830	11.830	0.000	95	542208	10.0	9.81	
86 m-Xylene & p-Xylene	106	11.900	11.900	0.000	99	1250609	10.0	10.1	
88 o-Xylene	106	12.305	12.305	0.000	97	1154275	10.0	10.6	
89 Styrene	104	12.361	12.361	0.000	95	1666582	10.0	11.0	
90 Bromoform	173	12.431	12.431	0.000	98	213980	10.0	9.18	
91 Isopropylbenzene	105	12.585	12.585	0.000	95	3141252	10.0	9.91	
$ 92 4-Bromofluorobenzene (Surr	95	12.878	12.878	0.000	96	659526	10.0	9.63	
93 N-Propylbenzene	91	12.962	12.962	0.000	98	3657713	10.0	9.81	
94 Bromobenzene	156	13.004	13.004	0.000	93	672037	10.0	9.21	
95 1,1,2,2-Tetrachloroethane	83	13.031	13.031	0.000	95	329077	10.0	8.99	
96 1,3,5-Trimethylbenzene	105	13.129	13.129	0.000	96	2505481	10.0	10.7	
97 2-Chlorotoluene	91	13.157	13.157	0.000	98	2305826	10.0	10.0	
98 1,2,3-Trichloropropane	110	13.199	13.199	0.000	87	99380	10.0	9.75	
99 trans-1,4-Dichloro-2-buten	53	13.199	13.199	0.000	87	80111	10.0	9.00	
100 Cyclohexanone	55	13.269	13.269	0.000	85	59596	100.0	90.3	
101 4-Chlorotoluene	91	13.311	13.311	0.000	96	2007263	10.0	10.2	
102 tert-Butylbenzene	119	13.450	13.450	0.000	93	2392261	10.0	10.5	
103 1,2,4-Trimethylbenzene	105	13.520	13.520	0.000	96	2515063	10.0	9.91	
104 sec-Butylbenzene	105	13.618	13.618	0.000	94	3590616	10.0	9.92	
105 4-Isopropyltoluene	119	13.744	13.744	0.000	96	3008960	10.0	10.0	
106 1,3-Dichlorobenzene	146	13.883	13.883	0.000	98	1410993	10.0	9.75	
107 1,2,3-Trimethylbenzene	105	13.953	13.953	0.000	95	2422520	10.0	9.59	
* 108 1,4-Dichlorobenzene-d4	152	13.953	13.953	0.000	74	909861	10.0	10.0	
109 1,4-Dichlorobenzene	146	13.967	13.967	0.000	96	1412676	10.0	9.49	
110 n-Butylbenzene	134	14.163	14.163	0.000	96	867823	10.0	10.3	
111 Benzyl chloride	126	14.191	14.191	0.000	81	143052	10.0	8.80	
112 1,2-Dichlorobenzene	146	14.386	14.386	0.000	99	1195648	10.0	9.87	
113 n-Nonyl Aldehyde	57	15.098	15.098	0.000	90	202788	10.0	9.53	
114 1,2-Dibromo-3-Chloropropan	157	15.182	15.182	0.000	85	57914	10.0	9.73	
115 1,3,5-Trichlorobenzene	180	15.196	15.196	0.000	97	1003646	10.0	9.86	
116 Hexachlorobutadiene	225	15.769	15.769	0.000	98	541223	10.0	9.98	
117 1,2,4-Trichlorobenzene	180	15.839	15.839	0.000	94	647808	10.0	9.91	
118 Naphthalene	128	16.188	16.188	0.000	96	752844	10.0	10.0	
120 1,2,3-Trichlorobenzene	180	16.383	16.383	0.000	95	396737	10.0	9.50	

Reagents:

8260 Surr 25_00065	Amount Added: 10.00	Units: uL	
8260 NewWkMix_00182	Amount Added: 10.00	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent

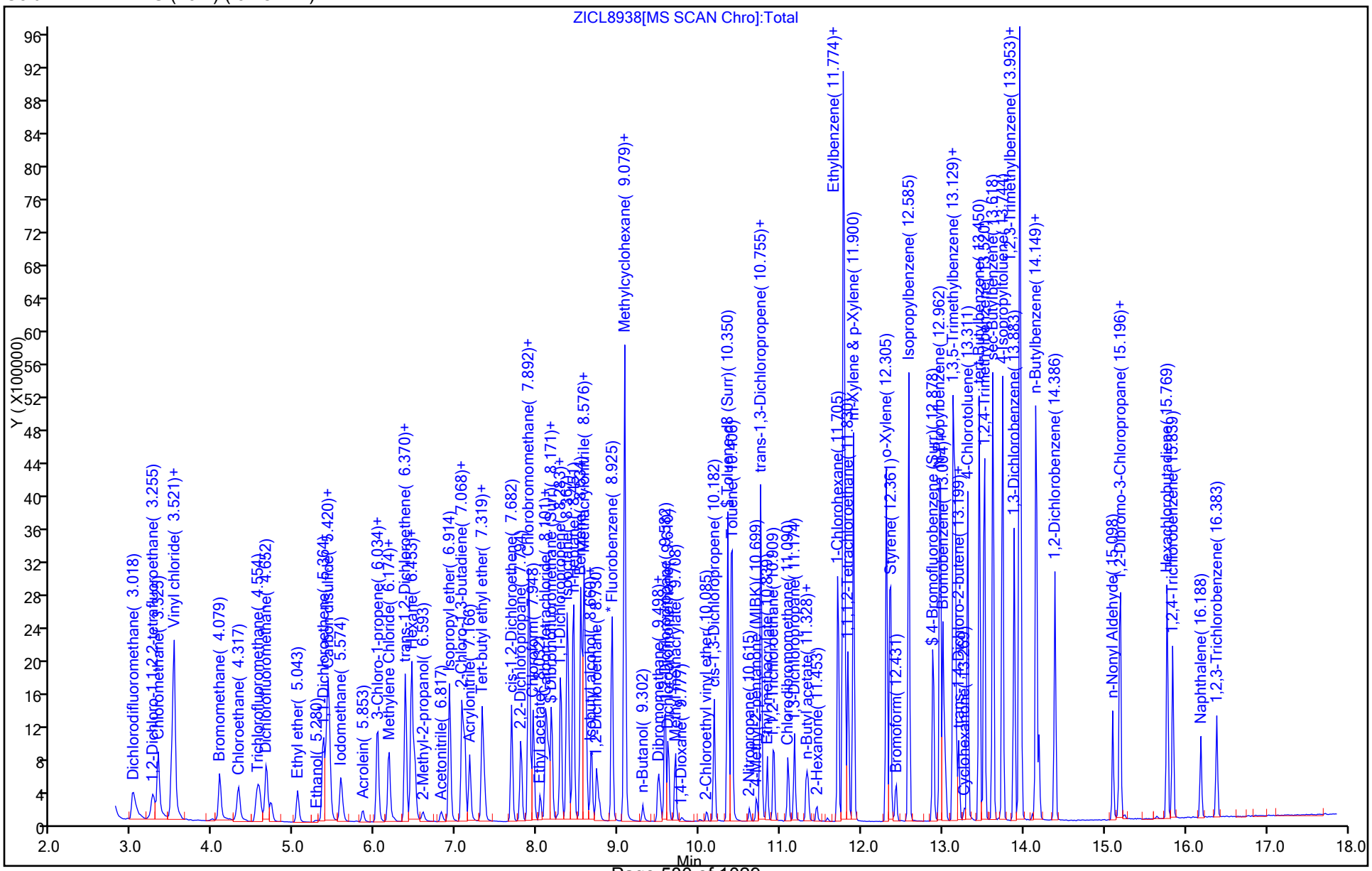
Report Date: 07-Sep-2016 12:31:15 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8938.D

Injection Date:	07-Sep-2016 09:07:30	Instrument ID:	VMSZ	Operator ID:	EF
Lims ID:	ICIS			Worklist Smp#:	9
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	6
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8939.D
Lims ID: ic
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 07-Sep-2016 09:30:30 ALS Bottle#: 7 Worklist Smp#: 10
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008404-010
Misc. Info.: VSTD020
Operator ID: EF Instrument ID: VMSZ
Sublist: chrom-25mL-8260-MSZ*sub12

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 07-Sep-2016 12:32:57 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: fishere Date: 07-Sep-2016 12:32:57

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.003	3.003	0.000	100	1849017	20.0	18.2	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.255	3.255	0.000	98	878635	20.0	20.0	
3 Chloromethane	50	3.324	3.324	0.000	99	2323219	20.0	19.1	
4 Vinyl chloride	62	3.492	3.492	0.000	98	2646720	20.0	19.6	
5 Butadiene	39	3.520	3.520	0.000	90	2351547	20.0	19.4	
6 Bromomethane	94	4.079	4.079	0.000	90	1132721	20.0	19.6	
7 Chloroethane	64	4.316	4.316	0.000	100	1343115	20.0	19.6	
8 Trichlorofluoromethane	101	4.553	4.553	0.000	99	2184979	20.0	19.7	
9 Dichlorofluoromethane	67	4.651	4.651	0.000	97	2443374	20.0	19.6	
10 Ethyl ether	74	5.042	5.042	0.000	91	579886	20.0	20.1	
11 Ethanol	45	5.266	5.266	0.000	99	169637	800.0	827.9	
12 1,1-Dichloroethene	96	5.363	5.363	0.000	98	1595299	20.0	20.6	
13 Carbon disulfide	76	5.405	5.405	0.000	99	5186275	20.0	20.4	
14 1,1,2-Trichloro-1,2,2-trif	151	5.433	5.433	0.000	92	1422428	20.0	20.8	
15 Iodomethane	142	5.573	5.573	0.000	98	2413149	20.0	20.8	
S 16 1,2-Dichloroethene, Total	96				0			40.8	
17 Acrolein	56	5.838	5.838	0.000	98	423601	100.0	108.2	
18 3-Chloro-1-propene	39	6.020	6.020	0.000	93	1598679	20.0	20.1	
19 Isopropyl alcohol	45	6.034	6.034	0.000	98	248397	200.0	196.5	
20 Methylene Chloride	84	6.173	6.173	0.000	93	1302502	20.0	19.8	
21 Acetone	43	6.229	6.229	0.000	99	129997	20.0	21.7	
22 trans-1,2-Dichloroethene	96	6.369	6.369	0.000	98	1635749	20.0	20.5	
23 Methyl acetate	74	6.369	6.369	0.000	84	406704	100.0	101.7	
24 Hexane	86	6.453	6.453	0.000	92	545623	20.0	21.6	
25 Methyl tert-butyl ether	73	6.481	6.481	0.000	95	2261260	20.0	20.4	
26 2-Methyl-2-propanol	59	6.592	6.592	0.000	99	416161	200.0	202.6	
27 Acetonitrile	41	6.816	6.816	0.000	99	506218	200.0	204.6	
28 Isopropyl ether	45	6.914	6.914	0.000	93	3983306	20.0	21.5	
29 2-Chloro-1,3-butadiene	53	7.067	7.067	0.000	91	2423059	20.0	22.5	
30 1,1-Dichloroethane	63	7.109	7.109	0.000	96	2675254	20.0	20.4	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
31 Acrylonitrile	53	7.165	7.165	0.000	99	1849916	200.0	203.6	
32 Tert-butyl ethyl ether	59	7.319	7.319	0.000	96	3232820	20.0	21.2	
33 Vinyl acetate	43	7.347	7.347	0.000	97	1676475	20.0	20.4	
34 cis-1,2-Dichloroethene	96	7.682	7.682	0.000	79	1635921	20.0	20.4	
35 2,2-Dichloropropane	77	7.794	7.794	0.000	89	1544459	20.0	19.1	
37 Chlorobromomethane	128	7.891	7.891	0.000	97	594483	20.0	20.1	
36 Cyclohexane	84	7.891	7.891	0.000	90	2905240	20.0	21.9	
38 Chloroform	83	7.947	7.947	0.000	94	2465549	20.0	19.7	
39 Ethyl acetate	45	8.031	8.031	0.000	99	143433	40.0	40.5	
40 Carbon tetrachloride	117	8.101	8.101	0.000	97	2107309	20.0	21.0	
41 Tetrahydrofuran	71	8.115	8.115	0.000	90	119143	40.0	41.3	
$ 42 Dibromofluoromethane (Surr	113	8.143	8.143	0.000	96	1209377	20.0	21.0	
43 1,1,1-Trichloroethane	97	8.171	8.171	0.000	97	2237215	20.0	20.1	
44 2-Butanone (MEK)	43	8.254	8.254	0.000	100	209514	20.0	18.7	
45 1,1-Dichloropropene	75	8.282	8.282	0.000	97	2239389	20.0	21.5	
46 Isooctane	57	8.366	8.366	0.000	95	6722165	20.0	20.7	
47 n-Heptane	43	8.450	8.450	0.000	90	2988057	20.0	21.8	
48 Benzene	78	8.534	8.534	0.000	99	5669223	20.0	19.2	
50 Propionitrile	54	8.562	8.562	0.000	94	693755	200.0	210.3	
49 Methacrylonitrile	41	8.576	8.576	0.000	91	3592412	200.0	201.9	
51 Tert-amyl methyl ether	73	8.604	8.604	0.000	97	2807295	20.0	21.7	
52 Isobutyl alcohol	42	8.659	8.659	0.000	96	334375	500.0	579.7	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.673	8.673	0.000	89	961229	20.0	19.3	
54 1,2-Dichloroethane	62	8.729	8.729	0.000	96	1146076	20.0	19.0	
* 55 Fluorobenzene	96	8.925	8.925	0.000	99	2677803	10.0	10.0	
57 Methylcyclohexane	55	9.078	9.078	0.000	88	2514857	20.0	21.6	
56 Trichloroethene	95	9.078	9.078	0.000	71	1726241	20.0	21.0	
59 n-Butanol	56	9.302	9.302	0.000	87	331350	500.0	595.5	
60 Dibromomethane	93	9.497	9.497	0.000	91	514555	20.0	19.3	
61 Ethyl acrylate	55	9.511	9.511	0.000	99	726999	20.0	22.7	
62 1,2-Dichloropropane	63	9.581	9.581	0.000	97	1378720	20.0	20.6	
63 Dichlorobromomethane	83	9.609	9.609	0.000	99	1553044	20.0	20.5	
64 Methyl methacrylate	69	9.707	9.707	0.000	91	906248	40.0	46.2	
65 1,4-Dioxane	88	9.777	9.777	0.000	93	92324	400.0	356.6	
66 2-Chloroethyl vinyl ether	63	10.084	10.084	0.000	91	141366	20.0	23.5	
67 cis-1,3-Dichloropropene	75	10.182	10.182	0.000	97	1969631	20.0	21.2	
$ 68 Toluene-d8 (Surr)	98	10.349	10.349	0.000	93	5249272	20.0	19.2	
69 Toluene	92	10.405	10.405	0.000	97	3944906	20.0	19.8	
70 2-Nitropropane	43	10.615	10.615	0.000	98	267658	40.0	39.2	
71 4-Methyl-2-pentanone (MIBK	43	10.698	10.698	0.000	97	490027	20.0	20.6	
73 Tetrachloroethene	164	10.754	10.754	0.000	98	1652488	20.0	20.3	
72 trans-1,3-Dichloropropene	75	10.754	10.754	0.000	86	1594922	20.0	20.9	
74 Ethyl methacrylate	69	10.838	10.838	0.000	89	980492	20.0	22.7	
75 1,1,2-Trichloroethane	83	10.922	10.922	0.000	91	657605	20.0	18.6	
76 Chlorodibromomethane	129	11.090	11.090	0.000	90	1062937	20.0	20.6	
77 1,3-Dichloropropane	76	11.173	11.173	0.000	89	1416388	20.0	19.3	
78 n-Butyl acetate	43	11.313	11.313	0.000	99	973219	20.0	22.0	
79 Ethylene Dibromide	107	11.341	11.341	0.000	99	732924	20.0	20.0	
80 2-Hexanone	43	11.453	11.453	0.000	95	336215	20.0	19.7	
81 1-Chlorohexane	91	11.718	11.718	0.000	97	2566936	20.0	21.4	
* 83 Chlorobenzene-d5	117	11.774	11.774	0.000	58	2128603	10.0	10.0	
82 Ethylbenzene	91	11.774	11.774	0.000	95	6887626	20.0	16.9	M

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
84 Chlorobenzene	112	11.788	11.788	0.000	93	4192101	20.0	18.7	
85 1,1,1,2-Tetrachloroethane	131	11.830	11.830	0.000	97	1412612	20.0	19.8	
86 m-Xylene & p-Xylene	106	11.900	11.900	0.000	97	3199112	20.0	20.0	
88 o-Xylene	106	12.305	12.305	0.000	95	2895860	20.0	20.5	
89 Styrene	104	12.360	12.360	0.000	94	4213780	20.0	21.6	
90 Bromoform	173	12.430	12.430	0.000	99	582215	20.0	20.2	
91 Isopropylbenzene	105	12.584	12.584	0.000	96	6722028	20.0	17.2	
$ 92 4-Bromofluorobenzene (Surr	95	12.877	12.877	0.000	96	1734982	20.0	20.5	
93 N-Propylbenzene	91	12.975	12.975	0.000	95	7609744	20.0	16.5	
94 Bromobenzene	156	13.003	13.003	0.000	93	1701937	20.0	18.9	
95 1,1,2,2-Tetrachloroethane	83	13.031	13.031	0.000	94	826054	20.0	18.3	
96 1,3,5-Trimethylbenzene	105	13.129	13.129	0.000	97	5664734	20.0	19.5	
97 2-Chlorotoluene	91	13.157	13.157	0.000	97	5367227	20.0	19.0	
98 1,2,3-Trichloropropane	110	13.198	13.198	0.000	86	253561	20.0	20.4	
99 trans-1,4-Dichloro-2-buten	53	13.198	13.198	0.000	82	211334	20.0	19.3	
100 Cyclohexanone	55	13.268	13.268	0.000	91	172446	200.0	211.8	
101 4-Chlorotoluene	91	13.310	13.310	0.000	96	4665824	20.0	19.3	
102 tert-Butylbenzene	119	13.450	13.450	0.000	93	5393452	20.0	19.2	
103 1,2,4-Trimethylbenzene	105	13.520	13.520	0.000	95	5570322	20.0	17.8	
104 sec-Butylbenzene	105	13.617	13.617	0.000	95	7307960	20.0	16.4	
105 4-Isopropyltoluene	119	13.743	13.743	0.000	92	6327756	20.0	17.1	
106 1,3-Dichlorobenzene	146	13.883	13.883	0.000	98	3357062	20.0	18.8	
107 1,2,3-Trimethylbenzene	105	13.953	13.953	0.000	94	5371287	20.0	17.2	
* 108 1,4-Dichlorobenzene-d4	152	13.953	13.953	0.000	70	1122390	10.0	10.0	
109 1,4-Dichlorobenzene	146	13.967	13.967	0.000	93	3368570	20.0	18.3	
110 n-Butylbenzene	134	14.162	14.162	0.000	92	2126793	20.0	20.5	
111 Benzyl chloride	126	14.190	14.190	0.000	82	389818	20.0	19.4	
112 1,2-Dichlorobenzene	146	14.386	14.386	0.000	98	2777684	20.0	18.6	
113 n-Nonyl Aldehyde	57	15.098	15.098	0.000	91	540591	20.0	20.2	
114 1,2-Dibromo-3-Chloropropan	157	15.182	15.182	0.000	87	144961	20.0	19.7	
115 1,3,5-Trichlorobenzene	180	15.196	15.196	0.000	97	2358839	20.0	18.8	
116 Hexachlorobutadiene	225	15.768	15.768	0.000	98	1251479	20.0	18.7	
117 1,2,4-Trichlorobenzene	180	15.838	15.838	0.000	94	1539557	20.0	19.1	
118 Naphthalene	128	16.187	16.187	0.000	97	1785619	20.0	19.3	
120 1,2,3-Trichlorobenzene	180	16.383	16.383	0.000	95	925740	20.0	18.0	
S 119 Xylenes, Total	106				0			40.6	
S 130 Trihalomethanes, Total	1				0			81.0	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260 Surr 25_00065	Amount Added: 20.00	Units: uL	
8260NewHiWrk_00160	Amount Added: 4.00	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent

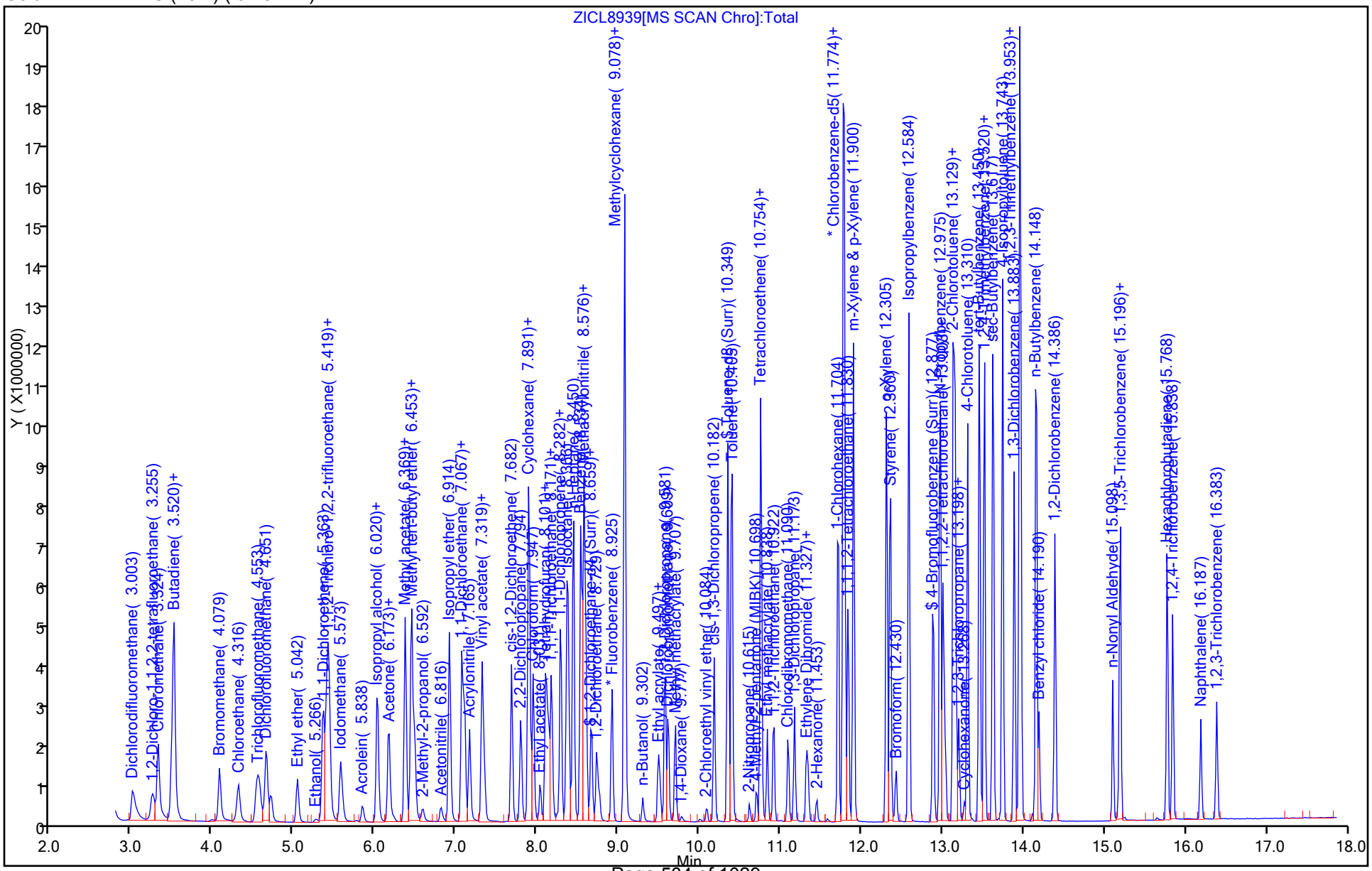
Report Date: 07-Sep-2016 12:32:58 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8939.D

Injection Date:	07-Sep-2016 09:30:30	Instrument ID:	VMSZ	Operator ID:	EF
Lims ID:	ic			Worklist Smp#:	10
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	7
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

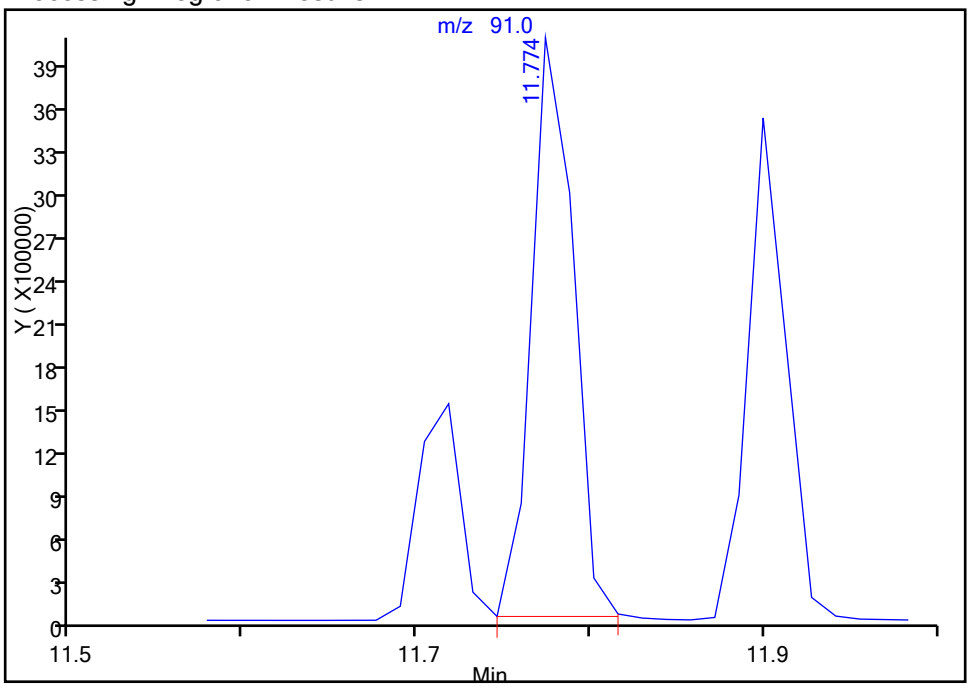
Data File:	\\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8939.D				
Injection Date:	07-Sep-2016 09:30:30	Instrument ID:	VMSZ		
Lims ID:	ic				
Client ID:					
Operator ID:	EF	ALS Bottle#:	7	Worklist Smp#:	10
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

82 Ethylbenzene, CAS: 100-41-4

Signal: 1

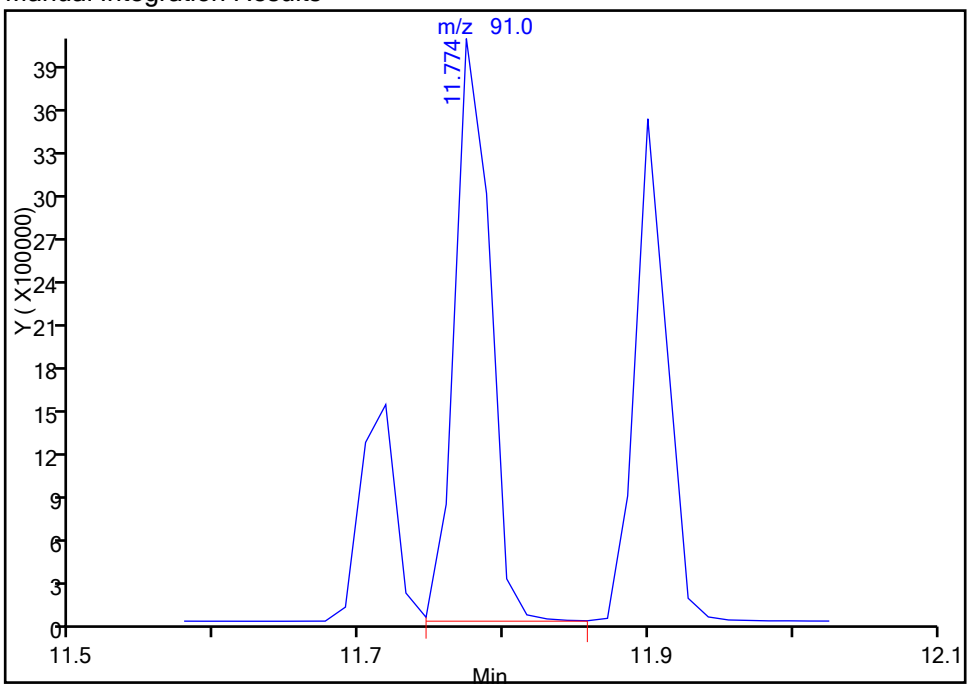
Processing Integration Results

RT: 11.77
Area: 6732646
Amount: 16.545760
Amount Units: ug/l



Manual Integration Results

RT: 11.77
Area: 6887626
Amount: 16.873076
Amount Units: ug/l



Reviewer: fishere, 07-Sep-2016 09:55:39

Audit Action: Split an Integrated Peak Audit Reason: Baseline

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D
Lims ID: ic
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 07-Sep-2016 09:54:30 ALS Bottle#: 8 Worklist Smp#: 11
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008404-011
Misc. Info.: VSTD040
Operator ID: EF Instrument ID: VMSZ
Sublist: chrom-25mL-8260-MSZ*sub12

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 07-Sep-2016 12:33:19 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: fishere Date: 07-Sep-2016 12:33:19

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.006	3.003	0.003	100	3970863	40.0	32.4	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.257	3.255	0.002	97	2010638	40.0	NQ	M
3 Chloromethane	50	3.327	3.324	0.003	98	4997824	40.0	34.1	
4 Vinyl chloride	62	3.495	3.492	0.003	98	5303405	40.0	32.8	
5 Butadiene	39	3.523	3.520	0.003	88	4625884	40.0	32.1	
6 Bromomethane	94	4.081	4.079	0.002	89	2473813	40.0	35.8	
7 Chloroethane	64	4.319	4.316	0.003	100	2855443	40.0	34.8	
8 Trichlorofluoromethane	101	4.556	4.553	0.003	100	5361735	40.0	40.0	
9 Dichlorofluoromethane	67	4.654	4.651	0.003	97	5664822	40.0	37.6	
10 Ethyl ether	74	5.045	5.042	0.003	90	1401018	40.0	40.3	
11 Ethanol	45	5.268	5.266	0.002	100	397354	1600.0	1606.3	
12 1,1-Dichloroethene	96	5.366	5.363	0.003	96	3838717	40.0	41.2	
13 Carbon disulfide	76	5.408	5.405	0.003	99	11250174	40.0	36.6	
14 1,1,2-Trichloro-1,2,2-trif	151	5.436	5.433	0.003	91	3360897	40.0	40.7	
15 Iodomethane	142	5.576	5.573	0.003	99	5622114	40.0	40.1	
S 16 1,2-Dichloroethene, Total	96				0			78.4	
17 Acrolein	56	5.841	5.838	0.003	99	990710	200.0	209.6	
18 3-Chloro-1-propene	39	6.023	6.020	0.003	92	3411225	40.0	35.5	
19 Isopropyl alcohol	45	6.037	6.034	0.003	98	606604	400.0	397.6	
20 Methylene Chloride	84	6.162	6.173	-0.011	92	3034449	40.0	38.2	
21 Acetone	43	6.232	6.229	0.003	98	268072	40.0	38.2	
22 trans-1,2-Dichloroethene	96	6.372	6.369	0.003	95	3850264	40.0	39.9	
23 Methyl acetate	74	6.372	6.369	0.003	86	990177	200.0	205.1	
24 Hexane	86	6.456	6.453	0.003	92	1339923	40.0	44.0	
25 Methyl tert-butyl ether	73	6.484	6.481	0.003	95	5093569	40.0	38.0	
26 2-Methyl-2-propanol	59	6.581	6.592	-0.011	100	958418	400.0	386.4	
27 Acetonitrile	41	6.805	6.816	-0.011	99	1187935	400.0	397.7	
28 Isopropyl ether	45	6.916	6.914	0.002	90	8290307	40.0	37.1	
29 2-Chloro-1,3-butadiene	53	7.070	7.067	0.003	90	5344074	40.0	41.1	
30 1,1-Dichloroethane	63	7.098	7.109	-0.011	96	5875098	40.0	37.1	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
31 Acrylonitrile	53	7.168	7.165	0.003	98	4113734	400.0	375.0	
32 Tert-butyl ethyl ether	59	7.321	7.319	0.002	93	6969479	40.0	37.9	
33 Vinyl acetate	43	7.349	7.347	0.002	97	3823436	40.0	38.6	
34 cis-1,2-Dichloroethene	96	7.685	7.682	0.003	77	3729663	40.0	38.5	
35 2,2-Dichloropropane	77	7.796	7.794	0.002	88	3370123	40.0	34.4	
37 Chlorobromomethane	128	7.894	7.891	0.003	95	1461544	40.0	40.9	
36 Cyclohexane	84	7.894	7.891	0.003	89	6569416	40.0	40.9	
38 Chloroform	83	7.950	7.947	0.003	93	5500437	40.0	36.3	
39 Ethyl acetate	45	8.034	8.031	0.003	99	326541	80.0	76.4	
40 Carbon tetrachloride	117	8.104	8.101	0.003	98	4837378	40.0	39.9	
41 Tetrahydrofuran	71	8.118	8.115	0.003	90	287040	80.0	82.4	
$ 42 Dibromofluoromethane (Surr	113	8.132	8.143	-0.011	95	2804722	40.0	40.4	
43 1,1,1-Trichloroethane	97	8.173	8.171	0.002	97	4941687	40.0	36.8	
44 2-Butanone (MEK)	43	8.243	8.254	-0.011	100	481458	40.0	35.6	
45 1,1-Dichloropropene	75	8.285	8.282	0.003	95	4965560	40.0	39.4	
46 Isooctane	57	8.369	8.366	0.003	93	12883394	40.0	32.9	
47 n-Heptane	43	8.453	8.450	0.003	87	6208578	40.0	37.4	
48 Benzene	78	8.537	8.534	0.003	94	10457079	40.0	29.4	
50 Propionitrile	54	8.564	8.562	0.002	44	1660386	400.0	416.8	
49 Methacrylonitrile	41	8.578	8.576	0.002	89	7381733	400.0	343.6	
51 Tert-amyl methyl ether	73	8.606	8.604	0.002	96	6037198	40.0	38.6	
52 Isobutyl alcohol	42	8.662	8.659	0.003	93	763642	1000.0	1096.6	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.676	8.673	0.003	88	2173918	40.0	36.2	
54 1,2-Dichloroethane	62	8.732	8.729	0.003	96	2538440	40.0	34.8	
* 55 Fluorobenzene	96	8.928	8.925	0.003	99	3232996	10.0	10.0	
57 Methylcyclohexane	55	9.081	9.078	0.003	88	5589704	40.0	39.7	
56 Trichloroethene	95	9.081	9.078	0.003	77	3948206	40.0	39.8	
59 n-Butanol	56	9.305	9.302	0.003	85	786067	1000.0	1170.2	
60 Dibromomethane	93	9.486	9.497	-0.011	92	1205422	40.0	37.4	
61 Ethyl acrylate	55	9.514	9.511	0.003	99	1710023	40.0	44.2	
62 1,2-Dichloropropane	63	9.570	9.581	-0.011	96	3107788	40.0	38.5	
63 Dichlorobromomethane	83	9.612	9.609	0.003	99	3538679	40.0	38.6	
64 Methyl methacrylate	69	9.696	9.707	-0.011	90	2104326	80.0	88.8	
65 1,4-Dioxane	88	9.780	9.777	0.003	92	225273	800.0	720.7	
66 2-Chloroethyl vinyl ether	63	10.087	10.084	0.003	91	349882	40.0	48.2	
67 cis-1,3-Dichloropropene	75	10.185	10.182	0.003	96	4391285	40.0	39.2	
$ 68 Toluene-d8 (Surr)	98	10.352	10.349	0.003	93	9255563	40.0	27.5	
69 Toluene	92	10.394	10.405	-0.011	90	7913539	40.0	32.2	
70 2-Nitropropane	43	10.617	10.615	0.002	96	627133	80.0	74.4	
71 4-Methyl-2-pentanone (MIBK	43	10.701	10.698	0.003	95	1158032	40.0	39.5	
73 Tetrachloroethene	164	10.757	10.754	0.003	96	3845697	40.0	38.3	
72 trans-1,3-Dichloropropene	75	10.757	10.754	0.003	89	3616478	40.0	38.4	
74 Ethyl methacrylate	69	10.841	10.838	0.003	89	2306744	40.0	43.3	
75 1,1,2-Trichloroethane	83	10.911	10.922	-0.011	90	1546227	40.0	35.4	
76 Chlorodibromomethane	129	11.092	11.090	0.002	91	2492058	40.0	39.1	
77 1,3-Dichloropropane	76	11.176	11.173	0.003	88	3206953	40.0	35.3	
78 n-Butyl acetate	43	11.316	11.313	0.003	98	2240494	40.0	41.0	
79 Ethylene Dibromide	107	11.344	11.341	0.003	98	1727821	40.0	38.2	
80 2-Hexanone	43	11.441	11.453	-0.012	96	776969	40.0	36.9	
81 1-Chlorohexane	91	11.707	11.718	-0.011	97	5689299	40.0	38.5	
* 83 Chlorobenzene-d5	117	11.777	11.774	0.003	59	2626062	10.0	10.0	
82 Ethylbenzene	91	11.777	11.774	0.003	95	10937867	40.0	21.7	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
84 Chlorobenzene	112	11.791	11.788	0.003	85	8235070	40.0	29.8	
85 1,1,1,2-Tetrachloroethane	131	11.833	11.830	0.003	97	3338940	40.0	37.9	
86 m-Xylene & p-Xylene	106	11.902	11.900	0.002	86	6578804	40.0	33.4	
88 o-Xylene	106	12.307	12.305	0.002	87	6166084	40.0	35.4	
89 Styrene	104	12.349	12.360	-0.011	93	8267950	40.0	34.4	
90 Bromoform	173	12.433	12.430	0.003	98	1420539	40.0	39.9	
91 Isopropylbenzene	105	12.587	12.584	0.003	89	11159673	40.0	23.1	
$ 92 4-Bromofluorobenzene (Surr	95	12.880	12.877	0.003	94	3840549	40.0	36.6	
93 N-Propylbenzene	91	12.964	12.975	-0.011	87	11577213	40.0	20.3	
94 Bromobenzene	156	13.006	13.003	0.003	87	3933441	40.0	35.3	
95 1,1,2,2-Tetrachloroethane	83	13.034	13.031	0.003	95	1896818	40.0	33.9	
96 1,3,5-Trimethylbenzene	105	13.131	13.129	0.002	91	9870605	40.0	27.5	
97 2-Chlorotoluene	91	13.159	13.157	0.003	90	10366927	40.0	29.6	
98 1,2,3-Trichloropropane	110	13.201	13.198	0.003	83	610382	40.0	40.0	
99 trans-1,4-Dichloro-2-buten	53	13.201	13.198	0.003	85	486015	40.0	35.8	
100 Cyclohexanone	55	13.271	13.268	0.003	84	423908	400.0	420.7	
101 4-Chlorotoluene	91	13.313	13.310	0.003	90	8746146	40.0	29.2	
102 tert-Butylbenzene	119	13.453	13.450	0.003	87	9667578	40.0	27.8	
103 1,2,4-Trimethylbenzene	105	13.522	13.520	0.002	91	9705125	40.0	25.0	
104 sec-Butylbenzene	105	13.620	13.617	0.003	87	11635026	40.0	21.1	
105 4-Isopropyltoluene	119	13.746	13.743	0.003	90	10575110	40.0	23.0	
106 1,3-Dichlorobenzene	146	13.886	13.883	0.003	93	6916746	40.0	31.3	
107 1,2,3-Trimethylbenzene	105	13.955	13.953	0.002	86	9609250	40.0	24.9	
* 108 1,4-Dichlorobenzene-d4	152	13.955	13.953	0.002	59	1389060	10.0	10.0	
109 1,4-Dichlorobenzene	146	13.969	13.967	0.002	88	7061208	40.0	31.1	
110 n-Butylbenzene	134	14.151	14.162	-0.011	84	4823599	40.0	37.6	
111 Benzyl chloride	126	14.193	14.190	0.003	72	940383	40.0	37.9	
112 1,2-Dichlorobenzene	146	14.388	14.386	0.002	94	5917890	40.0	32.0	
113 n-Nonyl Aldehyde	57	15.101	15.098	0.003	93	1359805	40.0	40.8	
114 1,2-Dibromo-3-Chloropropan	157	15.170	15.182	-0.012	93	358685	40.0	39.5	
115 1,3,5-Trichlorobenzene	180	15.198	15.196	0.002	97	5261189	40.0	33.8	
116 Hexachlorobutadiene	225	15.771	15.768	0.003	97	3111545	40.0	37.6	
117 1,2,4-Trichlorobenzene	180	15.841	15.838	0.003	95	3530228	40.0	35.4	
118 Naphthalene	128	16.190	16.187	0.003	97	4065732	40.0	35.5	
120 1,2,3-Trichlorobenzene	180	16.385	16.383	0.002	96	2136508	40.0	33.5	
S 119 Xylenes, Total	106				0			68.8	
S 130 Trihalomethanes, Total	1				0			154.0	

QC Flag Legend

Processing Flags

NQ - Not Quantifiable

Review Flags

M - Manually Integrated

Reagents:

8260NewHiWrk_00160	Amount Added: 8.00	Units: uL	
8260_Surr_00039	Amount Added: 0.40	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent

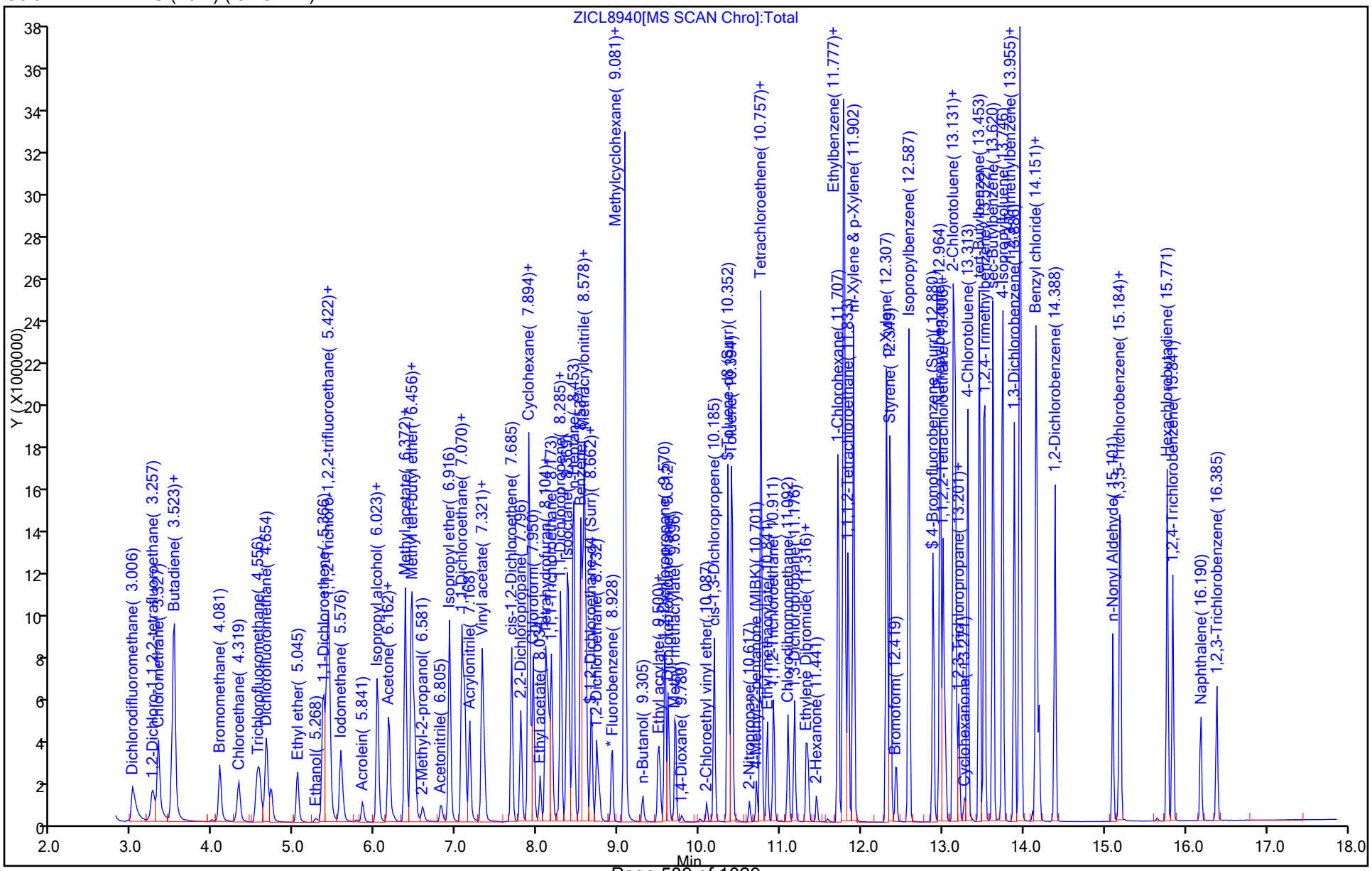
Report Date: 07-Sep-2016 12:33:21 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Injection Date:	07-Sep-2016 09:54:30	Instrument ID:	VMSZ	Operator ID:	EF
Lims ID:	ic			Worklist Smp#:	11
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	8
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

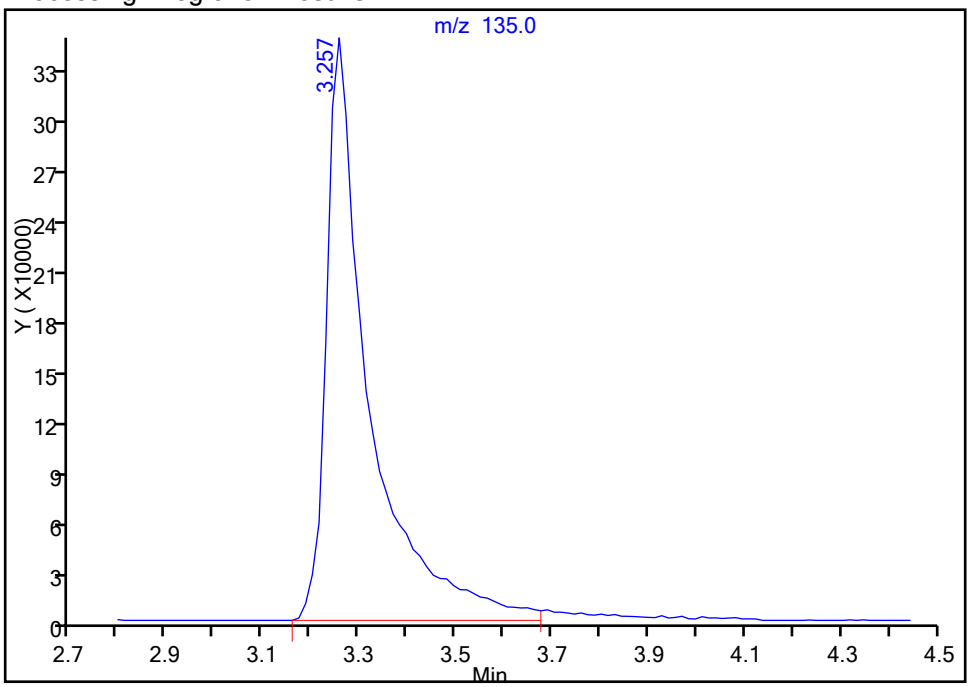
Data File:	\\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D				
Injection Date:	07-Sep-2016 09:54:30	Instrument ID:	VMSZ		
Lims ID:	ic				
Client ID:					
Operator ID:	EF	ALS Bottle#:	8	Worklist Smp#:	11
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

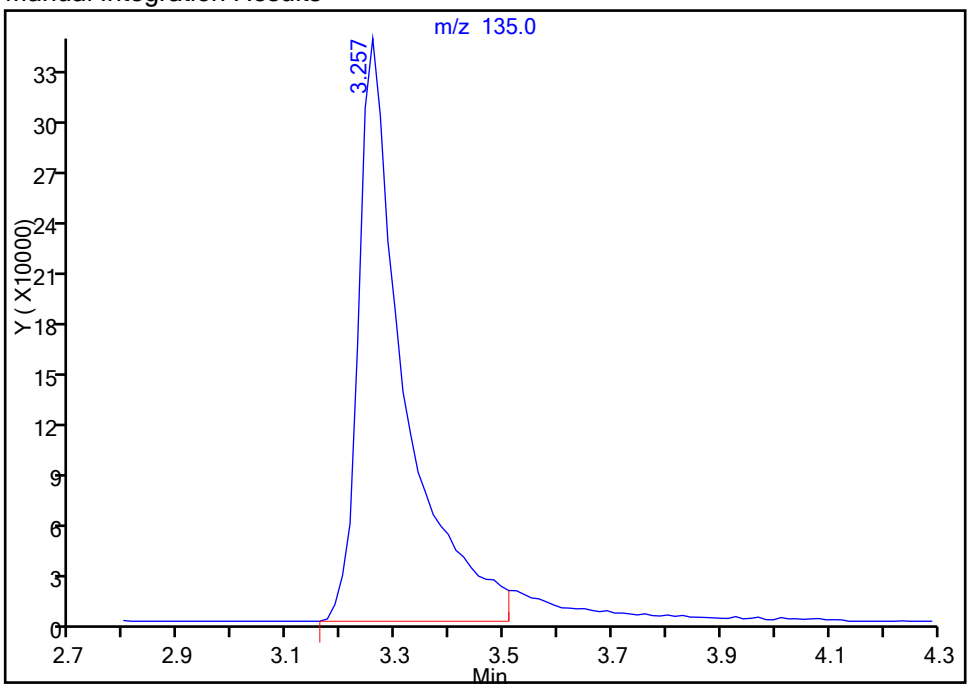
Processing Integration Results

RT: 3.26
Area: 2113843
Amount: 36.486827
Amount Units: ug/l



Manual Integration Results

RT: 3.26
Area: 2010638
Amount: NaN
Amount Units: ug/l



Reviewer: fishere, 07-Sep-2016 10:29:46

Audit Action: Split an Integrated Peak Audit Reason: Split Peak

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab Sample ID: ICV 160-265937/14 Calibration Date: 08/22/2016 14:40

Instrument ID: VMSL Calib Start Date: 08/22/2016 11:18

GC Column: RTX-VMS40 ID: 0.18(mm) Calib End Date: 08/22/2016 13:49

Lab File ID: LICV4712.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	0.4601	0.4119	0.1000	8.95	10.0	-10.5	30.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	Ave	0.2079	0.2231	0.0100	10.7	10.0	7.3	30.0
Chloromethane	Ave	0.5861	0.5469	0.1000	9.33	10.0	-6.7	30.0
Vinyl chloride	Ave	0.4493	0.4281	0.1000	9.53	10.0	-4.7	30.0
Butadiene	Ave	0.5075	0.4453	0.0100	8.77	10.0	-12.3	30.0
Methyl bromide	Ave	0.1717	0.1544	0.1000	8.99	10.0	-10.1	30.0
Chloroethane	Ave	0.2329	0.2148	0.1000	9.22	10.0	-7.8	30.0
Trichlorofluoromethane	Ave	0.5581	0.4786	0.1000	8.58	10.0	-14.2	30.0
Dichlorofluoromethane	Ave	0.5511	0.4939	0.0100	8.96	10.0	-10.4	30.0
Ethyl ether	Ave	0.0929	0.0978	0.0100	10.5	10.0	5.3	30.0
Ethanol	Ave	0.0011	0.0012	0.0010	434	400	8.6	30.0
1,1-Dichloroethene	Ave	0.2787	0.2623	0.1000	9.41	10.0	-5.9	30.0
Carbon disulfide	Ave	0.9825	0.9199	0.1000	9.36	10.0	-6.4	30.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	0.2735	0.2437	0.1000	8.91	10.0	-10.9	30.0
Iodomethane	Lin		0.1368	0.0100	7.83	10.0	-21.7	30.0
Acrolein	Lin1		0.0159	0.0010	61.5	50.0	22.9	30.0
Allyl chloride	Ave	0.3878	0.3552	0.0100	9.16	10.0	-8.4	30.0
Isopropyl alcohol	Ave	0.0059	0.0064*	0.0100	109	100	8.8	30.0
Methylene Chloride	Ave	0.2441	0.2198	0.1000	9.01	10.0	-9.9	30.0
Acetone	Lin1		0.0333*	0.1000	11.1	10.0	11.3	30.0
Methyl acetate	Ave	0.0125	0.0136*	0.1000	54.1	50.0	8.3	30.0
trans-1,2-Dichloroethene	Ave	0.2869	0.2795	0.1000	9.74	10.0	-2.6	30.0
Hexane	Ave	0.0958	0.0967	0.0100	10.1	10.0	1.0	30.0
Methyl tert-butyl ether	Ave	0.3755	0.4099	0.1000	10.9	10.0	9.1	30.0
Acetonitrile	Ave	0.0126	0.0128	0.0010	101	100	1.4	30.0
Isopropyl ether	Ave	0.8067	0.9016	0.0100	11.2	10.0	11.8	30.0
tert-Butyl alcohol	Ave	0.0084	0.0092*	0.0100	110	100	10.2	30.0
2-Chloro-1,3-butadiene	Ave	0.5640	0.5569	0.0100	9.87	10.0	-1.3	30.0
1,1-Dichloroethane	Ave	0.5346	0.5113	0.2000	9.56	10.0	-4.4	30.0
Acrylonitrile	Ave	0.0366	0.0397	0.0100	108	100	8.4	30.0
Tert-butyl ethyl ether	Ave	0.5818	0.6541	0.0100	11.2	10.0	12.4	30.0
Vinyl acetate	Ave	0.3356	0.3473	0.0100	10.3	10.0	3.5	30.0
cis-1,2-Dichloroethene	Ave	0.2681	0.2640	0.1000	9.85	10.0	-1.5	30.0
2,2-Dichloropropane	Ave	0.4813	0.4246	0.0100	8.82	10.0	-11.8	30.0
Bromochloromethane	Ave	0.0906	0.0932	0.0100	10.3	10.0	2.9	30.0
Cyclohexane	Ave	0.4778	0.4807	0.1000	10.1	10.0	0.6	30.0
Chloroform	Ave	0.4621	0.4393	0.2000	9.51	10.0	-4.9	30.0
Ethyl acetate	Ave	0.0143	0.0162	0.0100	22.7	20.0	13.4	30.0
Carbon tetrachloride	Ave	0.4634	0.4271	0.1000	9.22	10.0	-7.8	30.0
Tetrahydrofuran	Lin		0.0087	0.0010	22.0	20.0	10.0	30.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab Sample ID: ICV 160-265937/14 Calibration Date: 08/22/2016 14:40

Instrument ID: VMSL Calib Start Date: 08/22/2016 11:18

GC Column: RTX-VMS40 ID: 0.18(mm) Calib End Date: 08/22/2016 13:49

Lab File ID: LICV4712.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,1,1-Trichloroethane	Ave	0.5149	0.4651	0.1000	9.03	10.0	-9.7	30.0
2-Butanone	Lin1		0.0470*	0.1000	11.2	10.0	12.0	30.0
1,1-Dichloropropene	Ave	0.3972	0.3918	0.0100	9.86	10.0	-1.4	30.0
Isooctane	Ave	1.438	1.458	0.0100	10.1	10.0	1.3	30.0
n-Heptane	Ave	0.6870	0.6712	0.0100	9.77	10.0	-2.3	30.0
Benzene	Ave	1.053	1.032	0.5000	9.80	10.0	-2.0	30.0
Propionitrile	Ave	0.0133	0.0149	0.0010	112	100	11.9	30.0
Methacrylonitrile	Ave	0.0779	0.0833	0.0100	107	100	6.9	30.0
Tert-amyl methyl ether	Ave	0.4188	0.4628	0.0100	11.0	10.0	10.5	30.0
Isobutanol	Lin		0.0028	0.0010	268	250	7.1	30.0
1,2-Dichloroethane	Ave	0.2700	0.2595	0.1000	9.61	10.0	-3.9	30.0
Methylcyclohexane	Ave	0.5426	0.5182	0.1000	9.55	10.0	-4.5	30.0
Trichloroethene	Ave	0.2986	0.2943	0.2000	9.86	10.0	-1.4	30.0
n-Butanol	Lin		0.0025*	0.0100	262	250	4.7	30.0
Dibromomethane	Ave	0.0889	0.0884	0.0100	9.93	10.0	-0.7	30.0
Ethyl acrylate	Ave	0.1227	0.1465	0.0100	11.9	10.0	19.4	30.0
1,2-Dichloropropane	Ave	0.2410	0.2481	0.1000	10.3	10.0	2.9	30.0
Bromodichloromethane	Ave	0.2787	0.2842	0.2000	10.2	10.0	2.0	30.0
Methyl methacrylate	Ave	0.0600	0.0764	0.0100	25.5	20.0	27.5	30.0
1,4-Dioxane	Lin1		0.0009*	0.0010	215	200	7.5	30.0
2-Chloroethyl vinyl ether	Lin1		0.0234	0.0100	9.69	10.0	-3.1	30.0
cis-1,3-Dichloropropene	Ave	0.3036	0.3266	0.2000	10.8	10.0	7.6	30.0
Toluene	Ave	0.9795	0.999	0.4000	10.2	10.0	2.0	30.0
2-Nitropropane	Ave	0.0422	0.0448	0.0100	21.2	20.0	6.1	30.0
4-Methyl-2-pentanone	Ave	0.1320	0.1562	0.1000	11.8	10.0	18.3	30.0
Tetrachloroethene	Ave	0.3985	0.3791	0.2000	9.51	10.0	-4.9	30.0
trans-1,3-Dichloropropene	Ave	0.3531	0.3639	0.1000	10.3	10.0	3.1	30.0
Ethyl methacrylate	Lin1		0.2170	0.0100	9.60	10.0	-4.0	30.0
1,1,2-Trichloroethane	Ave	0.1503	0.1588	0.1000	10.6	10.0	5.6	30.0
Chlorodibromomethane	Ave	0.2395	0.2499	0.1000	10.4	10.0	4.4	30.0
1,3-Dichloropropane	Ave	0.3329	0.3432	0.0100	10.3	10.0	3.1	30.0
n-Butyl acetate	Ave	0.2447	0.2944	0.0100	12.0	10.0	20.3	30.0
1,2-Dibromoethane	Ave	0.1649	0.1781	0.1000	10.8	10.0	8.0	30.0
2-Hexanone	Ave	0.0867	0.1020	0.1000	11.8	10.0	17.6	30.0
Ethylbenzene	Ave	1.958	1.886	0.1000	9.63	10.0	-3.7	30.0
Chlorobenzene	Ave	1.033	1.000	0.5000	9.68	10.0	-3.2	30.0
1,1,1,2-Tetrachloroethane	Ave	0.3524	0.3493	0.0100	9.91	10.0	-0.9	30.0
m-Xylene & p-Xylene	Ave	0.7258	0.7279	0.1000	10.0	10.0	0.3	30.0
o-Xylene	Ave	0.6230	0.6527	0.3000	10.5	10.0	4.8	30.0
Styrene	Ave	0.9330	0.9707	0.3000	10.4	10.0	4.0	30.0
Bromoform	Ave	0.2457	0.2551	0.1000	10.4	10.0	3.8	30.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab Sample ID: ICV 160-265937/14 Calibration Date: 08/22/2016 14:40

Instrument ID: VMSL Calib Start Date: 08/22/2016 11:18

GC Column: RTX-VMS40 ID: 0.18(mm) Calib End Date: 08/22/2016 13:49

Lab File ID: LICV4712.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Isopropylbenzene	Ave	3.659	3.736	0.1000	10.2	10.0	2.1	30.0
N-Propylbenzene	Ave	4.271	4.392	0.0100	10.3	10.0	2.8	30.0
Bromobenzene	Ave	0.7935	0.8030	0.0100	10.1	10.0	1.2	30.0
1,1,2,2-Tetrachloroethane	Ave	0.3440	0.3751	0.3000	10.9	10.0	9.1	30.0
1,3,5-Trimethylbenzene	Ave	2.881	3.003	0.0100	10.4	10.0	4.2	30.0
2-Chlorotoluene	Ave	2.860	2.839	0.0100	9.93	10.0	-0.7	30.0
1,2,3-Trichloropropane	Ave	0.1182	0.1260	0.0100	10.7	10.0	6.6	30.0
trans-1,4-Dichloro-2-butene	Ave	0.1205	0.1294	0.0100	10.7	10.0	7.4	30.0
Cyclohexanone	Ave	0.0075	0.0083	0.0010	111	100	10.7	30.0
4-Chlorotoluene	Ave	2.497	2.553	0.0100	10.2	10.0	2.2	30.0
tert-Butylbenzene	Ave	2.768	2.846	0.0100	10.3	10.0	2.8	30.0
1,2,4-Trimethylbenzene	Ave	2.922	3.014	0.0100	10.3	10.0	3.1	30.0
sec-Butylbenzene	Ave	4.141	4.145	0.0100	10.0	10.0	0.1	30.0
4-Isopropyltoluene	Ave	3.512	3.599	0.0100	10.2	10.0	2.5	30.0
1,3-Dichlorobenzene	Ave	1.695	1.654	0.6000	9.76	10.0	-2.4	30.0
1,2,3-Trimethylbenzene	Ave	2.813	2.830	0.0100	10.1	10.0	0.6	30.0
1,4-Dichlorobenzene	Ave	1.688	1.641	0.5000	9.72	10.0	-2.8	30.0
n-Butylbenzene	Ave	0.9238	0.9317	0.0100	10.1	10.0	0.9	30.0
Benzyl chloride	Ave	0.1566	0.1648	0.0100	10.5	10.0	5.3	30.0
1,2-Dichlorobenzene	Ave	1.379	1.394	0.4000	10.1	10.0	1.0	30.0
Nonanal	Qua		0.2479	0.0100	8.91	10.0	-10.9	30.0
1,2-Dibromo-3-Chloropropane	Ave	0.0663	0.0777	0.0500	11.7	10.0	17.1	30.0
1,3,5-Trichlorobenzene	Ave	1.355	1.320	0.0100	9.74	10.0	-2.6	30.0
Hexachlorobutadiene	Ave	0.7749	0.7328	0.0100	9.46	10.0	-5.4	30.0
1,2,4-Trichlorobenzene	Ave	1.038	1.067	0.2000	10.3	10.0	2.9	30.0
Naphthalene	Ave	1.171	1.321	0.0100	11.3	10.0	12.8	30.0
1,2,3-Trichlorobenzene	Ave	0.8456	0.8841	0.0100	10.5	10.0	4.5	30.0
Dibromofluoromethane (Surr)	Ave	0.1922	0.1956	0.0100	10.2	10.0	1.8	30.0
1,2-Dichloroethane-d4 (Surr)	Ave	0.2033	0.2018	0.0100	9.93	10.0	-0.7	30.0
Toluene-d8 (Surr)	Ave	1.305	1.350	0.0100	10.3	10.0	3.4	30.0
4-Bromofluorobenzene (Surr)	Ave	0.8391	0.8716	0.0100	10.4	10.0	3.9	30.0

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICV4712.D
Lims ID: icv
Client ID:
Sample Type: ICV
Inject. Date: 22-Aug-2016 14:40:30 ALS Bottle#: 10 Worklist Smp#: 14
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: ICV
Operator ID: SMCR Instrument ID: VMSL
Sublist:

Method: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 23-Aug-2016 11:57:43 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK027

First Level Reviewer: rhoadess Date: 22-Aug-2016 15:30:25

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	501645	10.0	8.95	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	97	271707	10.0	10.7	M
3 Chloromethane	50	3.474	3.488	-0.014	99	666040	10.0	9.33	
4 Vinyl chloride	62	3.642	3.641	0.001	97	521358	10.0	9.53	
5 Butadiene	39	3.683	3.683	0.000	92	542250	10.0	8.77	
6 Bromomethane	94	4.256	4.256	0.000	91	188038	10.0	8.99	
7 Chloroethane	64	4.480	4.479	0.001	98	261553	10.0	9.22	
8 Trichlorofluoromethane	101	4.731	4.731	0.000	99	582787	10.0	8.58	
9 Dichlorofluoromethane	67	4.829	4.829	0.000	98	601458	10.0	8.96	
10 Ethyl ether	74	5.234	5.234	0.000	98	119060	10.0	10.5	
11 Ethanol	45	5.457	5.457	0.000	100	58855	400.0	434.3	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	95	319359	10.0	9.41	
13 Carbon disulfide	76	5.583	5.583	0.000	100	1120216	10.0	9.36	
14 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	89	296776	10.0	8.91	
16 Iodomethane	142	5.764	5.764	0.000	99	166567	10.0	7.83	
17 Acrolein	56	6.030	6.030	0.000	99	96669	50.0	61.5	
18 3-Chloro-1-propene	39	6.197	6.211	-0.014	90	432502	10.0	9.16	
19 Isopropyl alcohol	45	6.225	6.225	0.000	98	77770	100.0	108.8	
20 Methylene Chloride	84	6.337	6.351	-0.014	97	267701	10.0	9.01	
21 Acetone	43	6.407	6.407	0.000	98	40517	10.0	11.1	
22 trans-1,2-Dichloroethene	96	6.547	6.546	0.000	96	340339	10.0	9.74	
23 Methyl acetate	74	6.547	6.546	0.000	100	82729	50.0	54.1	
24 Hexane	86	6.630	6.630	0.000	94	117793	10.0	10.1	
25 Methyl tert-butyl ether	73	6.672	6.672	0.000	83	499115	10.0	10.9	
27 Acetonitrile	41	6.979	6.979	0.000	99	156084	100.0	101.4	
28 Isopropyl ether	45	7.091	7.091	0.000	95	1097938	10.0	11.2	
26 2-Methyl-2-propanol	59	7.091	7.091	0.000	34	112205	100.0	110.2	
29 2-Chloro-1,3-butadiene	53	7.231	7.245	-0.014	94	678171	10.0	9.87	
30 1,1-Dichloroethane	63	7.273	7.273	0.000	95	622606	10.0	9.56	
31 Acrylonitrile	53	7.329	7.329	0.001	98	483395	100.0	108.4	
32 Tert-butyl ethyl ether	59	7.496	7.496	0.000	98	796569	10.0	11.2	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
33 Vinyl acetate	43	7.510	7.510	0.000	97	422947	10.0	10.3	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	81	321460	10.0	9.85	
35 2,2-Dichloropropane	77	7.957	7.957	0.000	92	517029	10.0	8.82	
37 Chlorobromomethane	128	8.055	8.055	0.000	92	113516	10.0	10.3	
36 Cyclohexane	84	8.055	8.055	0.000	95	585416	10.0	10.1	
38 Chloroform	83	8.111	8.111	0.000	95	534924	10.0	9.51	
39 Ethyl acetate	45	8.195	8.194	0.001	99	39501	20.0	22.7	
40 Carbon tetrachloride	117	8.264	8.264	0.000	97	520049	10.0	9.22	
41 Tetrahydrofuran	71	8.278	8.278	0.000	93	21292	20.0	22.0	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	95	238214	10.0	10.2	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	98	566392	10.0	9.03	
45 2-Butanone (MEK)	43	8.404	8.404	0.000	98	57215	10.0	11.2	
47 1,1-Dichloropropene	75	8.446	8.446	0.000	93	477129	10.0	9.86	
44 Isooctane	57	8.530	8.530	0.000	97	1775095	10.0	10.1	
46 n-Heptane	43	8.600	8.599	0.001	98	817340	10.0	9.77	
48 Benzene	78	8.697	8.697	0.000	98	1256569	10.0	9.80	
49 Propionitrile	54	8.711	8.711	0.000	96	181280	100.0	111.9	
50 Methacrylonitrile	41	8.725	8.725	0.000	97	1014801	100.0	106.9	
51 Tert-amyl methyl ether	73	8.753	8.753	0.000	97	563546	10.0	11.0	
52 Isobutyl alcohol	42	8.809	8.809	0.000	93	84879	250.0	267.6	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	93	245775	10.0	9.93	
54 1,2-Dichloroethane	62	8.879	8.893	-0.014	97	315967	10.0	9.61	
* 55 Fluorobenzene	96	9.074	9.074	0.000	99	1217754	10.0	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	71	358392	10.0	9.86	
58 Methylcyclohexane	55	9.228	9.228	0.000	97	631027	10.0	9.55	
59 n-Butanol	56	9.451	9.451	0.000	91	76092	250.0	261.8	
61 Dibromomethane	93	9.633	9.633	0.000	93	107596	10.0	9.93	
60 Ethyl acrylate	55	9.661	9.661	0.000	99	178452	10.0	11.9	
62 1,2-Dichloropropane	63	9.731	9.731	0.000	92	302076	10.0	10.3	
63 Dichlorobromomethane	83	9.759	9.759	0.000	98	346109	10.0	10.2	
64 Methyl methacrylate	69	9.857	9.856	0.000	95	186168	20.0	25.5	
65 1,4-Dioxane	88	9.940	9.940	0.000	99	20654	200.0	214.9	
66 2-Chloroethyl vinyl ether	63	10.234	10.233	0.001	93	28515	10.0	9.69	
67 cis-1,3-Dichloropropene	75	10.331	10.331	0.000	93	397705	10.0	10.8	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	1130011	10.0	10.3	
69 Toluene	92	10.541	10.541	0.000	98	835818	10.0	10.2	
70 2-Nitropropane	43	10.764	10.764	0.000	99	74950	20.0	21.2	
71 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	98	130677	10.0	11.8	
72 trans-1,3-Dichloropropene	75	10.904	10.904	0.000	80	304527	10.0	10.3	
73 Tetrachloroethene	164	10.904	10.904	0.000	97	317187	10.0	9.51	
74 Ethyl methacrylate	69	10.974	10.974	0.000	94	181613	10.0	9.60	
75 1,1,2-Trichloroethane	83	11.058	11.057	0.001	93	132843	10.0	10.6	
76 Chlorodibromomethane	129	11.239	11.239	0.000	90	209107	10.0	10.4	
77 1,3-Dichloropropane	76	11.309	11.309	0.000	98	287224	10.0	10.3	
78 n-Butyl acetate	43	11.463	11.463	0.001	99	246369	10.0	12.0	
79 Ethylene Dibromide	107	11.477	11.476	0.001	98	149056	10.0	10.8	
80 2-Hexanone	43	11.588	11.588	0.000	98	85327	10.0	11.8	
81 1-Chlorohexane	91	11.854	11.854	0.000	95	495026	10.0	10.5	
* 83 Chlorobenzene-d5	117	11.910	11.909	0.001	91	836797	10.0	10.0	
82 Ethylbenzene	91	11.924	11.923	0.001	96	1578163	10.0	9.63	
84 Chlorobenzene	112	11.937	11.937	0.000	96	836476	10.0	9.68	
85 1,1,1,2-Tetrachloroethane	131	11.979	11.979	0.000	94	292302	10.0	9.91	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
86 m-Xylene & p-Xylene	106	12.035	12.035	0.000	98	609122	10.0	10.0	
88 o-Xylene	106	12.454	12.454	0.000	98	546182	10.0	10.5	
89 Styrene	104	12.496	12.496	0.000	95	812286	10.0	10.4	
90 Bromoform	173	12.566	12.566	0.000	99	108034	10.0	10.4	
91 Isopropylbenzene	105	12.720	12.719	0.001	97	1582109	10.0	10.2	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	94	369120	10.0	10.4	
93 N-Propylbenzene	91	13.111	13.111	0.000	98	1860004	10.0	10.3	
94 Bromobenzene	156	13.153	13.152	0.001	93	340080	10.0	10.1	
95 1,1,2,2-Tetrachloroethane	83	13.167	13.166	0.000	96	158874	10.0	10.9	
96 1,3,5-Trimethylbenzene	105	13.264	13.264	0.000	95	1271663	10.0	10.4	
97 2-Chlorotoluene	91	13.292	13.292	0.000	96	1202508	10.0	9.93	
99 1,2,3-Trichloropropane	110	13.334	13.334	0.000	88	53370	10.0	10.7	
98 trans-1,4-Dichloro-2-buten	53	13.334	13.334	0.000	89	54805	10.0	10.7	
100 Cyclohexanone	55	13.404	13.404	0.000	92	35306	100.0	110.7	
101 4-Chlorotoluene	91	13.446	13.446	0.000	98	1081362	10.0	10.2	
102 tert-Butylbenzene	119	13.599	13.599	0.000	93	1205253	10.0	10.3	
103 1,2,4-Trimethylbenzene	105	13.655	13.655	0.000	97	1276624	10.0	10.3	
104 sec-Butylbenzene	105	13.767	13.767	0.000	94	1755435	10.0	10.0	
105 4-Isopropyltoluene	119	13.879	13.879	0.000	97	1524331	10.0	10.2	
106 1,3-Dichlorobenzene	146	14.018	14.018	0.000	98	700467	10.0	9.76	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	84	423517	10.0	10.0	
107 1,2,3-Trimethylbenzene	105	14.088	14.088	0.000	96	1198708	10.0	10.1	
109 1,4-Dichlorobenzene	146	14.102	14.102	0.000	93	694876	10.0	9.72	
111 n-Butylbenzene	134	14.298	14.298	0.000	95	394605	10.0	10.1	
110 Benzyl chloride	126	14.326	14.326	0.000	95	69802	10.0	10.5	
112 1,2-Dichlorobenzene	146	14.521	14.521	0.000	97	590312	10.0	10.1	
113 n-Nonyl Aldehyde	57	15.247	15.247	0.000	88	104990	10.0	8.91	
115 1,2-Dibromo-3-Chloropropan	157	15.317	15.317	0.000	84	32884	10.0	11.7	
114 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	98	559178	10.0	9.74	
116 Hexachlorobutadiene	225	15.918	15.918	0.000	97	310371	10.0	9.46	
117 1,2,4-Trichlorobenzene	180	15.988	15.988	0.000	94	452044	10.0	10.3	
118 Naphthalene	128	16.337	16.337	0.000	97	559471	10.0	11.3	
120 1,2,3-Trichlorobenzene	180	16.532	16.532	0.000	96	374411	10.0	10.5	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260 Surr 25_00064	Amount Added: 10.00	Units: uL	
8260NewICVMix_00171	Amount Added: 10.00	Units: uL	
I.S. Working_00134	Amount Added: 10.00	Units: uL	Run Reagent

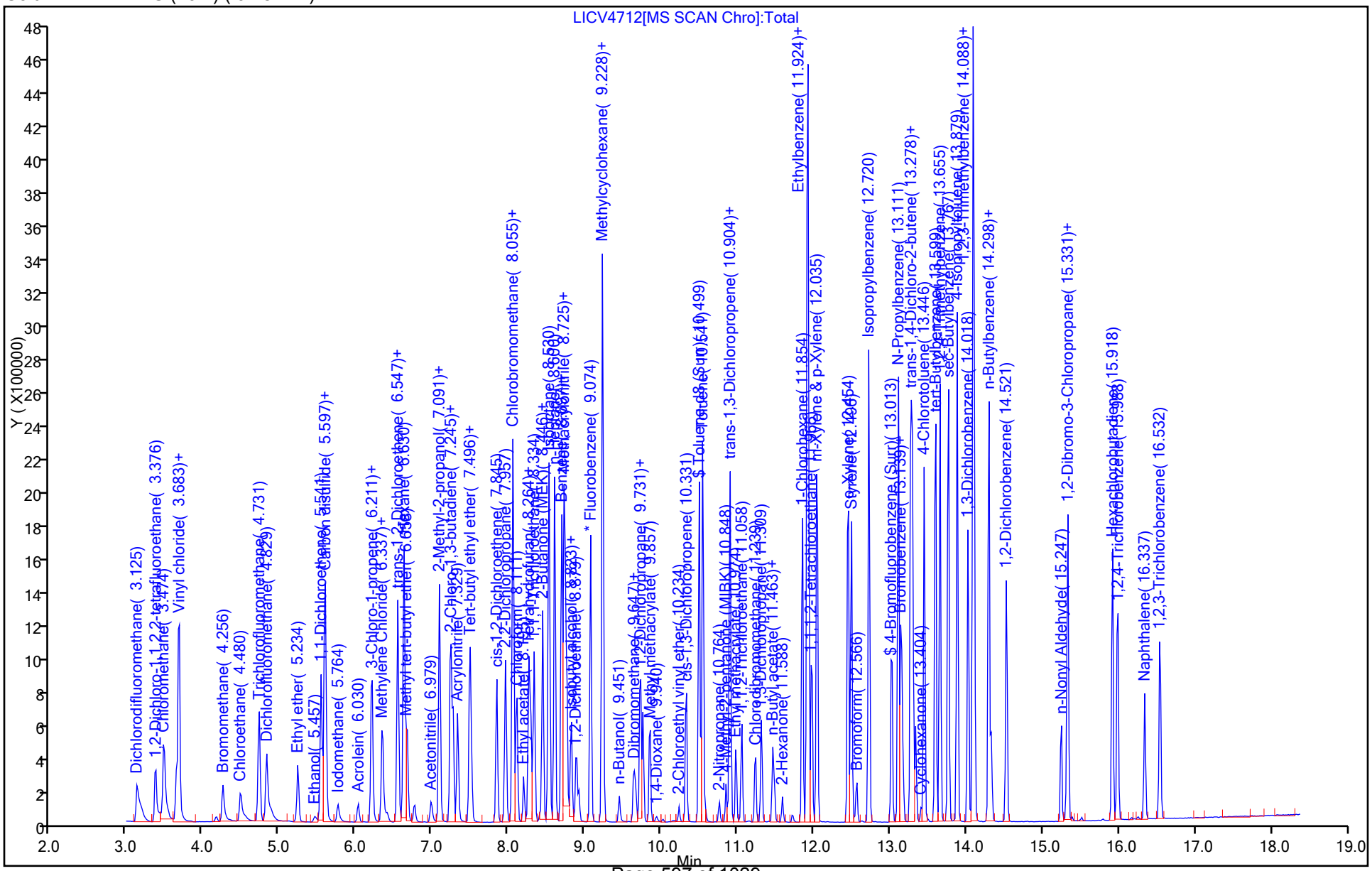
Report Date: 23-Aug-2016 11:58:26 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICV4712.D

Injection Date:	22-Aug-2016 14:40:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	icv			Worklist Smp#:	14
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	10
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

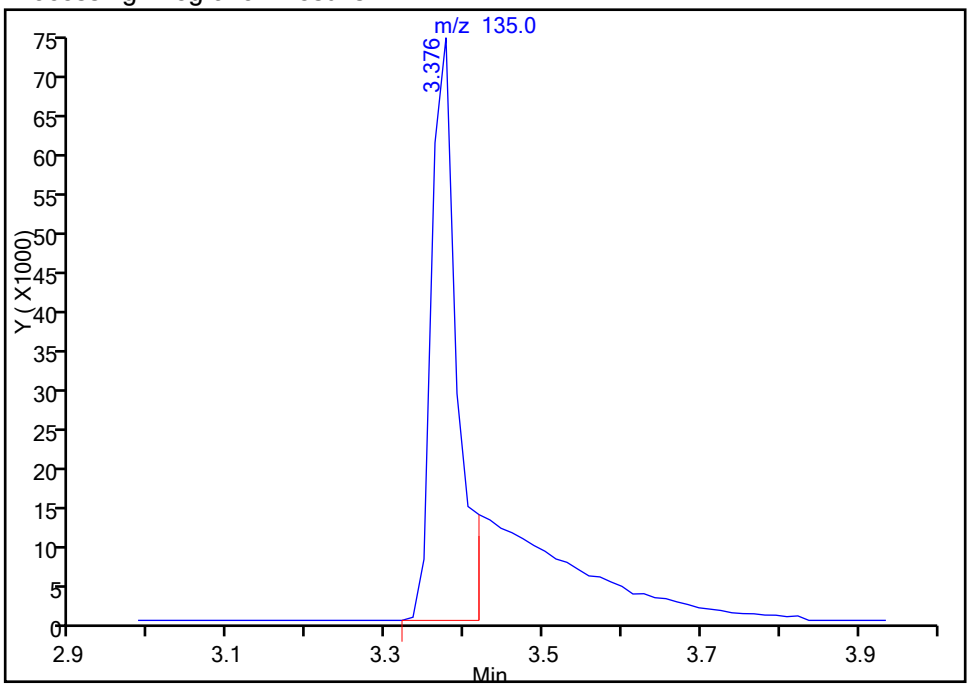
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICV4712.D				
Injection Date:	22-Aug-2016 14:40:30	Instrument ID:	VMSL		
Lims ID:	icv				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	10	Worklist Smp#:	14
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

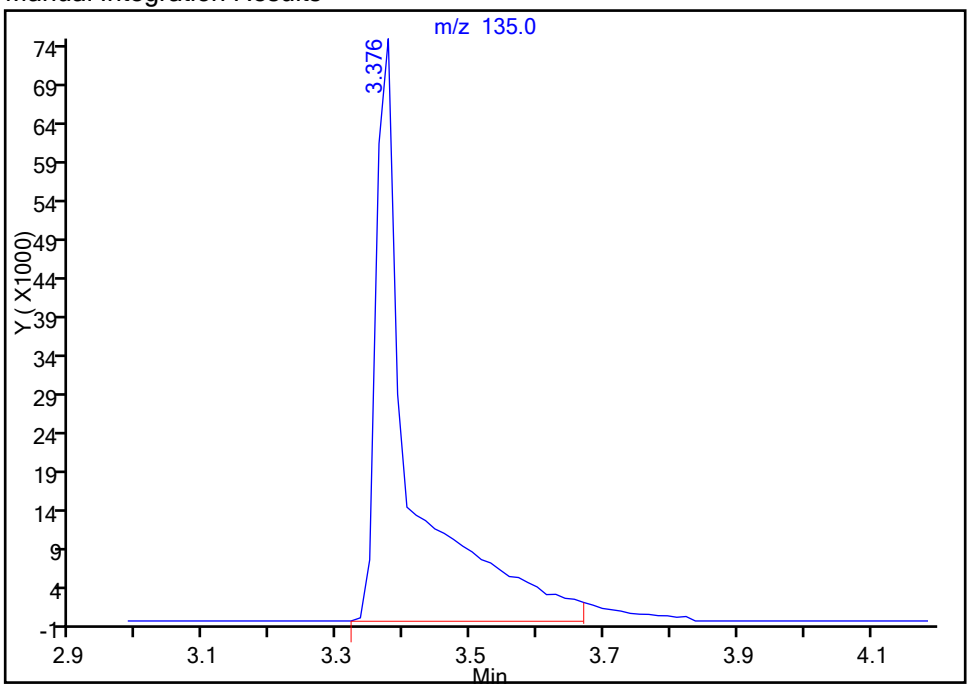
Processing Integration Results

RT: 3.38
Area: 168660
Amount: 6.662816
Amount Units: ug/l



Manual Integration Results

RT: 3.38
Area: 271707
Amount: 10.733629
Amount Units: ug/l



Reviewer: rhoadess, 22-Aug-2016 15:30:25

Audit Action: Manually Integrated Audit Reason: Peak Tail

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab Sample ID: CCVIS 160-267958/5 Calibration Date: 09/04/2016 09:52

Instrument ID: VMSL Calib Start Date: 08/22/2016 11:18

GC Column: RTX-VMS40 ID: 0.18(mm) Calib End Date: 08/22/2016 13:49

Lab File ID: LCCV4849.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	0.4601	0.4460	0.1000	9.69	10.0	-3.1	20.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	Ave	0.2079	0.2220	0.0100	10.7	10.0	6.8	20.0
Chloromethane	Ave	0.5861	0.7127	0.1000	12.2	10.0	21.6*	20.0
Vinyl chloride	Ave	0.4493	0.5889	0.1000	13.1	10.0	31.0*	20.0
Butadiene	Ave	0.5075	0.7068	0.0100	13.9	10.0	39.3*	20.0
Methyl bromide	Ave	0.1717	0.2203	0.1000	12.8	10.0	28.3*	20.0
Chloroethane	Ave	0.2329	0.3147	0.1000	13.5	10.0	35.1*	20.0
Trichlorofluoromethane	Ave	0.5581	0.6179	0.1000	11.1	10.0	10.7	20.0
Dichlorofluoromethane	Ave	0.5511	0.6973	0.0100	12.7	10.0	26.5*	20.0
Ethyl ether	Ave	0.0929	0.1052	0.0100	11.3	10.0	13.2	20.0
Ethanol	Ave	0.0011	0.0013	0.0010	469	400	17.2	20.0
1,1-Dichloroethene	Ave	0.2787	0.2729	0.1000	9.79	10.0	-2.1	20.0
Carbon disulfide	Ave	0.9825	0.996	0.1000	10.1	10.0	1.4	20.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	0.2735	0.2612	0.1000	9.55	10.0	-4.5	20.0
Iodomethane	Lin		0.1589	0.0100	8.90	10.0	-11.0	20.0
Acrolein	Lin1		0.0144	0.0010	55.8	50.0	11.7	20.0
Allyl chloride	Ave	0.3878	0.4321	0.0100	11.1	10.0	11.4	20.0
Isopropyl alcohol	Ave	0.0059	0.0061*	0.0100	104	100	3.8	20.0
Methylene Chloride	Ave	0.2441	0.2214	0.1000	9.07	10.0	-9.3	20.0
Acetone	Lin1		0.0345*	0.1000	11.6	10.0	15.5	20.0
trans-1,2-Dichloroethene	Ave	0.2869	0.2876	0.1000	10.0	10.0	0.3	20.0
Methyl acetate	Ave	0.0125	0.0133*	0.1000	52.8	50.0	5.7	20.0
Hexane	Ave	0.0958	0.1026	0.0100	10.7	10.0	7.1	20.0
Methyl tert-butyl ether	Ave	0.3755	0.3734	0.1000	9.94	10.0	-0.6	20.0
Acetonitrile	Ave	0.0126	0.0140	0.0010	111	100	10.9	20.0
Isopropyl ether	Ave	0.8067	0.9039	0.0100	11.2	10.0	12.0	20.0
tert-Butyl alcohol	Ave	0.0084	0.0088*	0.0100	105	100	5.0	20.0
2-Chloro-1,3-butadiene	Ave	0.5640	0.6261	0.0100	11.1	10.0	11.0	20.0
1,1-Dichloroethane	Ave	0.5346	0.5625	0.2000	10.5	10.0	5.2	20.0
Acrylonitrile	Ave	0.0366	0.0417	0.0100	114	100	13.7	20.0
Tert-butyl ethyl ether	Ave	0.5818	0.6220	0.0100	10.7	10.0	6.9	20.0
Vinyl acetate	Ave	0.3356	0.4140	0.0100	12.3	10.0	23.3*	20.0
cis-1,2-Dichloroethene	Ave	0.2681	0.2813	0.1000	10.5	10.0	4.9	20.0
2,2-Dichloropropane	Ave	0.4813	0.5075	0.0100	10.5	10.0	5.4	20.0
Bromochloromethane	Ave	0.0906	0.0948	0.0100	10.5	10.0	4.7	20.0
Cyclohexane	Ave	0.4778	0.5410	0.1000	11.3	10.0	13.2	20.0
Chloroform	Ave	0.4621	0.4805	0.2000	10.4	10.0	4.0	20.0
Ethyl acetate	Ave	0.0143	0.0165	0.0100	23.0	20.0	15.2	20.0
Carbon tetrachloride	Ave	0.4634	0.4581	0.1000	9.89	10.0	-1.1	20.0
Tetrahydrofuran	Lin		0.0091	0.0010	22.8	20.0	13.8	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab Sample ID: CCVIS 160-267958/5 Calibration Date: 09/04/2016 09:52

Instrument ID: VMSL Calib Start Date: 08/22/2016 11:18

GC Column: RTX-VMS40 ID: 0.18(mm) Calib End Date: 08/22/2016 13:49

Lab File ID: LCCV4849.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,1,1-Trichloroethane	Ave	0.5149	0.5169	0.1000	10.0	10.0	0.4	20.0
2-Butanone	Lin1		0.0501*	0.1000	12.0	10.0	19.5	20.0
1,1-Dichloropropene	Ave	0.3972	0.4333	0.0100	10.9	10.0	9.1	20.0
Isooctane	Ave	1.438	1.683	0.0100	11.7	10.0	17.0	20.0
n-Heptane	Ave	0.6870	0.8721	0.0100	12.7	10.0	26.9*	20.0
Benzene	Ave	1.053	1.124	0.5000	10.7	10.0	6.8	20.0
Propionitrile	Ave	0.0133	0.0153	0.0010	115	100	14.8	20.0
Methacrylonitrile	Ave	0.0779	0.0945	0.0100	121	100	21.2*	20.0
Tert-amyl methyl ether	Ave	0.4188	0.4339	0.0100	10.4	10.0	3.6	20.0
Isobutanol	Lin		0.0030	0.0010	290	250	15.8	20.0
1,2-Dichloroethane	Ave	0.2700	0.2801	0.1000	10.4	10.0	3.8	20.0
Methylcyclohexane	Ave	0.5426	0.6431	0.1000	11.9	10.0	18.5	20.0
Trichloroethene	Ave	0.2986	0.3220	0.2000	10.8	10.0	7.8	20.0
n-Butanol	Lin		0.0023*	0.0100	247	250	-1.2	20.0
Dibromomethane	Ave	0.0889	0.0931	0.0100	10.5	10.0	4.7	20.0
Ethyl acrylate	Ave	0.1227	0.1273	0.0100	10.4	10.0	3.7	20.0
1,2-Dichloropropane	Ave	0.2410	0.2711	0.1000	11.2	10.0	12.5	20.0
Bromodichloromethane	Ave	0.2787	0.2917	0.2000	10.5	10.0	4.7	20.0
Methyl methacrylate	Ave	0.0600	0.0695	0.0100	23.2	20.0	16.0	20.0
1,4-Dioxane	Lin1		0.0008*	0.0010	201	200	0.3	20.0
2-Chloroethyl vinyl ether	Lin1		0.0188	0.0100	7.77	10.0	-22.3*	20.0
cis-1,3-Dichloropropene	Ave	0.3036	0.3266	0.2000	10.8	10.0	7.6	20.0
Toluene	Ave	0.9795	1.094	0.4000	11.2	10.0	11.7	20.0
2-Nitropropane	Ave	0.0422	0.0463	0.0100	22.0	20.0	9.8	20.0
4-Methyl-2-pentanone	Ave	0.1320	0.1397	0.1000	10.6	10.0	5.9	20.0
Tetrachloroethene	Ave	0.3985	0.4069	0.2000	10.2	10.0	2.1	20.0
trans-1,3-Dichloropropene	Ave	0.3531	0.3708	0.1000	10.5	10.0	5.0	20.0
Ethyl methacrylate	Lin1		0.2033	0.0100	9.02	10.0	-9.8	20.0
1,1,2-Trichloroethane	Ave	0.1503	0.1549	0.1000	10.3	10.0	3.1	20.0
Chlorodibromomethane	Ave	0.2395	0.2343	0.1000	9.79	10.0	-2.1	20.0
1,3-Dichloropropane	Ave	0.3329	0.3276	0.0100	9.84	10.0	-1.6	20.0
n-Butyl acetate	Ave	0.2447	0.2544	0.0100	10.4	10.0	4.0	20.0
1,2-Dibromoethane	Ave	0.1649	0.1614	0.1000	9.79	10.0	-2.1	20.0
2-Hexanone	Ave	0.0867	0.0924*	0.1000	10.7	10.0	6.6	20.0
Ethylbenzene	Ave	1.958	2.054	0.1000	10.5	10.0	4.9	20.0
Chlorobenzene	Ave	1.033	1.062	0.5000	10.3	10.0	2.8	20.0
1,1,1,2-Tetrachloroethane	Ave	0.3524	0.3458	0.0100	9.81	10.0	-1.9	20.0
m-Xylene & p-Xylene	Ave	0.7258	0.7778	0.1000	10.7	10.0	7.2	20.0
o-Xylene	Ave	0.6230	0.7041	0.3000	11.3	10.0	13.0	20.0
Styrene	Ave	0.9330	1.101	0.3000	11.8	10.0	18.0	20.0
Bromoform	Ave	0.2457	0.2202	0.1000	8.96	10.0	-10.4	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab Sample ID: CCVIS 160-267958/5 Calibration Date: 09/04/2016 09:52

Instrument ID: VMSL Calib Start Date: 08/22/2016 11:18

GC Column: RTX-VMS40 ID: 0.18(mm) Calib End Date: 08/22/2016 13:49

Lab File ID: LCCV4849.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Isopropylbenzene	Ave	3.659	4.016	0.1000	11.0	10.0	9.8	20.0
N-Propylbenzene	Ave	4.271	4.843	0.0100	11.3	10.0	13.4	20.0
Bromobenzene	Ave	0.7935	0.7730	0.0100	9.74	10.0	-2.6	20.0
1,1,2,2-Tetrachloroethane	Ave	0.3440	0.3510	0.3000	10.2	10.0	2.0	20.0
1,3,5-Trimethylbenzene	Ave	2.881	3.097	0.0100	10.8	10.0	7.5	20.0
2-Chlorotoluene	Ave	2.860	2.955	0.0100	10.3	10.0	3.3	20.0
1,2,3-Trichloropropane	Ave	0.1182	0.1083	0.0100	9.16	10.0	-8.4	20.0
trans-1,4-Dichloro-2-butene	Ave	0.1205	0.1205	0.0100	10.0	10.0	-0.0	20.0
Cyclohexanone	Ave	0.0075	0.0074	0.0010	98.4	100	-1.6	20.0
4-Chlorotoluene	Ave	2.497	2.591	0.0100	10.4	10.0	3.7	20.0
tert-Butylbenzene	Ave	2.768	2.919	0.0100	10.5	10.0	5.5	20.0
1,2,4-Trimethylbenzene	Ave	2.922	3.119	0.0100	10.7	10.0	6.7	20.0
sec-Butylbenzene	Ave	4.141	4.434	0.0100	10.7	10.0	7.1	20.0
4-Isopropyltoluene	Ave	3.512	4.056	0.0100	11.5	10.0	15.5	20.0
1,3-Dichlorobenzene	Ave	1.695	1.636	0.6000	9.65	10.0	-3.5	20.0
1,2,3-Trimethylbenzene	Ave	2.813	2.912	0.0100	10.4	10.0	3.5	20.0
1,4-Dichlorobenzene	Ave	1.688	1.668	0.5000	9.88	10.0	-1.2	20.0
n-Butylbenzene	Ave	0.9238	1.015	0.0100	11.0	10.0	9.9	20.0
Benzyl chloride	Ave	0.1566	0.1693	0.0100	10.8	10.0	8.1	20.0
1,2-Dichlorobenzene	Ave	1.379	1.327	0.4000	9.62	10.0	-3.8	20.0
Nonanal	Qua		0.2604	0.0100	9.29	10.0	-7.1	20.0
1,2-Dibromo-3-Chloropropane	Ave	0.0663	0.0625	0.0500	9.42	10.0	-5.8	20.0
1,3,5-Trichlorobenzene	Ave	1.355	1.336	0.0100	9.86	10.0	-1.4	20.0
Hexachlorobutadiene	Ave	0.7749	0.7577	0.0100	9.78	10.0	-2.2	20.0
1,2,4-Trichlorobenzene	Ave	1.038	0.9573	0.2000	9.23	10.0	-7.7	20.0
Naphthalene	Ave	1.171	0.9469	0.0100	8.09	10.0	-19.1	20.0
1,2,3-Trichlorobenzene	Ave	0.8456	0.7715	0.0100	9.12	10.0	-8.8	20.0
Dibromofluoromethane (Surr)	Ave	0.1922	0.1990	0.0100	10.4	10.0	3.5	20.0
1,2-Dichloroethane-d4 (Surr)	Ave	0.2033	0.2096	0.0100	10.3	10.0	3.1	20.0
Toluene-d8 (Surr)	Ave	1.305	1.370	0.0100	10.5	10.0	5.0	20.0
4-Bromofluorobenzene (Surr)	Ave	0.8391	0.8689	0.0100	10.4	10.0	3.6	20.0

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LCCV4849.D
Lims ID: CCVIS
Client ID:
Sample Type: CCVIS
Inject. Date: 04-Sep-2016 09:52:30 ALS Bottle#: 1 Worklist Smp#: 5
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: CCVIS
Operator ID: ADB Instrument ID: VMSL
Sublist: chrom-25mL-8260-MSL*sub17

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:46:01 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: buettnera Date: 04-Sep-2016 10:37:31

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	585408	10.0	9.69	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.362	3.362	0.000	99	291359	10.0	10.7	M
3 Chloromethane	50	3.474	3.474	0.000	99	935512	10.0	12.2	
4 Vinyl chloride	62	3.641	3.641	0.000	98	773015	10.0	13.1	
5 Butadiene	39	3.669	3.669	0.000	98	927834	10.0	13.9	
6 Bromomethane	94	4.256	4.256	0.000	91	289192	10.0	12.8	
7 Chloroethane	64	4.479	4.479	0.000	98	413142	10.0	13.5	
8 Trichlorofluoromethane	101	4.717	4.717	0.000	99	811109	10.0	11.1	
9 Dichlorofluoromethane	67	4.828	4.828	0.000	98	915346	10.0	12.7	
10 Ethyl ether	74	5.233	5.233	0.000	95	138076	10.0	11.3	
11 Ethanol	45	5.457	5.457	0.000	100	68492	400.0	468.8	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	93	358197	10.0	9.79	
13 Carbon disulfide	76	5.583	5.583	0.000	100	1307981	10.0	10.1	
14 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	88	342843	10.0	9.55	
16 Iodomethane	142	5.750	5.750	0.000	99	208643	10.0	8.90	
17 Acrolein	56	6.016	6.016	0.000	99	94608	50.0	55.8	
18 3-Chloro-1-propene	39	6.197	6.197	0.000	89	567219	10.0	11.1	
19 Isopropyl alcohol	45	6.211	6.211	0.000	97	79947	100.0	103.8	
20 Methylene Chloride	84	6.337	6.337	0.000	96	290591	10.0	9.07	
21 Acetone	43	6.407	6.407	0.000	98	45231	10.0	11.6	
22 trans-1,2-Dichloroethene	96	6.532	6.532	0.000	94	377523	10.0	10.0	
23 Methyl acetate	74	6.546	6.546	0.000	100	87019	50.0	52.8	
24 Hexane	86	6.616	6.616	0.000	96	134629	10.0	10.7	
25 Methyl tert-butyl ether	73	6.658	6.658	0.000	92	490153	10.0	9.94	
27 Acetonitrile	41	6.979	6.979	0.000	99	184044	100.0	110.9	
28 Isopropyl ether	45	7.091	7.091	0.000	95	1186530	10.0	11.2	
26 2-Methyl-2-propanol	59	7.091	7.091	0.000	33	115272	100.0	105.0	
29 2-Chloro-1,3-butadiene	53	7.231	7.231	0.000	94	821863	10.0	11.1	
30 1,1-Dichloroethane	63	7.259	7.259	0.000	96	738425	10.0	10.5	
31 Acrylonitrile	53	7.328	7.328	0.000	98	546911	100.0	113.7	
32 Tert-butyl ethyl ether	59	7.482	7.482	0.000	97	816572	10.0	10.7	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
33 Vinyl acetate	43	7.510	7.510	0.000	97	543448	10.0	12.3	
34 cis-1,2-Dichloroethene	96	7.831	7.831	0.000	84	369245	10.0	10.5	
35 2,2-Dichloropropane	77	7.957	7.957	0.000	92	666214	10.0	10.5	
37 Chlorobromomethane	128	8.041	8.041	0.000	88	124494	10.0	10.5	
36 Cyclohexane	84	8.055	8.055	0.000	96	710198	10.0	11.3	
38 Chloroform	83	8.097	8.097	0.000	97	630784	10.0	10.4	
39 Ethyl acetate	45	8.194	8.194	0.000	99	43251	20.0	23.0	
40 Carbon tetrachloride	117	8.264	8.264	0.000	98	601368	10.0	9.89	
41 Tetrahydrofuran	71	8.278	8.278	0.000	93	23805	20.0	22.8	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	96	261200	10.0	10.4	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	98	678525	10.0	10.0	
45 2-Butanone (MEK)	43	8.404	8.404	0.000	98	65819	10.0	12.0	
47 1,1-Dichloropropene	75	8.446	8.446	0.000	91	568793	10.0	10.9	
44 Isooctane	57	8.516	8.516	0.000	97	2208930	10.0	11.7	
46 n-Heptane	43	8.599	8.599	0.000	98	1144819	10.0	12.7	
48 Benzene	78	8.683	8.683	0.000	97	1476123	10.0	10.7	
49 Propionitrile	54	8.711	8.711	0.000	95	200461	100.0	114.8	
50 Methacrylonitrile	41	8.725	8.725	0.000	97	1239902	100.0	121.2	
51 Tert-amyl methyl ether	73	8.753	8.753	0.000	95	569643	10.0	10.4	
52 Isobutyl alcohol	42	8.809	8.809	0.000	90	99369	250.0	289.6	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.809	8.809	0.000	95	275206	10.0	10.3	
54 1,2-Dichloroethane	62	8.879	8.879	0.000	96	367735	10.0	10.4	
* 55 Fluorobenzene	96	9.074	9.074	0.000	99	1312727	10.0	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	65	422703	10.0	10.8	
58 Methylcyclohexane	55	9.228	9.228	0.000	97	844182	10.0	11.9	
59 n-Butanol	56	9.451	9.451	0.000	96	76855	250.0	247.0	
61 Dibromomethane	93	9.633	9.633	0.000	96	122264	10.0	10.5	
60 Ethyl acrylate	55	9.661	9.661	0.000	99	167079	10.0	10.4	
62 1,2-Dichloropropane	63	9.717	9.717	0.000	90	355868	10.0	11.2	
63 Dichlorobromomethane	83	9.759	9.759	0.000	98	382955	10.0	10.5	
64 Methyl methacrylate	69	9.842	9.842	0.000	93	182562	20.0	23.2	
65 1,4-Dioxane	88	9.926	9.926	0.000	95	20738	200.0	200.6	
66 2-Chloroethyl vinyl ether	63	10.233	10.233	0.000	92	24628	10.0	7.77	
67 cis-1,3-Dichloropropene	75	10.317	10.317	0.000	89	428741	10.0	10.8	
$ 68 Toluene-d8 (Surr)	98	10.485	10.485	0.000	96	1287180	10.0	10.5	
69 Toluene	92	10.541	10.541	0.000	98	1027799	10.0	11.2	
70 2-Nitropropane	43	10.750	10.750	0.000	99	87065	20.0	22.0	
71 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	99	131241	10.0	10.6	
72 trans-1,3-Dichloropropene	75	10.890	10.890	0.000	87	348330	10.0	10.5	
73 Tetrachloroethene	164	10.890	10.890	0.000	95	382303	10.0	10.2	
74 Ethyl methacrylate	69	10.974	10.974	0.000	95	191012	10.0	9.02	
75 1,1,2-Trichloroethane	83	11.043	11.043	0.000	95	145546	10.0	10.3	
76 Chlorodibromomethane	129	11.225	11.225	0.000	90	220136	10.0	9.79	
77 1,3-Dichloropropane	76	11.309	11.309	0.000	97	307771	10.0	9.84	
78 n-Butyl acetate	43	11.448	11.448	0.000	96	239020	10.0	10.4	
79 Ethylene Dibromide	107	11.476	11.476	0.000	98	151615	10.0	9.79	
80 2-Hexanone	43	11.574	11.574	0.000	97	86848	10.0	10.7	
81 1-Chlorohexane	91	11.840	11.840	0.000	81	613294	10.0	11.5	
* 83 Chlorobenzene-d5	117	11.909	11.909	0.000	67	939500	10.0	10.0	
82 Ethylbenzene	91	11.909	11.909	0.000	98	1929629	10.0	10.5	
84 Chlorobenzene	112	11.923	11.923	0.000	89	997512	10.0	10.3	
85 1,1,1,2-Tetrachloroethane	131	11.965	11.965	0.000	93	324921	10.0	9.81	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
86 m-Xylene & p-Xylene	106	12.035	12.035	0.000	98	730748	10.0	10.7	
88 o-Xylene	106	12.440	12.440	0.000	98	661468	10.0	11.3	
89 Styrene	104	12.482	12.482	0.000	95	1034425	10.0	11.8	
90 Bromoform	173	12.552	12.552	0.000	97	118457	10.0	8.96	
91 Isopropylbenzene	105	12.719	12.719	0.000	96	2160832	10.0	11.0	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	85	467514	10.0	10.4	
93 N-Propylbenzene	91	13.096	13.096	0.000	98	2605661	10.0	11.3	
94 Bromobenzene	156	13.138	13.138	0.000	94	415880	10.0	9.74	
95 1,1,2,2-Tetrachloroethane	83	13.166	13.166	0.000	96	188845	10.0	10.2	
96 1,3,5-Trimethylbenzene	105	13.264	13.264	0.000	96	1666225	10.0	10.8	
97 2-Chlorotoluene	91	13.292	13.292	0.000	97	1589857	10.0	10.3	
99 1,2,3-Trichloropropane	110	13.320	13.320	0.000	91	58258	10.0	9.16	
98 trans-1,4-Dichloro-2-buten	53	13.334	13.334	0.000	87	64826	10.0	10.0	
100 Cyclohexanone	55	13.404	13.404	0.000	88	39858	100.0	98.4	
101 4-Chlorotoluene	91	13.446	13.446	0.000	98	1394060	10.0	10.4	
102 tert-Butylbenzene	119	13.585	13.585	0.000	94	1570309	10.0	10.5	
103 1,2,4-Trimethylbenzene	105	13.641	13.641	0.000	98	1678132	10.0	10.7	
104 sec-Butylbenzene	105	13.753	13.753	0.000	95	2385609	10.0	10.7	
105 4-Isopropyltoluene	119	13.879	13.879	0.000	97	2182129	10.0	11.5	
106 1,3-Dichlorobenzene	146	14.018	14.018	0.000	99	880254	10.0	9.65	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	89	538046	10.0	10.0	
107 1,2,3-Trimethylbenzene	105	14.088	14.088	0.000	96	1566700	10.0	10.4	
109 1,4-Dichlorobenzene	146	14.102	14.102	0.000	94	897245	10.0	9.88	
111 n-Butylbenzene	134	14.284	14.284	0.000	98	546187	10.0	11.0	
110 Benzyl chloride	126	14.326	14.326	0.000	66	91064	10.0	10.8	
112 1,2-Dichlorobenzene	146	14.521	14.521	0.000	98	714174	10.0	9.62	
113 n-Nonyl Aldehyde	57	15.233	15.233	0.000	82	140097	10.0	9.29	
115 1,2-Dibromo-3-Chloropropan	157	15.303	15.303	0.000	78	33605	10.0	9.42	
114 1,3,5-Trichlorobenzene	180	15.317	15.317	0.000	96	719028	10.0	9.86	
116 Hexachlorobutadiene	225	15.904	15.904	0.000	97	407666	10.0	9.78	
117 1,2,4-Trichlorobenzene	180	15.974	15.974	0.000	94	515061	10.0	9.23	
118 Naphthalene	128	16.337	16.337	0.000	97	509457	10.0	8.09	
120 1,2,3-Trichlorobenzene	180	16.532	16.532	0.000	96	415102	10.0	9.12	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260 NewWkMix_00181	Amount Added: 10.00	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

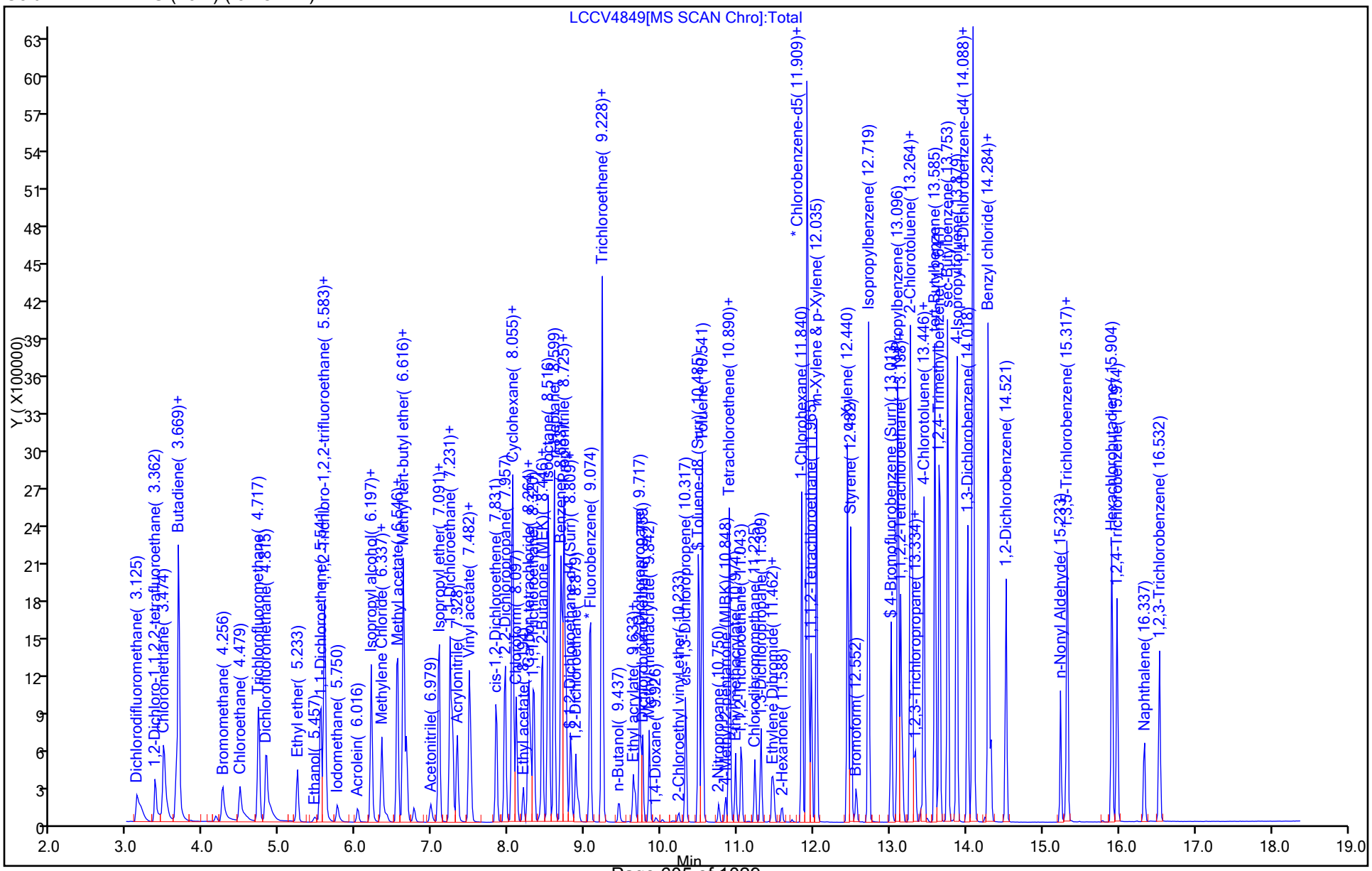
Report Date: 06-Sep-2016 08:46:02 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LCCV4849.D

Injection Date:	04-Sep-2016 09:52:30	Instrument ID:	VMSL	Operator ID:	ADB
Lims ID:	CCVIS			Worklist Smp#:	5
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	1
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

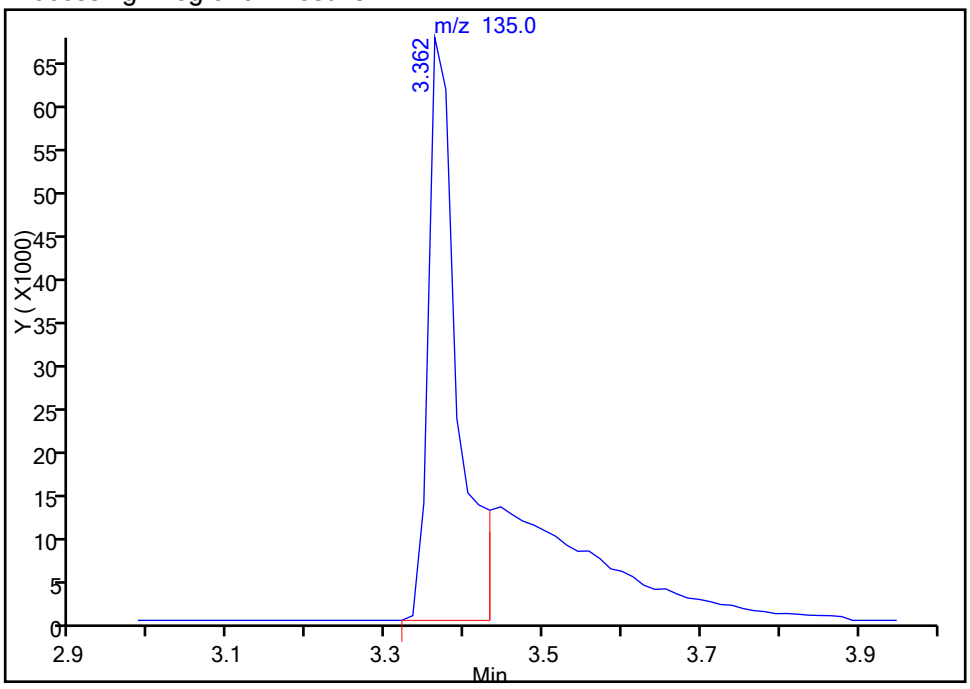
Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LCCV4849.D
Injection Date: 04-Sep-2016 09:52:30 Instrument ID: VMSL
Lims ID: CCVIS
Client ID:
Operator ID: ADB ALS Bottle#: 1 Worklist Smp#: 5
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Method: 25mL-8260-MSL Limit Group: MSV-8260
Column: RTX-VMS (40m) (0.18 mm) Detector MS SCAN

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

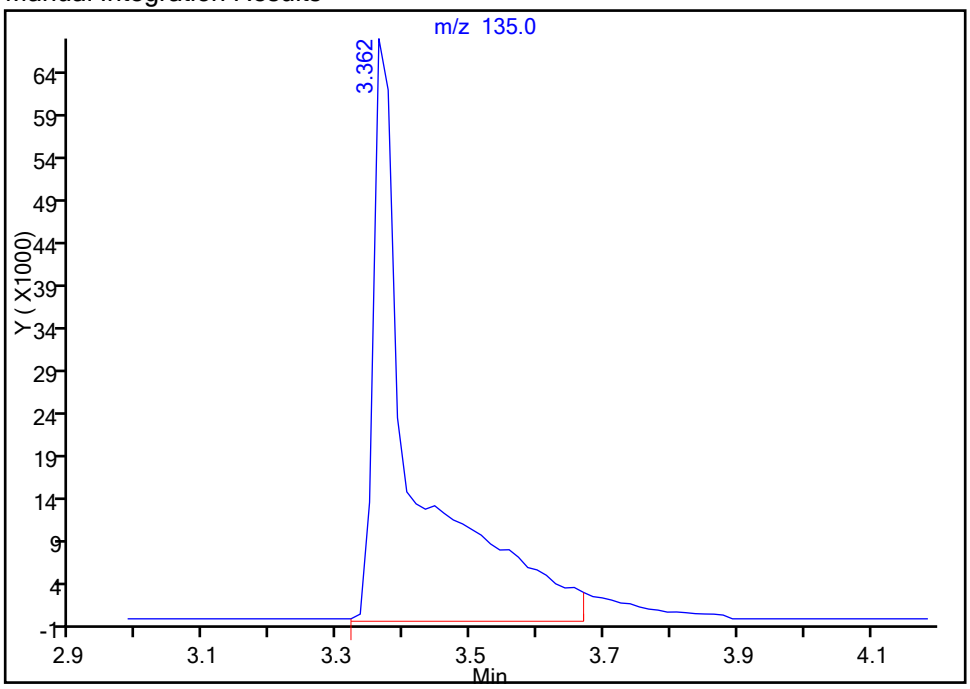
Processing Integration Results

RT: 3.36
Area: 174712
Amount: 6.402560
Amount Units: ug/l



Manual Integration Results

RT: 3.36
Area: 291359
Amount: 10.677248
Amount Units: ug/l



Reviewer: rhoadess, 06-Sep-2016 06:53:41
Audit Action: Manually Integrated Audit Reason: Peak Tail

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab Sample ID: CCVIS 160-268257/7 Calibration Date: 09/07/2016 10:58

Instrument ID: VMSL Calib Start Date: 08/22/2016 11:18

GC Column: RTX-VMS40 ID: 0.18(mm) Calib End Date: 08/22/2016 13:49

Lab File ID: LLCS4959.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	0.4601	0.3477	0.1000	7.56	10.0	-24.4*	20.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	Ave	0.2079	0.1487	0.0100	7.15	10.0	-28.5*	20.0
Chloromethane	Ave	0.5861	0.5413	0.1000	9.23	10.0	-7.7	20.0
Vinyl chloride	Ave	0.4493	0.4597	0.1000	10.2	10.0	2.3	20.0
Butadiene	Ave	0.5075	0.5551	0.0100	10.9	10.0	9.4	20.0
Methyl bromide	Ave	0.1717	0.1533	0.1000	8.93	10.0	-10.7	20.0
Chloroethane	Ave	0.2329	0.2532	0.1000	10.9	10.0	8.7	20.0
Trichlorofluoromethane	Ave	0.5581	0.4970	0.1000	8.91	10.0	-10.9	20.0
Dichlorofluoromethane	Ave	0.5511	0.5558	0.0100	10.1	10.0	0.9	20.0
Ethyl ether	Ave	0.0929	0.0904	0.0100	9.73	10.0	-2.7	20.0
Ethanol	Ave	0.0011	0.0012	0.0010	429	400	7.1	20.0
1,1-Dichloroethene	Ave	0.2787	0.2668	0.1000	9.57	10.0	-4.3	20.0
Carbon disulfide	Ave	0.9825	0.9706	0.1000	9.88	10.0	-1.2	20.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	0.2735	0.2448	0.1000	8.95	10.0	-10.5	20.0
Iodomethane	Lin		0.2078	0.0100	11.2	10.0	12.5	20.0
Acrolein	Lin1		0.0135	0.0010	52.5	50.0	4.9	20.0
Allyl chloride	Ave	0.3878	0.4086	0.0100	10.5	10.0	5.3	20.0
Isopropyl alcohol	Ave	0.0059	0.0058*	0.0100	98.9	100	-1.1	20.0
Methylene Chloride	Ave	0.2441	0.2148	0.1000	8.80	10.0	-12.0	20.0
Acetone	Lin1		0.0335*	0.1000	11.2	10.0	12.2	20.0
Methyl acetate	Ave	0.0125	0.0123*	0.1000	48.8	50.0	-2.3	20.0
trans-1,2-Dichloroethene	Ave	0.2869	0.2808	0.1000	9.79	10.0	-2.1	20.0
Hexane	Ave	0.0958	0.1025	0.0100	10.7	10.0	7.0	20.0
Methyl tert-butyl ether	Ave	0.3755	0.3517	0.1000	9.37	10.0	-6.3	20.0
Acetonitrile	Ave	0.0126	0.0131	0.0010	103	100	3.5	20.0
Isopropyl ether	Ave	0.8067	0.8920	0.0100	11.1	10.0	10.6	20.0
tert-Butyl alcohol	Ave	0.0084	0.0086*	0.0100	103	100	3.3	20.0
2-Chloro-1,3-butadiene	Ave	0.5640	0.6215	0.0100	11.0	10.0	10.2	20.0
1,1-Dichloroethane	Ave	0.5346	0.5439	0.2000	10.2	10.0	1.7	20.0
Acrylonitrile	Ave	0.0366	0.0374	0.0100	102	100	2.0	20.0
Tert-butyl ethyl ether	Ave	0.5818	0.5878	0.0100	10.1	10.0	1.0	20.0
Vinyl acetate	Ave	0.3356	0.3531	0.0100	10.5	10.0	5.2	20.0
cis-1,2-Dichloroethene	Ave	0.2681	0.2635	0.1000	9.83	10.0	-1.7	20.0
2,2-Dichloropropane	Ave	0.4813	0.4557	0.0100	9.47	10.0	-5.3	20.0
Bromochloromethane	Ave	0.0906	0.0836	0.0100	9.23	10.0	-7.7	20.0
Cyclohexane	Ave	0.4778	0.5116	0.1000	10.7	10.0	7.1	20.0
Chloroform	Ave	0.4621	0.4382	0.2000	9.48	10.0	-5.2	20.0
Ethyl acetate	Ave	0.0143	0.0150	0.0100	21.0	20.0	5.1	20.0
Carbon tetrachloride	Ave	0.4634	0.4222	0.1000	9.11	10.0	-8.9	20.0
Tetrahydrofuran	Lin		0.0076	0.0010	19.3	20.0	-3.6	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab Sample ID: CCVIS 160-268257/7 Calibration Date: 09/07/2016 10:58

Instrument ID: VMSL Calib Start Date: 08/22/2016 11:18

GC Column: RTX-VMS40 ID: 0.18(mm) Calib End Date: 08/22/2016 13:49

Lab File ID: LLCS4959.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,1,1-Trichloroethane	Ave	0.5149	0.4770	0.1000	9.27	10.0	-7.3	20.0
2-Butanone	Lin1		0.0465*	0.1000	11.1	10.0	10.9	20.0
1,1-Dichloropropene	Ave	0.3972	0.4165	0.0100	10.5	10.0	4.8	20.0
Isooctane	Ave	1.438	1.668	0.0100	11.6	10.0	16.0	20.0
n-Heptane	Ave	0.6870	0.8565	0.0100	12.5	10.0	24.7*	20.0
Benzene	Ave	1.053	1.091	0.5000	10.4	10.0	3.6	20.0
Propionitrile	Ave	0.0133	0.0137	0.0010	103	100	2.8	20.0
Methacrylonitrile	Ave	0.0779	0.0851	0.0100	109	100	9.2	20.0
Tert-amyl methyl ether	Ave	0.4188	0.4055	0.0100	9.68	10.0	-3.2	20.0
Isobutanol	Lin		0.0026	0.0010	249	250	-0.2	20.0
1,2-Dichloroethane	Ave	0.2700	0.2520	0.1000	9.33	10.0	-6.7	20.0
Methylcyclohexane	Ave	0.5426	0.6167	0.1000	11.4	10.0	13.6	20.0
Trichloroethene	Ave	0.2986	0.3084	0.2000	10.3	10.0	3.3	20.0
n-Butanol	Lin		0.0020*	0.0100	218	250	-12.8	20.0
Dibromomethane	Ave	0.0889	0.0821	0.0100	9.23	10.0	-7.7	20.0
Ethyl acrylate	Ave	0.1227	0.1207	0.0100	9.84	10.0	-1.6	20.0
1,2-Dichloropropane	Ave	0.2410	0.2551	0.1000	10.6	10.0	5.8	20.0
Bromodichloromethane	Ave	0.2787	0.2653	0.2000	9.52	10.0	-4.8	20.0
Methyl methacrylate	Ave	0.0600	0.0635	0.0100	21.2	20.0	5.9	20.0
1,4-Dioxane	Lin1		0.0007*	0.0010	181	200	-9.6	20.0
2-Chloroethyl vinyl ether	Lin1		0.0157	0.0100	6.50	10.0	-35.0*	20.0
cis-1,3-Dichloropropene	Ave	0.3036	0.3160	0.2000	10.4	10.0	4.1	20.0
Toluene	Ave	0.9795	1.064	0.4000	10.9	10.0	8.7	20.0
2-Nitropropane	Ave	0.0422	0.0408	0.0100	19.3	20.0	-3.4	20.0
4-Methyl-2-pentanone	Ave	0.1320	0.1379	0.1000	10.4	10.0	4.5	20.0
trans-1,3-Dichloropropene	Ave	0.3531	0.3550	0.1000	10.1	10.0	0.5	20.0
Tetrachloroethene	Ave	0.3985	0.3987	0.2000	10.0	10.0	0.0	20.0
Ethyl methacrylate	Lin1		0.2005	0.0100	8.90	10.0	-11.0	20.0
1,1,2-Trichloroethane	Ave	0.1503	0.1486	0.1000	9.89	10.0	-1.1	20.0
Chlorodibromomethane	Ave	0.2395	0.2167	0.1000	9.05	10.0	-9.5	20.0
1,3-Dichloropropane	Ave	0.3329	0.3286	0.0100	9.87	10.0	-1.3	20.0
n-Butyl acetate	Ave	0.2447	0.2530	0.0100	10.3	10.0	3.4	20.0
1,2-Dibromoethane	Ave	0.1649	0.1553	0.1000	9.42	10.0	-5.8	20.0
2-Hexanone	Ave	0.0867	0.0944*	0.1000	10.9	10.0	8.9	20.0
Ethylbenzene	Ave	1.958	2.063	0.1000	10.5	10.0	5.4	20.0
Chlorobenzene	Ave	1.033	1.043	0.5000	10.1	10.0	1.0	20.0
1,1,1,2-Tetrachloroethane	Ave	0.3524	0.3319	0.0100	9.42	10.0	-5.8	20.0
m-Xylene & p-Xylene	Ave	0.7258	0.7893	0.1000	10.9	10.0	8.7	20.0
o-Xylene	Ave	0.6230	0.6829	0.3000	11.0	10.0	9.6	20.0
Styrene	Ave	0.9330	1.030	0.3000	11.0	10.0	10.4	20.0
Bromoform	Ave	0.2457	0.2186	0.1000	8.90	10.0	-11.0	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab Sample ID: CCVIS 160-268257/7 Calibration Date: 09/07/2016 10:58

Instrument ID: VMSL Calib Start Date: 08/22/2016 11:18

GC Column: RTX-VMS40 ID: 0.18(mm) Calib End Date: 08/22/2016 13:49

Lab File ID: LLCS4959.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Isopropylbenzene	Ave	3.659	4.122	0.1000	11.3	10.0	12.7	20.0
N-Propylbenzene	Ave	4.271	5.021	0.0100	11.8	10.0	17.5	20.0
Bromobenzene	Ave	0.7935	0.7830	0.0100	9.87	10.0	-1.3	20.0
1,1,2,2-Tetrachloroethane	Ave	0.3440	0.3430	0.3000	9.97	10.0	-0.3	20.0
1,3,5-Trimethylbenzene	Ave	2.881	3.275	0.0100	11.4	10.0	13.7	20.0
2-Chlorotoluene	Ave	2.860	3.142	0.0100	11.0	10.0	9.8	20.0
1,2,3-Trichloropropane	Ave	0.1182	0.1073	0.0100	9.08	10.0	-9.2	20.0
trans-1,4-Dichloro-2-butene	Ave	0.1205	0.1179	0.0100	9.78	10.0	-2.2	20.0
Cyclohexanone	Ave	0.0075	0.0085	0.0010	113	100	13.1	20.0
4-Chlorotoluene	Ave	2.497	2.774	0.0100	11.1	10.0	11.1	20.0
tert-Butylbenzene	Ave	2.768	3.157	0.0100	11.4	10.0	14.1	20.0
1,2,4-Trimethylbenzene	Ave	2.922	3.307	0.0100	11.3	10.0	13.2	20.0
sec-Butylbenzene	Ave	4.141	4.784	0.0100	11.6	10.0	15.5	20.0
4-Isopropyltoluene	Ave	3.512	4.100	0.0100	11.7	10.0	16.7	20.0
1,3-Dichlorobenzene	Ave	1.695	1.699	0.6000	10.0	10.0	0.3	20.0
1,2,3-Trimethylbenzene	Ave	2.813	2.992	0.0100	10.6	10.0	6.4	20.0
1,4-Dichlorobenzene	Ave	1.688	1.674	0.5000	9.92	10.0	-0.8	20.0
n-Butylbenzene	Ave	0.9238	1.069	0.0100	11.6	10.0	15.7	20.0
Benzyl chloride	Ave	0.1566	0.1467	0.0100	9.37	10.0	-6.3	20.0
1,2-Dichlorobenzene	Ave	1.379	1.348	0.4000	9.77	10.0	-2.3	20.0
Nonanal	Qua		0.2827	0.0100	9.96	10.0	-0.4	20.0
1,2-Dibromo-3-Chloropropane	Ave	0.0663	0.0610	0.0500	9.21	10.0	-7.9	20.0
1,3,5-Trichlorobenzene	Ave	1.355	1.349	0.0100	9.96	10.0	-0.4	20.0
Hexachlorobutadiene	Ave	0.7749	0.7785	0.0100	10.0	10.0	0.5	20.0
1,2,4-Trichlorobenzene	Ave	1.038	0.9925	0.2000	9.57	10.0	-4.3	20.0
Naphthalene	Ave	1.171	0.9911	0.0100	8.46	10.0	-15.4	20.0
1,2,3-Trichlorobenzene	Ave	0.8456	0.7771	0.0100	9.19	10.0	-8.1	20.0
Dibromofluoromethane (Surr)	Ave	0.1922	0.1939	0.0100	10.1	10.0	0.9	20.0
1,2-Dichloroethane-d4 (Surr)	Ave	0.2033	0.1993	0.0100	9.81	10.0	-1.9	20.0
Toluene-d8 (Surr)	Ave	1.305	1.430	0.0100	11.0	10.0	9.5	20.0
4-Bromofluorobenzene (Surr)	Ave	0.8391	0.9186	0.0100	10.9	10.0	9.5	20.0

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LLCS4959.D
Lims ID: CCVIS
Client ID:
Sample Type: CCVIS
Inject. Date: 07-Sep-2016 10:58:30 ALS Bottle#: 2 Worklist Smp#: 7
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: LCS
Operator ID: SMCR Instrument ID: VMSL
Sublist: chrom-25mL-8260-MSL*sub17

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:40:17 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 07-Sep-2016 11:48:20

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	528021	10.0	7.56	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	99	225761	10.0	7.15	M
3 Chloromethane	50	3.474	3.474	0.000	99	822059	10.0	9.23	
4 Vinyl chloride	62	3.642	3.642	0.000	98	698068	10.0	10.2	
5 Butadiene	39	3.669	3.669	0.000	97	843057	10.0	10.9	
6 Bromomethane	94	4.256	4.256	0.000	91	232809	10.0	8.93	
7 Chloroethane	64	4.480	4.480	0.000	98	384512	10.0	10.9	
8 Trichlorofluoromethane	101	4.717	4.717	0.000	99	754813	10.0	8.91	
9 Dichlorofluoromethane	67	4.829	4.829	0.000	98	844107	10.0	10.1	
10 Ethyl ether	74	5.234	5.234	0.000	96	137269	10.0	9.73	
11 Ethanol	45	5.457	5.457	0.000	100	72432	400.0	428.6	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	93	405111	10.0	9.57	
13 Carbon disulfide	76	5.583	5.583	0.000	100	1473950	10.0	9.88	
14 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	90	371815	10.0	8.95	
16 Iodomethane	142	5.750	5.750	0.000	99	315619	10.0	11.2	
17 Acrolein	56	6.016	6.016	0.000	99	102740	50.0	52.5	
18 3-Chloro-1-propene	39	6.197	6.197	0.000	90	620495	10.0	10.5	
19 Isopropyl alcohol	45	6.225	6.225	0.000	97	88160	100.0	98.9	
20 Methylene Chloride	84	6.337	6.337	0.000	95	326197	10.0	8.80	
21 Acetone	43	6.407	6.407	0.000	100	50911	10.0	11.2	
22 trans-1,2-Dichloroethene	96	6.547	6.547	0.000	94	426442	10.0	9.79	
23 Methyl acetate	74	6.547	6.547	0.000	100	93066	50.0	48.8	
24 Hexane	86	6.616	6.616	0.000	96	155624	10.0	10.7	
25 Methyl tert-butyl ether	73	6.658	6.658	0.000	91	534101	10.0	9.37	
27 Acetonitrile	41	6.979	6.979	0.000	99	198671	100.0	103.5	
28 Isopropyl ether	45	7.091	7.091	0.000	95	1354637	10.0	11.1	
26 2-Methyl-2-propanol	59	7.091	7.091	0.000	33	131222	100.0	103.3	
29 2-Chloro-1,3-butadiene	53	7.231	7.231	0.000	94	943885	10.0	11.0	
30 1,1-Dichloroethane	63	7.259	7.259	0.000	98	825954	10.0	10.2	
31 Acrylonitrile	53	7.329	7.329	0.000	98	567184	100.0	102.0	
32 Tert-butyl ethyl ether	59	7.482	7.482	0.000	98	892638	10.0	10.1	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
33 Vinyl acetate	43	7.510	7.510	0.000	97	536204	10.0	10.5	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	84	400131	10.0	9.83	
35 2,2-Dichloropropane	77	7.957	7.957	0.000	93	691999	10.0	9.47	
37 Chlorobromomethane	128	8.055	8.055	0.000	89	126900	10.0	9.23	
36 Cyclohexane	84	8.055	8.055	0.000	96	776997	10.0	10.7	
38 Chloroform	83	8.097	8.097	0.000	97	665413	10.0	9.48	
39 Ethyl acetate	45	8.195	8.195	0.000	99	45633	20.0	21.0	
40 Carbon tetrachloride	117	8.264	8.264	0.000	97	641118	10.0	9.11	
41 Tetrahydrofuran	71	8.278	8.278	0.000	94	23082	20.0	19.3	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	95	294532	10.0	10.1	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	98	724477	10.0	9.27	
45 2-Butanone (MEK)	43	8.404	8.404	0.000	96	70678	10.0	11.1	
47 1,1-Dichloropropene	75	8.446	8.446	0.000	91	632513	10.0	10.5	
44 Isooctane	57	8.516	8.516	0.000	97	2533745	10.0	11.6	
46 n-Heptane	43	8.600	8.600	0.000	98	1300672	10.0	12.5	
48 Benzene	78	8.683	8.683	0.000	97	1657511	10.0	10.4	
49 Propionitrile	54	8.711	8.711	0.000	95	207702	100.0	102.8	
50 Methacrylonitrile	41	8.725	8.725	0.000	98	1292519	100.0	109.2	
51 Tert-amyl methyl ether	73	8.753	8.753	0.000	93	615855	10.0	9.68	
52 Isobutyl alcohol	42	8.809	8.809	0.000	94	98327	250.0	249.5	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	94	302694	10.0	9.81	
54 1,2-Dichloroethane	62	8.879	8.879	0.000	96	382704	10.0	9.33	
* 55 Fluorobenzene	96	9.074	9.074	0.000	99	1518678	10.0	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	65	468317	10.0	10.3	
58 Methylcyclohexane	55	9.228	9.228	0.000	96	936519	10.0	11.4	
59 n-Butanol	56	9.451	9.451	0.000	96	77258	250.0	218.1	
61 Dibromomethane	93	9.633	9.633	0.000	97	124641	10.0	9.23	
60 Ethyl acrylate	55	9.661	9.661	0.000	99	183343	10.0	9.84	
62 1,2-Dichloropropane	63	9.717	9.717	0.000	90	387363	10.0	10.6	
63 Dichlorobromomethane	83	9.759	9.759	0.000	98	402909	10.0	9.52	
64 Methyl methacrylate	69	9.843	9.843	0.000	93	192892	20.0	21.2	
65 1,4-Dioxane	88	9.926	9.926	0.000	96	21531	200.0	180.8	
66 2-Chloroethyl vinyl ether	63	10.234	10.234	0.000	91	23804	10.0	6.50	
67 cis-1,3-Dichloropropene	75	10.317	10.317	0.000	90	479875	10.0	10.4	
$ 68 Toluene-d8 (Surr)	98	10.485	10.485	0.000	96	1480028	10.0	11.0	
69 Toluene	92	10.541	10.541	0.000	98	1101454	10.0	10.9	
70 2-Nitropropane	43	10.750	10.750	0.000	98	84372	20.0	19.3	
71 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	99	142700	10.0	10.4	
72 trans-1,3-Dichloropropene	75	10.890	10.890	0.000	94	367374	10.0	10.1	
73 Tetrachloroethene	164	10.904	10.904	0.000	96	412618	10.0	10.0	
74 Ethyl methacrylate	69	10.974	10.974	0.000	95	207539	10.0	8.90	
75 1,1,2-Trichloroethane	83	11.044	11.044	0.000	94	153827	10.0	9.89	
76 Chlorodibromomethane	129	11.225	11.225	0.000	91	224234	10.0	9.05	
77 1,3-Dichloropropane	76	11.309	11.309	0.000	98	340075	10.0	9.87	
78 n-Butyl acetate	43	11.449	11.449	0.000	97	261852	10.0	10.3	
79 Ethylene Dibromide	107	11.477	11.477	0.000	98	160698	10.0	9.42	
80 2-Hexanone	43	11.588	11.588	0.000	97	97720	10.0	10.9	
81 1-Chlorohexane	91	11.840	11.840	0.000	82	690869	10.0	11.8	
* 83 Chlorobenzene-d5	117	11.910	11.910	0.000	75	1034975	10.0	10.0	
82 Ethylbenzene	91	11.910	11.910	0.000	97	2135504	10.0	10.5	
84 Chlorobenzene	112	11.924	11.924	0.000	89	1079431	10.0	10.1	
85 1,1,1,2-Tetrachloroethane	131	11.965	11.965	0.000	93	343467	10.0	9.42	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
86 m-Xylene & p-Xylene	106	12.035	12.035	0.000	98	816858	10.0	10.9	
88 o-Xylene	106	12.440	12.440	0.000	99	706764	10.0	11.0	
89 Styrene	104	12.482	12.482	0.000	95	1066520	10.0	11.0	
90 Bromoform	173	12.552	12.552	0.000	96	113098	10.0	8.90	
91 Isopropylbenzene	105	12.720	12.720	0.000	96	2132246	10.0	11.3	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	85	475169	10.0	10.9	
93 N-Propylbenzene	91	13.097	13.097	0.000	99	2597089	10.0	11.8	
94 Bromobenzene	156	13.139	13.139	0.000	94	405007	10.0	9.87	
95 1,1,2,2-Tetrachloroethane	83	13.167	13.167	0.000	96	177425	10.0	9.97	
96 1,3,5-Trimethylbenzene	105	13.264	13.264	0.000	95	1694236	10.0	11.4	
97 2-Chlorotoluene	91	13.292	13.292	0.000	97	1625096	10.0	11.0	
99 1,2,3-Trichloropropane	110	13.320	13.320	0.000	84	55508	10.0	9.08	
98 trans-1,4-Dichloro-2-buten	53	13.334	13.334	0.000	87	60970	10.0	9.78	
100 Cyclohexanone	55	13.404	13.404	0.000	90	44050	100.0	113.1	
101 4-Chlorotoluene	91	13.446	13.446	0.000	98	1434934	10.0	11.1	
102 tert-Butylbenzene	119	13.585	13.585	0.000	95	1633156	10.0	11.4	
103 1,2,4-Trimethylbenzene	105	13.641	13.641	0.000	97	1710675	10.0	11.3	
104 sec-Butylbenzene	105	13.753	13.753	0.000	95	2474839	10.0	11.6	
105 4-Isopropyltoluene	119	13.879	13.879	0.000	97	2120681	10.0	11.7	
106 1,3-Dichlorobenzene	146	14.018	14.018	0.000	99	878874	10.0	10.0	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	94	517281	10.0	10.0	
107 1,2,3-Trimethylbenzene	105	14.088	14.088	0.000	96	1547643	10.0	10.6	
109 1,4-Dichlorobenzene	146	14.102	14.102	0.000	95	865783	10.0	9.92	
111 n-Butylbenzene	134	14.284	14.284	0.000	97	552978	10.0	11.6	
110 Benzyl chloride	126	14.326	14.326	0.000	23	75897	10.0	9.37	
112 1,2-Dichlorobenzene	146	14.521	14.521	0.000	98	697455	10.0	9.77	
113 n-Nonyl Aldehyde	57	15.234	15.234	0.000	82	146250	10.0	9.96	
115 1,2-Dibromo-3-Chloropropan	157	15.303	15.303	0.000	79	31576	10.0	9.21	
114 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	97	697767	10.0	9.96	
116 Hexachlorobutadiene	225	15.904	15.904	0.000	97	402710	10.0	10.0	
117 1,2,4-Trichlorobenzene	180	15.974	15.974	0.000	94	513383	10.0	9.57	
118 Naphthalene	128	16.337	16.337	0.000	97	512680	10.0	8.46	
120 1,2,3-Trichlorobenzene	180	16.532	16.532	0.000	96	401979	10.0	9.19	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260 NewWkMix_00182	Amount Added: 10.00	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

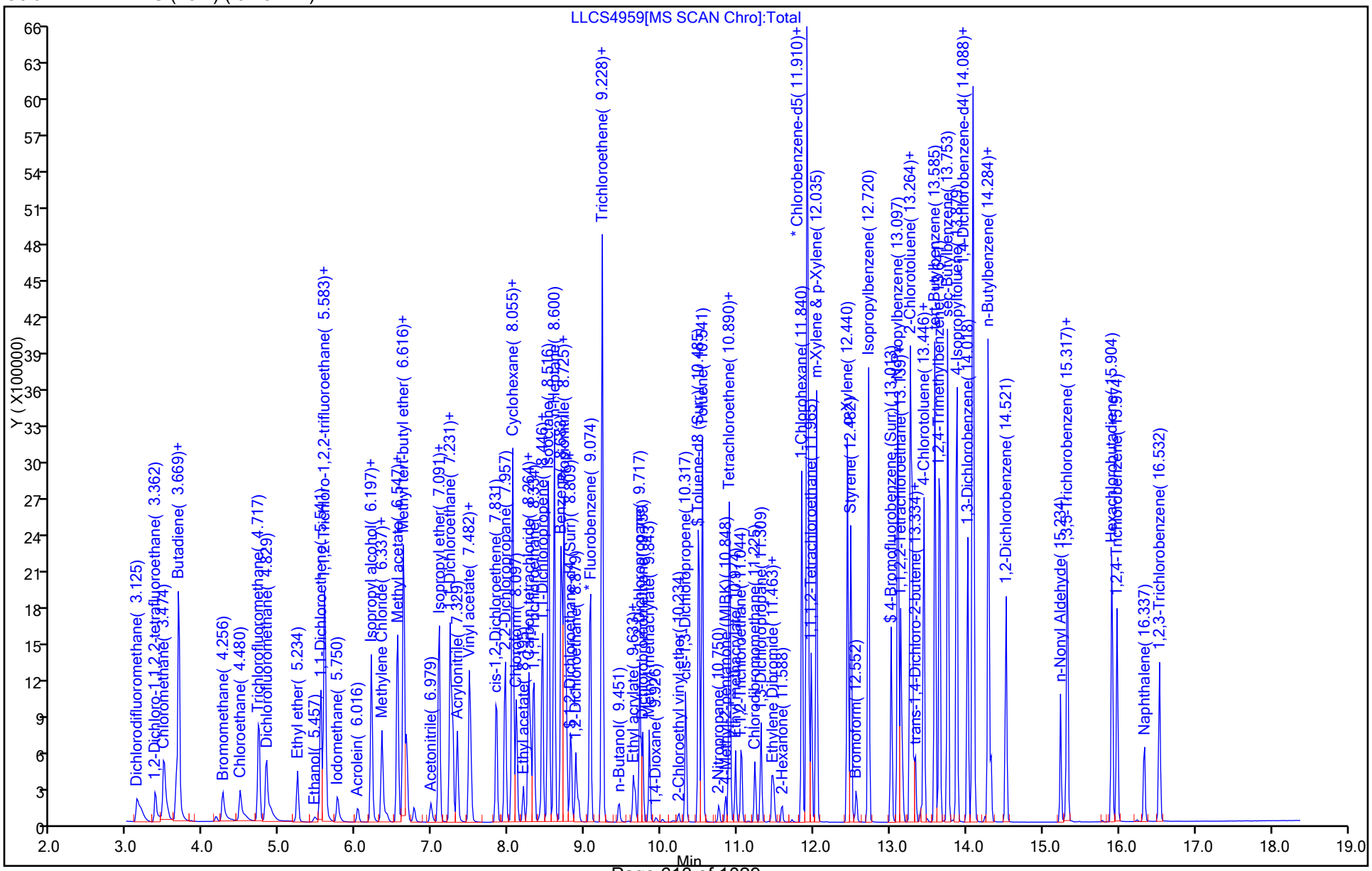
Report Date: 08-Sep-2016 08:40:18 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LLCS4959.D

Injection Date:	07-Sep-2016 10:58:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	CCVIS			Worklist Smp#:	7
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	2
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



Manual Integration/User Assign Peak Report

TestAmerica St. Louis

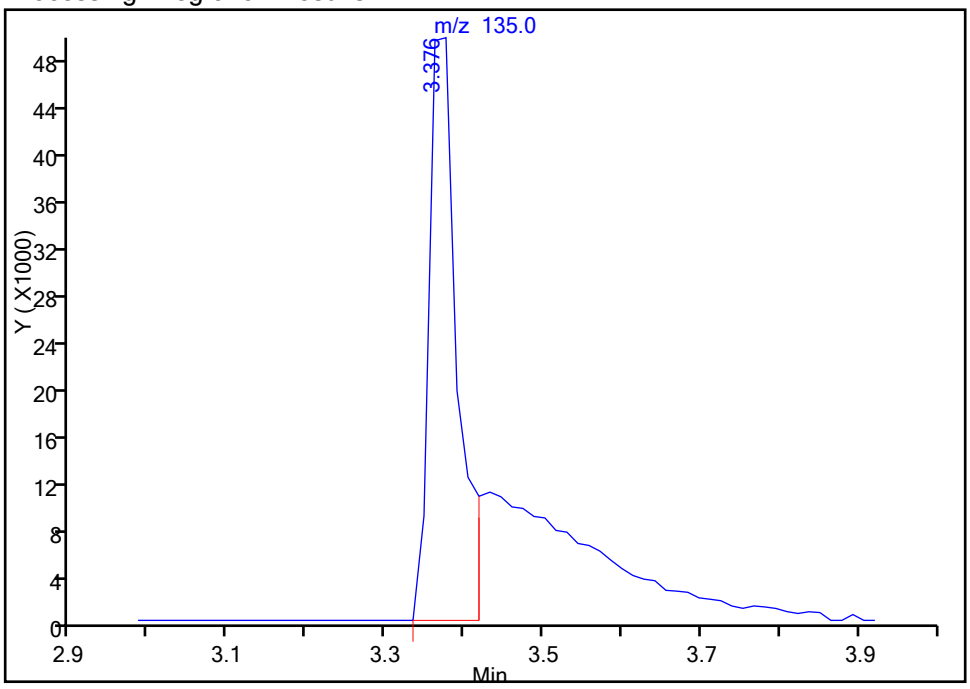
Data File:	\\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LLCS4959.D				
Injection Date:	07-Sep-2016 10:58:30	Instrument ID:	VMSL		
Lims ID:	CCVIS				
Client ID:					
Operator ID:	SMCR	ALS Bottle#:	2	Worklist Smp#:	7
Purge Vol:	25.000 mL	Dil. Factor:	1.0000		
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		
Column:	RTX-VMS (40m) (0.18 mm)	Detector	MS SCAN		

2 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Signal: 1

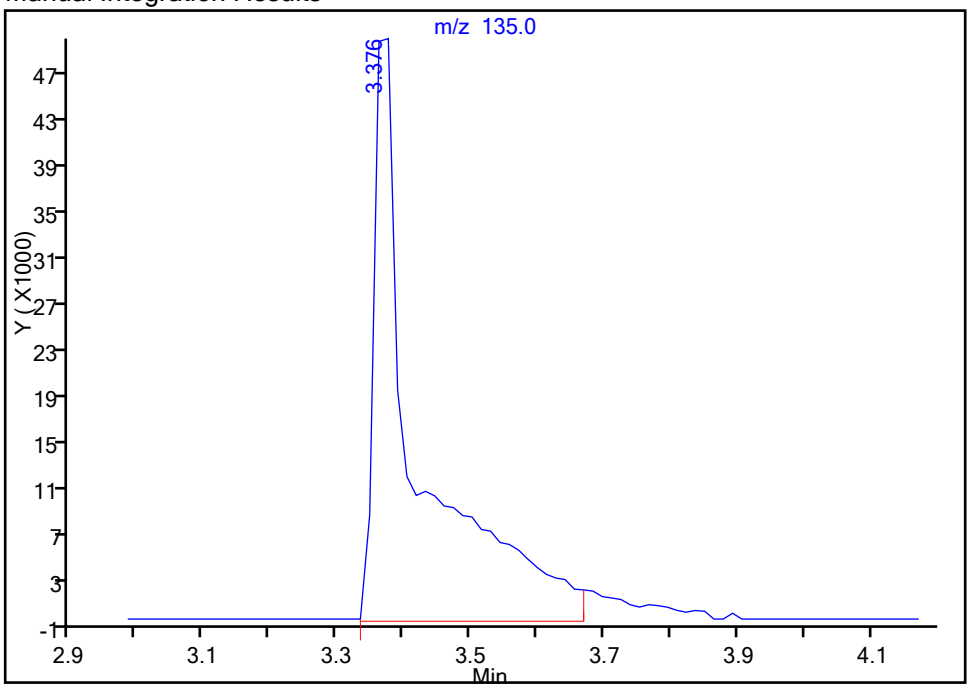
Processing Integration Results

RT: 3.38
Area: 124524
Amount: 3.944507
Amount Units: ug/l



Manual Integration Results

RT: 3.38
Area: 225761
Amount: 7.151358
Amount Units: ug/l



Reviewer: rhoadess, 07-Sep-2016 11:48:20

Audit Action: Manually Integrated Audit Reason: Peak Tail

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab Sample ID: ICV 160-268249/14 Calibration Date: 09/07/2016 11:05

Instrument ID: VMSZ Calib Start Date: 09/07/2016 07:32

GC Column: RTX-VMS40 ID: 0.18(mm) Calib End Date: 09/07/2016 09:54

Lab File ID: ZICV8943.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	0.3796	0.3406	0.1000	8.97	10.0	-10.3	30.0
1,2-Dichloro-1,1,2,2-tetrafluoroethane	Qua		0.2206	0.0100	12.5	10.0	24.8	30.0
Chloromethane	Ave	0.4536	0.4041	0.1000	8.91	10.0	-10.9	30.0
Vinyl chloride	Lin		0.4174	0.1000	8.01	10.0	-19.9	30.0
Butadiene	Lin		0.3338	0.0100	6.97	10.0	-30.3*	30.0
Methyl bromide	Lin		0.1878	0.1000	8.45	10.0	-15.5	30.0
Chloroethane	Lin		0.2170	0.1000	8.19	10.0	-18.1	30.0
Trichlorofluoromethane	Ave	0.4150	0.4225	0.1000	10.2	10.0	1.8	30.0
Dichlorofluoromethane	Ave	0.4665	0.4658	0.0100	9.99	10.0	-0.1	30.0
Ethyl ether	Ave	0.1076	0.1132	0.0100	10.5	10.0	5.2	30.0
Ethanol	Ave	0.0008	0.0007*	0.0010	365	400	-8.7	30.0
1,1-Dichloroethene	Ave	0.2885	0.3125	0.1000	10.8	10.0	8.3	30.0
Carbon disulfide	Ave	0.9499	1.017	0.1000	10.7	10.0	7.1	30.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	0.2556	0.2769	0.1000	10.8	10.0	8.4	30.0
Iodomethane	Ave	0.4338	0.4734	0.0100	10.9	10.0	9.1	30.0
Acrolein	Ave	0.0146	0.0149	0.0010	51.0	50.0	2.0	30.0
Allyl chloride	Ave	0.2974	0.2661	0.0100	8.95	10.0	-10.5	30.0
Isopropyl alcohol	Ave	0.0047	0.0044*	0.0100	93.5	100	-6.5	30.0
Methylene Chloride	Ave	0.2457	0.2504	0.1000	10.2	10.0	1.9	30.0
Acetone	Lin1		0.0234*	0.1000	9.65	10.0	-3.5	30.0
Methyl acetate	Ave	0.0149	0.0150*	0.1000	50.2	50.0	0.5	30.0
trans-1,2-Dichloroethene	Ave	0.2984	0.3247	0.1000	10.9	10.0	8.8	30.0
Hexane	Ave	0.0942	0.1069	0.0100	11.4	10.0	13.5	30.0
Methyl tert-butyl ether	Ave	0.4145	0.4161	0.1000	10.0	10.0	0.4	30.0
tert-Butyl alcohol	Ave	0.0077	0.0072*	0.0100	93.8	100	-6.2	30.0
Acetonitrile	Ave	0.0092	0.0086	0.0010	92.5	100	-7.5	30.0
Isopropyl ether	Ave	0.6909	0.7173	0.0100	10.4	10.0	3.8	30.0
2-Chloro-1,3-butadiene	Ave	0.4020	0.4347	0.0100	10.8	10.0	8.1	30.0
1,1-Dichloroethane	Ave	0.4898	0.4916	0.2000	10.0	10.0	0.4	30.0
Acrylonitrile	Ave	0.0339	0.0333	0.0100	98.1	100	-1.9	30.0
Tert-butyl ethyl ether	Ave	0.5687	0.5713	0.0100	10.0	10.0	0.5	30.0
Vinyl acetate	Ave	0.3066	0.2954	0.0100	9.64	10.0	-3.6	30.0
cis-1,2-Dichloroethene	Ave	0.2999	0.3064	0.1000	10.2	10.0	2.2	30.0
2,2-Dichloropropane	Ave	0.3027	0.3035	0.0100	10.0	10.0	0.3	30.0
Bromochloromethane	Ave	0.1105	0.1080	0.0100	9.78	10.0	-2.2	30.0
Cyclohexane	Ave	0.4963	0.5544	0.1000	11.2	10.0	11.7	30.0
Chloroform	Ave	0.4684	0.4590	0.2000	9.80	10.0	-2.0	30.0
Ethyl acetate	Ave	0.0132	0.0119	0.0100	18.0	20.0	-10.0	30.0
Carbon tetrachloride	Ave	0.3753	0.4045	0.1000	10.8	10.0	7.8	30.0
Tetrahydrofuran	Ave	0.0108	0.0099	0.0010	18.3	20.0	-8.5	30.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab Sample ID: ICV 160-268249/14 Calibration Date: 09/07/2016 11:05

Instrument ID: VMSZ Calib Start Date: 09/07/2016 07:32

GC Column: RTX-VMS40 ID: 0.18(mm) Calib End Date: 09/07/2016 09:54

Lab File ID: ZICV8943.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,1,1-Trichloroethane	Ave	0.4156	0.4201	0.1000	10.1	10.0	1.1	30.0
2-Butanone	Ave	0.0418	0.0342*	0.1000	8.19	10.0	-18.1	30.0
1,1-Dichloropropene	Ave	0.3897	0.4298	0.0100	11.0	10.0	10.3	30.0
Isooctane	Ave	1.212	1.309	0.0100	10.8	10.0	8.0	30.0
n-Heptane	Ave	0.5129	0.5374	0.0100	10.5	10.0	4.8	30.0
Benzene	Ave	1.101	1.123	0.5000	10.2	10.0	2.0	30.0
Propionitrile	Ave	0.0123	0.0125	0.0010	101	100	1.0	30.0
Methacrylonitrile	Ave	0.0665	0.0608	0.0100	91.5	100	-8.5	30.0
Tert-amyl methyl ether	Ave	0.4836	0.4942	0.0100	10.2	10.0	2.2	30.0
Isobutanol	Ave	0.0022	0.0022	0.0010	252	250	0.8	30.0
1,2-Dichloroethane	Ave	0.2258	0.2009	0.1000	8.90	10.0	-11.0	30.0
Methylcyclohexane	Ave	0.4356	0.4599	0.1000	10.6	10.0	5.6	30.0
Trichloroethene	Ave	0.3065	0.3172	0.2000	10.3	10.0	3.5	30.0
n-Butanol	Ave	0.0021	0.0020*	0.0100	245	250	-2.2	30.0
Dibromomethane	Ave	0.0998	0.0891	0.0100	8.93	10.0	-10.7	30.0
Ethyl acrylate	Ave	0.1198	0.1193	0.0100	9.96	10.0	-0.4	30.0
1,2-Dichloropropane	Ave	0.2497	0.2565	0.1000	10.3	10.0	2.7	30.0
Bromodichloromethane	Ave	0.2835	0.2785	0.2000	9.83	10.0	-1.7	30.0
Methyl methacrylate	Ave	0.0733	0.0777	0.0100	21.2	20.0	6.0	30.0
1,4-Dioxane	Ave	0.0010	0.0009*	0.0010	180	200	-10.0	30.0
2-Chloroethyl vinyl ether	Ave	0.0225	0.0231	0.0100	10.3	10.0	2.7	30.0
cis-1,3-Dichloropropene	Ave	0.3464	0.3550	0.2000	10.2	10.0	2.5	30.0
Toluene	Ave	0.9361	1.025	0.4000	10.9	10.0	9.5	30.0
2-Nitropropane	Ave	0.0321	0.0278	0.0100	17.3	20.0	-13.3	30.0
4-Methyl-2-pentanone	Ave	0.1116	0.1115	0.1000	9.99	10.0	-0.0	30.0
Tetrachloroethene	Ave	0.3827	0.4195	0.2000	11.0	10.0	9.6	30.0
trans-1,3-Dichloropropene	Ave	0.3583	0.3653	0.1000	10.2	10.0	1.9	30.0
Ethyl methacrylate	Ave	0.2028	0.2170	0.0100	10.7	10.0	7.0	30.0
1,1,2-Trichloroethane	Ave	0.1662	0.1608	0.1000	9.67	10.0	-3.3	30.0
Chlorodibromomethane	Ave	0.2425	0.2504	0.1000	10.3	10.0	3.2	30.0
1,3-Dichloropropane	Ave	0.3455	0.3465	0.0100	10.0	10.0	0.3	30.0
n-Butyl acetate	Ave	0.2081	0.2073	0.0100	9.96	10.0	-0.4	30.0
1,2-Dibromoethane	Ave	0.1722	0.1891	0.1000	11.0	10.0	9.8	30.0
2-Hexanone	Ave	0.0801	0.0730*	0.1000	9.12	10.0	-8.8	30.0
Ethylbenzene	Ave	1.918	1.863	0.1000	9.71	10.0	-2.9	30.0
Chlorobenzene	Ave	1.053	1.093	0.5000	10.4	10.0	3.9	30.0
1,1,1,2-Tetrachloroethane	Ave	0.3351	0.3541	0.0100	10.6	10.0	5.7	30.0
m-Xylene & p-Xylene	Ave	0.7509	0.8141	0.1000	10.8	10.0	8.4	30.0
o-Xylene	Ave	0.6625	0.7370	0.3000	11.1	10.0	11.2	30.0
Styrene	Ave	0.9151	1.024	0.3000	11.2	10.0	11.9	30.0
Bromoform	Ave	0.2562	0.2655	0.1000	10.4	10.0	3.6	30.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Lab Sample ID: ICV 160-268249/14 Calibration Date: 09/07/2016 11:05

Instrument ID: VMSZ Calib Start Date: 09/07/2016 07:32

GC Column: RTX-VMS40 ID: 0.18(mm) Calib End Date: 09/07/2016 09:54

Lab File ID: ZICV8943.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Isopropylbenzene	Ave	3.485	3.519	0.1000	10.1	10.0	1.0	30.0
N-Propylbenzene	Ave	4.097	4.038	0.0100	9.86	10.0	-1.4	30.0
Bromobenzene	Ave	0.8019	0.8091	0.0100	10.1	10.0	0.9	30.0
1,1,2,2-Tetrachloroethane	Ave	0.4022	0.3696	0.3000	9.19	10.0	-8.1	30.0
1,3,5-Trimethylbenzene	Ave	2.584	2.822	0.0100	10.9	10.0	9.2	30.0
2-Chlorotoluene	Ave	2.522	2.661	0.0100	10.6	10.0	5.5	30.0
1,2,3-Trichloropropane	Lin1		0.1164	0.0100	10.4	10.0	4.1	30.0
trans-1,4-Dichloro-2-butene	Ave	0.0978	0.0872	0.0100	8.92	10.0	-10.8	30.0
Cyclohexanone	Ave	0.0073	0.0062	0.0010	84.9	100	-15.1	30.0
4-Chlorotoluene	Ave	2.157	2.345	0.0100	10.9	10.0	8.7	30.0
tert-Butylbenzene	Ave	2.504	2.734	0.0100	10.9	10.0	9.2	30.0
1,2,4-Trimethylbenzene	Ave	2.790	2.824	0.0100	10.1	10.0	1.2	30.0
sec-Butylbenzene	Ave	3.978	3.842	0.0100	9.66	10.0	-3.4	30.0
4-Isopropyltoluene	Ave	3.304	3.341	0.0100	10.1	10.0	1.1	30.0
1,3-Dichlorobenzene	Ave	1.591	1.628	0.6000	10.2	10.0	2.4	30.0
1,2,3-Trimethylbenzene	Ave	2.777	2.684	0.0100	9.67	10.0	-3.3	30.0
1,4-Dichlorobenzene	Ave	1.636	1.620	0.5000	9.90	10.0	-1.0	30.0
n-Butylbenzene	Ave	0.9228	1.014	0.0100	11.0	10.0	9.8	30.0
Benzyl chloride	Ave	0.1786	0.1867	0.0100	10.5	10.0	4.6	30.0
1,2-Dichlorobenzene	Ave	1.331	1.318	0.4000	9.90	10.0	-1.0	30.0
Nonanal	Lin1		0.2081	0.0100	8.92	10.0	-10.8	30.0
1,2-Dibromo-3-Chloropropane	Ave	0.0654	0.0649	0.0500	9.93	10.0	-0.7	30.0
1,3,5-Trichlorobenzene	Ave	1.119	1.118	0.0100	9.99	10.0	-0.1	30.0
Hexachlorobutadiene	Ave	0.5962	0.6362	0.0100	10.7	10.0	6.7	30.0
1,2,4-Trichlorobenzene	Ave	0.7185	0.7175	0.2000	9.99	10.0	-0.1	30.0
Naphthalene	Ave	0.8253	0.7836	0.0100	9.50	10.0	-5.0	30.0
1,2,3-Trichlorobenzene	Ave	0.4590	0.4104	0.0100	8.94	10.0	-10.6	30.0
Dibromofluoromethane (Surr)	Ave	0.2149	0.2272	0.0100	10.6	10.0	5.7	30.0
1,2-Dichloroethane-d4 (Surr)	Ave	0.1857	0.1653	0.0100	8.91	10.0	-10.9	30.0
Toluene-d8 (Surr)	Ave	1.283	1.377	0.0100	10.7	10.0	7.3	30.0
4-Bromofluorobenzene (Surr)	Lin1		0.8036	0.0100	10.7	10.0	6.7	30.0

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICV8943.D
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 07-Sep-2016 11:05:30 ALS Bottle#: 11 Worklist Smp#: 14
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008404-014
Misc. Info.: icv
Operator ID: EF Instrument ID: VMSZ
Sublist:

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 07-Sep-2016 12:33:19 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: fishere Date: 07-Sep-2016 12:33:34

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.004	3.003	0.001	99	1217286	10.0	8.97	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.256	3.255	0.001	97	788566	10.0	12.5	
3 Chloromethane	50	3.325	3.324	0.001	99	1444415	10.0	8.91	
4 Vinyl chloride	62	3.493	3.492	0.001	98	1491878	10.0	8.01	
5 Butadiene	39	3.521	3.520	0.001	88	1192840	10.0	6.97	
6 Bromomethane	94	4.080	4.079	0.001	90	671025	10.0	8.45	
7 Chloroethane	64	4.317	4.316	0.001	99	775370	10.0	8.19	
8 Trichlorofluoromethane	101	4.554	4.553	0.001	98	1510001	10.0	10.2	
9 Dichlorofluoromethane	67	4.652	4.651	0.001	97	1664864	10.0	9.99	
10 Ethyl ether	74	5.043	5.042	0.001	89	404548	10.0	10.5	
11 Ethanol	45	5.267	5.266	0.001	98	99916	400.0	365.4	
12 1,1-Dichloroethene	96	5.364	5.363	0.001	96	1116891	10.0	10.8	
13 Carbon disulfide	76	5.406	5.405	0.001	99	3634520	10.0	10.7	
14 1,1,2-Trichloro-1,2,2-trif	151	5.434	5.433	0.001	90	989673	10.0	10.8	
15 Iodomethane	142	5.574	5.573	0.001	97	1691911	10.0	10.9	
17 Acrolein	56	5.839	5.838	0.001	99	266464	50.0	51.0	
18 3-Chloro-1-propene	39	6.021	6.020	0.001	94	950977	10.0	8.95	
19 Isopropyl alcohol	45	6.035	6.034	0.001	15	157725	100.0	93.5	
20 Methylene Chloride	84	6.174	6.173	0.001	90	894996	10.0	10.2	
21 Acetone	43	6.230	6.229	0.001	99	83591	10.0	9.65	
22 trans-1,2-Dichloroethene	96	6.370	6.369	0.001	97	1160436	10.0	10.9	
23 Methyl acetate	74	6.370	6.369	0.001	78	268089	50.0	50.2	
24 Hexane	86	6.454	6.453	0.001	91	382097	10.0	11.4	
25 Methyl tert-butyl ether	73	6.482	6.481	0.001	94	1487063	10.0	10.0	
26 2-Methyl-2-propanol	59	6.593	6.592	0.001	100	257125	100.0	93.8	
27 Acetonitrile	41	6.817	6.816	0.001	98	305446	100.0	92.5	
28 Isopropyl ether	45	6.915	6.914	0.001	95	2563754	10.0	10.4	
29 2-Chloro-1,3-butadiene	53	7.068	7.067	0.001	89	1553664	10.0	10.8	
30 1,1-Dichloroethane	63	7.096	7.109	-0.013	96	1756845	10.0	10.0	
31 Acrylonitrile	53	7.166	7.165	0.001	100	1189538	100.0	98.1	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
32 Tert-butyl ethyl ether	59	7.320	7.319	0.001	95	2041867	10.0	10.0	
33 Vinyl acetate	43	7.348	7.347	0.001	97	1055798	10.0	9.64	
34 cis-1,2-Dichloroethene	96	7.683	7.682	0.001	78	1095002	10.0	10.2	
35 2,2-Dichloropropane	77	7.795	7.794	0.001	87	1084643	10.0	10.0	
37 Chlorobromomethane	128	7.892	7.891	0.001	93	385992	10.0	9.78	
36 Cyclohexane	84	7.892	7.891	0.001	88	1981386	10.0	11.2	
38 Chloroform	83	7.948	7.947	0.001	93	1640419	10.0	9.80	
39 Ethyl acetate	45	8.032	8.031	0.001	99	85028	20.0	18.0	
40 Carbon tetrachloride	117	8.102	8.101	0.001	96	1445686	10.0	10.8	
41 Tetrahydrofuran	71	8.116	8.115	0.001	87	70519	20.0	18.3	
$ 42 Dibromofluoromethane (Surr	113	8.144	8.143	0.001	96	812004	10.0	10.6	
43 1,1,1-Trichloroethane	97	8.172	8.171	0.001	97	1501347	10.0	10.1	
44 2-Butanone (MEK)	43	8.255	8.254	0.001	99	122351	10.0	8.19	
45 1,1-Dichloropropene	75	8.283	8.282	0.001	98	1536227	10.0	11.0	
46 Isooctane	57	8.367	8.366	0.001	95	4676884	10.0	10.8	
47 n-Heptane	43	8.451	8.450	0.001	88	1920526	10.0	10.5	
48 Benzene	78	8.535	8.534	0.001	97	4013416	10.0	10.2	
50 Propionitrile	54	8.563	8.562	0.001	46	444987	100.0	101.0	
49 Methacrylonitrile	41	8.577	8.576	0.001	90	2172042	100.0	91.5	
51 Tert-amyl methyl ether	73	8.605	8.604	0.001	97	1766143	10.0	10.2	
52 Isobutyl alcohol	42	8.660	8.659	0.001	89	193961	250.0	252.0	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.674	8.673	0.001	87	590882	10.0	8.91	
54 1,2-Dichloroethane	62	8.730	8.729	0.001	96	717847	10.0	8.90	
* 55 Fluorobenzene	96	8.926	8.925	0.001	99	3574017	10.0	10.0	
57 Methylcyclohexane	55	9.079	9.078	0.001	86	1643511	10.0	10.6	
56 Trichloroethene	95	9.079	9.078	0.001	69	1133610	10.0	10.3	
59 n-Butanol	56	9.303	9.302	0.001	88	181655	250.0	244.6	
60 Dibromomethane	93	9.484	9.497	-0.013	92	318312	10.0	8.93	
61 Ethyl acrylate	55	9.512	9.511	0.001	99	426382	10.0	9.96	
62 1,2-Dichloropropane	63	9.568	9.581	-0.013	97	916621	10.0	10.3	
63 Dichlorobromomethane	83	9.610	9.609	0.001	99	995516	10.0	9.83	
64 Methyl methacrylate	69	9.708	9.707	0.001	89	555048	20.0	21.2	
65 1,4-Dioxane	88	9.778	9.777	0.001	92	62172	200.0	179.9	
66 2-Chloroethyl vinyl ether	63	10.085	10.084	0.001	90	82513	10.0	10.3	
67 cis-1,3-Dichloropropene	75	10.183	10.182	0.001	98	1268632	10.0	10.2	
$ 68 Toluene-d8 (Surr)	98	10.350	10.349	0.001	92	3617818	10.0	10.7	
69 Toluene	92	10.392	10.405	-0.013	99	2692868	10.0	10.9	
70 2-Nitropropane	43	10.616	10.615	0.001	98	146158	20.0	17.3	
71 4-Methyl-2-pentanone (MIBK	43	10.699	10.698	0.001	96	293083	10.0	10.0	
73 Tetrachloroethene	164	10.755	10.754	0.001	97	1102440	10.0	11.0	
72 trans-1,3-Dichloropropene	75	10.755	10.754	0.001	78	959892	10.0	10.2	
74 Ethyl methacrylate	69	10.839	10.838	0.001	87	570295	10.0	10.7	
75 1,1,2-Trichloroethane	83	10.909	10.922	-0.013	89	422581	10.0	9.67	
76 Chlorodibromomethane	129	11.091	11.090	0.001	90	658004	10.0	10.3	
77 1,3-Dichloropropane	76	11.174	11.173	0.001	87	910593	10.0	10.0	
78 n-Butyl acetate	43	11.314	11.313	0.001	99	544676	10.0	9.96	
79 Ethylene Dibromide	107	11.342	11.341	0.001	97	496834	10.0	11.0	
80 2-Hexanone	43	11.440	11.453	-0.013	98	191943	10.0	9.12	
81 1-Chlorohexane	91	11.705	11.718	-0.013	98	1773364	10.0	12.0	
* 83 Chlorobenzene-d5	117	11.775	11.774	0.001	68	2627807	10.0	10.0	
82 Ethylbenzene	91	11.775	11.774	0.001	96	4894638	10.0	9.71	
84 Chlorobenzene	112	11.789	11.788	0.001	94	2872500	10.0	10.4	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
85 1,1,1,2-Tetrachloroethane	131	11.831	11.830	0.001	95	930405	10.0	10.6	
86 m-Xylene & p-Xylene	106	11.901	11.900	0.001	99	2139164	10.0	10.8	
88 o-Xylene	106	12.306	12.305	0.001	95	1936641	10.0	11.1	
89 Styrene	104	12.347	12.360	-0.013	94	2690924	10.0	11.2	
90 Bromoform	173	12.431	12.430	0.001	99	366648	10.0	10.4	
91 Isopropylbenzene	105	12.585	12.584	0.001	95	4860164	10.0	10.1	
$ 92 4-Bromofluorobenzene (Surr	95	12.878	12.877	0.001	97	1109918	10.0	10.7	
93 N-Propylbenzene	91	12.962	12.975	-0.013	97	5577391	10.0	9.86	
94 Bromobenzene	156	13.004	13.003	0.001	89	1117439	10.0	10.1	
95 1,1,2,2-Tetrachloroethane	83	13.032	13.031	0.001	94	510417	10.0	9.19	
96 1,3,5-Trimethylbenzene	105	13.130	13.129	0.001	96	3898239	10.0	10.9	
97 2-Chlorotoluene	91	13.158	13.157	0.002	99	3675491	10.0	10.6	
98 1,2,3-Trichloropropane	110	13.199	13.198	0.001	83	160731	10.0	10.4	
99 trans-1,4-Dichloro-2-buten	53	13.199	13.198	0.001	84	120447	10.0	8.92	
100 Cyclohexanone	55	13.269	13.268	0.001	83	85101	100.0	84.9	
101 4-Chlorotoluene	91	13.311	13.310	0.001	95	3239074	10.0	10.9	
102 tert-Butylbenzene	119	13.451	13.450	0.001	93	3775961	10.0	10.9	
103 1,2,4-Trimethylbenzene	105	13.521	13.520	0.001	95	3900680	10.0	10.1	
104 sec-Butylbenzene	105	13.618	13.617	0.001	95	5306741	10.0	9.66	
105 4-Isopropyltoluene	119	13.744	13.743	0.001	95	4615072	10.0	10.1	
106 1,3-Dichlorobenzene	146	13.884	13.883	0.001	98	2249070	10.0	10.2	
107 1,2,3-Trimethylbenzene	105	13.954	13.953	0.001	95	3707343	10.0	9.67	
* 108 1,4-Dichlorobenzene-d4	152	13.954	13.953	0.001	74	1381175	10.0	10.0	
109 1,4-Dichlorobenzene	146	13.968	13.967	0.001	96	2237545	10.0	9.90	
110 n-Butylbenzene	134	14.149	14.162	-0.013	96	1399890	10.0	11.0	
111 Benzyl chloride	126	14.191	14.190	0.001	79	257906	10.0	10.5	
112 1,2-Dichlorobenzene	146	14.387	14.386	0.001	99	1820493	10.0	9.90	
113 n-Nonyl Aldehyde	57	15.099	15.098	0.001	92	287442	10.0	8.92	
114 1,2-Dibromo-3-Chloropropan	157	15.183	15.182	0.001	87	89688	10.0	9.93	
115 1,3,5-Trichlorobenzene	180	15.197	15.196	0.001	96	1543829	10.0	9.99	
116 Hexachlorobutadiene	225	15.769	15.768	0.001	94	878718	10.0	10.7	
117 1,2,4-Trichlorobenzene	180	15.839	15.838	0.001	95	991049	10.0	9.99	
118 Naphthalene	128	16.188	16.187	0.001	96	1082271	10.0	9.50	
120 1,2,3-Trichlorobenzene	180	16.384	16.383	0.001	95	566823	10.0	8.94	

Reagents:

8260NewICVMix_00173	Amount Added: 10.00	Units: uL	
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent

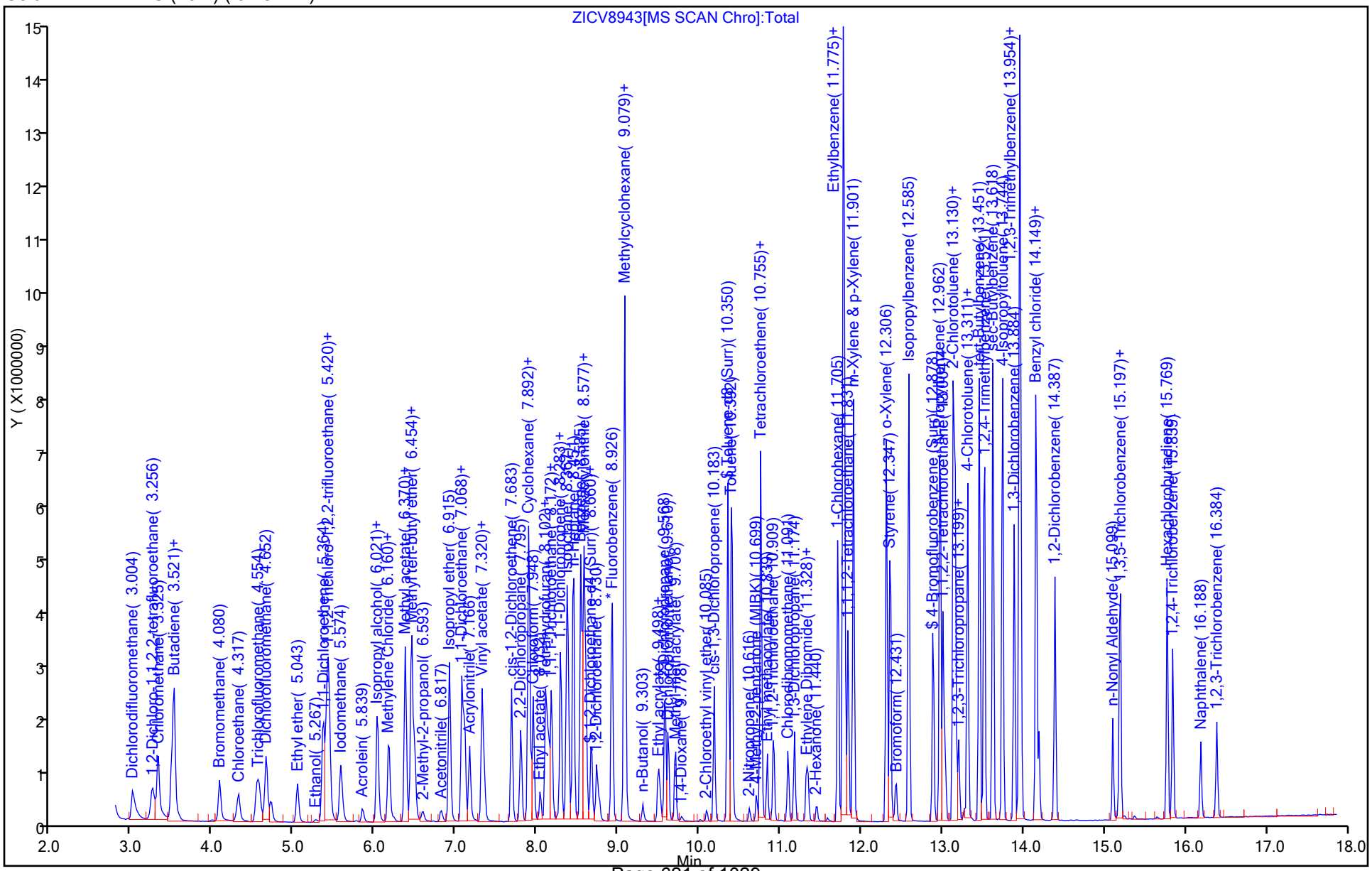
Report Date: 07-Sep-2016 12:33:35 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICV8943.D

Injection Date:	07-Sep-2016 11:05:30	Instrument ID:	VMSZ	Operator ID:	EF
Lims ID:	ICV			Worklist Smp#:	14
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	11
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LBFB4702.D
Lims ID: bfb
Client ID:
Sample Type: BFB
Inject. Date: 22-Aug-2016 10:29:30 ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 uL Dil. Factor: 1.0000
Sample Info: BFB
Misc. Info.: BFB
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 23-Aug-2016 11:58:54 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK027

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
$ 124 BFB	95	4.150	4.150	0.000	0	134366	NR	NR	

QC Flag Legend

Processing Flags
NR - Missing Quant Standard

Reagents:

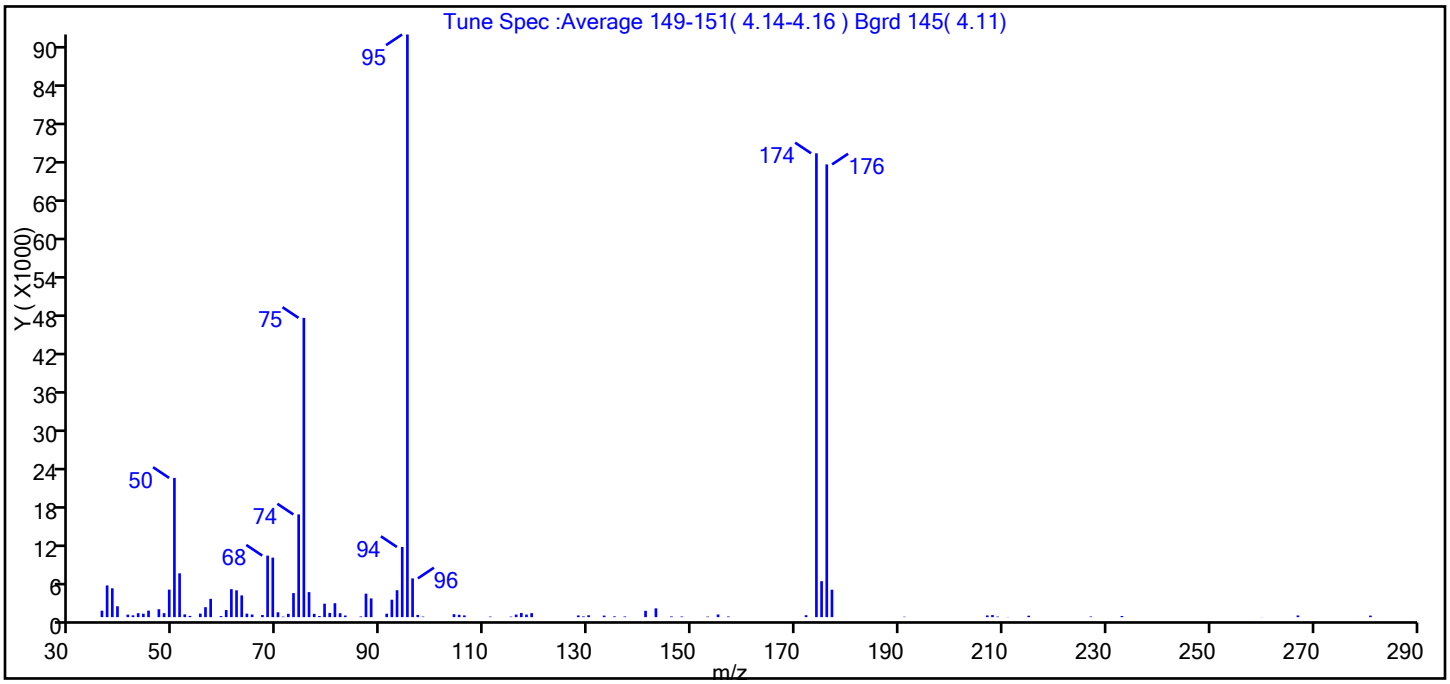
BFB_00061 Amount Added: 2.00 Units: uL

MS Tune Report

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LBFB4702.D
Injection Date: 22-Aug-2016 10:29:30 Instrument ID: VMSL
Lims ID: bfb
Client ID:
Operator ID: SMCR ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 uL Dil. Factor: 1.0000
Method: 25mL-8260-MSL Limit Group: MSV-8260
Tune Method: BFB Method 8260

$ 124 BFB



m/z	Ion Abundance Criteria	% Relative Abundance
95	Base peak, 100% relative abundance	100.0
50	15 to 40% of m/z 95	23.9
75	30 to 60% of m/z 95	51.4
96	5 to 9% of m/z 95	6.7
173	Less than 2% of m/z 174	0.0 (0.0)
174	50 to 120% of m/z 95	79.6
175	5 to 9% of m/z 174	6.2 (7.8)
176	Greater than 95% but less than 101% of m/z 174	77.7 (97.6)
177	5 to 9% of m/z 176	4.7 (6.1)

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LBFB4702.D\25mL-8260-MSL.rslt\spectra.d
Injection Date: 22-Aug-2016 10:29:30
Spectrum: Tune Spec :Average 149-151(4.14-4.16) Bgrd 145(4.11)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 92

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	1019	63.00	3423	91.00	542	141.00	997
37.00	4991	64.00	550	92.00	2745	143.00	1384
38.00	4540	65.00	414	93.00	4238	146.00	114
39.00	1713	67.00	335	94.00	11046	148.00	99
41.00	394	68.00	9686	95.00	91728	153.00	89
42.00	287	69.00	9372	96.00	6103	155.00	420
43.00	627	70.00	764	97.00	350	157.00	106
44.00	541	71.00	84	98.00	86	172.00	304
45.00	1027	72.00	524	104.00	467	174.00	73024
47.00	1246	73.00	3787	105.00	376	175.00	5662
48.00	630	74.00	16170	106.00	276	176.00	71272
49.00	4333	75.00	47112	111.00	85	177.00	4320
50.00	21920	76.00	3941	115.00	83	191.00	63
51.00	6898	77.00	523	116.00	407	207.00	268
52.00	437	78.00	173	117.00	659	208.00	326
53.00	196	79.00	2118	118.00	403	209.00	91
55.00	561	80.00	660	119.00	635	211.00	28
56.00	1568	81.00	2192	128.00	267	215.00	225
57.00	2880	82.00	626	129.00	114	227.00	98
59.00	172	83.00	255	130.00	293	233.00	178
60.00	1123	86.00	105	133.00	245	260.00	18
61.00	4407	87.00	3697	135.00	125	267.00	264
62.00	4222	88.00	2951	137.00	106	281.00	244

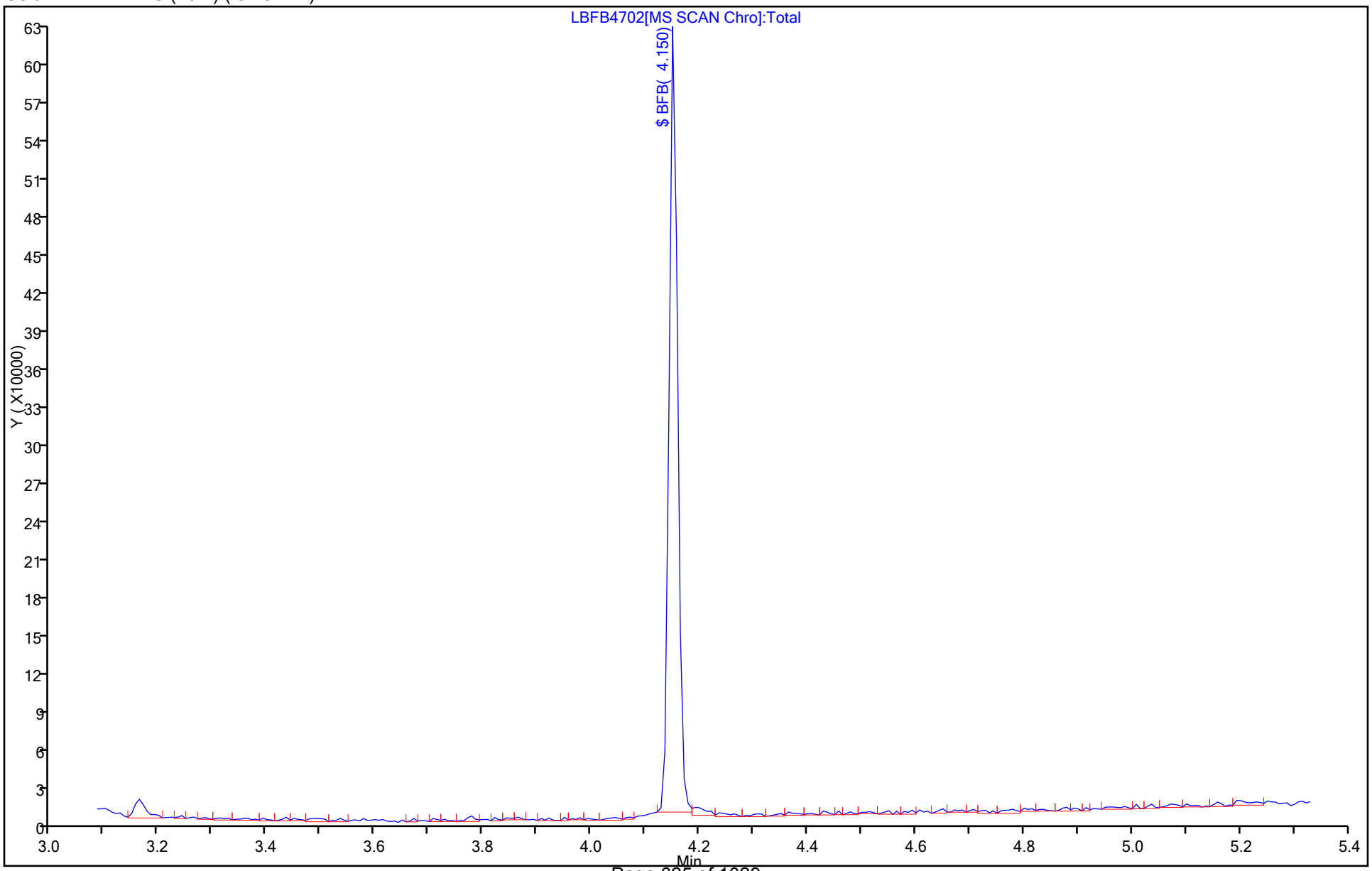
Report Date: 23-Aug-2016 11:58:54 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LBFB4702.D

Injection Date:	22-Aug-2016 10:29:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	bfb			Worklist Smp#:	1
Client ID:					
Injection Vol:	2.0 uL	Dil. Factor:	1.0000	ALS Bottle#:	1
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LBFB4848.D
Lims ID: BFB
Client ID:
Sample Type: BFB
Inject. Date: 04-Sep-2016 09:30:30 ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 uL Dil. Factor: 1.0000
Sample Info: BFB
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:46:50 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: buettnera Date: 04-Sep-2016 09:47:48

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
$ 124 BFB	95	4.143	4.143	0.000	0	232844	NR	NR	

QC Flag Legend

Processing Flags
NR - Missing Quant Standard

Reagents:

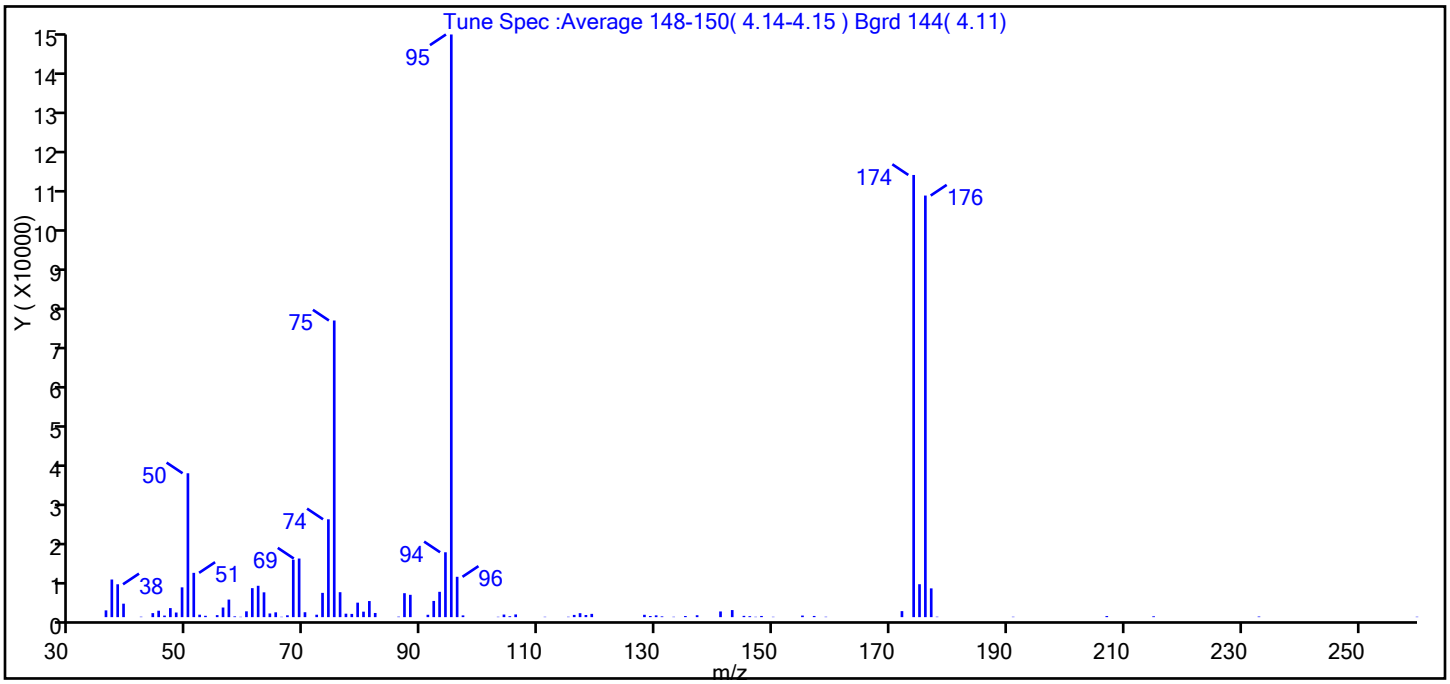
BFB_00061 Amount Added: 2.00 Units: uL

MS Tune Report

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LBFB4848.D
Injection Date: 04-Sep-2016 09:30:30 Instrument ID: VMSL
Lims ID: BFB
Client ID:
Operator ID: ADB ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 uL Dil. Factor: 1.0000
Method: 25mL-8260-MSL Limit Group: MSV-8260
Tune Method: BFB Method 8260

$ 124 BFB



m/z	Ion Abundance Criteria	% Relative Abundance
95	Base peak, 100% relative abundance	100.0
50	15 to 40% of m/z 95	24.7
75	30 to 60% of m/z 95	50.9
96	5 to 9% of m/z 95	6.9
173	Less than 2% of m/z 174	0.0 (0.0)
174	50 to 120% of m/z 95	75.9
175	5 to 9% of m/z 174	5.7 (7.4)
176	Greater than 95% but less than 101% of m/z 174	72.4 (95.3)
177	5 to 9% of m/z 176	4.9 (6.8)

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LBFB4848.D\25mL-8260-MSL.rslt\spectra.d
Injection Date: 04-Sep-2016 09:30:30
Spectrum: Tune Spec :Average 148-150(4.14-4.15) Bgrd 144(4.11)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 90

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	1663	63.00	6092	92.00	3978	141.00	1397
37.00	9237	64.00	905	93.00	6220	143.00	1736
38.00	8068	65.00	1183	94.00	15926	145.00	316
39.00	3308	66.00	87	95.00	143040	146.00	237
42.00	104	67.00	451	96.00	9904	147.00	90
44.00	988	68.00	14094	97.00	429	148.00	291
45.00	1578	69.00	14388	103.00	89	150.00	85
46.00	383	70.00	1206	104.00	636	155.00	386
47.00	2222	72.00	597	105.00	221	157.00	291
48.00	1133	73.00	5960	106.00	664	159.00	98
49.00	7313	74.00	24024	111.00	87	172.00	1477
50.00	35320	75.00	72824	115.00	96	174.00	108552
51.00	10876	76.00	6125	116.00	548	175.00	8082
52.00	600	77.00	850	117.00	974	176.00	103496
53.00	334	78.00	794	118.00	525	177.00	7064
55.00	494	79.00	3558	119.00	804	178.00	105
56.00	2360	80.00	1347	128.00	579	191.00	94
57.00	4312	81.00	3952	129.00	279	207.00	268
58.00	190	82.00	1022	130.00	437	215.00	207
59.00	84	86.00	119	131.00	187	233.00	149
60.00	1430	87.00	5879	133.00	92	260.00	97
61.00	7116	88.00	5482	135.00	278		
62.00	7700	91.00	583	137.00	466		

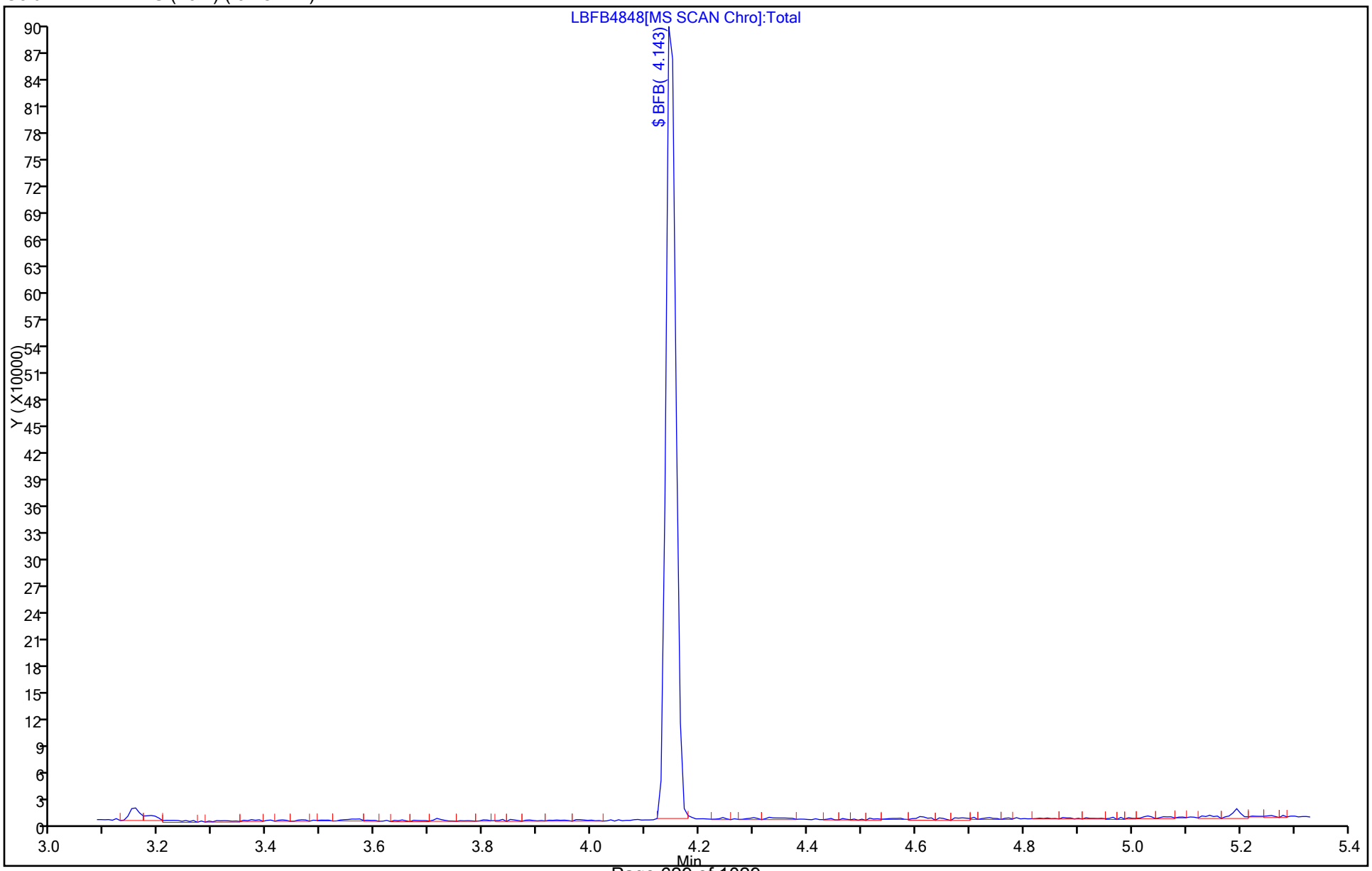
Report Date: 06-Sep-2016 08:46:51 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LBFB4848.D

Injection Date:	04-Sep-2016 09:30:30	Instrument ID:	VMSL	Operator ID:	ADB
Lims ID:	BFB			Worklist Smp#:	1
Client ID:					
Injection Vol:	2.0 uL	Dil. Factor:	1.0000	ALS Bottle#:	1
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LBFB4957.D
Lims ID: BFB
Client ID:
Sample Type: BFB
Inject. Date: 07-Sep-2016 10:09:30 ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 uL Dil. Factor: 1.0000
Sample Info: BFB
Misc. Info.: BFB
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:40:27 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 07-Sep-2016 11:02:09

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
$ 124 BFB	95	4.143	4.143	0.000	0	847408	NR	NR	

QC Flag Legend

Processing Flags
NR - Missing Quant Standard

Reagents:

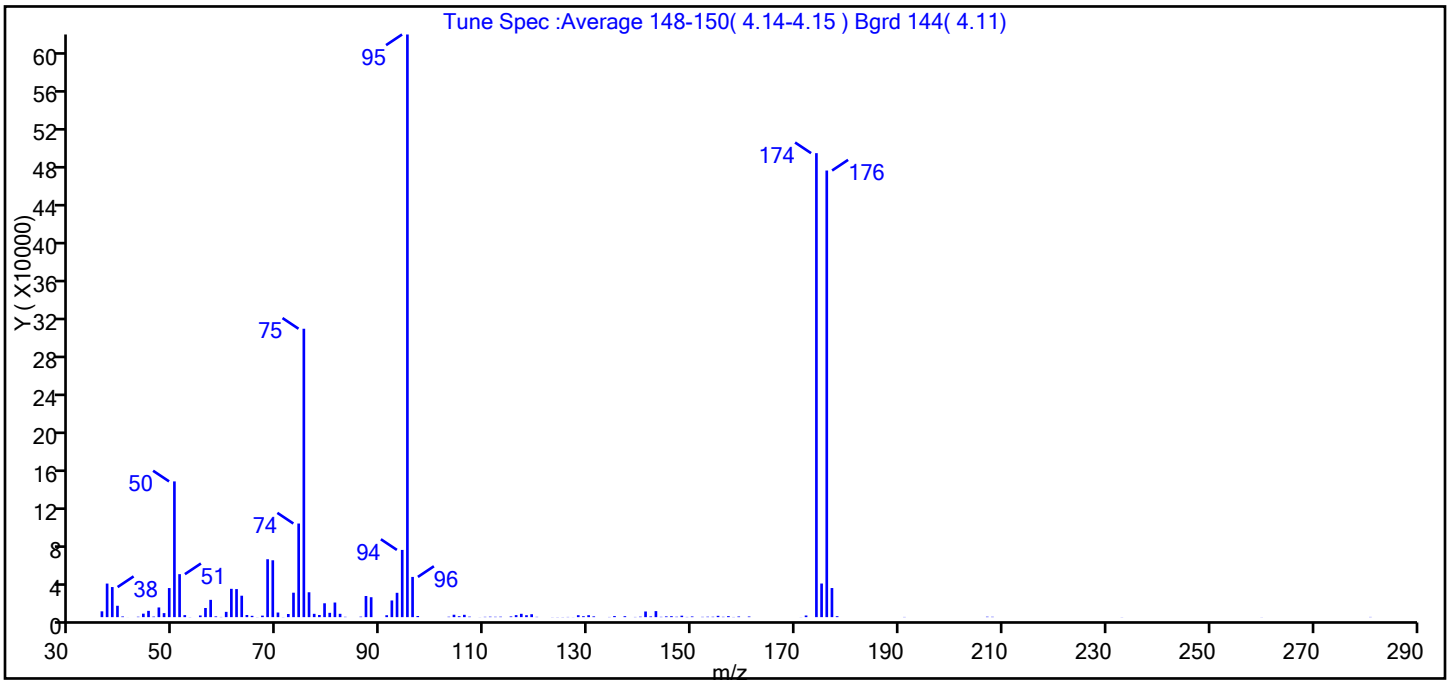
BFB_00062 Amount Added: 2.00 Units: uL

MS Tune Report

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LBFB4957.D
Injection Date: 07-Sep-2016 10:09:30 Instrument ID: VMSL
Lims ID: BFB
Client ID:
Operator ID: SMCR ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 uL Dil. Factor: 1.0000
Method: 25mL-8260-MSL Limit Group: MSV-8260
Tune Method: BFB Method 8260

$ 124 BFB



m/z	Ion Abundance Criteria	% Relative Abundance
95	Base peak, 100% relative abundance	100.0
50	15 to 40% of m/z 95	23.3
75	30 to 60% of m/z 95	49.5
96	5 to 9% of m/z 95	6.9
173	Less than 2% of m/z 174	0.0 (0.0)
174	50 to 120% of m/z 95	79.6
175	5 to 9% of m/z 174	5.8 (7.2)
176	Greater than 95% but less than 101% of m/z 174	76.7 (96.3)
177	5 to 9% of m/z 176	5.0 (6.5)

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LBFB4957.D\25mL-8260-MSL.rslt\spectra.d
Injection Date: 07-Sep-2016 10:09:30
Spectrum: Tune Spec :Average 148-150(4.14-4.15) Bgrd 144(4.11)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 118

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	6101	68.00	60648	107.00	524	145.00	797
37.00	35160	69.00	59552	109.00	84	146.00	1001
38.00	31504	70.00	4838	110.00	331	147.00	420
39.00	11907	71.00	123	111.00	487	148.00	1515
40.00	715	72.00	3295	112.00	377	149.00	223
41.00	39	73.00	25600	113.00	480	150.00	714
43.00	431	74.00	98040	115.00	746	152.00	310
44.00	3660	75.00	302016	116.00	2094	153.00	457
45.00	6581	76.00	26048	117.00	3496	154.00	405
46.00	580	77.00	3478	118.00	2026	155.00	1382
47.00	10144	78.00	2259	119.00	3061	156.00	357
48.00	4224	79.00	14510	120.00	311	157.00	1042
49.00	30456	80.00	4517	123.00	121	158.00	186
50.00	142144	81.00	15307	124.00	145	159.00	693
51.00	45016	82.00	3481	125.00	153	161.00	677
52.00	2114	83.00	346	126.00	220	171.00	90
53.00	146	86.00	516	127.00	89	172.00	1727
55.00	1726	87.00	22136	128.00	2029	174.00	485888
56.00	9582	88.00	20856	129.00	967	175.00	35200
57.00	18112	91.00	1997	130.00	2025	176.00	467712
58.00	811	92.00	17464	131.00	823	177.00	30480
59.00	210	93.00	25488	134.00	199	178.00	999
60.00	5543	94.00	70400	135.00	1138	191.00	208
61.00	29664	95.00	610176	137.00	997	207.00	454
62.00	29392	96.00	42120	139.00	212	208.00	363
63.00	22448	97.00	1179	140.00	493	233.00	118
64.00	2251	103.00	429	141.00	5935	260.00	95
65.00	1382	104.00	2523	142.00	748	281.00	220
66.00	102	105.00	951	143.00	6314		
67.00	1568	106.00	2443	144.00	326		

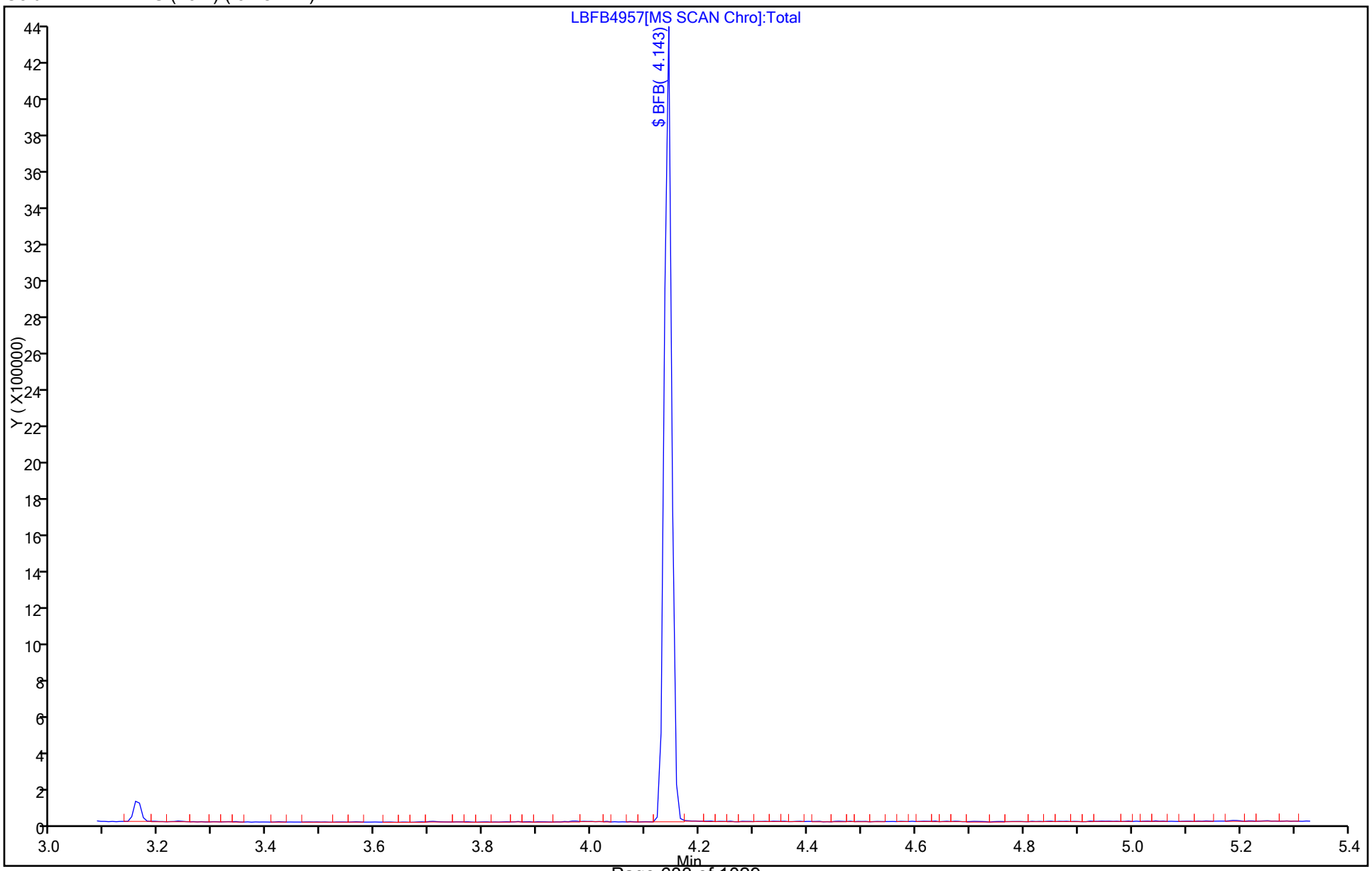
Report Date: 08-Sep-2016 08:40:28 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LBFB4957.D

Injection Date:	07-Sep-2016 10:09:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	BFB			Worklist Smp#:	1
Client ID:					
Injection Vol:	2.0 uL	Dil. Factor:	1.0000	ALS Bottle#:	1
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZBFB8932.D
Lims ID: bfb
Client ID:
Sample Type: BFB
Inject. Date: 07-Sep-2016 06:52:30 ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 uL Dil. Factor: 1.0000
Sample Info: 160-0008404-001
Misc. Info.: 50NGBFB
Operator ID: EF Instrument ID: VMSZ

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 07-Sep-2016 07:17:49 Calib Date: 06-Sep-2016 10:45:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160906-8395.b\ZICL8909.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK010

First Level Reviewer: fishere Date: 07-Sep-2016 07:17:48

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
$ 124 BFB	95	4.490	4.490	0.000	0	631107	NR	NR	

QC Flag Legend

Processing Flags
NR - Missing Quant Standard

Reagents:

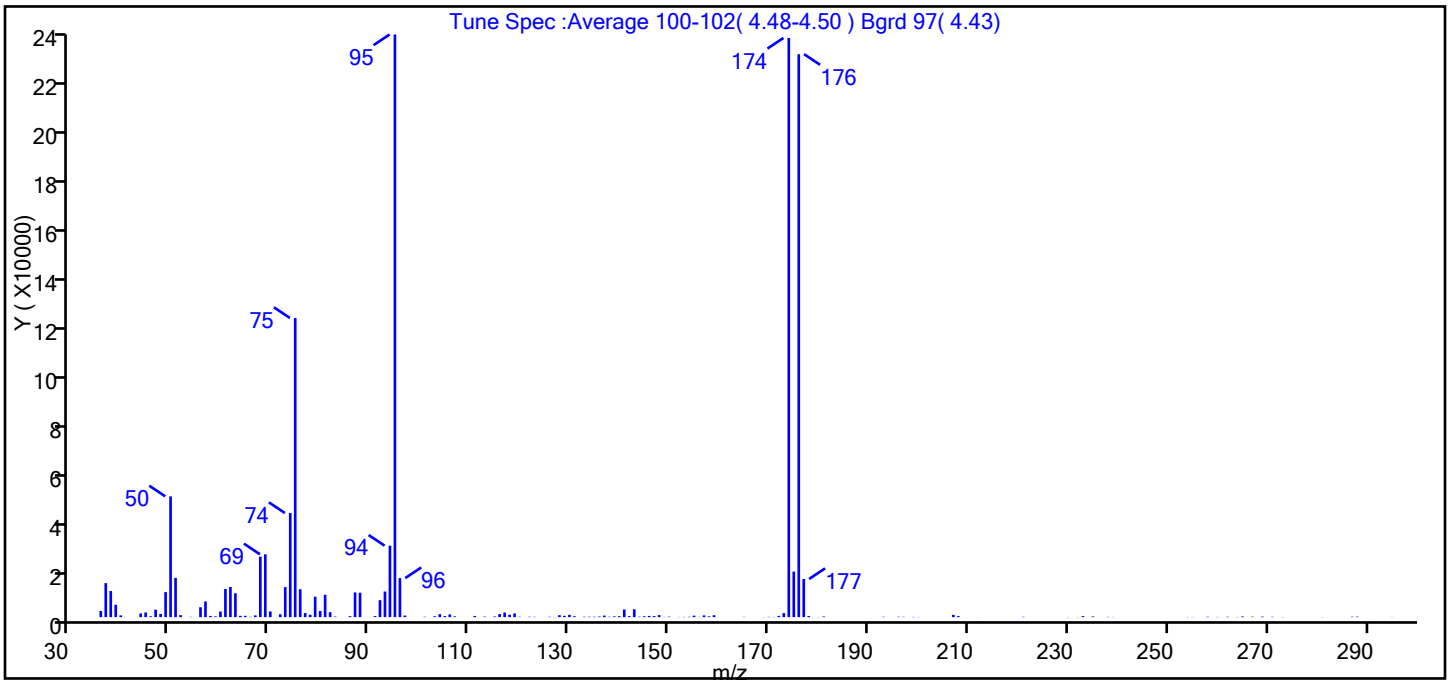
BFB_00062 Amount Added: 2.00 Units: uL

MS Tune Report

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZBFB8932.D
Injection Date: 07-Sep-2016 06:52:30 Instrument ID: VMSZ
Lims ID: bfb
Client ID:
Operator ID: EF ALS Bottle#: 1 Worklist Smp#: 1
Injection Vol: 2.0 uL Dil. Factor: 1.0000
Method: 25mL-8260-MSZ Limit Group: MSV-8260
Tune Method: BFB Method 8260

$ 124 BFB



m/z	Ion Abundance Criteria	% Relative Abundance
95	Base peak, 100% relative abundance	100.0
50	15 to 40% of m/z 95	20.7
75	30 to 60% of m/z 95	51.3
96	5 to 9% of m/z 95	6.7
173	Less than 2% of m/z 174	0.7 (0.7)
174	50 to 120% of m/z 95	99.4
175	5 to 9% of m/z 174	7.8 (7.9)
176	Greater than 95% but less than 101% of m/z 174	96.6 (97.2)
177	5 to 9% of m/z 176	6.5 (6.8)

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZBFB8932.D\25mL-8260-MSZ.rslt\spectra.d
Injection Date: 07-Sep-2016 06:52:30
Spectrum: Tune Spec :Average 100-102(4.48-4.50) Bgrd 97(4.43)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 144

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	2499	78.00	962	130.00	947	176.00	228800
37.00	13815	79.00	8301	131.00	373	177.00	15494
38.00	10613	80.00	2512	133.00	174	178.00	442
39.00	5037	81.00	9100	134.00	174	180.00	71
40.00	727	82.00	2008	135.00	164	181.00	258
44.00	1498	83.00	219	136.00	253	193.00	147
45.00	1889	86.00	400	137.00	632	196.00	165
46.00	339	87.00	10048	138.00	157	197.00	127
47.00	3028	88.00	9925	139.00	313	199.00	96
48.00	1312	91.00	430	140.00	389	200.00	71
49.00	10180	92.00	6897	141.00	3120	207.00	927
50.00	49088	93.00	10415	142.00	412	208.00	424
51.00	15958	94.00	29040	143.00	3190	212.00	39
52.00	823	95.00	236800	144.00	166	221.00	159
54.00	114	96.00	15866	145.00	356	230.00	75
56.00	4026	97.00	659	146.00	492	232.00	65
57.00	6378	101.00	163	147.00	430	233.00	410
58.00	496	103.00	355	148.00	843	235.00	285
59.00	307	104.00	1199	149.00	93	238.00	114
60.00	2289	105.00	465	150.00	195	239.00	79
61.00	11421	106.00	1116	152.00	76	247.00	7
62.00	12251	107.00	320	153.00	113	254.00	72
63.00	9717	111.00	496	154.00	143	255.00	92
64.00	540	113.00	206	155.00	609	258.00	163
65.00	535	115.00	262	156.00	95	260.00	90
66.00	116	116.00	1253	157.00	713	262.00	165
67.00	716	117.00	1882	158.00	320	264.00	86
68.00	24576	118.00	1006	159.00	788	265.00	275
69.00	25528	119.00	1507	165.00	119	267.00	188
70.00	2311	120.00	150	169.00	67	269.00	233
72.00	1165	122.00	160	170.00	124	271.00	146
73.00	12199	123.00	131	171.00	77	273.00	74
74.00	42312	126.00	152	172.00	511	281.00	55

Report Date: 07-Sep-2016 07:17:52 Chrom Revision: 2.2 20-Apr-2016 13:59:46
Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZBFB8932.D\25mL-8260-MSZ.rslt\spectra.d
Injection Date: 07-Sep-2016 06:52:30
Spectrum: Tune Spec :Average 100-102(4.48-4.50) Bgrd 97(4.43)
Base Peak: 95.00
Minimum % Base Peak: 0
Number of Points: 144

m/z	Y	m/z	Y	m/z	Y	m/z	Y
75.00	121584	127.00	70	173.00	1638	287.00	183
76.00	11328	128.00	808	174.00	235392	288.00	212
77.00	1673	129.00	531	175.00	18512	295.00	67

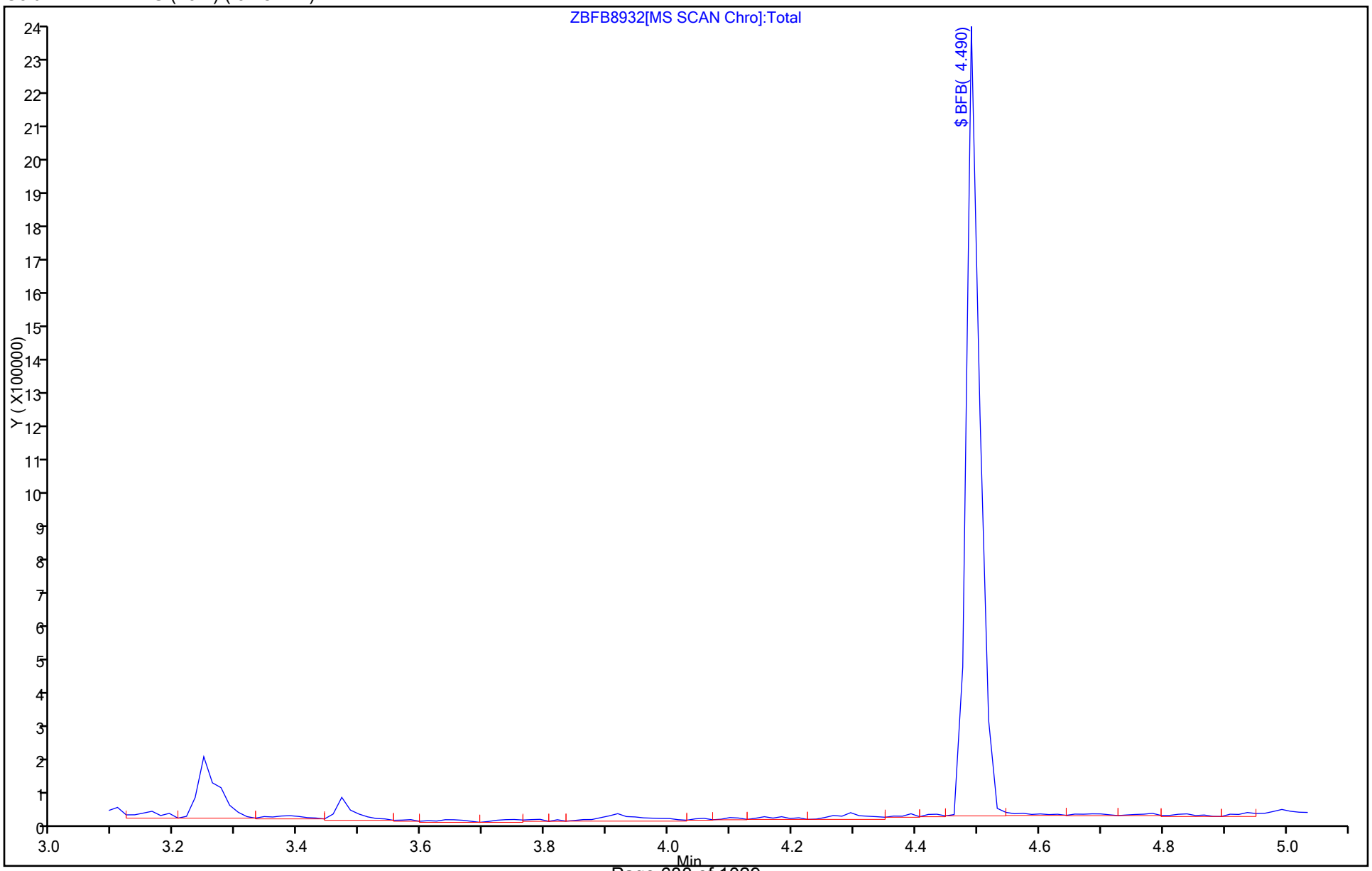
Report Date: 07-Sep-2016 07:17:53 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZBFB8932.D

Injection Date:	07-Sep-2016 06:52:30	Instrument ID:	VMSZ	Operator ID:	EF
Lims ID:	bfb			Worklist Smp#:	1
Client ID:					
Injection Vol:	2.0 uL	Dil. Factor:	1.0000	ALS Bottle#:	1
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 160-267958/9

Matrix: Water | Lab File ID: LBLK4853.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 25(mL) | Date Analyzed: 09/04/2016 11:33

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 267958 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	ND		1.0	0.17
79-34-5	1,1,2,2-Tetrachloroethane	ND		1.0	0.10
79-00-5	1,1,2-Trichloroethane	ND		1.0	0.13
75-35-4	1,1-Dichloroethene	ND		1.0	0.10
75-34-3	1,1-Dichloroethane	ND		1.0	0.070
120-82-1	1,2,4-Trichlorobenzene	ND		1.0	0.10
96-12-8	1,2-Dibromo-3-Chloropropane	ND		1.0	0.41
107-06-2	1,2-Dichloroethane	ND		1.0	0.22
540-59-0	1,2-Dichloroethene, Total	ND		2.0	0.14
78-87-5	1,2-Dichloropropane	ND		1.0	0.10
78-93-3	2-Butanone	ND		5.0	0.47
591-78-6	2-Hexanone	ND		5.0	0.25
108-10-1	4-Methyl-2-pentanone	ND		5.0	0.22
67-64-1	Acetone	ND		2.0	0.55
71-43-2	Benzene	ND		1.0	0.10
75-25-2	Bromoform	ND		1.0	0.17
74-83-9	Methyl bromide	ND		2.0	0.25
75-15-0	Carbon disulfide	ND		1.0	0.10
56-23-5	Carbon tetrachloride	ND		1.0	0.18
108-90-7	Chlorobenzene	ND		1.0	0.11
124-48-1	Chlorodibromomethane	ND		1.0	0.14
75-00-3	Chloroethane	ND		2.0	0.16
67-66-3	Chloroform	ND		1.0	0.10
74-87-3	Chloromethane	ND		2.0	0.10
156-59-2	cis-1,2-Dichloroethene	ND		1.0	0.10
10061-01-5	cis-1,3-Dichloropropene	ND		1.0	0.16
75-27-4	Bromodichloromethane	ND		1.0	0.14
100-41-4	Ethylbenzene	ND		1.0	0.12
106-93-4	1,2-Dibromoethane	ND		1.0	0.13
75-09-2	Methylene Chloride	ND		1.0	0.27
71-36-3	n-Butanol	ND		50	12
100-42-5	Styrene	ND		1.0	0.13
127-18-4	Tetrachloroethene	ND		1.0	0.18
108-88-3	Toluene	ND		1.0	0.14
156-60-5	trans-1,2-Dichloroethene	ND		1.0	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		1.0	0.10

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 160-267958/9

Matrix: Water | Lab File ID: LBLK4853.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 25(mL) | Date Analyzed: 09/04/2016 11:33

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 267958 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		1.0	0.25
108-05-4	Vinyl acetate	ND		2.0	0.18
75-01-4	Vinyl chloride	ND		2.0	0.19
1330-20-7	Xylenes, Total	ND		3.0	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	105		75-129
460-00-4	4-Bromofluorobenzene (Surr)	100		81-130
1868-53-7	Dibromofluoromethane (Surr)	103		81-124
2037-26-5	Toluene-d8 (Surr)	109		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LBLK4853.D
Lims ID: MB
Client ID:
Sample Type: MB
Inject. Date: 04-Sep-2016 11:33:30 ALS Bottle#: 5 Worklist Smp#: 9
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: MB
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:16:57 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: buettnera Date: 06-Sep-2016 08:12:54

	Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1	Dichlorodifluoromethane	85		3.125					ND	
2	1,2-Dichloro-1,1,2,2-tetra	135		3.376					ND	
3	Chloromethane	50		3.474					ND	
4	Vinyl chloride	62		3.641					ND	
5	Butadiene	39		3.669					ND	
6	Bromomethane	94		4.256					ND	
7	Chloroethane	64		4.479					ND	
8	Trichlorofluoromethane	101		4.717					ND	
9	Dichlorofluoromethane	67		4.829					ND	
10	Ethyl ether	74		5.234					ND	
11	Ethanol	45		5.457					ND	
12	1,1-Dichloroethene	96		5.541					ND	
13	Carbon disulfide	76		5.583					ND	
14	1,1,2-Trichloro-1,2,2-trif	151		5.597					ND	
16	Iodomethane	142		5.750					ND	
S 15	1,2-Dichloroethene, Total	96		5.816					ND	
17	Acrolein	56		6.016					ND	
18	3-Chloro-1-propene	39		6.197					ND	
19	Isopropyl alcohol	45		6.225					ND	
20	Methylene Chloride	84		6.337					ND	
21	Acetone	43		6.407					ND	
22	trans-1,2-Dichloroethene	96		6.546					ND	
23	Methyl acetate	74		6.546					ND	
24	Hexane	86		6.616					ND	
25	Methyl tert-butyl ether	73		6.658					ND	
27	Acetonitrile	41		6.979					ND	
28	Isopropyl ether	45		7.091					ND	
26	2-Methyl-2-propanol	59		7.091					ND	
29	2-Chloro-1,3-butadiene	53		7.231					ND	
30	1,1-Dichloroethane	63		7.259					ND	
31	Acrylonitrile	53		7.329					ND	
32	Tert-butyl ethyl ether	59		7.482					ND	

	Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
	33 Vinyl acetate	43		7.510					ND	
	34 cis-1,2-Dichloroethene	96		7.845					ND	
	35 2,2-Dichloropropane	77		7.957					ND	
	37 Chlorobromomethane	128		8.055					ND	
	36 Cyclohexane	84		8.055					ND	
	38 Chloroform	83		8.097					ND	
	39 Ethyl acetate	45		8.194					ND	
	40 Carbon tetrachloride	117		8.264					ND	
	41 Tetrahydrofuran	71		8.278					ND	
$	42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	228835	10.0		10.3
	43 1,1,1-Trichloroethane	97		8.334					ND	
	45 2-Butanone (MEK)	43		8.404					ND	
	47 1,1-Dichloropropene	75		8.446					ND	
	44 Isooctane	57		8.516					ND	
	46 n-Heptane	43		8.599					ND	
	48 Benzene	78		8.683					ND	
	49 Propionitrile	54		8.711					ND	
	50 Methacrylonitrile	41		8.725					ND	
	51 Tert-amyl methyl ether	73		8.753					ND	
	52 Isobutyl alcohol	42		8.809					ND	
$	53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	94	245585	10.0		10.5
	54 1,2-Dichloroethane	62		8.879					ND	
*	55 Fluorobenzene	96	9.074	9.074	0.000	98	1153161	10.0		10.0
	57 Trichloroethene	95		9.228					ND	
	58 Methylcyclohexane	55		9.228					ND	
	56 1,4-Difluorobenzene	114		9.256					ND	
	59 n-Butanol	56		9.451					ND	
	61 Dibromomethane	93		9.633					ND	
	60 Ethyl acrylate	55		9.661					ND	
	62 1,2-Dichloropropane	63		9.717					ND	
	63 Dichlorobromomethane	83		9.759					ND	
	64 Methyl methacrylate	69		9.842					ND	
	65 1,4-Dioxane	88		9.926					ND	
	66 2-Chloroethyl vinyl ether	63		10.234					ND	
	67 cis-1,3-Dichloropropene	75		10.317					ND	
$	68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	95	1082023	10.0		10.9
	69 Toluene	92		10.541					ND	
	70 2-Nitropropane	43		10.750					ND	
	71 4-Methyl-2-pentanone (MIBK	43		10.848					ND	
	72 trans-1,3-Dichloropropene	75		10.890					ND	
	73 Tetrachloroethene	164		10.904					ND	
	74 Ethyl methacrylate	69		10.974					ND	
	75 1,1,2-Trichloroethane	83		11.044					ND	
	76 Chlorodibromomethane	129		11.225					ND	
	77 1,3-Dichloropropane	76		11.309					ND	
	78 n-Butyl acetate	43		11.449					ND	
	79 Ethylene Dibromide	107		11.477					ND	
	80 2-Hexanone	43		11.588					ND	
	81 1-Chlorohexane	91		11.840					ND	
*	83 Chlorobenzene-d5	117	11.909	11.909	0.000	88	759298	10.0		10.0
	82 Ethylbenzene	91		11.909					ND	
	84 Chlorobenzene	112		11.923					ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
85 1,1,1,2-Tetrachloroethane	131		11.965					ND	
86 m-Xylene & p-Xylene	106		12.035					ND	
88 o-Xylene	106		12.440					ND	
89 Styrene	104		12.482					ND	
90 Bromoform	173		12.552					ND	
91 Isopropylbenzene	105		12.720					ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	84	365873	10.0	9.95	
93 N-Propylbenzene	91		13.097					ND	
94 Bromobenzene	156		13.139					ND	
95 1,1,2,2-Tetrachloroethane	83		13.166					ND	
96 1,3,5-Trimethylbenzene	105		13.264					ND	
97 2-Chlorotoluene	91		13.292					ND	
99 1,2,3-Trichloropropane	110		13.320					ND	
98 trans-1,4-Dichloro-2-buten	53		13.334					ND	
100 Cyclohexanone	55		13.404					ND	
101 4-Chlorotoluene	91		13.446					ND	
102 tert-Butylbenzene	119		13.585					ND	
103 1,2,4-Trimethylbenzene	105		13.641					ND	
87 Pentachloroethane	167		13.655					ND	
104 sec-Butylbenzene	105		13.753					ND	
105 4-Isopropyltoluene	119		13.879					ND	
106 1,3-Dichlorobenzene	146		14.018					ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	97	438030	10.0	10.0	
107 1,2,3-Trimethylbenzene	105		14.088					ND	
109 1,4-Dichlorobenzene	146		14.102					ND	
111 n-Butylbenzene	134		14.284					ND	
110 Benzyl chloride	126		14.326					ND	
112 1,2-Dichlorobenzene	146		14.521					ND	
113 n-Nonyl Aldehyde	57		15.233					ND	
115 1,2-Dibromo-3-Chloropropan	157		15.303					ND	
114 1,3,5-Trichlorobenzene	180		15.331					ND	
116 Hexachlorobutadiene	225		15.904					ND	
117 1,2,4-Trichlorobenzene	180		15.974					ND	
118 Naphthalene	128		16.337					ND	
S 119 Xylenes, Total	106		16.500					ND	
120 1,2,3-Trichlorobenzene	180		16.532					ND	
121 2-Pentanone	1		0.000					ND	
S 130 Trihalomethanes, Total	1		0.000					ND	

Reagents:

I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

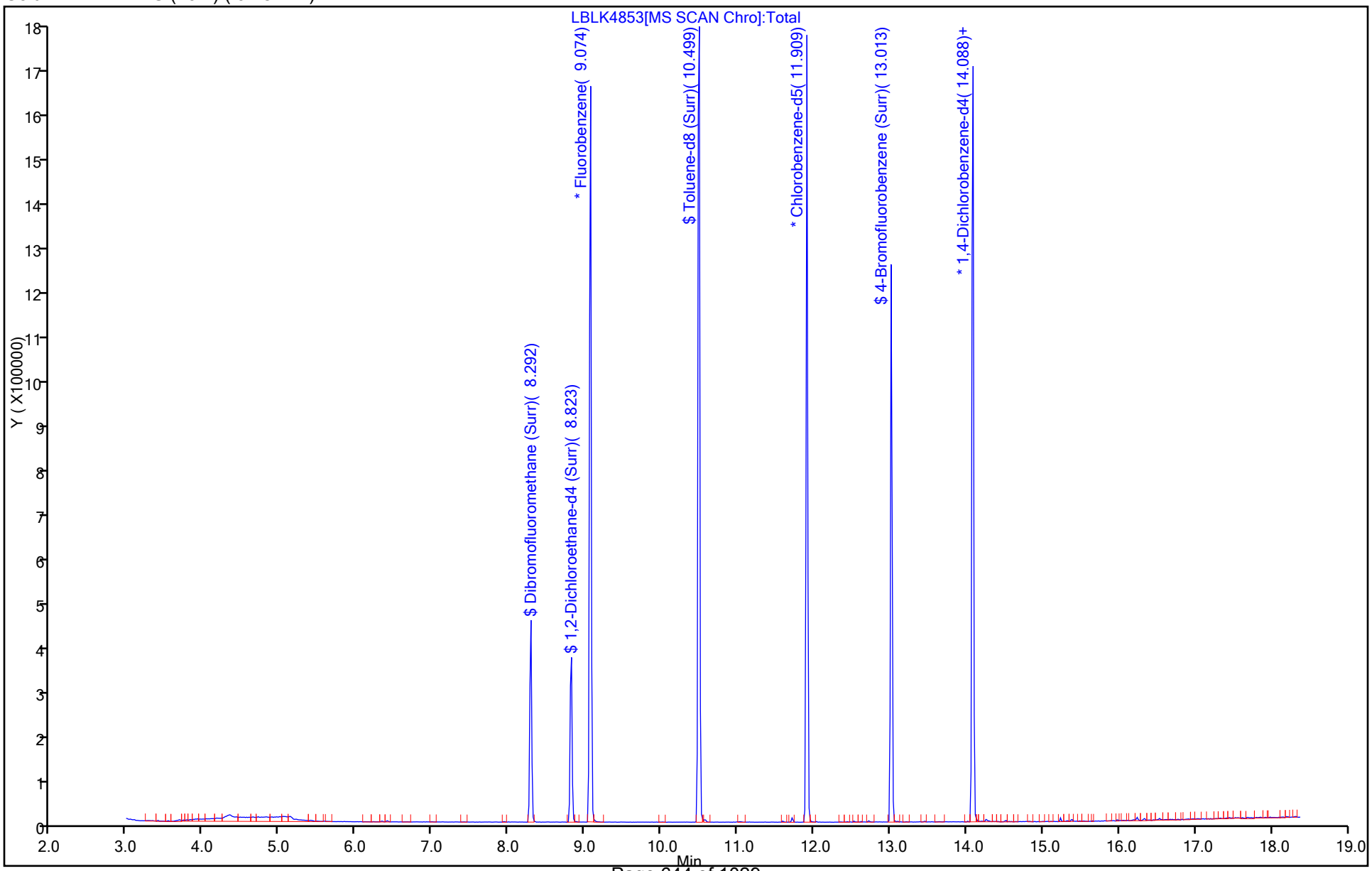
Report Date: 06-Sep-2016 08:45:46 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LBLK4853.D

Injection Date:	04-Sep-2016 11:33:30	Instrument ID:	VMSL	Operator ID:	ADB
Lims ID:	MB			Worklist Smp#:	9
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	5
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LBLK4853.D
Lims ID: MB
Client ID:
Sample Type: MB
Inject. Date: 04-Sep-2016 11:33:30 ALS Bottle#: 5 Worklist Smp#: 9
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: MB
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:16:57 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: buettnera Date: 06-Sep-2016 08:12:54

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.3	103.27
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	10.5	104.77
$ 68 Toluene-d8 (Surr)	10.0	10.9	109.16
$ 92 4-Bromofluorobenzene (Surr)	10.0	9.95	99.54

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 160-268249/18

Matrix: Water | Lab File ID: ZBLK8947.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 12:55

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268249 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	ND		1.0	0.17
79-34-5	1,1,2,2-Tetrachloroethane	ND		1.0	0.10
79-00-5	1,1,2-Trichloroethane	ND		1.0	0.13
75-35-4	1,1-Dichloroethene	ND		1.0	0.10
75-34-3	1,1-Dichloroethane	ND		1.0	0.070
120-82-1	1,2,4-Trichlorobenzene	ND		1.0	0.10
96-12-8	1,2-Dibromo-3-Chloropropane	ND		1.0	0.41
107-06-2	1,2-Dichloroethane	ND		1.0	0.22
540-59-0	1,2-Dichloroethene, Total	ND		2.0	0.14
78-87-5	1,2-Dichloropropane	ND		1.0	0.10
78-93-3	2-Butanone	ND		5.0	0.47
591-78-6	2-Hexanone	ND		5.0	0.25
108-10-1	4-Methyl-2-pentanone	ND		5.0	0.22
67-64-1	Acetone	ND		2.0	0.55
71-43-2	Benzene	ND		1.0	0.10
75-25-2	Bromoform	ND		1.0	0.17
74-83-9	Methyl bromide	ND		2.0	0.25
75-15-0	Carbon disulfide	ND		1.0	0.10
56-23-5	Carbon tetrachloride	ND		1.0	0.18
108-90-7	Chlorobenzene	ND		1.0	0.11
124-48-1	Chlorodibromomethane	ND		1.0	0.14
75-00-3	Chloroethane	ND		2.0	0.16
67-66-3	Chloroform	ND		1.0	0.10
74-87-3	Chloromethane	ND		2.0	0.10
156-59-2	cis-1,2-Dichloroethene	ND		1.0	0.10
10061-01-5	cis-1,3-Dichloropropene	ND		1.0	0.16
75-27-4	Bromodichloromethane	ND		1.0	0.14
100-41-4	Ethylbenzene	ND		1.0	0.12
106-93-4	1,2-Dibromoethane	ND		1.0	0.13
75-09-2	Methylene Chloride	ND		1.0	0.27
71-36-3	n-Butanol	ND		50	12
100-42-5	Styrene	ND		1.0	0.13
127-18-4	Tetrachloroethene	ND		1.0	0.18
108-88-3	Toluene	ND		1.0	0.14
156-60-5	trans-1,2-Dichloroethene	ND		1.0	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		1.0	0.10

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 160-268249/18

Matrix: Water | Lab File ID: ZBLK8947.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 12:55

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268249 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		1.0	0.25
108-05-4	Vinyl acetate	ND		2.0	0.18
75-01-4	Vinyl chloride	ND		2.0	0.19
1330-20-7	Xylenes, Total	ND		3.0	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	90		75-129
460-00-4	4-Bromofluorobenzene (Surr)	116		81-130
1868-53-7	Dibromofluoromethane (Surr)	105		81-124
2037-26-5	Toluene-d8 (Surr)	108		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZBLK8947.D
Lims ID: mb
Client ID:
Sample Type: MB
Inject. Date: 07-Sep-2016 12:55:30 ALS Bottle#: 15 Worklist Smp#: 18
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008404-018
Misc. Info.: MB
Operator ID: EF Instrument ID: VMSZ

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 07-Sep-2016 13:24:36 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: fishere Date: 07-Sep-2016 13:24:36

	Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1	Dichlorodifluoromethane	85		3.004					ND	
2	1,2-Dichloro-1,1,2,2-tetra	135		3.255					ND	
3	Chloromethane	50		3.325					ND	
4	Vinyl chloride	62		3.493					ND	
5	Butadiene	39		3.520					ND	
6	Bromomethane	94		4.079					ND	
7	Chloroethane	64		4.317					ND	
8	Trichlorofluoromethane	101		4.554					ND	
9	Dichlorofluoromethane	67		4.652					ND	
10	Ethyl ether	74		5.043					ND	
11	Ethanol	45		5.266					ND	
12	1,1-Dichloroethene	96		5.364					ND	
13	Carbon disulfide	76		5.406					ND	
14	1,1,2-Trichloro-1,2,2-trif	151		5.434					ND	
15	Iodomethane	142		5.574					ND	
S 16	1,2-Dichloroethene, Total	96		5.816					ND	
17	Acrolein	56		5.839					ND	
18	3-Chloro-1-propene	39		6.020					ND	
19	Isopropyl alcohol	45		6.034					ND	
20	Methylene Chloride	84		6.174					ND	
21	Acetone	43		6.230					ND	
22	trans-1,2-Dichloroethene	96		6.370					ND	
23	Methyl acetate	74		6.370					ND	
24	Hexane	86		6.453					ND	
25	Methyl tert-butyl ether	73		6.481					ND	
26	2-Methyl-2-propanol	59		6.593					ND	
27	Acetonitrile	41		6.817					ND	
28	Isopropyl ether	45		6.914					ND	
29	2-Chloro-1,3-butadiene	53		7.068					ND	
30	1,1-Dichloroethane	63		7.096					ND	
31	Acrylonitrile	53		7.166					ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
32 Tert-butyl ethyl ether	59		7.319					ND	
33 Vinyl acetate	43		7.347					ND	
34 cis-1,2-Dichloroethene	96		7.682					ND	
35 2,2-Dichloropropane	77		7.794					ND	
37 Chlorobromomethane	128		7.892					ND	
36 Cyclohexane	84		7.892					ND	
38 Chloroform	83		7.948					ND	
39 Ethyl acetate	45		8.032					ND	
40 Carbon tetrachloride	117		8.101					ND	
41 Tetrahydrofuran	71		8.115					ND	
$ 42 Dibromofluoromethane (Surr	113	8.132	8.143	-0.011	95	833017	10.0		10.5
43 1,1,1-Trichloroethane	97		8.171					ND	
44 2-Butanone (MEK)	43		8.255					ND	
45 1,1-Dichloropropene	75		8.283					ND	
46 Isooctane	57		8.367					ND	
47 n-Heptane	43		8.451					ND	
48 Benzene	78		8.534					ND	
50 Propionitrile	54		8.562					ND	
49 Methacrylonitrile	41		8.576					ND	
51 Tert-amyl methyl ether	73		8.604					ND	
52 Isobutyl alcohol	42		8.660					ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.662	8.674	-0.012	87	616932	10.0		9.01
54 1,2-Dichloroethane	62		8.730					ND	
* 55 Fluorobenzene	96	8.928	8.925	0.003	99	3688599	10.0		10.0
57 Methylcyclohexane	55		9.079					ND	
56 Trichloroethene	95		9.079					ND	
58 1,4-Difluorobenzene	114		9.107					ND	
59 n-Butanol	56		9.302					ND	
60 Dibromomethane	93		9.484					ND	
61 Ethyl acrylate	55		9.512					ND	
62 1,2-Dichloropropane	63		9.568					ND	
63 Dichlorobromomethane	83		9.610					ND	
64 Methyl methacrylate	69		9.707					ND	
65 1,4-Dioxane	88		9.777					ND	
66 2-Chloroethyl vinyl ether	63		10.085					ND	
67 cis-1,3-Dichloropropene	75		10.182					ND	
$ 68 Toluene-d8 (Surr)	98	10.352	10.350	0.002	92	3671467	10.0		10.8
69 Toluene	92		10.392					ND	
70 2-Nitropropane	43		10.615					ND	
71 4-Methyl-2-pentanone (MIBK	43		10.699					ND	
73 Tetrachloroethene	164		10.755					ND	
72 trans-1,3-Dichloropropene	75		10.755					ND	
74 Ethyl methacrylate	69		10.839					ND	
75 1,1,2-Trichloroethane	83		10.909					ND	
76 Chlorodibromomethane	129		11.090					ND	
77 1,3-Dichloropropane	76		11.174					ND	
78 n-Butyl acetate	43		11.314					ND	
79 Ethylene Dibromide	107		11.342					ND	
80 2-Hexanone	43		11.439					ND	
81 1-Chlorohexane	91		11.705					ND	
* 83 Chlorobenzene-d5	117	11.777	11.774	0.003	83	2653807	10.0		10.0
82 Ethylbenzene	91		11.774					ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
84 Chlorobenzene	112		11.788					ND	
85 1,1,1,2-Tetrachloroethane	131		11.830					ND	
86 m-Xylene & p-Xylene	106		11.900					ND	
88 o-Xylene	106		12.305					ND	
89 Styrene	104		12.361					ND	
90 Bromoform	173		12.431					ND	
91 Isopropylbenzene	105		12.585					ND	
$ 92 4-Bromofluorobenzene (Surr	95	12.880	12.878	0.002	97	1109952	10.0	11.6	
93 N-Propylbenzene	91		12.976					ND	
94 Bromobenzene	156		13.003					ND	
95 1,1,2,2-Tetrachloroethane	83		13.031					ND	
96 1,3,5-Trimethylbenzene	105		13.129					ND	
97 2-Chlorotoluene	91		13.157					ND	
98 1,2,3-Trichloropropane	110		13.199					ND	
99 trans-1,4-Dichloro-2-buten	53		13.199					ND	
100 Cyclohexanone	55		13.269					ND	
101 4-Chlorotoluene	91		13.311					ND	
102 tert-Butylbenzene	119		13.450					ND	
103 1,2,4-Trimethylbenzene	105		13.520					ND	
87 Pentachloroethane	167		13.520					ND	
104 sec-Butylbenzene	105		13.618					ND	
105 4-Isopropyltoluene	119		13.744					ND	
106 1,3-Dichlorobenzene	146		13.883					ND	
107 1,2,3-Trimethylbenzene	105		13.953					ND	
* 108 1,4-Dichlorobenzene-d4	152	13.955	13.953	0.002	92	1275770	10.0	10.0	
109 1,4-Dichlorobenzene	146		13.967					ND	
110 n-Butylbenzene	134		14.163					ND	
111 Benzyl chloride	126		14.191					ND	
112 1,2-Dichlorobenzene	146		14.386					ND	
113 n-Nonyl Aldehyde	57		15.098					ND	
114 1,2-Dibromo-3-Chloropropan	157		15.182					ND	
115 1,3,5-Trichlorobenzene	180		15.196					ND	
116 Hexachlorobutadiene	225		15.769					ND	
117 1,2,4-Trichlorobenzene	180		15.839					ND	
118 Naphthalene	128	16.190	16.188	0.002	96	22874		0.2173	
120 1,2,3-Trichlorobenzene	180		16.383					ND	
S 119 Xylenes, Total	106		16.500					ND	
121 2-Pentanone	1		0.000					ND	
S 130 Trihalomethanes, Total	1		0.000					ND	

Reagents:

8260 Surr 25_00065	Amount Added: 10.00	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent

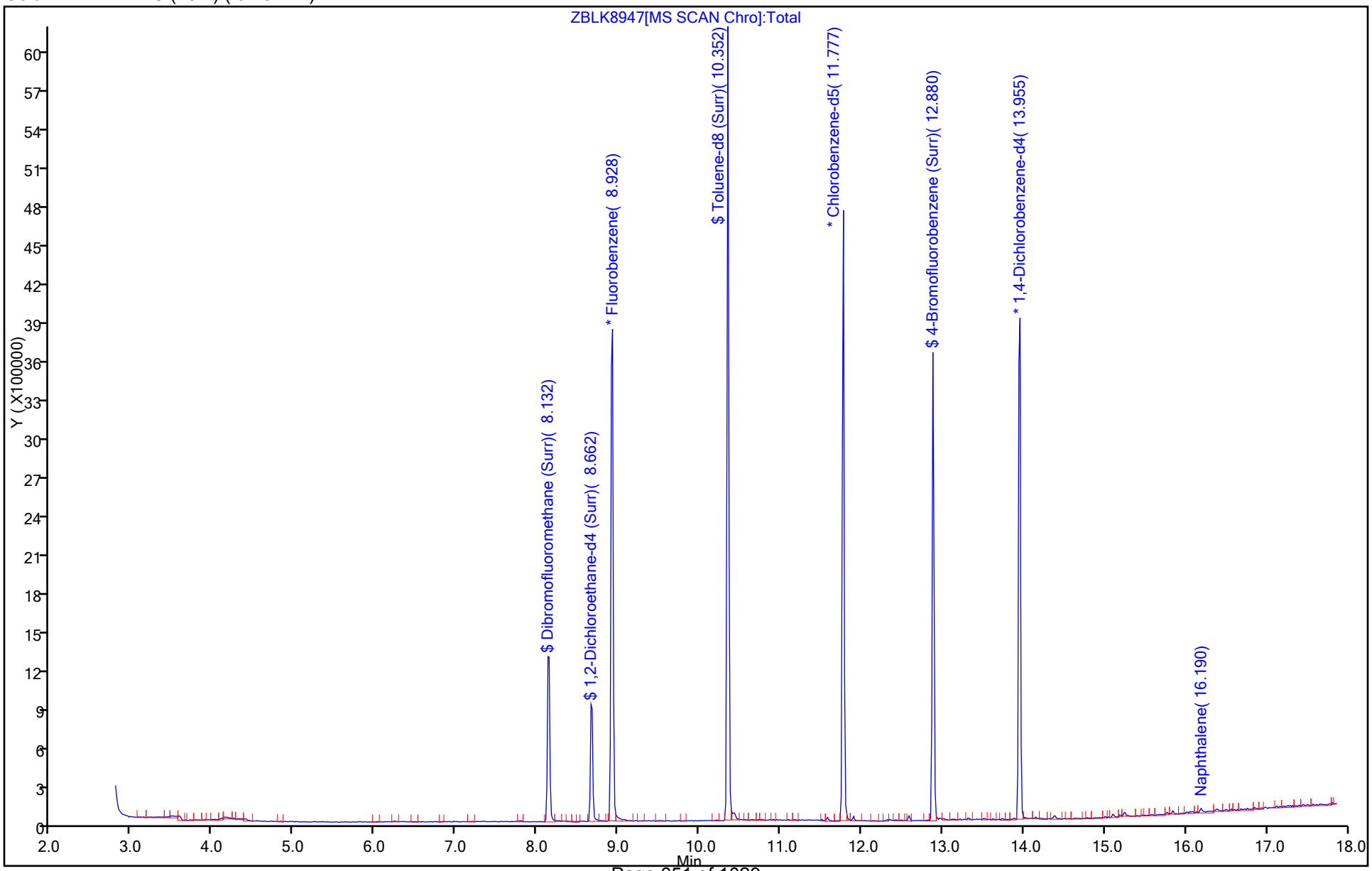
Report Date: 07-Sep-2016 13:24:36 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZBLK8947.D

Injection Date:	07-Sep-2016 12:55:30	Instrument ID:	VMSZ	Operator ID:	EF
Lims ID:	mb			Worklist Smp#:	18
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	15
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZBLK8947.D
Lims ID: mb
Client ID:
Sample Type: MB
Inject. Date: 07-Sep-2016 12:55:30 ALS Bottle#: 15 Worklist Smp#: 18
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008404-018
Misc. Info.: MB
Operator ID: EF Instrument ID: VMSZ

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 07-Sep-2016 13:24:36 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: fishere Date: 07-Sep-2016 13:24:36

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.5	105.07
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	9.01	90.09
$ 68 Toluene-d8 (Surr)	10.0	10.8	107.82
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.6	115.53

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 160-268257/10

Matrix: Water | Lab File ID: LBLK4963.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 12:38

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	ND		1.0	0.17
79-34-5	1,1,2,2-Tetrachloroethane	ND		1.0	0.10
79-00-5	1,1,2-Trichloroethane	ND		1.0	0.13
75-35-4	1,1-Dichloroethene	ND		1.0	0.10
75-34-3	1,1-Dichloroethane	ND		1.0	0.070
120-82-1	1,2,4-Trichlorobenzene	ND		1.0	0.10
96-12-8	1,2-Dibromo-3-Chloropropane	ND		1.0	0.41
107-06-2	1,2-Dichloroethane	ND		1.0	0.22
540-59-0	1,2-Dichloroethene, Total	ND		2.0	0.14
78-87-5	1,2-Dichloropropane	ND		1.0	0.10
78-93-3	2-Butanone	ND		5.0	0.47
591-78-6	2-Hexanone	ND		5.0	0.25
108-10-1	4-Methyl-2-pentanone	ND		5.0	0.22
67-64-1	Acetone	0.579	J	2.0	0.55
71-43-2	Benzene	ND		1.0	0.10
75-25-2	Bromoform	ND		1.0	0.17
74-83-9	Methyl bromide	ND		2.0	0.25
75-15-0	Carbon disulfide	ND		1.0	0.10
56-23-5	Carbon tetrachloride	ND		1.0	0.18
108-90-7	Chlorobenzene	ND		1.0	0.11
124-48-1	Chlorodibromomethane	ND		1.0	0.14
75-00-3	Chloroethane	ND		2.0	0.16
67-66-3	Chloroform	ND		1.0	0.10
74-87-3	Chloromethane	ND		2.0	0.10
156-59-2	cis-1,2-Dichloroethene	ND		1.0	0.10
10061-01-5	cis-1,3-Dichloropropene	ND		1.0	0.16
75-27-4	Bromodichloromethane	ND		1.0	0.14
100-41-4	Ethylbenzene	ND		1.0	0.12
106-93-4	1,2-Dibromoethane	ND		1.0	0.13
75-09-2	Methylene Chloride	ND		1.0	0.27
71-36-3	n-Butanol	ND		50	12
100-42-5	Styrene	ND		1.0	0.13
127-18-4	Tetrachloroethene	ND		1.0	0.18
108-88-3	Toluene	ND		1.0	0.14
156-60-5	trans-1,2-Dichloroethene	ND		1.0	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		1.0	0.10

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 160-268257/10

Matrix: Water | Lab File ID: LBLK4963.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 12:38

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		1.0	0.25
108-05-4	Vinyl acetate	ND		2.0	0.18
75-01-4	Vinyl chloride	ND		2.0	0.19
1330-20-7	Xylenes, Total	ND		3.0	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	103		75-129
460-00-4	4-Bromofluorobenzene (Surr)	117		81-130
1868-53-7	Dibromofluoromethane (Surr)	104		81-124
2037-26-5	Toluene-d8 (Surr)	116		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LBLK4963.D
Lims ID: MB
Client ID:
Sample Type: MB
Inject. Date: 07-Sep-2016 12:38:30 ALS Bottle#: 6 Worklist Smp#: 10
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: MB
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:40:20 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 07-Sep-2016 14:50:54

	Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1	Dichlorodifluoromethane	85		3.125					ND	
2	1,2-Dichloro-1,1,2,2-tetra	135		3.376					ND	
3	Chloromethane	50		3.474					ND	
4	Vinyl chloride	62		3.642					ND	
5	Butadiene	39		3.669					ND	
6	Bromomethane	94		4.256					ND	
7	Chloroethane	64		4.479					ND	
8	Trichlorofluoromethane	101		4.731					ND	
9	Dichlorofluoromethane	67		4.829					ND	
10	Ethyl ether	74		5.234					ND	
11	Ethanol	45		5.457					ND	
12	1,1-Dichloroethene	96		5.541					ND	
13	Carbon disulfide	76		5.583					ND	
14	1,1,2-Trichloro-1,2,2-trif	151		5.597					ND	
16	Iodomethane	142		5.750					ND	
S 15	1,2-Dichloroethene, Total	96		5.816					ND	
17	Acrolein	56		6.030					ND	
18	3-Chloro-1-propene	39		6.197					ND	
19	Isopropyl alcohol	45	6.225	6.225	0.000	21	1295		1.59	
20	Methylene Chloride	84		6.337					ND	
21	Acetone	43	6.407	6.407	0.000	95	5472		0.5793	
22	trans-1,2-Dichloroethene	96		6.546					ND	
23	Methyl acetate	74		6.546					ND	
24	Hexane	86		6.630					ND	
25	Methyl tert-butyl ether	73		6.658					ND	
27	Acetonitrile	41		6.979					ND	
28	Isopropyl ether	45		7.091					ND	
26	2-Methyl-2-propanol	59		7.091					ND	
29	2-Chloro-1,3-butadiene	53		7.231					ND	
30	1,1-Dichloroethane	63		7.259					ND	
31	Acrylonitrile	53		7.329					ND	
32	Tert-butyl ethyl ether	59		7.482					ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
33 Vinyl acetate	43		7.510					ND	
34 cis-1,2-Dichloroethene	96		7.845					ND	
35 2,2-Dichloropropane	77		7.957					ND	
37 Chlorobromomethane	128		8.055					ND	
36 Cyclohexane	84		8.055					ND	
38 Chloroform	83		8.097					ND	
39 Ethyl acetate	45		8.195					ND	
40 Carbon tetrachloride	117		8.264					ND	
41 Tetrahydrofuran	71		8.278					ND	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	93	278379	10.0		10.4
43 1,1,1-Trichloroethane	97		8.334					ND	
45 2-Butanone (MEK)	43		8.404					ND	
47 1,1-Dichloropropene	75		8.446					ND	
44 Isooctane	57		8.516					ND	
46 n-Heptane	43		8.600					ND	
48 Benzene	78		8.683					ND	
49 Propionitrile	54		8.711					ND	
50 Methacrylonitrile	41		8.725					ND	
51 Tert-amyl methyl ether	73		8.753					ND	
52 Isobutyl alcohol	42		8.809					ND	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	94	290730	10.0		10.3
54 1,2-Dichloroethane	62		8.879					ND	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1389703	10.0		10.0
57 Trichloroethene	95		9.228					ND	
58 Methylcyclohexane	55		9.228					ND	
56 1,4-Difluorobenzene	114		9.256					ND	
59 n-Butanol	56		9.451					ND	
61 Dibromomethane	93		9.633					ND	
60 Ethyl acrylate	55		9.661					ND	
62 1,2-Dichloropropane	63		9.717					ND	
63 Dichlorobromomethane	83		9.759					ND	
64 Methyl methacrylate	69		9.843					ND	
65 1,4-Dioxane	88		9.940					ND	
66 2-Chloroethyl vinyl ether	63		10.234					ND	
67 cis-1,3-Dichloropropene	75		10.317					ND	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	95	1354102	10.0		11.6
69 Toluene	92		10.541					ND	
70 2-Nitropropane	43		10.750					ND	
71 4-Methyl-2-pentanone (MIBK	43		10.848					ND	
72 trans-1,3-Dichloropropene	75		10.890					ND	
73 Tetrachloroethene	164		10.904					ND	
74 Ethyl methacrylate	69		10.974					ND	
75 1,1,2-Trichloroethane	83		11.058					ND	
76 Chlorodibromomethane	129		11.225					ND	
77 1,3-Dichloropropane	76		11.309					ND	
78 n-Butyl acetate	43		11.449					ND	
79 Ethylene Dibromide	107		11.477					ND	
80 2-Hexanone	43		11.588					ND	
81 1-Chlorohexane	91		11.840					ND	
* 83 Chlorobenzene-d5	117	11.910	11.910	0.000	89	891492	10.0		10.0
82 Ethylbenzene	91		11.910					ND	
84 Chlorobenzene	112		11.923					ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
85 1,1,1,2-Tetrachloroethane	131		11.965					ND	
86 m-Xylene & p-Xylene	106		12.035					ND	
88 o-Xylene	106		12.440					ND	
89 Styrene	104		12.482					ND	
90 Bromoform	173		12.552					ND	
91 Isopropylbenzene	105		12.720					ND	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	83	411496	10.0	11.7	
93 N-Propylbenzene	91		13.097					ND	
94 Bromobenzene	156		13.139					ND	
95 1,1,2,2-Tetrachloroethane	83		13.166					ND	
96 1,3,5-Trimethylbenzene	105		13.264					ND	
97 2-Chlorotoluene	91		13.292					ND	
99 1,2,3-Trichloropropane	110		13.320					ND	
98 trans-1,4-Dichloro-2-buten	53		13.334					ND	
100 Cyclohexanone	55		13.404					ND	
101 4-Chlorotoluene	91		13.446					ND	
102 tert-Butylbenzene	119		13.585					ND	
87 Pentachloroethane	167		13.655					ND	
103 1,2,4-Trimethylbenzene	105		13.655					ND	
104 sec-Butylbenzene	105		13.753					ND	
105 4-Isopropyltoluene	119		13.879					ND	
106 1,3-Dichlorobenzene	146		14.018					ND	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	95	420523	10.0	10.0	
107 1,2,3-Trimethylbenzene	105		14.088					ND	
109 1,4-Dichlorobenzene	146		14.102					ND	
111 n-Butylbenzene	134		14.284					ND	
110 Benzyl chloride	126		14.326					ND	
112 1,2-Dichlorobenzene	146		14.521					ND	
113 n-Nonyl Aldehyde	57		15.233					ND	
115 1,2-Dibromo-3-Chloropropan	157		15.303					ND	
114 1,3,5-Trichlorobenzene	180		15.331					ND	
116 Hexachlorobutadiene	225		15.904					ND	
117 1,2,4-Trichlorobenzene	180		15.974					ND	
118 Naphthalene	128		16.337					ND	
S 119 Xylenes, Total	106		16.500					ND	
120 1,2,3-Trichlorobenzene	180		16.532					ND	
121 2-Pentanone	1		0.000					ND	
S 130 Trihalomethanes, Total	1		0.000					ND	

Reagents:

I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

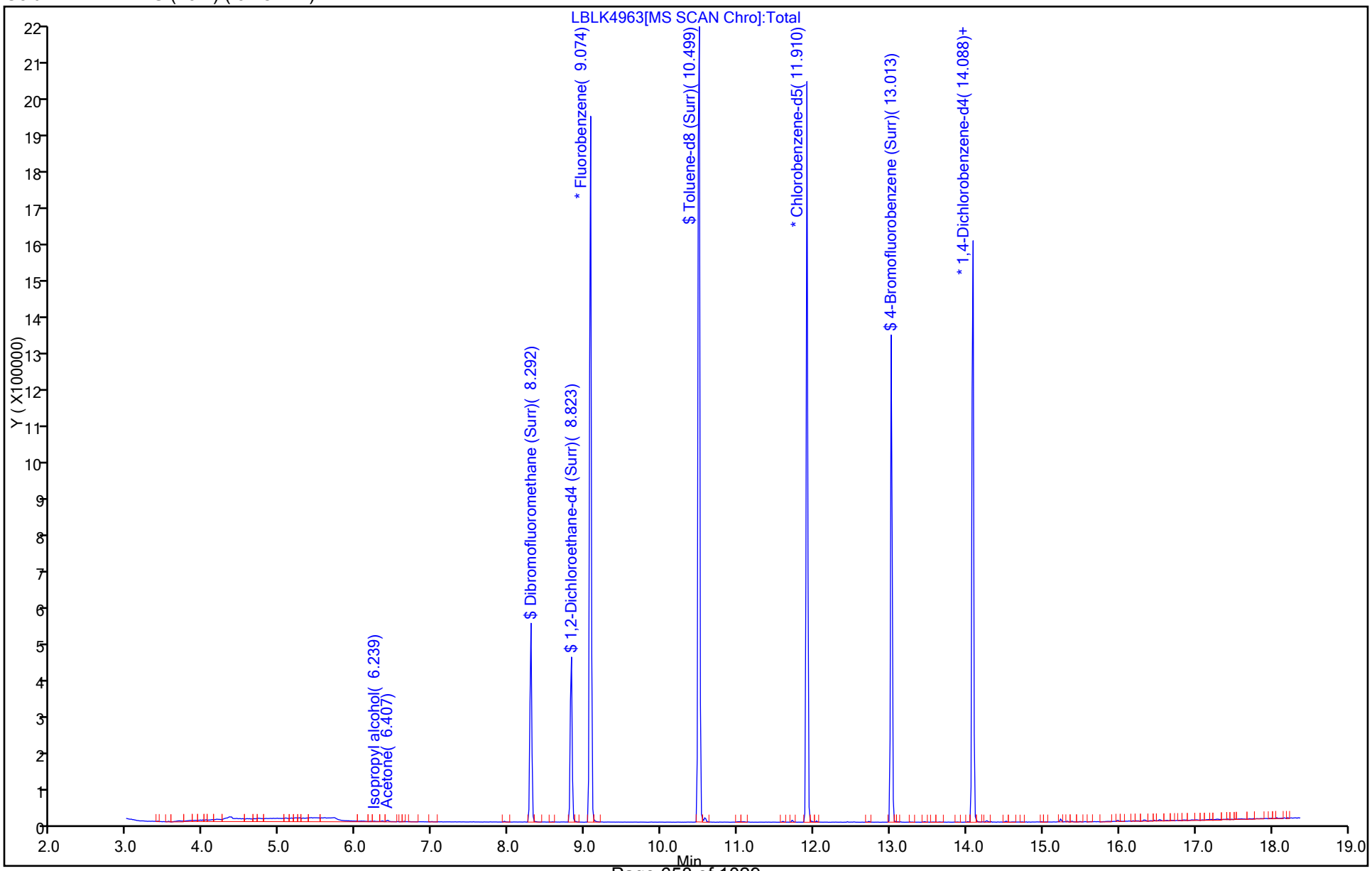
Report Date: 08-Sep-2016 08:40:23 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LBLK4963.D

Injection Date:	07-Sep-2016 12:38:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	MB			Worklist Smp#:	10
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	6
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LBLK4963.D
Lims ID: MB
Client ID:
Sample Type: MB
Inject. Date: 07-Sep-2016 12:38:30 ALS Bottle#: 6 Worklist Smp#: 10
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: MB
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:40:20 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 07-Sep-2016 14:50:54

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.4	104.25
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	10.3	102.91
$ 68 Toluene-d8 (Surr)	10.0	11.6	116.36
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.7	116.61

Report Date: 08-Sep-2016 08:40:23 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LBLK4963.D

Injection Date: 07-Sep-2016 12:38:30 Instrument ID: VMSL

Lims ID: MB

Client ID:

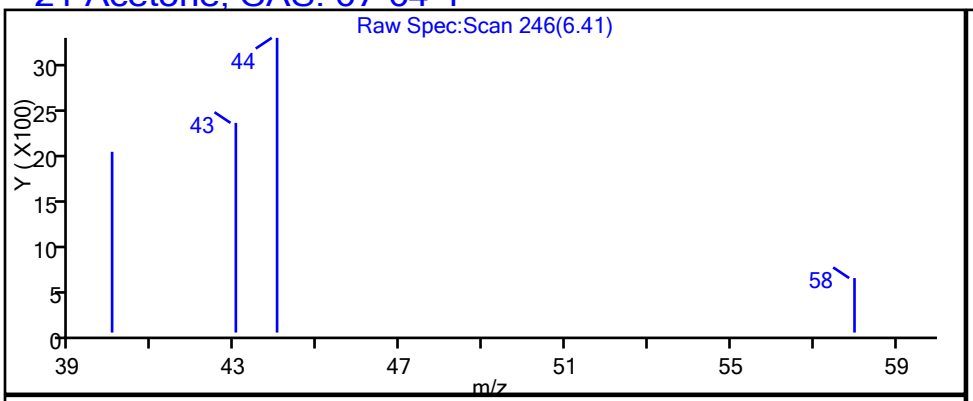
Operator ID: SMCR ALS Bottle#: 6 Worklist Smp#: 10

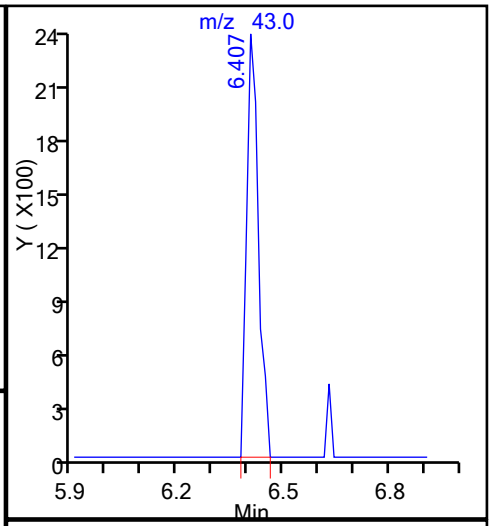
Purge Vol: 25.000 mL Dil. Factor: 1.0000

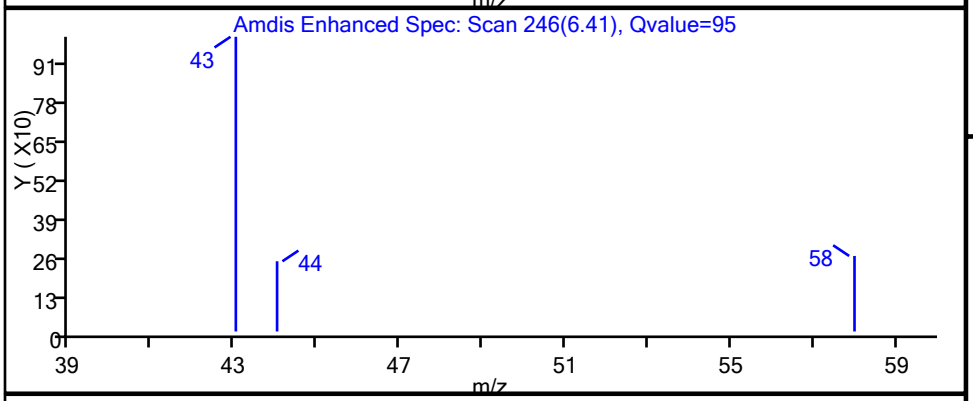
Method: 25mL-8260-MSL Limit Group: MSV-8260

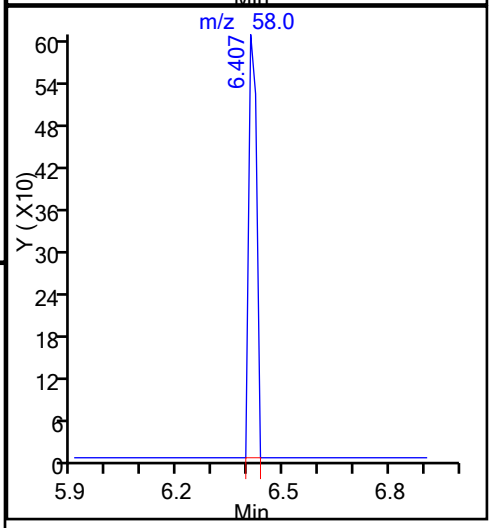
Column: RTX-VMS (40m) (0.18 mm) Detector MS SCAN

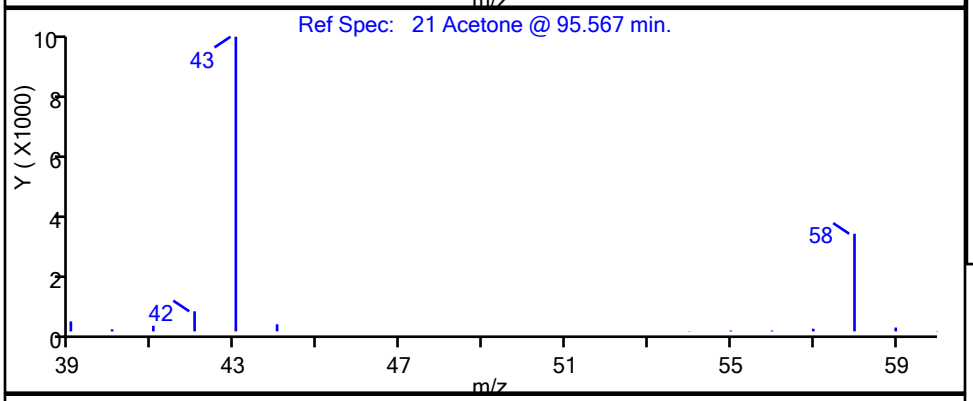
21 Acetone, CAS: 67-64-1

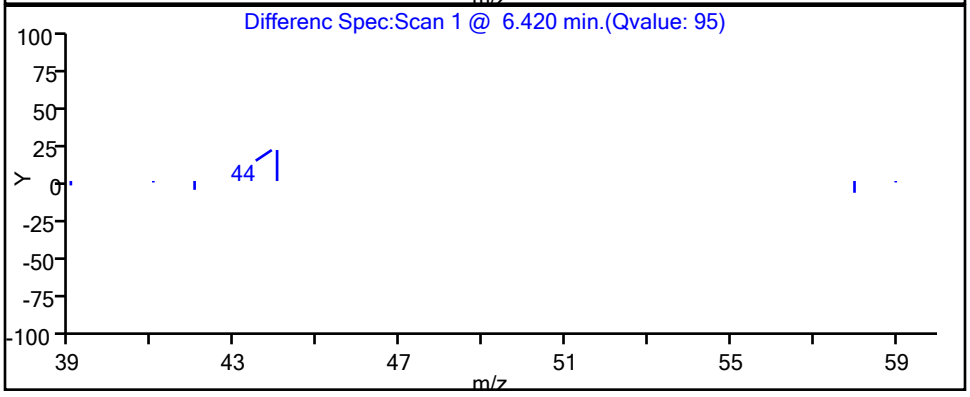












FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 160-267958/6

Matrix: Water | Lab File ID: LLCS4850.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 25(mL) | Date Analyzed: 09/04/2016 10:18

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 267958 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	10.0		1.0	0.17
79-34-5	1,1,2,2-Tetrachloroethane	9.54		1.0	0.10
79-00-5	1,1,2-Trichloroethane	10.0		1.0	0.13
75-35-4	1,1-Dichloroethene	9.54		1.0	0.10
75-34-3	1,1-Dichloroethane	9.90		1.0	0.070
120-82-1	1,2,4-Trichlorobenzene	9.31		1.0	0.10
96-12-8	1,2-Dibromo-3-Chloropropane	9.66		1.0	0.41
107-06-2	1,2-Dichloroethane	10.1		1.0	0.22
540-59-0	1,2-Dichloroethene, Total	18.9		2.0	0.14
78-87-5	1,2-Dichloropropane	10.1		1.0	0.10
78-93-3	2-Butanone	12.0		5.0	0.47
591-78-6	2-Hexanone	10.6		5.0	0.25
108-10-1	4-Methyl-2-pentanone	10.5		5.0	0.22
67-64-1	Acetone	10.9		2.0	0.55
71-43-2	Benzene	10.7		1.0	0.10
75-25-2	Bromoform	8.64		1.0	0.17
74-83-9	Methyl bromide	11.3		2.0	0.25
75-15-0	Carbon disulfide	9.75		1.0	0.10
56-23-5	Carbon tetrachloride	10.0		1.0	0.18
108-90-7	Chlorobenzene	10.2		1.0	0.11
124-48-1	Chlorodibromomethane	9.63		1.0	0.14
75-00-3	Chloroethane	12.7		2.0	0.16
67-66-3	Chloroform	10.0		1.0	0.10
74-87-3	Chloromethane	11.5		2.0	0.10
156-59-2	cis-1,2-Dichloroethene	9.45		1.0	0.10
10061-01-5	cis-1,3-Dichloropropene	10.0		1.0	0.16
75-27-4	Bromodichloromethane	9.59		1.0	0.14
100-41-4	Ethylbenzene	10.5		1.0	0.12
106-93-4	1,2-Dibromoethane	9.75		1.0	0.13
75-09-2	Methylene Chloride	8.60		1.0	0.27
71-36-3	n-Butanol	224		50	12
100-42-5	Styrene	11.2		1.0	0.13
127-18-4	Tetrachloroethene	10.0		1.0	0.18
108-88-3	Toluene	10.8		1.0	0.14
156-60-5	trans-1,2-Dichloroethene	9.49		1.0	0.10
10061-02-6	trans-1,3-Dichloropropene	10.2		1.0	0.10

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 160-267958/6

Matrix: Water | Lab File ID: LLCS4850.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 25(mL) | Date Analyzed: 09/04/2016 10:18

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 267958 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	10.1		1.0	0.25
108-05-4	Vinyl acetate	11.4		2.0	0.18
75-01-4	Vinyl chloride	12.3		2.0	0.19
1330-20-7	Xylenes, Total	22.0		3.0	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	103		75-129
460-00-4	4-Bromofluorobenzene (Surr)	94		81-130
1868-53-7	Dibromofluoromethane (Surr)	106		81-124
2037-26-5	Toluene-d8 (Surr)	100		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LLCS4850.D
Lims ID: LCS
Client ID:
Sample Type: LCS
Inject. Date: 04-Sep-2016 10:18:30 ALS Bottle#: 2 Worklist Smp#: 6
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: LCS
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:45:58 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: buettnera Date: 06-Sep-2016 08:07:16

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	571757	10.0	9.01	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	98	277092	10.0	9.66	M
3 Chloromethane	50	3.474	3.474	0.000	99	928669	10.0	11.5	
4 Vinyl chloride	62	3.641	3.641	0.000	98	759594	10.0	12.3	
5 Butadiene	39	3.669	3.669	0.000	98	917658	10.0	13.1	
6 Bromomethane	94	4.256	4.256	0.000	91	267719	10.0	11.3	
7 Chloroethane	64	4.479	4.479	0.000	98	407417	10.0	12.7	
8 Trichlorofluoromethane	101	4.717	4.717	0.000	98	803699	10.0	10.4	
9 Dichlorofluoromethane	67	4.829	4.829	0.000	98	902938	10.0	11.9	
10 Ethyl ether	74	5.234	5.234	0.000	96	145484	10.0	11.4	
11 Ethanol	45	5.457	5.457	0.000	99	67947	400.0	442.6	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	93	366774	10.0	9.54	
13 Carbon disulfide	76	5.583	5.583	0.000	99	1321313	10.0	9.75	
14 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	90	346179	10.0	9.18	
16 Iodomethane	142	5.750	5.750	0.000	99	202690	10.0	8.32	
S 15 1,2-Dichloroethene, Total	96				0			18.9	
17 Acrolein	56	6.016	6.016	0.000	99	107213	50.0	60.2	
18 3-Chloro-1-propene	39	6.197	6.197	0.000	89	570882	10.0	10.7	
19 Isopropyl alcohol	45	6.225	6.225	0.000	97	79821	100.0	98.6	
20 Methylene Chloride	84	6.337	6.337	0.000	95	289392	10.0	8.60	
21 Acetone	43	6.407	6.407	0.000	98	45054	10.0	10.9	
22 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	94	375615	10.0	9.49	
23 Methyl acetate	74	6.546	6.546	0.000	100	84978	50.0	49.1	
24 Hexane	86	6.616	6.616	0.000	96	136237	10.0	10.3	
25 Methyl tert-butyl ether	73	6.658	6.658	0.000	92	490790	10.0	9.47	
27 Acetonitrile	41	6.979	6.979	0.000	99	180584	100.0	103.5	
28 Isopropyl ether	45	7.091	7.091	0.000	95	1192947	10.0	10.7	
26 2-Methyl-2-propanol	59	7.091	7.091	0.000	33	116466	100.0	100.9	
29 2-Chloro-1,3-butadiene	53	7.231	7.231	0.000	94	836105	10.0	10.7	
30 1,1-Dichloroethane	63	7.259	7.259	0.000	97	729973	10.0	9.90	
31 Acrylonitrile	53	7.328	7.328	0.000	98	523568	100.0	103.6	
32 Tert-butyl ethyl ether	59	7.482	7.482	0.000	97	792641	10.0	9.88	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
33 Vinyl acetate	43	7.510	7.510	0.000	97	530003	10.0	11.4	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	84	349313	10.0	9.45	
35 2,2-Dichloropropane	77	7.957	7.957	0.000	93	663379	10.0	10.0	
37 Chlorobromomethane	128	8.055	8.055	0.000	88	122175	10.0	9.78	
36 Cyclohexane	84	8.055	8.055	0.000	96	722298	10.0	11.0	
38 Chloroform	83	8.097	8.097	0.000	97	640049	10.0	10.0	
39 Ethyl acetate	45	8.194	8.194	0.000	99	45287	20.0	23.0	
40 Carbon tetrachloride	117	8.264	8.264	0.000	98	640861	10.0	10.0	
41 Tetrahydrofuran	71	8.278	8.278	0.000	93	23320	20.0	21.3	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	95	280030	10.0	10.6	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	98	711205	10.0	10.0	
45 2-Butanone (MEK)	43	8.404	8.404	0.000	97	69504	10.0	12.0	
47 1,1-Dichloropropene	75	8.446	8.446	0.000	91	596057	10.0	10.9	
44 Isooctane	57	8.516	8.516	0.000	97	2370508	10.0	11.9	
46 n-Heptane	43	8.599	8.599	0.000	98	1216353	10.0	12.8	
48 Benzene	78	8.683	8.683	0.000	98	1551787	10.0	10.7	
49 Propionitrile	54	8.711	8.711	0.000	95	208625	100.0	113.7	
50 Methacrylonitrile	41	8.725	8.725	0.000	97	1279047	100.0	119.0	
51 Tert-amyl methyl ether	73	8.753	8.753	0.000	94	610196	10.0	10.6	
52 Isobutyl alcohol	42	8.809	8.809	0.000	88	99305	250.0	276.0	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	94	287819	10.0	10.3	
54 1,2-Dichloroethane	62	8.879	8.879	0.000	96	375981	10.0	10.1	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1379473	10.0	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	65	414683	10.0	10.1	
58 Methylcyclohexane	55	9.228	9.228	0.000	97	829017	10.0	11.1	
59 n-Butanol	56	9.451	9.451	0.000	95	72521	250.0	224.5	
61 Dibromomethane	93	9.633	9.633	0.000	96	113940	10.0	9.29	
60 Ethyl acrylate	55	9.661	9.661	0.000	99	162461	10.0	9.60	
62 1,2-Dichloropropane	63	9.717	9.717	0.000	89	335828	10.0	10.1	
63 Dichlorobromomethane	83	9.759	9.759	0.000	98	368910	10.0	9.59	
64 Methyl methacrylate	69	9.842	9.842	0.000	92	169704	20.0	20.5	
65 1,4-Dioxane	88	9.926	9.926	0.000	92	18634	200.0	172.5	
66 2-Chloroethyl vinyl ether	63	10.233	10.233	0.000	92	21068	10.0	6.34	
67 cis-1,3-Dichloropropene	75	10.317	10.317	0.000	89	420408	10.0	10.0	
$ 68 Toluene-d8 (Surr)	98	10.485	10.485	0.000	96	1278962	10.0	10.0	
69 Toluene	92	10.541	10.541	0.000	98	1031926	10.0	10.8	
70 2-Nitropropane	43	10.750	10.750	0.000	98	86414	20.0	20.9	
71 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	99	135323	10.0	10.5	
72 trans-1,3-Dichloropropene	75	10.890	10.890	0.000	87	354105	10.0	10.2	
73 Tetrachloroethene	164	10.890	10.890	0.000	94	391573	10.0	10.0	
74 Ethyl methacrylate	69	10.974	10.974	0.000	95	194429	10.0	8.82	
75 1,1,2-Trichloroethane	83	11.043	11.043	0.000	94	147218	10.0	10.0	
76 Chlorodibromomethane	129	11.225	11.225	0.000	91	225685	10.0	9.63	
77 1,3-Dichloropropane	76	11.309	11.309	0.000	98	329913	10.0	10.1	
78 n-Butyl acetate	43	11.449	11.449	0.000	97	245167	10.0	10.2	
79 Ethylene Dibromide	107	11.476	11.476	0.000	98	157339	10.0	9.75	
80 2-Hexanone	43	11.574	11.574	0.000	97	90014	10.0	10.6	
81 1-Chlorohexane	91	11.840	11.840	0.000	81	636197	10.0	11.5	
* 83 Chlorobenzene-d5	117	11.909	11.909	0.000	66	978690	10.0	10.0	
82 Ethylbenzene	91	11.909	11.909	0.000	98	2015065	10.0	10.5	
84 Chlorobenzene	112	11.923	11.923	0.000	89	1029692	10.0	10.2	
85 1,1,1,2-Tetrachloroethane	131	11.965	11.965	0.000	93	352614	10.0	10.2	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
86 m-Xylene & p-Xylene	106	12.035	12.035	0.000	98	774573	10.0	10.9	
88 o-Xylene	106	12.440	12.440	0.000	98	678007	10.0	11.1	
89 Styrene	104	12.482	12.482	0.000	95	1027094	10.0	11.2	
90 Bromoform	173	12.552	12.552	0.000	96	118846	10.0	8.64	
91 Isopropylbenzene	105	12.719	12.719	0.000	96	2019072	10.0	9.85	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	87	443207	10.0	9.43	
93 N-Propylbenzene	91	13.097	13.097	0.000	99	2548375	10.0	10.7	
94 Bromobenzene	156	13.138	13.138	0.000	95	403491	10.0	9.08	
95 1,1,2,2-Tetrachloroethane	83	13.166	13.166	0.000	96	183740	10.0	9.54	
96 1,3,5-Trimethylbenzene	105	13.264	13.264	0.000	96	1656107	10.0	10.3	
97 2-Chlorotoluene	91	13.292	13.292	0.000	97	1759719	10.0	11.0	
99 1,2,3-Trichloropropane	110	13.320	13.320	0.000	85	63899	10.0	9.65	
98 trans-1,4-Dichloro-2-buten	53	13.334	13.334	0.000	88	72496	10.0	10.7	
100 Cyclohexanone	55	13.404	13.404	0.000	90	42855	100.0	101.6	
101 4-Chlorotoluene	91	13.446	13.446	0.000	98	1559752	10.0	11.2	
102 tert-Butylbenzene	119	13.585	13.585	0.000	94	1729235	10.0	11.2	
103 1,2,4-Trimethylbenzene	105	13.641	13.641	0.000	98	1859944	10.0	11.4	
104 sec-Butylbenzene	105	13.753	13.753	0.000	95	2688855	10.0	11.6	
105 4-Isopropyltoluene	119	13.879	13.879	0.000	97	2255895	10.0	11.5	
106 1,3-Dichlorobenzene	146	14.018	14.018	0.000	99	947946	10.0	9.99	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	88	559981	10.0	10.0	
107 1,2,3-Trimethylbenzene	105	14.088	14.088	0.000	97	1689333	10.0	10.7	
109 1,4-Dichlorobenzene	146	14.102	14.102	0.000	95	946684	10.0	10.0	
111 n-Butylbenzene	134	14.284	14.284	0.000	98	593759	10.0	11.5	
110 Benzyl chloride	126	14.326	14.326	0.000	10	92620	10.0	10.6	
112 1,2-Dichlorobenzene	146	14.521	14.521	0.000	98	750190	10.0	9.71	
113 n-Nonyl Aldehyde	57	15.233	15.233	0.000	84	157099	10.0	9.90	
115 1,2-Dibromo-3-Chloropropan	157	15.303	15.303	0.000	80	35860	10.0	9.66	
114 1,3,5-Trichlorobenzene	180	15.317	15.317	0.000	97	752782	10.0	9.92	
116 Hexachlorobutadiene	225	15.904	15.904	0.000	97	421517	10.0	9.71	
117 1,2,4-Trichlorobenzene	180	15.974	15.974	0.000	94	541177	10.0	9.31	
118 Naphthalene	128	16.337	16.337	0.000	97	557896	10.0	8.51	
S 119 Xylenes, Total	106				0			22.0	
120 1,2,3-Trichlorobenzene	180	16.532	16.532	0.000	95	427515	10.0	9.03	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260 NewWkMix_00181	Amount Added: 10.00	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

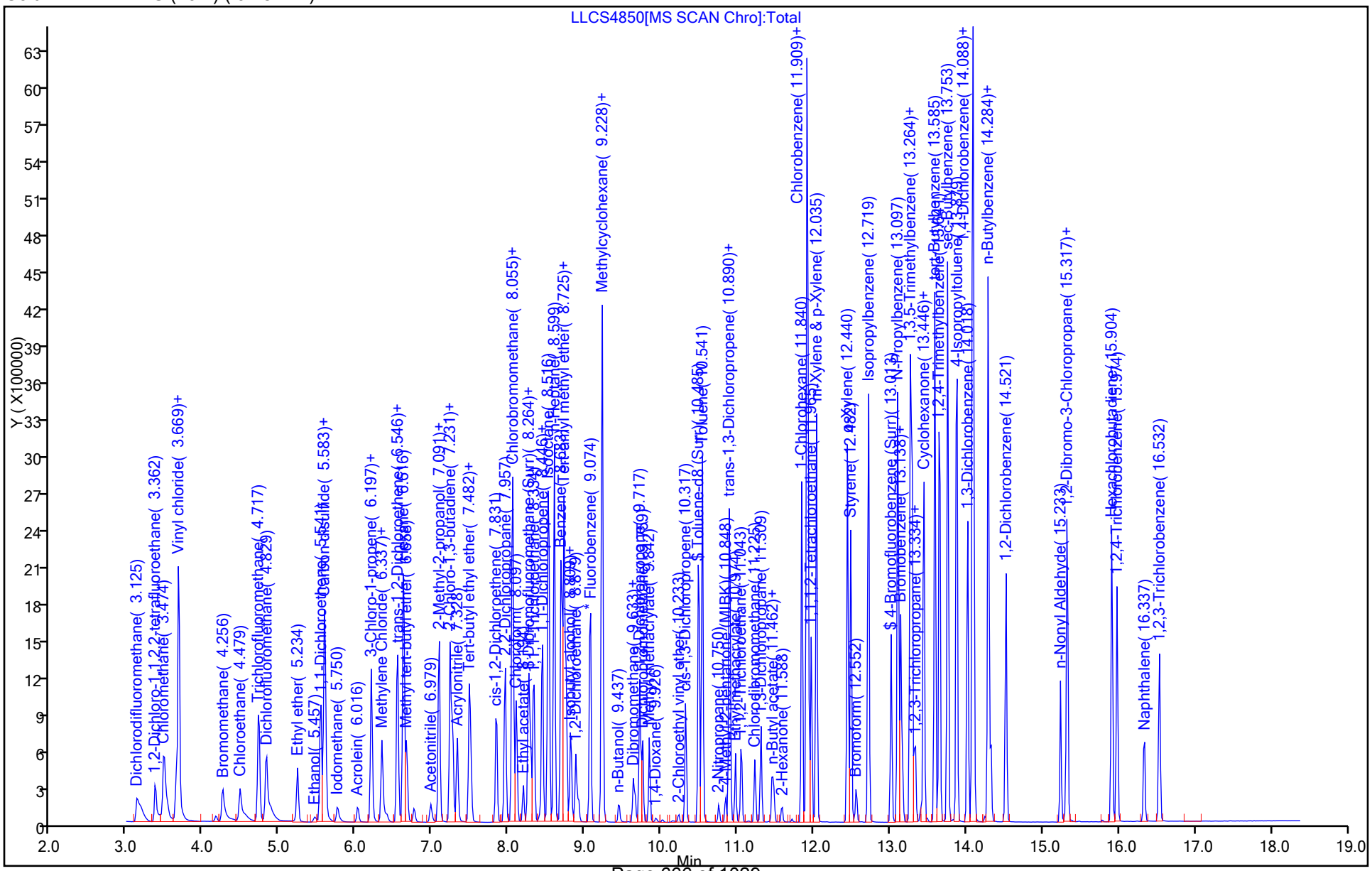
Report Date: 06-Sep-2016 08:45:59 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LLCS4850.D

Injection Date:	04-Sep-2016 10:18:30	Instrument ID:	VMSL	Operator ID:	ADB
Lims ID:	LCS			Worklist Smp#:	6
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	2
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LLCS4850.D
Lims ID: LCS
Client ID:
Sample Type: LCS
Inject. Date: 04-Sep-2016 10:18:30 ALS Bottle#: 2 Worklist Smp#: 6
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: LCS
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:45:58 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: buettnera Date: 06-Sep-2016 08:07:16

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.6	105.64
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	10.3	102.64
$ 68 Toluene-d8 (Surr)	10.0	10.0	100.11
$ 92 4-Bromofluorobenzene (Surr)	10.0	9.43	94.32

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 160-268249/15

Matrix: Water | Lab File ID: ZLCS8944.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 11:44

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268249 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	9.74		1.0	0.17
79-34-5	1,1,2,2-Tetrachloroethane	9.31		1.0	0.10
79-00-5	1,1,2-Trichloroethane	9.42		1.0	0.13
75-35-4	1,1-Dichloroethene	10.7		1.0	0.10
75-34-3	1,1-Dichloroethane	9.97		1.0	0.070
120-82-1	1,2,4-Trichlorobenzene	10.9		1.0	0.10
96-12-8	1,2-Dibromo-3-Chloropropane	10.2		1.0	0.41
107-06-2	1,2-Dichloroethane	8.96		1.0	0.22
540-59-0	1,2-Dichloroethene, Total	20.5		2.0	0.14
78-87-5	1,2-Dichloropropane	9.78		1.0	0.10
78-93-3	2-Butanone	8.75		5.0	0.47
591-78-6	2-Hexanone	9.21		5.0	0.25
108-10-1	4-Methyl-2-pentanone	9.78		5.0	0.22
67-64-1	Acetone	10.5		2.0	0.55
71-43-2	Benzene	9.98		1.0	0.10
75-25-2	Bromoform	10.6		1.0	0.17
74-83-9	Methyl bromide	8.86		2.0	0.25
75-15-0	Carbon disulfide	10.2		1.0	0.10
56-23-5	Carbon tetrachloride	10.1		1.0	0.18
108-90-7	Chlorobenzene	9.99		1.0	0.11
124-48-1	Chlorodibromomethane	10.3		1.0	0.14
75-00-3	Chloroethane	7.94		2.0	0.16
67-66-3	Chloroform	9.79		1.0	0.10
74-87-3	Chloromethane	9.03		2.0	0.10
156-59-2	cis-1,2-Dichloroethene	10.1		1.0	0.10
10061-01-5	cis-1,3-Dichloropropene	10.1		1.0	0.16
75-27-4	Bromodichloromethane	9.74		1.0	0.14
100-41-4	Ethylbenzene	9.02		1.0	0.12
106-93-4	1,2-Dibromoethane	10.3		1.0	0.13
75-09-2	Methylene Chloride	10.1		1.0	0.27
71-36-3	n-Butanol	259		50	12
100-42-5	Styrene	11.3		1.0	0.13
127-18-4	Tetrachloroethene	10.5		1.0	0.18
108-88-3	Toluene	10.3		1.0	0.14
156-60-5	trans-1,2-Dichloroethene	10.4		1.0	0.10
10061-02-6	trans-1,3-Dichloropropene	9.83		1.0	0.10

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 160-268249/15

Matrix: Water | Lab File ID: ZLCS8944.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 11:44

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268249 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	9.99		1.0	0.25
108-05-4	Vinyl acetate	9.39		2.0	0.18
75-01-4	Vinyl chloride	7.88		2.0	0.19
1330-20-7	Xylenes, Total	21.2		3.0	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	92		75-129
460-00-4	4-Bromofluorobenzene (Surr)	107		81-130
1868-53-7	Dibromofluoromethane (Surr)	110		81-124
2037-26-5	Toluene-d8 (Surr)	102		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZLCS8944.D
Lims ID: lcs
Client ID:
Sample Type: LCS
Inject. Date: 07-Sep-2016 11:44:30 ALS Bottle#: 12 Worklist Smp#: 15
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008404-015
Misc. Info.: LCS
Operator ID: EF Instrument ID: VMSZ

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 07-Sep-2016 12:39:07 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: fishere Date: 07-Sep-2016 12:39:21

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.005	3.004	0.001	100	1298223	10.0	9.51	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.256	3.255	0.001	96	627552	10.0	9.63	
3 Chloromethane	50	3.326	3.325	0.001	99	1472734	10.0	9.03	
4 Vinyl chloride	62	3.494	3.493	0.001	98	1476827	10.0	7.88	
5 Butadiene	39	3.522	3.520	0.002	88	1207659	10.0	7.02	
6 Bromomethane	94	4.080	4.079	0.001	89	706102	10.0	8.86	
7 Chloroethane	64	4.318	4.317	0.001	99	757855	10.0	7.94	
8 Trichlorofluoromethane	101	4.555	4.554	0.001	98	1511512	10.0	10.1	
9 Dichlorofluoromethane	67	4.653	4.652	0.001	97	1675095	10.0	9.99	
10 Ethyl ether	74	5.044	5.043	0.001	89	417804	10.0	10.8	
11 Ethanol	45	5.267	5.266	0.001	99	112669	400.0	409.5	
12 1,1-Dichloroethene	96	5.351	5.364	-0.013	97	1106933	10.0	10.7	
13 Carbon disulfide	76	5.407	5.406	0.001	98	3494861	10.0	10.2	
14 1,1,2-Trichloro-1,2,2-trif	151	5.421	5.434	-0.013	89	1001576	10.0	10.9	
15 Iodomethane	142	5.575	5.574	0.001	97	1710086	10.0	11.0	
17 Acrolein	56	5.840	5.839	0.001	99	284694	50.0	54.2	
18 3-Chloro-1-propene	39	6.021	6.020	0.001	95	941388	10.0	8.80	
19 Isopropyl alcohol	45	6.035	6.034	0.001	99	161362	100.0	95.1	
20 Methylene Chloride	84	6.161	6.174	-0.013	92	895750	10.0	10.1	
21 Acetone	43	6.231	6.230	0.001	99	90518	10.0	10.5	
22 trans-1,2-Dichloroethene	96	6.371	6.370	0.001	99	1110621	10.0	10.4	
23 Methyl acetate	74	6.371	6.370	0.001	97	289936	50.0	54.0	
24 Hexane	86	6.454	6.453	0.001	90	373013	10.0	11.0	
25 Methyl tert-butyl ether	73	6.482	6.481	0.001	89	1526937	10.0	10.2	
26 2-Methyl-2-propanol	59	6.594	6.593	0.001	100	266450	100.0	96.6	
27 Acetonitrile	41	6.818	6.817	0.002	99	309799	100.0	93.2	
28 Isopropyl ether	45	6.915	6.914	0.001	94	2454849	10.0	9.88	
29 2-Chloro-1,3-butadiene	53	7.069	7.068	0.001	88	1452340	10.0	10.0	
30 1,1-Dichloroethane	63	7.097	7.096	0.001	97	1756637	10.0	9.97	
31 Acrylonitrile	53	7.167	7.166	0.001	99	1234519	100.0	101.2	
32 Tert-butyl ethyl ether	59	7.320	7.319	0.001	95	2017979	10.0	9.87	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
33 Vinyl acetate	43	7.348	7.347	0.001	96	1035544	10.0	9.39	
34 cis-1,2-Dichloroethene	96	7.683	7.682	0.001	77	1089359	10.0	10.1	
35 2,2-Dichloropropane	77	7.795	7.794	0.001	87	1027252	10.0	9.44	
37 Chlorobromomethane	128	7.893	7.892	0.001	60	416576	10.0	10.5	
36 Cyclohexane	84	7.893	7.892	0.001	87	1911251	10.0	10.7	
38 Chloroform	83	7.949	7.948	0.001	93	1648592	10.0	9.79	
39 Ethyl acetate	45	8.033	8.032	0.001	99	86208	20.0	18.1	
40 Carbon tetrachloride	117	8.102	8.101	0.001	97	1367010	10.0	10.1	
41 Tetrahydrofuran	71	8.116	8.115	0.001	88	77734	20.0	20.1	
$ 42 Dibromofluoromethane (Surr	113	8.130	8.143	-0.013	96	850263	10.0	11.0	
43 1,1,1-Trichloroethane	97	8.172	8.171	0.001	97	1456226	10.0	9.74	
44 2-Butanone (MEK)	43	8.256	8.255	0.001	100	131529	10.0	8.75	
45 1,1-Dichloropropene	75	8.284	8.283	0.001	99	1458650	10.0	10.4	
46 Isooctane	57	8.368	8.367	0.001	95	4360643	10.0	10.0	
47 n-Heptane	43	8.438	8.451	-0.013	90	1799876	10.0	9.76	
48 Benzene	78	8.535	8.534	0.001	96	3948712	10.0	9.98	
50 Propionitrile	54	8.563	8.562	0.001	92	432550	100.0	97.6	
49 Methacrylonitrile	41	8.577	8.576	0.001	90	2213494	100.0	92.6	
51 Tert-amyl methyl ether	73	8.605	8.604	0.001	97	1752555	10.0	10.1	
52 Isobutyl alcohol	42	8.661	8.660	0.001	94	185247	250.0	239.2	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.661	8.674	-0.013	88	617021	10.0	9.24	
54 1,2-Dichloroethane	62	8.731	8.730	0.001	97	727686	10.0	8.96	
* 55 Fluorobenzene	96	8.926	8.925	0.001	99	3595610	10.0	10.0	
57 Methylcyclohexane	55	9.080	9.079	0.001	86	1567631	10.0	10.0	
56 Trichloroethene	95	9.080	9.079	0.001	71	1100564	10.0	9.99	
59 n-Butanol	56	9.303	9.302	0.001	85	193755	250.0	259.3	
60 Dibromomethane	93	9.485	9.484	0.001	93	339067	10.0	9.45	
61 Ethyl acrylate	55	9.513	9.512	0.001	99	434649	10.0	10.1	
62 1,2-Dichloropropane	63	9.569	9.568	0.001	97	877702	10.0	9.78	
63 Dichlorobromomethane	83	9.611	9.610	0.001	100	993094	10.0	9.74	
64 Methyl methacrylate	69	9.709	9.707	0.001	90	551771	20.0	20.9	
65 1,4-Dioxane	88	9.778	9.777	0.001	91	65372	200.0	188.0	
66 2-Chloroethyl vinyl ether	63	10.086	10.085	0.001	91	85249	10.0	10.6	
67 cis-1,3-Dichloropropene	75	10.183	10.182	0.001	98	1261582	10.0	10.1	
$ 68 Toluene-d8 (Surr)	98	10.351	10.350	0.001	92	3588754	10.0	10.2	
69 Toluene	92	10.393	10.392	0.001	99	2636639	10.0	10.3	
70 2-Nitropropane	43	10.616	10.615	0.001	94	148153	20.0	16.9	
71 4-Methyl-2-pentanone (MIBK	43	10.700	10.699	0.001	96	298419	10.0	9.78	
73 Tetrachloroethene	164	10.756	10.755	0.001	97	1100754	10.0	10.5	
72 trans-1,3-Dichloropropene	75	10.756	10.755	0.001	77	963492	10.0	9.83	
74 Ethyl methacrylate	69	10.840	10.839	0.001	87	592929	10.0	10.7	
75 1,1,2-Trichloroethane	83	10.910	10.909	0.001	90	428371	10.0	9.42	
76 Chlorodibromomethane	129	11.091	11.090	0.001	90	679905	10.0	10.3	
77 1,3-Dichloropropane	76	11.175	11.174	0.001	86	926293	10.0	9.80	
78 n-Butyl acetate	43	11.315	11.314	0.001	98	563000	10.0	9.89	
79 Ethylene Dibromide	107	11.343	11.342	0.001	99	483080	10.0	10.3	
80 2-Hexanone	43	11.440	11.439	0.001	97	201817	10.0	9.21	
81 1-Chlorohexane	91	11.706	11.705	0.001	97	1694806	10.0	11.0	
* 83 Chlorobenzene-d5	117	11.775	11.774	0.001	69	2735132	10.0	10.0	
82 Ethylbenzene	91	11.775	11.774	0.001	96	4729202	10.0	9.02	
84 Chlorobenzene	112	11.789	11.788	0.001	95	2875076	10.0	9.99	
85 1,1,1,2-Tetrachloroethane	131	11.831	11.830	0.001	95	960084	10.0	10.5	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
86 m-Xylene & p-Xylene	106	11.901	11.900	0.001	99	2134541	10.0	10.4	
88 o-Xylene	106	12.306	12.305	0.001	95	1949987	10.0	10.8	
89 Styrene	104	12.348	12.361	-0.013	94	2838138	10.0	11.3	
90 Bromoform	173	12.432	12.431	0.001	99	391107	10.0	10.6	
91 Isopropylbenzene	105	12.586	12.585	0.002	95	4874600	10.0	9.70	
$ 92 4-Bromofluorobenzene (Surr	95	12.879	12.878	0.001	96	1160757	10.0	10.7	
93 N-Propylbenzene	91	12.963	12.976	-0.013	97	5544530	10.0	9.38	
94 Bromobenzene	156	13.005	13.003	0.002	87	1166627	10.0	10.1	
95 1,1,2,2-Tetrachloroethane	83	13.032	13.031	0.001	94	540238	10.0	9.31	
96 1,3,5-Trimethylbenzene	105	13.130	13.129	0.001	97	3903779	10.0	10.5	
97 2-Chlorotoluene	91	13.158	13.157	0.001	98	3663826	10.0	10.1	
98 1,2,3-Trichloropropane	110	13.200	13.199	0.001	82	163539	10.0	10.1	
99 trans-1,4-Dichloro-2-buten	53	13.200	13.199	0.001	84	128846	10.0	9.13	
100 Cyclohexanone	55	13.270	13.269	0.001	85	92193	100.0	88.1	
101 4-Chlorotoluene	91	13.312	13.311	0.001	95	3252922	10.0	10.5	
102 tert-Butylbenzene	119	13.451	13.450	0.001	92	3759814	10.0	10.4	
103 1,2,4-Trimethylbenzene	105	13.521	13.520	0.001	95	3934564	10.0	9.78	
104 sec-Butylbenzene	105	13.619	13.618	0.001	94	5255853	10.0	9.16	
105 4-Isopropyltoluene	119	13.745	13.744	0.001	95	4648787	10.0	9.76	
106 1,3-Dichlorobenzene	146	13.884	13.883	0.001	97	2284985	10.0	9.96	
107 1,2,3-Trimethylbenzene	105	13.954	13.953	0.001	94	3692771	10.0	9.22	
* 108 1,4-Dichlorobenzene-d4	152	13.954	13.953	0.001	76	1442489	10.0	10.0	
109 1,4-Dichlorobenzene	146	13.968	13.967	0.001	94	2308224	10.0	9.78	
110 n-Butylbenzene	134	14.150	14.163	-0.013	95	1410894	10.0	10.6	
111 Benzyl chloride	126	14.192	14.191	0.001	76	253263	10.0	9.83	
112 1,2-Dichlorobenzene	146	14.387	14.386	0.001	99	1884106	10.0	9.81	
113 n-Nonyl Aldehyde	57	15.099	15.098	0.001	92	323265	10.0	9.59	
114 1,2-Dibromo-3-Chloropropan	157	15.183	15.182	0.001	87	95877	10.0	10.2	
115 1,3,5-Trichlorobenzene	180	15.197	15.196	0.001	96	1680388	10.0	10.4	
116 Hexachlorobutadiene	225	15.770	15.769	0.001	96	945890	10.0	11.0	
117 1,2,4-Trichlorobenzene	180	15.840	15.839	0.001	94	1132276	10.0	10.9	
118 Naphthalene	128	16.189	16.188	0.001	96	1316105	10.0	11.1	
120 1,2,3-Trichlorobenzene	180	16.384	16.383	0.001	96	719612	10.0	10.9	

Reagents:

8260 Surr 25_00065	Amount Added: 10.00	Units: uL	
8260 NewWkMix_00182	Amount Added: 10.00	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent

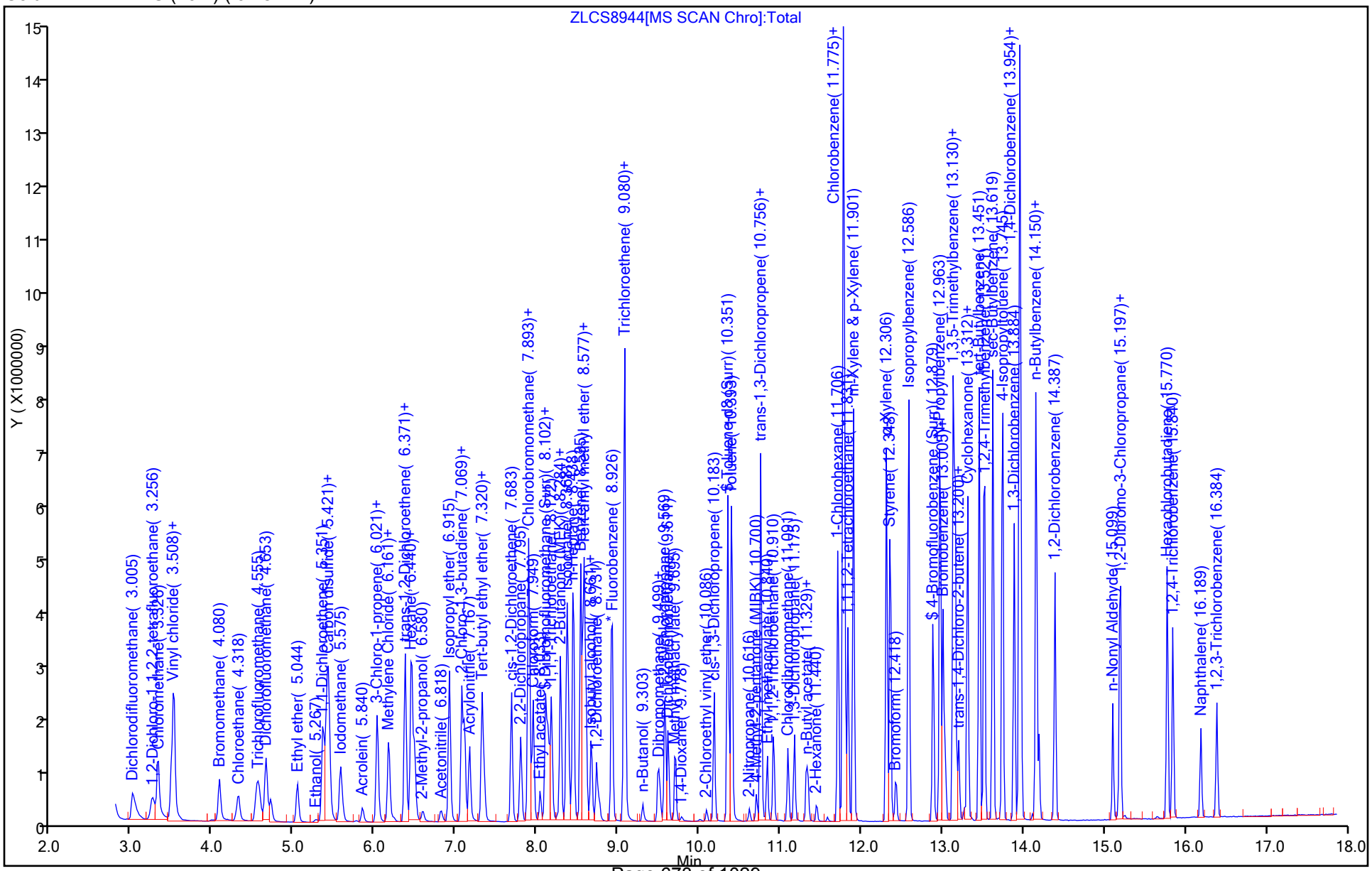
Report Date: 07-Sep-2016 12:39:21 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZLCS8944.D

Injection Date:	07-Sep-2016 11:44:30	Instrument ID:	VMSZ	Operator ID:	EF
Lims ID:	lcs			Worklist Smp#:	15
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	12
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZLCS8944.D
Lims ID: lcs
Client ID:
Sample Type: LCS
Inject. Date: 07-Sep-2016 11:44:30 ALS Bottle#: 12 Worklist Smp#: 15
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008404-015
Misc. Info.: LCS
Operator ID: EF Instrument ID: VMSZ

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 07-Sep-2016 12:39:07 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: fishere Date: 07-Sep-2016 12:39:21

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	11.0	110.02
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	9.24	92.43
$ 68 Toluene-d8 (Surr)	10.0	10.2	102.26
$ 92 4-Bromofluorobenzene (Surr)	10.0	10.7	106.88

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 160-268257/8

Matrix: Water | Lab File ID: LLCS4960.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 11:23

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	9.23		1.0	0.17
79-34-5	1,1,2,2-Tetrachloroethane	9.80		1.0	0.10
79-00-5	1,1,2-Trichloroethane	9.98		1.0	0.13
75-35-4	1,1-Dichloroethene	9.54		1.0	0.10
75-34-3	1,1-Dichloroethane	10.1		1.0	0.070
120-82-1	1,2,4-Trichlorobenzene	9.48		1.0	0.10
96-12-8	1,2-Dibromo-3-Chloropropane	9.16		1.0	0.41
107-06-2	1,2-Dichloroethane	9.24		1.0	0.22
540-59-0	1,2-Dichloroethene, Total	19.7		2.0	0.14
78-87-5	1,2-Dichloropropane	10.6		1.0	0.10
78-93-3	2-Butanone	11.1		5.0	0.47
591-78-6	2-Hexanone	11.2		5.0	0.25
108-10-1	4-Methyl-2-pentanone	10.8		5.0	0.22
67-64-1	Acetone	11.5		2.0	0.55
71-43-2	Benzene	10.4		1.0	0.10
75-25-2	Bromoform	8.84		1.0	0.17
74-83-9	Methyl bromide	9.11		2.0	0.25
75-15-0	Carbon disulfide	9.88		1.0	0.10
56-23-5	Carbon tetrachloride	9.00		1.0	0.18
108-90-7	Chlorobenzene	10.2		1.0	0.11
124-48-1	Chlorodibromomethane	9.24		1.0	0.14
75-00-3	Chloroethane	10.7		2.0	0.16
67-66-3	Chloroform	9.51		1.0	0.10
74-87-3	Chloromethane	9.16		2.0	0.10
156-59-2	cis-1,2-Dichloroethene	9.92		1.0	0.10
10061-01-5	cis-1,3-Dichloropropene	10.3		1.0	0.16
75-27-4	Bromodichloromethane	9.46		1.0	0.14
100-41-4	Ethylbenzene	10.6		1.0	0.12
106-93-4	1,2-Dibromoethane	9.47		1.0	0.13
75-09-2	Methylene Chloride	8.82		1.0	0.27
71-36-3	n-Butanol	225		50	12
100-42-5	Styrene	11.1		1.0	0.13
127-18-4	Tetrachloroethene	9.86		1.0	0.18
108-88-3	Toluene	10.8		1.0	0.14
156-60-5	trans-1,2-Dichloroethene	9.80		1.0	0.10
10061-02-6	trans-1,3-Dichloropropene	10.3		1.0	0.10

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 160-268257/8

Matrix: Water | Lab File ID: LLCS4960.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 11:23

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	10.2		1.0	0.25
108-05-4	Vinyl acetate	10.6		2.0	0.18
75-01-4	Vinyl chloride	10.2		2.0	0.19
1330-20-7	Xylenes, Total	21.9		3.0	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	97		75-129
460-00-4	4-Bromofluorobenzene (Surr)	110		81-130
1868-53-7	Dibromofluoromethane (Surr)	101		81-124
2037-26-5	Toluene-d8 (Surr)	112		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LLCS4960.D
Lims ID: LCS
Client ID:
Sample Type: LCS
Inject. Date: 07-Sep-2016 11:23:30 ALS Bottle#: 3 Worklist Smp#: 8
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: LCSD
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:40:18 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 07-Sep-2016 14:14:33

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	533013	10.0	7.48	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	100	232156	10.0	7.21	M
3 Chloromethane	50	3.474	3.474	0.000	99	832223	10.0	9.16	
4 Vinyl chloride	62	3.641	3.641	0.000	98	709053	10.0	10.2	
5 Butadiene	39	3.669	3.669	0.000	97	843828	10.0	10.7	
6 Bromomethane	94	4.256	4.256	0.000	91	242499	10.0	9.11	
7 Chloroethane	64	4.479	4.479	0.000	98	385742	10.0	10.7	
8 Trichlorofluoromethane	101	4.731	4.731	0.000	98	759600	10.0	8.78	
9 Dichlorofluoromethane	67	4.829	4.829	0.000	98	861345	10.0	10.1	
10 Ethyl ether	74	5.234	5.234	0.000	96	141272	10.0	9.81	
11 Ethanol	45	5.457	5.457	0.000	100	69212	400.0	401.3	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	93	411993	10.0	9.54	
13 Carbon disulfide	76	5.583	5.583	0.000	100	1504519	10.0	9.88	
14 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	89	378456	10.0	8.93	
16 Iodomethane	142	5.750	5.750	0.000	99	306648	10.0	10.8	
S 15 1,2-Dichloroethene, Total	96				0			19.7	
17 Acrolein	56	6.030	6.030	0.000	99	103964	50.0	52.0	
18 3-Chloro-1-propene	39	6.197	6.197	0.000	90	634453	10.0	10.6	
19 Isopropyl alcohol	45	6.225	6.225	0.000	98	88455	100.0	97.3	
20 Methylene Chloride	84	6.337	6.337	0.000	95	333435	10.0	8.82	
21 Acetone	43	6.407	6.407	0.000	98	52982	10.0	11.5	
22 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	94	435595	10.0	9.80	
23 Methyl acetate	74	6.546	6.546	0.000	100	95226	50.0	49.0	
24 Hexane	86	6.630	6.630	0.000	97	158444	10.0	10.7	
25 Methyl tert-butyl ether	73	6.658	6.658	0.000	91	560564	10.0	9.63	
27 Acetonitrile	41	6.979	6.979	0.000	100	194794	100.0	99.4	
28 Isopropyl ether	45	7.091	7.091	0.000	96	1408889	10.0	11.3	
26 2-Methyl-2-propanol	59	7.091	7.091	0.000	33	137277	100.0	105.9	
29 2-Chloro-1,3-butadiene	53	7.231	7.231	0.000	94	952599	10.0	10.9	
30 1,1-Dichloroethane	63	7.259	7.259	0.000	95	839306	10.0	10.1	
31 Acrylonitrile	53	7.329	7.329	0.000	98	581525	100.0	102.4	
32 Tert-butyl ethyl ether	59	7.482	7.482	0.000	98	927788	10.0	10.3	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
33 Vinyl acetate	43	7.510	7.510	0.000	97	552217	10.0	10.6	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	84	412116	10.0	9.92	
35 2,2-Dichloropropane	77	7.957	7.957	0.000	93	702792	10.0	9.42	
37 Chlorobromomethane	128	8.055	8.055	0.000	88	129033	10.0	9.20	
36 Cyclohexane	84	8.055	8.055	0.000	96	784724	10.0	10.6	
38 Chloroform	83	8.097	8.097	0.000	96	680710	10.0	9.51	
39 Ethyl acetate	45	8.194	8.194	0.000	99	46736	20.0	21.1	
40 Carbon tetrachloride	117	8.264	8.264	0.000	98	646367	10.0	9.00	
41 Tetrahydrofuran	71	8.278	8.278	0.000	94	22948	20.0	18.8	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	95	300638	10.0	10.1	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	98	736196	10.0	9.23	
45 2-Butanone (MEK)	43	8.404	8.404	0.000	97	72316	10.0	11.1	
47 1,1-Dichloropropene	75	8.446	8.446	0.000	91	644457	10.0	10.5	
44 Isooctane	57	8.516	8.516	0.000	97	2594416	10.0	11.6	
46 n-Heptane	43	8.599	8.599	0.000	98	1316263	10.0	12.4	
48 Benzene	78	8.683	8.683	0.000	97	1694982	10.0	10.4	
49 Propionitrile	54	8.711	8.711	0.000	95	211151	100.0	102.4	
50 Methacrylonitrile	41	8.725	8.725	0.000	98	1312905	100.0	108.7	
51 Tert-amyl methyl ether	73	8.753	8.753	0.000	93	639680	10.0	9.86	
52 Isobutyl alcohol	42	8.809	8.809	0.000	94	103704	250.0	257.4	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	95	307116	10.0	9.75	
54 1,2-Dichloroethane	62	8.879	8.879	0.000	96	386558	10.0	9.24	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1549631	10.0	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	65	473969	10.0	10.2	
58 Methylcyclohexane	55	9.228	9.228	0.000	97	949093	10.0	11.3	
59 n-Butanol	56	9.451	9.451	0.000	95	81508	250.0	224.6	
61 Dibromomethane	93	9.633	9.633	0.000	97	126923	10.0	9.21	
60 Ethyl acrylate	55	9.661	9.661	0.000	99	193756	10.0	10.2	
62 1,2-Dichloropropane	63	9.717	9.717	0.000	91	397361	10.0	10.6	
63 Dichlorobromomethane	83	9.759	9.759	0.000	98	408794	10.0	9.46	
64 Methyl methacrylate	69	9.842	9.842	0.000	93	200901	20.0	21.6	
65 1,4-Dioxane	88	9.940	9.940	0.000	93	21137	200.0	174.2	
66 2-Chloroethyl vinyl ether	63	10.234	10.234	0.000	91	27152	10.0	7.26	
67 cis-1,3-Dichloropropene	75	10.317	10.317	0.000	90	485277	10.0	10.3	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	95	1526920	10.0	11.2	
69 Toluene	92	10.541	10.541	0.000	98	1110175	10.0	10.8	
70 2-Nitropropane	43	10.750	10.750	0.000	99	88926	20.0	20.1	
71 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	99	148626	10.0	10.8	
72 trans-1,3-Dichloropropene	75	10.890	10.890	0.000	94	379939	10.0	10.3	
73 Tetrachloroethene	164	10.904	10.904	0.000	97	411336	10.0	9.86	
74 Ethyl methacrylate	69	10.974	10.974	0.000	96	210966	10.0	8.94	
75 1,1,2-Trichloroethane	83	11.044	11.044	0.000	94	157163	10.0	9.98	
76 Chlorodibromomethane	129	11.225	11.225	0.000	91	231752	10.0	9.24	
77 1,3-Dichloropropane	76	11.309	11.309	0.000	98	346313	10.0	9.93	
78 n-Butyl acetate	43	11.449	11.449	0.000	97	272412	10.0	10.6	
79 Ethylene Dibromide	107	11.477	11.477	0.000	98	163573	10.0	9.47	
80 2-Hexanone	43	11.588	11.588	0.000	98	101722	10.0	11.2	
81 1-Chlorohexane	91	11.840	11.840	0.000	84	688279	10.0	11.6	
* 83 Chlorobenzene-d5	117	11.909	11.909	0.000	90	1047289	10.0	10.0	
82 Ethylbenzene	91	11.909	11.909	0.000	99	2170154	10.0	10.6	
84 Chlorobenzene	112	11.923	11.923	0.000	92	1099665	10.0	10.2	
85 1,1,1,2-Tetrachloroethane	131	11.965	11.965	0.000	93	347840	10.0	9.42	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
86 m-Xylene & p-Xylene	106	12.035	12.035	0.000	98	817895	10.0	10.8	
88 o-Xylene	106	12.440	12.440	0.000	99	722775	10.0	11.1	
89 Styrene	104	12.482	12.482	0.000	95	1087112	10.0	11.1	
90 Bromoform	173	12.552	12.552	0.000	96	115265	10.0	8.84	
91 Isopropylbenzene	105	12.720	12.720	0.000	96	2152283	10.0	11.1	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	84	489007	10.0	11.0	
93 N-Propylbenzene	91	13.097	13.097	0.000	98	2618229	10.0	11.6	
94 Bromobenzene	156	13.139	13.139	0.000	97	409391	10.0	9.72	
95 1,1,2,2-Tetrachloroethane	83	13.166	13.166	0.000	96	178851	10.0	9.80	
96 1,3,5-Trimethylbenzene	105	13.264	13.264	0.000	96	1731540	10.0	11.3	
97 2-Chlorotoluene	91	13.292	13.292	0.000	96	1644486	10.0	10.8	
99 1,2,3-Trichloropropane	110	13.320	13.320	0.000	84	57237	10.0	9.12	
98 trans-1,4-Dichloro-2-buten	53	13.334	13.334	0.000	83	61202	10.0	9.57	
100 Cyclohexanone	55	13.404	13.404	0.000	89	44872	100.0	112.3	
101 4-Chlorotoluene	91	13.446	13.446	0.000	98	1460822	10.0	11.0	
102 tert-Butylbenzene	119	13.585	13.585	0.000	94	1638308	10.0	11.2	
103 1,2,4-Trimethylbenzene	105	13.655	13.655	0.000	97	1724280	10.0	11.1	
104 sec-Butylbenzene	105	13.753	13.753	0.000	95	2490089	10.0	11.3	
105 4-Isopropyltoluene	119	13.879	13.879	0.000	97	2104287	10.0	11.3	
106 1,3-Dichlorobenzene	146	14.018	14.018	0.000	99	893563	10.0	9.94	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	73	530675	10.0	10.0	
107 1,2,3-Trimethylbenzene	105	14.088	14.088	0.000	96	1573412	10.0	10.5	
109 1,4-Dichlorobenzene	146	14.102	14.102	0.000	95	873764	10.0	9.75	
111 n-Butylbenzene	134	14.284	14.284	0.000	98	549940	10.0	11.2	
110 Benzyl chloride	126	14.326	14.326	0.000	63	78014	10.0	9.39	
112 1,2-Dichlorobenzene	146	14.521	14.521	0.000	98	702278	10.0	9.59	
113 n-Nonyl Aldehyde	57	15.233	15.233	0.000	83	155820	10.0	10.3	
115 1,2-Dibromo-3-Chloropropan	157	15.303	15.303	0.000	80	32204	10.0	9.16	
114 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	97	706894	10.0	9.83	
116 Hexachlorobutadiene	225	15.904	15.904	0.000	97	402954	10.0	9.80	
117 1,2,4-Trichlorobenzene	180	15.974	15.974	0.000	94	522215	10.0	9.48	
118 Naphthalene	128	16.337	16.337	0.000	97	535642	10.0	8.62	
S 119 Xylenes, Total	106				0			21.8	
120 1,2,3-Trichlorobenzene	180	16.532	16.532	0.000	96	410427	10.0	9.15	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260 NewWkMix_00182	Amount Added: 10.00	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

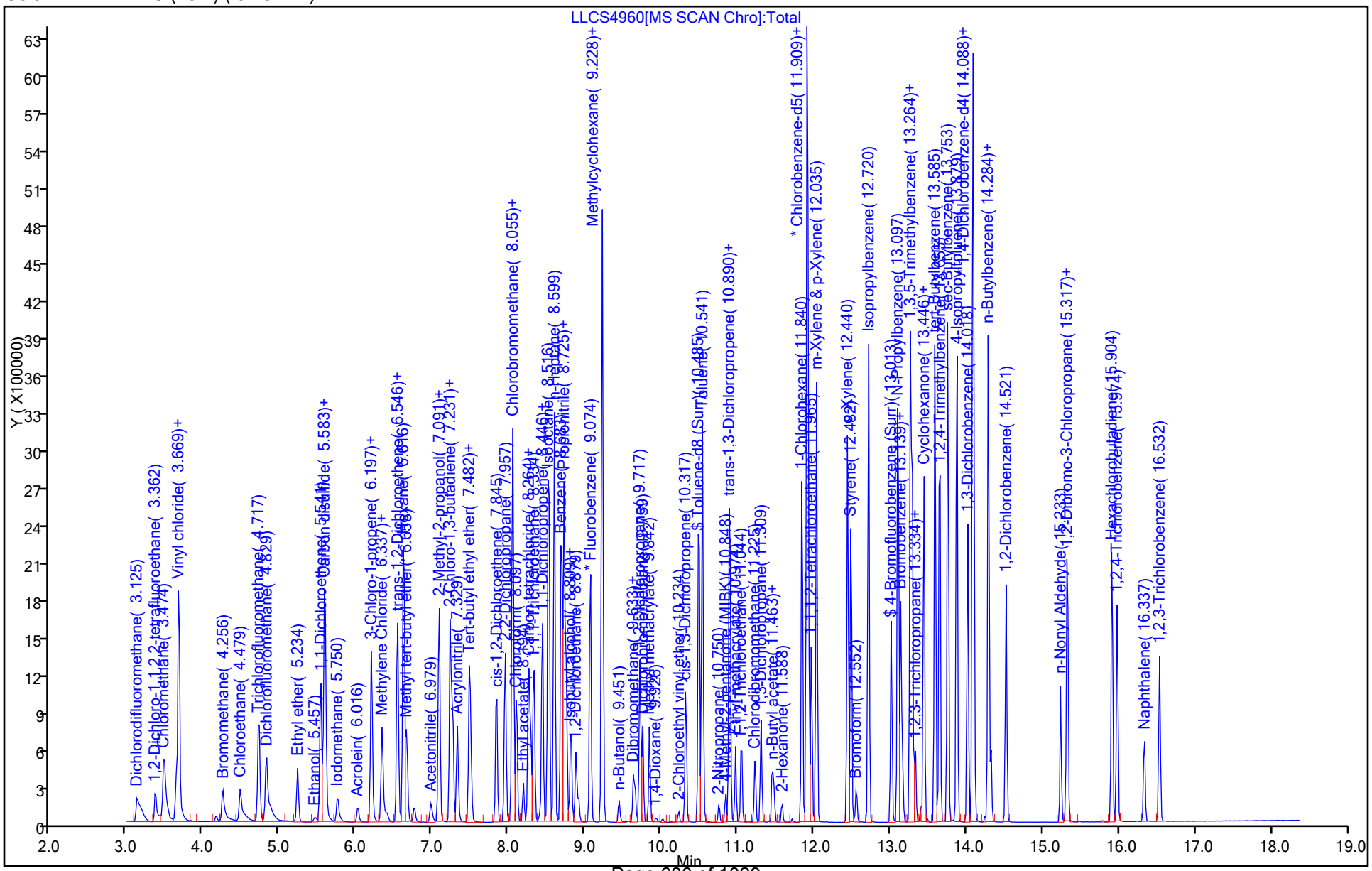
Report Date: 08-Sep-2016 08:40:19 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LLCS4960.D

Injection Date:	07-Sep-2016 11:23:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	LCS			Worklist Smp#:	8
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	3
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LLCS4960.D
Lims ID: LCS
Client ID:
Sample Type: LCS
Inject. Date: 07-Sep-2016 11:23:30 ALS Bottle#: 3 Worklist Smp#: 8
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: LCSD
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:40:18 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 07-Sep-2016 14:14:33

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.1	100.96
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	9.75	97.50
$ 68 Toluene-d8 (Surr)	10.0	11.2	111.69
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.0	109.82

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 160-267958/7

Matrix: Water | Lab File ID: LLCS4851.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 25(mL) | Date Analyzed: 09/04/2016 10:43

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 267958 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	9.94		1.0	0.17
79-34-5	1,1,2,2-Tetrachloroethane	8.98		1.0	0.10
79-00-5	1,1,2-Trichloroethane	9.91		1.0	0.13
75-35-4	1,1-Dichloroethene	10.1		1.0	0.10
75-34-3	1,1-Dichloroethane	10.4		1.0	0.070
120-82-1	1,2,4-Trichlorobenzene	9.50		1.0	0.10
96-12-8	1,2-Dibromo-3-Chloropropane	9.20		1.0	0.41
107-06-2	1,2-Dichloroethane	9.87		1.0	0.22
540-59-0	1,2-Dichloroethene, Total	20.1		2.0	0.14
78-87-5	1,2-Dichloropropane	10.7		1.0	0.10
78-93-3	2-Butanone	11.1		5.0	0.47
591-78-6	2-Hexanone	10.5		5.0	0.25
108-10-1	4-Methyl-2-pentanone	10.2		5.0	0.22
67-64-1	Acetone	11.1		2.0	0.55
71-43-2	Benzene	10.5		1.0	0.10
75-25-2	Bromoform	8.34		1.0	0.17
74-83-9	Methyl bromide	12.1		2.0	0.25
75-15-0	Carbon disulfide	10.4		1.0	0.10
56-23-5	Carbon tetrachloride	9.84		1.0	0.18
108-90-7	Chlorobenzene	10.2		1.0	0.11
124-48-1	Chlorodibromomethane	9.30		1.0	0.14
75-00-3	Chloroethane	13.2		2.0	0.16
67-66-3	Chloroform	9.92		1.0	0.10
74-87-3	Chloromethane	12.0		2.0	0.10
156-59-2	cis-1,2-Dichloroethene	10.1		1.0	0.10
10061-01-5	cis-1,3-Dichloropropene	10.5		1.0	0.16
75-27-4	Bromodichloromethane	9.97		1.0	0.14
100-41-4	Ethylbenzene	10.6		1.0	0.12
106-93-4	1,2-Dibromoethane	9.44		1.0	0.13
75-09-2	Methylene Chloride	9.01		1.0	0.27
71-36-3	n-Butanol	227		50	12
100-42-5	Styrene	11.3		1.0	0.13
127-18-4	Tetrachloroethene	10.4		1.0	0.18
108-88-3	Toluene	11.0		1.0	0.14
156-60-5	trans-1,2-Dichloroethene	10.0		1.0	0.10
10061-02-6	trans-1,3-Dichloropropene	10.3		1.0	0.10

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Client Sample ID: Lab Sample ID: LCSD 160-267958/7

Matrix: Water Lab File ID: LLCS4851.D

Analysis Method: 8260C Date Collected:

Sample wt/vol: 25(mL) Date Analyzed: 09/04/2016 10:43

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 267958 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	10.5		1.0	0.25
108-05-4	Vinyl acetate	11.2		2.0	0.18
75-01-4	Vinyl chloride	13.2		2.0	0.19
1330-20-7	Xylenes, Total	21.6		3.0	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	99		75-129
460-00-4	4-Bromofluorobenzene (Surr)	99		81-130
1868-53-7	Dibromofluoromethane (Surr)	100		81-124
2037-26-5	Toluene-d8 (Surr)	107		87-128

Report Date: 06-Sep-2016 08:45:54 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LLCS4851.D
Lims ID: LCSD
Client ID:
Sample Type: LCSD
Inject. Date: 04-Sep-2016 10:43:30 ALS Bottle#: 3 Worklist Smp#: 7
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: LCSD
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:45:53 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: buettnera Date: 06-Sep-2016 08:10:17

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	582879	10.0	9.63	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	99	277595	10.0	10.2	M
3 Chloromethane	50	3.474	3.474	0.000	99	921603	10.0	12.0	
4 Vinyl chloride	62	3.641	3.641	0.000	98	777060	10.0	13.2	
5 Butadiene	39	3.669	3.669	0.000	98	930965	10.0	13.9	
6 Bromomethane	94	4.256	4.256	0.000	91	273845	10.0	12.1	
7 Chloroethane	64	4.479	4.479	0.000	98	405795	10.0	13.2	
8 Trichlorofluoromethane	101	4.717	4.717	0.000	98	804827	10.0	11.0	
9 Dichlorofluoromethane	67	4.829	4.829	0.000	98	890487	10.0	12.3	
10 Ethyl ether	74	5.234	5.234	0.000	96	141050	10.0	11.5	
11 Ethanol	45	5.457	5.457	0.000	100	63687	400.0	435.2	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	93	371218	10.0	10.1	
13 Carbon disulfide	76	5.583	5.583	0.000	100	1342129	10.0	10.4	
14 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	90	348141	10.0	9.68	
16 Iodomethane	142	5.750	5.750	0.000	100	192761	10.0	8.30	
S 15 1,2-Dichloroethene, Total	96				0			20.1	
17 Acrolein	56	6.016	6.016	0.000	99	100331	50.0	59.1	
18 3-Chloro-1-propene	39	6.197	6.197	0.000	89	573042	10.0	11.2	
19 Isopropyl alcohol	45	6.225	6.225	0.000	97	77184	100.0	100.0	
20 Methylene Chloride	84	6.337	6.337	0.000	95	289085	10.0	9.01	
21 Acetone	43	6.407	6.407	0.000	99	43702	10.0	11.1	
22 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	94	377491	10.0	10.0	
23 Methyl acetate	74	6.546	6.546	0.000	100	83347	50.0	50.5	
24 Hexane	86	6.616	6.616	0.000	96	136287	10.0	10.8	
25 Methyl tert-butyl ether	73	6.658	6.658	0.000	91	481719	10.0	9.76	
27 Acetonitrile	41	6.979	6.979	0.000	100	172267	100.0	103.6	
28 Isopropyl ether	45	7.091	7.091	0.000	96	1196846	10.0	11.3	
26 2-Methyl-2-propanol	59	7.091	7.091	0.000	34	115569	100.0	105.1	
29 2-Chloro-1,3-butadiene	53	7.231	7.231	0.000	94	853640	10.0	11.5	
30 1,1-Dichloroethane	63	7.259	7.259	0.000	95	732968	10.0	10.4	
31 Acrylonitrile	53	7.329	7.329	0.000	98	502151	100.0	104.2	
32 Tert-butyl ethyl ether	59	7.482	7.482	0.000	98	794640	10.0	10.4	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
33 Vinyl acetate	43	7.510	7.510	0.000	97	492097	10.0	11.2	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	84	355806	10.0	10.1	
35 2,2-Dichloropropane	77	7.957	7.957	0.000	93	644813	10.0	10.2	
37 Chlorobromomethane	128	8.055	8.055	0.000	88	113318	10.0	9.52	
36 Cyclohexane	84	8.055	8.055	0.000	96	689144	10.0	11.0	
38 Chloroform	83	8.097	8.097	0.000	96	602620	10.0	9.92	
39 Ethyl acetate	45	8.194	8.194	0.000	99	41462	20.0	22.1	
40 Carbon tetrachloride	117	8.264	8.264	0.000	98	599634	10.0	9.84	
41 Tetrahydrofuran	71	8.278	8.278	0.000	92	18951	20.0	18.3	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	95	253051	10.0	10.0	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	98	672763	10.0	9.94	
45 2-Butanone (MEK)	43	8.404	8.404	0.000	95	61125	10.0	11.1	
47 1,1-Dichloropropene	75	8.446	8.446	0.000	91	564263	10.0	10.8	
44 Isooctane	57	8.516	8.516	0.000	97	2241384	10.0	11.9	
46 n-Heptane	43	8.599	8.599	0.000	98	1136068	10.0	12.6	
48 Benzene	78	8.683	8.683	0.000	97	1448637	10.0	10.5	
49 Propionitrile	54	8.711	8.711	0.000	94	181705	100.0	103.9	
50 Methacrylonitrile	41	8.725	8.725	0.000	97	1150194	100.0	112.2	
51 Tert-amyl methyl ether	73	8.753	8.753	0.000	93	547305	10.0	9.94	
52 Isobutyl alcohol	42	8.809	8.809	0.000	92	89580	250.0	261.8	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	95	265921	10.0	9.95	
54 1,2-Dichloroethane	62	8.879	8.879	0.000	97	350529	10.0	9.87	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1314969	10.0	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	65	413247	10.0	10.5	
58 Methylcyclohexane	55	9.228	9.228	0.000	97	832899	10.0	11.7	
59 n-Butanol	56	9.451	9.451	0.000	95	70083	250.0	227.2	
61 Dibromomethane	93	9.633	9.633	0.000	96	107525	10.0	9.19	
60 Ethyl acrylate	55	9.661	9.661	0.000	99	161529	10.0	10.0	
62 1,2-Dichloropropane	63	9.717	9.717	0.000	89	337718	10.0	10.7	
63 Dichlorobromomethane	83	9.759	9.759	0.000	98	365415	10.0	9.97	
64 Methyl methacrylate	69	9.842	9.842	0.000	92	166425	20.0	21.1	
65 1,4-Dioxane	88	9.926	9.926	0.000	91	17860	200.0	173.5	
66 2-Chloroethyl vinyl ether	63	10.234	10.234	0.000	90	22871	10.0	7.21	
67 cis-1,3-Dichloropropene	75	10.317	10.317	0.000	89	417606	10.0	10.5	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	1270880	10.0	10.7	
69 Toluene	92	10.541	10.541	0.000	98	974110	10.0	11.0	
70 2-Nitropropane	43	10.750	10.750	0.000	99	77978	20.0	20.4	
71 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	99	121574	10.0	10.2	
72 trans-1,3-Dichloropropene	75	10.890	10.890	0.000	89	328151	10.0	10.3	
73 Tetrachloroethene	164	10.904	10.904	0.000	96	374092	10.0	10.4	
74 Ethyl methacrylate	69	10.974	10.974	0.000	95	177493	10.0	8.70	
75 1,1,2-Trichloroethane	83	11.044	11.044	0.000	94	135008	10.0	9.91	
76 Chlorodibromomethane	129	11.225	11.225	0.000	91	201814	10.0	9.30	
77 1,3-Dichloropropane	76	11.309	11.309	0.000	97	290334	10.0	9.62	
78 n-Butyl acetate	43	11.449	11.449	0.000	97	222238	10.0	10.0	
79 Ethylene Dibromide	107	11.477	11.477	0.000	99	141047	10.0	9.44	
80 2-Hexanone	43	11.588	11.588	0.000	98	82536	10.0	10.5	
81 1-Chlorohexane	91	11.840	11.840	0.000	82	595112	10.0	11.6	
* 83 Chlorobenzene-d5	117	11.909	11.909	0.000	66	906218	10.0	10.0	
82 Ethylbenzene	91	11.909	11.909	0.000	98	1884816	10.0	10.6	
84 Chlorobenzene	112	11.923	11.923	0.000	90	957330	10.0	10.2	
85 1,1,1,2-Tetrachloroethane	131	11.965	11.965	0.000	93	309081	10.0	9.68	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
86 m-Xylene & p-Xylene	106	12.035	12.035	0.000	98	713100	10.0	10.8	
88 o-Xylene	106	12.440	12.440	0.000	99	609945	10.0	10.8	
89 Styrene	104	12.482	12.482	0.000	95	955959	10.0	11.3	
90 Bromoform	173	12.552	12.552	0.000	97	103839	10.0	8.34	
91 Isopropylbenzene	105	12.720	12.720	0.000	96	1874986	10.0	10.1	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	86	419191	10.0	9.86	
93 N-Propylbenzene	91	13.097	13.097	0.000	98	2314161	10.0	10.7	
94 Bromobenzene	156	13.139	13.139	0.000	93	370887	10.0	9.23	
95 1,1,2,2-Tetrachloroethane	83	13.166	13.166	0.000	97	156512	10.0	8.98	
96 1,3,5-Trimethylbenzene	105	13.264	13.264	0.000	96	1507958	10.0	10.3	
97 2-Chlorotoluene	91	13.292	13.292	0.000	97	1440015	10.0	9.94	
99 1,2,3-Trichloropropane	110	13.320	13.320	0.000	90	51924	10.0	8.67	
98 trans-1,4-Dichloro-2-buten	53	13.334	13.334	0.000	88	57695	10.0	9.45	
100 Cyclohexanone	55	13.404	13.404	0.000	90	35023	100.0	91.8	
101 4-Chlorotoluene	91	13.446	13.446	0.000	98	1257954	10.0	9.94	
102 tert-Butylbenzene	119	13.585	13.585	0.000	94	1460043	10.0	10.4	
103 1,2,4-Trimethylbenzene	105	13.641	13.641	0.000	97	1526609	10.0	10.3	
104 sec-Butylbenzene	105	13.753	13.753	0.000	95	2174026	10.0	10.4	
105 4-Isopropyltoluene	119	13.879	13.879	0.000	97	1901507	10.0	10.7	
106 1,3-Dichlorobenzene	146	14.018	14.018	0.000	99	831969	10.0	9.69	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	94	506669	10.0	10.0	
107 1,2,3-Trimethylbenzene	105	14.088	14.088	0.000	97	1474337	10.0	10.3	
109 1,4-Dichlorobenzene	146	14.102	14.102	0.000	95	838079	10.0	9.80	
111 n-Butylbenzene	134	14.284	14.284	0.000	97	530655	10.0	11.3	
110 Benzyl chloride	126	14.326	14.326	0.000	27	77861	10.0	9.82	
112 1,2-Dichlorobenzene	146	14.521	14.521	0.000	98	667142	10.0	9.55	
113 n-Nonyl Aldehyde	57	15.233	15.233	0.000	83	145219	10.0	10.1	
115 1,2-Dibromo-3-Chloropropan	157	15.303	15.303	0.000	80	30913	10.0	9.20	
114 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	97	684267	10.0	9.97	
116 Hexachlorobutadiene	225	15.904	15.904	0.000	97	392070	10.0	9.99	
117 1,2,4-Trichlorobenzene	180	15.974	15.974	0.000	95	499661	10.0	9.50	
118 Naphthalene	128	16.337	16.337	0.000	97	509351	10.0	8.58	
S 119 Xylenes, Total	106				0			21.6	
120 1,2,3-Trichlorobenzene	180	16.532	16.532	0.000	96	404465	10.0	9.44	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260 NewWkMix_00181	Amount Added: 10.00	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

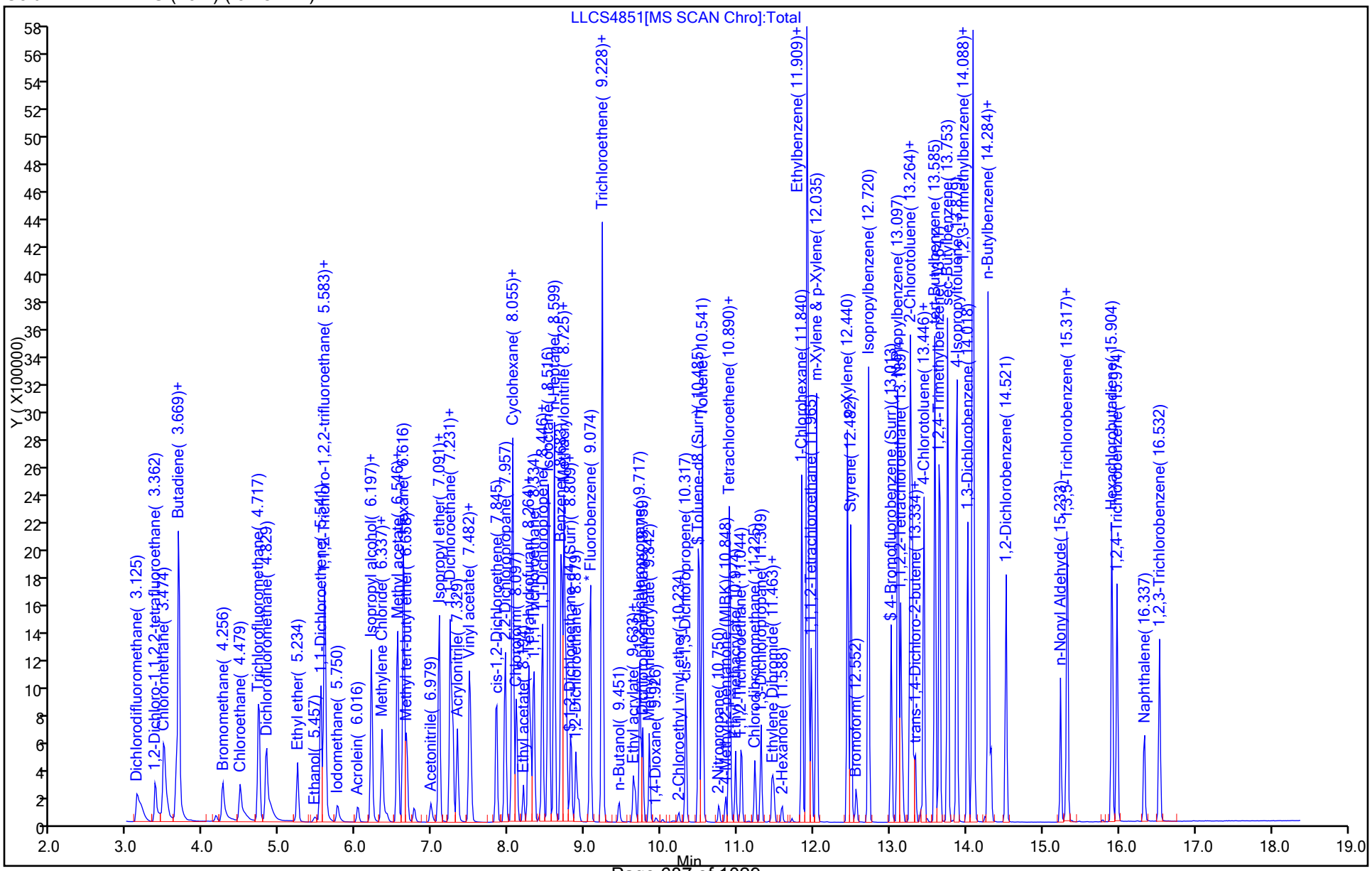
Report Date: 06-Sep-2016 08:45:54 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LLCS4851.D

Injection Date:	04-Sep-2016 10:43:30	Instrument ID:	VMSL	Operator ID:	ADB
Lims ID:	LCSD			Worklist Smp#:	7
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	3
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\LLCS4851.D
Lims ID: LCSD
Client ID:
Sample Type: LCSD
Inject. Date: 04-Sep-2016 10:43:30 ALS Bottle#: 3 Worklist Smp#: 7
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: LCSD
Operator ID: ADB Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160904-8391.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 06-Sep-2016 08:45:53 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK036

First Level Reviewer: buettnera Date: 06-Sep-2016 08:10:17

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.0	100.15
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	9.95	99.48
$ 68 Toluene-d8 (Surr)	10.0	10.7	107.43
$ 92 4-Bromofluorobenzene (Surr)	10.0	9.86	98.60

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 160-268249/16

Matrix: Water | Lab File ID: ZLCS8945.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 12:08

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268249 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	9.94		1.0	0.17
79-34-5	1,1,2,2-Tetrachloroethane	9.44		1.0	0.10
79-00-5	1,1,2-Trichloroethane	9.68		1.0	0.13
75-35-4	1,1-Dichloroethene	10.7		1.0	0.10
75-34-3	1,1-Dichloroethane	9.79		1.0	0.070
120-82-1	1,2,4-Trichlorobenzene	10.4		1.0	0.10
96-12-8	1,2-Dibromo-3-Chloropropane	10.0		1.0	0.41
107-06-2	1,2-Dichloroethane	8.79		1.0	0.22
540-59-0	1,2-Dichloroethene, Total	20.7		2.0	0.14
78-87-5	1,2-Dichloropropane	9.86		1.0	0.10
78-93-3	2-Butanone	8.80		5.0	0.47
591-78-6	2-Hexanone	9.75		5.0	0.25
108-10-1	4-Methyl-2-pentanone	10.2		5.0	0.22
67-64-1	Acetone	9.84		2.0	0.55
71-43-2	Benzene	9.82		1.0	0.10
75-25-2	Bromoform	11.1		1.0	0.17
74-83-9	Methyl bromide	8.79		2.0	0.25
75-15-0	Carbon disulfide	10.4		1.0	0.10
56-23-5	Carbon tetrachloride	10.2		1.0	0.18
108-90-7	Chlorobenzene	9.92		1.0	0.11
124-48-1	Chlorodibromomethane	10.6		1.0	0.14
75-00-3	Chloroethane	7.72		2.0	0.16
67-66-3	Chloroform	9.20		1.0	0.10
74-87-3	Chloromethane	9.01		2.0	0.10
156-59-2	cis-1,2-Dichloroethene	10.3		1.0	0.10
10061-01-5	cis-1,3-Dichloropropene	10.4		1.0	0.16
75-27-4	Bromodichloromethane	9.80		1.0	0.14
100-41-4	Ethylbenzene	9.03		1.0	0.12
106-93-4	1,2-Dibromoethane	10.3		1.0	0.13
75-09-2	Methylene Chloride	10.2		1.0	0.27
71-36-3	n-Butanol	262		50	12
100-42-5	Styrene	11.2		1.0	0.13
127-18-4	Tetrachloroethene	10.7		1.0	0.18
108-88-3	Toluene	10.4		1.0	0.14
156-60-5	trans-1,2-Dichloroethene	10.4		1.0	0.10
10061-02-6	trans-1,3-Dichloropropene	10.2		1.0	0.10

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 160-268249/16

Matrix: Water | Lab File ID: ZLCS8945.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 12:08

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268249 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	10.1		1.0	0.25
108-05-4	Vinyl acetate	9.22		2.0	0.18
75-01-4	Vinyl chloride	7.76		2.0	0.19
1330-20-7	Xylenes, Total	20.9		3.0	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	93		75-129
460-00-4	4-Bromofluorobenzene (Surr)	108		81-130
1868-53-7	Dibromofluoromethane (Surr)	109		81-124
2037-26-5	Toluene-d8 (Surr)	102		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZLCS8945.D
Lims ID: lcsd
Client ID:
Sample Type: LCSD
Inject. Date: 07-Sep-2016 12:08:30 ALS Bottle#: 13 Worklist Smp#: 16
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008404-016
Misc. Info.: LCSD
Operator ID: EF Instrument ID: VMSZ

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 07-Sep-2016 12:39:30 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: fishere Date: 07-Sep-2016 12:39:30

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.004	3.004	0.000	99	1358364	10.0	9.31	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.255	3.255	0.000	97	695437	10.0	10.0	
3 Chloromethane	50	3.325	3.325	0.000	98	1571417	10.0	9.01	
4 Vinyl chloride	62	3.493	3.493	0.000	98	1556984	10.0	7.76	
5 Butadiene	39	3.520	3.520	0.000	88	1285294	10.0	6.99	
6 Bromomethane	94	4.079	4.079	0.000	89	748728	10.0	8.79	
7 Chloroethane	64	4.317	4.317	0.000	99	787965	10.0	7.72	
8 Trichlorofluoromethane	101	4.554	4.554	0.000	98	1643558	10.0	10.3	
9 Dichlorofluoromethane	67	4.652	4.652	0.000	97	1762604	10.0	9.83	
10 Ethyl ether	74	5.043	5.043	0.000	90	444495	10.0	10.8	
11 Ethanol	45	5.266	5.266	0.000	99	115222	400.0	391.9	
12 1,1-Dichloroethene	96	5.364	5.364	0.000	95	1187401	10.0	10.7	
13 Carbon disulfide	76	5.406	5.406	0.000	99	3799010	10.0	10.4	
14 1,1,2-Trichloro-1,2,2-trif	151	5.434	5.434	0.000	90	1065037	10.0	10.8	
15 Iodomethane	142	5.574	5.574	0.000	97	1843827	10.0	11.1	
S 16 1,2-Dichloroethene, Total	96				0			20.7	
17 Acrolein	56	5.839	5.839	0.000	99	311082	50.0	55.4	
18 3-Chloro-1-propene	39	6.020	6.020	0.000	95	992755	10.0	8.69	
19 Isopropyl alcohol	45	6.034	6.034	0.000	97	172811	100.0	95.3	
20 Methylene Chloride	84	6.174	6.174	0.000	89	965023	10.0	10.2	
21 Acetone	43	6.230	6.230	0.000	99	91363	10.0	9.84	
22 trans-1,2-Dichloroethene	96	6.370	6.370	0.000	99	1190221	10.0	10.4	
23 Methyl acetate	74	6.370	6.370	0.000	97	313051	50.0	54.6	
24 Hexane	86	6.453	6.453	0.000	90	407356	10.0	11.3	
25 Methyl tert-butyl ether	73	6.481	6.481	0.000	89	1658567	10.0	10.4	
26 2-Methyl-2-propanol	59	6.593	6.593	0.000	99	280218	100.0	95.0	
27 Acetonitrile	41	6.817	6.817	0.000	98	341452	100.0	96.2	
28 Isopropyl ether	45	6.914	6.914	0.000	95	2664310	10.0	10.0	
29 2-Chloro-1,3-butadiene	53	7.068	7.068	0.000	88	1580349	10.0	10.2	
30 1,1-Dichloroethane	63	7.096	7.096	0.000	95	1843303	10.0	9.79	
31 Acrylonitrile	53	7.166	7.166	0.000	99	1293143	100.0	99.2	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
32 Tert-butyl ethyl ether	59	7.319	7.319	0.000	96	2190333	10.0	10.0	
33 Vinyl acetate	43	7.347	7.347	0.000	97	1086681	10.0	9.22	
34 cis-1,2-Dichloroethene	96	7.682	7.682	0.000	77	1184963	10.0	10.3	
35 2,2-Dichloropropane	77	7.794	7.794	0.000	87	1119638	10.0	9.63	
37 Chlorobromomethane	128	7.892	7.892	0.000	59	450606	10.0	10.6	
36 Cyclohexane	84	7.892	7.892	0.000	88	2047999	10.0	10.7	
38 Chloroform	83	7.948	7.948	0.000	92	1656218	10.0	9.20	
39 Ethyl acetate	45	8.032	8.032	0.000	99	96019	20.0	18.9	
40 Carbon tetrachloride	117	8.101	8.101	0.000	97	1477466	10.0	10.2	
41 Tetrahydrofuran	71	8.115	8.115	0.000	89	83974	20.0	20.3	
$ 42 Dibromofluoromethane (Surr	113	8.143	8.143	0.000	96	902850	10.0	10.9	
43 1,1,1-Trichloroethane	97	8.171	8.171	0.000	97	1587635	10.0	9.94	
44 2-Butanone (MEK)	43	8.255	8.255	0.000	96	141273	10.0	8.80	
45 1,1-Dichloropropene	75	8.283	8.283	0.000	97	1561774	10.0	10.4	
46 Isooctane	57	8.367	8.367	0.000	94	4782669	10.0	10.3	
47 n-Heptane	43	8.451	8.451	0.000	89	1971734	10.0	10.0	
48 Benzene	78	8.534	8.534	0.000	97	4154854	10.0	9.82	
50 Propionitrile	54	8.562	8.562	0.000	46	451358	100.0	95.3	
49 Methacrylonitrile	41	8.576	8.576	0.000	89	2335820	100.0	91.5	
51 Tert-amyl methyl ether	73	8.604	8.604	0.000	97	1906478	10.0	10.3	
52 Isobutyl alcohol	42	8.660	8.660	0.000	95	211890	250.0	256.0	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.674	8.674	0.000	88	660867	10.0	9.26	
54 1,2-Dichloroethane	62	8.730	8.730	0.000	96	762583	10.0	8.79	
* 55 Fluorobenzene	96	8.925	8.925	0.000	99	3842926	10.0	10.0	
57 Methylcyclohexane	55	9.079	9.079	0.000	85	1668731	10.0	9.97	
56 Trichloroethene	95	9.079	9.079	0.000	69	1190761	10.0	10.1	
59 n-Butanol	56	9.302	9.302	0.000	85	209164	250.0	261.9	
60 Dibromomethane	93	9.484	9.484	0.000	94	368739	10.0	9.62	
61 Ethyl acrylate	55	9.512	9.512	0.000	98	488499	10.0	10.6	
62 1,2-Dichloropropane	63	9.568	9.568	0.000	97	946048	10.0	9.86	
63 Dichlorobromomethane	83	9.610	9.610	0.000	100	1067657	10.0	9.80	
64 Methyl methacrylate	69	9.707	9.707	0.000	89	614727	20.0	21.8	
65 1,4-Dioxane	88	9.777	9.777	0.000	90	68091	200.0	183.3	
66 2-Chloroethyl vinyl ether	63	10.085	10.085	0.000	90	94570	10.0	11.0	
67 cis-1,3-Dichloropropene	75	10.182	10.182	0.000	98	1383989	10.0	10.4	
$ 68 Toluene-d8 (Surr)	98	10.350	10.350	0.000	92	3791624	10.0	10.2	
69 Toluene	92	10.392	10.392	0.000	99	2818060	10.0	10.4	
70 2-Nitropropane	43	10.615	10.615	0.000	97	150967	20.0	16.3	
71 4-Methyl-2-pentanone (MIBK	43	10.699	10.699	0.000	95	330037	10.0	10.2	
73 Tetrachloroethene	164	10.755	10.755	0.000	97	1177346	10.0	10.7	
72 trans-1,3-Dichloropropene	75	10.755	10.755	0.000	78	1059116	10.0	10.2	
74 Ethyl methacrylate	69	10.839	10.839	0.000	87	667246	10.0	11.4	
75 1,1,2-Trichloroethane	83	10.909	10.909	0.000	88	464296	10.0	9.68	
76 Chlorodibromomethane	129	11.090	11.090	0.000	92	738826	10.0	10.6	
77 1,3-Dichloropropane	76	11.174	11.174	0.000	87	1004250	10.0	10.1	
78 n-Butyl acetate	43	11.314	11.314	0.000	98	604976	10.0	10.1	
79 Ethylene Dibromide	107	11.342	11.342	0.000	99	510852	10.0	10.3	
80 2-Hexanone	43	11.439	11.439	0.000	97	225351	10.0	9.75	
81 1-Chlorohexane	91	11.705	11.705	0.000	98	1736157	10.0	10.7	
* 83 Chlorobenzene-d5	117	11.774	11.774	0.000	71	2885603	10.0	10.0	
82 Ethylbenzene	91	11.774	11.774	0.000	95	4998582	10.0	9.03	
84 Chlorobenzene	112	11.788	11.788	0.000	93	3013502	10.0	9.92	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
85 1,1,1,2-Tetrachloroethane	131	11.830	11.830	0.000	97	1015028	10.0	10.5	
86 m-Xylene & p-Xylene	106	11.900	11.900	0.000	99	2234121	10.0	10.3	
88 o-Xylene	106	12.305	12.305	0.000	95	2017825	10.0	10.6	
89 Styrene	104	12.361	12.361	0.000	94	2956672	10.0	11.2	
90 Bromoform	173	12.431	12.431	0.000	99	423681	10.0	11.1	
91 Isopropylbenzene	105	12.585	12.585	0.000	95	4928532	10.0	9.50	
$ 92 4-Bromofluorobenzene (Surr	95	12.878	12.878	0.000	98	1208943	10.0	10.8	
93 N-Propylbenzene	91	12.976	12.976	0.000	96	5571042	10.0	9.13	
94 Bromobenzene	156	13.003	13.003	0.000	89	1231582	10.0	10.3	
95 1,1,2,2-Tetrachloroethane	83	13.031	13.031	0.000	94	565154	10.0	9.44	
96 1,3,5-Trimethylbenzene	105	13.129	13.129	0.000	97	4001099	10.0	10.4	
97 2-Chlorotoluene	91	13.157	13.157	0.000	98	3773671	10.0	10.1	
98 1,2,3-Trichloropropane	110	13.199	13.199	0.000	83	179904	10.0	10.8	
99 trans-1,4-Dichloro-2-buten	53	13.199	13.199	0.000	82	128382	10.0	8.82	
100 Cyclohexanone	55	13.269	13.269	0.000	84	93465	100.0	86.5	
101 4-Chlorotoluene	91	13.311	13.311	0.000	95	3330583	10.0	10.4	
102 tert-Butylbenzene	119	13.450	13.450	0.000	92	3810661	10.0	10.2	
103 1,2,4-Trimethylbenzene	105	13.520	13.520	0.000	95	4027744	10.0	9.70	
104 sec-Butylbenzene	105	13.618	13.618	0.000	95	5363632	10.0	9.06	
105 4-Isopropyltoluene	119	13.744	13.744	0.000	95	4640226	10.0	9.44	
106 1,3-Dichlorobenzene	146	13.883	13.883	0.000	98	2353782	10.0	9.94	
107 1,2,3-Trimethylbenzene	105	13.953	13.953	0.000	95	3777336	10.0	9.14	
* 108 1,4-Dichlorobenzene-d4	152	13.953	13.953	0.000	92	1488550	10.0	10.0	
109 1,4-Dichlorobenzene	146	13.967	13.967	0.000	96	2376343	10.0	9.76	
110 n-Butylbenzene	134	14.163	14.163	0.000	94	1399900	10.0	10.2	
111 Benzyl chloride	126	14.191	14.191	0.000	81	271669	10.0	10.2	
112 1,2-Dichlorobenzene	146	14.386	14.386	0.000	99	1929727	10.0	9.74	
113 n-Nonyl Aldehyde	57	15.098	15.098	0.000	92	341639	10.0	9.81	
114 1,2-Dibromo-3-Chloropropan	157	15.182	15.182	0.000	87	97830	10.0	10.0	
115 1,3,5-Trichlorobenzene	180	15.196	15.196	0.000	97	1669071	10.0	10.0	
116 Hexachlorobutadiene	225	15.769	15.769	0.000	97	879023	10.0	9.90	
117 1,2,4-Trichlorobenzene	180	15.839	15.839	0.000	93	1108794	10.0	10.4	
118 Naphthalene	128	16.188	16.188	0.000	96	1290120	10.0	10.5	
120 1,2,3-Trichlorobenzene	180	16.383	16.383	0.000	95	670554	10.0	9.81	
S 119 Xylenes, Total	106				0			20.9	
S 130 Trihalomethanes, Total	1				0			40.7	

Reagents:

8260 Surr 25_00065	Amount Added: 10.00	Units: uL	
8260 NewWkMix_00182	Amount Added: 10.00	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent

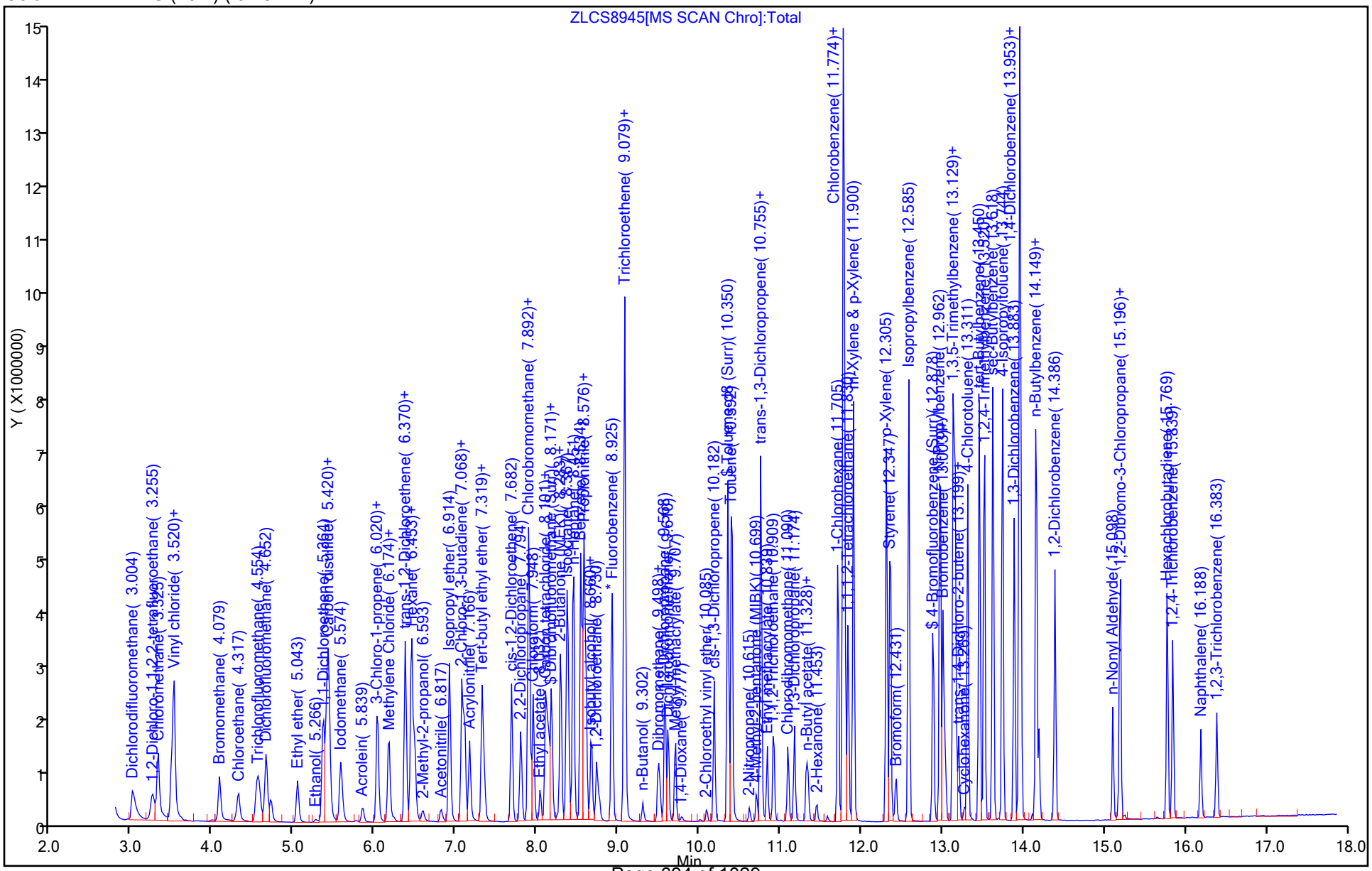
Report Date: 07-Sep-2016 12:39:31 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZLCS8945.D

Injection Date:	07-Sep-2016 12:08:30	Instrument ID:	VMSZ	Operator ID:	EF
Lims ID:	lcsd			Worklist Smp#:	16
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	13
Method:	25mL-8260-MSZ	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZLCS8945.D
Lims ID: lcsd
Client ID:
Sample Type: LCSD
Inject. Date: 07-Sep-2016 12:08:30 ALS Bottle#: 13 Worklist Smp#: 16
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: 160-0008404-016
Misc. Info.: LCSD
Operator ID: EF Instrument ID: VMSZ

Method: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\25mL-8260-MSZ.m
Limit Group: MSV-8260
Last Update: 07-Sep-2016 12:39:30 Calib Date: 07-Sep-2016 09:54:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSZ\20160907-8404.b\ZICL8940.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK019

First Level Reviewer: fishere Date: 07-Sep-2016 12:39:30

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.9	109.30
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	9.26	92.63
$ 68 Toluene-d8 (Surr)	10.0	10.2	102.41
$ 92 4-Bromofluorobenzene (Surr)	10.0	10.8	107.87

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 160-268257/33

Matrix: Water | Lab File ID: LLCS4961.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 11:48

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	9.25		1.0	0.17
79-34-5	1,1,2,2-Tetrachloroethane	10.0		1.0	0.10
79-00-5	1,1,2-Trichloroethane	9.76		1.0	0.13
75-35-4	1,1-Dichloroethene	9.73		1.0	0.10
75-34-3	1,1-Dichloroethane	10.1		1.0	0.070
120-82-1	1,2,4-Trichlorobenzene	9.48		1.0	0.10
96-12-8	1,2-Dibromo-3-Chloropropane	8.86		1.0	0.41
107-06-2	1,2-Dichloroethane	9.07		1.0	0.22
540-59-0	1,2-Dichloroethene, Total	19.8		2.0	0.14
78-87-5	1,2-Dichloropropane	10.6		1.0	0.10
78-93-3	2-Butanone	10.4		5.0	0.47
591-78-6	2-Hexanone	10.4		5.0	0.25
108-10-1	4-Methyl-2-pentanone	10.5		5.0	0.22
67-64-1	Acetone	10.7		2.0	0.55
71-43-2	Benzene	10.4		1.0	0.10
75-25-2	Bromoform	8.70		1.0	0.17
74-83-9	Methyl bromide	9.27		2.0	0.25
75-15-0	Carbon disulfide	9.88		1.0	0.10
56-23-5	Carbon tetrachloride	9.01		1.0	0.18
108-90-7	Chlorobenzene	10.3		1.0	0.11
124-48-1	Chlorodibromomethane	8.98		1.0	0.14
75-00-3	Chloroethane	10.7		2.0	0.16
67-66-3	Chloroform	9.51		1.0	0.10
74-87-3	Chloromethane	9.42		2.0	0.10
156-59-2	cis-1,2-Dichloroethene	9.94		1.0	0.10
10061-01-5	cis-1,3-Dichloropropene	10.3		1.0	0.16
75-27-4	Bromodichloromethane	9.34		1.0	0.14
100-41-4	Ethylbenzene	10.8		1.0	0.12
106-93-4	1,2-Dibromoethane	9.25		1.0	0.13
75-09-2	Methylene Chloride	8.72		1.0	0.27
71-36-3	n-Butanol	212		50	12
100-42-5	Styrene	11.3		1.0	0.13
127-18-4	Tetrachloroethene	10.3		1.0	0.18
108-88-3	Toluene	11.0		1.0	0.14
156-60-5	trans-1,2-Dichloroethene	9.83		1.0	0.10
10061-02-6	trans-1,3-Dichloropropene	10.1		1.0	0.10

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 160-268257/33

Matrix: Water | Lab File ID: LLCS4961.D

Analysis Method: 8260C | Date Collected:

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 11:48

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	10.2		1.0	0.25
108-05-4	Vinyl acetate	11.3		2.0	0.18
75-01-4	Vinyl chloride	10.2		2.0	0.19
1330-20-7	Xylenes, Total	22.4		3.0	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	95		75-129
460-00-4	4-Bromofluorobenzene (Surr)	110		81-130
1868-53-7	Dibromofluoromethane (Surr)	100		81-124
2037-26-5	Toluene-d8 (Surr)	112		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LLCS4961.D
Lims ID: LCSD
Client ID:
Sample Type: LCSD
Inject. Date: 07-Sep-2016 11:48:30 ALS Bottle#: 4 Worklist Smp#: 33
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: LCSD
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:40:20 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 07-Sep-2016 14:19:33

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	546720	10.0	7.62	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	98	224774	10.0	6.94	M
3 Chloromethane	50	3.474	3.474	0.000	99	860542	10.0	9.42	
4 Vinyl chloride	62	3.642	3.642	0.000	98	717782	10.0	10.2	
5 Butadiene	39	3.669	3.669	0.000	98	864067	10.0	10.9	
6 Bromomethane	94	4.256	4.256	0.000	91	248098	10.0	9.27	
7 Chloroethane	64	4.479	4.479	0.000	98	387156	10.0	10.7	
8 Trichlorofluoromethane	101	4.731	4.731	0.000	98	765732	10.0	8.80	
9 Dichlorofluoromethane	67	4.829	4.829	0.000	98	862730	10.0	10.0	
10 Ethyl ether	74	5.234	5.234	0.000	96	140306	10.0	9.69	
11 Ethanol	45	5.457	5.457	0.000	100	67317	400.0	388.0	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	93	422999	10.0	9.73	
13 Carbon disulfide	76	5.583	5.583	0.000	100	1513803	10.0	9.88	
14 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	90	382896	10.0	8.98	
16 Iodomethane	142	5.750	5.750	0.000	99	299966	10.0	10.5	
S 15 1,2-Dichloroethene, Total	96				0			19.8	
17 Acrolein	56	6.030	6.030	0.000	99	110432	50.0	54.9	
18 3-Chloro-1-propene	39	6.197	6.197	0.000	90	642849	10.0	10.6	
19 Isopropyl alcohol	45	6.225	6.225	0.000	97	82183	100.0	89.8	
20 Methylene Chloride	84	6.337	6.337	0.000	95	331596	10.0	8.72	
21 Acetone	43	6.407	6.407	0.000	100	50232	10.0	10.7	
22 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	94	439772	10.0	9.83	
23 Methyl acetate	74	6.546	6.546	0.000	100	91805	50.0	46.9	
24 Hexane	86	6.630	6.630	0.000	96	159414	10.0	10.7	
25 Methyl tert-butyl ether	73	6.658	6.658	0.000	91	535089	10.0	9.14	
27 Acetonitrile	41	6.979	6.979	0.000	99	187592	100.0	95.2	
28 Isopropyl ether	45	7.091	7.091	0.000	96	1382201	10.0	11.0	
26 2-Methyl-2-propanol	59	7.091	7.091	0.000	33	134742	100.0	103.3	
29 2-Chloro-1,3-butadiene	53	7.231	7.231	0.000	94	974068	10.0	11.1	
30 1,1-Dichloroethane	63	7.259	7.259	0.000	96	841891	10.0	10.1	
31 Acrylonitrile	53	7.329	7.329	0.000	98	567327	100.0	99.3	
32 Tert-butyl ethyl ether	59	7.482	7.482	0.000	98	899288	10.0	9.92	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
33 Vinyl acetate	43	7.510	7.510	0.000	97	592744	10.0	11.3	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	83	415511	10.0	9.94	
35 2,2-Dichloropropane	77	7.957	7.957	0.000	93	740883	10.0	9.87	
37 Chlorobromomethane	128	8.055	8.055	0.000	48	128524	10.0	9.10	
36 Cyclohexane	84	8.055	8.055	0.000	95	798337	10.0	10.7	
38 Chloroform	83	8.097	8.097	0.000	96	684926	10.0	9.51	
39 Ethyl acetate	45	8.195	8.195	0.000	99	46220	20.0	20.7	
40 Carbon tetrachloride	117	8.264	8.264	0.000	98	650686	10.0	9.01	
41 Tetrahydrofuran	71	8.278	8.278	0.000	93	23131	20.0	18.8	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	95	299354	10.0	10.0	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	97	742107	10.0	9.25	
45 2-Butanone (MEK)	43	8.404	8.404	0.000	97	67904	10.0	10.4	
47 1,1-Dichloropropene	75	8.446	8.446	0.000	91	658554	10.0	10.6	
44 Isooctane	57	8.516	8.516	0.000	97	2617115	10.0	11.7	
46 n-Heptane	43	8.600	8.600	0.000	98	1337380	10.0	12.5	
48 Benzene	78	8.683	8.683	0.000	97	1702496	10.0	10.4	
49 Propionitrile	54	8.711	8.711	0.000	94	201269	100.0	97.0	
50 Methacrylonitrile	41	8.725	8.725	0.000	97	1257283	100.0	103.5	
51 Tert-amyl methyl ether	73	8.753	8.753	0.000	93	610752	10.0	9.35	
52 Isobutyl alcohol	42	8.809	8.809	0.000	92	96119	250.0	238.1	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	94	301021	10.0	9.50	
54 1,2-Dichloroethane	62	8.879	8.879	0.000	96	381848	10.0	9.07	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1559003	10.0	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	64	475856	10.0	10.2	
58 Methylcyclohexane	55	9.228	9.228	0.000	97	967294	10.0	11.4	
59 n-Butanol	56	9.451	9.451	0.000	96	76605	250.0	211.6	
61 Dibromomethane	93	9.633	9.633	0.000	97	122119	10.0	8.81	
60 Ethyl acrylate	55	9.661	9.661	0.000	99	184260	10.0	9.63	
62 1,2-Dichloropropane	63	9.717	9.717	0.000	91	397023	10.0	10.6	
63 Dichlorobromomethane	83	9.759	9.759	0.000	98	405869	10.0	9.34	
64 Methyl methacrylate	69	9.843	9.843	0.000	93	190477	20.0	20.4	
65 1,4-Dioxane	88	9.940	9.940	0.000	93	19745	200.0	162.2	
66 2-Chloroethyl vinyl ether	63	10.234	10.234	0.000	91	27128	10.0	7.21	
67 cis-1,3-Dichloropropene	75	10.317	10.317	0.000	90	487348	10.0	10.3	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	1526591	10.0	11.2	
69 Toluene	92	10.541	10.541	0.000	98	1122941	10.0	11.0	
70 2-Nitropropane	43	10.750	10.750	0.000	98	85905	20.0	19.5	
71 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	99	143918	10.0	10.5	
72 trans-1,3-Dichloropropene	75	10.890	10.890	0.000	94	372125	10.0	10.1	
73 Tetrachloroethene	164	10.904	10.904	0.000	97	426281	10.0	10.3	
74 Ethyl methacrylate	69	10.974	10.974	0.000	95	206456	10.0	8.80	
75 1,1,2-Trichloroethane	83	11.058	11.058	0.000	94	152882	10.0	9.76	
76 Chlorodibromomethane	129	11.225	11.225	0.000	91	224192	10.0	8.98	
77 1,3-Dichloropropane	76	11.309	11.309	0.000	98	336806	10.0	9.71	
78 n-Butyl acetate	43	11.449	11.449	0.000	97	259850	10.0	10.2	
79 Ethylene Dibromide	107	11.477	11.477	0.000	99	158954	10.0	9.25	
80 2-Hexanone	43	11.588	11.588	0.000	98	93890	10.0	10.4	
81 1-Chlorohexane	91	11.840	11.840	0.000	85	718854	10.0	12.2	
* 83 Chlorobenzene-d5	117	11.910	11.910	0.000	89	1042071	10.0	10.0	
82 Ethylbenzene	91	11.910	11.910	0.000	98	2208153	10.0	10.8	
84 Chlorobenzene	112	11.923	11.923	0.000	88	1103209	10.0	10.3	
85 1,1,1,2-Tetrachloroethane	131	11.965	11.965	0.000	93	348062	10.0	9.48	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
86 m-Xylene & p-Xylene	106	12.035	12.035	0.000	98	846174	10.0	11.2	
88 o-Xylene	106	12.440	12.440	0.000	99	728028	10.0	11.2	
89 Styrene	104	12.482	12.482	0.000	95	1096160	10.0	11.3	
90 Bromoform	173	12.552	12.552	0.000	95	111793	10.0	8.70	
91 Isopropylbenzene	105	12.720	12.720	0.000	96	2196525	10.0	11.5	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	85	482784	10.0	11.0	
93 N-Propylbenzene	91	13.097	13.097	0.000	98	2703386	10.0	12.1	
94 Bromobenzene	156	13.139	13.139	0.000	96	413243	10.0	9.96	
95 1,1,2,2-Tetrachloroethane	83	13.166	13.166	0.000	96	180079	10.0	10.0	
96 1,3,5-Trimethylbenzene	105	13.264	13.264	0.000	95	1765950	10.0	11.7	
97 2-Chlorotoluene	91	13.292	13.292	0.000	96	1659333	10.0	11.1	
99 1,2,3-Trichloropropane	110	13.320	13.320	0.000	84	54660	10.0	8.84	
98 trans-1,4-Dichloro-2-buten	53	13.334	13.334	0.000	83	60471	10.0	9.59	
100 Cyclohexanone	55	13.404	13.404	0.000	87	41282	100.0	104.8	
101 4-Chlorotoluene	91	13.446	13.446	0.000	98	1475029	10.0	11.3	
102 tert-Butylbenzene	119	13.585	13.585	0.000	94	1678639	10.0	11.6	
103 1,2,4-Trimethylbenzene	105	13.655	13.655	0.000	97	1750376	10.0	11.5	
104 sec-Butylbenzene	105	13.753	13.753	0.000	96	2574982	10.0	11.9	
105 4-Isopropyltoluene	119	13.879	13.879	0.000	97	2182072	10.0	11.9	
106 1,3-Dichlorobenzene	146	14.018	14.018	0.000	99	898843	10.0	10.1	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	73	523106	10.0	10.0	
107 1,2,3-Trimethylbenzene	105	14.088	14.088	0.000	96	1563857	10.0	10.6	
109 1,4-Dichlorobenzene	146	14.102	14.102	0.000	95	878858	10.0	9.95	
111 n-Butylbenzene	134	14.284	14.284	0.000	97	576202	10.0	11.9	
110 Benzyl chloride	126	14.326	14.326	0.000	63	82387	10.0	10.1	
112 1,2-Dichlorobenzene	146	14.521	14.521	0.000	98	704454	10.0	9.76	
113 n-Nonyl Aldehyde	57	15.233	15.233	0.000	82	148879	10.0	10.0	
115 1,2-Dibromo-3-Chloropropan	157	15.303	15.303	0.000	80	30730	10.0	8.86	
114 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	97	717640	10.0	10.1	
116 Hexachlorobutadiene	225	15.904	15.904	0.000	97	416653	10.0	10.3	
117 1,2,4-Trichlorobenzene	180	15.974	15.974	0.000	94	514462	10.0	9.48	
118 Naphthalene	128	16.337	16.337	0.000	97	511472	10.0	8.35	
S 119 Xylenes, Total	106				0			22.4	
120 1,2,3-Trichlorobenzene	180	16.532	16.532	0.000	96	400779	10.0	9.06	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

8260 NewWkMix_00182	Amount Added: 10.00	Units: uL	
I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

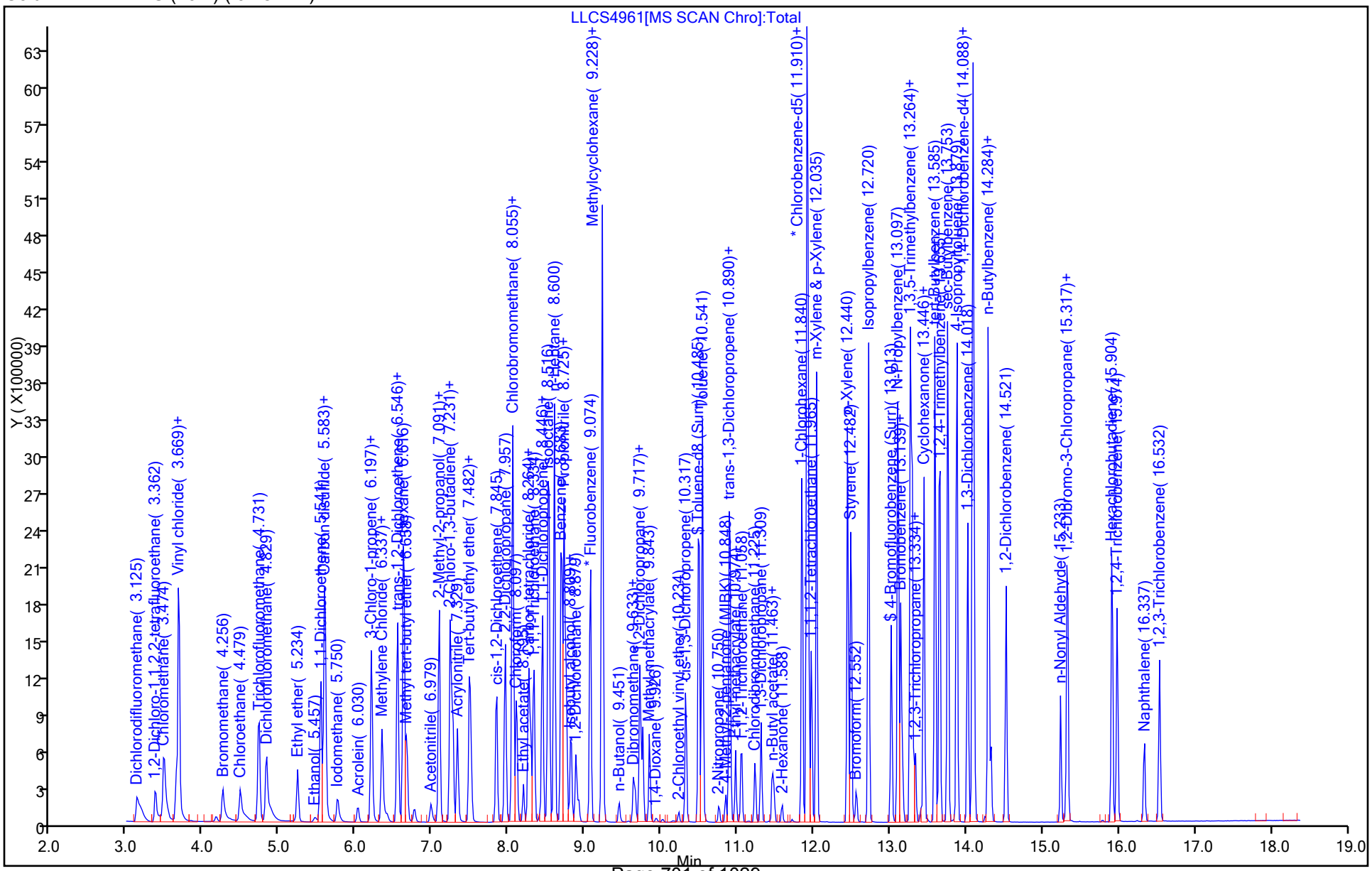
Report Date: 08-Sep-2016 08:40:20 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LLCS4961.D

Injection Date:	07-Sep-2016 11:48:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	LCSD			Worklist Smp#:	33
Client ID:					
Purge Vol:	25.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	4
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LLCS4961.D
Lims ID: LCSD
Client ID:
Sample Type: LCSD
Inject. Date: 07-Sep-2016 11:48:30 ALS Bottle#: 4 Worklist Smp#: 33
Purge Vol: 25.000 mL Dil. Factor: 1.0000
Sample Info: LCSD
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:40:20 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 07-Sep-2016 14:19:33

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.0	99.93
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	9.50	94.99
$ 68 Toluene-d8 (Surr)	10.0	11.2	112.22
$ 92 4-Bromofluorobenzene (Surr)	10.0	11.0	109.99

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR08JC-082516-MS MS | Lab Sample ID: 160-18852-7 MS

Matrix: Water | Lab File ID: LSMP4965.D

Analysis Method: 8260C | Date Collected: 08/25/2016 10:40

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 13:29

Soil Aliquot Vol: | Dilution Factor: 500

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	4670		500	86
79-34-5	1,1,2,2-Tetrachloroethane	4990		500	50
79-00-5	1,1,2-Trichloroethane	4940		500	66
75-35-4	1,1-Dichloroethene	4890		500	50
75-34-3	1,1-Dichloroethane	5330		500	35
120-82-1	1,2,4-Trichlorobenzene	4660		500	50
96-12-8	1,2-Dibromo-3-Chloropropane	4250		500	210
107-06-2	1,2-Dichloroethane	4730		500	110
540-59-0	1,2-Dichloroethene, Total	11800		1000	69
78-87-5	1,2-Dichloropropane	5350		500	50
78-93-3	2-Butanone	5280		2500	230
591-78-6	2-Hexanone	4970		2500	120
108-10-1	4-Methyl-2-pentanone	5050		2500	110
67-64-1	Acetone	4900		1000	280
71-43-2	Benzene	5240		500	50
75-25-2	Bromoform	4400		500	85
74-83-9	Methyl bromide	5020		1000	130
75-15-0	Carbon disulfide	4960		500	50
56-23-5	Carbon tetrachloride	4590		500	91
108-90-7	Chlorobenzene	5070		500	55
124-48-1	Chlorodibromomethane	4490		500	72
75-00-3	Chloroethane	5340		1000	82
67-66-3	Chloroform	4820		500	50
74-87-3	Chloromethane	4470		1000	51
156-59-2	cis-1,2-Dichloroethene	6980		500	50
10061-01-5	cis-1,3-Dichloropropene	5170		500	79
75-27-4	Bromodichloromethane	4820		500	69
100-41-4	Ethylbenzene	5330		500	61
106-93-4	1,2-Dibromoethane	4590		500	65
75-09-2	Methylene Chloride	4420		500	140
71-36-3	n-Butanol	105000		25000	6200
100-42-5	Styrene	5560		500	67
127-18-4	Tetrachloroethene	6210		500	90
108-88-3	Toluene	5390		500	70
156-60-5	trans-1,2-Dichloroethene	4860		500	52
10061-02-6	trans-1,3-Dichloropropene	5090		500	50

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR08JC-082516-MS MS | Lab Sample ID: 160-18852-7 MS

Matrix: Water | Lab File ID: LSMP4965.D

Analysis Method: 8260C | Date Collected: 08/25/2016 10:40

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 13:29

Soil Aliquot Vol: | Dilution Factor: 500

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	11600		500	130
108-05-4	Vinyl acetate	5860		1000	90
75-01-4	Vinyl chloride	5000		1000	97
1330-20-7	Xylenes, Total	10900		1500	130

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	98		75-129
460-00-4	4-Bromofluorobenzene (Surr)	108		81-130
1868-53-7	Dibromofluoromethane (Surr)	101		81-124
2037-26-5	Toluene-d8 (Surr)	109		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4965.D
Lims ID: 160-18852-A-7 MS
Client ID: GW-BR08JC-082516-MS
Sample Type: MS
Inject. Date: 07-Sep-2016 13:29:30 ALS Bottle#: 8 Worklist Smp#: 12
Purge Vol: 25.000 mL Dil. Factor: 500.0000
Sample Info: 160-0008407-012
Misc. Info.: 160-18852-b-7 ms
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:40:20 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:07:10

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	487093		7.26	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	99	213836		7.05	M
3 Chloromethane	50	3.488	3.474	0.014	99	763878		8.94	
4 Vinyl chloride	62	3.641	3.642	-0.001	98	654778		10.0	
5 Butadiene	39	3.669	3.669	0.000	98	778469		10.5	
6 Bromomethane	94	4.256	4.256	0.000	92	251228		10.0	
7 Chloroethane	64	4.479	4.479	0.000	98	362838		10.7	
8 Trichlorofluoromethane	101	4.731	4.731	0.000	99	722220		8.87	
9 Dichlorofluoromethane	67	4.829	4.829	0.000	98	810902		10.1	
10 Ethyl ether	74	5.234	5.234	0.000	95	131391		9.70	
11 Ethanol	45	5.457	5.457	0.000	99	64330		396.3	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	93	397784		9.79	
13 Carbon disulfide	76	5.583	5.583	0.000	100	1422820		9.93	
14 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	91	355661		8.92	
16 Iodomethane	142	5.764	5.750	0.014	99	184731		7.35	
S 15 1,2-Dichloroethene, Total	96				0			23.7	
17 Acrolein	56	6.030	6.030	0.000	99	95786		50.9	
18 3-Chloro-1-propene	39	6.197	6.197	0.000	90	610796		10.8	
19 Isopropyl alcohol	45	6.225	6.225	0.000	97	79261		92.6	
20 Methylene Chloride	84	6.337	6.337	0.000	95	314471		8.83	
21 Acetone	43	6.407	6.407	0.000	98	43181		9.81	
22 trans-1,2-Dichloroethene	96	6.546	6.546	0.000	94	406605		9.72	
23 Methyl acetate	74	6.546	6.546	0.000	100	88807		48.5	
24 Hexane	86	6.630	6.630	0.000	96	146175		10.5	
25 Methyl tert-butyl ether	73	6.658	6.658	0.000	90	509070		9.30	
27 Acetonitrile	41	6.979	6.979	0.000	99	186583		101.2	
28 Isopropyl ether	45	7.091	7.091	0.000	95	1300936		11.1	
26 2-Methyl-2-propanol	59	7.091	7.091	0.000	33	126534		103.7	
29 2-Chloro-1,3-butadiene	53	7.231	7.231	0.000	94	909438		11.1	
30 1,1-Dichloroethane	63	7.259	7.259	0.000	96	830399		10.7	
31 Acrylonitrile	53	7.329	7.329	0.000	98	543299		101.7	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
32 Tert-butyl ethyl ether	59	7.482	7.482	0.000	97	852516		10.0	
33 Vinyl acetate	43	7.510	7.510	0.000	97	573298		11.7	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	83	546104		14.0	
35 2,2-Dichloropropane	77	7.957	7.957	0.000	93	687861		9.80	
37 Chlorobromomethane	128	8.055	8.055	0.000	89	123571		9.36	
36 Cyclohexane	84	8.055	8.055	0.000	96	736903		10.6	
38 Chloroform	83	8.097	8.097	0.000	96	649853		9.64	
39 Ethyl acetate	45	8.194	8.195	0.000	99	42915		20.6	
40 Carbon tetrachloride	117	8.264	8.264	0.000	98	620374		9.18	
41 Tetrahydrofuran	71	8.278	8.278	0.000	92	21833		19.0	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	95	283250	10.0	10.1	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	98	700791		9.33	
45 2-Butanone (MEK)	43	8.404	8.404	0.000	96	64663		10.6	
47 1,1-Dichloropropene	75	8.446	8.446	0.000	91	611862		10.6	
44 Isooctane	57	8.530	8.516	0.014	97	2426416		11.6	
46 n-Heptane	43	8.599	8.600	-0.001	98	1246617		12.4	
48 Benzene	78	8.697	8.683	0.014	98	1609653		10.5	
49 Propionitrile	54	8.711	8.711	0.000	95	196996		101.5	
50 Methacrylonitrile	41	8.725	8.725	0.000	98	1242632		109.3	
51 Tert-amyl methyl ether	73	8.753	8.753	0.000	93	590158		9.66	
52 Isobutyl alcohol	42	8.809	8.809	0.000	93	94740		250.3	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	95	290648	10.0	9.80	
54 1,2-Dichloroethane	62	8.879	8.879	0.000	96	372354		9.46	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1458427	10.0	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	95	1012175		23.2	
58 Methylcyclohexane	55	9.228	9.228	0.000	92	908361		11.5	
56 1,4-Difluorobenzene	114		9.256					ND	
59 n-Butanol	56	9.451	9.451	0.000	97	70828		209.4	
61 Dibromomethane	93	9.633	9.633	0.000	95	122883		9.47	
60 Ethyl acrylate	55	9.661	9.661	0.000	99	174032		9.72	
62 1,2-Dichloropropane	63	9.717	9.717	0.000	90	376184		10.7	
63 Dichlorobromomethane	83	9.759	9.759	0.000	98	391728		9.64	
64 Methyl methacrylate	69	9.842	9.843	-0.001	92	181283		20.7	
65 1,4-Dioxane	88	9.940	9.940	0.000	94	19116		167.6	
66 2-Chloroethyl vinyl ether	63	10.234	10.234	0.000	91	26570		7.55	
67 cis-1,3-Dichloropropene	75	10.317	10.317	0.000	90	458164		10.3	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	1430119	10.0	10.9	
69 Toluene	92	10.541	10.541	0.000	98	1057122		10.8	
70 2-Nitropropane	43	10.750	10.750	0.000	97	80130		19.0	
71 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	99	133580		10.1	
72 trans-1,3-Dichloropropene	75	10.890	10.890	0.000	92	360010		10.2	
73 Tetrachloroethene	164	10.904	10.904	0.000	97	495923		12.4	
74 Ethyl methacrylate	69	10.974	10.974	0.000	95	197531		8.76	
75 1,1,2-Trichloroethane	83	11.058	11.058	0.000	94	148584		9.87	
76 Chlorodibromomethane	129	11.225	11.225	0.000	91	215500		8.99	
77 1,3-Dichloropropane	76	11.309	11.309	0.000	98	324495		9.73	
78 n-Butyl acetate	43	11.449	11.449	0.000	97	245416		10.0	
79 Ethylene Dibromide	107	11.477	11.477	0.000	99	151696		9.19	
80 2-Hexanone	43	11.588	11.588	0.000	98	86213		9.93	
81 1-Chlorohexane	91	11.840	11.840	0.000	85	664647		11.7	
* 83 Chlorobenzene-d5	117	11.909	11.910	-0.001	68	1001362	10.0	10.0	
82 Ethylbenzene	91	11.909	11.910	-0.001	98	2089389		10.7	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
84 Chlorobenzene	112	11.923	11.923	0.000	87	1048045		10.1	
85 1,1,1,2-Tetrachloroethane	131	11.965	11.965	0.000	92	330854		9.38	
86 m-Xylene & p-Xylene	106	12.035	12.035	0.000	98	789501		10.9	
88 o-Xylene	106	12.440	12.440	0.000	99	683792		11.0	
89 Styrene	104	12.482	12.482	0.000	95	1038908		11.1	
90 Bromoform	173	12.552	12.552	0.000	96	109991		8.80	
91 Isopropylbenzene	105	12.720	12.720	0.000	96	2057574		11.1	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	84	459609	10.0	10.8	
93 N-Propylbenzene	91	13.097	13.097	0.000	99	2531425		11.7	
94 Bromobenzene	156	13.138	13.139	-0.001	96	394183		9.77	
95 1,1,2,2-Tetrachloroethane	83	13.166	13.166	0.000	96	174754		9.99	
96 1,3,5-Trimethylbenzene	105	13.264	13.264	0.000	96	1646177		11.2	
97 2-Chlorotoluene	91	13.292	13.292	0.000	96	1596437		11.0	
99 1,2,3-Trichloropropane	110	13.320	13.320	0.000	86	53614		8.92	
98 trans-1,4-Dichloro-2-buten	53	13.334	13.334	0.000	84	60207		9.82	
100 Cyclohexanone	55	13.404	13.404	0.000	87	34763		90.8	
101 4-Chlorotoluene	91	13.446	13.446	0.000	98	1395782		11.0	
102 tert-Butylbenzene	119	13.585	13.585	0.000	95	1580035		11.2	
87 Pentachloroethane	167	13.641	13.655	-0.014	1	938		0.0477	7
103 1,2,4-Trimethylbenzene	105	13.655	13.655	0.000	97	1655315		11.1	
104 sec-Butylbenzene	105	13.753	13.753	0.000	96	2404719		11.4	
105 4-Isopropyltoluene	119	13.879	13.879	0.000	97	2046919		11.5	
106 1,3-Dichlorobenzene	146	14.018	14.018	0.000	99	858619		9.96	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	73	508600	10.0	10.0	
107 1,2,3-Trimethylbenzene	105	14.088	14.088	0.000	96	1498942		10.5	
109 1,4-Dichlorobenzene	146	14.102	14.102	0.000	95	849267		9.89	
111 n-Butylbenzene	134	14.284	14.284	0.000	98	538905		11.5	
110 Benzyl chloride	126	14.326	14.326	0.000	77	79949		10.0	
112 1,2-Dichlorobenzene	146	14.521	14.521	0.000	97	674027		9.61	
113 n-Nonyl Aldehyde	57	15.233	15.233	0.000	83	120459		8.57	
115 1,2-Dibromo-3-Chloropropan	157	15.303	15.303	0.000	77	28626		8.49	
114 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	97	688541		10.0	
116 Hexachlorobutadiene	225	15.918	15.904	0.014	98	390652		9.91	
117 1,2,4-Trichlorobenzene	180	15.974	15.974	0.000	94	491682		9.32	
118 Naphthalene	128	16.337	16.337	0.000	97	470245		7.89	
S 119 Xylenes, Total	106				0			21.8	
120 1,2,3-Trichlorobenzene	180	16.532	16.532	0.000	96	387428		9.01	
121 2-Pentanone	1		0.000					ND	
S 130 Trihalomethanes, Total	1		0.000					ND	

QC Flag Legend

Processing Flags

7 - Failed Limit of Detection

Review Flags

M - Manually Integrated

Reagents:

I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

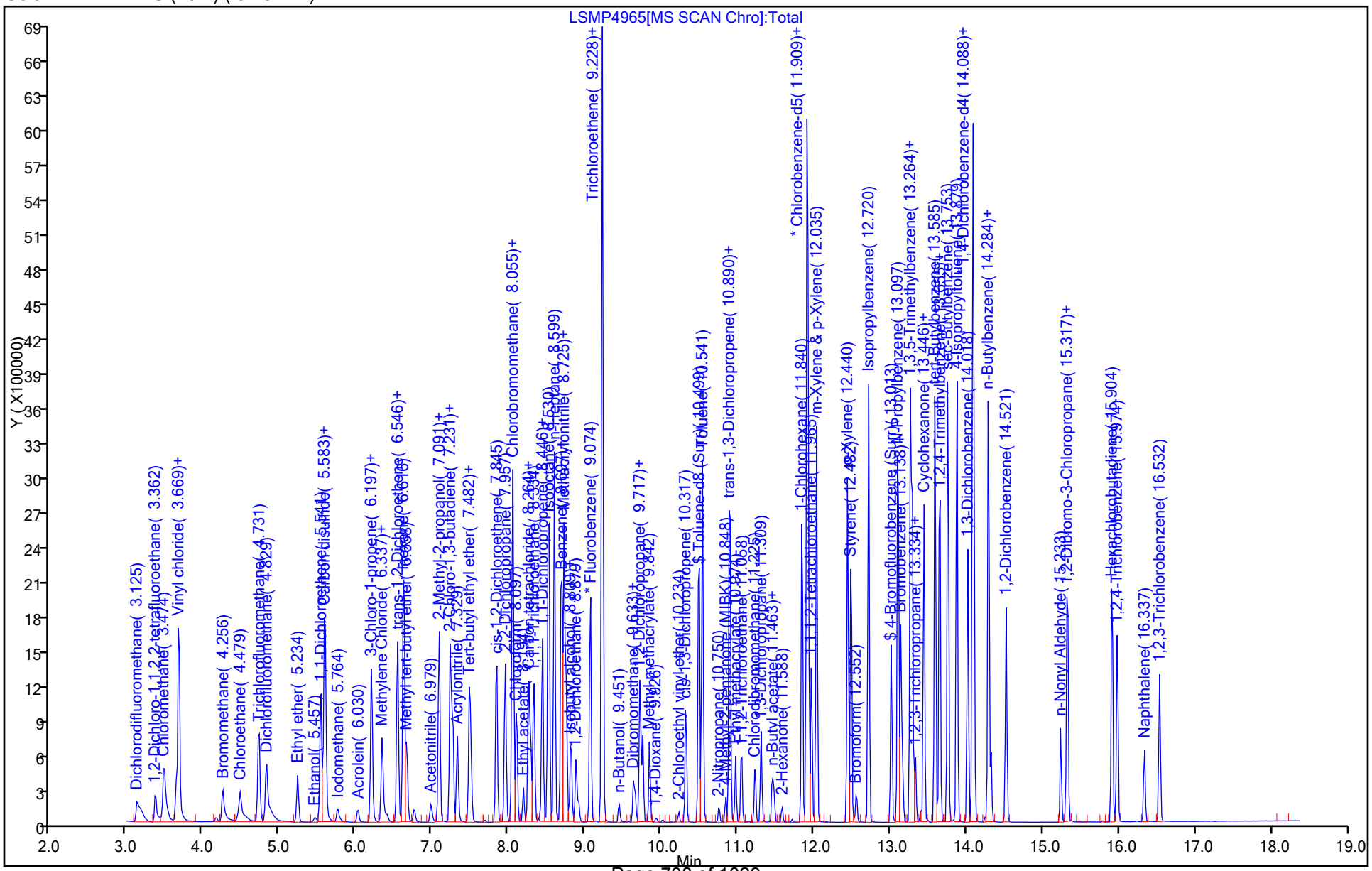
Report Date: 08-Sep-2016 08:40:25 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4965.D

Injection Date:	07-Sep-2016 13:29:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	160-18852-A-7 MS			Worklist Smp#:	12
Client ID:	GW-BR08JC-082516-MS				
Purge Vol:	25.000 mL	Dil. Factor:	500.0000	ALS Bottle#:	8
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4965.D
Lims ID: 160-18852-A-7 MS
Client ID: GW-BR08JC-082516-MS
Sample Type: MS
Inject. Date: 07-Sep-2016 13:29:30 ALS Bottle#: 8 Worklist Smp#: 12
Purge Vol: 25.000 mL Dil. Factor: 500.0000
Sample Info: 160-0008407-012
Misc. Info.: 160-18852-b-7 ms
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:40:20 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:07:10

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	10.1	101.07
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	9.80	98.04
$ 68 Toluene-d8 (Surr)	10.0	10.9	109.40
$ 92 4-Bromofluorobenzene (Surr)	10.0	10.8	107.69

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR08JC-082516-MSD MSD | Lab Sample ID: 160-18852-7 MSD

Matrix: Water | Lab File ID: LSMP4966.D

Analysis Method: 8260C | Date Collected: 08/25/2016 10:40

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 13:54

Soil Aliquot Vol: | Dilution Factor: 500

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	4580		500	86
79-34-5	1,1,2,2-Tetrachloroethane	4990		500	50
79-00-5	1,1,2-Trichloroethane	4940		500	66
75-35-4	1,1-Dichloroethene	4810		500	50
75-34-3	1,1-Dichloroethane	5260		500	35
120-82-1	1,2,4-Trichlorobenzene	4740		500	50
96-12-8	1,2-Dibromo-3-Chloropropane	4620		500	210
107-06-2	1,2-Dichloroethane	4680		500	110
540-59-0	1,2-Dichloroethene, Total	11800		1000	69
78-87-5	1,2-Dichloropropane	5290		500	50
78-93-3	2-Butanone	5320		2500	230
591-78-6	2-Hexanone	5230		2500	120
108-10-1	4-Methyl-2-pentanone	5410		2500	110
67-64-1	Acetone	5040		1000	280
71-43-2	Benzene	5170		500	50
75-25-2	Bromoform	4410		500	85
74-83-9	Methyl bromide	4800		1000	130
75-15-0	Carbon disulfide	4840		500	50
56-23-5	Carbon tetrachloride	4510		500	91
108-90-7	Chlorobenzene	5060		500	55
124-48-1	Chlorodibromomethane	4600		500	72
75-00-3	Chloroethane	5320		1000	82
67-66-3	Chloroform	4730		500	50
74-87-3	Chloromethane	4550		1000	51
156-59-2	cis-1,2-Dichloroethene	6880		500	50
10061-01-5	cis-1,3-Dichloropropene	5190		500	79
75-27-4	Bromodichloromethane	4770		500	69
100-41-4	Ethylbenzene	5310		500	61
106-93-4	1,2-Dibromoethane	4730		500	65
75-09-2	Methylene Chloride	4360		500	140
71-36-3	n-Butanol	112000		25000	6200
100-42-5	Styrene	5600		500	67
127-18-4	Tetrachloroethene	6140		500	90
108-88-3	Toluene	5390		500	70
156-60-5	trans-1,2-Dichloroethene	4880		500	52
10061-02-6	trans-1,3-Dichloropropene	5150		500	50

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica St. Louis | Job No.: 160-18852-1

SDG No.:

Client Sample ID: GW-BR08JC-082516-MSD MSD | Lab Sample ID: 160-18852-7 MSD

Matrix: Water | Lab File ID: LSMP4966.D

Analysis Method: 8260C | Date Collected: 08/25/2016 10:40

Sample wt/vol: 25(mL) | Date Analyzed: 09/07/2016 13:54

Soil Aliquot Vol: | Dilution Factor: 500

Soil Extract Vol.: | GC Column: RTX-VMS40 ID: 0.18(mm)

% Moisture: | Level: (low/med) Low

Analysis Batch No.: 268257 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	11500		500	130
108-05-4	Vinyl acetate	5940		1000	90
75-01-4	Vinyl chloride	5150		1000	97
1330-20-7	Xylenes, Total	11000		1500	130

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	98		75-129
460-00-4	4-Bromofluorobenzene (Surr)	108		81-130
1868-53-7	Dibromofluoromethane (Surr)	100		81-124
2037-26-5	Toluene-d8 (Surr)	109		87-128

TestAmerica St. Louis
Target Compound Quantitation Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4966.D
Lims ID: 160-18852-A-7 MSD
Client ID: GW-BR08JC-082516-MSD
Sample Type: MSD
Inject. Date: 07-Sep-2016 13:54:30 ALS Bottle#: 9 Worklist Smp#: 13
Purge Vol: 25.000 mL Dil. Factor: 500.0000
Sample Info: 160-0008407-013
Misc. Info.: 160-18852-b-7 msd
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:40:20 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:09:28

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
1 Dichlorodifluoromethane	85	3.125	3.125	0.000	99	502494		7.24	
2 1,2-Dichloro-1,1,2,2-tetra	135	3.376	3.376	0.000	99	212422		6.77	M
3 Chloromethane	50	3.474	3.474	0.000	99	805194		9.10	
4 Vinyl chloride	62	3.642	3.642	0.000	98	698898		10.3	
5 Butadiene	39	3.669	3.669	0.000	98	823417		10.8	
6 Bromomethane	94	4.256	4.256	0.000	91	248838		9.60	
7 Chloroethane	64	4.480	4.479	0.001	98	374124		10.6	
8 Trichlorofluoromethane	101	4.717	4.731	-0.014	98	734440		8.72	
9 Dichlorofluoromethane	67	4.829	4.829	0.000	98	828821		9.97	
10 Ethyl ether	74	5.234	5.234	0.000	95	137667		9.82	
11 Ethanol	45	5.457	5.457	0.000	100	69055		411.2	
12 1,1-Dichloroethene	96	5.541	5.541	0.000	93	404791		9.62	
13 Carbon disulfide	76	5.583	5.583	0.000	100	1433748		9.67	
14 1,1,2-Trichloro-1,2,2-trif	151	5.597	5.597	0.000	90	362321		8.78	
16 Iodomethane	142	5.764	5.750	0.014	99	217023		8.17	
S 15 1,2-Dichloroethene, Total	96				0			23.5	
17 Acrolein	56	6.030	6.030	0.000	99	105471		54.2	
18 3-Chloro-1-propene	39	6.197	6.197	0.000	90	621294		10.6	
19 Isopropyl alcohol	45	6.225	6.225	0.000	97	86409		97.6	
20 Methylene Chloride	84	6.337	6.337	0.000	95	320970		8.72	
21 Acetone	43	6.407	6.407	0.000	98	45840		10.1	
22 trans-1,2-Dichloroethene	96	6.547	6.546	0.000	94	422193		9.75	
23 Methyl acetate	74	6.547	6.546	0.000	100	94196		49.8	
24 Hexane	86	6.630	6.630	0.000	96	152024		10.5	
25 Methyl tert-butyl ether	73	6.658	6.658	0.000	91	546695		9.65	
27 Acetonitrile	41	6.979	6.979	0.000	99	194581		102.0	
28 Isopropyl ether	45	7.091	7.091	0.000	95	1357383		11.2	
26 2-Methyl-2-propanol	59	7.091	7.091	0.000	33	132457		105.0	
29 2-Chloro-1,3-butadiene	53	7.231	7.231	0.000	94	926094		10.9	
30 1,1-Dichloroethane	63	7.259	7.259	0.000	95	848392		10.5	
31 Acrylonitrile	53	7.329	7.329	0.000	98	569205		103.0	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
32 Tert-butyl ethyl ether	59	7.482	7.482	0.000	98	896947		10.2	
33 Vinyl acetate	43	7.510	7.510	0.000	97	601870		11.9	
34 cis-1,2-Dichloroethene	96	7.845	7.845	0.000	84	556335		13.8	
35 2,2-Dichloropropane	77	7.957	7.957	0.000	93	697133		9.60	
37 Chlorobromomethane	128	8.055	8.055	0.000	90	128455		9.40	
36 Cyclohexane	84	8.055	8.055	0.000	96	754958		10.5	
38 Chloroform	83	8.097	8.097	0.000	96	659322		9.46	
39 Ethyl acetate	45	8.195	8.195	0.001	99	45994		21.3	
40 Carbon tetrachloride	117	8.264	8.264	0.000	98	630362		9.02	
41 Tetrahydrofuran	71	8.278	8.278	0.000	94	22464		18.9	
$ 42 Dibromofluoromethane (Surr	113	8.292	8.292	0.000	95	289362	10.0	9.98	
43 1,1,1-Trichloroethane	97	8.334	8.334	0.000	97	711956		9.16	
45 2-Butanone (MEK)	43	8.404	8.404	0.000	96	67460		10.6	
47 1,1-Dichloropropene	75	8.446	8.446	0.000	91	628398		10.5	
44 Isooctane	57	8.530	8.516	0.014	97	2467655		11.4	
46 n-Heptane	43	8.600	8.600	0.000	98	1280427		12.4	
48 Benzene	78	8.697	8.683	0.014	98	1643919		10.3	
49 Propionitrile	54	8.711	8.711	0.000	94	204278		101.8	
50 Methacrylonitrile	41	8.725	8.725	0.000	97	1292090		109.9	
51 Tert-amyl methyl ether	73	8.753	8.753	0.000	98	616294		9.75	
52 Isobutyl alcohol	42	8.809	8.809	0.000	93	101449		258.6	
$ 53 1,2-Dichloroethane-d4 (Sur	65	8.823	8.823	0.000	94	299453	10.0	9.76	
54 1,2-Dichloroethane	62	8.879	8.879	0.000	96	381027		9.35	
* 55 Fluorobenzene	96	9.074	9.074	0.000	98	1508819	10.0	10.0	
57 Trichloroethene	95	9.228	9.228	0.000	95	1038715		23.1	
58 Methylcyclohexane	55	9.228	9.228	0.000	91	919841		11.2	
56 1,4-Difluorobenzene	114		9.256					ND	
59 n-Butanol	56	9.451	9.451	0.000	97	78817		223.2	
61 Dibromomethane	93	9.633	9.633	0.000	97	123952		9.24	
60 Ethyl acrylate	55	9.661	9.661	0.000	99	188268		10.2	
62 1,2-Dichloropropane	63	9.717	9.717	0.000	90	384604		10.6	
63 Dichlorobromomethane	83	9.759	9.759	0.000	98	401469		9.55	
64 Methyl methacrylate	69	9.843	9.843	0.000	93	193342		21.4	
65 1,4-Dioxane	88	9.940	9.940	0.000	94	21259		179.7	
66 2-Chloroethyl vinyl ether	63	10.234	10.234	0.000	92	30090		8.26	
67 cis-1,3-Dichloropropene	75	10.317	10.317	0.000	90	475564		10.4	
$ 68 Toluene-d8 (Surr)	98	10.499	10.499	0.000	94	1458608	10.0	10.9	
69 Toluene	92	10.541	10.541	0.000	98	1082817		10.8	
70 2-Nitropropane	43	10.750	10.750	0.000	97	85396		19.7	
71 4-Methyl-2-pentanone (MIBK	43	10.848	10.848	0.000	99	146405		10.8	
72 trans-1,3-Dichloropropene	75	10.890	10.890	0.000	92	372884		10.3	
73 Tetrachloroethene	164	10.904	10.904	0.000	97	502115		12.3	
74 Ethyl methacrylate	69	10.974	10.974	0.000	95	210515		9.10	
75 1,1,2-Trichloroethane	83	11.058	11.058	0.000	94	152472		9.89	
76 Chlorodibromomethane	129	11.225	11.225	0.000	91	225868		9.20	
77 1,3-Dichloropropane	76	11.309	11.309	0.000	98	338467		9.91	
78 n-Butyl acetate	43	11.449	11.449	0.000	97	264981		10.6	
79 Ethylene Dibromide	107	11.477	11.477	0.000	98	159894		9.45	
80 2-Hexanone	43	11.588	11.588	0.000	98	93000		10.5	
81 1-Chlorohexane	91	11.840	11.840	0.000	85	675565		11.6	
* 83 Chlorobenzene-d5	117	11.910	11.910	0.000	66	1025836	10.0	10.0	
82 Ethylbenzene	91	11.910	11.910	0.000	98	2134137		10.6	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	Cal Amt ug/l	OnCol Amt ug/l	Flags
84 Chlorobenzene	112	11.924	11.923	0.001	90	1071784		10.1	
85 1,1,1,2-Tetrachloroethane	131	11.965	11.965	0.000	93	342221		9.47	
86 m-Xylene & p-Xylene	106	12.035	12.035	0.000	98	812222		10.9	
88 o-Xylene	106	12.440	12.440	0.000	99	707695		11.1	
89 Styrene	104	12.482	12.482	0.000	95	1071274		11.2	
90 Bromoform	173	12.566	12.552	0.014	99	113138		8.82	
91 Isopropylbenzene	105	12.720	12.720	0.000	96	2107135		11.0	
$ 92 4-Bromofluorobenzene (Surr	95	13.013	13.013	0.000	84	473468	10.0	10.8	
93 N-Propylbenzene	91	13.097	13.097	0.000	99	2583402		11.6	
94 Bromobenzene	156	13.139	13.139	0.000	97	406564		9.81	
95 1,1,2,2-Tetrachloroethane	83	13.167	13.166	0.000	97	179451		9.99	
96 1,3,5-Trimethylbenzene	105	13.264	13.264	0.000	94	1703708		11.3	
97 2-Chlorotoluene	91	13.292	13.292	0.000	96	1620164		10.8	
99 1,2,3-Trichloropropane	110	13.334	13.320	0.014	86	57031		9.24	
98 trans-1,4-Dichloro-2-buten	53	13.334	13.334	0.000	82	62992		10.0	
100 Cyclohexanone	55	13.404	13.404	0.000	87	37961		96.5	
101 4-Chlorotoluene	91	13.446	13.446	0.000	98	1431321		11.0	
102 tert-Butylbenzene	119	13.585	13.585	0.000	94	1611970		11.2	
87 Pentachloroethane	167	13.641	13.655	-0.014	1	1518		0.0752	7
103 1,2,4-Trimethylbenzene	105	13.655	13.655	0.000	97	1701041		11.1	
104 sec-Butylbenzene	105	13.753	13.753	0.000	96	2449981		11.3	
105 4-Isopropyltoluene	119	13.879	13.879	0.000	97	2089561		11.4	
106 1,3-Dichlorobenzene	146	14.018	14.018	0.000	99	879445		9.94	
* 108 1,4-Dichlorobenzene-d4	152	14.088	14.088	0.000	74	522250	10.0	10.0	
107 1,2,3-Trimethylbenzene	105	14.088	14.088	0.000	97	1537423		10.5	
109 1,4-Dichlorobenzene	146	14.102	14.102	0.000	95	871206		9.88	
111 n-Butylbenzene	134	14.284	14.284	0.000	98	551360		11.4	
110 Benzyl chloride	126	14.326	14.326	0.000	70	80409		9.83	
112 1,2-Dichlorobenzene	146	14.521	14.521	0.000	97	693398		9.63	
113 n-Nonyl Aldehyde	57	15.234	15.233	0.001	82	142755		9.68	
115 1,2-Dibromo-3-Chloropropan	157	15.303	15.303	0.000	79	31996		9.24	
114 1,3,5-Trichlorobenzene	180	15.331	15.331	0.000	98	707392		10.0	
116 Hexachlorobutadiene	225	15.918	15.904	0.014	98	397911		9.83	
117 1,2,4-Trichlorobenzene	180	15.974	15.974	0.000	95	513759		9.48	
118 Naphthalene	128	16.337	16.337	0.000	97	518687		8.48	
S 119 Xylenes, Total	106				0			22.0	
120 1,2,3-Trichlorobenzene	180	16.532	16.532	0.000	96	399170		9.04	
121 2-Pentanone	1		0.000					ND	
S 130 Trihalomethanes, Total	1		0.000					ND	

QC Flag Legend

Processing Flags

7 - Failed Limit of Detection

Review Flags

M - Manually Integrated

Reagents:

I.S. Working_00135	Amount Added: 10.00	Units: uL	Run Reagent
8260 Surr 25_00065	Amount Added: 10.00	Units: uL	Run Reagent

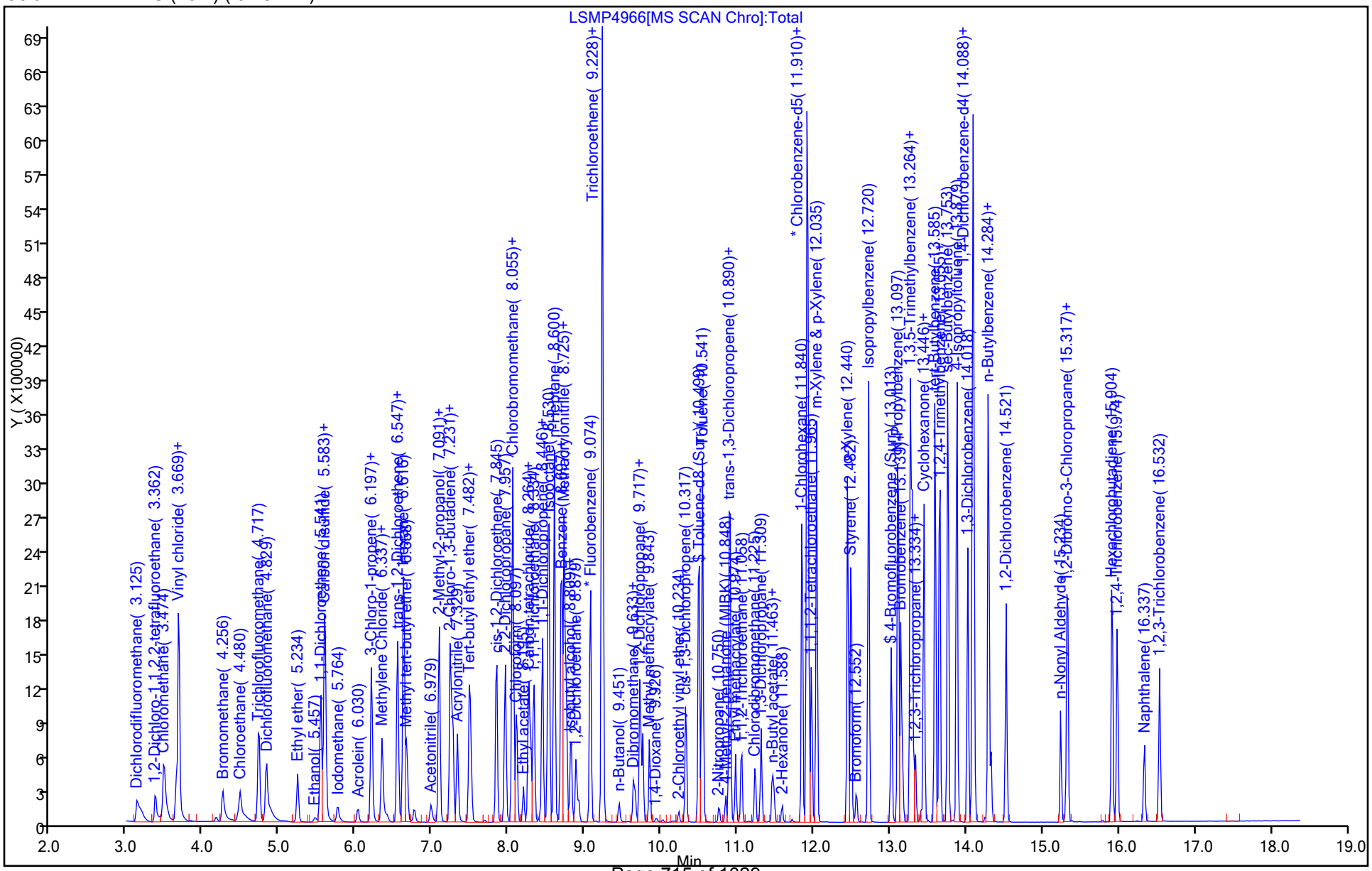
Report Date: 08-Sep-2016 08:40:27 Chrom Revision: 2.2 20-Apr-2016 13:59:46

TestAmerica St. Louis

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4966.D

Injection Date:	07-Sep-2016 13:54:30	Instrument ID:	VMSL	Operator ID:	SMCR
Lims ID:	160-18852-A-7 MSD			Worklist Smp#:	13
Client ID:	GW-BR08JC-082516-MSD				
Purge Vol:	25.000 mL	Dil. Factor:	500.0000	ALS Bottle#:	9
Method:	25mL-8260-MSL	Limit Group:	MSV-8260		

Column: RTX-VMS (40m) (0.18 mm)



TestAmerica St. Louis
Recovery Report

Data File: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\LSMP4966.D
Lims ID: 160-18852-A-7 MSD
Client ID: GW-BR08JC-082516-MSD
Sample Type: MSD
Inject. Date: 07-Sep-2016 13:54:30 ALS Bottle#: 9 Worklist Smp#: 13
Purge Vol: 25.000 mL Dil. Factor: 500.0000
Sample Info: 160-0008407-013
Misc. Info.: 160-18852-b-7 msd
Operator ID: SMCR Instrument ID: VMSL

Method: \\ChromNA\StLouis\ChromData\VMSL\20160907-8407.b\25mL-8260-MSL.m
Limit Group: MSV-8260
Last Update: 08-Sep-2016 08:40:20 Calib Date: 22-Aug-2016 13:49:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\StLouis\ChromData\VMSL\20160822-8266.b\LICL4710.D

Column 1 : RTX-VMS (40m) (0.18 mm) Det: MS SCAN
Process Host: XAWRK021

First Level Reviewer: rhoadess Date: 08-Sep-2016 08:09:28

Compound	Amount Added	Amount Recovered	% Rec.
$ 42 Dibromofluoromethane (Surr)	10.0	9.98	99.81
$ 53 1,2-Dichloroethane-d4 (Surr)	10.0	9.76	97.63
$ 68 Toluene-d8 (Surr)	10.0	10.9	108.92
$ 92 4-Bromofluorobenzene (Surr)	10.0	10.8	108.04

GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Instrument ID: VMSL Start Date: 08/22/2016 10:29

Analysis Batch Number: 265937 End Date: 08/22/2016 21:48

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 160-265937/1		08/22/2016 10:29	1	LBFB4702.D	RTX-VMS40 0.18(mm)
IC 160-265937/6		08/22/2016 11:18	1	LICL4704.D	RTX-VMS40 0.18(mm)
IC 160-265937/7		08/22/2016 11:43	1	LICL4705.D	RTX-VMS40 0.18(mm)
IC 160-265937/8		08/22/2016 12:08	1	LICL4706.D	RTX-VMS40 0.18(mm)
IC 160-265937/9		08/22/2016 12:33	1	LICL4707.D	RTX-VMS40 0.18(mm)
ICIS 160-265937/10		08/22/2016 12:59	1	LICL4708.D	RTX-VMS40 0.18(mm)
IC 160-265937/11		08/22/2016 13:24	1	LICL4709.D	RTX-VMS40 0.18(mm)
IC 160-265937/12		08/22/2016 13:49	1	LICL4710.D	RTX-VMS40 0.18(mm)
ICV 160-265937/14		08/22/2016 14:40	1	LICV4712.D	RTX-VMS40 0.18(mm)
ZZZZZ		08/22/2016 15:05	1		RTX-VMS40 0.18(mm)
ZZZZZ		08/22/2016 15:30	1		RTX-VMS40 0.18(mm)
ZZZZZ		08/22/2016 15:55	1		RTX-VMS40 0.18(mm)
ZZZZZ		08/22/2016 16:21	1		RTX-VMS40 0.18(mm)
ZZZZZ		08/22/2016 16:46	1		RTX-VMS40 0.18(mm)
ZZZZZ		08/22/2016 17:11	1		RTX-VMS40 0.18(mm)
ZZZZZ		08/22/2016 17:36	1		RTX-VMS40 0.18(mm)
ZZZZZ		08/22/2016 18:27	5		RTX-VMS40 0.18(mm)
ZZZZZ		08/22/2016 18:52	5		RTX-VMS40 0.18(mm)
ZZZZZ		08/22/2016 19:17	5		RTX-VMS40 0.18(mm)
ZZZZZ		08/22/2016 19:42	5		RTX-VMS40 0.18(mm)
ZZZZZ		08/22/2016 20:07	2.5		RTX-VMS40 0.18(mm)
ZZZZZ		08/22/2016 20:32	1		RTX-VMS40 0.18(mm)
ZZZZZ		08/22/2016 20:57	1		RTX-VMS40 0.18(mm)
ZZZZZ		08/22/2016 21:23	1		RTX-VMS40 0.18(mm)
ZZZZZ		08/22/2016 21:48	1		RTX-VMS40 0.18(mm)

GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Instrument ID: VMSL Start Date: 09/04/2016 09:30

Analysis Batch Number: 267958 End Date: 09/04/2016 20:47

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 160-267958/1		09/04/2016 09:30	1	LBFB4848.D	RTX-VMS40 0.18(mm)
CCVIS 160-267958/5		09/04/2016 09:52	1	LCCV4849.D	RTX-VMS40 0.18(mm)
LCS 160-267958/6		09/04/2016 10:18	1	LLCS4850.D	RTX-VMS40 0.18(mm)
LCSD 160-267958/7		09/04/2016 10:43	1	LLCS4851.D	RTX-VMS40 0.18(mm)
ZZZZZ		09/04/2016 11:08	1		RTX-VMS40 0.18(mm)
MB 160-267958/9		09/04/2016 11:33	1	LBLK4853.D	RTX-VMS40 0.18(mm)
ZZZZZ		09/04/2016 11:58	1		RTX-VMS40 0.18(mm)
ZZZZZ		09/04/2016 12:24	1		RTX-VMS40 0.18(mm)
ZZZZZ		09/04/2016 12:49	1		RTX-VMS40 0.18(mm)
ZZZZZ		09/04/2016 13:39	5		RTX-VMS40 0.18(mm)
ZZZZZ		09/04/2016 14:04	5		RTX-VMS40 0.18(mm)
ZZZZZ		09/04/2016 14:30	1		RTX-VMS40 0.18(mm)
ZZZZZ		09/04/2016 14:55	1		RTX-VMS40 0.18(mm)
ZZZZZ		09/04/2016 15:20	1		RTX-VMS40 0.18(mm)
ZZZZZ		09/04/2016 15:45	1		RTX-VMS40 0.18(mm)
ZZZZZ		09/04/2016 16:10	1		RTX-VMS40 0.18(mm)
ZZZZZ		09/04/2016 16:36	25		RTX-VMS40 0.18(mm)
160-18852-1		09/04/2016 17:01	1	LSMP4866.D	RTX-VMS40 0.18(mm)
160-18852-2		09/04/2016 17:26	1	LSMP4867.D	RTX-VMS40 0.18(mm)
160-18852-3		09/04/2016 17:51	50	LSMP4868.D	RTX-VMS40 0.18(mm)
160-18852-4		09/04/2016 18:16	1	LSMP4869.D	RTX-VMS40 0.18(mm)
160-18852-5		09/04/2016 18:41	50	LSMP4870.D	RTX-VMS40 0.18(mm)
160-18852-6		09/04/2016 19:06	500	LSMP4871.D	RTX-VMS40 0.18(mm)
ZZZZZ		09/04/2016 19:32	2.5		RTX-VMS40 0.18(mm)
ZZZZZ		09/04/2016 19:57	5		RTX-VMS40 0.18(mm)
160-18852-5		09/04/2016 20:22	5	LSMP4874.D	RTX-VMS40 0.18(mm)
ZZZZZ		09/04/2016 20:47	50		RTX-VMS40 0.18(mm)

GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Instrument ID: VMSZ Start Date: 09/07/2016 06:52

Analysis Batch Number: 268249 End Date: 09/07/2016 18:25

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 160-268249/1		09/07/2016 06:52	1	ZBFB8932.D	RTX-VMS40 0.18(mm)
IC 160-268249/5		09/07/2016 07:32	1	ZICL8934.D	RTX-VMS40 0.18(mm)
IC 160-268249/6		09/07/2016 07:55	1	ZICL8935.D	RTX-VMS40 0.18(mm)
IC 160-268249/7		09/07/2016 08:19	1	ZICL8936.D	RTX-VMS40 0.18(mm)
IC 160-268249/8		09/07/2016 08:43	1	ZICL8937.D	RTX-VMS40 0.18(mm)
ICIS 160-268249/9		09/07/2016 09:07	1	ZICL8938.D	RTX-VMS40 0.18(mm)
IC 160-268249/10		09/07/2016 09:30	1	ZICL8939.D	RTX-VMS40 0.18(mm)
IC 160-268249/11		09/07/2016 09:54	1	ZICL8940.D	RTX-VMS40 0.18(mm)
ICV 160-268249/14		09/07/2016 11:05	1	ZICV8943.D	RTX-VMS40 0.18(mm)
LCS 160-268249/15		09/07/2016 11:44	1	ZLCS8944.D	RTX-VMS40 0.18(mm)
LCSD 160-268249/16		09/07/2016 12:08	1	ZLCS8945.D	RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 12:32	1		RTX-VMS40 0.18(mm)
MB 160-268249/18		09/07/2016 12:55	1	ZBLK8947.D	RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 13:19	1		RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 13:42	1		RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 14:06	1		RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 14:30	1		RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 14:54	1		RTX-VMS40 0.18(mm)
160-18852-11		09/07/2016 15:17	25	ZSMP8953.D	RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 16:02	500		RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 16:26	250		RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 16:50	1		RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 17:14	5		RTX-VMS40 0.18(mm)
160-18852-11		09/07/2016 17:37	2.5	ZSMP8958.D	RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 18:01	50		RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 18:25	25		RTX-VMS40 0.18(mm)

GC/MS VOA ANALYSIS RUN LOG

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Instrument ID: VMSL Start Date: 09/07/2016 10:09

Analysis Batch Number: 268257 End Date: 09/07/2016 21:28

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
BFB 160-268257/1		09/07/2016 10:09	1	LBFB4957.D	RTX-VMS40 0.18(mm)
CCVIS 160-268257/7		09/07/2016 10:58	1	LLCS4959.D	RTX-VMS40 0.18(mm)
LCS 160-268257/8		09/07/2016 11:23	1	LLCS4960.D	RTX-VMS40 0.18(mm)
LCSD 160-268257/33		09/07/2016 11:48	1	LLCS4961.D	RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 12:13	1		RTX-VMS40 0.18(mm)
MB 160-268257/10		09/07/2016 12:38	1	LBLK4963.D	RTX-VMS40 0.18(mm)
160-18852-7		09/07/2016 13:03	500	LSMP4964.D	RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 13:29	500		RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 13:54	500		RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 14:44	10		RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 15:09	1		RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 15:35	1		RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 16:00	50		RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 16:25	2.5		RTX-VMS40 0.18(mm)
160-18852-3		09/07/2016 16:50	5	LSMP4973.D	RTX-VMS40 0.18(mm)
160-18852-6		09/07/2016 17:16	50	LSMP4974.D	RTX-VMS40 0.18(mm)
160-18852-8		09/07/2016 17:41	100	LSMP4975.D	RTX-VMS40 0.18(mm)
160-18852-9		09/07/2016 18:06	500	LSMP4976.D	RTX-VMS40 0.18(mm)
160-18852-10		09/07/2016 18:31	25	LSMP4977.D	RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 18:57	1		RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 19:22	5		RTX-VMS40 0.18(mm)
160-18852-7		09/07/2016 19:47	50	LSMP4980.D	RTX-VMS40 0.18(mm)
160-18852-8		09/07/2016 20:12	10	LSMP4981.D	RTX-VMS40 0.18(mm)
160-18852-9		09/07/2016 20:37	50	LSMP4982.D	RTX-VMS40 0.18(mm)
160-18852-10		09/07/2016 21:02	2.5	LSMP4983.D	RTX-VMS40 0.18(mm)
ZZZZZ		09/07/2016 21:28	1		RTX-VMS40 0.18(mm)

ALPHA SPECTROSCOPY

Method A-01-R U

Isotopic Uranium (Alpha Spectrometry) by Method A-01-R

Prep Batch: 268210

Preparation, Extraction Chromatography Resin Actinide Separation

Alpha Spectroscopy Analysis Detail Report
Prep Batch: 268210

Lab ID: MB 160-268210/1-A
Client ID:
Sigma: 2
Analyzed: 09/12/16 14:59
Detector: AV205
Dil Fac: 1
Decay Corrected: No
Yield Truncated: Yes
Ts: 400

Analyte	MB Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Uranium 238	0.01836	0.0367	0.0367	U	pCi/L	0.100	0.0551	269255
Uranium 234	-0.01533	0.0217	0.0217	U G	pCi/L	0.100	0.121	269255
Uranium-235/236	0.0000	0.0191	0.0191	U	pCi/L	0.100	0.0687	269255

Tracer	MB Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Uranium 232	3.656	0.373	0.483		pCi/L	0.0526	7.41	51.8	30 - 110

Lab ID: LCS 160-268210/2-A
Client ID:
Sigma: 2
Analyzed: 09/09/16 12:48
Detector: AV161
Dil Fac: 1
Decay Corrected: No
Yield Truncated: Yes
Ts: 400

Analyte	LCS Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Uranium 238	6.272	0.627	0.819		pCi/L	0.100	0.0866	268755
Uranium 234	5.851	0.608	0.782		pCi/L	0.100	0.136	268755

Tracer	LCS Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Uranium 232	3.882	0.367	0.491		pCi/L	0.0745	7.41	55.0	30 - 110

Lab ID: LCSD 160-268210/3-A
Client ID:
Sigma: 2
Analyzed: 09/09/16 12:48
Detector: AV162
Dil Fac: 1
Decay Corrected: No
Yield Truncated: Yes
Ts: 400

Analyte	LCSD Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Uranium 238	6.185	0.670	0.848		pCi/L	0.100	0.100	268756
Uranium 234	6.532	0.689	0.880		pCi/L	0.100	0.0544	268756

Tracer	LCSD Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Uranium 232	3.327	0.338	0.439		pCi/L	0.0738	7.41	47.2	30 - 110

Lab ID: 160-18852-2
Client ID: GW-BR10RB-082516
Sigma: 2
Analyzed: 09/12/16 15:01
Detector: AV206
Dil Fac: 1
Decay Corrected: No
Yield Truncated: Yes
Ts: 800

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Uranium 238	0.125	0.0590	0.0599		pCi/L	0.100	0.0209	269256
Uranium 234	3.21	0.301	0.404		pCi/L	0.100	0.0700	269256
Uranium-235/236	0.00867	0.0173	0.0174	U	pCi/L	0.100	0.0260	269256

Alpha Spectroscopy Analysis Detail Report
Prep Batch: 268210

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Uranium 232	4.65	0.294	0.489		pCi/L	0.0631	7.41	66.0	30 - 110

Lab ID: 160-18852-3
Client ID: GW-GWJJ-082516
Sigma: 2
Analyzed: 09/09/16 12:48
Detector: AV166
Dil Fac: 1
Decay Corrected: No
Yield Truncated: Yes
Ts: 400

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Uranium 238	0.0692	0.0687	0.0689	U	pCi/L	0.100	0.0835	268758
Uranium 234	0.00882	0.0328	0.0328	U	pCi/L	0.100	0.0836	268758
Uranium-235/236	0.000	0.0157	0.0157	U	pCi/L	0.100	0.0565	268758

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Uranium 232	4.27	0.397	0.535		pCi/L	0.0927	7.41	60.6	30 - 110

Lab ID: 160-18852-4
Client ID: GW-BR13JC-082516
Sigma: 2
Analyzed: 09/12/16 15:01
Detector: AV207
Dil Fac: 1
Decay Corrected: No
Yield Truncated: Yes
Ts: 800

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Uranium 238	0.299	0.0922	0.0955		pCi/L	0.100	0.0213	269257
Uranium 234	4.16	0.345	0.490		pCi/L	0.100	0.0504	269257
Uranium-235/236	0.0709	0.0502	0.0505		pCi/L	0.100	0.0266	269257

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Uranium 232	4.44	0.283	0.468		pCi/L	0.0541	7.41	63.0	30 - 110

Lab ID: 160-18852-5
Client ID: GW-BR04JC-082516
Sigma: 2
Analyzed: 09/09/16 12:48
Detector: AV168
Dil Fac: 1
Decay Corrected: No
Yield Truncated: Yes
Ts: 400

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Uranium 238	0.461	0.163	0.167		pCi/L	0.100	0.0781	268760
Uranium 234	3.32	0.435	0.516		pCi/L	0.100	0.0931	268760
Uranium-235/236	0.0705	0.0705	0.0707		pCi/L	0.100	0.0529	268760

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Uranium 232	4.44	0.398	0.546		pCi/L	0.0817	7.41	62.9	30 - 110

Alpha Spectroscopy Analysis Detail Report
Prep Batch: 268210

Lab ID: 160-18852-11
Client ID: GW-NB34-082516
Sigma: 2

Analyzed: 09/09/16 12:48
Detector: AV169
Dil Fac: 1

Decay Corrected: No
Yield Truncated: Yes
Ts: 400

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Uranium 238	0.0728	0.0648	0.0651		pCi/L	0.100	0.0721	268761
Uranium 234	0.0621	0.0667	0.0669	U	pCi/L	0.100	0.0964	268761
Uranium-235/236	-0.00677	0.0135	0.0136	U	pCi/L	0.100	0.0899	268761

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Uranium 232	4.97	0.429	0.599		pCi/L	0.0844	7.41	70.5	30 - 110

Quality Control Summary

Method Blank ID:	Analyte	Parent Result	Spike Added	MB Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
MB 160-268210/1-A	Uranium 238			0.01836	U	pCi/L							.99911917
MB 160-268210/1-A	Uranium 234			-0.01533	U G	pCi/L							-1.41172545
MB 160-268210/1-A	Uranium-235/236			0.0000	U	pCi/L							.

Lab Control Sample ID:	Analyte	Parent Result	Spike Added	LCS Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
LCS 160-268210/2-A	Uranium 238		6.51	6.272		pCi/L	96	83 - 121	1				-.403324913
LCS 160-268210/2-A	Uranium 234		6.37	5.851		pCi/L	92	84 - 120	11				-.8956313639

Lab Control Sample Duplicate	Analyte	Parent Result	Spike Added	LCSD Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
LCSD 160-268210/3-A	Uranium 238		6.51	6.185		pCi/L	95	83 - 121	1	0.05	0.15	1	-.5283761412
LCSD 160-268210/3-A	Uranium 234		6.37	6.532		pCi/L	103	84 - 120	11	0.41	1.16	1	.2656200086

Glossary:
Ts = Count Duration, Sample

ALPHA SPECTROSCOPY BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Batch Number: 268210 Batch Start Date: 09/06/16 13:27 Batch Analyst: Sherman, Austin T

Batch Method: ExtChrom Batch End Date: 09/08/16 14:58

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	U-232 00035	UNAT 00012			
MB 160-268210/1		ExtChrom, A-01-R		500 mL	0.1 mL				
LCS 160-268210/2		ExtChrom, A-01-R		500 mL	0.1 mL	0.1 mL			
LCSD 160-268210/3		ExtChrom, A-01-R		500 mL	0.1 mL	0.1 mL			
160-18852-A-2	GW-BR10RB-082516	ExtChrom, A-01-R	T	499.99 mL	0.1 mL				
160-18852-A-3	GW-GWJJ-082516	ExtChrom, A-01-R	T	500.00 mL	0.1 mL				
160-18852-A-4	GW-BR13JC-082516	ExtChrom, A-01-R	T	499.99 mL	0.1 mL				
160-18852-A-5	GW-BR04JC-082516	ExtChrom, A-01-R	T	499.99 mL	0.1 mL				
160-18852-A-11	GW-NB34-082516	ExtChrom, A-01-R	T	500.02 mL	0.1 mL				

Batch Notes	
Balance ID	1125353055
Analyst ID - Column	nmn per scb
Column Date	9/8/16
Analyst ID - CoPrecipitation	scb
CoPrecipitation Date	9/8/16
Pipette ID	rad104
Analyst ID - Reagent Drop Witness	jdl
Analyst ID - Reagent Drop	ats
SOP Number	st-rc-0100, st-rc-0238

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:45:49PM 9/12/2016

Sample

Sample Name: MB 160-268210/1-A Type: Blank
Spectrum #2 Analysis #1
: MB 160-268210/1-A
Sample Collection Date: 9/8/2016 3:04:00PM
Comment:

Sample Volume : 0.50 Sample Units: L
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 268210
AnalysisResultsID: 176801
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

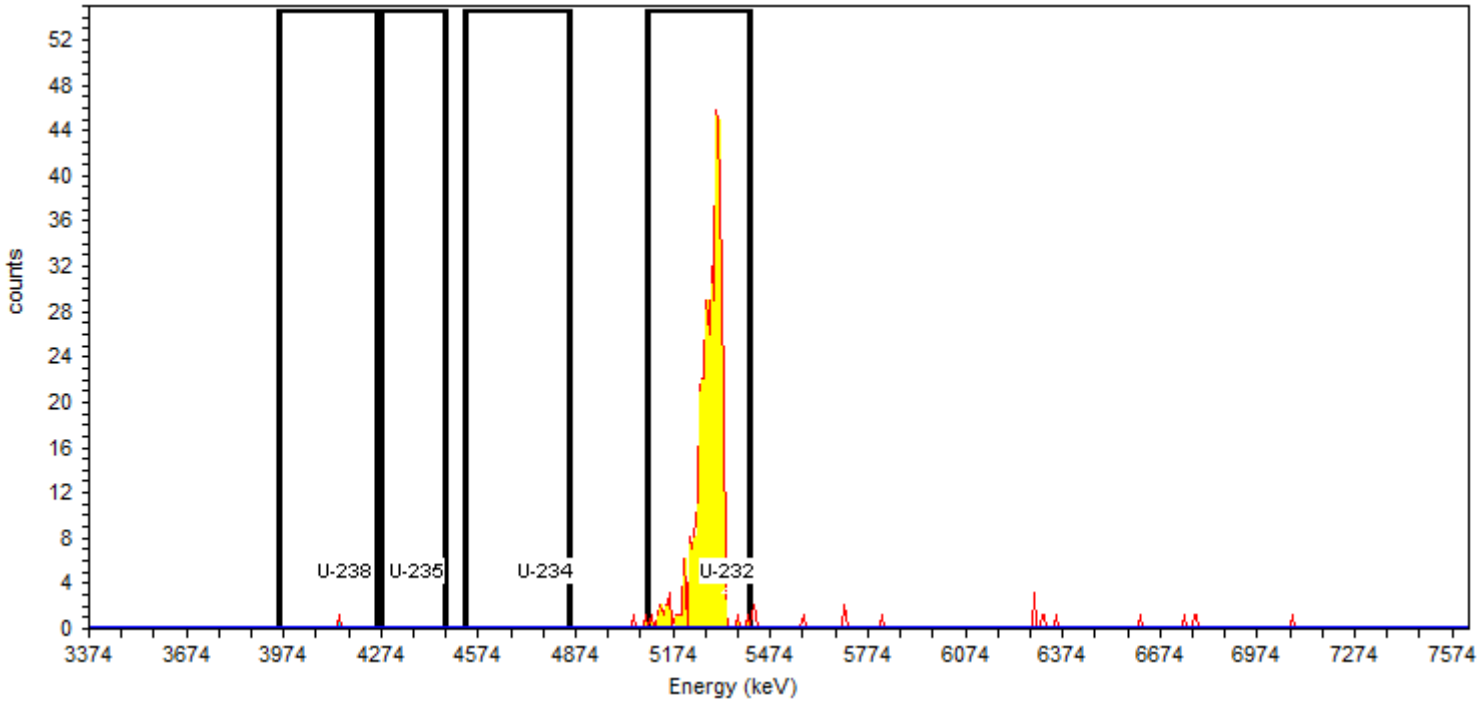
Tracer Name: U-232_00035
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/5/2011 2:39:38PM

Tracer Nuclide: U-232
Tracer Recovery: 51.83%

Acquisition

Detector: AV205 SN: 49-155dd3
Acquisition Start Date: 9/12/2016 2:59:23PM
Live Time: 400.00 min.
Real Time: 400.00 min.
Background Date: 9/1/2016 3:17:16PM
Bkgd Info: Sample: ICB;AV205; Det: AV205; Spectrum #1; 9/1/2016 3:17:16 PM

Energy Calibration: IC-8875;AV205-20151018a
Efficiency Calibration:IC-8875;AV205-20151018a
Calibration Date: 10/18/2015 6:42:32PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 23.67% +/- 0.34% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:9/9/2016 12:44:36PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	44.5	100.0	1	0.0000	1.00	1.836E-002	pCi/L
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	.0	80.2	0	0.0000	0.00	0.000E+000	pCi/L
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	.0	99.8	0	0.8333	-0.83	-1.533E-002	pCi/L
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	72.7	100.1	385	0.4167	384.58	3.841E+000	pCi/L

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:28:25PM 9/9/2016

Sample

Sample Name: LCS 160-268210/2-A Type: Control
Spectrum #1 Analysis #1
: LCS 160-268210/2-A
Sample Collection Date: 9/8/2016 3:04:00PM
Comment:

Sample Volume : 0.50 Sample Units: L
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 268210
AnalysisResultsID: 176589
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

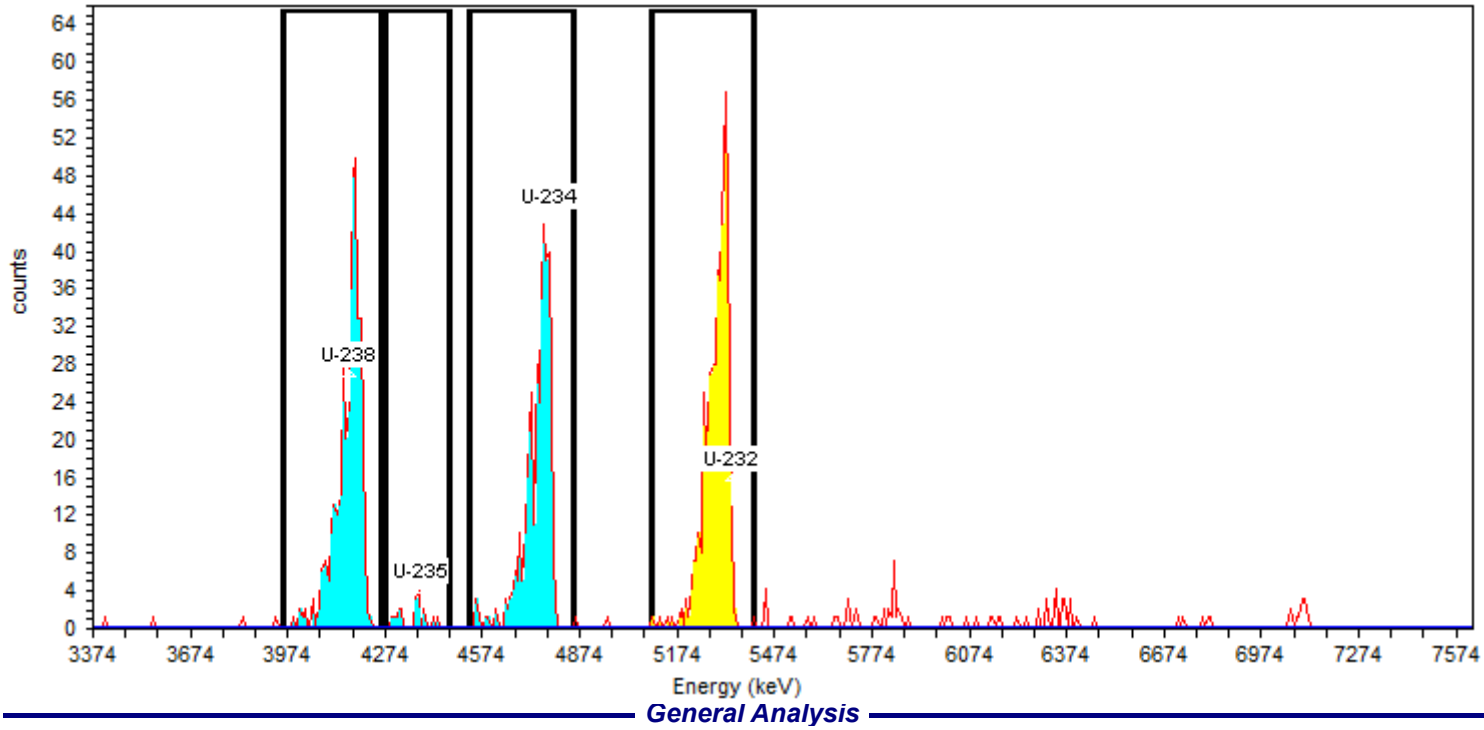
Tracer Name: U-232_00035
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/5/2011 2:39:38PM

Tracer Nuclide: U-232
Tracer Recovery: 55.03%

Acquisition

Detector: AV161 SN: 50-05/II7
Acquisition Start Date: 9/9/2016 12:48:05PM
Live Time: 400.00 min.
Real Time: 400.00 min.
Background Date: 9/2/2016 10:55:25AM
Bkgd Info: Sample: ICB;AV161; Det: AV161; Spectrum #1; 9/2/2016 10:55:25 AM

Energy Calibration: IC-7107;AV161-20151016
Efficiency Calibration:IC-7107;AV161-20151016
Calibration Date: 10/17/2015 2:36:23PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 26.14% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:9/9/2016 12:44:34PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	59.3	100.0	401	0.4167	400.58	6.272E+000	pCi/L
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	72.7	80.2	19	0.0000	19.00	3.709E-001	pCi/L
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	63.5	99.8	375	2.0833	372.92	5.851E+000	pCi/L
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	72.7	100.1	453	2.0833	450.92	4.077E+000	pCi/L

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:28:09PM 9/9/2016

Sample

Sample Name: LCSD 160-268210/3-A Type: Control
Spectrum #1 Analysis #1
: LCSD 160-268210/3-A
Sample Collection Date: 9/8/2016 3:04:00PM
Comment:

Sample Volume : 0.50 Sample Units: L
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 268210
AnalysisResultsID: 176588
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

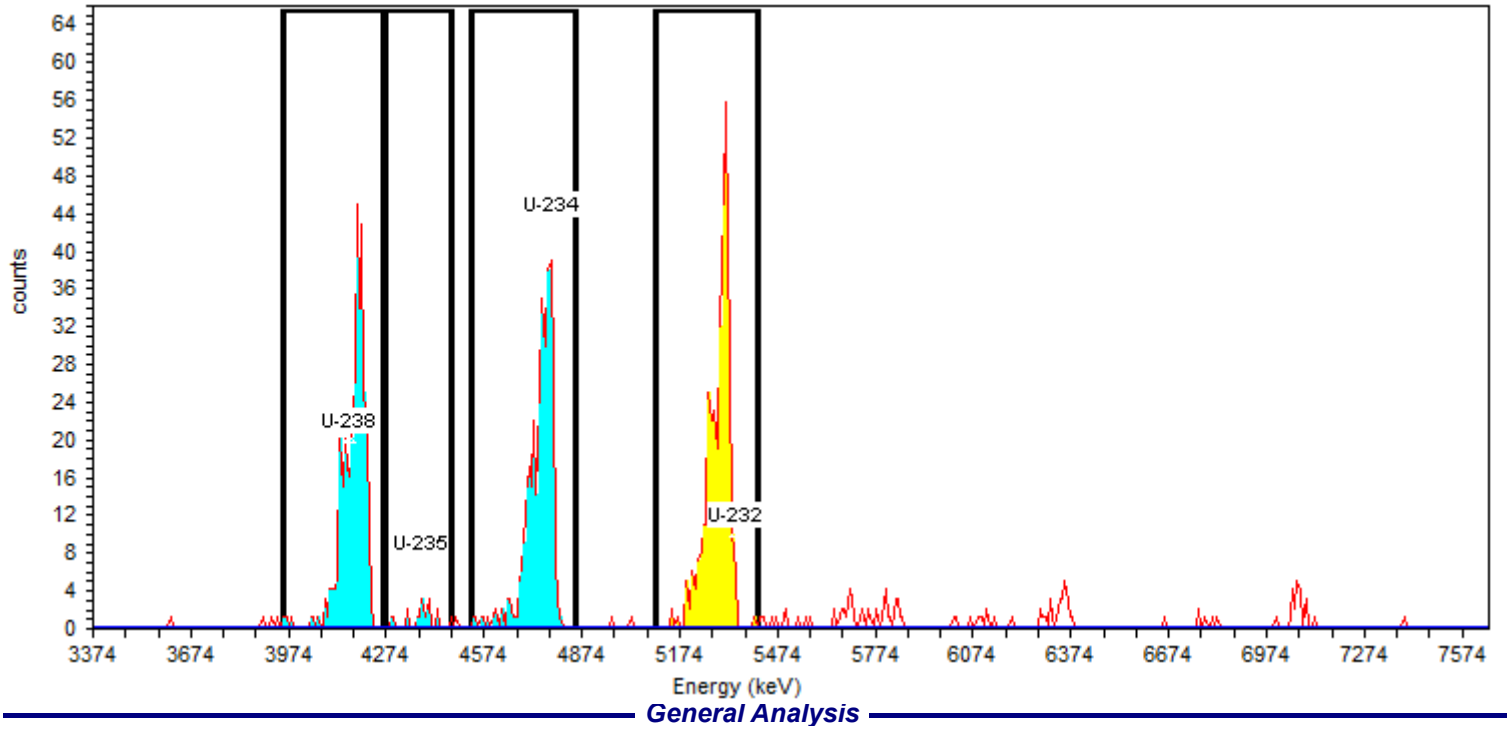
Tracer Name: U-232_00035
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/5/2011 2:39:38PM

Tracer Nuclide: U-232
Tracer Recovery: 47.16%

Acquisition

Detector: AV162 SN: 50-05/JJ6
Acquisition Start Date: 9/9/2016 12:48:05PM
Live Time: 400.00 min.
Real Time: 400.00 min.
Background Date: 9/1/2016 3:17:10PM
Bkgd Info: Sample: ICB;AV162; Det: AV162; Spectrum #1; 9/1/2016 3:17:10 PM

Energy Calibration: IC-8874;AV162-20151016
Efficiency Calibration:IC-8874;AV162-20151016
Calibration Date: 10/17/2015 2:36:27PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 26.38% +/- 0.38% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:9/9/2016 12:44:35PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	64.1	100.0	342	0.4167	341.58	6.185E+000	pCi/L
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	39.0	80.2	18	0.8333	17.17	3.876E-001	pCi/L
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	69.5	99.8	360	0.0000	360.00	6.532E+000	pCi/L
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	60.2	100.1	392	2.0833	389.92	3.494E+000	pCi/L

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:28:54AM 9/13/2016

Sample

Sample Name: 160-18852-A-2-A Type: Sample
Spectrum #1 Analysis #1
: 160-18852-A-2-A
Sample Collection Date: 8/25/2016 8:00:00AM
Comment:

Sample Volume : 0.50 Sample Units: L
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 268210
AnalysisResultsID: 176813
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

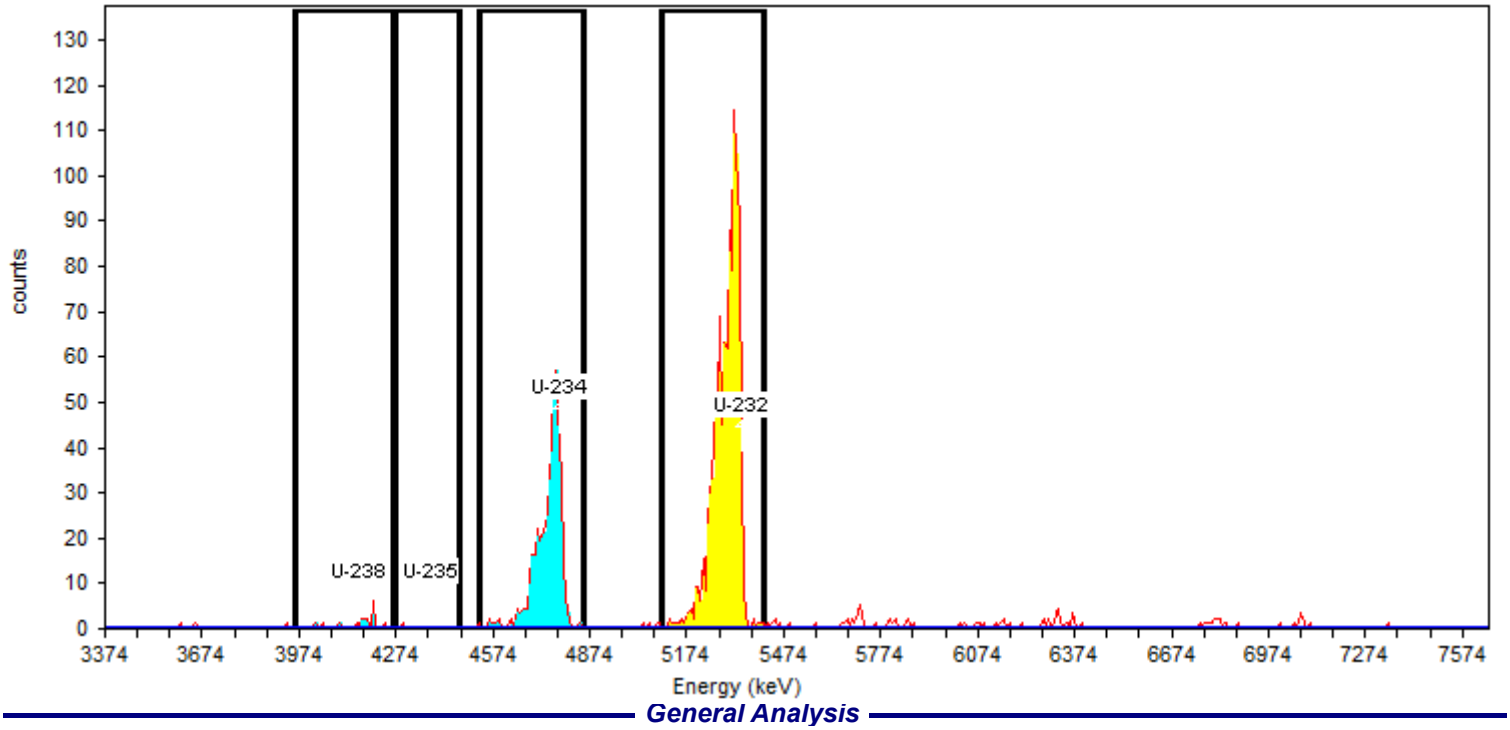
Tracer Name: U-232_00035
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/5/2011 2:39:38PM

Tracer Nuclide: U-232
Tracer Recovery: 65.97%

Acquisition

Detector: AV206 SN: 50-119AA6
Acquisition Start Date: 9/12/2016 3:01:25PM
Live Time: 800.00 min.
Real Time: 801.37 min.
Background Date: 9/2/2016 10:55:28AM
Bkgd Info: Sample: ICB;AV206; Det: AV206; Spectrum #1; 9/2/2016 10:55:28 AM

Energy Calibration: IC-8876;AV206-20151018
Efficiency Calibration:IC-8876;AV206-20151018
Calibration Date: 10/18/2015 6:41:49PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 24.55% +/- 0.29% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:9/12/2016 2:59:35PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	60.0	100.0	18	0.0000	18.00	1.252E-001	pCi/L
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	18.1	80.2	1	0.0000	1.00	8.671E-003	pCi/L
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	58.2	99.8	463	2.5000	460.50	3.209E+000	pCi/L
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	76.7	100.1	1021	5.8333	1015.17	4.888E+000	pCi/L

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:28:41PM 9/9/2016

Sample

Sample Name: 160-18852-A-3-A Type: Sample
Spectrum #1 Analysis #1
: 160-18852-A-3-A
Sample Collection Date: 8/25/2016 8:35:00AM
Comment:

Sample Volume : 0.50 Sample Units: L
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 268210
AnalysisResultsID: 176592
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

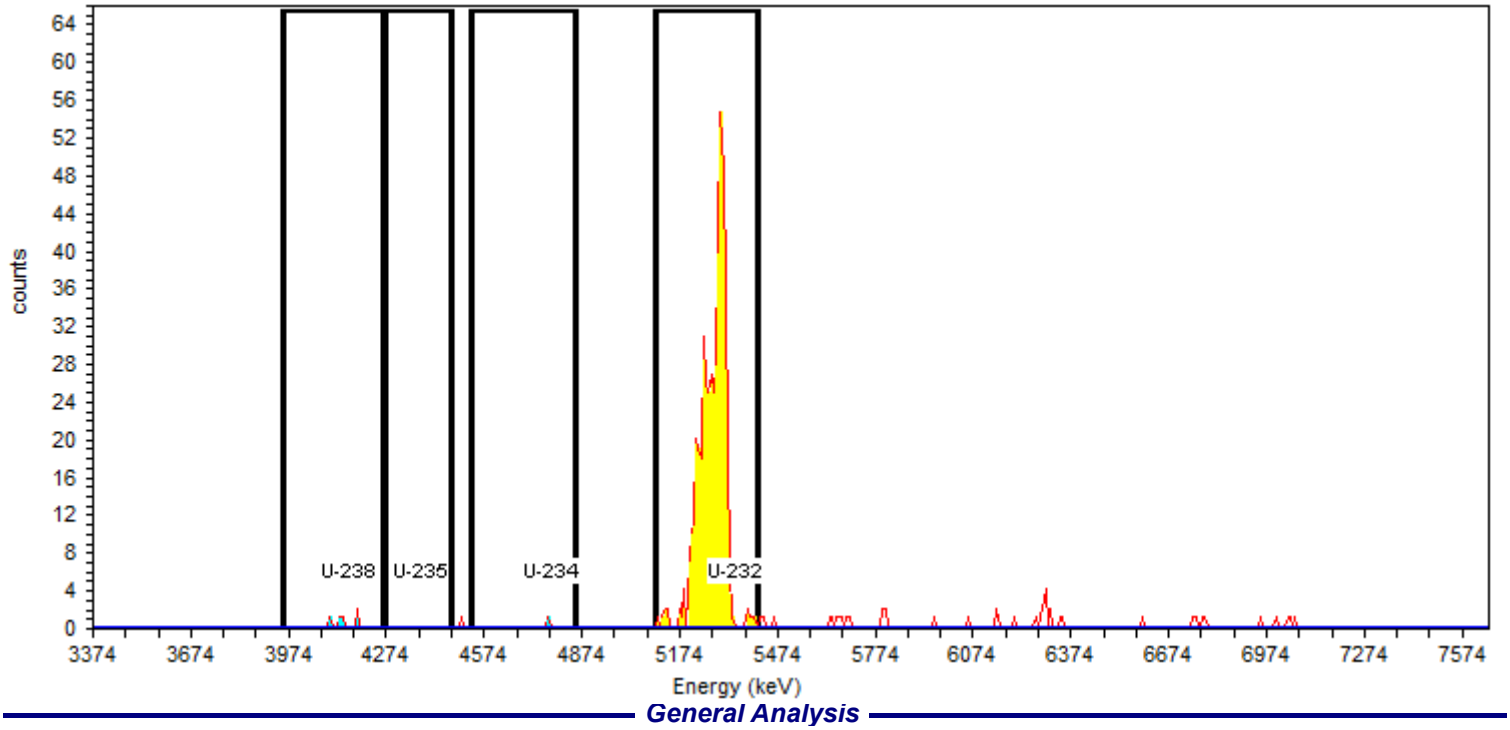
Tracer Name: U-232_00035
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/5/2011 2:39:38PM

Tracer Nuclide: U-232
Tracer Recovery: 60.55%

Acquisition

Detector: AV166 SN: 50-112 G1
Acquisition Start Date: 9/9/2016 12:48:06PM
Live Time: 400.00 min.
Real Time: 400.00 min.
Background Date: 9/2/2016 10:55:26AM
Bkgd Info: Sample: ICB;AV166; Det: AV166; Spectrum #1; 9/2/2016 10:55:26 AM

Energy Calibration: IC-9520;AV166-20151016a
Efficiency Calibration:IC-9520;AV166-20151016a
Calibration Date: 10/17/2015 2:37:00PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 24.64% +/- 0.35% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:9/9/2016 12:44:34PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	37.5	100.0	5	0.4167	4.58	6.919E-002	pCi/L
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	.0	80.2	0	0.0000	0.00	0.000E+000	pCi/L
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	44.5	99.8	1	0.4167	0.58	8.824E-003	pCi/L
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	89.3	100.1	471	3.3333	467.67	4.487E+000	pCi/L

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
4:28:09AM 9/13/2016

Sample

Sample Name: 160-18852-A-4-B Type: Sample
Spectrum #1 Analysis #1
: 160-18852-A-4-B
Sample Collection Date: 8/25/2016 9:25:00AM
Comment:

Sample Volume : 0.50 Sample Units: L
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 268210
AnalysisResultsID: 176812
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

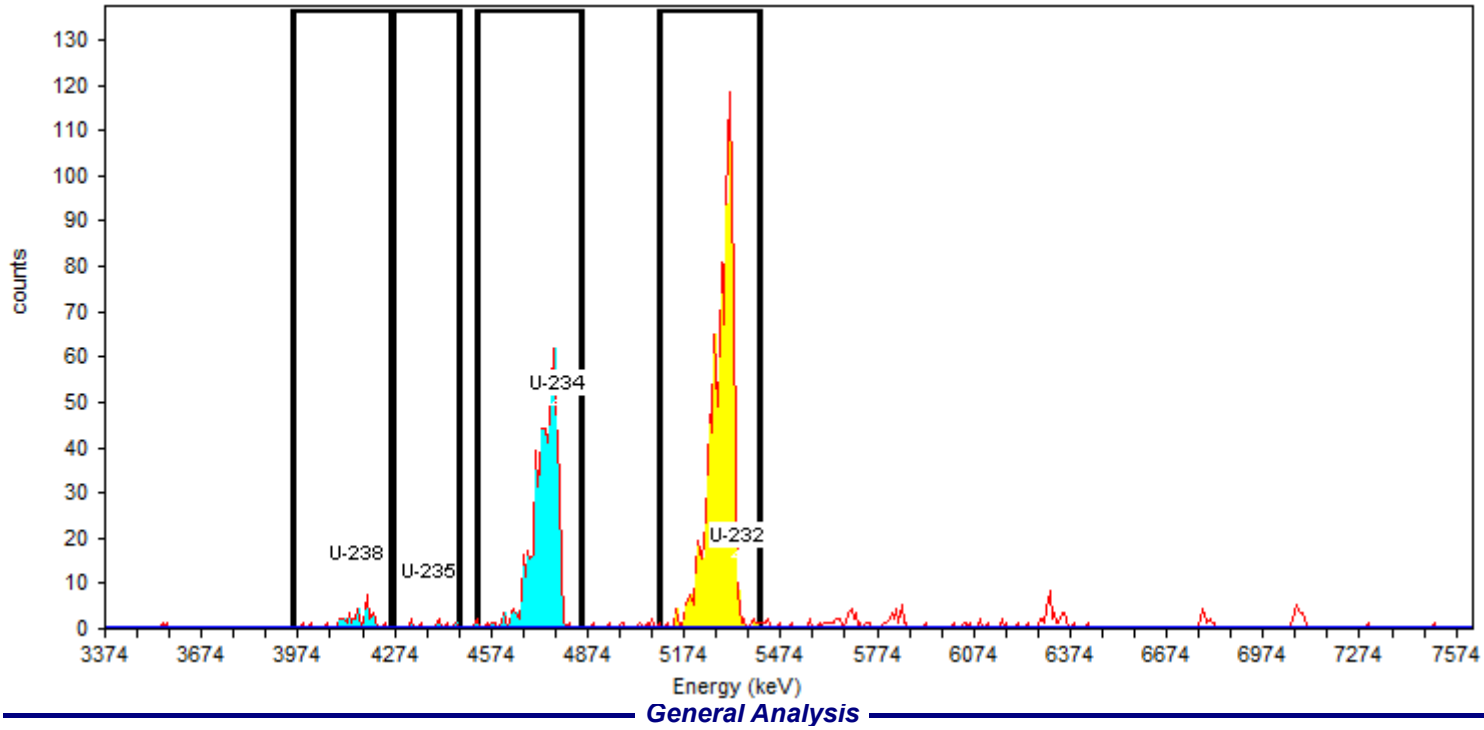
Tracer Name: U-232_00035
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/5/2011 2:39:38PM

Tracer Nuclide: U-232
Tracer Recovery: 62.98%

Acquisition

Detector: AV207 SN: 50-117H6
Acquisition Start Date: 9/12/2016 3:01:25PM
Live Time: 800.00 min.
Real Time: 800.00 min.
Background Date: 9/2/2016 10:55:28AM
Bkgd Info: Sample: ICB;AV207; Det: AV207; Spectrum #1; 9/2/2016 10:55:28 AM

Energy Calibration: IC-8877;AV207-20151018
Efficiency Calibration:IC-8877;AV207-20151018
Calibration Date: 10/18/2015 6:41:56PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 25.15% +/- 0.30% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:9/12/2016 2:59:35PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	102.6	100.0	42	0.0000	42.00	2.987E-001	pCi/L
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	152.8	80.2	8	0.0000	8.00	7.093E-002	pCi/L
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	80.4	99.8	584	0.8333	583.17	4.155E+000	pCi/L
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	74.8	100.1	997	4.1667	992.83	4.667E+000	pCi/L

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:28:29PM 9/9/2016

Sample

Sample Name: 160-18852-A-5-A Type: Sample
Spectrum #1 Analysis #1
: 160-18852-A-5-A
Sample Collection Date: 8/25/2016 10:05:00AM
Comment:

Sample Volume : 0.50 Sample Units: L
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 268210
AnalysisResultsID: 176590
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

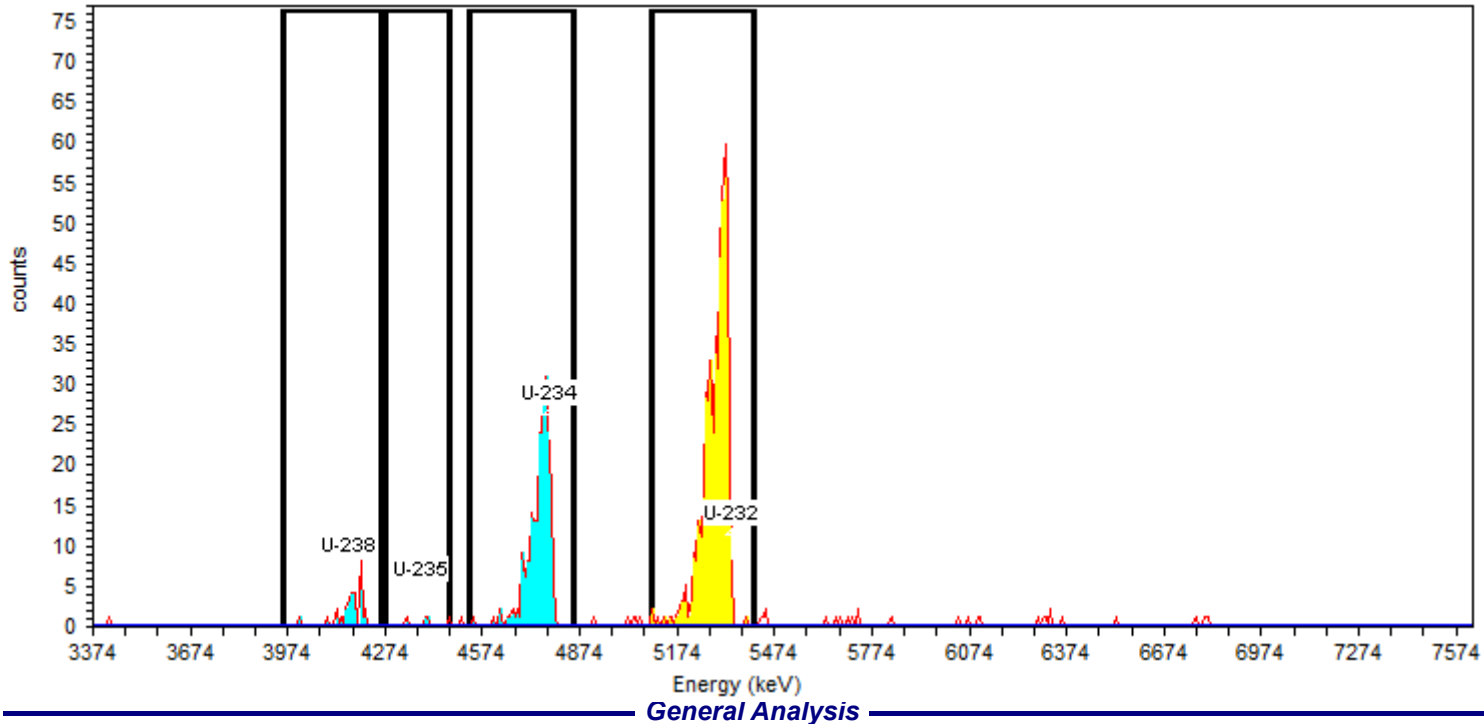
Tracer Name: U-232_00035
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/5/2011 2:39:38PM

Tracer Nuclide: U-232
Tracer Recovery: 62.89%

Acquisition

Detector: AV168 SN: 50-113 G4
Acquisition Start Date: 9/9/2016 12:48:06PM
Live Time: 400.00 min.
Real Time: 400.00 min.
Background Date: 9/2/2016 10:55:26AM
Bkgd Info: Sample: ICB;AV168; Det: AV168; Spectrum #1; 9/2/2016 10:55:26 AM

Energy Calibration: IC-9793;AV168-20151016
Efficiency Calibration:IC-9793;AV168-20151016
Calibration Date: 10/17/2015 2:36:43PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 25.33% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:9/9/2016 12:44:34PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	58.9	100.0	33	0.4167	32.58	4.606E-001	pCi/L
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	72.0	80.2	4	0.0000	4.00	7.050E-002	pCi/L
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	57.1	99.8	235	0.8333	234.17	3.317E+000	pCi/L
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	73.8	100.1	502	2.5000	499.50	4.660E+000	pCi/L

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:28:46PM 9/9/2016

Sample

Sample Name: 160-18852-A-11-A Type: Sample
Spectrum #1 Analysis #1
: 160-18852-A-11-A
Sample Collection Date: 8/25/2016 2:55:00PM
Comment:

Sample Volume : 0.50 Sample Units: L
First Stage Dilution: N/A
Aliquot: N/A Aliquot Fraction: N/A
Dilution 2: N/A
Lab Preparation:

Batch

Batch Name: 268210
AnalysisResultsID: 176593
Description:

Client Name: Undefined
Client Contact:
Analyst: 60040

Tracer

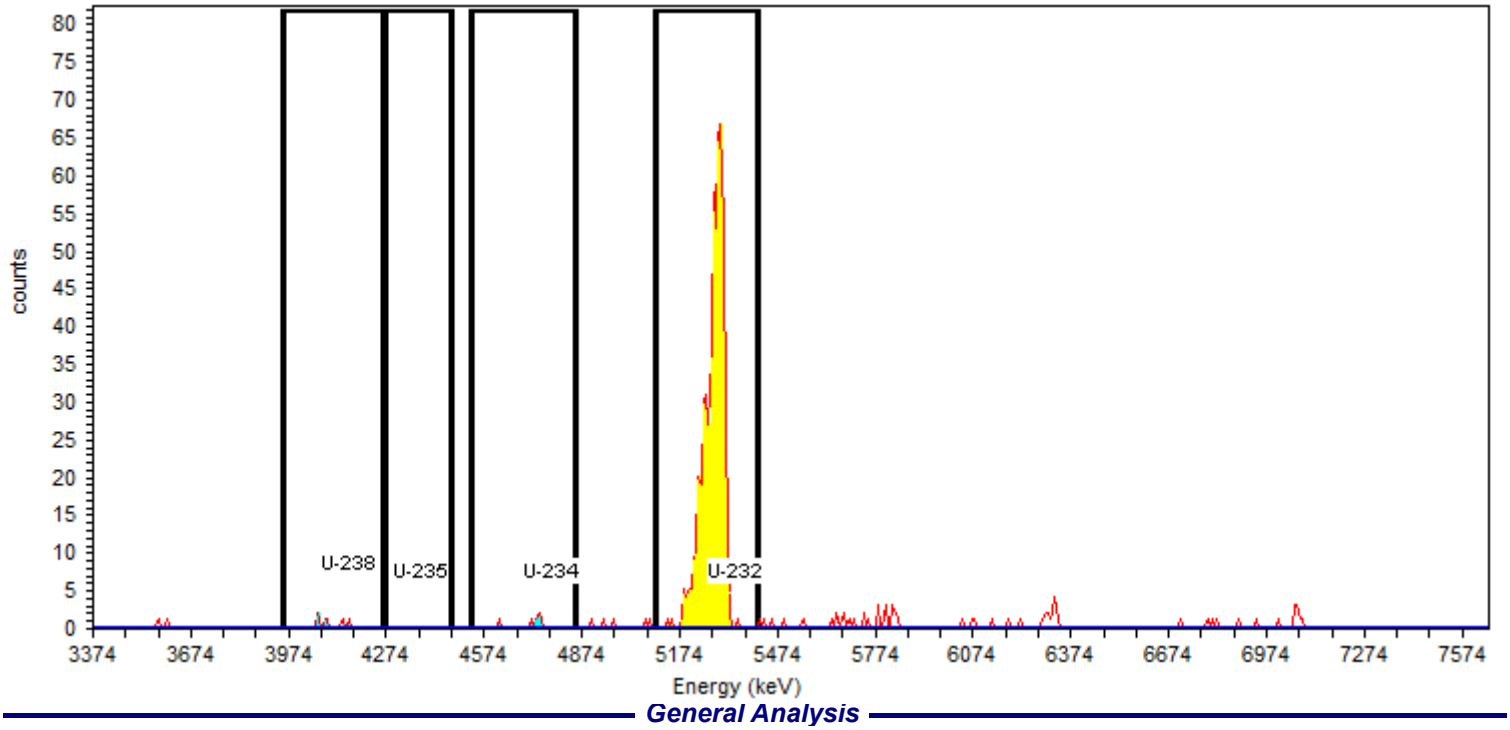
Tracer Name: U-232_00035
Tracer Activity: 82.25 DPM / mL x (Vol.) 0.10 mL = 8.22 DPM
Tracer Ref. Date: 8/5/2011 2:39:38PM

Tracer Nuclide: U-232
Tracer Recovery: 70.50%

Acquisition

Detector: AV169 SN: 50-112 G5
Acquisition Start Date: 9/9/2016 12:48:06PM
Live Time: 400.00 min.
Real Time: 400.02 min.
Background Date: 9/1/2016 3:17:12PM
Bkgd Info: Sample: ICB;AV169; Det: AV169; Spectrum #1; 9/1/2016 3:17:12 PM

Energy Calibration: IC-9794;AV169-20151016
Efficiency Calibration:IC-9794;AV169-20151016
Calibration Date: 10/17/2015 2:36:47PM
Energy Cal: Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²
Efficiency: 24.50% +/- 0.31% TPU(2 sigma)



General Analysis

Analysis Method: ROI Analysis, Set Name = UROI
Decay Correction:9/9/2016 12:44:34PM
MDA Constants: Kα = 1.64 , Kβ = 1.64

Nuclide Library: Uranium
MDA Source: Background

Nuclide Summary (ROI)

Nuclide	Peak Energy keV	Peak Expected keV	Peak Diff keV	ROI Start keV	ROI End keV	FWHM keV	B.R. %	Gross Counts	Bkgd Counts	Net Counts	Activity	Units
U-238	4157.5	4,196.0	-38.5	3956.1	4261.9	38.8	100.0	6	0.4167	5.58	7.280E-002	pCi/L
U-235	4381.2	4,396.0	-14.8	4269.3	4470.7	.0	80.2	0	0.4167	-0.42	-6.774E-003	pCi/L
U-234	4776.4	4,775.8	0.6	4530.3	4851.0	44.2	99.8	6	1.2500	4.75	6.205E-002	pCi/L
U-232	5343.2	5,320.3	22.9	5097.1	5410.3	61.3	100.1	544	2.5000	541.50	5.224E+000	pCi/L

Daily Checks

Alpha Spectroscopy Daily Pulser Check

Analysis Date: 09/09/16

		Gross Counts			FWHM (keV)			Pulser Center			Energy (keV)		
Detector	**Analysis Date**	**Result**	**Criteria**	**P/F**	**Result**	**Criteria**	**P/F**	**Result**	**Criteria**	**P/F**	**Result**	**Criteria**	**P/F**
AV161	09/09/16 09:10	6011	5716.9 - 6318.7	Pass	15.2	10 - 20	Pass	229.9	224.9 - 234.9	Pass	5081	5041.6 - 5121.6	Pass
AV162	09/09/16 09:10	5997	5631.4 - 6224.2	Pass	16.3	10 - 20	Pass	223.1	218.0 - 228.0	Pass	5030	4990.0 - 5070.0	Pass
AV166	09/09/16 09:10	6014	5696.3 - 6296.0	Pass	14.4	10 - 20	Pass	221.0	217.8 - 227.8	Pass	5015	4988.4 - 5068.4	Pass
AV168	09/09/16 09:10	5857	5537.1 - 6120.0	Pass	13.1	10 - 20	Pass	223.0	218.1 - 228.1	Pass	5030	4990.4 - 5070.4	Pass
AV169	09/09/16 09:10	5952	5719.2 - 6321.2	Pass	17.0	10 - 20	Pass	221.9	217.5 - 227.5	Pass	5022	4986.3 - 5066.3	Pass

Analysis Date: 09/12/16

		Gross Counts			FWHM (keV)			Pulser Center			Energy (keV)		
Detector	**Analysis Date**	**Result**	**Criteria**	**P/F**	**Result**	**Criteria**	**P/F**	**Result**	**Criteria**	**P/F**	**Result**	**Criteria**	**P/F**
AV205	09/12/16 08:47	6011	5716.1 - 6317.8	Pass	14.6	10 - 20	Pass	222.0	217.0 - 227.0	Pass	5022	4982.3 - 5062.3	Pass
AV206	09/12/16 08:47	5979	5675.7 - 6273.2	Pass	15.1	10 - 20	Pass	222.2	216.1 - 226.1	Pass	5024	4975.8 - 5055.8	Pass
AV207	09/12/16 09:54	5877	5708.0 - 6308.9	Pass	12.5	10 - 20	Pass	223.0	218.0 - 228.0	Pass	5030	4989.9 - 5069.9	Pass

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:13:10AM 9/9/2016

Sample

Sample Name: Pulser;AV161
Comment:

Spectrum #3 Analysis #1

Batch

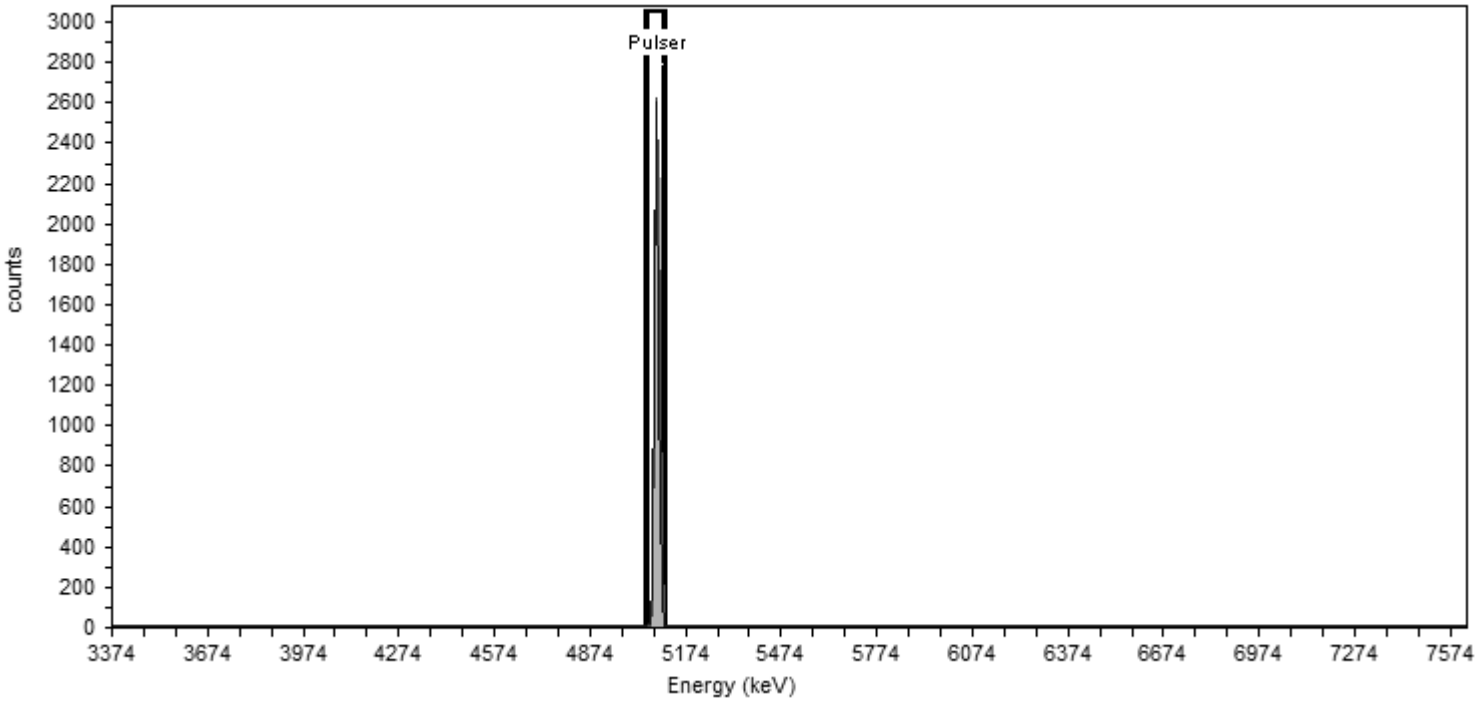
Batch Name: August2016a
Description:

Acquisition

Detector: AV161 , SN: 50-05/II7
Acquisition Start Date: 9/9/2016 9:10:25AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-7107;AV161-20151016
Calibration Date: 10/17/2015 2:36:23PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5081.495	5055.559	5107.431	15.24	5,726.57	6,011.23

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Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:13:05AM 9/9/2016

Sample

Sample Name: Pulser;AV162
Comment:

Spectrum #3 Analysis #1

Batch

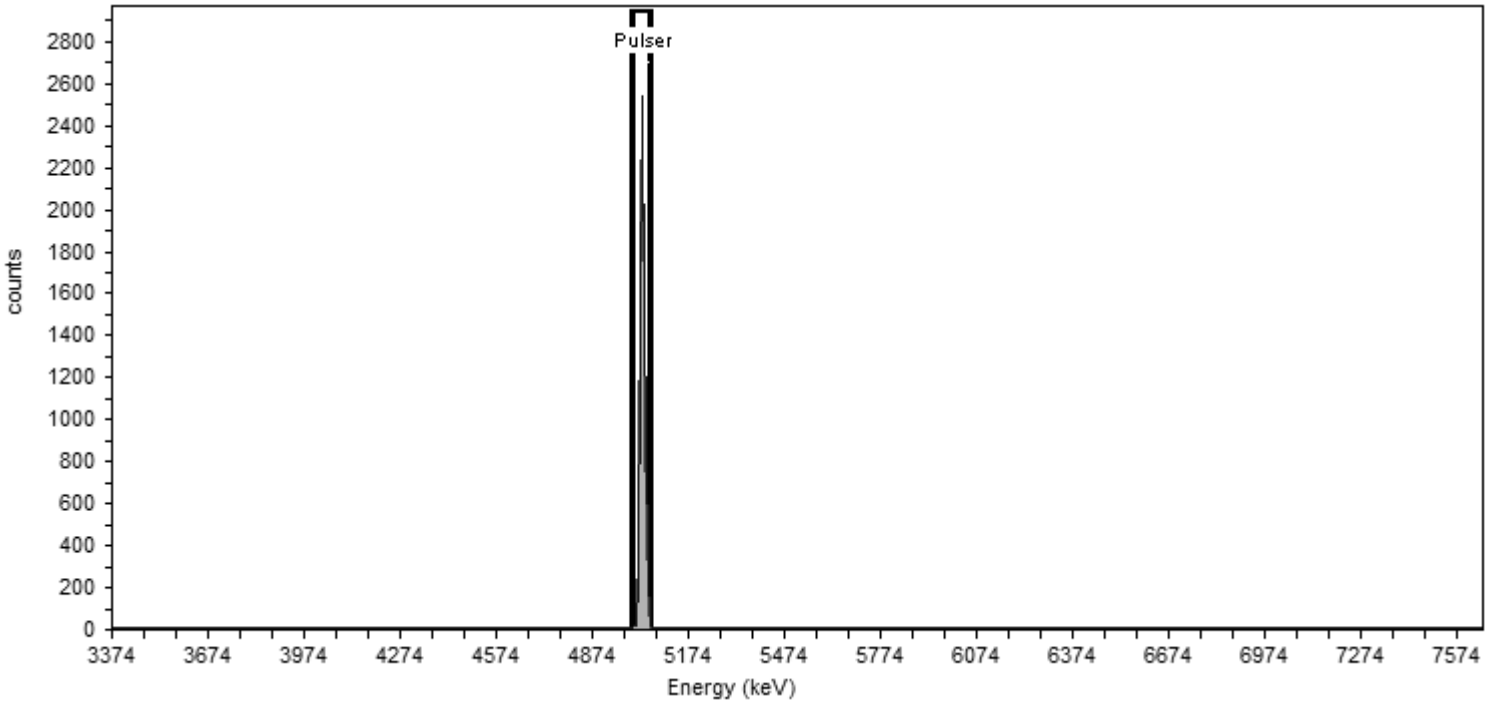
Batch Name: August2016a
Description:

Acquisition

Detector: AV162 , SN: 50-05/JJ6
Acquisition Start Date: 9/9/2016 9:10:25AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-8874;AV162-20151016
Calibration Date: 10/17/2015 2:36:27PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5030.377	5002.601	5058.152	16.32	5,943.76	5,996.76

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:13:09AM 9/9/2016

Sample

Sample Name: Pulser;AV166
Comment:

Spectrum #3 Analysis #1

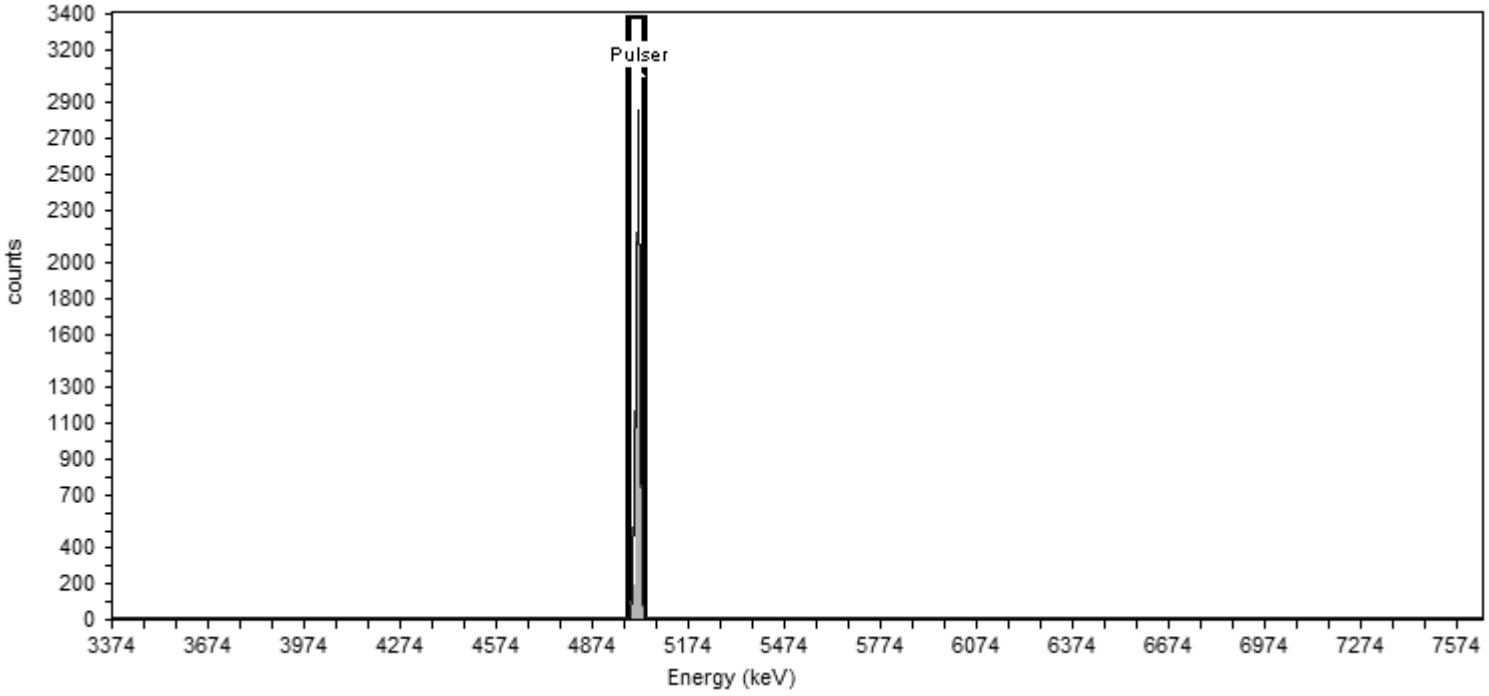
Batch

Batch Name: August2016a
Description:

Acquisition

Detector: AV166 , SN: 50-112 G1
Acquisition Start Date: 9/9/2016 9:10:23AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9520;AV166-20151016a
Calibration Date: 10/17/2015 2:37:00PM

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5015.076	4990.553	5039.600	14.41	5,905.12	6,013.54

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:13:11AM 9/9/2016

Sample

Sample Name: Pulser;AV168
Comment:

Spectrum #3 Analysis #1

Batch

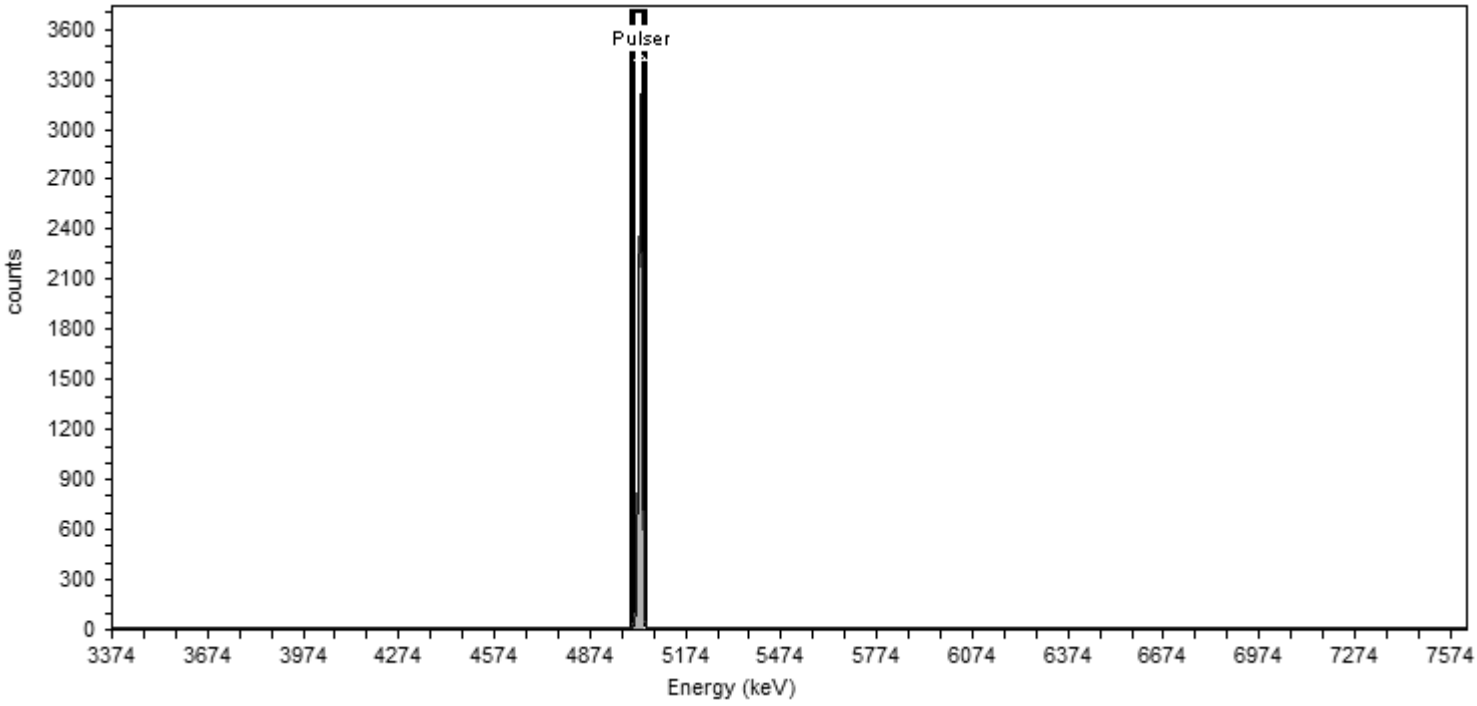
Batch Name: August2016a
Description:

Acquisition

Detector: AV168 , SN: 50-113 G4
Acquisition Start Date: 9/9/2016 9:10:25AM
Live Time: 1.00 min.
Real Time: 1.01 min.
Calibration Name: IC-9793;AV168-20151016
Calibration Date: 10/17/2015 2:36:43PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5030.064	5007.814	5052.313	13.07	6,013.54	5,856.60

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:13:14AM 9/9/2016

Sample

Sample Name: Pulser;AV169
Comment:

Spectrum #3 Analysis #1

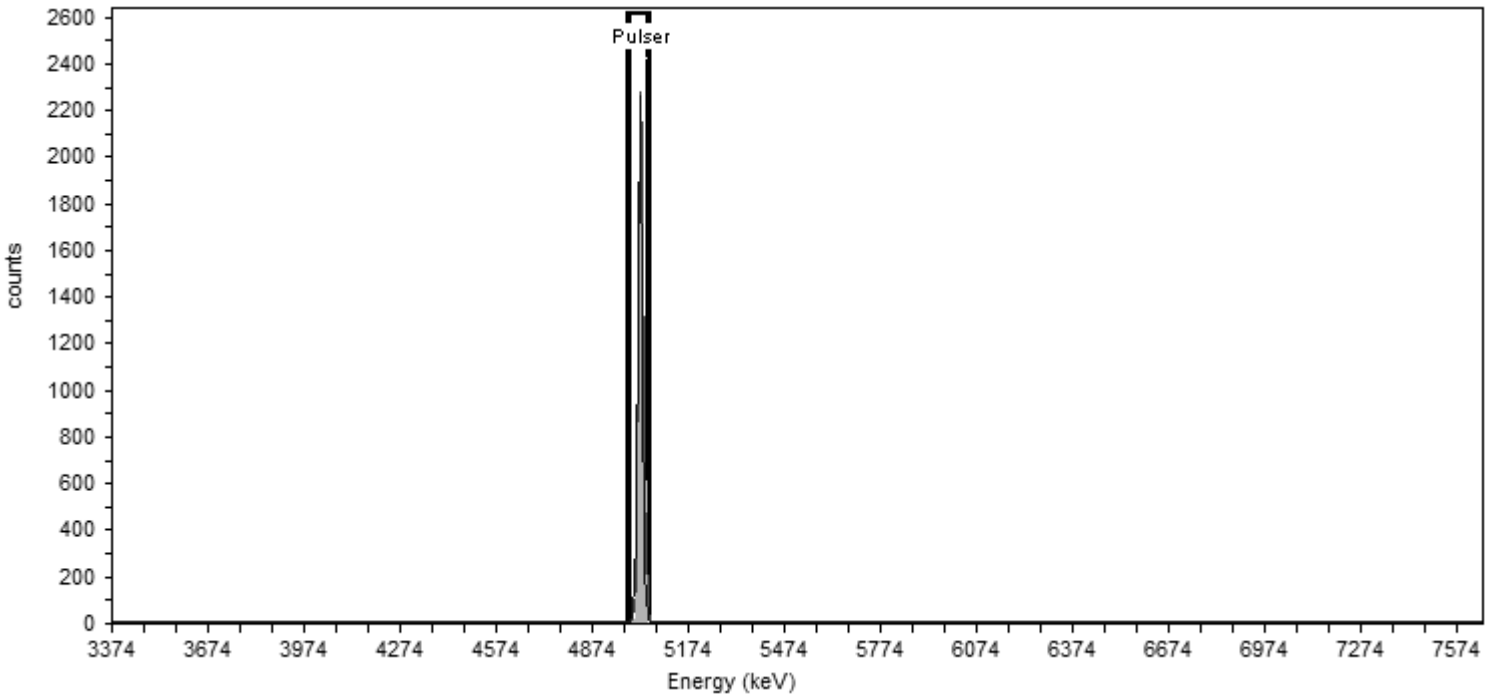
Batch

Batch Name: August2016a
Description:

Acquisition

Detector: AV169 , SN: 50-112 G5
Acquisition Start Date: 9/9/2016 9:10:25AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-9794;AV169-20151016
Calibration Date: 10/17/2015 2:36:47PM

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5021.612	4992.604	5050.620	17.04	5,566.50	5,951.55

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:51:59AM 9/12/2016

Sample

Sample Name: Pulser;AV205 Spectrum #5 Analysis #1
Comment:

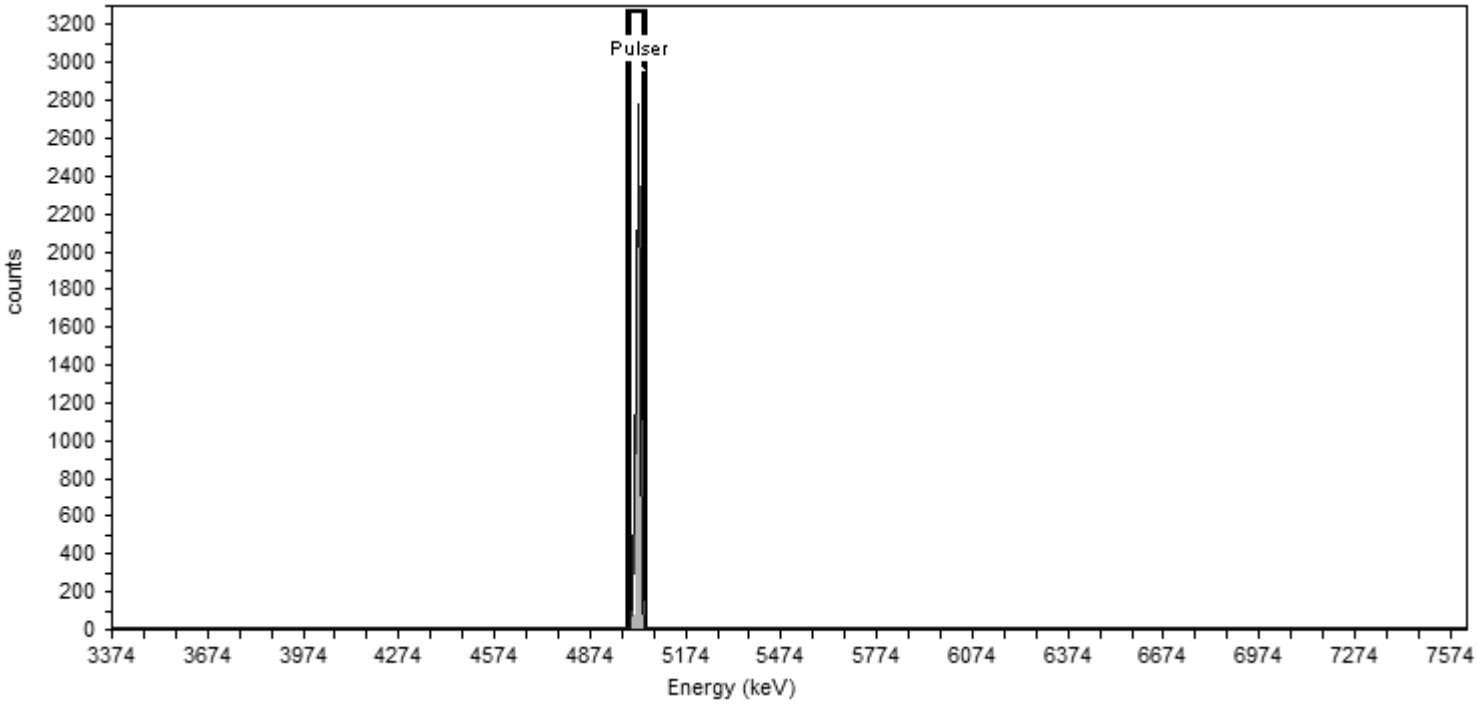
Batch

Batch Name: August2016b
Description:

Acquisition

Detector: AV205 , SN: 49-155dd3
Acquisition Start Date: 9/12/2016 8:47:05AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-8875;AV205-20151018a
Calibration Date: 10/18/2015 6:42:32PM

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5022.197	4997.305	5047.088	14.62	5,832.60	6,011.22

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:52:19AM 9/12/2016

Sample

Sample Name: Pulser;AV206
Comment:

Spectrum #5 Analysis #1

Batch

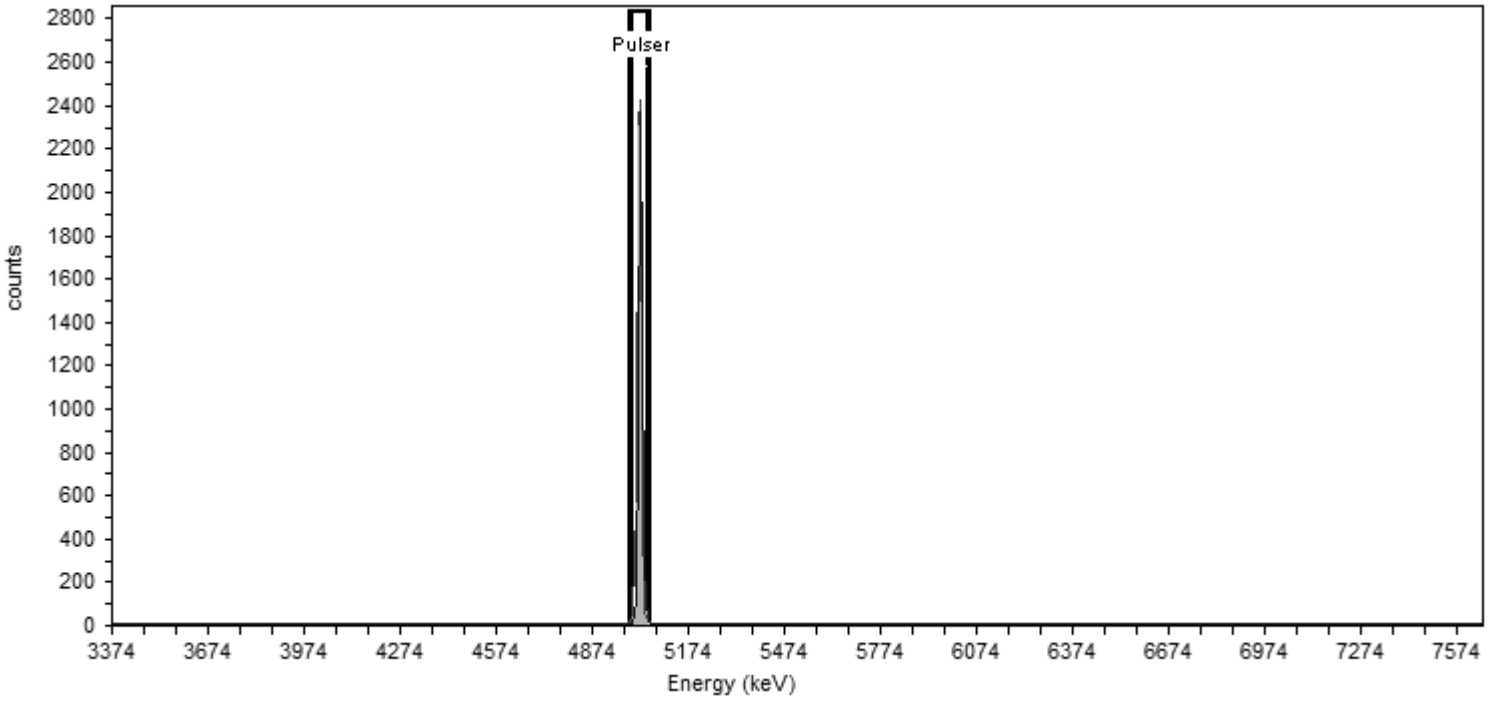
Batch Name: August2016b
Description:

Acquisition

Detector: AV206 , SN: 50-119AA6
Acquisition Start Date: 9/12/2016 8:47:05AM
Live Time: 1.00 min.
Real Time: 1.00 min.
Calibration Name: IC-8876;AV206-20151018
Calibration Date: 10/18/2015 6:41:49PM

Energy Calibration Equation:

Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5023.867	4998.131	5049.604	15.12	5,252.18	5,978.95

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Pulser Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
9:56:01AM 9/12/2016

Sample

Sample Name: Pulser;AV207 Spectrum #6 Analysis #1
Comment:

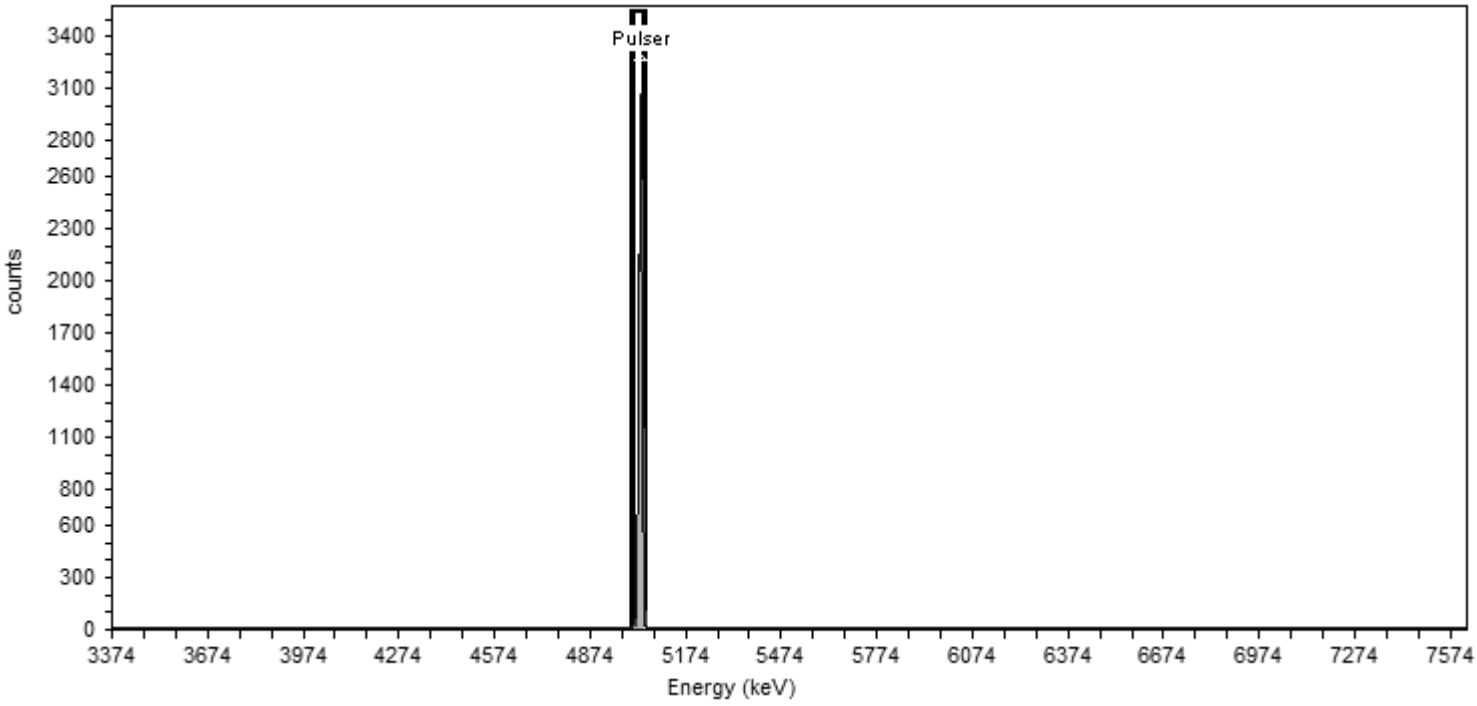
Batch

Batch Name: August2016b
Description:

Acquisition

Detector: AV207 , SN: 50-117H6
Acquisition Start Date: 9/12/2016 9:54:54AM
Live Time: 1.00 min.
Real Time: 1.01 min.
Calibration Name: IC-8877;AV207-20151018
Calibration Date: 10/18/2015 6:41:56PM

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Peak Fit Analysis

Nuclide Summary (Peak Search)

Nuclide	Peak Energy keV	Start Energy keV	End Energy keV	FWHM keV	Fit Area	Gross Counts
Pulser	5029.667	5008.438	5050.897	12.47	5,481.14	5,876.55

Initial Calibrations

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:36:24PM 10/17/2015

Calibration

Sample Name: IC-7107;AV161-20151016
Description:
Detector: AV161

Analyst: 60040
Analysis Date: 10/17/2015 2:36:23PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82232-334
Prepared by: Analytics
Description:

Certification Date: 6/3/2010 12:00:00PM

Acquisition

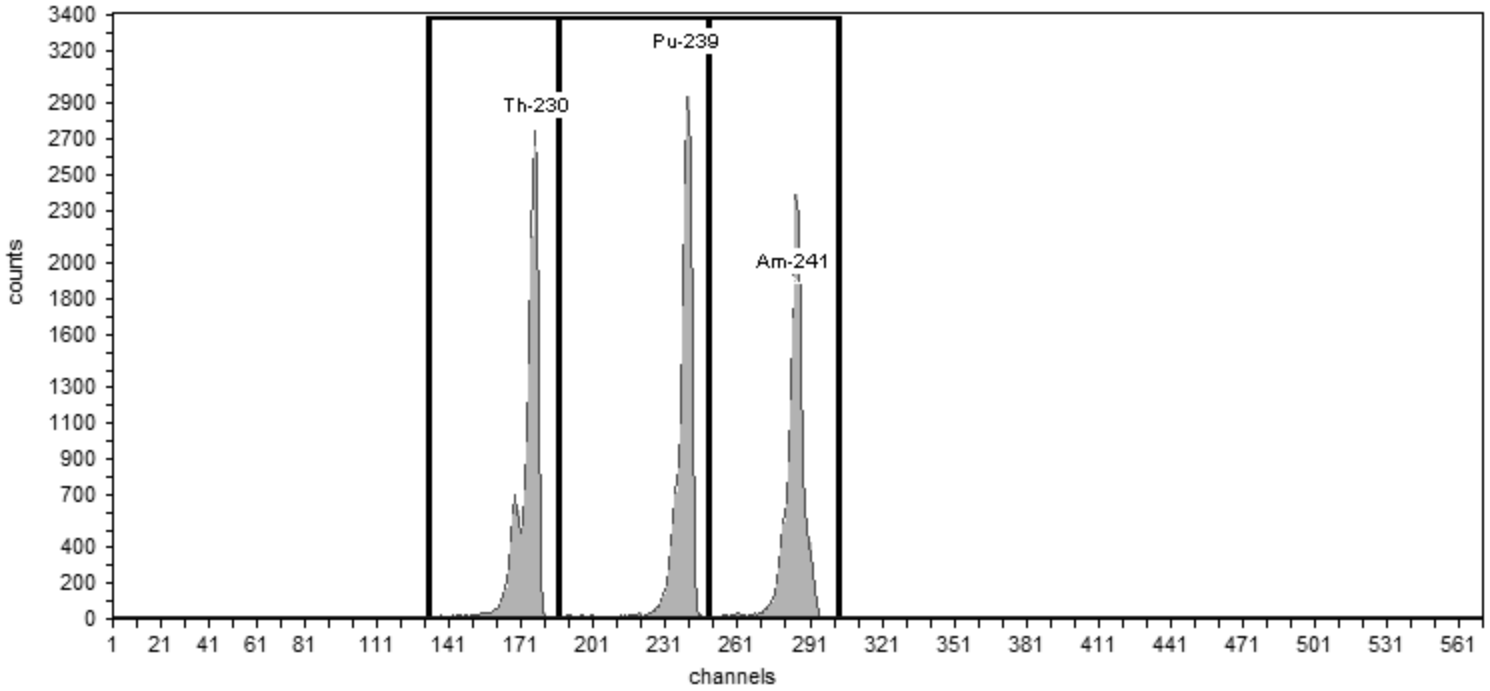
Detector: AV161 , SN: 50-05/II7
Acquisition Start Date: 10/16/2015 6:57:20PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Efficiency Calibration Name: IC-7107;AV161-20151016

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 26.14% +/- 0.30% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.68	16,596.00	118.54
Pu-239	240	5,155.40	186	249	32.25	16,176.00	115.54
Am-241	284	5,485.70	249	303	34.34	15,558.00	111.13

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:27:23PM 11/23/2015

Calibration

Sample Name: IC-8874;AV162-20151016
Description:
Detector: AV162

Analyst: 60040
Analysis Date: 10/17/2015 2:36:27PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82233-334
Prepared by: Analytics
Description:

Certification Date: 6/3/2010 12:00:00PM

Acquisition

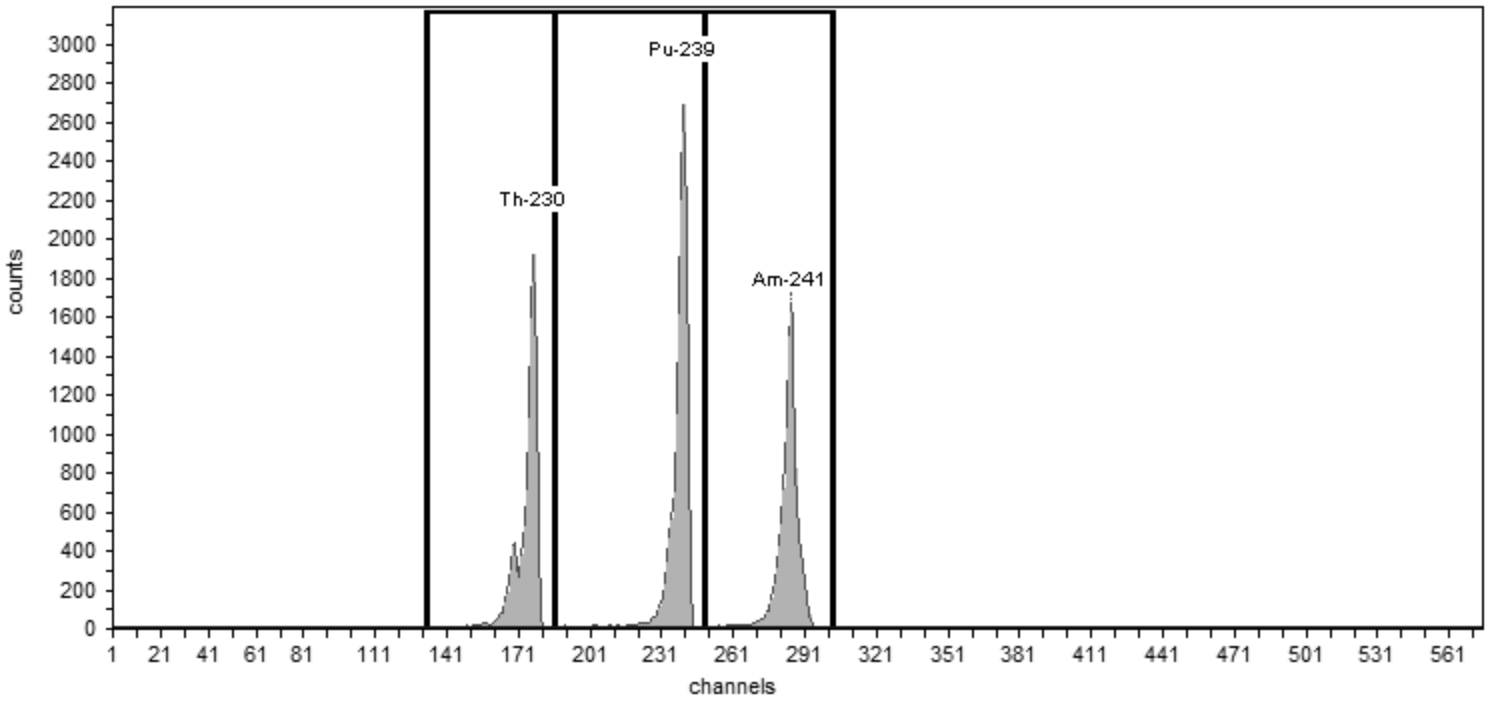
Detector: AV162 , SN: 50-05/JJ6
Acquisition Start Date: 10/16/2015 6:57:31PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency Calibration Name: IC-8874;AV162-20151016

Efficiency: 26.38% +/- 0.38% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	28.12	10,534.00	75.24
Pu-239	240	5,155.40	186	249	31.43	13,977.00	99.84
Am-241	284	5,485.70	249	303	31.73	11,128.00	79.49

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:37:01PM 10/17/2015

Calibration

Sample Name: IC-9520;AV166-20151016a
Description:
Detector: AV166

Analyst: 60040
Analysis Date: 10/17/2015 2:37:00PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82237-334
Prepared by: Analytics
Description:

Certification Date: 6/1/2010 12:00:00PM

Acquisition

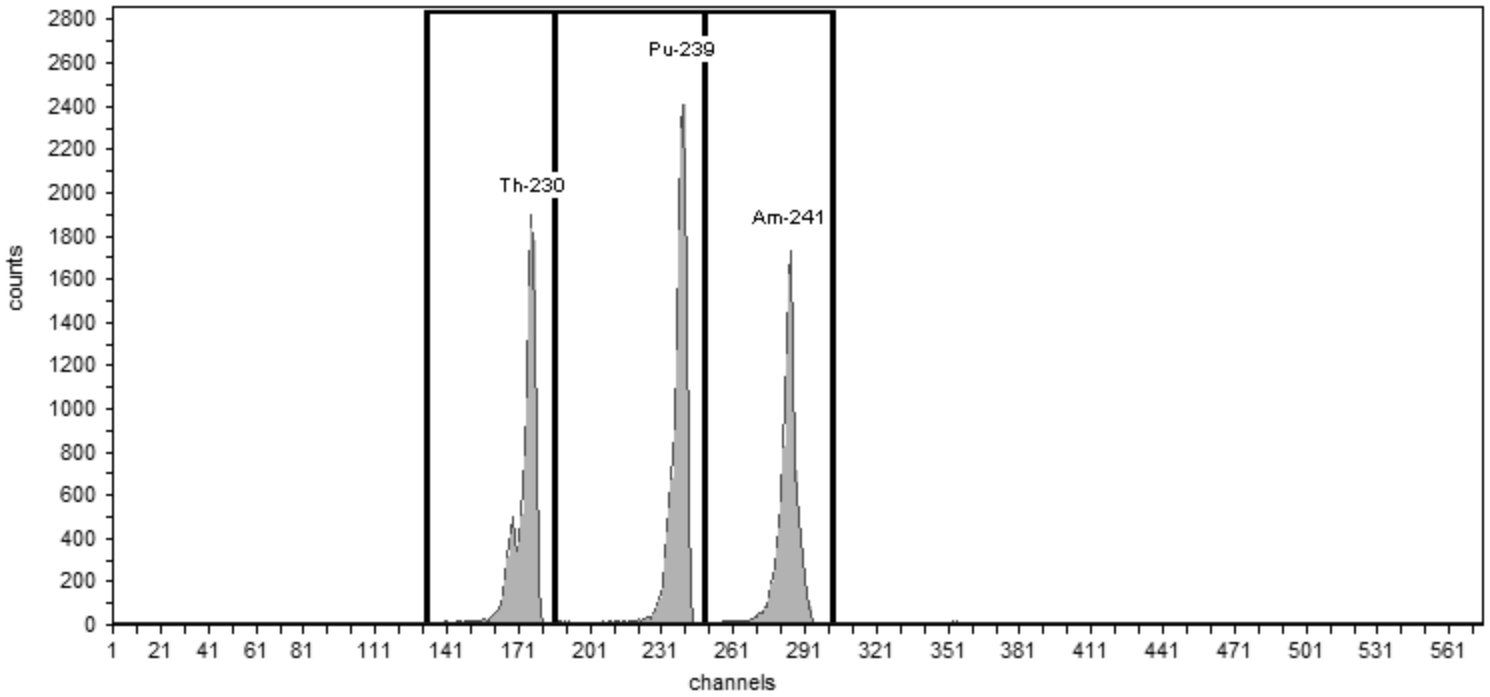
Detector: AV166 , SN: 50-112 G1
Acquisition Start Date: 10/16/2015 7:04:15PM

Live Time: 140.00 min.
Real Time: 140.09 min.

Efficiency Calibration Name: IC-9520;AV166-20151016a

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.64% +/- 0.35% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	32.09	11,794.00	84.24
Pu-239	240	5,155.40	186	249	34.08	13,736.00	98.11
Am-241	284	5,485.70	249	303	34.37	11,391.00	81.36

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:36:44PM 10/17/2015

Calibration

Sample Name: IC-9793;AV168-20151016
Description:
Detector: AV168

Analyst: 60040
Analysis Date: 10/17/2015 2:36:43PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82241-334
Prepared by: Analytics
Description:

Certification Date: 6/8/2010 12:00:00PM

Acquisition

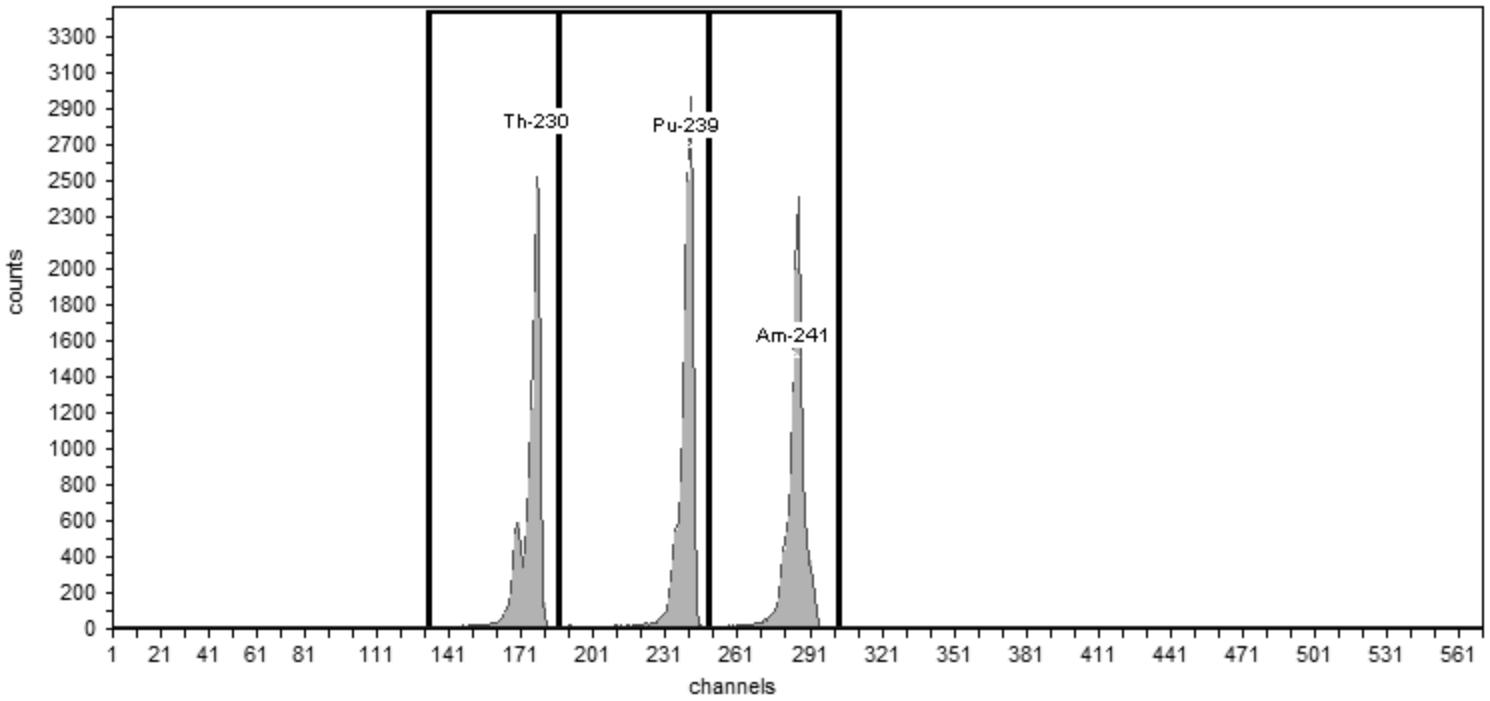
Detector: AV168 , SN: 50-113 G4
Acquisition Start Date: 10/16/2015 6:59:06PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency Calibration Name: IC-9793;AV168-20151016

Efficiency: 25.33% +/- 0.31% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	28.27	14,086.00	100.61
Pu-239	240	5,155.40	186	249	29.54	14,748.00	105.34
Am-241	284	5,485.70	249	303	28.44	13,768.00	98.34

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:27:32PM 11/23/2015

Calibration

Sample Name: IC-9794;AV169-20151016
Description:
Detector: AV169

Analyst: 60040
Analysis Date: 10/17/2015 2:36:47PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82242-334
Prepared by: Analytics
Description:

Certification Date: 6/8/2010 12:00:00PM

Acquisition

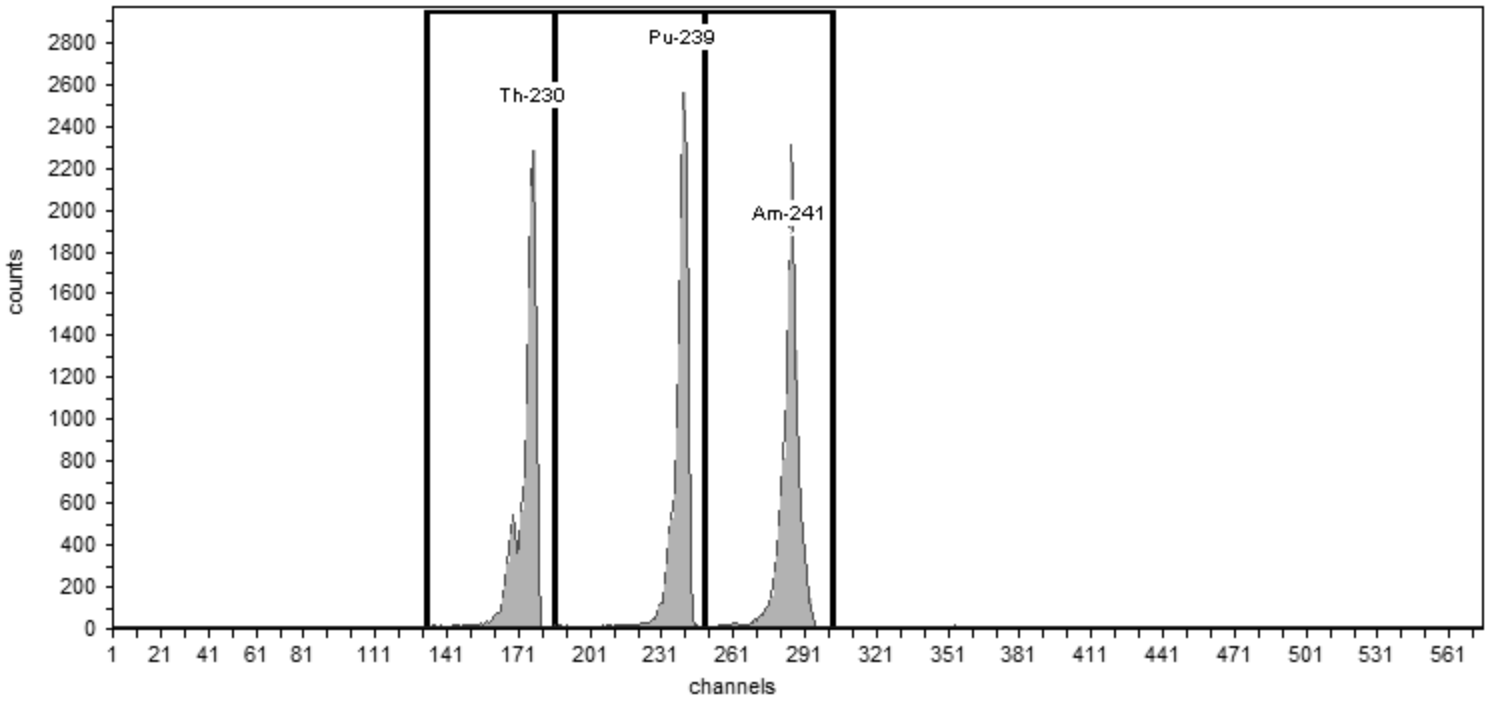
Detector: AV169 , SN: 50-112 G5
Acquisition Start Date: 10/16/2015 6:59:16PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency Calibration Name: IC-9794;AV169-20151016

Efficiency: 24.50% +/- 0.31% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.08	13,354.00	95.39
Pu-239	240	5,155.40	186	249	30.67	13,390.00	95.64
Am-241	284	5,485.70	249	303	31.74	14,605.00	104.32

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:42:33PM 10/18/2015

Calibration

Sample Name: IC-8875;AV205-20151018a
Description:
Detector: AV205

Analyst: 60040
Analysis Date: 10/18/2015 6:42:32PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82234-334
Prepared by: Analytics
Description:

Certification Date: 6/2/2010 12:00:00PM

Acquisition

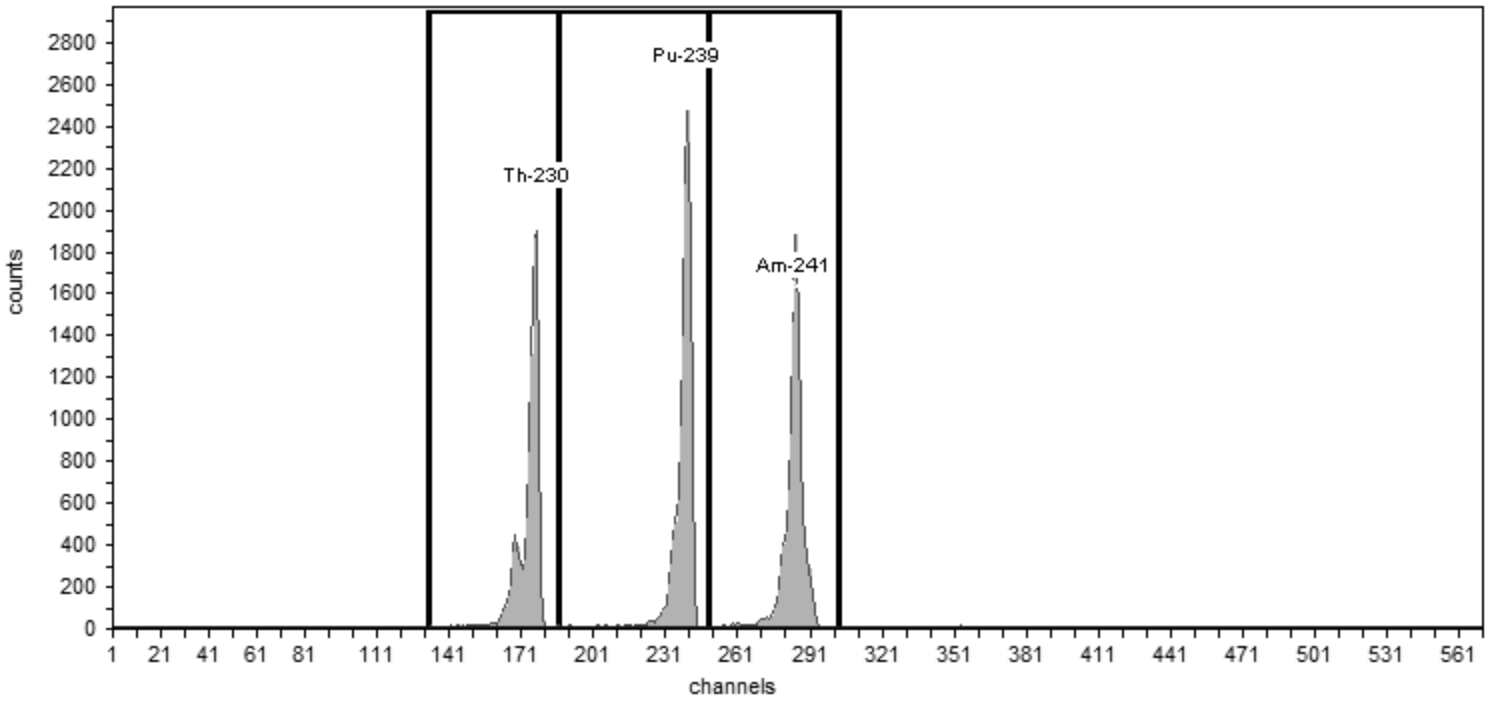
Detector: AV205 , SN: 49-155dd3
Acquisition Start Date: 10/18/2015 4:19:01PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency Calibration Name: IC-8875;AV205-20151018a

Efficiency: 23.67% +/- 0.34% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	29.04	10,676.00	76.26
Pu-239	240	5,155.40	186	249	29.83	12,556.00	89.69
Am-241	284	5,485.70	249	303	28.83	11,134.00	79.53

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:41:51PM 10/18/2015

Calibration

Sample Name: IC-8876;AV206-20151018
Description:
Detector: AV206

Analyst: 60040
Analysis Date: 10/18/2015 6:41:49PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82235-334
Prepared by: Analytics
Description:

Certification Date: 6/4/2010 12:00:00PM

Acquisition

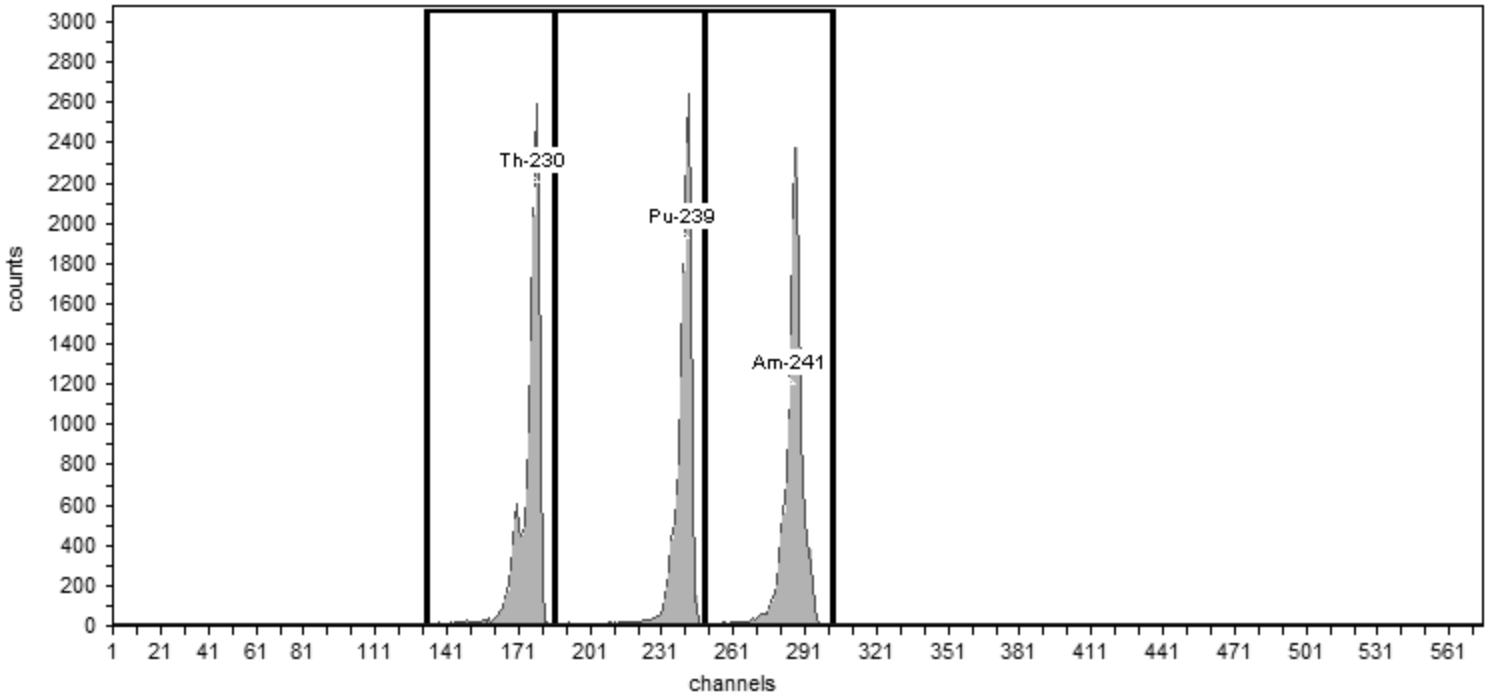
Detector: AV206 , SN: 50-119AA6
Acquisition Start Date: 10/18/2015 4:10:49PM

Live Time: 140.00 min.
Real Time: 140.02 min.

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency Calibration Name: IC-8876;AV206-20151018

Efficiency: 24.55% +/- 0.29% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	29.56	14,971.00	106.94
Pu-239	240	5,155.40	186	249	32.27	14,290.00	102.07
Am-241	284	5,485.70	249	303	32.56	15,026.00	107.33

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:41:58PM 10/18/2015

Calibration

Sample Name: IC-8877;AV207-20151018
Description:
Detector: AV207

Analyst: 60040
Analysis Date: 10/18/2015 6:41:56PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82236-334
Prepared by: Analytics
Description:

Certification Date: 6/2/2010 12:00:00PM

Acquisition

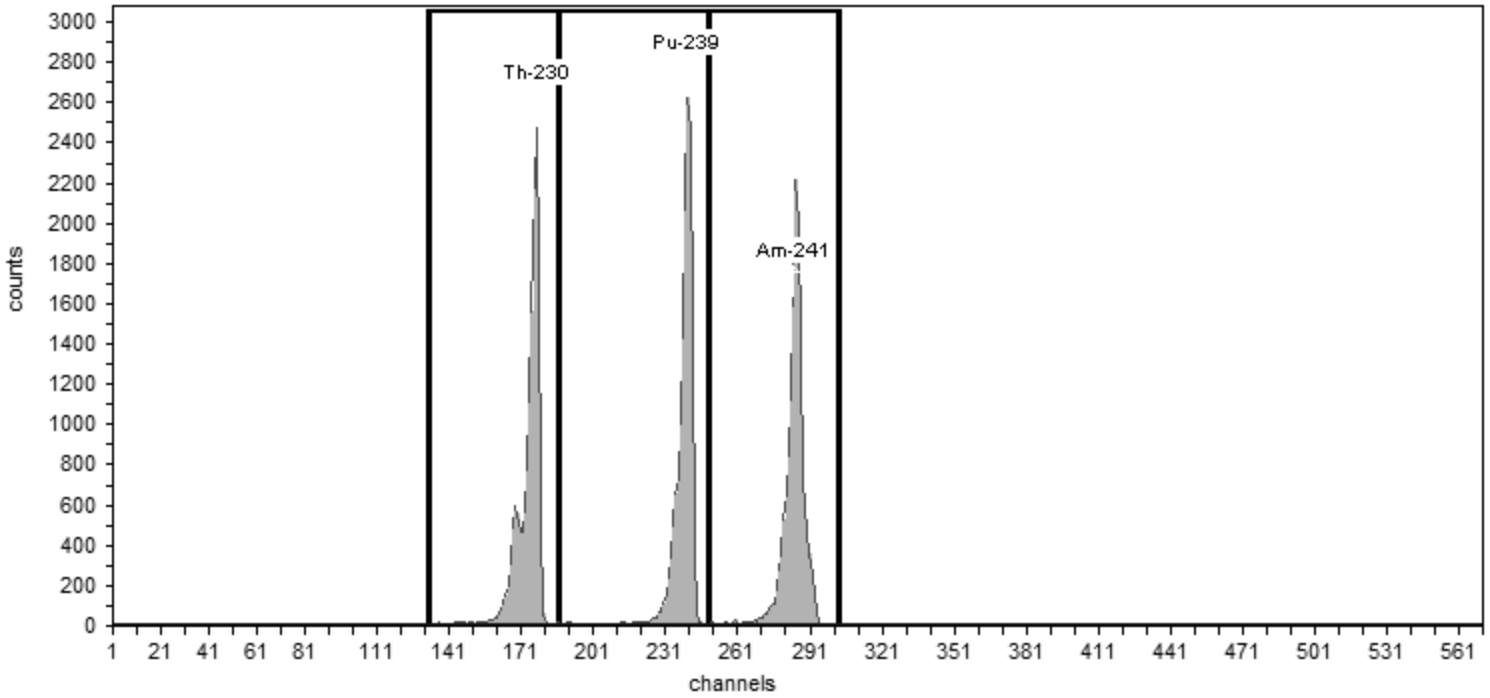
Detector: AV207 , SN: 50-117H6
Acquisition Start Date: 10/18/2015 4:11:01PM

Live Time: 140.00 min.
Real Time: 140.01 min.

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency Calibration Name: IC-8877;AV207-20151018

Efficiency: 25.15% +/- 0.30% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.89	14,676.00	104.83
Pu-239	240	5,155.40	186	249	32.69	14,608.00	104.34
Am-241	284	5,485.70	249	303	33.13	14,312.00	102.23

Initial Calibration Verifications

Alpha Spectroscopy Calibration Summary

Detector: AV161

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223458/1	10/16/15 18:57	82232-334_00001	0.2614	0.20-0.32		
ICV 160-223576/1	10/26/15 20:26	82233-334_00001	0.2638	0.20-0.32	100.9	95-105
CCV 160-268321/1	09/06/16 16:41	82232-334_00001	0.2551	0.20-0.32	97.6	95-105

Detector: AV162

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223459/1	10/16/15 18:57	82233-334_00001	0.2638	0.20-0.32		
ICV 160-223577/1	10/26/15 20:26	82232-334_00001	0.2572	0.20-0.32	97.5	95-105
CCV 160-268322/1	09/06/16 16:42	82233-334_00001	0.2586	0.20-0.32	98.0	95-105

Detector: AV166

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223463/1	10/16/15 19:04	82237-334_00003	0.2464	0.20-0.32		
ICV 160-223581/1	10/26/15 20:27	82242-334_00001	0.2428	0.20-0.32	98.6	95-105
CCV 160-268324/1	09/06/16 14:00	82237-334_00003	0.2416	0.20-0.32	98.1	95-105

Detector: AV168

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223465/1	10/16/15 18:59	82241-334_00001	0.2533	0.20-0.32		
ICV 160-223583/1	10/26/15 20:32	82244-334_00001	0.2462	0.20-0.32	97.2	95-105
CCV 160-268326/1	09/06/16 13:59	82241-334_00001	0.2452	0.20-0.32	96.8	95-105

Detector: AV169

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223466/1	10/16/15 18:59	82242-334_00001	0.2450	0.20-0.32		
ICV 160-223584/1	10/26/15 20:28	82237-334_00003	0.2461	0.20-0.32	100.4	95-105
CCV 160-268327/1	09/06/16 13:59	82242-334_00001	0.2331	0.20-0.32	95.1	95-105

Detector: AV205

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223502/1	10/18/15 16:19	82234-334_00001	0.2367	0.20-0.32		
ICV 160-223620/1	11/01/15 16:02	82245-334_00001	0.2405	0.20-0.32	101.6	95-105
CCV 160-268347/1	09/06/16 12:49	82234-334_00001	0.2258	0.20-0.32	95.4	95-105

Detector: AV206

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223503/1	10/18/15 16:10	82235-334_00001	0.2455	0.20-0.32		
ICV 160-223621/1	11/01/15 16:02	82247-334_00001	0.2375	0.20-0.32	96.7	95-105
CCV 160-268348/1	09/06/16 12:43	82235-334_00001	0.2352	0.20-0.32	95.8	95-105

Detector: AV207

Lab Sample ID	Analysis Date	Reagent ID	Efficiency	Efficiency Limits	Efficiency Recovery	Recovery Limits
IC 160-223504/1	10/18/15 16:11	82236-334_00001	0.2515	0.20-0.32		
ICV 160-223622/1	11/01/15 16:10	82246-334_00001	0.2519	0.20-0.32	100.2	95-105
CCV 160-268349/1	09/06/16 12:43	82236-334_00001	0.2504	0.20-0.32	99.6	95-105

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:13:56PM 10/27/2015

Calibration

Sample Name: ICV-8874;AV161-20151026
Description:
Detector: AV161

Analyst: 60040
Analysis Date: 10/27/2015 2:13:54PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82233-334
Prepared by: Analytics
Description:

Certification Date: 6/3/2010 12:00:00PM

Acquisition

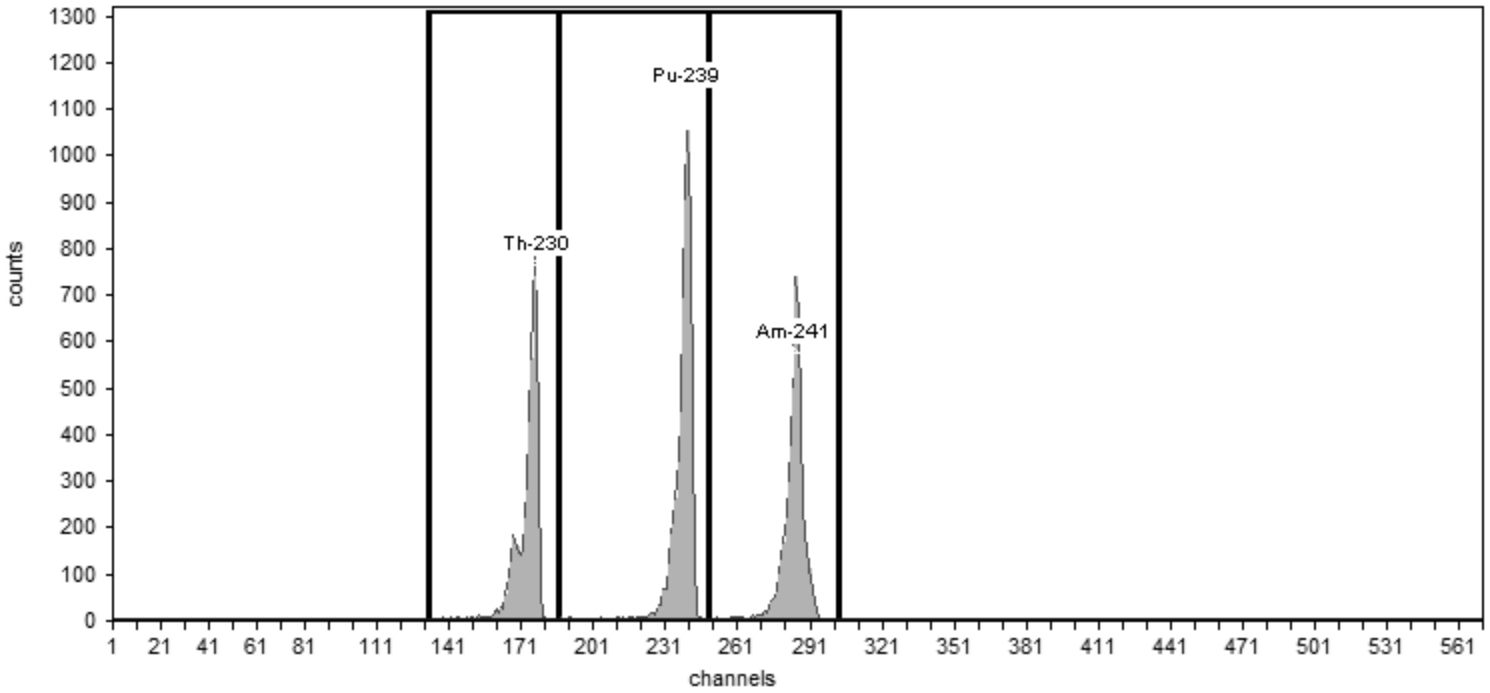
Detector: AV161 , SN: 50-05/II7
Acquisition Start Date: 10/26/2015 8:26:29PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-8874;AV161-2015102

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 26.38% +/- 0.50% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.07	4,593.00	76.55
Pu-239	240	5,155.40	186	249	33.01	5,962.00	99.37
Am-241	284	5,485.70	249	303	32.82	4,724.00	78.73

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:13:59PM 10/27/2015

Calibration

Sample Name: ICV-7107;AV162-20151026
Description:
Detector: AV162

Analyst: 60040
Analysis Date: 10/27/2015 2:13:58PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82232-334
Prepared by: Analytics
Description:

Certification Date: 6/3/2010 12:00:00PM

Acquisition

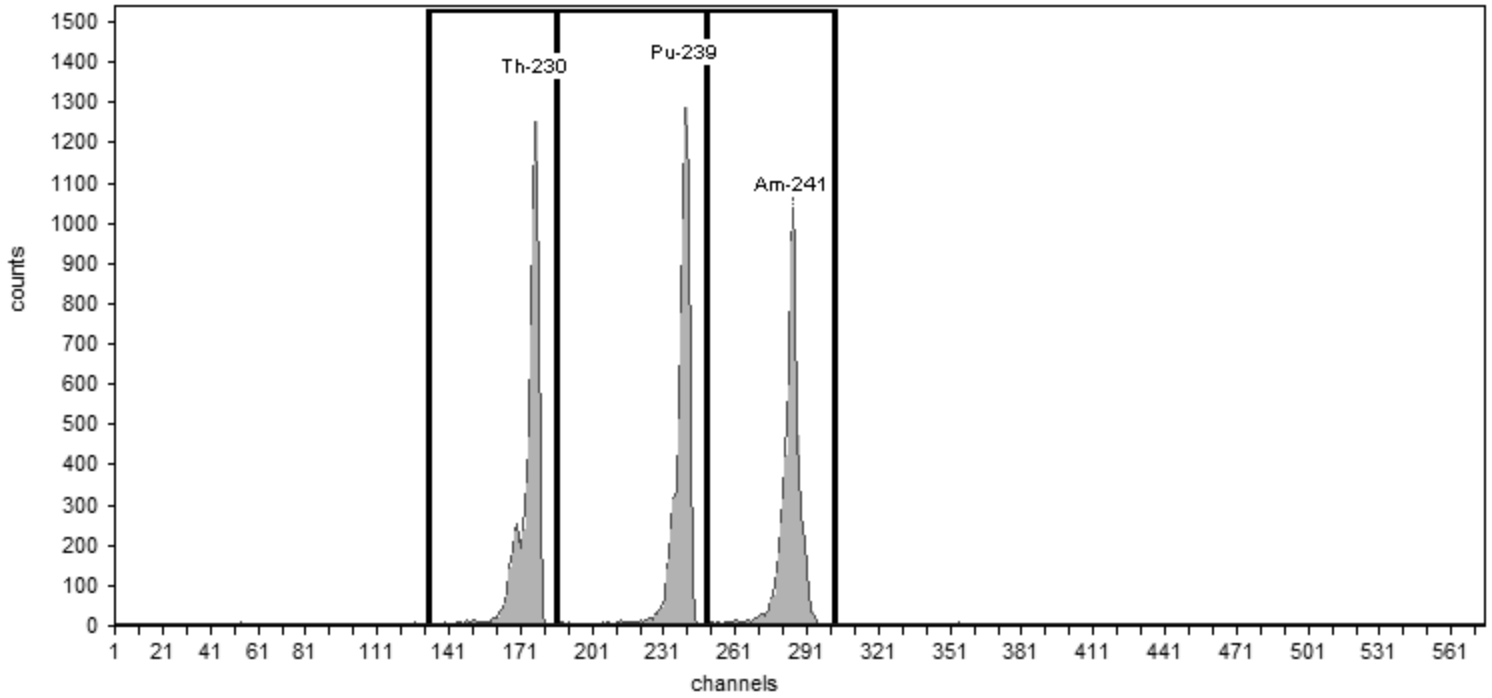
Detector: AV162 , SN: 50-05/JJ6
Acquisition Start Date: 10/26/2015 8:26:40PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²

Efficiency Calibration Name: ICV-7107;AV162-2015102

Efficiency: 25.72% +/- 0.40% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	28.67	6,855.00	114.25
Pu-239	240	5,155.40	186	249	31.64	6,850.00	114.17
Am-241	284	5,485.70	249	303	29.54	6,681.00	111.35

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:14:09PM 10/27/2015

Calibration

Sample Name: ICV-9794;AV166-20151026
Description:
Detector: AV166

Analyst: 60040
Analysis Date: 10/27/2015 2:14:08PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82242-334
Prepared by: Analytics
Description:

Certification Date: 6/8/2010 12:00:00PM

Acquisition

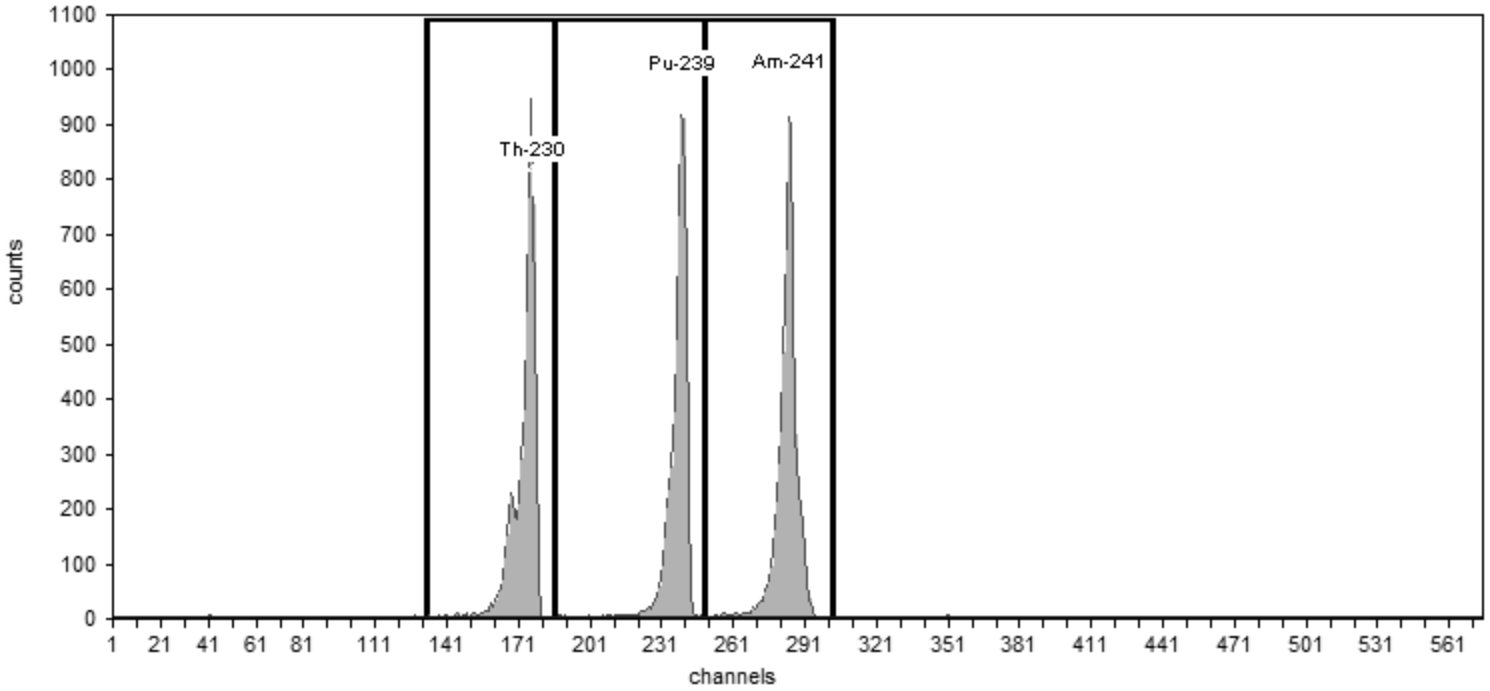
Detector: AV166 , SN: 50-112 G1
Acquisition Start Date: 10/26/2015 8:27:35PM

Live Time: 60.00 min.
Real Time: 60.03 min.

Efficiency Calibration Name: ICV-9794;AV166-2015102

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 24.28% +/- 0.42% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	31.03	5,744.00	95.73
Pu-239	240	5,155.40	186	249	35.91	5,610.00	93.50
Am-241	284	5,485.70	249	303	35.38	6,204.00	103.40

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:14:47PM 10/27/2015

Calibration

Sample Name: ICV-9817;AV168-20151026a
Description:
Detector: AV168

Analyst: 60040
Analysis Date: 10/27/2015 2:14:46PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82244-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

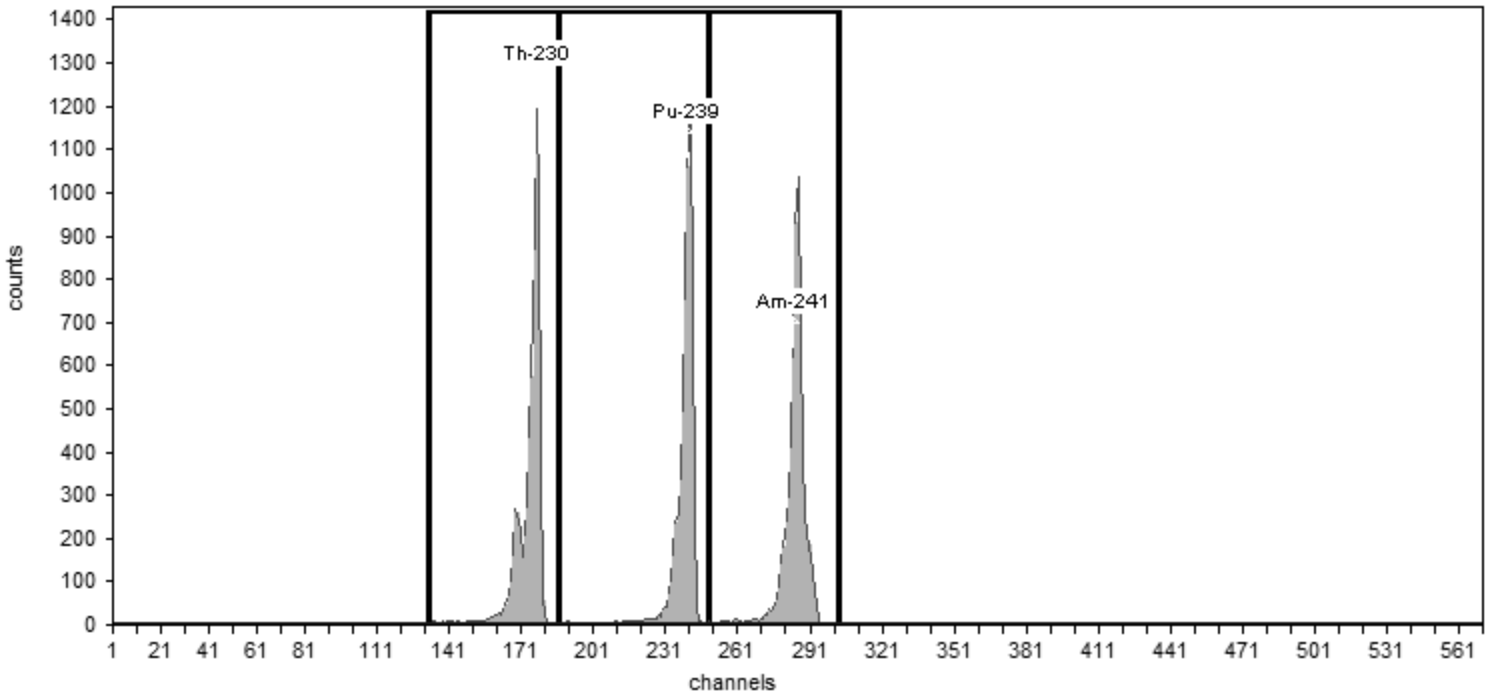
Detector: AV168 , SN: 50-113 G4
Acquisition Start Date: 10/26/2015 8:32:38PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-9817;AV168-2015102

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 24.62% +/- 0.41% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	26.50	6,422.00	107.03
Pu-239	240	5,155.40	186	249	29.31	5,938.00	98.97
Am-241	284	5,485.70	249	303	30.05	6,184.00	103.07

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:14:19PM 10/27/2015

Calibration

Sample Name: ICV-9520;AV169-20151026
Description:
Detector: AV169

Analyst: 60040
Analysis Date: 10/27/2015 2:14:18PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82237-334
Prepared by: Analytics
Description:

Certification Date: 6/1/2010 12:00:00PM

Acquisition

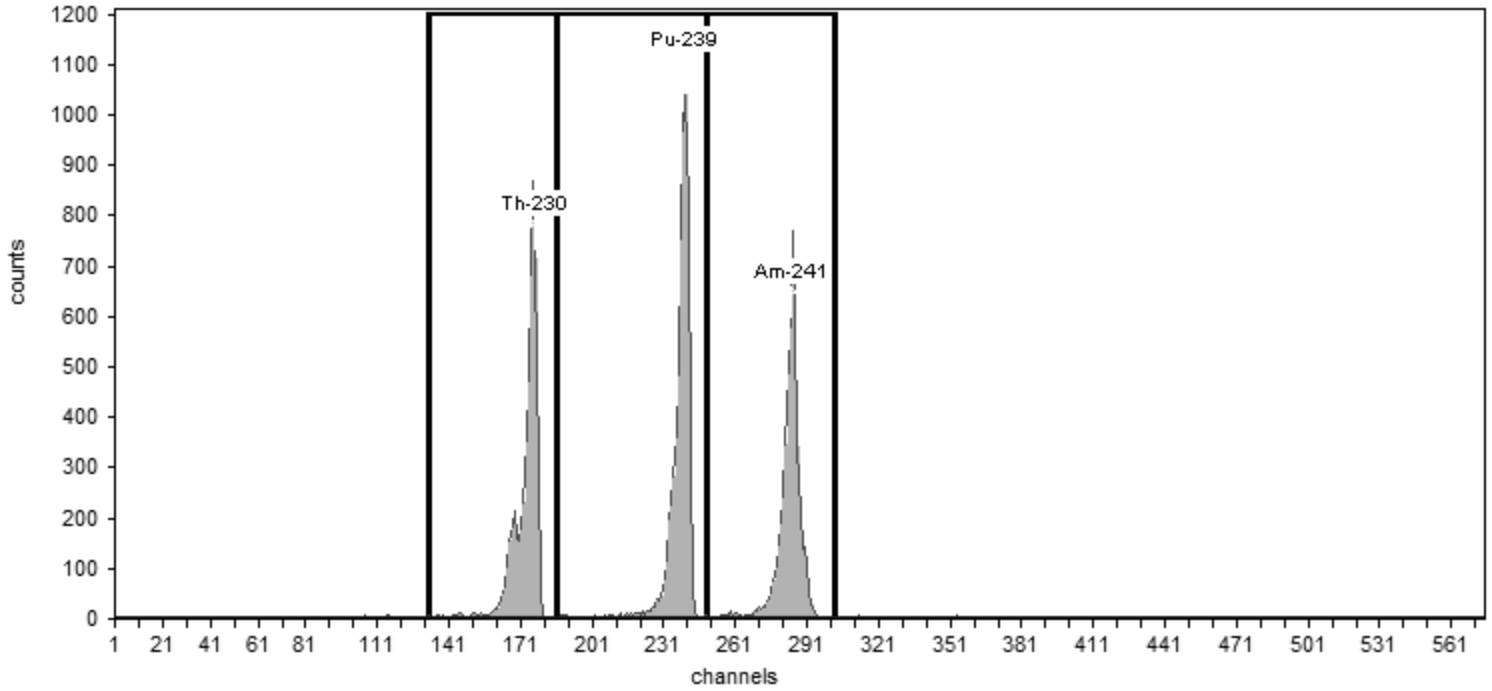
Detector: AV169 , SN: 50-112 G5
Acquisition Start Date: 10/26/2015 8:28:24PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-9520;AV169-2015102

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 24.61% +/- 0.46% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	29.53	5,052.00	84.20
Pu-239	240	5,155.40	186	249	33.21	5,973.00	99.55
Am-241	284	5,485.70	249	303	33.98	4,794.00	79.90

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:06:43PM 11/1/2015

Calibration

Sample Name: ICV-9884;AV205-20151101
Description:
Detector: AV205

Analyst: 60040
Analysis Date: 11/1/2015 6:06:42PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82245-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

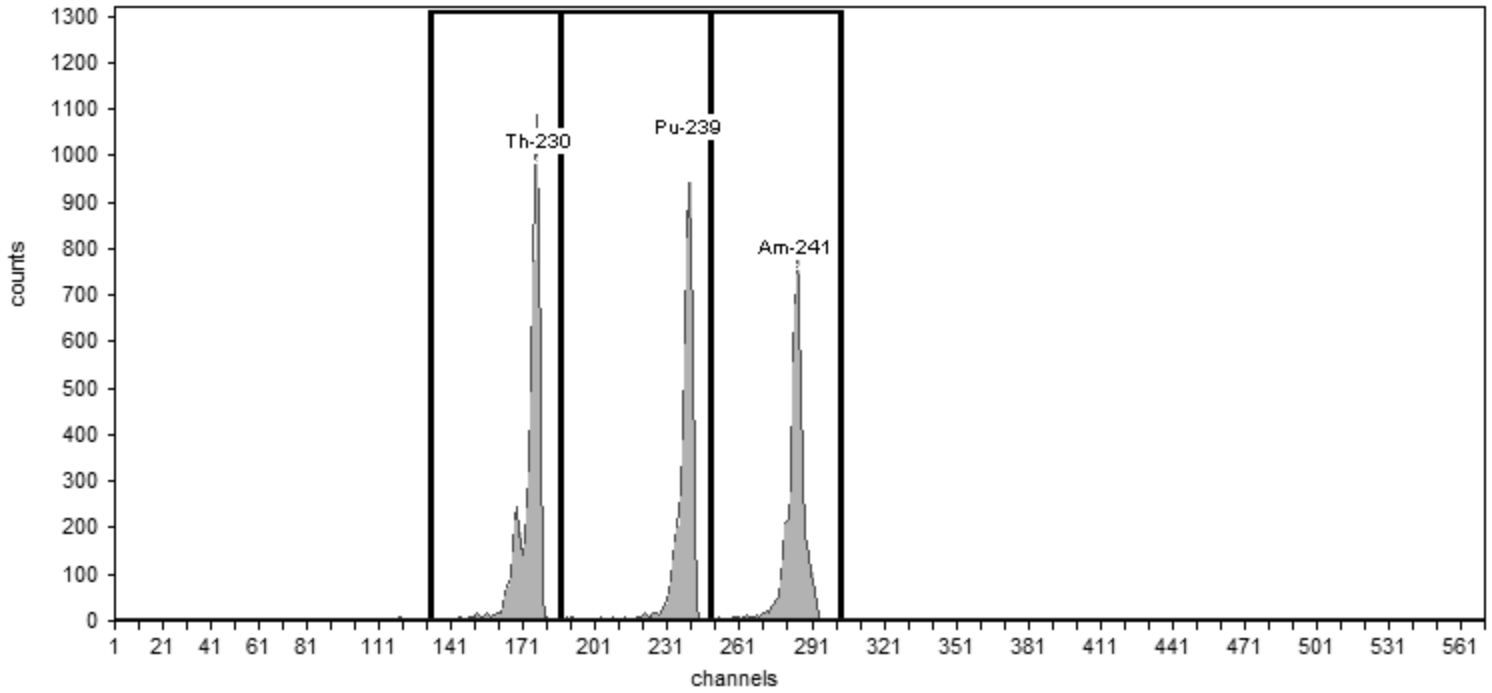
Detector: AV205 , SN: 49-155dd3
Acquisition Start Date: 11/1/2015 4:02:07PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency Calibration Name: ICV-9884;AV205-2015110

Efficiency: 24.05% +/- 0.46% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	26.73	5,797.00	96.62
Pu-239	240	5,155.40	186	249	29.85	4,737.00	78.95
Am-241	284	5,485.70	249	303	29.82	4,752.00	79.20

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:32:31PM 11/23/2015

Calibration

Sample Name: ICV-9886;AV206-20151101
Description:
Detector: AV206

Analyst: 60040
Analysis Date: 11/1/2015 6:06:45PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82247-334
Prepared by: Analytics
Description:

Certification Date: 6/10/2010 12:00:00PM

Acquisition

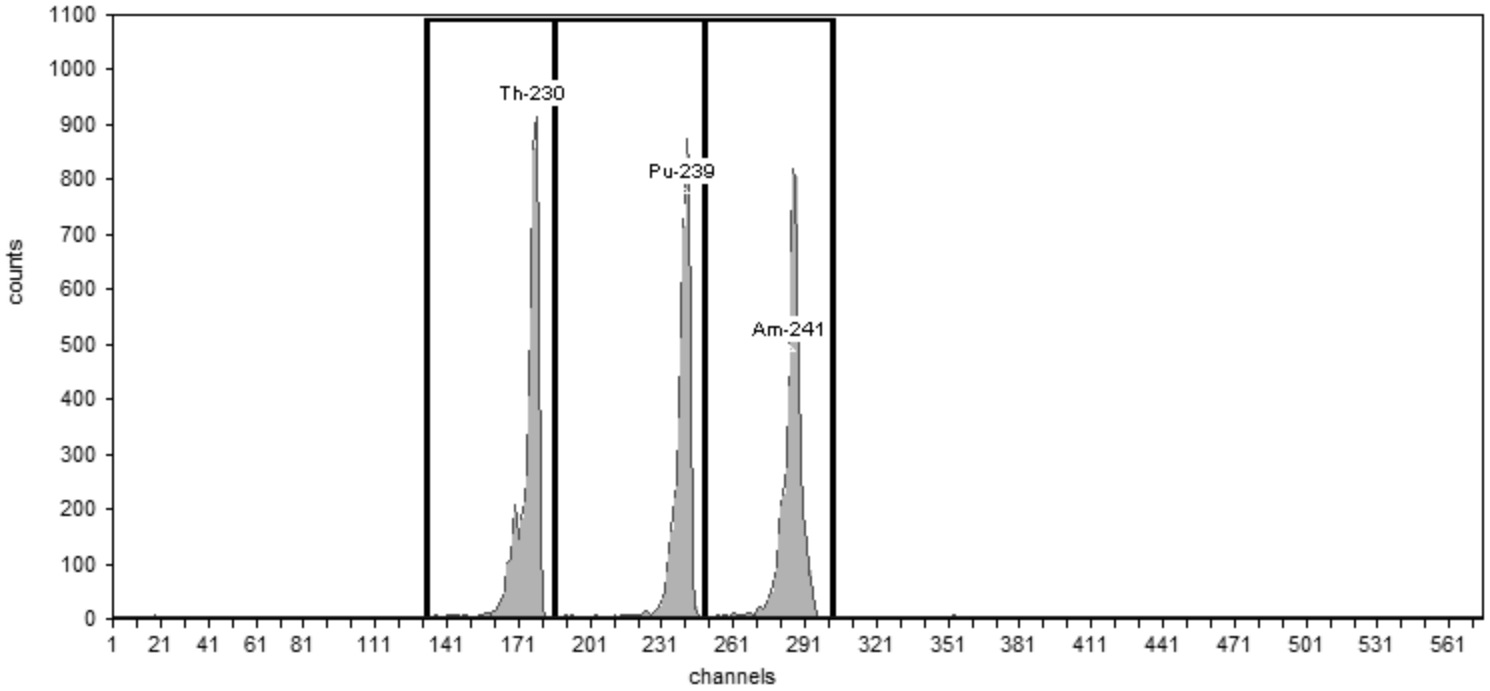
Detector: AV206 , SN: 50-119AA6
Acquisition Start Date: 11/1/2015 4:02:23PM

Live Time: 60.00 min.
Real Time: 60.01 min.

Efficiency Calibration Name: ICV-9886;AV206-2015110

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 23.75% +/- 0.43% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	29.65	5,304.00	88.40
Pu-239	240	5,155.40	186	249	34.18	4,902.00	81.70
Am-241	284	5,485.70	249	303	32.70	5,387.00	89.78

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
6:07:02PM 11/1/2015

Calibration

Sample Name: ICV-9885;AV207-20151101a
Description:
Detector: AV207

Analyst: 60040
Analysis Date: 11/1/2015 6:07:01PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82246-334
Prepared by: Analytics
Description:

Certification Date: 6/9/2010 12:00:00PM

Acquisition

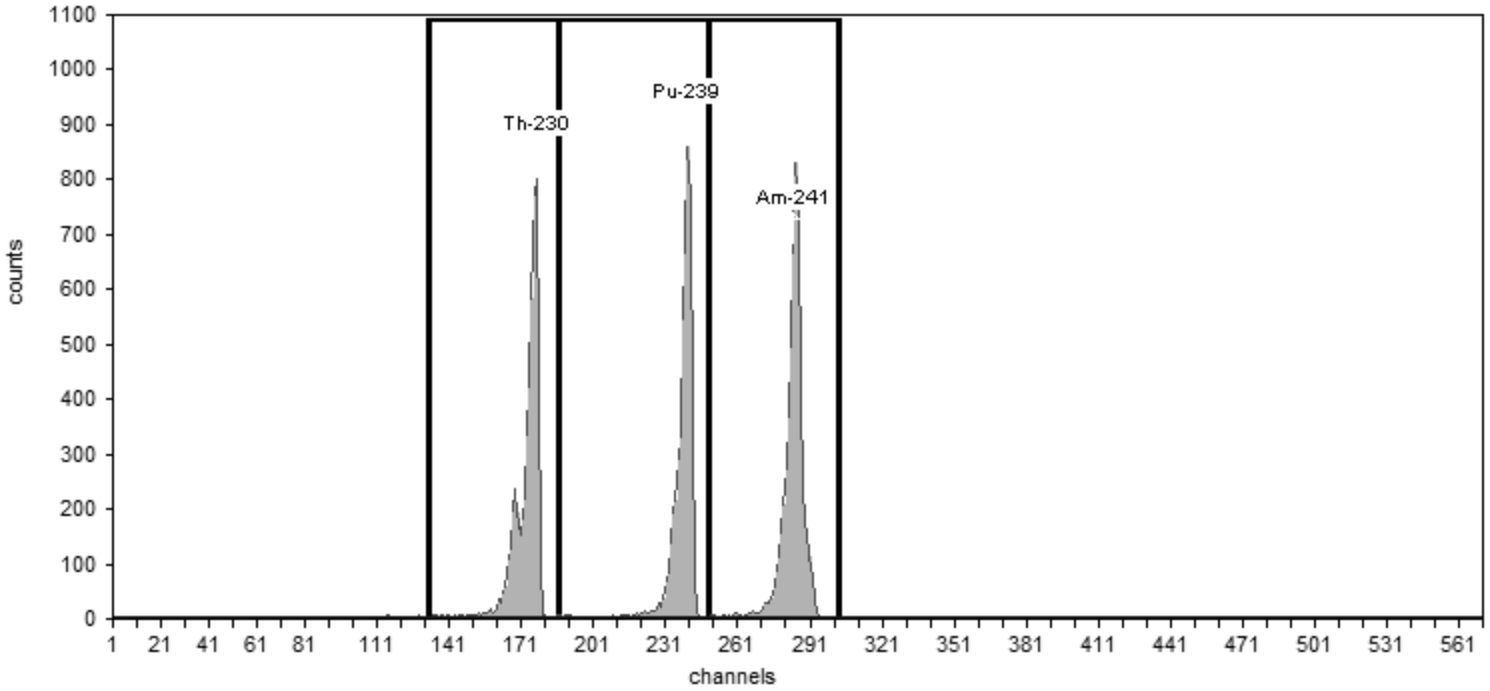
Detector: AV207 , SN: 50-117H6
Acquisition Start Date: 11/1/2015 4:10:52PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: ICV-9885;AV207-2015110

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.19% +/- 0.48% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 0

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	32.38	5,121.00	85.35
Pu-239	240	5,155.40	186	249	32.47	4,800.00	80.00
Am-241	284	5,485.70	249	303	34.15	5,384.00	89.73

Monthly Calibration Verifications

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:26:04AM 9/7/2016

Calibration

Sample Name: CCV-7107;AV161-20160906
Description:
Detector: AV161

Analyst: 60040
Analysis Date: 9/7/2016 8:26:03AM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82232-334
Prepared by: Analytics
Description:

Certification Date: 6/3/2010 12:00:00PM

Acquisition

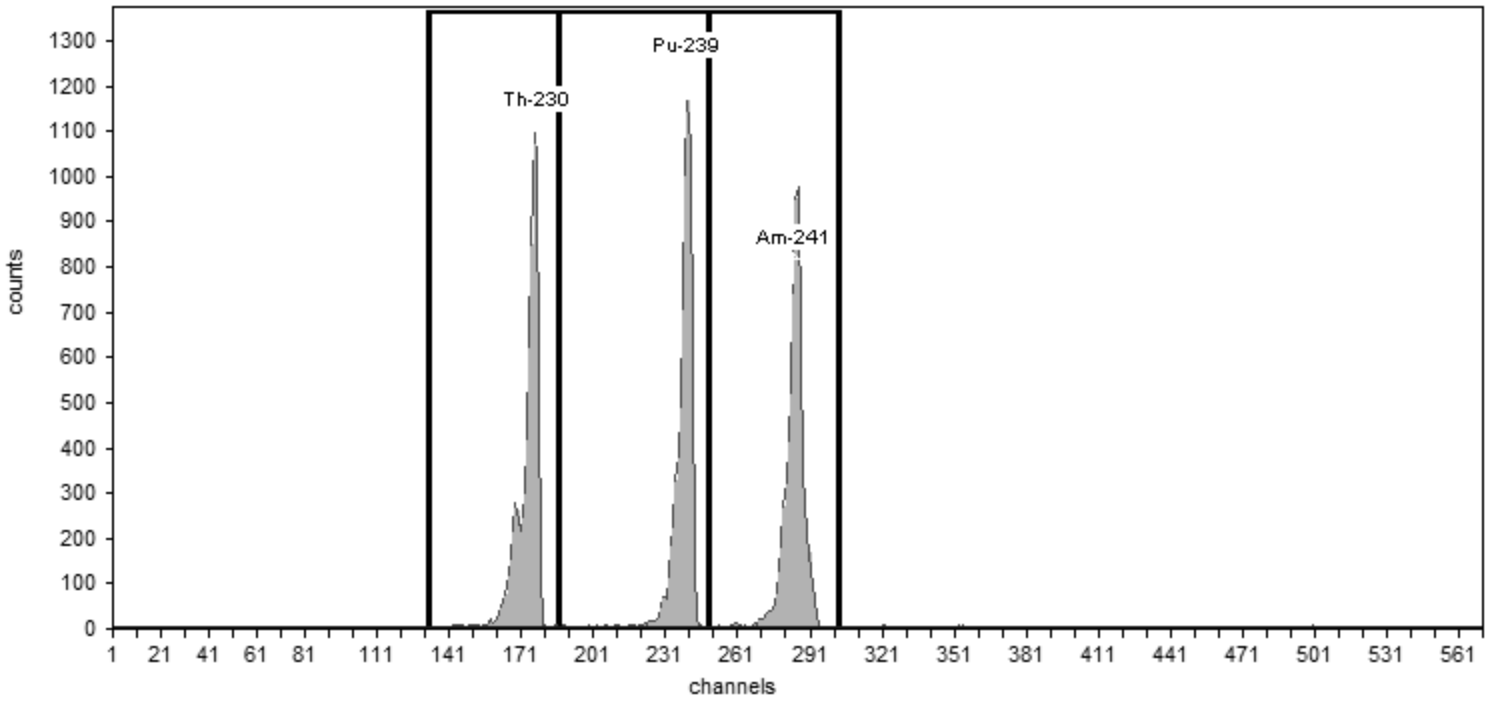
Detector: AV161 , SN: 50-05/II7
Acquisition Start Date: 9/6/2016 4:41:55PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-7107;AV161-201609(

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.51% +/- 0.40% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	32.25	6,800.00	113.33
Pu-239	240	5,155.40	186	249	34.07	6,749.00	112.48
Am-241	284	5,485.70	249	303	35.54	6,657.00	110.95

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
8:26:13AM 9/7/2016

Calibration

Sample Name: CCV-8874;AV162-20160906
Description:
Detector: AV162

Analyst: 60040
Analysis Date: 9/7/2016 8:26:11AM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82233-334
Prepared by: Analytics
Description:

Certification Date: 6/3/2010 12:00:00PM

Acquisition

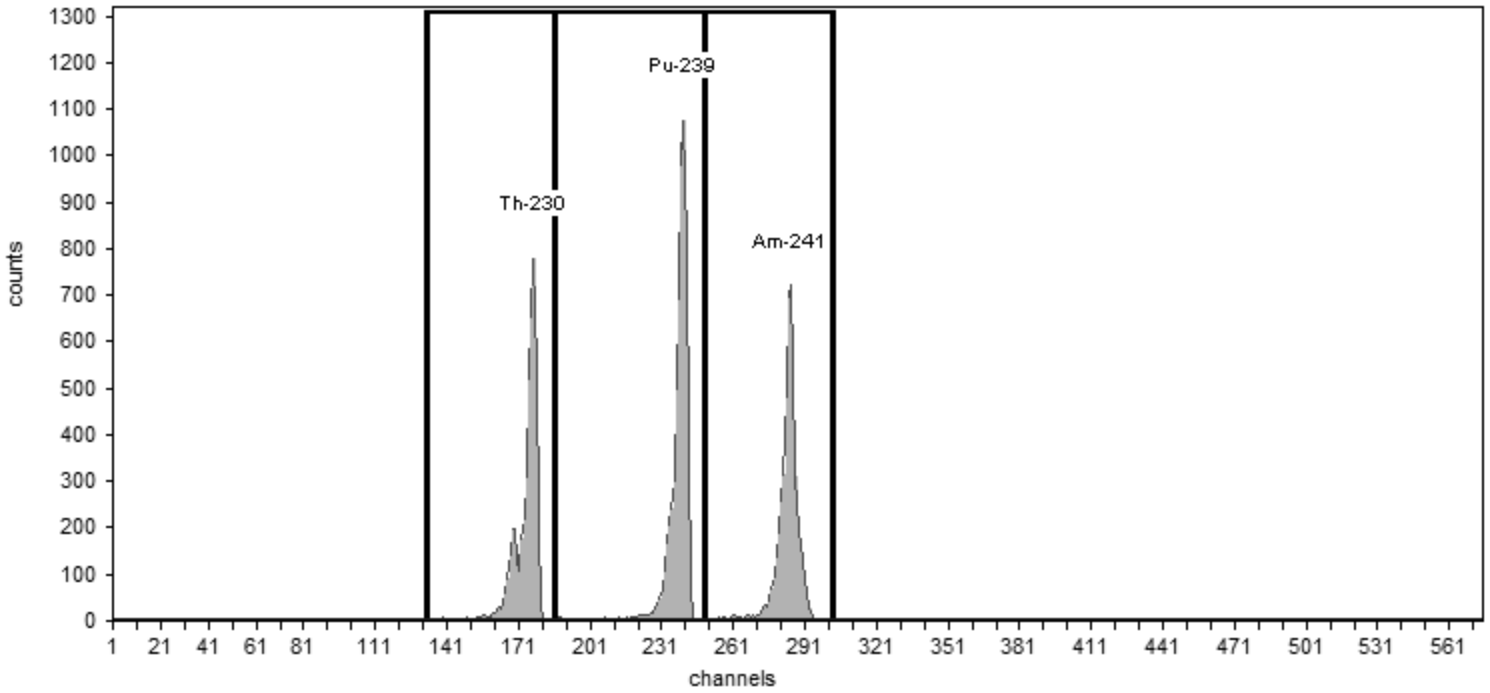
Detector: AV162 , SN: 50-05/JJ6
Acquisition Start Date: 9/6/2016 4:42:11PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-8874;AV162-201609(

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.86% +/- 0.49% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.39	4,501.00	75.02
Pu-239	240	5,155.40	186	249	32.84	5,794.00	96.57
Am-241	284	5,485.70	249	303	33.58	4,672.00	77.87

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
3:08:40PM 9/6/2016

Calibration

Sample Name: CCV-9520;AV166-20160906
Description:
Detector: AV166

Analyst: 60040
Analysis Date: 9/6/2016 3:08:39PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82237-334
Prepared by: Analytics
Description:

Certification Date: 6/1/2010 12:00:00PM

Acquisition

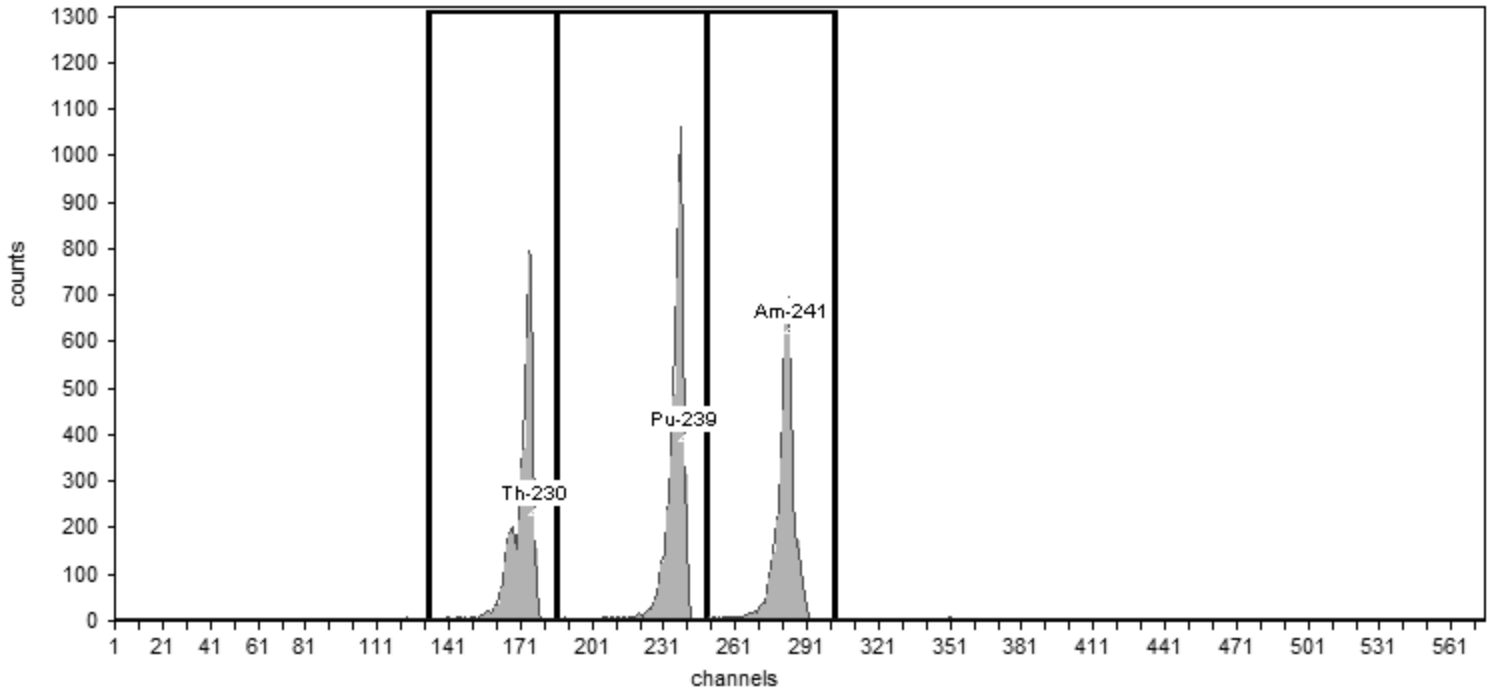
Detector: AV166 , SN: 50-112 G1
Acquisition Start Date: 9/6/2016 2:00:06PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-9520;AV166-201609(

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 24.16% +/- 0.45% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.42	5,041.00	84.02
Pu-239	240	5,155.40	186	249	31.94	5,784.00	96.40
Am-241	284	5,485.70	249	303	35.46	4,693.00	78.22

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
3:08:23PM 9/6/2016

Calibration

Sample Name: CCV-9793;AV168-20160906
Description:
Detector: AV168

Analyst: 60040
Analysis Date: 9/6/2016 3:08:21PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82241-334
Prepared by: Analytics
Description:

Certification Date: 6/8/2010 12:00:00PM

Acquisition

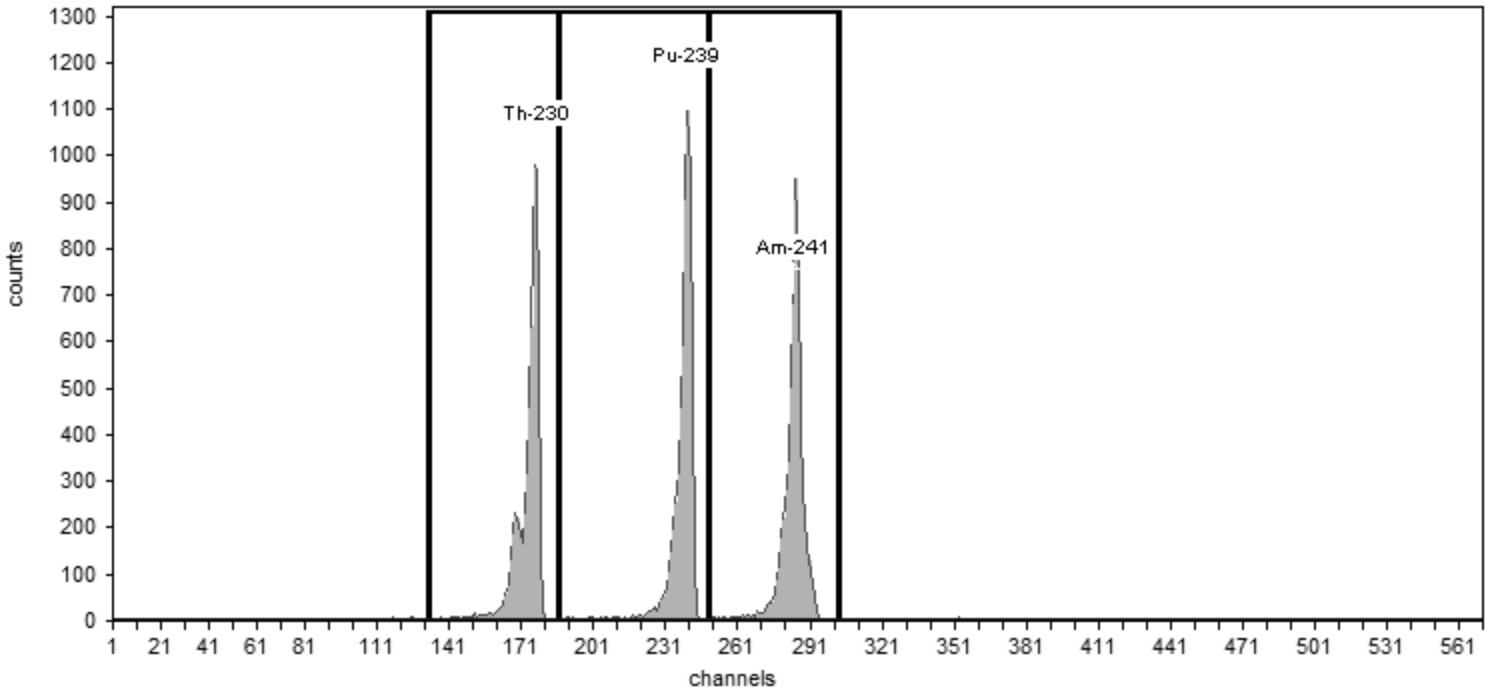
Detector: AV168 , SN: 50-113 G4
Acquisition Start Date: 9/6/2016 1:59:29PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-9793;AV168-201609(

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 24.52% +/- 0.42% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	30.53	5,844.00	97.40
Pu-239	240	5,155.40	186	249	31.48	6,042.00	100.70
Am-241	284	5,485.70	249	303	29.95	5,774.00	96.23

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
3:08:16PM 9/6/2016

Calibration

Sample Name: CCV-9794;AV169-20160906
Description:
Detector: AV169

Analyst: 60040
Analysis Date: 9/6/2016 3:08:15PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82242-334
Prepared by: Analytics
Description:

Certification Date: 6/8/2010 12:00:00PM

Acquisition

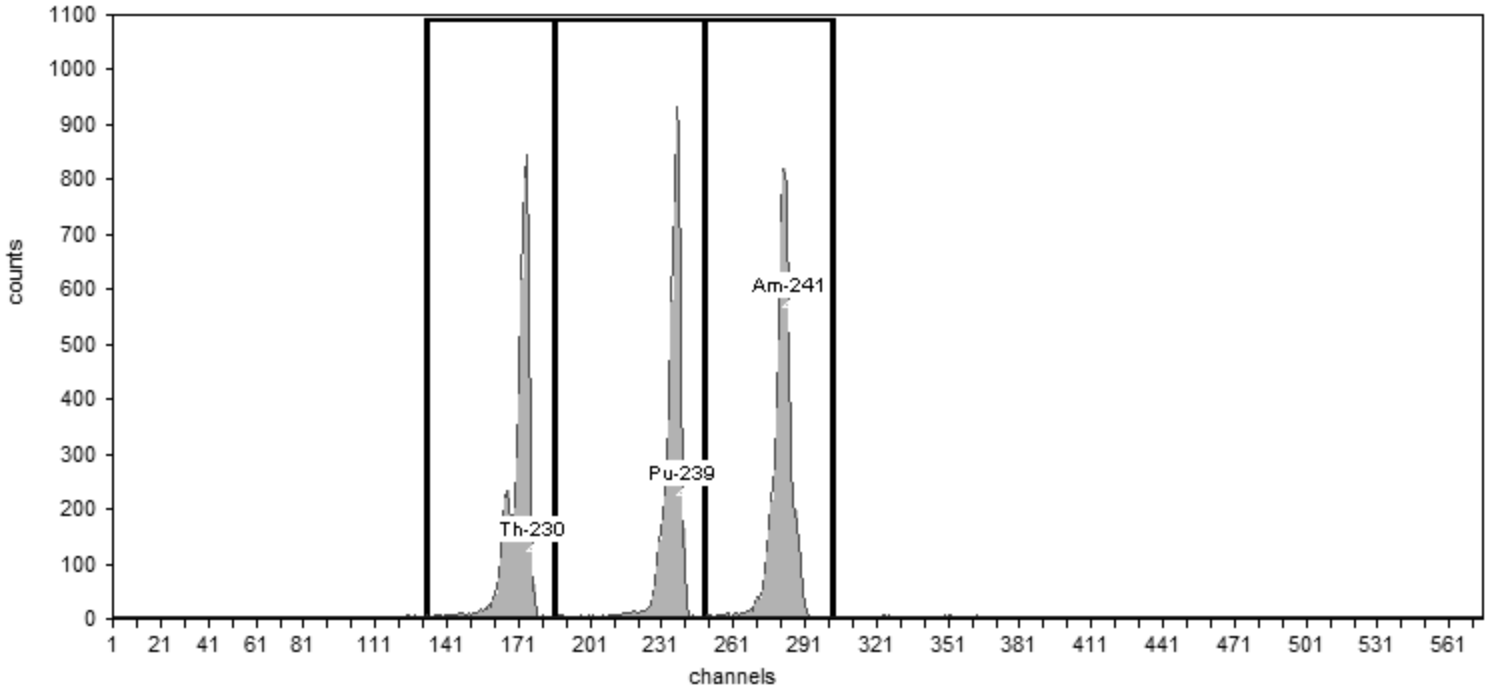
Detector: AV169 , SN: 50-112 G5
Acquisition Start Date: 9/6/2016 1:59:15PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-9794;AV169-201609(

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 23.31% +/- 0.40% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	33.39	5,531.00	92.18
Pu-239	240	5,155.40	186	249	35.08	5,456.00	90.93
Am-241	284	5,485.70	249	303	38.94	5,863.00	97.72

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:49:15PM 9/6/2016

Calibration

Sample Name: CCV-8875;AV205-20160906a
Description:
Detector: AV205

Analyst: 60040
Analysis Date: 9/6/2016 1:49:14PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82234-334
Prepared by: Analytics
Description:

Certification Date: 6/2/2010 12:00:00PM

Acquisition

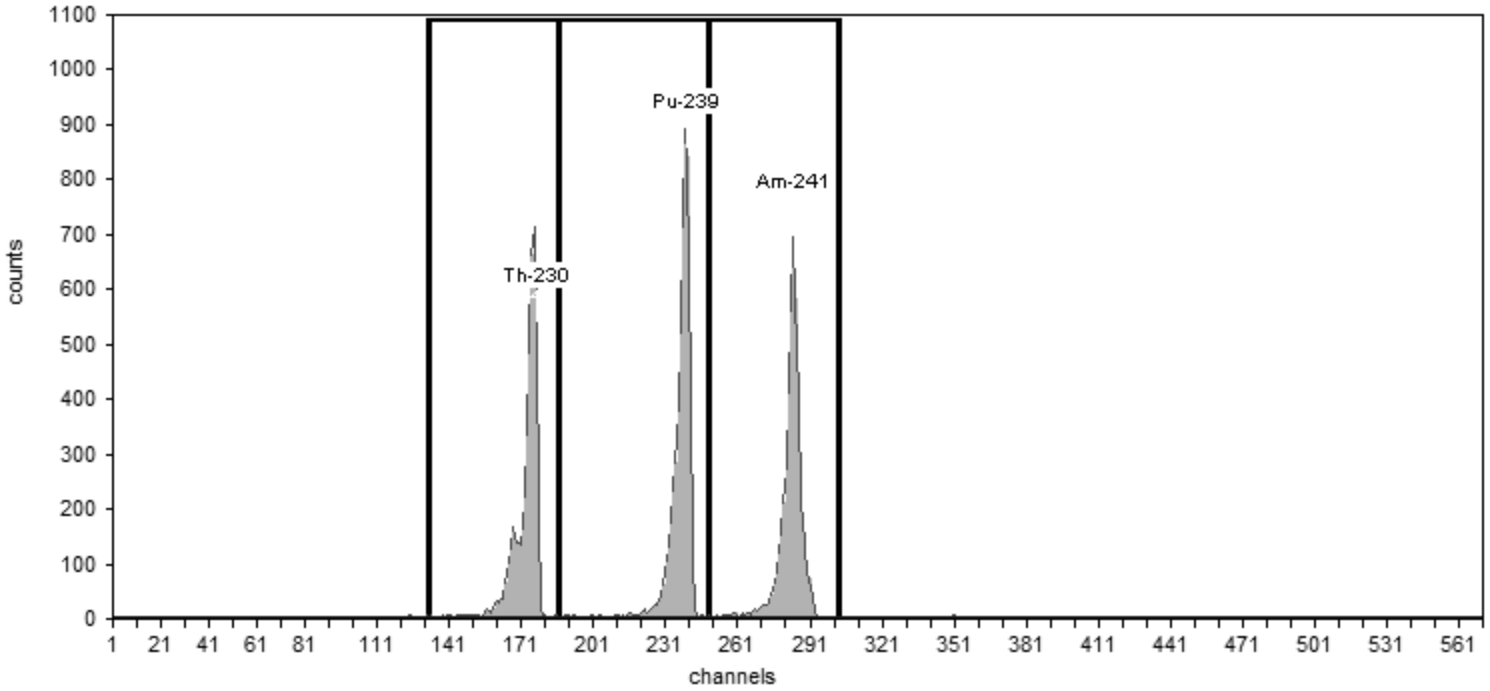
Detector: AV205 , SN: 49-155dd3
Acquisition Start Date: 9/6/2016 12:49:12PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-8875;AV205-201609(

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 22.58% +/- 0.44% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	32.33	4,402.00	73.37
Pu-239	240	5,155.40	186	249	33.07	5,116.00	85.27
Am-241	284	5,485.70	249	303	35.24	4,512.00	75.20

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:46:59PM 9/6/2016

Calibration

Sample Name: CCV-8876;AV206-20160906
Description:
Detector: AV206

Analyst: 60040
Analysis Date: 9/6/2016 1:46:58PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82235-334
Prepared by: Analytics
Description:

Certification Date: 6/4/2010 12:00:00PM

Acquisition

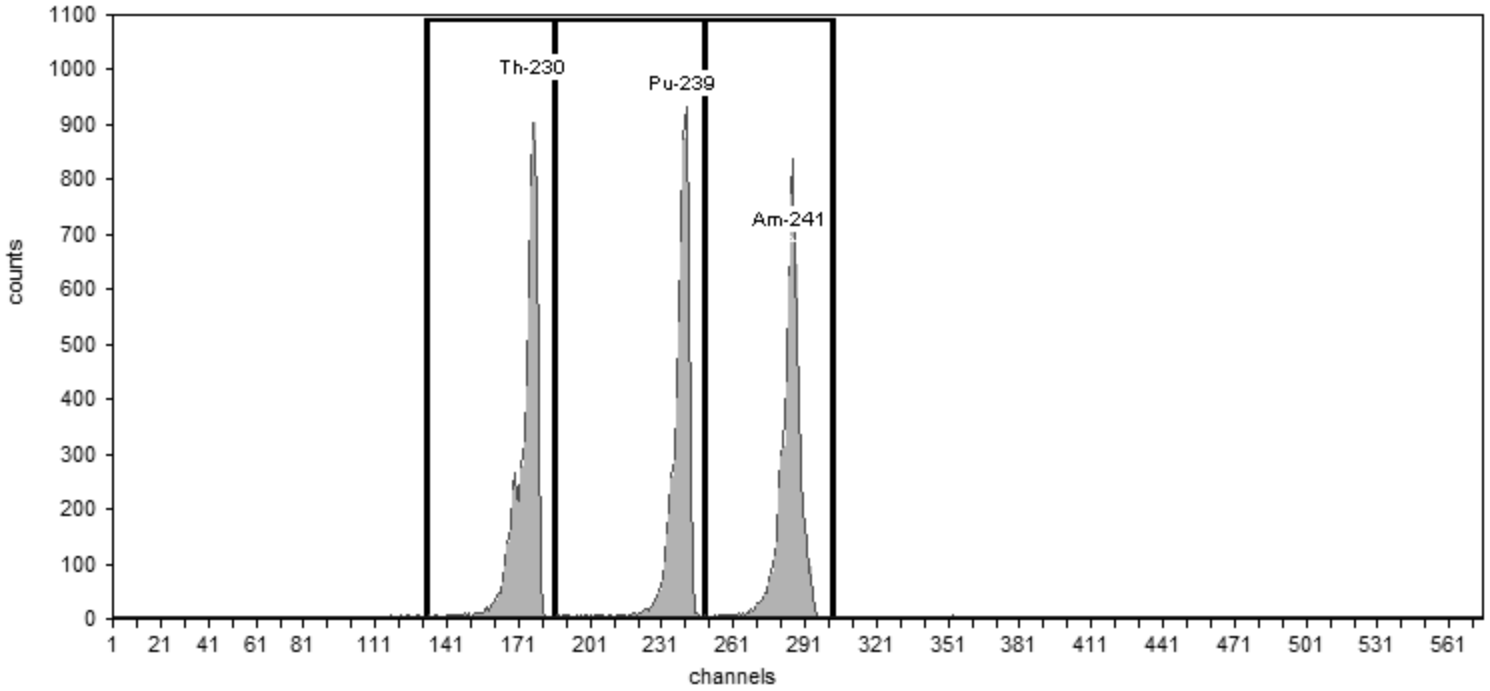
Detector: AV206 , SN: 50-119AA6
Acquisition Start Date: 9/6/2016 12:43:19PM

Live Time: 60.00 min.
Real Time: 60.01 min.

Efficiency Calibration Name: CCV-8876;AV206-201609(

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 23.52% +/- 0.39% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	34.47	6,197.00	103.28
Pu-239	240	5,155.40	186	249	37.61	5,820.00	97.00
Am-241	284	5,485.70	249	303	37.56	6,159.00	102.65

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Calibration Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
1:47:19PM 9/6/2016

Calibration

Sample Name: CCV-8877;AV207-20160906
Description:
Detector: AV207

Analyst: 60040
Analysis Date: 9/6/2016 1:47:16PM
Calibration Type: Energy And Efficiency

Source Info

Certificate ID: 82236-334
Prepared by: Analytics
Description:

Certification Date: 6/2/2010 12:00:00PM

Acquisition

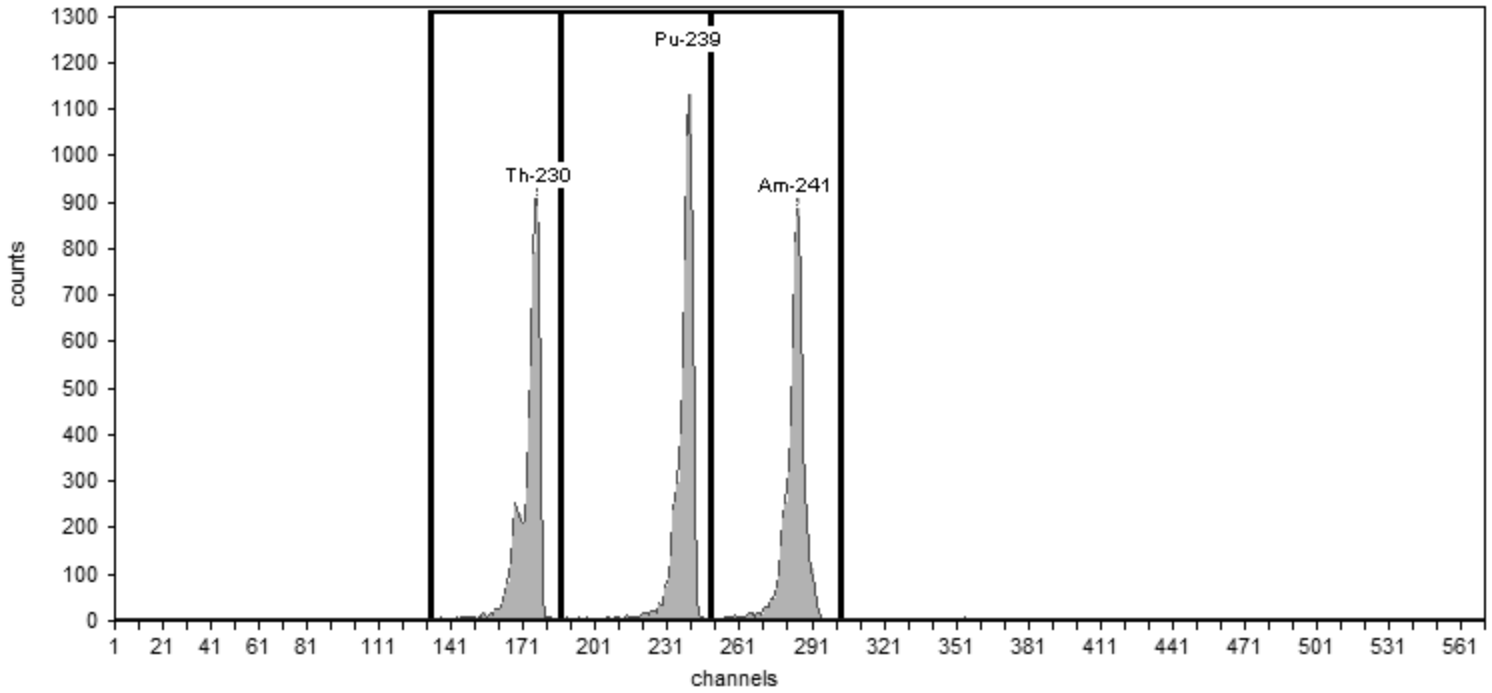
Detector: AV207 , SN: 50-117H6
Acquisition Start Date: 9/6/2016 12:43:37PM

Live Time: 60.00 min.
Real Time: 60.00 min.

Efficiency Calibration Name: CCV-8877;AV207-201609(

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2

Efficiency: 25.04% +/- 0.41% TPU(2 sigma)



General Analysis

Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: No
Shelf: 1

Nuclide Activity Summary

Nuclide	Peak Channel	Peak Energy keV	ROI Start Channel	ROI End Channel	Peak FWHM keV	Gross Counts	Net Count Rate (cpm)
Th-230	177	4,687.50	132	186	33.33	6,064.00	101.07
Pu-239	240	5,155.40	186	249	32.63	6,419.00	106.98
Am-241	284	5,485.70	249	303	34.52	6,150.00	102.50

Monthly Backgrounds

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:56:51AM 9/3/2016

Sample

Sample Name: ICB;AV161
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

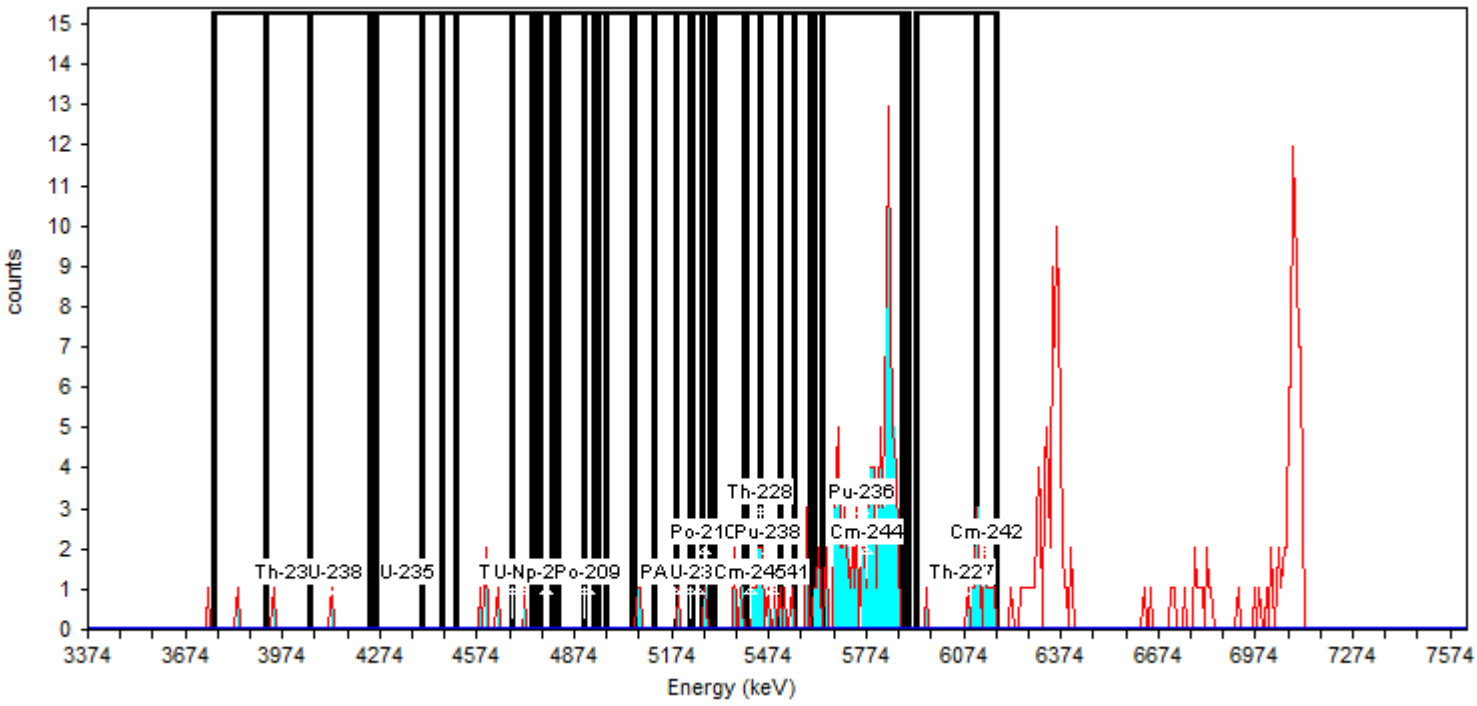
Batch

Batch Name: August2016a
Description:

Acquisition

Detector: AV161 , SN: 50-05/II7
Acquisition Start Date: 9/2/2016 10:55:25AM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-7107;AV161-20151016
Calibration Date: 10/17/2015 2:36:23PM

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 290.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	2.00	2.083E-003	1.804E-003
U-238	4,135.08	3,918.81	4,239.49	2.00	2.083E-003	1.804E-003
U-235	4,358.81	4,261.86	4,463.21	0.00	0.000E+000	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	5.00	5.208E-003	2.552E-003
U-234	4,709.31	4,507.96	4,821.17	5.00	5.208E-003	2.552E-003
Pu-242	4,903.21	4,679.48	4,947.95	1.00	1.042E-003	1.473E-003
Th-229	4,858.46	4,739.14	5,119.48	2.00	2.083E-003	1.804E-003
Np-237	4,783.89	4,768.97	4,806.26	0.00	0.000E+000	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	3.00	3.125E-003	2.083E-003
Am-243	5,231.34	5,052.36	5,305.92	4.00	4.167E-003	2.329E-003
U-232	5,253.71	5,059.82	5,402.86	7.00	7.292E-003	2.946E-003
Th-228	5,447.61	5,186.59	5,507.27	16.00	1.667E-002	4.295E-003
Po-210	5,276.09	5,231.34	5,291.00	1.00	1.042E-003	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	17.00	1.771E-002	4.419E-003
Am-241	5,484.90	5,298.46	5,604.22	19.00	1.979E-002	4.658E-003
Cm-245	5,417.78	5,395.41	5,447.61	6.00	6.250E-003	2.756E-003
Pu-236	5,760.83	5,611.67	5,887.60	99.00	1.031E-001	1.042E-002
Cm-244	5,775.74	5,641.51	5,902.52	94.00	9.792E-002	1.015E-002
Th-227	6,074.04	5,932.35	6,178.45	14.00	1.458E-002	4.034E-003
Cm-242	6,148.62	6,118.79	6,178.45	10.00	1.042E-002	3.455E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:20:10AM 9/2/2016

Sample

Sample Name: ICB;AV162
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

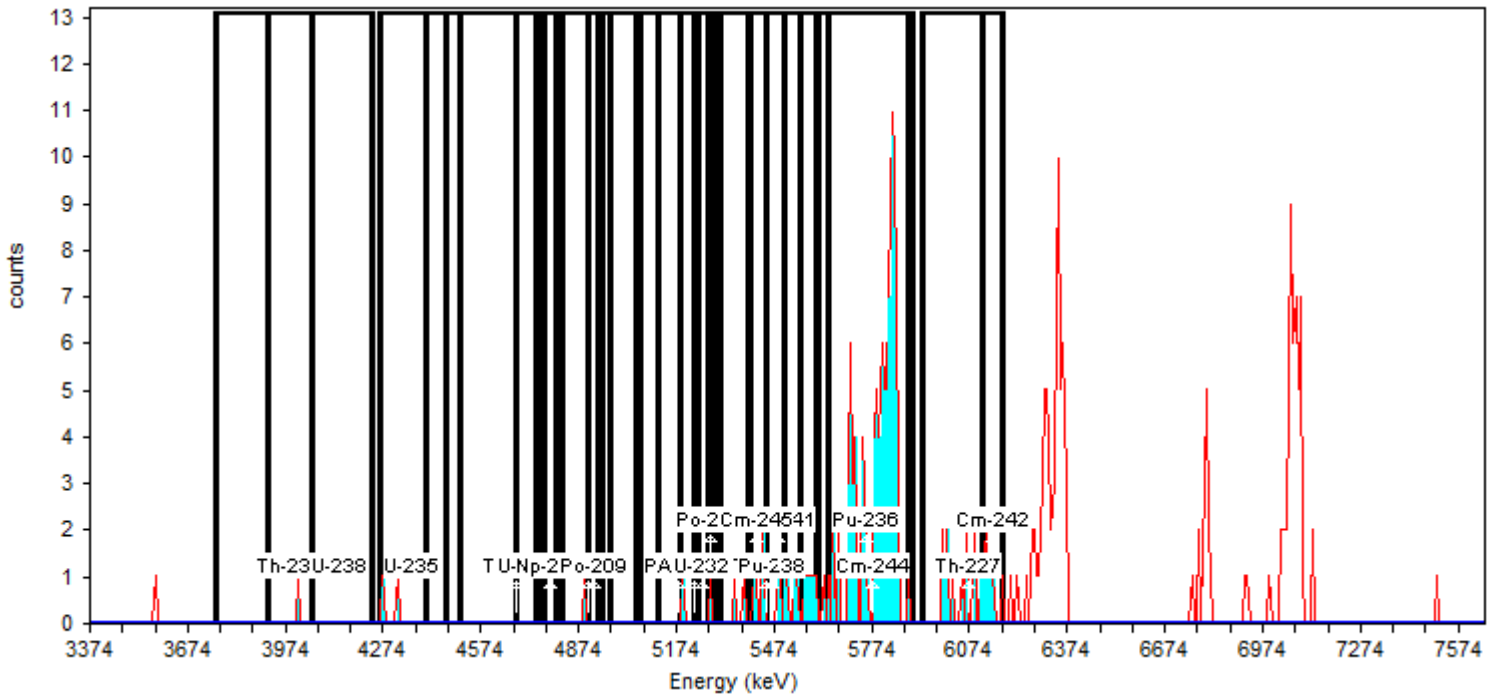
Batch

Batch Name: August2016
Description:

Acquisition

Detector: AV162 , SN: 50-05/JJ6
Acquisition Start Date: 9/1/2016 3:17:10PM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-8874;AV162-20151016
Calibration Date: 10/17/2015 2:36:27PM

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 270.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	1.00	1.042E-003	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	1.00	1.042E-003	1.473E-003
U-235	4,358.81	4,261.86	4,463.21	2.00	2.083E-003	1.804E-003
Th-230	4,679.48	4,403.55	4,746.60	0.00	0.000E+000	1.473E-003
U-234	4,709.31	4,507.96	4,821.17	0.00	0.000E+000	1.473E-003
Pu-242	4,903.21	4,679.48	4,947.95	1.00	1.042E-003	1.473E-003
Th-229	4,858.46	4,739.14	5,119.48	1.00	1.042E-003	1.473E-003
Np-237	4,783.89	4,768.97	4,806.26	0.00	0.000E+000	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	1.00	1.042E-003	1.473E-003
Am-243	5,231.34	5,052.36	5,305.92	2.00	2.083E-003	1.804E-003
U-232	5,253.71	5,059.82	5,402.86	4.00	4.167E-003	2.329E-003
Th-228	5,447.61	5,186.59	5,507.27	11.00	1.146E-002	3.608E-003
Po-210	5,276.09	5,231.34	5,291.00	1.00	1.042E-003	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	13.00	1.354E-002	3.898E-003
Am-241	5,484.90	5,298.46	5,604.22	18.00	1.875E-002	4.541E-003
Cm-245	5,417.78	5,395.41	5,447.61	4.00	4.167E-003	2.329E-003
Pu-236	5,760.83	5,611.67	5,887.60	98.00	1.021E-001	1.036E-002
Cm-244	5,775.74	5,641.51	5,902.52	97.00	1.010E-001	1.031E-002
Th-227	6,074.04	5,932.35	6,178.45	19.00	1.979E-002	4.658E-003
Cm-242	6,148.62	6,118.79	6,178.45	7.00	7.292E-003	2.946E-003

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:57:19AM 9/3/2016

Sample

Sample Name: ICB;AV166
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

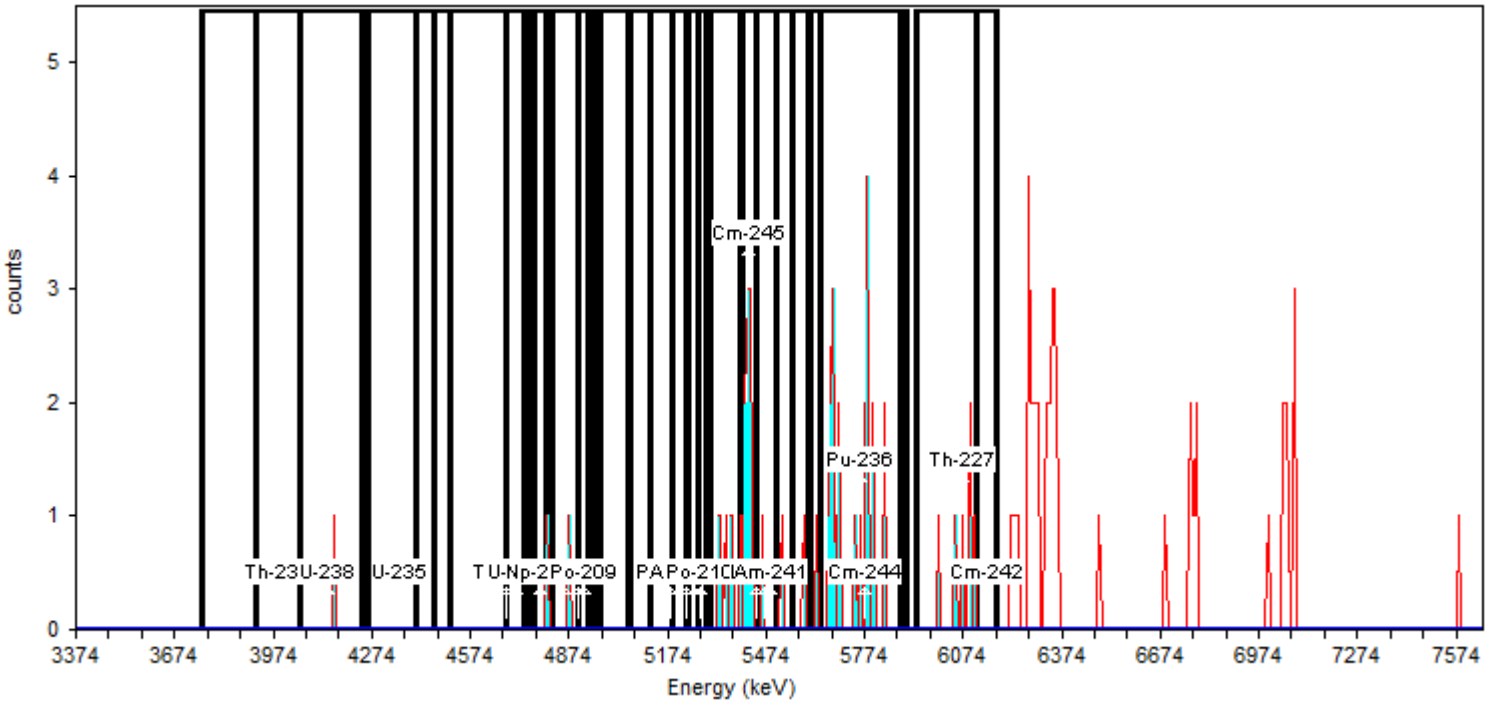
Batch

Batch Name: August2016a
Description:

Acquisition

Detector: AV166 , SN: 50-112 G1
Acquisition Start Date: 9/2/2016 10:55:26AM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-9520;AV166-20151016a
Calibration Date: 10/17/2015 2:37:00PM

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 97.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	0.00	0.000E+000	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	1.00	1.042E-003	1.473E-003
U-235	4,358.81	4,261.86	4,463.21	0.00	0.000E+000	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	0.00	0.000E+000	1.473E-003
U-234	4,709.31	4,507.96	4,821.17	1.00	1.042E-003	1.473E-003
Pu-242	4,903.21	4,679.48	4,947.95	2.00	2.083E-003	1.804E-003
Th-229	4,858.46	4,739.14	5,119.48	2.00	2.083E-003	1.804E-003
Np-237	4,783.89	4,768.97	4,806.26	1.00	1.042E-003	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	0.00	0.000E+000	1.473E-003
Am-243	5,231.34	5,052.36	5,305.92	0.00	0.000E+000	1.473E-003
U-232	5,253.71	5,059.82	5,402.86	6.00	6.250E-003	2.756E-003
Th-228	5,447.61	5,186.59	5,507.27	16.00	1.667E-002	4.295E-003
Po-210	5,276.09	5,231.34	5,291.00	0.00	0.000E+000	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	17.00	1.771E-002	4.419E-003
Am-241	5,484.90	5,298.46	5,604.22	18.00	1.875E-002	4.541E-003
Cm-245	5,417.78	5,395.41	5,447.61	10.00	1.042E-002	3.455E-003
Pu-236	5,760.83	5,611.67	5,887.60	21.00	2.188E-002	4.886E-003
Cm-244	5,775.74	5,641.51	5,902.52	20.00	2.083E-002	4.774E-003
Th-227	6,074.04	5,932.35	6,178.45	6.00	6.250E-003	2.756E-003
Cm-242	6,148.62	6,118.79	6,178.45	0.00	0.000E+000	1.473E-003

Sample

Sample Name: ICB;AV168
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

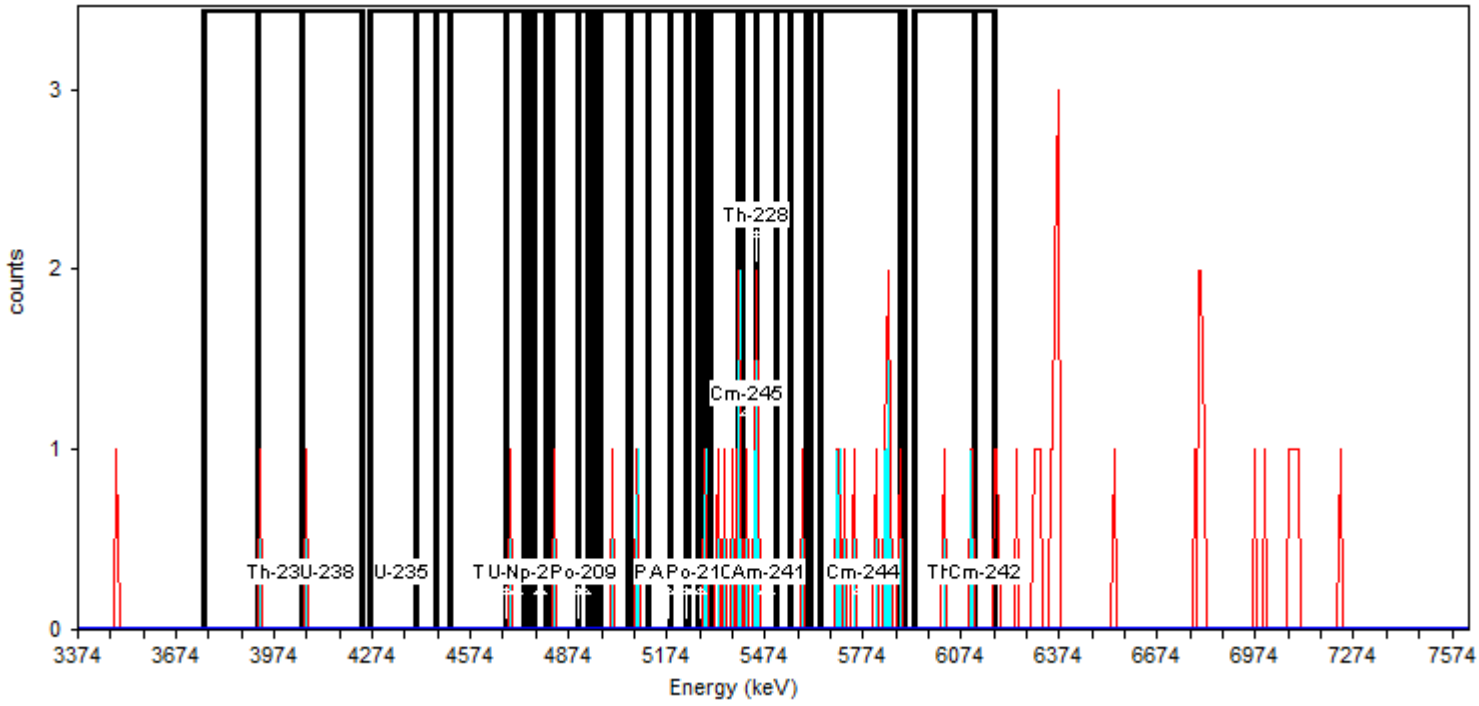
Batch

Batch Name: August2016a
Description:

Acquisition

Detector: AV168 , SN: 50-113 G4
Acquisition Start Date: 9/2/2016 10:55:26AM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-9793;AV168-20151016
Calibration Date: 10/17/2015 2:36:43PM

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 61.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	1.00	1.042E-003	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	2.00	2.083E-003	1.804E-003
U-235	4,358.81	4,261.86	4,463.21	0.00	0.000E+000	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	1.00	1.042E-003	1.473E-003
U-234	4,709.31	4,507.96	4,821.17	1.00	1.042E-003	1.473E-003
Pu-242	4,903.21	4,679.48	4,947.95	2.00	2.083E-003	1.804E-003
Th-229	4,858.46	4,739.14	5,119.48	3.00	3.125E-003	2.083E-003
Np-237	4,783.89	4,768.97	4,806.26	0.00	0.000E+000	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	2.00	2.083E-003	1.804E-003
Am-243	5,231.34	5,052.36	5,305.92	2.00	2.083E-003	1.804E-003
U-232	5,253.71	5,059.82	5,402.86	7.00	7.292E-003	2.946E-003
Th-228	5,447.61	5,186.59	5,507.27	11.00	1.146E-002	3.608E-003
Po-210	5,276.09	5,231.34	5,291.00	1.00	1.042E-003	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	11.00	1.146E-002	3.608E-003
Am-241	5,484.90	5,298.46	5,604.22	11.00	1.146E-002	3.608E-003
Cm-245	5,417.78	5,395.41	5,447.61	6.00	6.250E-003	2.756E-003
Pu-236	5,760.83	5,611.67	5,887.60	10.00	1.042E-002	3.455E-003
Cm-244	5,775.74	5,641.51	5,902.52	10.00	1.042E-002	3.455E-003
Th-227	6,074.04	5,932.35	6,178.45	4.00	4.167E-003	2.329E-003
Cm-242	6,148.62	6,118.79	6,178.45	1.00	1.042E-003	1.473E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
7:20:18AM 9/2/2016

Sample

Sample Name: ICB;AV169
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

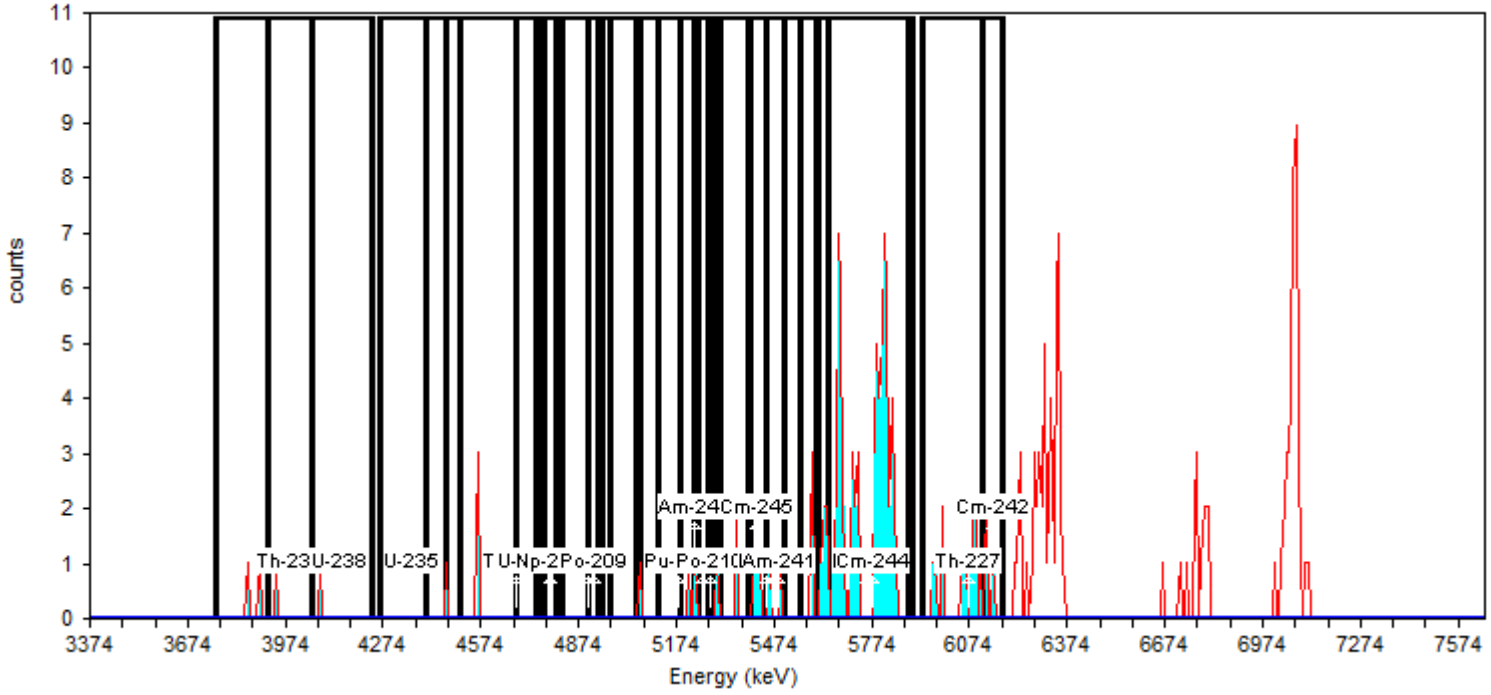
Batch

Batch Name: August2016
Description:

Acquisition

Detector: AV169 , SN: 50-112 G5
Acquisition Start Date: 9/1/2016 3:17:12PM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-9794;AV169-20151016
Calibration Date: 10/17/2015 2:36:47PM

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 210.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	3.00	3.125E-003	2.083E-003
U-238	4,135.08	3,918.81	4,239.49	2.00	2.083E-003	1.804E-003
U-235	4,358.81	4,261.86	4,463.21	1.00	1.042E-003	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	4.00	4.167E-003	2.329E-003
U-234	4,709.31	4,507.96	4,821.17	3.00	3.125E-003	2.083E-003
Pu-242	4,903.21	4,679.48	4,947.95	0.00	0.000E+000	1.473E-003
Th-229	4,858.46	4,739.14	5,119.48	1.00	1.042E-003	1.473E-003
Np-237	4,783.89	4,768.97	4,806.26	0.00	0.000E+000	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	3.00	3.125E-003	2.083E-003
Am-243	5,231.34	5,052.36	5,305.92	4.00	4.167E-003	2.329E-003
U-232	5,253.71	5,059.82	5,402.86	6.00	6.250E-003	2.756E-003
Th-228	5,447.61	5,186.59	5,507.27	12.00	1.250E-002	3.756E-003
Po-210	5,276.09	5,231.34	5,291.00	1.00	1.042E-003	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	10.00	1.042E-002	3.455E-003
Am-241	5,484.90	5,298.46	5,604.22	13.00	1.354E-002	3.898E-003
Cm-245	5,417.78	5,395.41	5,447.61	4.00	4.167E-003	2.329E-003
Pu-236	5,760.83	5,611.67	5,887.60	72.00	7.500E-002	8.900E-003
Cm-244	5,775.74	5,641.51	5,902.52	67.00	6.979E-002	8.590E-003
Th-227	6,074.04	5,932.35	6,178.45	16.00	1.667E-002	4.295E-003
Cm-242	6,148.62	6,118.79	6,178.45	3.00	3.125E-003	2.083E-003

Sample

Sample Name: ICB;AV205
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

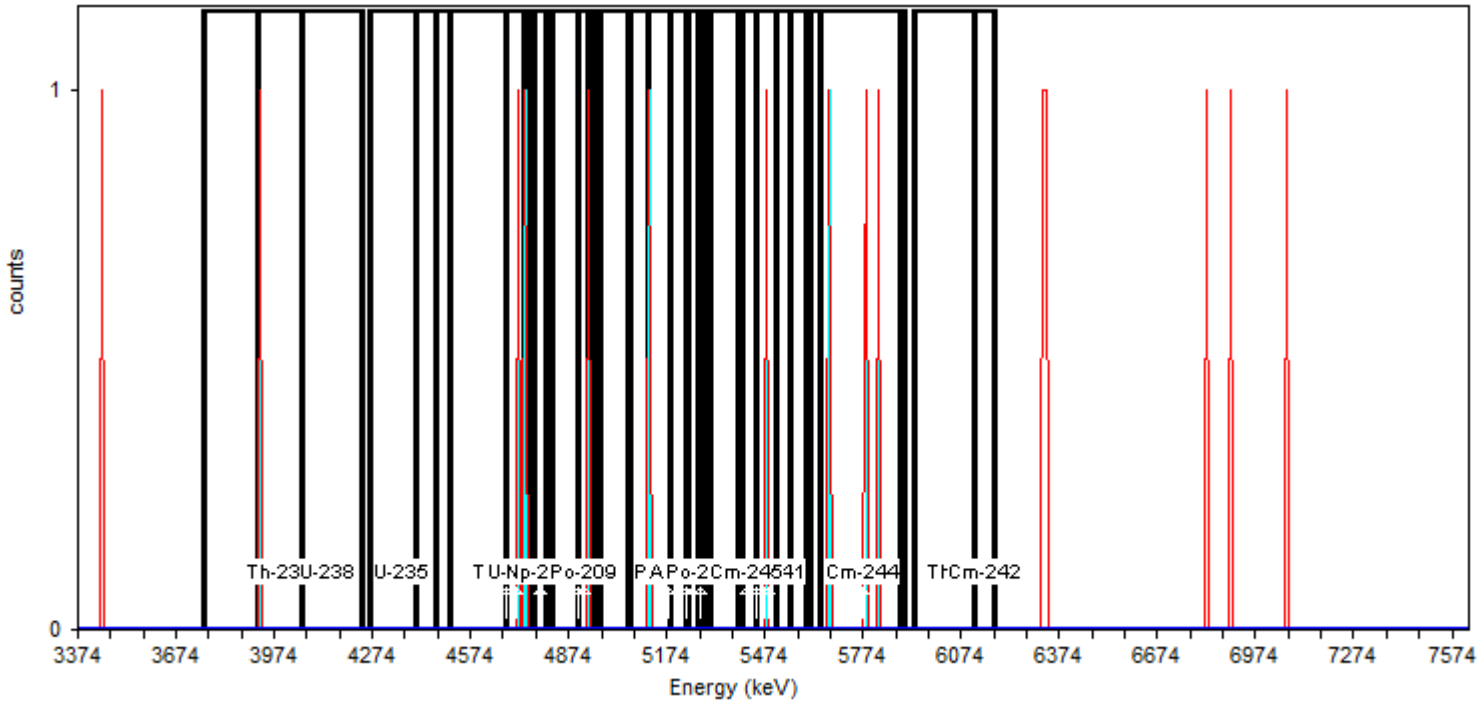
Batch

Batch Name: August2016
Description:

Acquisition

Detector: AV205 , SN: 49-155dd3
Acquisition Start Date: 9/1/2016 3:17:16PM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-8875;AV205-20151018a
Calibration Date: 10/18/2015 6:42:32PM

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 15.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	1.00	1.042E-003	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	1.00	1.042E-003	1.473E-003
U-235	4,358.81	4,261.86	4,463.21	0.00	0.000E+000	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	2.00	2.083E-003	1.804E-003
U-234	4,709.31	4,507.96	4,821.17	2.00	2.083E-003	1.804E-003
Pu-242	4,903.21	4,679.48	4,947.95	3.00	3.125E-003	2.083E-003
Th-229	4,858.46	4,739.14	5,119.48	3.00	3.125E-003	2.083E-003
Np-237	4,783.89	4,768.97	4,806.26	0.00	0.000E+000	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	1.00	1.042E-003	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	1.00	1.042E-003	1.473E-003
Am-243	5,231.34	5,052.36	5,305.92	1.00	1.042E-003	1.473E-003
U-232	5,253.71	5,059.82	5,402.86	1.00	1.042E-003	1.473E-003
Th-228	5,447.61	5,186.59	5,507.27	1.00	1.042E-003	1.473E-003
Po-210	5,276.09	5,231.34	5,291.00	0.00	0.000E+000	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	1.00	1.042E-003	1.473E-003
Am-241	5,484.90	5,298.46	5,604.22	1.00	1.042E-003	1.473E-003
Cm-245	5,417.78	5,395.41	5,447.61	0.00	0.000E+000	1.473E-003
Pu-236	5,760.83	5,611.67	5,887.60	3.00	3.125E-003	2.083E-003
Cm-244	5,775.74	5,641.51	5,902.52	3.00	3.125E-003	2.083E-003
Th-227	6,074.04	5,932.35	6,178.45	0.00	0.000E+000	1.473E-003
Cm-242	6,148.62	6,118.79	6,178.45	0.00	0.000E+000	1.473E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:58:14AM 9/3/2016

Sample

Sample Name: ICB;AV206
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

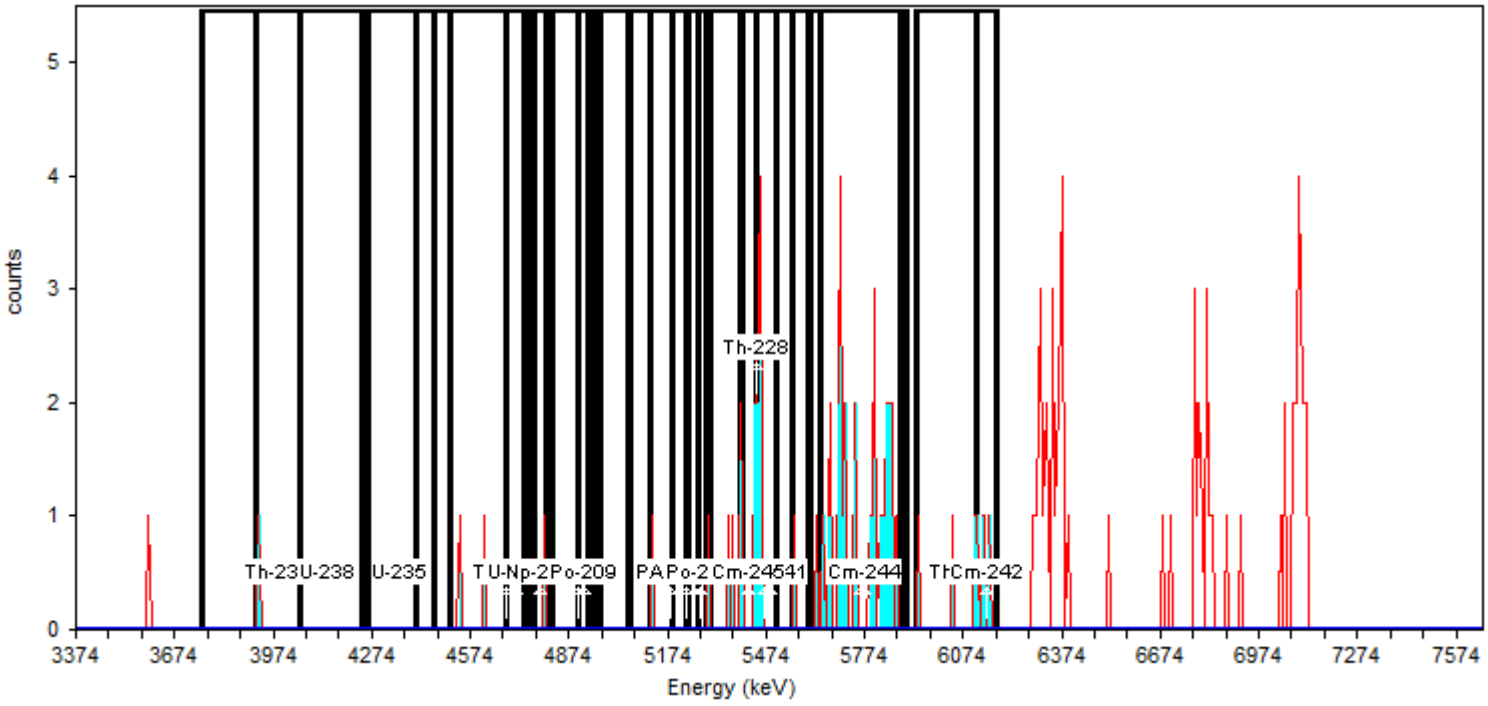
Batch

Batch Name: August2016a
Description:

Acquisition

Detector: AV206 , SN: 50-119AA6
Acquisition Start Date: 9/2/2016 10:55:28AM
Live Time: 960.00 min.
Real Time: 960.26 min.
Calibration Name: IC-8876;AV206-20151018
Calibration Date: 10/18/2015 6:41:49PM

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 121.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	1.00	1.042E-003	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	1.00	1.042E-003	1.473E-003
U-235	4,358.81	4,261.86	4,463.21	0.00	0.000E+000	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	2.00	2.083E-003	1.804E-003
U-234	4,709.31	4,507.96	4,821.17	3.00	3.125E-003	2.083E-003
Pu-242	4,903.21	4,679.48	4,947.95	1.00	1.042E-003	1.473E-003
Th-229	4,858.46	4,739.14	5,119.48	1.00	1.042E-003	1.473E-003
Np-237	4,783.89	4,768.97	4,806.26	1.00	1.042E-003	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	1.00	1.042E-003	1.473E-003
Am-243	5,231.34	5,052.36	5,305.92	2.00	2.083E-003	1.804E-003
U-232	5,253.71	5,059.82	5,402.86	7.00	7.292E-003	2.946E-003
Th-228	5,447.61	5,186.59	5,507.27	15.00	1.563E-002	4.167E-003
Po-210	5,276.09	5,231.34	5,291.00	0.00	0.000E+000	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	15.00	1.563E-002	4.167E-003
Am-241	5,484.90	5,298.46	5,604.22	16.00	1.667E-002	4.295E-003
Cm-245	5,417.78	5,395.41	5,447.61	7.00	7.292E-003	2.946E-003
Pu-236	5,760.83	5,611.67	5,887.60	31.00	3.229E-002	5.893E-003
Cm-244	5,775.74	5,641.51	5,902.52	30.00	3.125E-002	5.800E-003
Th-227	6,074.04	5,932.35	6,178.45	7.00	7.292E-003	2.946E-003
Cm-242	6,148.62	6,118.79	6,178.45	4.00	4.167E-003	2.329E-003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Alpha-Spectroscopy Analysis Report

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
2:57:10AM 9/3/2016

Sample

Sample Name: ICB;AV207
Comment:

Spectrum #1 Analysis #1
Analyst: 60040

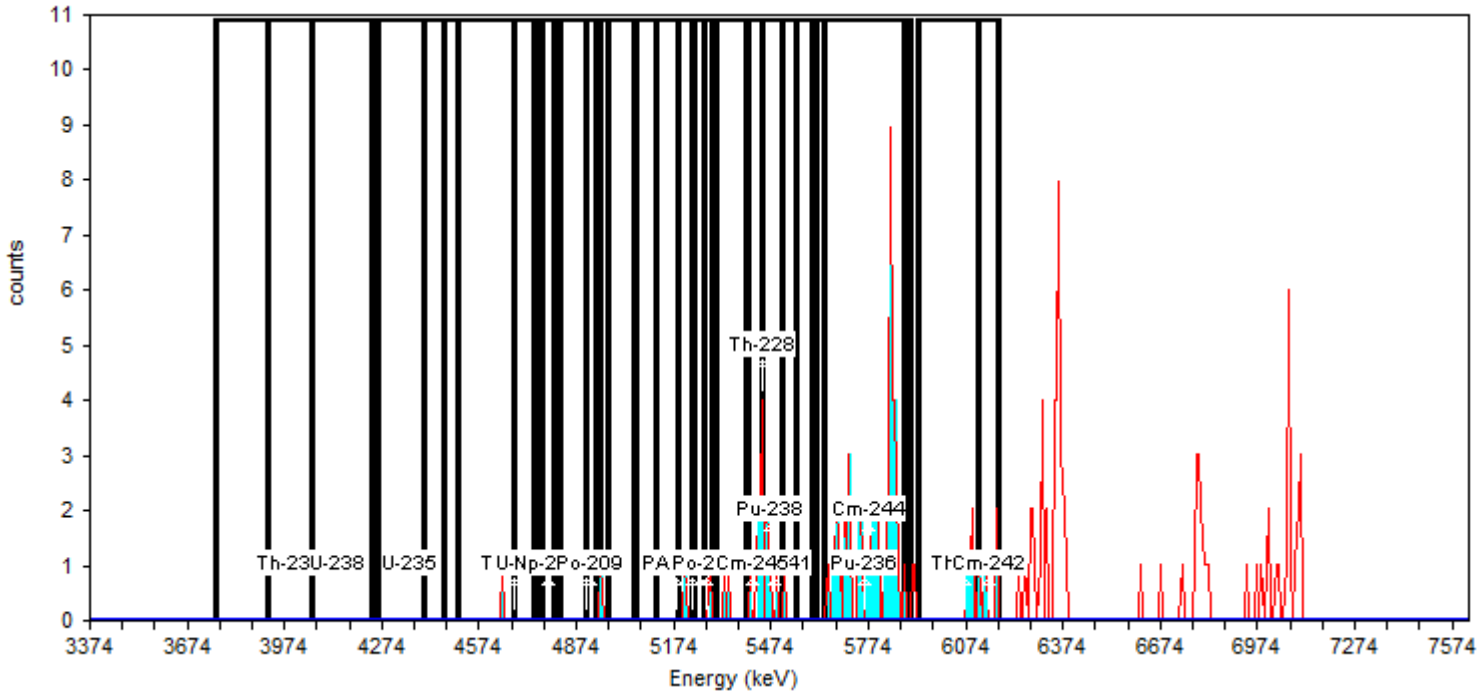
Batch

Batch Name: August2016a
Description:

Acquisition

Detector: AV207 , SN: 50-117H6
Acquisition Start Date: 9/2/2016 10:55:28AM
Live Time: 960.00 min.
Real Time: 960.00 min.
Calibration Name: IC-8877;AV207-20151018
Calibration Date: 10/18/2015 6:41:56PM

Energy Calibration Equation:
Gain = 7.4575 keV / Ch
Offset = 3,366.95 keV
Quadratic = 0.0000 keV / Ch^2



General Analysis

Analysis Method: Absolute ROI Analysis, Set Name = 11/05_BackgroundROI
Nuclide Library: Background ROI Library
Total Background Counts: 151.00

Nuclide Summary (ROI)

RegionName	Peak Energy (keV)	Start Energy (keV)	End Energy (keV)	GrossCounts	Count Rate (CPM)	CR Uncertainty (CPM)
Th-232	3,985.93	3,754.75	4,053.05	0.00	0.000E+000	1.473E-003
U-238	4,135.08	3,918.81	4,239.49	0.00	0.000E+000	1.473E-003
U-235	4,358.81	4,261.86	4,463.21	0.00	0.000E+000	1.473E-003
Th-230	4,679.48	4,403.55	4,746.60	1.00	1.042E-003	1.473E-003
U-234	4,709.31	4,507.96	4,821.17	1.00	1.042E-003	1.473E-003
Pu-242	4,903.21	4,679.48	4,947.95	1.00	1.042E-003	1.473E-003
Th-229	4,858.46	4,739.14	5,119.48	1.00	1.042E-003	1.473E-003
Np-237	4,783.89	4,768.97	4,806.26	0.00	0.000E+000	1.473E-003
Po-209	4,918.12	4,903.21	4,933.04	0.00	0.000E+000	1.473E-003
Pu-239	5,179.14	4,970.33	5,238.80	1.00	1.042E-003	1.473E-003
Am-243	5,231.34	5,052.36	5,305.92	2.00	2.083E-003	1.804E-003
U-232	5,253.71	5,059.82	5,402.86	4.00	4.167E-003	2.329E-003
Th-228	5,447.61	5,186.59	5,507.27	17.00	1.771E-002	4.419E-003
Po-210	5,276.09	5,231.34	5,291.00	1.00	1.042E-003	1.473E-003
Pu-238	5,469.98	5,268.63	5,552.01	17.00	1.771E-002	4.419E-003
Am-241	5,484.90	5,298.46	5,604.22	16.00	1.667E-002	4.295E-003
Cm-245	5,417.78	5,395.41	5,447.61	9.00	9.375E-003	3.294E-003
Pu-236	5,760.83	5,611.67	5,887.60	47.00	4.896E-002	7.217E-003
Cm-244	5,775.74	5,641.51	5,902.52	47.00	4.896E-002	7.217E-003
Th-227	6,074.04	5,932.35	6,178.45	9.00	9.375E-003	3.294E-003
Cm-242	6,148.62	6,118.79	6,178.45	5.00	5.208E-003	2.552E-003

Run Logs

Alpha Spectroscopy Run Log

Detector: AV161

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/16/15 18:57	140	IC 160-223458/1		223458			PS
10/26/15 20:26	60	ICV 160-223576/1		223576			PS
09/02/16 10:55	960	ICB 160-268120/1		268120			PS
09/06/16 16:41	60	CCV 160-268321/1		268321			PS
09/09/16 09:10	1	PULSER 160-268755/1		268755			RTM
09/09/16 12:48	400	LCS 160-268210/2-A		268755	268210	A-01-R	RTM

Detector: AV162

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/16/15 18:57	140	IC 160-223459/1		223459			PS
10/26/15 20:26	60	ICV 160-223577/1		223577			PS
09/01/16 15:17	960	ICB 160-268034/1		268034			PS
09/06/16 16:42	60	CCV 160-268322/1		268322			PS
09/09/16 09:10	1	PULSER 160-268756/1		268756			RTM
09/09/16 12:48	400	LCSD 160-268210/3-A		268756	268210	A-01-R	RTM

Detector: AV166

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/16/15 19:04	140	IC 160-223463/1		223463			PS
10/26/15 20:27	60	ICV 160-223581/1		223581			PS
09/02/16 10:55	960	ICB 160-268123/1		268123			PS
09/06/16 14:00	60	CCV 160-268324/1		268324			PS
09/09/16 09:10	1	PULSER 160-268758/1		268758			RTM
09/09/16 12:48	400	160-18852-3	GW-GWJJ-082516	268758	268210	A-01-R	RTM

Detector: AV168

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/16/15 18:59	140	IC 160-223465/1		223465			PS
10/26/15 20:32	60	ICV 160-223583/1		223583			PS
09/02/16 10:55	960	ICB 160-268124/1		268124			PS
09/06/16 13:59	60	CCV 160-268326/1		268326			PS
09/09/16 09:10	1	PULSER 160-268760/1		268760			RTM
09/09/16 12:48	400	160-18852-5	GW-BR04JC-082516	268760	268210	A-01-R	RTM

Detector: AV169

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/16/15 18:59	140	IC 160-223466/1		223466			PS
10/26/15 20:28	60	ICV 160-223584/1		223584			PS
09/01/16 15:17	960	ICB 160-268041/1		268041			PS
09/06/16 13:59	60	CCV 160-268327/1		268327			PS
09/09/16 09:10	1	PULSER 160-268761/1		268761			RTM
09/09/16 12:48	400	160-18852-11	GW-NB34-082516	268761	268210	A-01-R	RTM

Detector: AV205

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/18/15 16:19	140	IC 160-223502/1		223502			PS
11/01/15 16:02	60	ICV 160-223620/1		223620			PS

Alpha Spectroscopy Run Log

Detector: AV205 (Continued)

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
09/01/16 15:17	960	ICB 160-268068/1		268068			PS
09/06/16 12:49	60	CCV 160-268347/1		268347			PS
09/12/16 08:47	1	PULSER 160-269255/1		269255			ALD
09/12/16 14:59	400	MB 160-268210/1-A		269255	268210	A-01-R	ALD

Detector: AV206

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/18/15 16:10	140	IC 160-223503/1		223503			PS
11/01/15 16:02	60	ICV 160-223621/1		223621			PS
09/02/16 10:55	960	ICB 160-268135/1		268135			PS
09/06/16 12:43	60	CCV 160-268348/1		268348			PS
09/12/16 08:47	1	PULSER 160-269256/1		269256			ALD
09/12/16 15:01	800	160-18852-2	GW-BR10RB-082516	269256	268210	A-01-R	ALD

Detector: AV207

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
10/18/15 16:11	140	IC 160-223504/1		223504			PS
11/01/15 16:10	60	ICV 160-223622/1		223622			PS
09/02/16 10:55	960	ICB 160-268136/1		268136			PS
09/06/16 12:43	60	CCV 160-268349/1		268349			PS
09/12/16 08:47	1	PULSER 160-269257/1		269257			
09/12/16 09:54	1	PULSER 160-269257/2		269257			ALD
09/12/16 15:01	800	160-18852-4	GW-BR13JC-082516	269257	268210	A-01-R	ALD

GAMMA SPECTROSCOPY

Method TC-02-RC Tracers

Technetium-99 Tracers

Prep Batch: 267833

Technetium-99 Tracers Prep

Test America St. Louis Spectrum ID: 5_Gamma_20161683

Sample Description: 267833_Gamma_TCCLBA 160-267833~1-A
Detector: Detector # 5
Batch ID: 267833
Work Order Number: Gamma
Lot Number: TCCLBA 160-267833~1-A

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 12:13:38 Real Time: 602 sec
Analysis Time: 9/2/2016 12:24 Dead Time: 0.41 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 5_Soil_TunaCan.Clb
Efficiency Cal Desc: 5_Soil_TunaCan_90099_032612
Efficiency Cal Date: 3/27/2012 17:20
Energy Cal Date: 2/28/2012 19:35
Library: Client_Tc-99m.lib
Bkgd Correction File: 5_2016-07-31_1355.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	7.863E+02	4.5	3.565E+01	5.362E+01	2.219E+01
Total	7.863E+02				

Analyst: kody Saulters

TestAmerica Inc Spectrum name: 5_Gamma_20161683.An1

Sample description
267833_Gamma_TCCLBA 160-267833~1-A

Spectrum Filename: C:\User\SPC\Det5\5_Gamma_20161683.An1

Acquisition information
Start time: 9/2/2016 12:13:38 PM
Live time: 600
Real time: 602
Dead time: 0.41 %
Detector ID: 5

Detector system
Ge 5 SN/157

Calibration
Filename: 5_Soil_TunaCan.Clb
5_Soil_TunaCan_90099_032612

Energy Calibration
Created: 2/28/2012 7:35:48 PM
Zero offset: 0.158 keV
Gain: 0.250 keV/channel
Quadratic: 3.911E-08 keV/channel^2

Efficiency Calibration
Created: 3/27/2012 5:20:37 PM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.87 %
Log(Eff): 6.466115E-01 + (-7.830454E-01*Log(E)) +
(-4.117504E-03*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.43 %
Log(Eff): -2.462251E+01 + (9.075211E+00*Log(E)) +
(-9.664422E-01*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.62keV)
Stop channel: 8000 (2000.81keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) =
2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            3
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                          Status          Comments
       Decay correct to date:         YES       9/2/2016 12:00:00 PM
       Decay during acquisition:      YES
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  YES       5_2016-07-31_1355.PBC
                                                 7/31/2016 1:55:22 PM

       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.    1 cutoff: 5.00E+01 %
       Energy Calibration
            Normalized diff:       1.0000

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    pCi/Samp
_____________________________________________________________________________
  140.49      512.   4.53   0.95  3.411E-02   140.51  89.060  7.863E+02 TC99M
No unknown peaks passed sensitivity test.

------------------------------------------------------------
This section based on library: Client_Tc-99m.lib


************** I D E N T I F I E D   P E A K   S U M M A R Y **************
Nuclide  Peak    Centroid  Background  Net Area   Intensity   Uncert  FWHM
         Channel Energy    Counts      Counts     Cts/Sec  1 Sigma %  keV
_____________________________________________________________________________
TC-99M    561.88   140.51         6.       512.     0.853     4.53   0.951D

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  A   Derived peak area.
```

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	MDA Value pCi/Sample	COMMENTS
TC-99M	I	7.8634E+02				2.51E-01	
							Energy duplication
			140.51	7.863E+02	*(	2.219E+01 4.53E+00	8.91E+01 G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

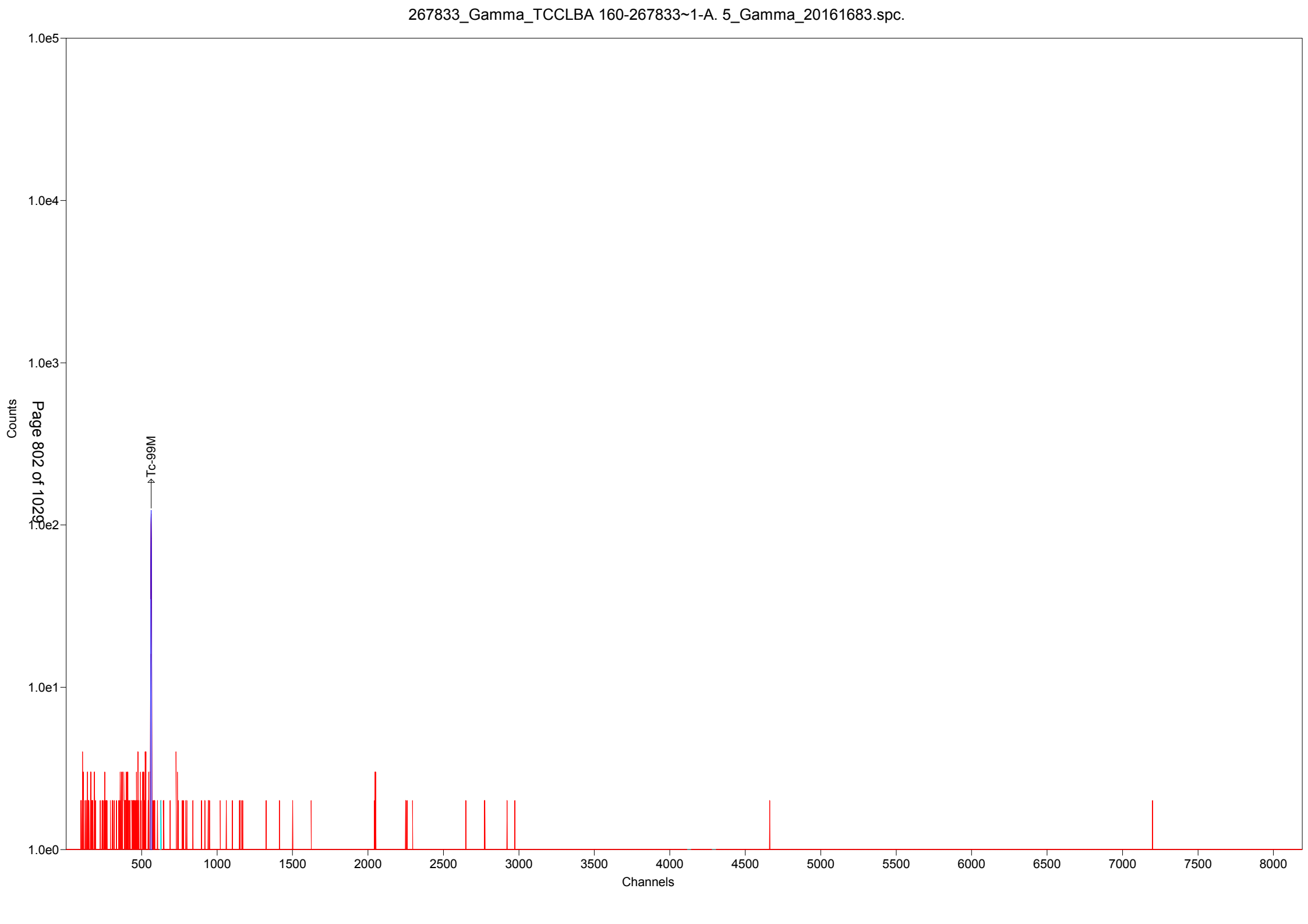
Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M #	7.6604E+02	7.8634E+02	4.533E+00%	2.22E+01

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.8 keV) 7.660E+02 pCi/Sample
Total Decayed Activity (37.6 to 2000.8 keV) 7.8634308E+02 pCi/Sample

The library has energies which are not separable.


267833_Gamma_TCCLBA 160-267833~1-A. 5_Gamma_20161683.spc.
1.0e5
1.0e4
1.0e3
1.0e2
1.0e1
1.0e0
Counts
Tc-99M
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
Channels

Test America St. Louis Spectrum ID: 7_Gamma_20162154

Sample Description: 267833_Gamma_TCCLBA 160-267833~1-A
Detector: Detector # 7
Batch ID: 267833
Work Order Number: Gamma
Lot Number: TCCLBA 160-267833~1-A

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 12:28:48 Real Time: 609 sec
Analysis Time: 9/2/2016 12:39 Dead Time: 1.55 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 7_Soil_TunaCan.Clb
Efficiency Cal Desc: 7_TunaCan_90099_032712
Efficiency Cal Date: 3/16/2012 11:45
Energy Cal Date: 2/23/2012 08:40
Library: Client_Tc-99m.lib
Bkgd Correction File: 7_2016-07-31_1448.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	9.158E+02	3.4	3.080E+01	5.590E+01	1.396E+01
Total	9.158E+02				

Analyst: kody Saulters

TestAmerica Inc Spectrum name: 7_Gamma_20162154.An1

Sample description
267833_Gamma_TCCLBA 160-267833~1-A

Spectrum Filename: C:\User\SPC\Det7\7_Gamma_20162154.An1

Acquisition information
Start time: 9/2/2016 12:28:48 PM
Live time: 600
Real time: 609
Dead time: 1.55 %
Detector ID: 7

Detector system
Ge 7 SN/154

Calibration
Filename: 7_Soil_TunaCan.Clb
7_TunaCan_90099_032712

Energy Calibration
Created: 2/23/2012 8:40:56 AM
Zero offset: 0.117 keV
Gain: 0.250 keV/channel
Quadratic: 3.508E-09 keV/channel^2

Efficiency Calibration
Created: 3/16/2012 11:45:14 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.87 %
Log(Eff): 6.716580E-01 + (-6.166540E-01*Log(E)) +
(-2.065917E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.48 %
Log(Eff): -2.689695E+01 + (1.019544E+01*Log(E)) +
(-1.081671E+00*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.61keV)
Stop channel: 8000 (2000.13keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) =
2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            3
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                          Status          Comments
       Decay correct to date:         YES       9/2/2016 12:00:00 PM
       Decay during acquisition:      YES
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  YES       7_2016-07-31_1448.PBC
                                                 7/31/2016 2:48:35 PM

       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.    1 cutoff: 5.00E+01 %
       Energy Calibration
            Normalized diff:       0.0979

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    pCi/Samp
_____________________________________________________________________________
  140.42      905.   3.36   0.96  5.337E-02   140.51  89.060  9.158E+02 TC99M
No unknown peaks passed sensitivity test.

-------------------------------------------------------------
This section based on library: Client_Tc-99m.lib


************** I D E N T I F I E D   P E A K    S U M M A R Y **************
Nuclide  Peak    Centroid  Background  Net Area   Intensity   Uncert  FWHM
         Channel Energy    Counts      Counts     Cts/Sec  1 Sigma %  keV
_____________________________________________________________________________
TC-99M    561.63   140.51         6.       905.     1.509     3.36   0.957D

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  A   Derived peak area.
```

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	MDA Value pCi/Sample	COMMENTS
TC-99M	I	9.1582E+02				2.51E-01	
							Energy duplication
			140.51	9.158E+02	(	1.396E+01	3.36E+00 8.91E+01 G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

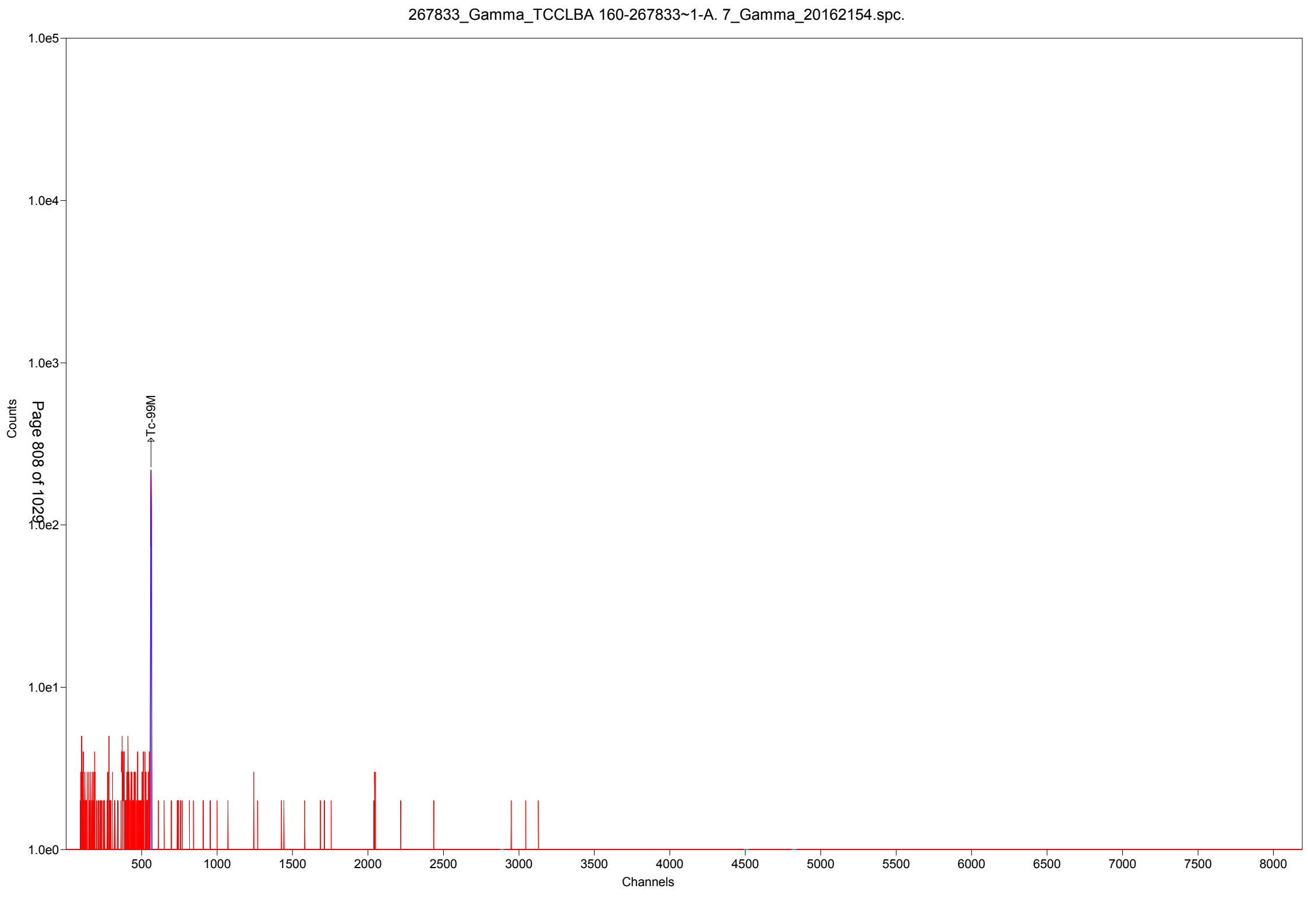
Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	8.6658E+02	9.1582E+02	3.363E+00%	1.40E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.1 keV) 8.666E+02 pCi/Sample
Total Decayed Activity (37.6 to 2000.1 keV) 9.1582220E+02 pCi/Sample

The library has energies which are not separable.


267833_Gamma_TCCLBA 160-267833~1-A. 7_Gamma_20162154.spc.
1.0e5
1.0e4
1.0e3
1.0e2
1.0e1
1.0e0
Counts
Tc-99M
Page 808 of 1029
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
Channels

Test America St. Louis Spectrum ID: 8_Gamma_20161421

Sample Description: 267833_Gamma_TCCLBA 160-267833~1-A
Detector: Detector # 8
Batch ID: 267833
Work Order Number: Gamma
Lot Number: TCCLBA 160-267833~1-A

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 12:43:23 Real Time: 616 sec
Analysis Time: 9/2/2016 12:54 Dead Time: 2.53 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 8_Soil_TunaCan.Clb
Efficiency Cal Desc: 8_Soil_TunaCan_90099_032712
Efficiency Cal Date: 3/28/2012 10:35
Energy Cal Date: 2/28/2012 10:34
Library: Client_Tc-99m.lib
Bkgd Correction File: 8_2016-08-08_1838.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	9.136E+02	4.0	3.691E+01	5.940E+01	2.621E+01
Total	9.136E+02				

Analyst: kody Saulters

TestAmerica Inc Spectrum name: 8_Gamma_20161421.An1

Sample description
267833_Gamma_TCCLBA 160-267833~1-A

Spectrum Filename: C:\User\SPC\Det8\8_Gamma_20161421.An1

Acquisition information
Start time: 9/2/2016 12:43:23 PM
Live time: 600
Real time: 616
Dead time: 2.53 %
Detector ID: 8

Detector system
Ge 8 SN/174

Calibration
Filename: 8_Soil_TunaCan.Clb
8_Soil_TunaCan_90099_032712

Energy Calibration
Created: 2/28/2012 10:34:41 AM
Zero offset: 0.052 keV
Gain: 0.250 keV/channel
Quadratic: 5.282E-10 keV/channel^2

Efficiency Calibration
Created: 3/28/2012 10:35:20 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.39 %
Log(Eff): -1.098764E-01 + (-4.958544E-01*Log(E)) + (-2.572270E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.71 %
Log(Eff): -2.525301E+01 + (9.398253E+00*Log(E)) + (-1.000034E+00*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.55keV)
Stop channel: 8000 (1999.97keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) = 2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

```
       Random error:               4.0000000E+00
       Systematic error:           4.0000000E+00
       Fraction Limit:             0.000%
       Background width:           3
       Half lives decay limit:    12.000
       Activity range factor:      2.000
       Min. step backg. energy     0.000
       Multiplet shift channel     2.000

Corrections                          Status          Comments
       Decay correct to date:         YES       9/2/2016 12:00:00 PM
       Decay during acquisition:      YES
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  YES       8_2016-08-08_1838.PBC
                                                 8/8/2016 6:38:16 PM

       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.    1 cutoff: 5.00E+01 %
       Energy Calibration
            Normalized diff:       0.0527

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    pCi/Samp
_____________________________________________________________________________
  140.57      649.   4.04   0.92  3.945E-02   140.51  89.060  9.136E+02 TC99M
No unknown peaks passed sensitivity test.

------------------------------------------------------------
This section based on library: Client_Tc-99m.lib


************** I D E N T I F I E D   P E A K    S U M M A R Y **************
Nuclide  Peak    Centroid  Background  Net Area   Intensity   Uncert  FWHM
         Channel Energy    Counts      Counts     Cts/Sec  1 Sigma %  keV
_____________________________________________________________________________
TC-99M    561.86   140.51        12.       649.     1.082     4.04   0.924D

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  A   Derived peak area.
```

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	MDA Value pCi/Sample	COMMENTS
TC-99M	I	9.1365E+02				2.51E-01	
							Energy duplication
			140.51	9.136E+02 (	2.621E+01	4.04E+00	8.91E+01 G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
\+ - Peak activity higher than counting uncertainty range.
\- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

TestAmerica Inc Spectrum name: 8_Gamma_20161421.An1

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

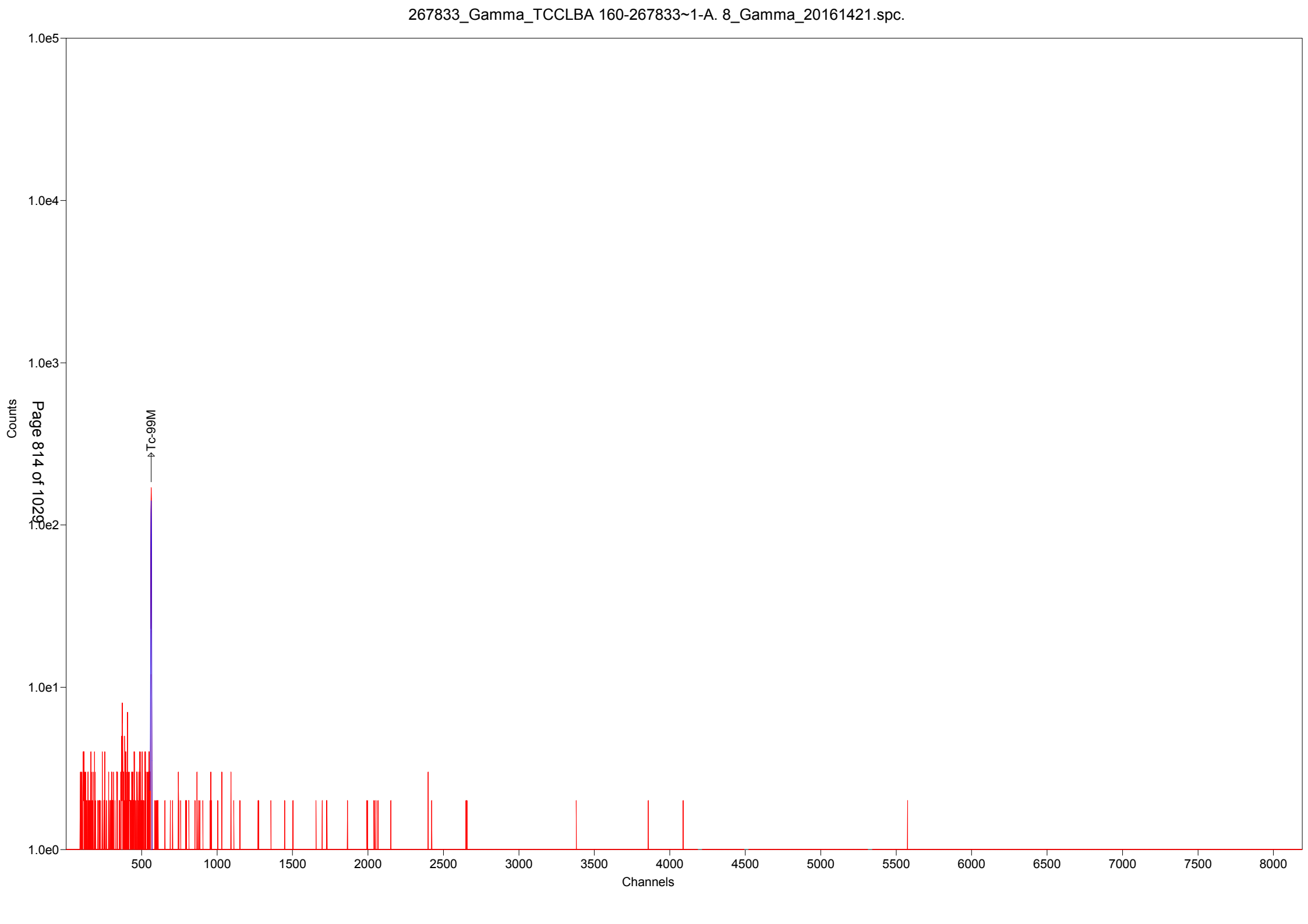
Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	8.4066E+02	9.1365E+02	4.040E+00%	2.62E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.5 to 2000.0 keV) 8.407E+02 pCi/Sample
Total Decayed Activity (37.5 to 2000.0 keV) 9.1364734E+02 pCi/Sample

The library has energies which are not separable.


267833_Gamma_TCCLBA 160-267833~1-A. 8_Gamma_20161421.spc.
1.0e5
1.0e4
1.0e3
1.0e2
1.0e1
1.0e0
Counts
Page 814 of 1029
TC-99M
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
Channels

Test America St. Louis Spectrum ID: 7_Gamma_20162153

Sample Description: 267833_Gamma_TCCLBB 160-267833~2-A
Detector: Detector # 7
Batch ID: 267833
Work Order Number: Gamma
Lot Number: TCCLBB 160-267833~2-A

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 12:14:36 Real Time: 610 sec
Analysis Time: 9/2/2016 12:25 Dead Time: 1.57 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 7_Soil_TunaCan.Clb
Efficiency Cal Desc: 7_TunaCan_90099_032712
Efficiency Cal Date: 3/16/2012 11:45
Energy Cal Date: 2/23/2012 08:40
Library: Client_Tc-99m.lib
Bkgd Correction File: 7_2016-07-31_1448.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	9.611E+02	3.3	3.182E+01	5.838E+01	2.024E+01
Total	9.611E+02				

Analyst: kody Saulters

TestAmerica Inc Spectrum name: 7_Gamma_20162153.An1

Sample description
267833_Gamma_TCCLBB 160-267833~2-A

Spectrum Filename: C:\User\SPC\Det7\7_Gamma_20162153.An1

Acquisition information
Start time: 9/2/2016 12:14:36 PM
Live time: 600
Real time: 610
Dead time: 1.57 %
Detector ID: 7

Detector system
Ge 7 SN/154

Calibration
Filename: 7_Soil_TunaCan.Clb
7_TunaCan_90099_032712

Energy Calibration
Created: 2/23/2012 8:40:56 AM
Zero offset: 0.117 keV
Gain: 0.250 keV/channel
Quadratic: 3.508E-09 keV/channel^2

Efficiency Calibration
Created: 3/16/2012 11:45:14 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.87 %
Log(Eff): 6.716580E-01 + (-6.166540E-01*Log(E)) +
(-2.065917E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.48 %
Log(Eff): -2.689695E+01 + (1.019544E+01*Log(E)) +
(-1.081671E+00*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.61keV)
Stop channel: 8000 (2000.13keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) =
2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

Random error:	4.0000000E+00
Systematic error:	4.0000000E+00
Fraction Limit:	0.000%
Background width:	3
Half lives decay limit:	12.000
Activity range factor:	2.000
Min. step backg. energy	0.000
Multiplet shift channel	2.000

Corrections	Status	Comments
Decay correct to date:	YES	9/2/2016 12:00:00 PM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	7_2016-07-31_1448.PBC 7/31/2016 2:48:35 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 1 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.0764

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. pCi/Samp	Nuc
140.44	976.	3.31	0.95	5.337E-02	140.51	89.060	9.611E+02	TC99M

No unknown peaks passed sensitivity test.

This section based on library: Client_Tc-99m.lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
TC-99M	561.63	140.51	15.	976.	1.627	3.31	0.952D

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	Peak MDA Value pCi/Sample	COMMENTS
TC-99M	I	9.6109E+02				2.51E-01	
							Energy duplication
			140.51	9.611E+02	(	2.024E+01 3.31E+00 8.91E+01	G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
\+ - Peak activity higher than counting uncertainty range.
\- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

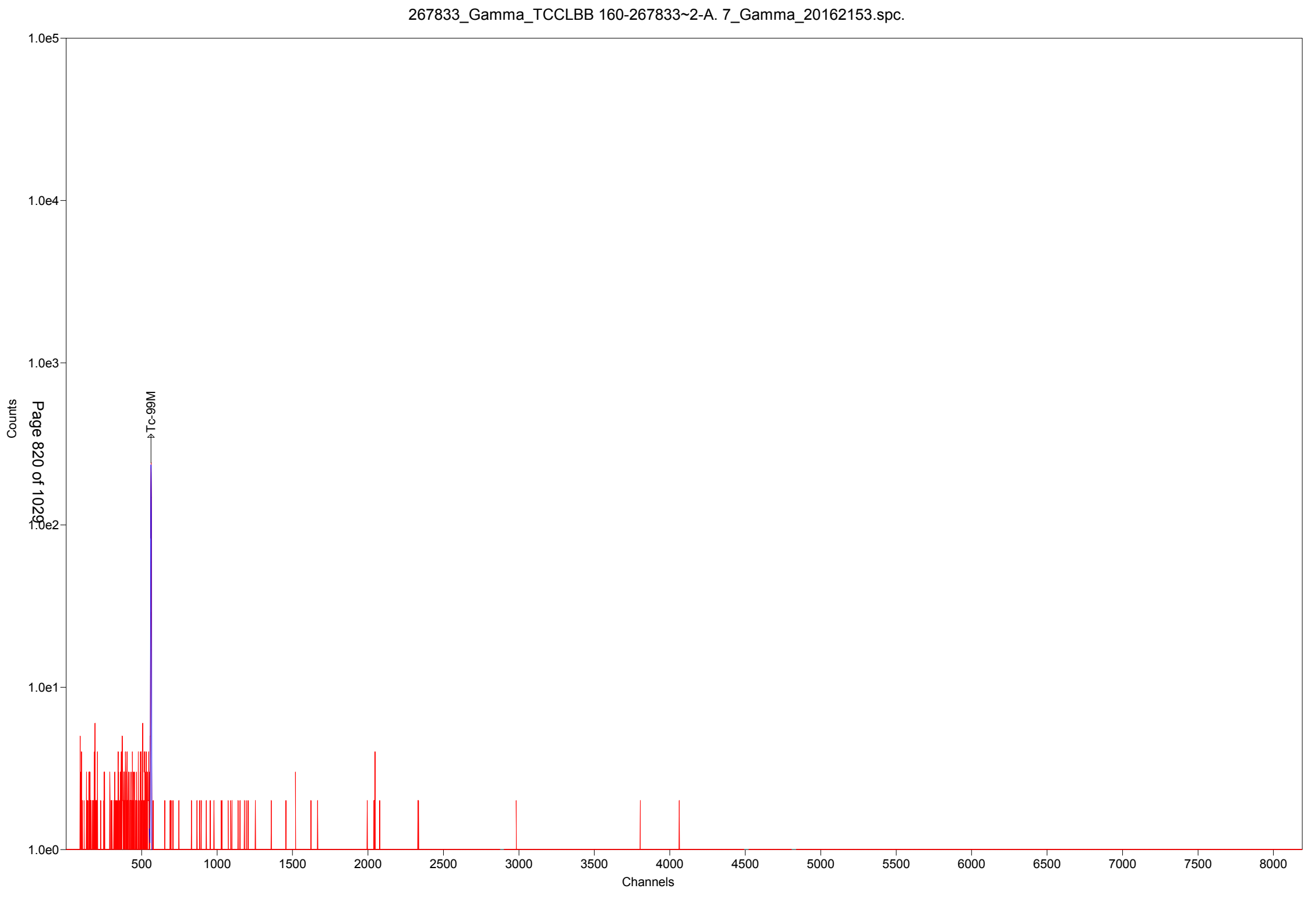
Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	9.3454E+02	9.6109E+02	3.311E+00%	2.02E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

S U M M A R Y

Total Activity (37.6 to 2000.1 keV) 9.345E+02 pCi/Sample
Total Decayed Activity (37.6 to 2000.1 keV) 9.6109412E+02 pCi/Sample

The library has energies which are not separable.


267833_Gamma_TCCLBB 160-267833~2-A. 7_Gamma_20162153.spc.
1.0e5
1.0e4
1.0e3
1.0e2
1.0e1
1.0e0
Counts
Tc-99M
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
Channels

Test America St. Louis Spectrum ID: 8_Gamma_20161420

Sample Description: 267833_Gamma_TCCLBB 160-267833~2-A
Detector: Detector # 8
Batch ID: 267833
Work Order Number: Gamma
Lot Number: TCCLBB 160-267833~2-A

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 12:30:13 Real Time: 616 sec
Analysis Time: 9/2/2016 12:40 Dead Time: 2.58 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 8_Soil_TunaCan.Clb
Efficiency Cal Desc: 8_Soil_TunaCan_90099_032712
Efficiency Cal Date: 3/28/2012 10:35
Energy Cal Date: 2/28/2012 10:34
Library: Client_Tc-99m.lib
Bkgd Correction File: 8_2016-08-08_1838.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	8.931E+02	4.1	3.627E+01	5.818E+01	2.587E+01
Total	8.931E+02				

Analyst: kody Saulters

(Page 1 of 5)

TestAmerica Inc Spectrum name: 8_Gamma_20161420.An1

Sample description
267833_Gamma_TCCLBB 160-267833~2-A

Spectrum Filename: C:\User\SPC\Det8\8_Gamma_20161420.An1

Acquisition information
Start time: 9/2/2016 12:30:13 PM
Live time: 600
Real time: 616
Dead time: 2.58 %
Detector ID: 8

Detector system
Ge 8 SN/174

Calibration
Filename: 8_Soil_TunaCan.Clb
8_Soil_TunaCan_90099_032712

Energy Calibration
Created: 2/28/2012 10:34:41 AM
Zero offset: 0.052 keV
Gain: 0.250 keV/channel
Quadratic: 5.282E-10 keV/channel^2

Efficiency Calibration
Created: 3/28/2012 10:35:20 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.39 %
Log(Eff): -1.098764E-01 + (-4.958544E-01*Log(E)) + (-2.572270E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.71 %
Log(Eff): -2.525301E+01 + (9.398253E+00*Log(E)) + (-1.000034E+00*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.55keV)
Stop channel: 8000 (1999.97keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) = 2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

Random error:	4.0000000E+00
Systematic error:	4.0000000E+00
Fraction Limit:	0.000%
Background width:	3
Half lives decay limit:	12.000
Activity range factor:	2.000
Min. step backg. energy	0.000
Multiplet shift channel	2.000

Corrections	Status	Comments
Decay correct to date:	YES	9/2/2016 12:00:00 PM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	8_2016-08-08_1838.PBC 8/8/2016 6:38:16 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 1 cutoff: 5.00E+01 %

Energy Calibration

Normalized diff: 0.0219

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. pCi/Samp	Nuc
140.53	651.	4.06	0.83	3.945E-02	140.51	89.060	8.931E+02	TC99M

No unknown peaks passed sensitivity test.

This section based on library: Client_Tc-99m.lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV	
TC-99M	561.86	140.51	12.	651.	1.085	4.06	0.827	D

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	Peak MDA Value pCi/Sample	COMMENTS
TC-99M	I	8.9314E+02				2.51E-01	
							Energy duplication
			140.51	8.931E+02 (	2.587E+01	4.06E+00	8.91E+01 G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

TestAmerica Inc Spectrum name: 8_Gamma_20161420.An1

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

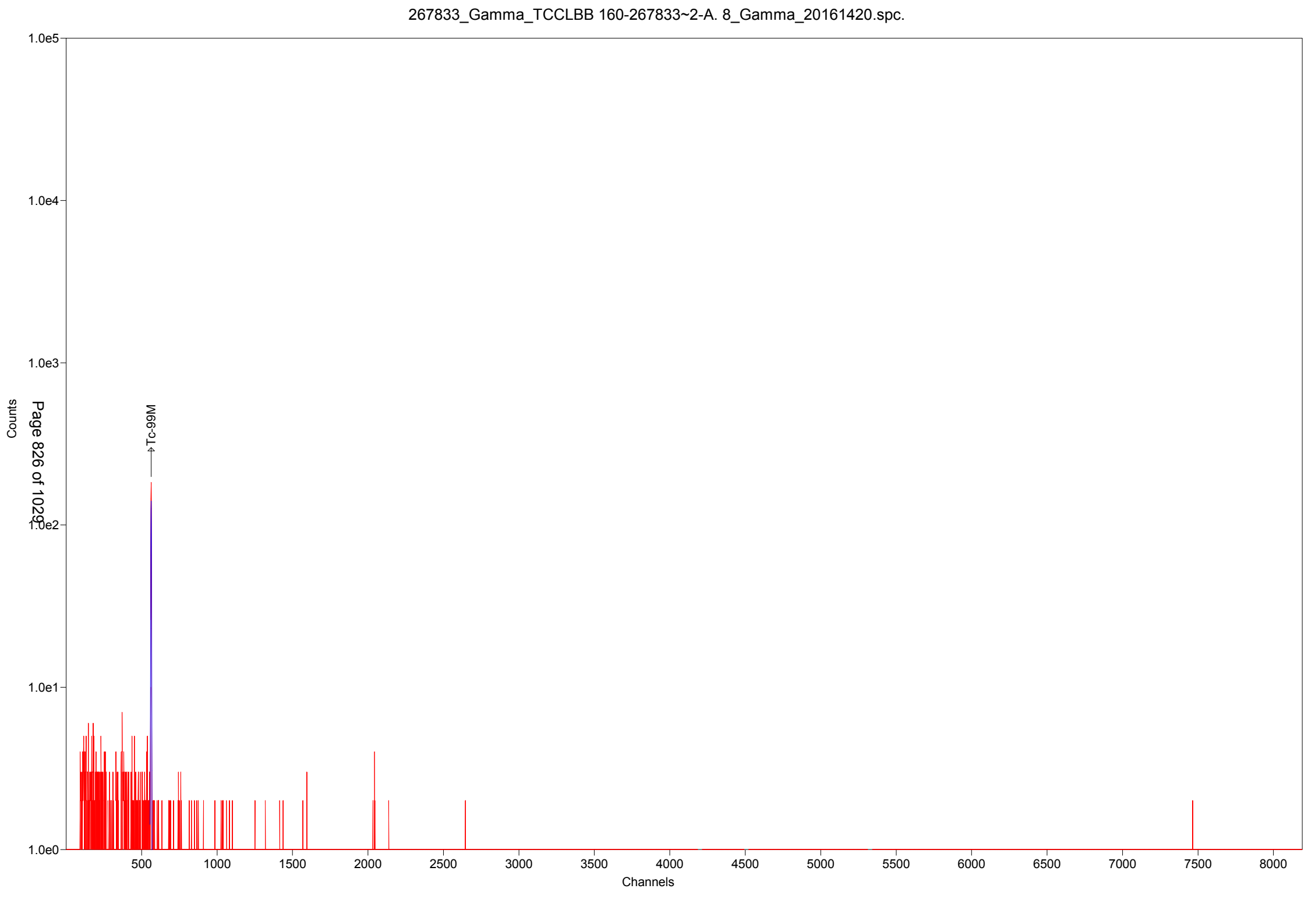
Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	8.4282E+02	8.9314E+02	4.061E+00%	2.59E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.5 to 2000.0 keV) 8.428E+02 pCi/Sample
Total Decayed Activity (37.5 to 2000.0 keV) 8.9314056E+02 pCi/Sample

The library has energies which are not separable.


267833_Gamma_TCCLBB 160-267833~2-A. 8_Gamma_20161420.spc.
1.0e5
1.0e4
1.0e3
1.0e2
1.0e1
1.0e0
Counts
Tc-99M
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
Channels

Test America St. Louis Spectrum ID: 5_Gamma_20161685

Sample Description: 267833_Gamma_TCCLBB 160-267833~2-A
Detector: Detector # 5
Batch ID: 267833
Work Order Number: Gamma
Lot Number: TCCLBB 160-267833~2-A

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 12:47:30 Real Time: 602 sec
Analysis Time: 9/2/2016 12:57 Dead Time: 0.35 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 5_Soil_TunaCan.Clb
Efficiency Cal Desc: 5_Soil_TunaCan_90099_032612
Efficiency Cal Date: 3/27/2012 17:20
Energy Cal Date: 2/28/2012 19:35
Library: Client_Tc-99m.lib
Bkgd Correction File: 5_2016-07-31_1355.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	8.823E+02	4.6	4.028E+01	6.035E+01	3.596E+01
Total	8.823E+02				

Analyst: kody Saulters

TestAmerica Inc Spectrum name: 5_Gamma_20161685.An1

Sample description
267833_Gamma_TCCLBB 160-267833~2-A

Spectrum Filename: C:\User\SPC\Det5\5_Gamma_20161685.An1

Acquisition information
Start time: 9/2/2016 12:47:30 PM
Live time: 600
Real time: 602
Dead time: 0.35 %
Detector ID: 5

Detector system
Ge 5 SN/157

Calibration
Filename: 5_Soil_TunaCan.Clb
5_Soil_TunaCan_90099_032612

Energy Calibration
Created: 2/28/2012 7:35:48 PM
Zero offset: 0.158 keV
Gain: 0.250 keV/channel
Quadratic: 3.911E-08 keV/channel^2

Efficiency Calibration
Created: 3/27/2012 5:20:37 PM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.87 %
Log(Eff): 6.466115E-01 + (-7.830454E-01*Log(E)) +
(-4.117504E-03*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.43 %
Log(Eff): -2.462251E+01 + (9.075211E+00*Log(E)) +
(-9.664422E-01*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.62keV)
Stop channel: 8000 (2000.81keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) =
2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            3
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                          Status          Comments
       Decay correct to date:         YES       9/2/2016 12:00:00 PM
       Decay during acquisition:      YES
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  YES       5_2016-07-31_1355.PBC
                                                 7/31/2016 1:55:22 PM

       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.    1 cutoff: 5.00E+01 %
       Energy Calibration
            Normalized diff:       1.0000

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    pCi/Samp
_____________________________________________________________________________
  140.50      538.   4.56   1.01  3.411E-02   140.51  89.060  8.823E+02 TC99M
No unknown peaks passed sensitivity test.

------------------------------------------------------------
This section based on library: Client_Tc-99m.lib


************** I D E N T I F I E D   P E A K    S U M M A R Y **************
Nuclide  Peak    Centroid  Background  Net Area   Intensity   Uncert  FWHM
         Channel Energy    Counts      Counts     Cts/Sec  1 Sigma %  keV
_____________________________________________________________________________
TC-99M    561.88   140.51        17.       538.     0.897     4.56   1.013D

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  A   Derived peak area.
```

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	MDA Value pCi/Sample	COMMENTS
TC-99M	I	8.8233E+02				2.51E-01	
							Energy duplication
			140.51	8.823E+02	(	3.596E+01 4.56E+00	8.91E+01 G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

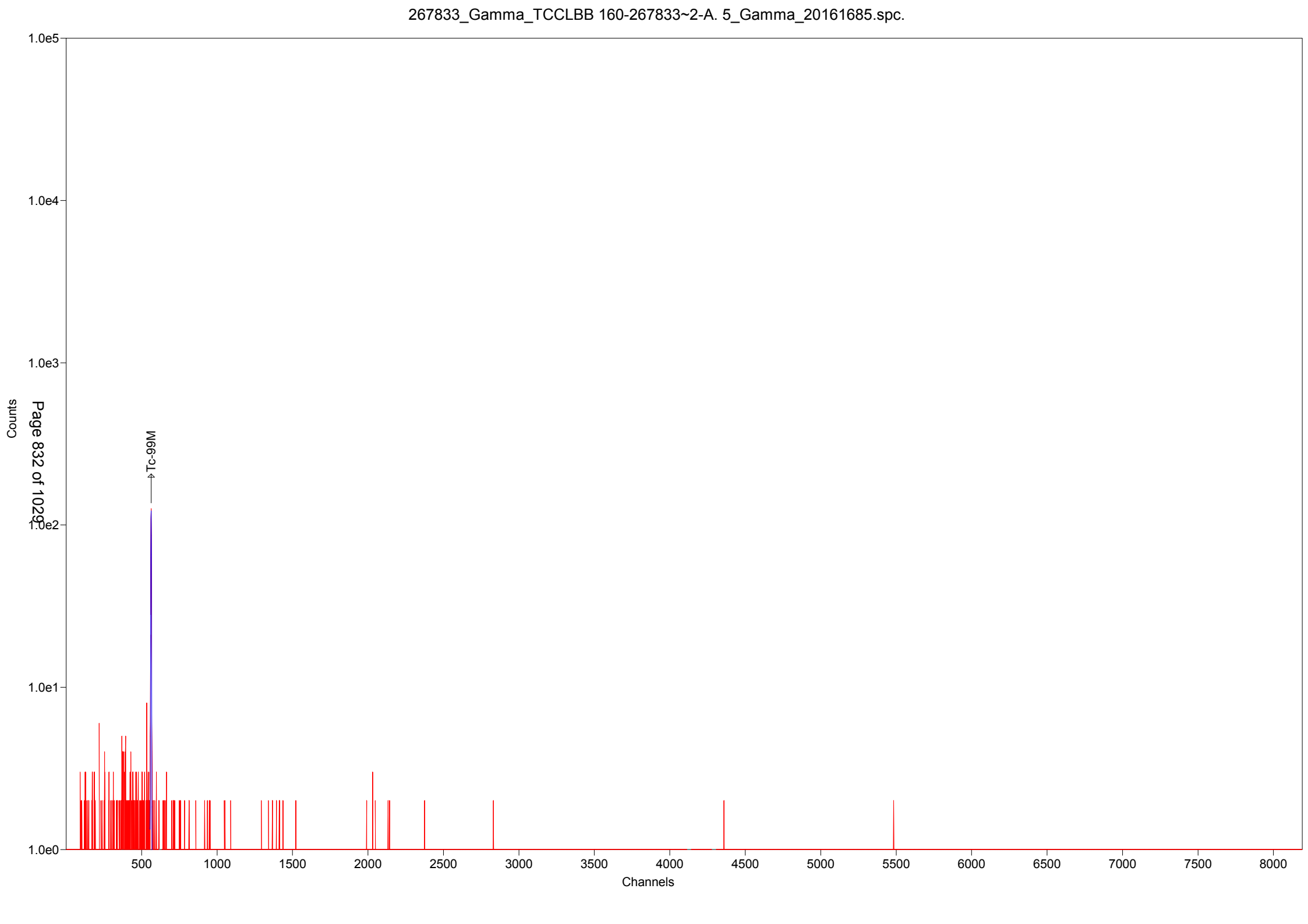
Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M #	8.0545E+02	8.8233E+02	4.565E+00%	3.60E+01

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.8 keV) 8.055E+02 pCi/Sample
Total Decayed Activity (37.6 to 2000.8 keV) 8.8233215E+02 pCi/Sample

The library has energies which are not separable.


267833_Gamma_TCCLBB 160-267833~2-A. 5_Gamma_20161685.spc.
1.0e5
1.0e4
1.0e3
1.0e2
1.0e1
1.0e0
Counts
Tc-99M
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
Channels

Test America St. Louis Spectrum ID: 8_Gamma_20161419

Sample Description: 267833_Gamma_TCCLBC 160-267833~3-A
Detector: Detector # 8
Batch ID: 267833
Work Order Number: Gamma
Lot Number: TCCLBC 160-267833~3-A

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 12:16:02 Real Time: 616 sec
Analysis Time: 9/2/2016 12:26 Dead Time: 2.53 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 8_Soil_TunaCan.Clb
Efficiency Cal Desc: 8_Soil_TunaCan_90099_032712
Efficiency Cal Date: 3/28/2012 10:35
Energy Cal Date: 2/28/2012 10:34
Library: Client_Tc-99m.lib
Bkgd Correction File: 8_2016-08-08_1838.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	8.398E+02	4.2	3.535E+01	5.549E+01	3.001E+01
Total	8.398E+02				

Analyst: kody Saulters

TestAmerica Inc Spectrum name: 8_Gamma_20161419.An1

Sample description
267833_Gamma_TCCLBC 160-267833~3-A

Spectrum Filename: C:\User\SPC\Det8\8_Gamma_20161419.An1

Acquisition information
Start time: 9/2/2016 12:16:02 PM
Live time: 600
Real time: 616
Dead time: 2.53 %
Detector ID: 8

Detector system
Ge 8 SN/174

Calibration
Filename: 8_Soil_TunaCan.Clb
8_Soil_TunaCan_90099_032712

Energy Calibration
Created: 2/28/2012 10:34:41 AM
Zero offset: 0.052 keV
Gain: 0.250 keV/channel
Quadratic: 5.282E-10 keV/channel^2

Efficiency Calibration
Created: 3/28/2012 10:35:20 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.39 %
Log(Eff): -1.098764E-01 + (-4.958544E-01*Log(E)) + (-2.572270E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.71 %
Log(Eff): -2.525301E+01 + (9.398253E+00*Log(E)) + (-1.000034E+00*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.55keV)
Stop channel: 8000 (1999.97keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) = 2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

Random error:	4.0000000E+00
Systematic error:	4.0000000E+00
Fraction Limit:	0.000%
Background width:	3
Half lives decay limit:	12.000
Activity range factor:	2.000
Min. step backg. energy	0.000
Multiplet shift channel	2.000

Corrections	Status	Comments
Decay correct to date:	YES	9/2/2016 12:00:00 PM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	8_2016-08-08_1838.PBC 8/8/2016 6:38:16 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 1 cutoff: 5.00E+01 %

Energy Calibration

Normalized diff: 0.0683

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. pCi/Samp	Nuc
140.58	629.	4.21	0.85	3.944E-02	140.51	89.060	8.398E+02	TC99M

No unknown peaks passed sensitivity test.

This section based on library: Client_Tc-99m.lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
TC-99M	561.86	140.51	18.	629.	1.048	4.21	0.848D

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	Peak MDA Value pCi/Sample	COMMENTS
TC-99M	I	8.3978E+02				2.51E-01	
							Energy duplication
			140.51	8.398E+02 (	3.001E+01	4.21E+00	8.91E+01 G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

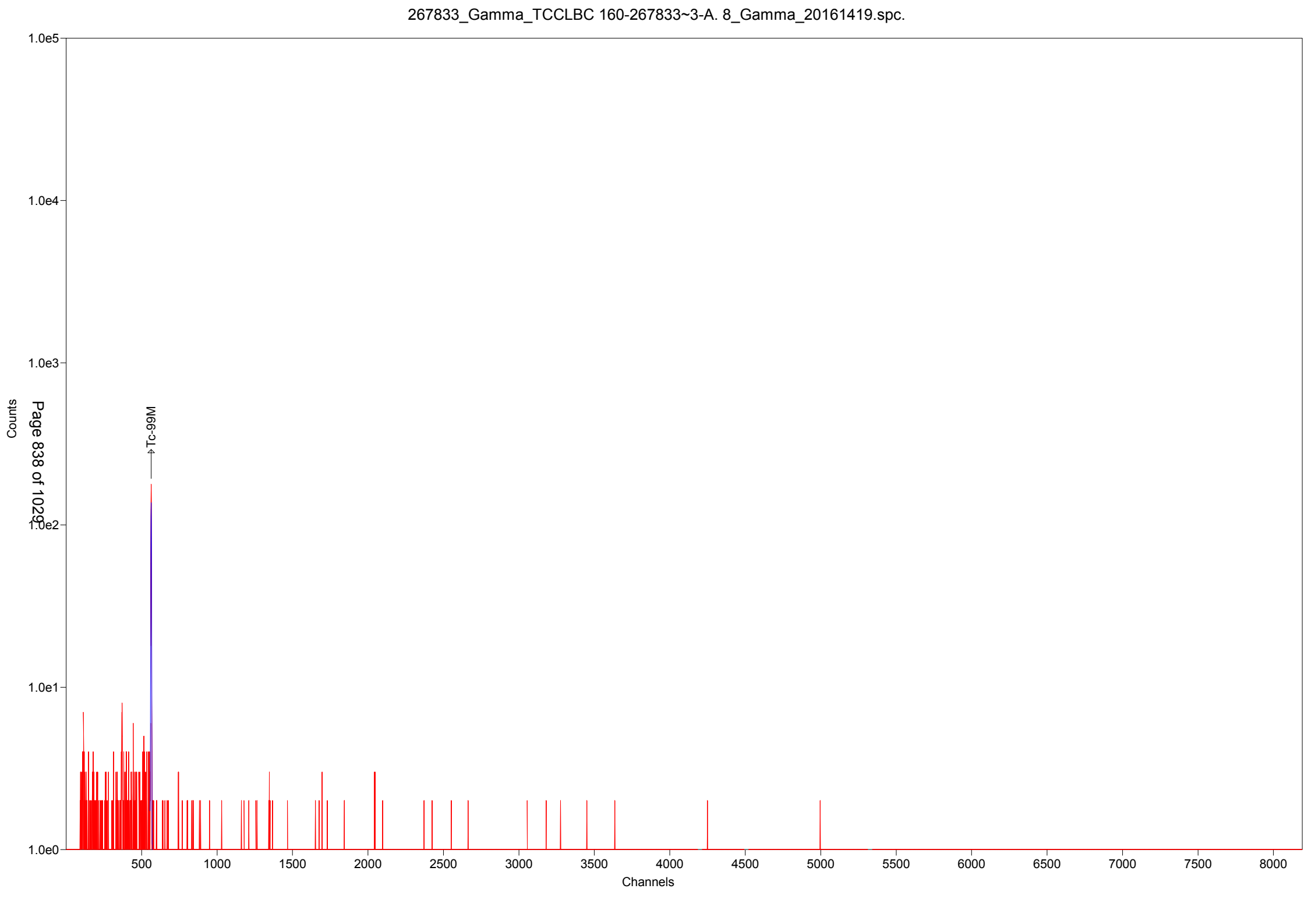
Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	8.1433E+02	8.3978E+02	4.209E+00%	3.00E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.5 to 2000.0 keV) 8.143E+02 pCi/Sample
Total Decayed Activity (37.5 to 2000.0 keV) 8.3978021E+02 pCi/Sample

The library has energies which are not separable.


267833_Gamma_TCCLBC 160-267833~3-A. 8_Gamma_20161419.spc.
1.0e5
1.0e4
1.0e3
1.0e2
1.0e1
1.0e0
Counts
Tc-99M
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
Channels

Test America St. Louis Spectrum ID: 5_Gamma_20161684

Sample Description: 267833_Gamma_TCCLBC 160-267833~3-A
Detector: Detector # 5
Batch ID: 267833
Work Order Number: Gamma
Lot Number: TCCLBC 160-267833~3-A

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 12:27:49 Real Time: 602 sec
Analysis Time: 9/2/2016 12:38 Dead Time: 0.34 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 5_Soil_TunaCan.Clb
Efficiency Cal Desc: 5_Soil_TunaCan_90099_032612
Efficiency Cal Date: 3/27/2012 17:20
Energy Cal Date: 2/28/2012 19:35
Library: Client_Tc-99m.lib
Bkgd Correction File: 5_2016-07-31_1355.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	8.623E+02	4.5	3.849E+01	5.840E+01	2.977E+01
Total	8.623E+02				

Analyst: kody Saulters

TestAmerica Inc Spectrum name: 5_Gamma_20161684.An1

Sample description
267833_Gamma_TCCLBC 160-267833~3-A

Spectrum Filename: C:\User\SPC\Det5\5_Gamma_20161684.An1

Acquisition information
Start time: 9/2/2016 12:27:49 PM
Live time: 600
Real time: 602
Dead time: 0.34 %
Detector ID: 5

Detector system
Ge 5 SN/157

Calibration
Filename: 5_Soil_TunaCan.Clb
5_Soil_TunaCan_90099_032612

Energy Calibration
Created: 2/28/2012 7:35:48 PM
Zero offset: 0.158 keV
Gain: 0.250 keV/channel
Quadratic: 3.911E-08 keV/channel^2

Efficiency Calibration
Created: 3/27/2012 5:20:37 PM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.87 %
Log(Eff): 6.466115E-01 + (-7.830454E-01*Log(E)) +
(-4.117504E-03*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.43 %
Log(Eff): -2.462251E+01 + (9.075211E+00*Log(E)) +
(-9.664422E-01*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.62keV)
Stop channel: 8000 (2000.81keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) =
2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            3
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                          Status          Comments
       Decay correct to date:         YES       9/2/2016 12:00:00 PM
       Decay during acquisition:      YES
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  YES       5_2016-07-31_1355.PBC
                                                 7/31/2016 1:55:22 PM

       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.    1 cutoff: 5.00E+01 %
       Energy Calibration
            Normalized diff:       1.0000

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    pCi/Samp
_____________________________________________________________________________
  140.51      546.   4.46   1.01  3.411E-02   140.51  89.060  8.623E+02 TC99M
No unknown peaks passed sensitivity test.

------------------------------------------------------------
This section based on library: Client_Tc-99m.lib


************** I D E N T I F I E D   P E A K    S U M M A R Y **************
Nuclide  Peak    Centroid  Background  Net Area   Intensity   Uncert  FWHM
         Channel Energy    Counts      Counts     Cts/Sec  1 Sigma %  keV
_____________________________________________________________________________
TC-99M    561.88   140.51        12.       546.     0.910     4.46   1.015D

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  A   Derived peak area.
```

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	MDA Value pCi/Sample	COMMENTS
TC-99M	I	8.6226E+02				2.51E-01	
							Energy duplication
			140.51	8.623E+02	*(	2.977E+01 4.46E+00	8.91E+01 G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation
F - Fast Neutron Activation
I - Fission Product
N - Naturally Occurring Isotope
P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded

Peak Codes:
G - Gamma Ray
X - X-Ray
P - Positron Decay
S - Single-Escape
D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

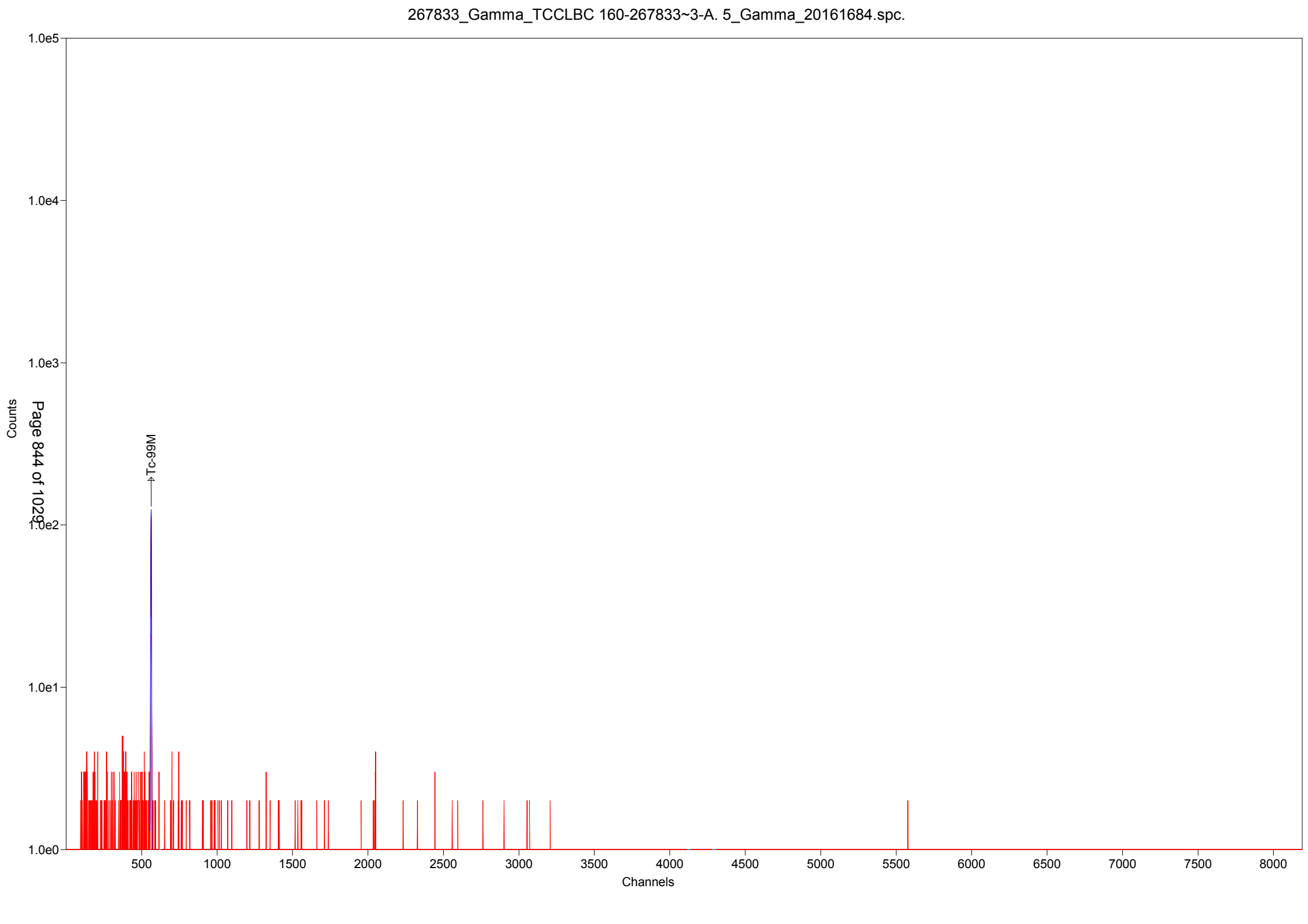
Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M #	8.1743E+02	8.6226E+02	4.464E+00%	2.98E+01

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.8 keV) 8.174E+02 pCi/Sample
Total Decayed Activity (37.6 to 2000.8 keV) 8.6225635E+02 pCi/Sample

The library has energies which are not separable.


267833_Gamma_TCCLBC 160-267833~3-A. 5_Gamma_20161684.spc.
1.0e5
1.0e4
1.0e3
1.0e2
1.0e1
1.0e0
Counts
Page 844 of 1029
TL-99M
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
Channels

Test America St. Louis Spectrum ID: 7_Gamma_20162155

Sample Description: 267833_Gamma_TCCLBC 160-267833~3-A
Detector: Detector # 7
Batch ID: 267833
Work Order Number: Gamma
Lot Number: TCCLBC 160-267833~3-A

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 12:40:21 Real Time: 610 sec
Analysis Time: 9/2/2016 12:51 Dead Time: 1.57 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 7_Soil_TunaCan.Clb
Efficiency Cal Desc: 7_TunaCan_90099_032712
Efficiency Cal Date: 3/16/2012 11:45
Energy Cal Date: 2/23/2012 08:40
Library: Client_Tc-99m.lib
Bkgd Correction File: 7_2016-07-31_1448.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	9.796E+02	3.4	3.292E+01	5.978E+01	2.198E+01
Total	9.796E+02				

Analyst: kody Saulters

TestAmerica Inc Spectrum name: 7_Gamma_20162155.An1

Sample description
267833_Gamma_TCCLBC 160-267833~3-A

Spectrum Filename: C:\User\SPC\Det7\7_Gamma_20162155.An1

Acquisition information
Start time: 9/2/2016 12:40:21 PM
Live time: 600
Real time: 610
Dead time: 1.57 %
Detector ID: 7

Detector system
Ge 7 SN/154

Calibration
Filename: 7_Soil_TunaCan.Clb
7_TunaCan_90099_032712

Energy Calibration
Created: 2/23/2012 8:40:56 AM
Zero offset: 0.117 keV
Gain: 0.250 keV/channel
Quadratic: 3.508E-09 keV/channel^2

Efficiency Calibration
Created: 3/16/2012 11:45:14 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.87 %
Log(Eff): 6.716580E-01 + (-6.166540E-01*Log(E)) +
(-2.065917E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.48 %
Log(Eff): -2.689695E+01 + (1.019544E+01*Log(E)) +
(-1.081671E+00*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.61keV)
Stop channel: 8000 (2000.13keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) =
2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

Random error:	4.0000000E+00
Systematic error:	4.0000000E+00
Fraction Limit:	0.000%
Background width:	3
Half lives decay limit:	12.000
Activity range factor:	2.000
Min. step backg. energy	0.000
Multiplet shift channel	2.000

Corrections	Status	Comments
Decay correct to date:	YES	9/2/2016 12:00:00 PM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	7_2016-07-31_1448.PBC 7/31/2016 2:48:35 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 1 cutoff: 5.00E+01 %

Energy Calibration

Normalized diff: 0.0939

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. pCi/Samp	Nuc
140.42	947.	3.36	0.91	5.337E-02	140.51	89.060	9.796E+02	TC99M

No unknown peaks passed sensitivity test.

This section based on library: Client_Tc-99m.lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
TC-99M	561.63	140.51	16.	947.	1.579	3.36	0.915D

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	Peak MDA Value pCi/Sample	COMMENTS
TC-99M	I	9.7962E+02				2.51E-01	
							Energy duplication
			140.51	9.796E+02 (	2.198E+01	3.36E+00	8.91E+01 G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

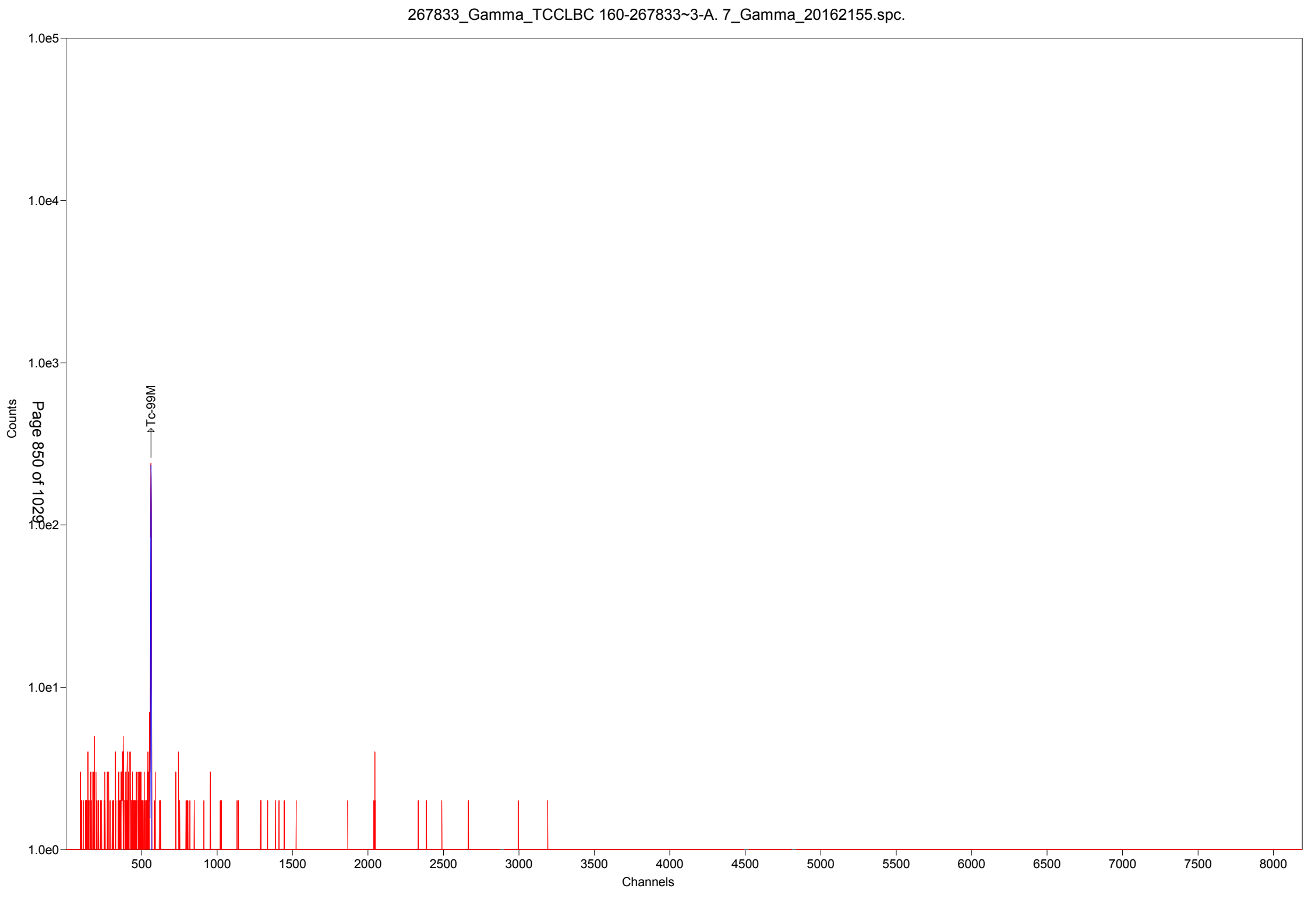
Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	9.0662E+02	9.7962E+02	3.361E+00%	2.20E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.1 keV) 9.066E+02 pCi/Sample
Total Decayed Activity (37.6 to 2000.1 keV) 9.7961774E+02 pCi/Sample

The library has energies which are not separable.


267833_Gamma_TCCLBC 160-267833~3-A. 7_Gamma_20162155.spc.
1.0e5
1.0e4
1.0e3
1.0e2
1.0e1
1.0e0
Counts
Tc-99M
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
Channels

Prep Batch: 267837

Technetium-99 Tracers Prep

Test America St. Louis Spectrum ID: 8_Gamma_20161431

Sample Description: 267837_Gamma_MB 160-267837~1-A
Detector: Detector # 8
Batch ID: 267837
Work Order Number: Gamma
Lot Number: MB 160-267837~1-A

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 19:19:19 Real Time: 615 sec
Analysis Time: 9/2/2016 19:29 Dead Time: 2.51 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 8_Soil_TunaCan.Clb
Efficiency Cal Desc: 8_Soil_TunaCan_90099_032712
Efficiency Cal Date: 3/28/2012 10:35
Energy Cal Date: 2/28/2012 10:34
Library: Client_Tc-99m.lib
Bkgd Correction File: 8_2016-08-08_1838.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	9.265E+02	5.7	5.280E+01	7.081E+01	2.217E+01
Total	9.265E+02				

Analyst: Mike Aldridge

TestAmerica Inc Spectrum name: 8_Gamma_20161431.An1

Sample description
267837_Gamma_MB 160-267837~1-A

Spectrum Filename: C:\User\SPC\Det8\8_Gamma_20161431.An1

Acquisition information
Start time: 9/2/2016 7:19:19 PM
Live time: 600
Real time: 615
Dead time: 2.51 %
Detector ID: 8

Detector system
Ge 8 SN/174

Calibration
Filename: 8_Soil_TunaCan.Clb
8_Soil_TunaCan_90099_032712

Energy Calibration
Created: 2/28/2012 10:34:41 AM
Zero offset: 0.052 keV
Gain: 0.250 keV/channel
Quadratic: 5.282E-10 keV/channel^2

Efficiency Calibration
Created: 3/28/2012 10:35:20 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.39 %
Log(Eff): -1.098764E-01 + (-4.958544E-01*Log(E)) + (-2.572270E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.71 %
Log(Eff): -2.525301E+01 + (9.398253E+00*Log(E)) + (-1.000034E+00*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.55keV)
Stop channel: 8000 (1999.97keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) = 2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

Random error:	4.0000000E+00
Systematic error:	4.0000000E+00
Fraction Limit:	0.000%
Background width:	3
Half lives decay limit:	12.000
Activity range factor:	2.000
Min. step backg. energy	0.000
Multiplet shift channel	2.000

Corrections	Status	Comments
Decay correct to date:	YES	9/2/2016 12:00:00 PM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	8_2016-08-08_1838.PBC 8/8/2016 6:38:16 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 1 cutoff: 5.00E+01 %

Energy Calibration

Normalized diff: 0.0267

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. pCi/Samp	Nuc
140.54	308.	5.70	1.00	3.945E-02	140.51	89.060	9.265E+02	TC99M

No unknown peaks passed sensitivity test.

This section based on library: Client_Tc-99m.lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
TC-99M	561.86	140.51	0.	308.	0.513	5.70	1.003D

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	MDA Value pCi/Sample	COMMENTS
TC-99M	I	9.2655E+02				2.51E-01	
							Energy duplication
			140.51	9.265E+02	(	2.217E+01	5.70E+00 8.91E+01 G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
\+ - Peak activity higher than counting uncertainty range.
\- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

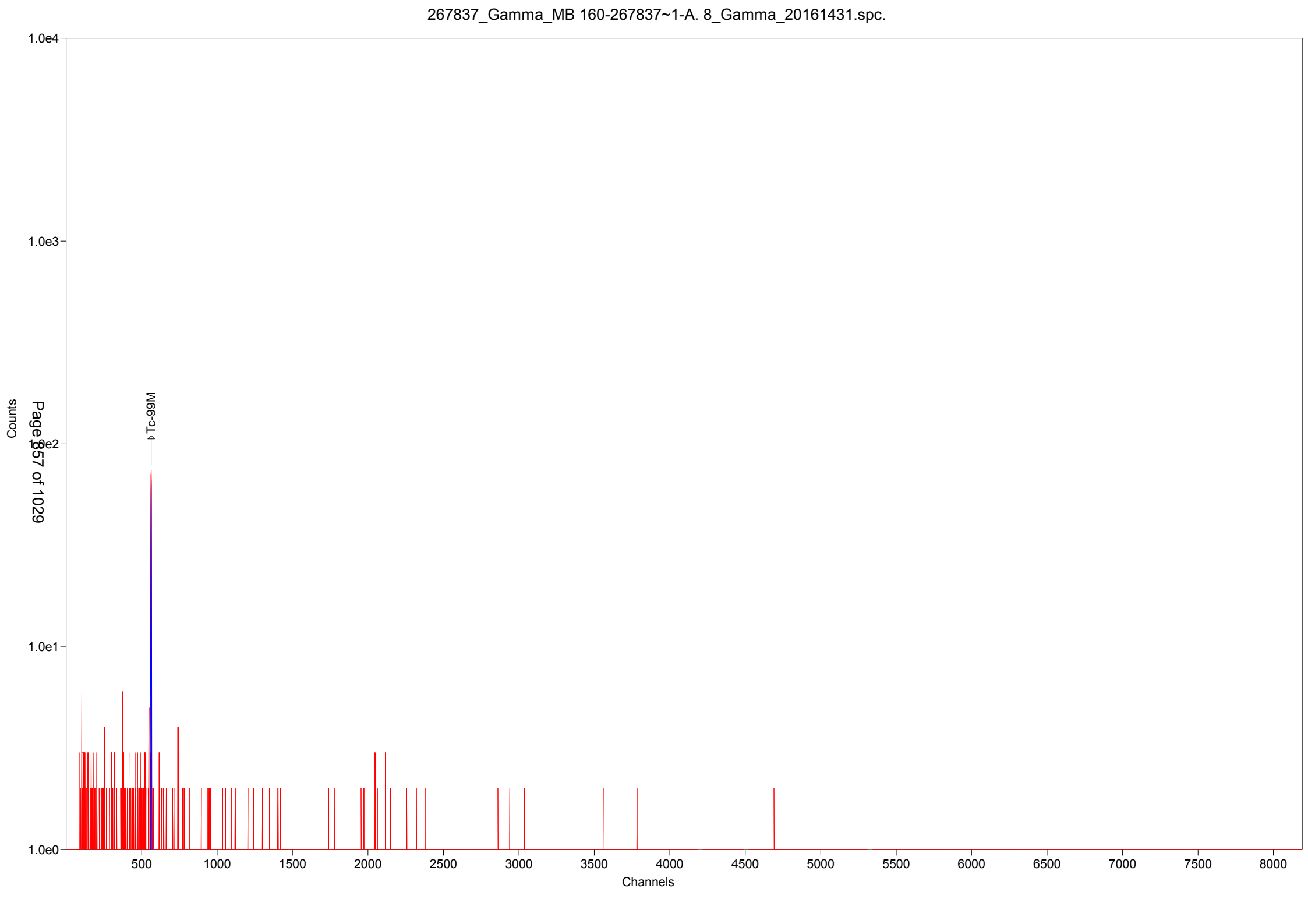
Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	3.9875E+02	9.2655E+02	5.698E+00%	2.22E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.5 to 2000.0 keV) 3.988E+02 pCi/Sample
Total Decayed Activity (37.5 to 2000.0 keV) 9.2654974E+02 pCi/Sample

The library has energies which are not separable.


267837_Gamma_MB 160-267837~1-A. 8_Gamma_20161431.spc.
1.0e4
1.0e3
1.0e2
1.0e1
1.0e0
Counts
Tc-99M
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
Channels

Test America St. Louis Spectrum ID: 5_Gamma_20161695

Sample Description: 267837_Gamma_LCS 160-267837~2-A
Detector: Detector # 5
Batch ID: 267837
Work Order Number: Gamma
Lot Number: LCS 160-267837~2-A

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 19:25:56 Real Time: 603 sec
Analysis Time: 9/2/2016 19:36 Dead Time: 0.52 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 5_Soil_TunaCan.Clb
Efficiency Cal Desc: 5_Soil_TunaCan_90099_032612
Efficiency Cal Date: 3/27/2012 17:20
Energy Cal Date: 2/28/2012 19:35
Library: Client_Tc-99m.lib
Bkgd Correction File: 5_2016-07-31_1355.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	8.808E+02	6.6	5.832E+01	7.358E+01	4.977E+01
Total	8.808E+02				

Analyst: Mike Aldridge

TestAmerica Inc Spectrum name: 5_Gamma_20161695.An1

Sample description
267837_Gamma_LCS 160-267837~2-A

Spectrum Filename: C:\User\SPC\Det5\5_Gamma_20161695.An1

Acquisition information
Start time: 9/2/2016 7:25:56 PM
Live time: 600
Real time: 603
Dead time: 0.52 %
Detector ID: 5

Detector system
Ge 5 SN/157

Calibration
Filename: 5_Soil_TunaCan.Clb
5_Soil_TunaCan_90099_032612

Energy Calibration
Created: 2/28/2012 7:35:48 PM
Zero offset: 0.158 keV
Gain: 0.250 keV/channel
Quadratic: 3.911E-08 keV/channel^2

Efficiency Calibration
Created: 3/27/2012 5:20:37 PM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.87 %
Log(Eff): 6.466115E-01 + (-7.830454E-01*Log(E)) +
(-4.117504E-03*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.43 %
Log(Eff): -2.462251E+01 + (9.075211E+00*Log(E)) +
(-9.664422E-01*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.62keV)
Stop channel: 8000 (2000.81keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) =
2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

Random error:	4.0000000E+00
Systematic error:	4.0000000E+00
Fraction Limit:	0.000%
Background width:	3
Half lives decay limit:	12.000
Activity range factor:	2.000
Min. step backg. energy	0.000
Multiplet shift channel	2.000

Corrections	Status	Comments
Decay correct to date:	YES	9/2/2016 12:00:00 PM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	5_2016-07-31_1355.PBC 7/31/2016 1:55:22 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 1 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 1.0000

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. pCi/Samp	Nuc
140.50	250.	6.62	0.95	3.411E-02	140.51	89.060	8.808E+02	TC99M

No unknown peaks passed sensitivity test.

This section based on library: Client_Tc-99m.lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
TC-99M	561.88	140.51	6.	250.	0.417	6.62	0.949D

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	Peak MDA Value pCi/Sample	COMMENTS
TC-99M	I	8.8082E+02				2.51E-01	
							Energy duplication
			140.51	8.808E+02 @(		4.977E+01 6.62E+00	8.91E+01 G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

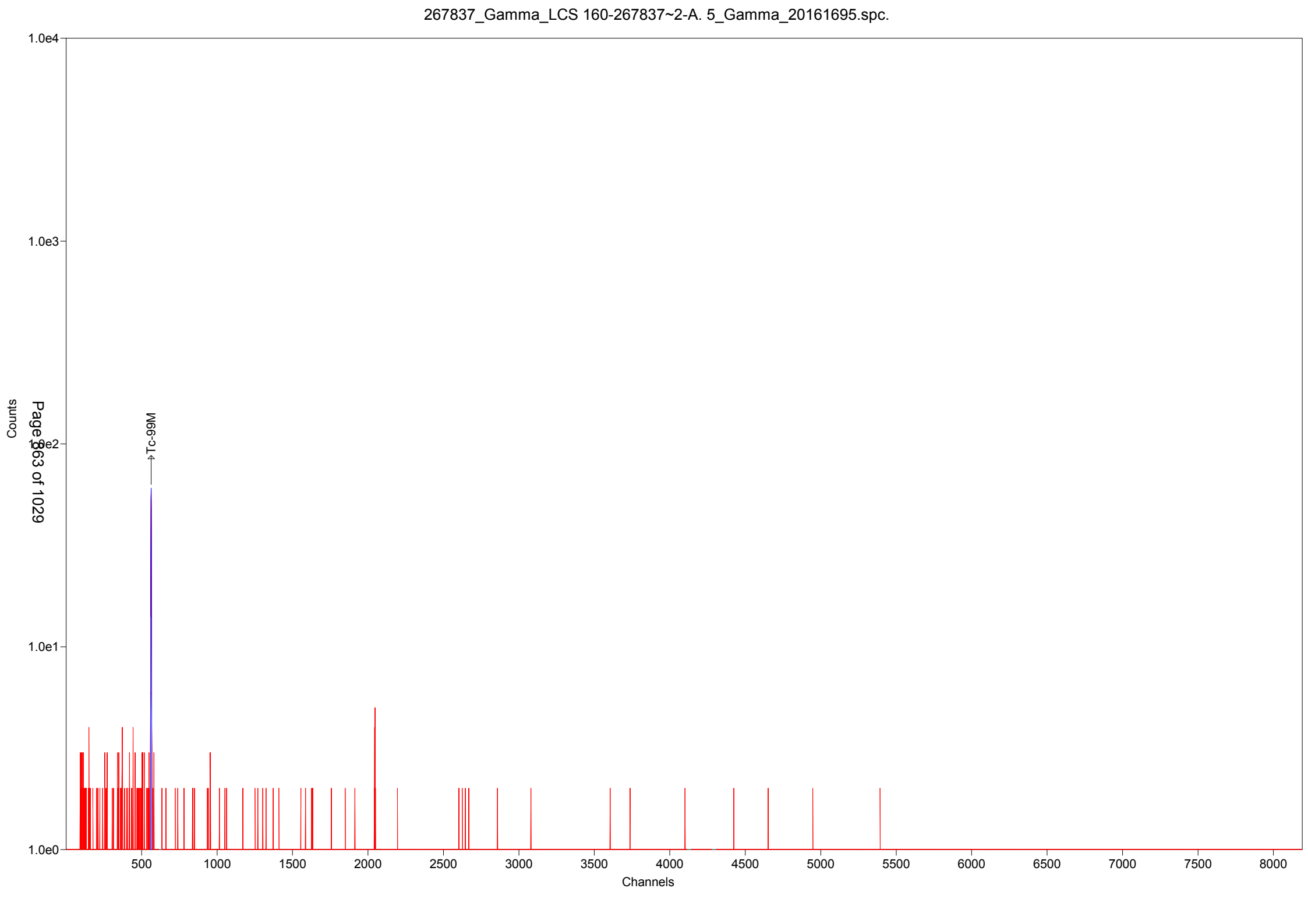
Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M #	3.7429E+02	8.8082E+02	6.621E+00%	4.98E+01

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.8 keV) 3.743E+02 pCi/Sample
Total Decayed Activity (37.6 to 2000.8 keV) 8.8082269E+02 pCi/Sample

The library has energies which are not separable.


267837_Gamma_LCS 160-267837~2-A. 5_Gamma_20161695.spc.
1.0e4
1.0e3
1.0e2
1.0e1
1.0e0
Counts
Tc-99M
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
Channels

Test America St. Louis Spectrum ID: 7_Gamma_20162162

Sample Description: 267837_Gamma_160-18742-A-13-F MS
Detector: Detector # 7
Batch ID: 267837
Work Order Number: Gamma
Lot Number: 160-18742-A-13-F MS

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 18:12:56 Real Time: 609 sec
Analysis Time: 9/2/2016 18:23 Dead Time: 1.53 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 7_Soil_TunaCan.Clb
Efficiency Cal Desc: 7_TunaCan_90099_032712
Efficiency Cal Date: 3/16/2012 11:45
Energy Cal Date: 2/23/2012 08:40
Library: Client_Tc-99m.lib
Bkgd Correction File: 7_2016-07-31_1448.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	9.768E+02	4.5	4.431E+01	6.662E+01	2.154E+01
Total	9.768E+02				

Analyst: Mike Aldridge

TestAmerica Inc Spectrum name: 7_Gamma_20162162.An1

Sample description
267837_Gamma_160-18742-A-13-F MS

Spectrum Filename: C:\User\SPC\Det7\7_Gamma_20162162.An1

Acquisition information
Start time: 9/2/2016 6:12:56 PM
Live time: 600
Real time: 609
Dead time: 1.53 %
Detector ID: 7

Detector system
Ge 7 SN/154

Calibration
Filename: 7_Soil_TunaCan.Clb
7_TunaCan_90099_032712

Energy Calibration
Created: 2/23/2012 8:40:56 AM
Zero offset: 0.117 keV
Gain: 0.250 keV/channel
Quadratic: 3.508E-09 keV/channel^2

Efficiency Calibration
Created: 3/16/2012 11:45:14 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.87 %
Log(Eff): 6.716580E-01 + (-6.166540E-01*Log(E)) +
(-2.065917E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.48 %
Log(Eff): -2.689695E+01 + (1.019544E+01*Log(E)) +
(-1.081671E+00*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.61keV)
Stop channel: 8000 (2000.13keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) =
2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            3
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                          Status          Comments
       Decay correct to date:         YES       9/2/2016 12:00:00 PM
       Decay during acquisition:      YES
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  YES       7_2016-07-31_1448.PBC
                                                 7/31/2016 2:48:35 PM

       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.    1 cutoff: 5.00E+01 %
       Energy Calibration
            Normalized diff:       0.1176

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    pCi/Samp
_____________________________________________________________________________
  140.40      499.   4.54   1.16  5.338E-02   140.51  89.060  9.768E+02 TC99M
No unknown peaks passed sensitivity test.

------------------------------------------------------------
This section based on library: Client_Tc-99m.lib


************** I D E N T I F I E D   P E A K    S U M M A R Y **************
Nuclide  Peak    Centroid  Background  Net Area   Intensity   Uncert  FWHM
         Channel Energy    Counts      Counts     Cts/Sec  1 Sigma %  keV
_____________________________________________________________________________
TC-99M    561.63   140.51         3.       499.     0.831     4.54   1.158D

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  A   Derived peak area.
```

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	Peak MDA Value pCi/Sample	COMMENTS
TC-99M	I	9.7676E+02				2.51E-01	
							Energy duplication
			140.51	9.768E+02 (	2.154E+01	4.54E+00	8.91E+01 G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
\+ - Peak activity higher than counting uncertainty range.
\- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation
F - Fast Neutron Activation
I - Fission Product
N - Naturally Occurring Isotope
P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded

Peak Codes:
G - Gamma Ray
X - X-Ray
P - Positron Decay
S - Single-Escape
D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

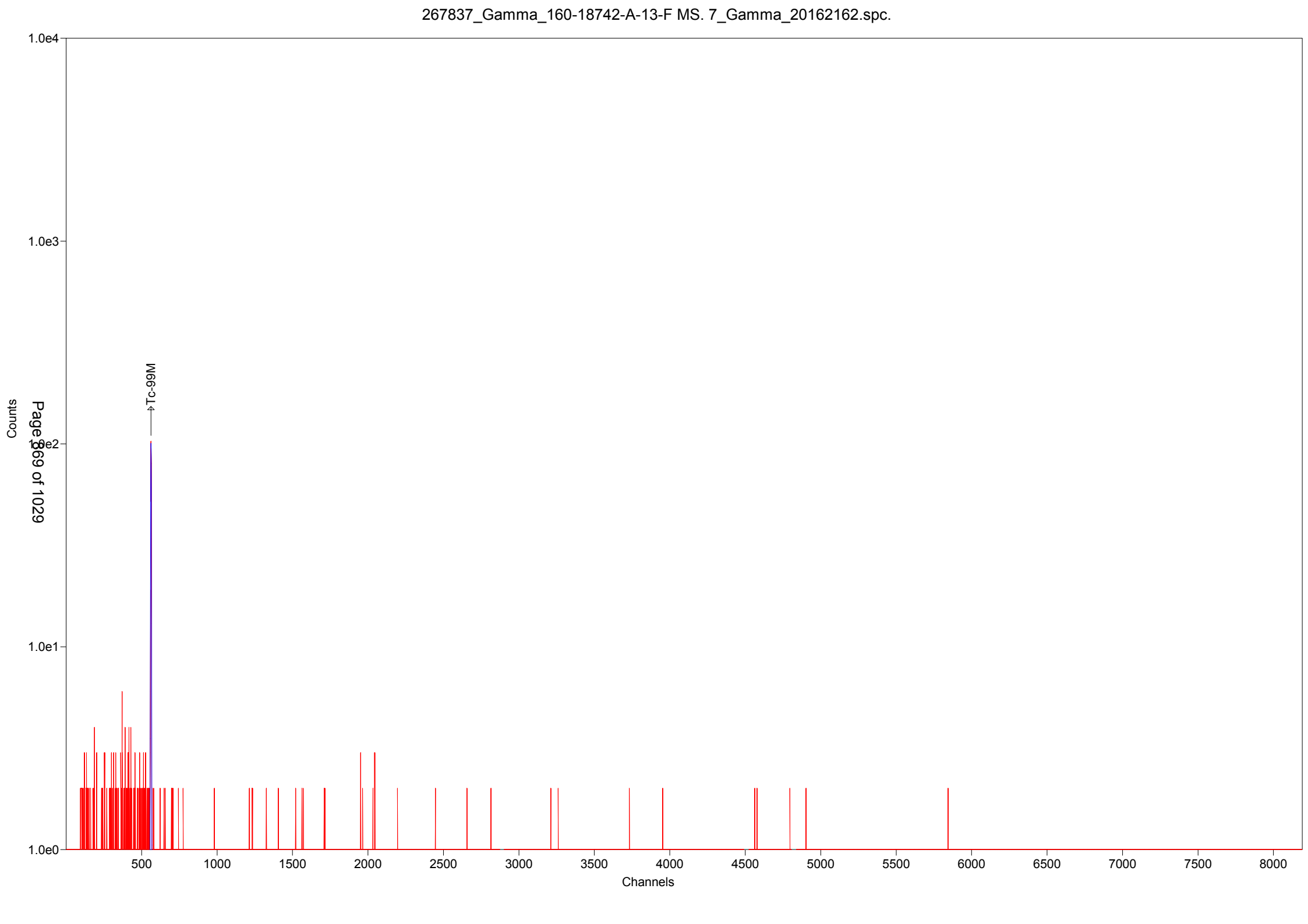
Nuclide	Activity pCi/Sample	Time of Count Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	4.7748E+02	9.7676E+02	4.536E+00%	2.15E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

S U M M A R Y

Total Activity (37.6 to 2000.1 keV) 4.775E+02 pCi/Sample
Total Decayed Activity (37.6 to 2000.1 keV) 9.7676459E+02 pCi/Sample

The library has energies which are not separable.


267837_Gamma_160-18742-A-13-F MS. 7_Gamma_20162162.spc.
1.0e4
1.0e3
1.0e2
1.0e1
1.0e0
Counts
Tc-99M
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
Channels

Test America St. Louis Spectrum ID: 8_Gamma_20161428

Sample Description: 267837_Gamma_160-18742-B-13-D MSD
Detector: Detector # 8
Batch ID: 267837
Work Order Number: Gamma
Lot Number: 160-18742-B-13-D MSD

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 18:14:08 Real Time: 615 sec
Analysis Time: 9/2/2016 18:24 Dead Time: 2.50 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 8_Soil_TunaCan.Clb
Efficiency Cal Desc: 8_Soil_TunaCan_90099_032712
Efficiency Cal Date: 3/28/2012 10:35
Energy Cal Date: 2/28/2012 10:34
Library: Client_Tc-99m.lib
Bkgd Correction File: 8_2016-08-08_1838.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	8.946E+02	5.7	5.081E+01	6.825E+01	4.218E+01
Total	8.946E+02				

Analyst: Mike Aldridge

TestAmerica Inc Spectrum name: 8_Gamma_20161428.An1

Sample description
267837_Gamma_160-18742-B-13-D MSD

Spectrum Filename: C:\User\SPC\Det8\8_Gamma_20161428.An1

Acquisition information
Start time: 9/2/2016 6:14:08 PM
Live time: 600
Real time: 615
Dead time: 2.50 %
Detector ID: 8

Detector system
Ge 8 SN/174

Calibration
Filename: 8_Soil_TunaCan.Clb
8_Soil_TunaCan_90099_032712

Energy Calibration
Created: 2/28/2012 10:34:41 AM
Zero offset: 0.052 keV
Gain: 0.250 keV/channel
Quadratic: 5.282E-10 keV/channel^2

Efficiency Calibration
Created: 3/28/2012 10:35:20 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.39 %
Log(Eff): -1.098764E-01 + (-4.958544E-01*Log(E)) +
(-2.572270E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.71 %
Log(Eff): -2.525301E+01 + (9.398253E+00*Log(E)) +
(-1.000034E+00*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.55keV)
Stop channel: 8000 (1999.97keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) =
2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

```
       Random error:               4.0000000E+00
       Systematic error:           4.0000000E+00
       Fraction Limit:             0.000%
       Background width:           3
       Half lives decay limit:    12.000
       Activity range factor:      2.000
       Min. step backg. energy     0.000
       Multiplet shift channel     2.000

Corrections                          Status          Comments
       Decay correct to date:         YES       9/2/2016 12:00:00 PM
       Decay during acquisition:      YES
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  YES       8_2016-08-08_1838.PBC
                                                8/8/2016 6:38:16 PM

       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.    1 cutoff: 5.00E+01 %
       Energy Calibration
            Normalized diff:       0.0549

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    pCi/Samp
_____________________________________________________________________________
  140.57      337.   5.68   0.96  3.944E-02   140.51  89.060  8.946E+02 TC99M
No unknown peaks passed sensitivity test.

------------------------------------------------------------
This section based on library: Client_Tc-99m.lib


************** I D E N T I F I E D   P E A K    S U M M A R Y **************
Nuclide  Peak    Centroid  Background  Net Area   Intensity   Uncert  FWHM
         Channel Energy    Counts      Counts     Cts/Sec  1 Sigma %  keV
_____________________________________________________________________________
TC-99M    561.86   140.51         8.       337.     0.562     5.68   0.959D

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  A   Derived peak area.
```

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	Peak MDA Value pCi/Sample	COMMENTS
TC-99M	I	8.9458E+02				2.51E-01	
							Energy duplication
			140.51	8.946E+02 (		4.218E+01 5.68E+00	8.91E+01 G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	4.3629E+02	8.9458E+02	5.679E+00%	4.22E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.5 to 2000.0 keV) 4.363E+02 pCi/Sample
Total Decayed Activity (37.5 to 2000.0 keV) 8.9457690E+02 pCi/Sample

The library has energies which are not separable.


267837_Gamma_160-18742-B-13-D MSD. 8_Gamma_20161428.spc.
1.0e4
1.0e3
1.0e2
1.0e1
1.0e0
Counts
Tc-99M
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
Channels

Test America St. Louis Spectrum ID: 5_Gamma_20161693

Sample Description: 267837_Gamma_160-18852-B-2-C
Detector: Detector # 5
Batch ID: 267837
Work Order Number: Gamma
Lot Number: 160-18852-B-2-C

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 18:34:19 Real Time: 602 sec
Analysis Time: 9/2/2016 18:45 Dead Time: 0.38 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 5_Soil_TunaCan.Clb
Efficiency Cal Desc: 5_Soil_TunaCan_90099_032612
Efficiency Cal Date: 3/27/2012 17:20
Energy Cal Date: 2/28/2012 19:35
Library: Client_Tc-99m.lib
Bkgd Correction File: 5_2016-07-31_1355.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	8.998E+02	6.3	5.630E+01	7.260E+01	5.071E+01
Total	8.998E+02				

Analyst: Mike Aldridge

TestAmerica Inc Spectrum name: 5_Gamma_20161693.An1

Sample description
267837_Gamma_160-18852-B-2-C

Spectrum Filename: C:\User\SPC\Det5\5_Gamma_20161693.An1

Acquisition information
Start time: 9/2/2016 6:34:19 PM
Live time: 600
Real time: 602
Dead time: 0.38 %
Detector ID: 5

Detector system
Ge 5 SN/157

Calibration
Filename: 5_Soil_TunaCan.Clb
5_Soil_TunaCan_90099_032612

Energy Calibration
Created: 2/28/2012 7:35:48 PM
Zero offset: 0.158 keV
Gain: 0.250 keV/channel
Quadratic: 3.911E-08 keV/channel^2

Efficiency Calibration
Created: 3/27/2012 5:20:37 PM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.87 %
Log(Eff): 6.466115E-01 + (-7.830454E-01*Log(E)) +
(-4.117504E-03*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.43 %
Log(Eff): -2.462251E+01 + (9.075211E+00*Log(E)) +
(-9.664422E-01*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.62keV)
Stop channel: 8000 (2000.81keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) =
2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            3
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                          Status          Comments
       Decay correct to date:         YES       9/2/2016 12:00:00 PM
       Decay during acquisition:      YES
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  YES       5_2016-07-31_1355.PBC
                                                 7/31/2016 1:55:22 PM

       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.    1 cutoff: 5.00E+01 %
       Energy Calibration
            Normalized diff:       1.0000

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    pCi/Samp
_____________________________________________________________________________
  140.52      282.   6.26   1.28  3.411E-02   140.51  89.060  8.998E+02 TC99M
No unknown peaks passed sensitivity test.

-------------------------------------------------------------
This section based on library: Client_Tc-99m.lib


************** I D E N T I F I E D   P E A K    S U M M A R Y **************
Nuclide  Peak    Centroid  Background  Net Area   Intensity   Uncert  FWHM
         Channel Energy    Counts      Counts     Cts/Sec  1 Sigma %  keV
_____________________________________________________________________________
TC-99M    561.88   140.51         8.       282.     0.470     6.26   1.283D

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  A   Derived peak area.
```

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	MDA Value pCi/Sample	COMMENTS
TC-99M	I	8.9985E+02				2.51E-01	
							Energy duplication
			140.51	8.998E+02	*(	5.071E+01	6.26E+00 8.91E+01 G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

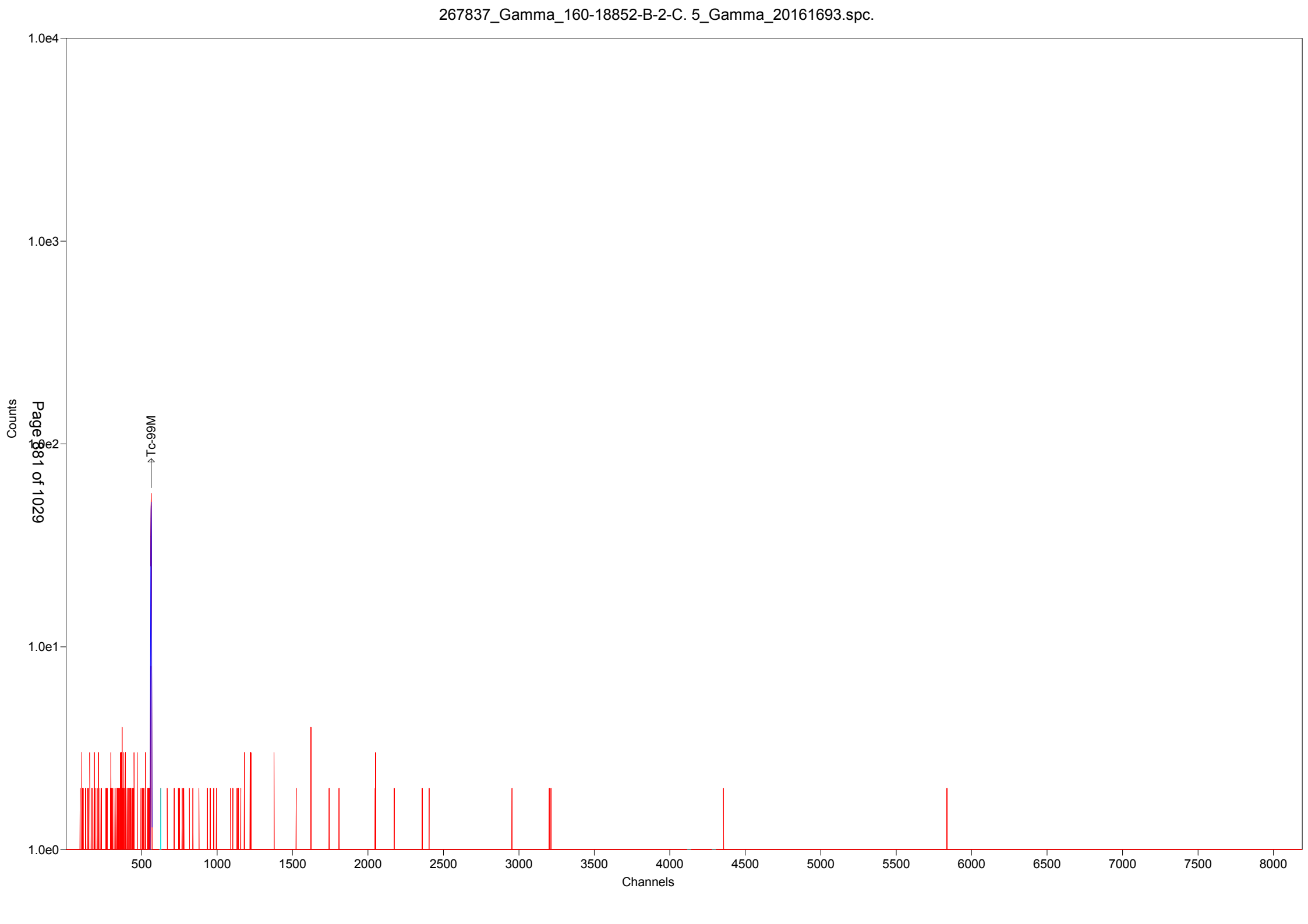
Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M #	4.2219E+02	8.9985E+02	6.257E+00%	5.07E+01

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.8 keV) 4.222E+02 pCi/Sample
Total Decayed Activity (37.6 to 2000.8 keV) 8.9984906E+02 pCi/Sample

The library has energies which are not separable.


267837_Gamma_160-18852-B-2-C. 5_Gamma_20161693.spc.
1.0e4
1.0e3
1.0e2
1.0e1
1.0e0
Counts
Tc-99M
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
Channels

Test America St. Louis Spectrum ID: 7_Gamma_20162163

Sample Description: 267837_Gamma_160-18852-B-3-C
Detector: Detector # 7
Batch ID: 267837
Work Order Number: Gamma
Lot Number: 160-18852-B-3-C

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 18:35:20 Real Time: 610 sec
Analysis Time: 9/2/2016 18:45 Dead Time: 1.58 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 7_Soil_TunaCan.Clb
Efficiency Cal Desc: 7_TunaCan_90099_032712
Efficiency Cal Date: 3/16/2012 11:45
Energy Cal Date: 2/23/2012 08:40
Library: Client_Tc-99m.lib
Bkgd Correction File: 7_2016-07-31_1448.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	8.940E+02	5.1	4.525E+01	6.420E+01	3.944E+01
Total	8.940E+02				

Analyst: Mike Aldridge

TestAmerica Inc Spectrum name: 7_Gamma_20162163.An1

Sample description
267837_Gamma_160-18852-B-3-C

Spectrum Filename: C:\User\SPC\Det7\7_Gamma_20162163.An1

Acquisition information
Start time: 9/2/2016 6:35:20 PM
Live time: 600
Real time: 610
Dead time: 1.58 %
Detector ID: 7

Detector system
Ge 7 SN/154

Calibration
Filename: 7_Soil_TunaCan.Clb
7_TunaCan_90099_032712

Energy Calibration
Created: 2/23/2012 8:40:56 AM
Zero offset: 0.117 keV
Gain: 0.250 keV/channel
Quadratic: 3.508E-09 keV/channel^2

Efficiency Calibration
Created: 3/16/2012 11:45:14 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.87 %
Log(Eff): 6.716580E-01 + (-6.166540E-01*Log(E)) +
(-2.065917E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.48 %
Log(Eff): -2.689695E+01 + (1.019544E+01*Log(E)) +
(-1.081671E+00*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.61keV)
Stop channel: 8000 (2000.13keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) =
2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            3
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                          Status          Comments
       Decay correct to date:         YES       9/2/2016 12:00:00 PM
       Decay during acquisition:      YES
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  YES       7_2016-07-31_1448.PBC
                                                 7/31/2016 2:48:35 PM

       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.    1 cutoff: 5.00E+01 %
       Energy Calibration
            Normalized diff:       0.0321

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    pCi/Samp
_____________________________________________________________________________
  140.48      437.   5.06   0.92  5.336E-02   140.51  89.060  8.940E+02 TC99M
No unknown peaks passed sensitivity test.

-------------------------------------------------------------
This section based on library: Client_Tc-99m.lib


************** I D E N T I F I E D   P E A K    S U M M A R Y **************
Nuclide  Peak    Centroid  Background  Net Area   Intensity   Uncert  FWHM
         Channel Energy    Counts      Counts     Cts/Sec  1 Sigma %  keV
_____________________________________________________________________________
TC-99M    561.63   140.51        13.       437.     0.729     5.06   0.916D

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  A   Derived peak area.
```

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	Peak MDA Value pCi/Sample	COMMENTS
TC-99M	I	8.9396E+02				2.51E-01	
							Energy duplication
			140.51	8.940E+02 (		3.944E+01	5.06E+00 8.91E+01 G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
\+ - Peak activity higher than counting uncertainty range.
\- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	4.1861E+02	8.9396E+02	5.062E+00%	3.94E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.1 keV) 4.186E+02 pCi/Sample
Total Decayed Activity (37.6 to 2000.1 keV) 8.9396320E+02 pCi/Sample

The library has energies which are not separable.

267837_Gamma_160-18852-B-3-C. 7_Gamma_20162163.spc.

Test America St. Louis Spectrum ID: 8_Gamma_20161429

Sample Description: 267837_Gamma_160-18852-B-4-B
Detector: Detector # 8
Batch ID: 267837
Work Order Number: Gamma
Lot Number: 160-18852-B-4-B

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 18:36:39 Real Time: 615 sec
Analysis Time: 9/2/2016 18:47 Dead Time: 2.51 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 8_Soil_TunaCan.Clb
Efficiency Cal Desc: 8_Soil_TunaCan_90099_032712
Efficiency Cal Date: 3/28/2012 10:35
Energy Cal Date: 2/28/2012 10:34
Library: Client_Tc-99m.lib
Bkgd Correction File: 8_2016-08-08_1838.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	9.720E+02	5.5	5.333E+01	7.277E+01	3.734E+01
Total	9.720E+02				

Analyst: Mike Aldridge

TestAmerica Inc Spectrum name: 8_Gamma_20161429.An1

Sample description
267837_Gamma_160-18852-B-4-B

Spectrum Filename: C:\User\SPC\Det8\8_Gamma_20161429.An1

Acquisition information
Start time: 9/2/2016 6:36:39 PM
Live time: 600
Real time: 615
Dead time: 2.51 %
Detector ID: 8

Detector system
Ge 8 SN/174

Calibration
Filename: 8_Soil_TunaCan.Clb
8_Soil_TunaCan_90099_032712

Energy Calibration
Created: 2/28/2012 10:34:41 AM
Zero offset: 0.052 keV
Gain: 0.250 keV/channel
Quadratic: 5.282E-10 keV/channel^2

Efficiency Calibration
Created: 3/28/2012 10:35:20 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.39 %
Log(Eff): -1.098764E-01 + (-4.958544E-01*Log(E)) +
(-2.572270E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.71 %
Log(Eff): -2.525301E+01 + (9.398253E+00*Log(E)) +
(-1.000034E+00*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.55keV)
Stop channel: 8000 (1999.97keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) =
2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

Random error:	4.0000000E+00
Systematic error:	4.0000000E+00
Fraction Limit:	0.000%
Background width:	3
Half lives decay limit:	12.000
Activity range factor:	2.000
Min. step backg. energy	0.000
Multiplet shift channel	2.000

Corrections	Status	Comments
Decay correct to date:	YES	9/2/2016 12:00:00 PM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	8_2016-08-08_1838.PBC 8/8/2016 6:38:16 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 1 cutoff: 5.00E+01 %

Energy Calibration

Normalized diff: 0.0003

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. pCi/Samp	Nuc
140.51	351.	5.49	1.08	3.945E-02	140.51	89.060	9.720E+02	TC99M

No unknown peaks passed sensitivity test.

This section based on library: Client_Tc-99m.lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV	
TC-99M	561.86	140.51	5.	351.	0.584	5.49	1.076	D

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	Peak MDA Value pCi/Sample	COMMENTS
TC-99M	I	9.7196E+02				2.51E-01	
							Energy duplication
			140.51	9.720E+02 (		3.734E+01 5.49E+00	8.91E+01 G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
\+ - Peak activity higher than counting uncertainty range.
\- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

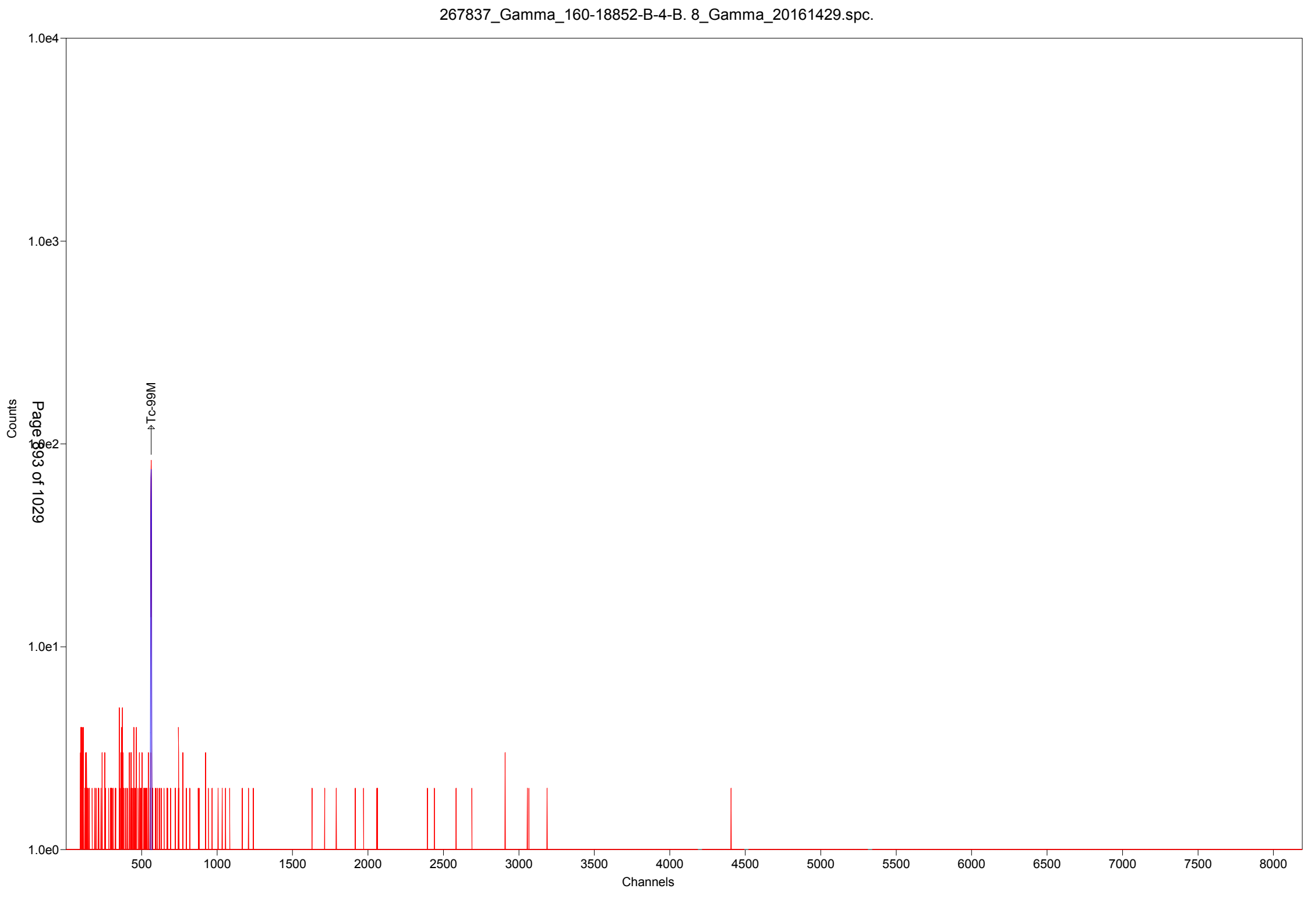
Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	4.5399E+02	9.7196E+02	5.487E+00%	3.73E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.5 to 2000.0 keV) 4.540E+02 pCi/Sample
Total Decayed Activity (37.5 to 2000.0 keV) 9.7196307E+02 pCi/Sample

The library has energies which are not separable.


267837_Gamma_160-18852-B-4-B. 8_Gamma_20161429.spc.
1.0e4
1.0e3
1.0e2
1.0e1
1.0e0
Counts
Tc-99M
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
Channels

Test America St. Louis Spectrum ID: 7_Gamma_20162165

Sample Description: 267837_Gamma_160-18852-B-5-C
Detector: Detector # 7
Batch ID: 267837
Work Order Number: Gamma
Lot Number: 160-18852-B-5-C

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 19:37:22 Real Time: 609 sec
Analysis Time: 9/2/2016 19:47 Dead Time: 1.53 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 7_Soil_TunaCan.Clb
Efficiency Cal Desc: 7_TunaCan_90099_032712
Efficiency Cal Date: 3/16/2012 11:45
Energy Cal Date: 2/23/2012 08:40
Library: Client_Tc-99m.lib
Bkgd Correction File: 7_2016-07-31_1448.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	9.026E+02	5.3	4.764E+01	6.620E+01	3.843E+01
Total	9.026E+02				

Analyst: Mike Aldridge

TestAmerica Inc Spectrum name: 7_Gamma_20162165.An1

Sample description
267837_Gamma_160-18852-B-5-C

Spectrum Filename: C:\User\SPC\Det7\7_Gamma_20162165.An1

Acquisition information
Start time: 9/2/2016 7:37:22 PM
Live time: 600
Real time: 609
Dead time: 1.53 %
Detector ID: 7

Detector system
Ge 7 SN/154

Calibration
Filename: 7_Soil_TunaCan.Clb
7_TunaCan_90099_032712

Energy Calibration
Created: 2/23/2012 8:40:56 AM
Zero offset: 0.117 keV
Gain: 0.250 keV/channel
Quadratic: 3.508E-09 keV/channel^2

Efficiency Calibration
Created: 3/16/2012 11:45:14 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.87 %
Log(Eff): 6.716580E-01 + (-6.166540E-01*Log(E)) +
(-2.065917E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.48 %
Log(Eff): -2.689695E+01 + (1.019544E+01*Log(E)) +
(-1.081671E+00*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.61keV)
Stop channel: 8000 (2000.13keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) =
2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

Random error:	4.0000000E+00
Systematic error:	4.0000000E+00
Fraction Limit:	0.000%
Background width:	3
Half lives decay limit:	12.000
Activity range factor:	2.000
Min. step backg. energy	0.000
Multiplet shift channel	2.000

Corrections	Status	Comments
Decay correct to date:	YES	9/2/2016 12:00:00 PM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	7_2016-07-31_1448.PBC 7/31/2016 2:48:35 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 1 cutoff: 5.00E+01 %

Energy Calibration

Normalized diff: 0.0925

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. pCi/Samp	Nuc
140.42	392.	5.28	1.02	5.337E-02	140.51	89.060	9.026E+02	TC99M

No unknown peaks passed sensitivity test.

This section based on library: Client_Tc-99m.lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV	
TC-99M	561.63	140.51	9.	392.	0.653	5.28	1.021	D

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	MDA Value pCi/Sample	COMMENTS
TC-99M	I	9.0260E+02				2.51E-01	
							Energy duplication
			140.51	9.026E+02	(	3.843E+01	5.28E+00 8.91E+01 G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

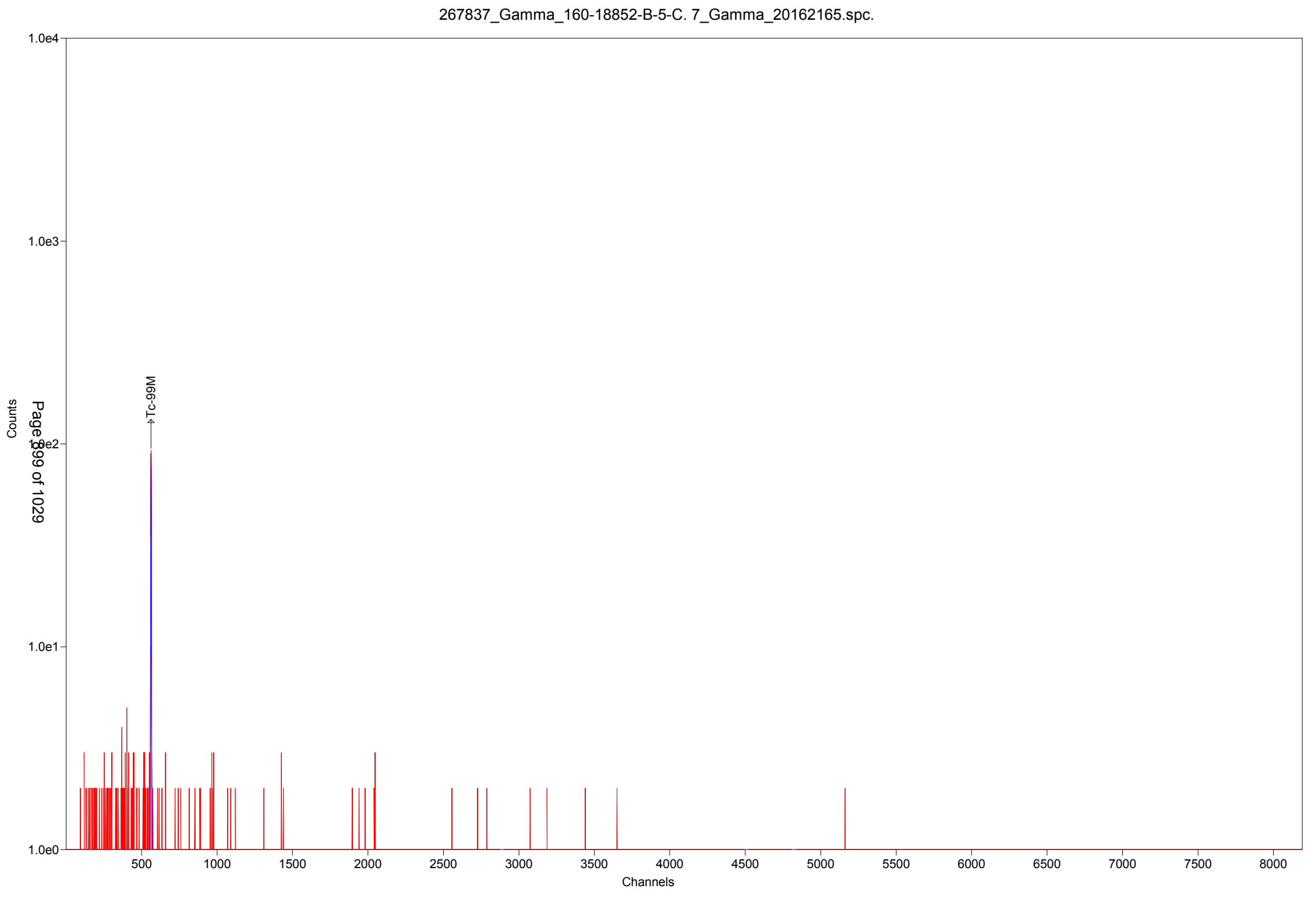
Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	3.7522E+02	9.0260E+02	5.278E+00%	3.84E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.1 keV) 3.752E+02 pCi/Sample
Total Decayed Activity (37.6 to 2000.1 keV) 9.0259985E+02 pCi/Sample

The library has energies which are not separable.


267837_Gamma_160-18852-B-5-C. 7_Gamma_20162165.spc.
1.0e4
1.0e3
1.0e2
1.0e1
1.0e0
Counts
Tc-99M
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
Channels

Test America St. Louis Spectrum ID: 8_Gamma_20161430

Sample Description: 267837_Gamma_160-18852-B-11-C
Detector: Detector # 8
Batch ID: 267837
Work Order Number: Gamma
Lot Number: 160-18852-B-11-C

Decay to Time: 9/2/2016 12:00 Live Time: 600 sec
Acquisition Time: 9/2/2016 18:59:24 Real Time: 615 sec
Analysis Time: 9/2/2016 19:10 Dead Time: 2.52 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 8_Soil_TunaCan.Clb
Efficiency Cal Desc: 8_Soil_TunaCan_90099_032712
Efficiency Cal Date: 3/28/2012 10:35
Energy Cal Date: 2/28/2012 10:34
Library: Client_Tc-99m.lib
Bkgd Correction File: 8_2016-08-08_1838.PBC

Nuclide	Activity pCi/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert pCi/Sample	1-Sigma Total Uncert pCi/Sample	Minimum Detectable Activity pCi/Sample
TC-99M	9.164E+02	5.8	5.316E+01	7.074E+01	4.225E+01
Total	9.164E+02				

Analyst: Mike Aldridge

TestAmerica Inc Spectrum name: 8_Gamma_20161430.An1

Sample description
267837_Gamma_160-18852-B-11-C

Spectrum Filename: C:\User\SPC\Det8\8_Gamma_20161430.An1

Acquisition information
Start time: 9/2/2016 6:59:24 PM
Live time: 600
Real time: 615
Dead time: 2.52 %
Detector ID: 8

Detector system
Ge 8 SN/174

Calibration
Filename: 8_Soil_TunaCan.Clb
8_Soil_TunaCan_90099_032712

Energy Calibration
Created: 2/28/2012 10:34:41 AM
Zero offset: 0.052 keV
Gain: 0.250 keV/channel
Quadratic: 5.282E-10 keV/channel^2

Efficiency Calibration
Created: 3/28/2012 10:35:20 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.39 %
Log(Eff): -1.098764E-01 + (-4.958544E-01*Log(E)) + (-2.572270E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.71 %
Log(Eff): -2.525301E+01 + (9.398253E+00*Log(E)) + (-1.000034E+00*Log(E)^2)

Library Files
Main analysis library: Client_Tc-99m.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.55keV)
Stop channel: 8000 (1999.97keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00 +/- 0.000E+00%
Activity scaling factor: 1.0000E+00/(3.7000E-02* 1.0000E+00) = 2.7027E+01
Detection limit method: Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            3
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                          Status          Comments
       Decay correct to date:         YES       9/2/2016 12:00:00 PM
       Decay during acquisition:      YES
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  YES       8_2016-08-08_1838.PBC
                                                 8/8/2016 6:38:16 PM

       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.    1 cutoff: 5.00E+01 %
       Energy Calibration
            Normalized diff:       0.0175

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    pCi/Samp
_____________________________________________________________________________
  140.53      316.   5.80   0.91  3.945E-02   140.51  89.060  9.164E+02 TC99M
No unknown peaks passed sensitivity test.

------------------------------------------------------------
This section based on library: Client_Tc-99m.lib


************** I D E N T I F I E D   P E A K    S U M M A R Y **************
Nuclide  Peak    Centroid  Background  Net Area   Intensity   Uncert  FWHM
         Channel Energy    Counts      Counts     Cts/Sec  1 Sigma %  keV
_____________________________________________________________________________
TC-99M    561.86   140.51         6.       316.     0.527     5.80   0.908D

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  A   Derived peak area.
```

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity pCi/Sample	Peak Energy keV	Peak Activity pCi/Sample	Peak Code	Peak MDA Value pCi/Sample	COMMENTS
TC-99M	I	9.1641E+02				2.51E-01	
							Energy duplication
			140.51	9.164E+02 (		4.225E+01 5.80E+00	8.91E+01 G K

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
\+ - Peak activity higher than counting uncertainty range.
\- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

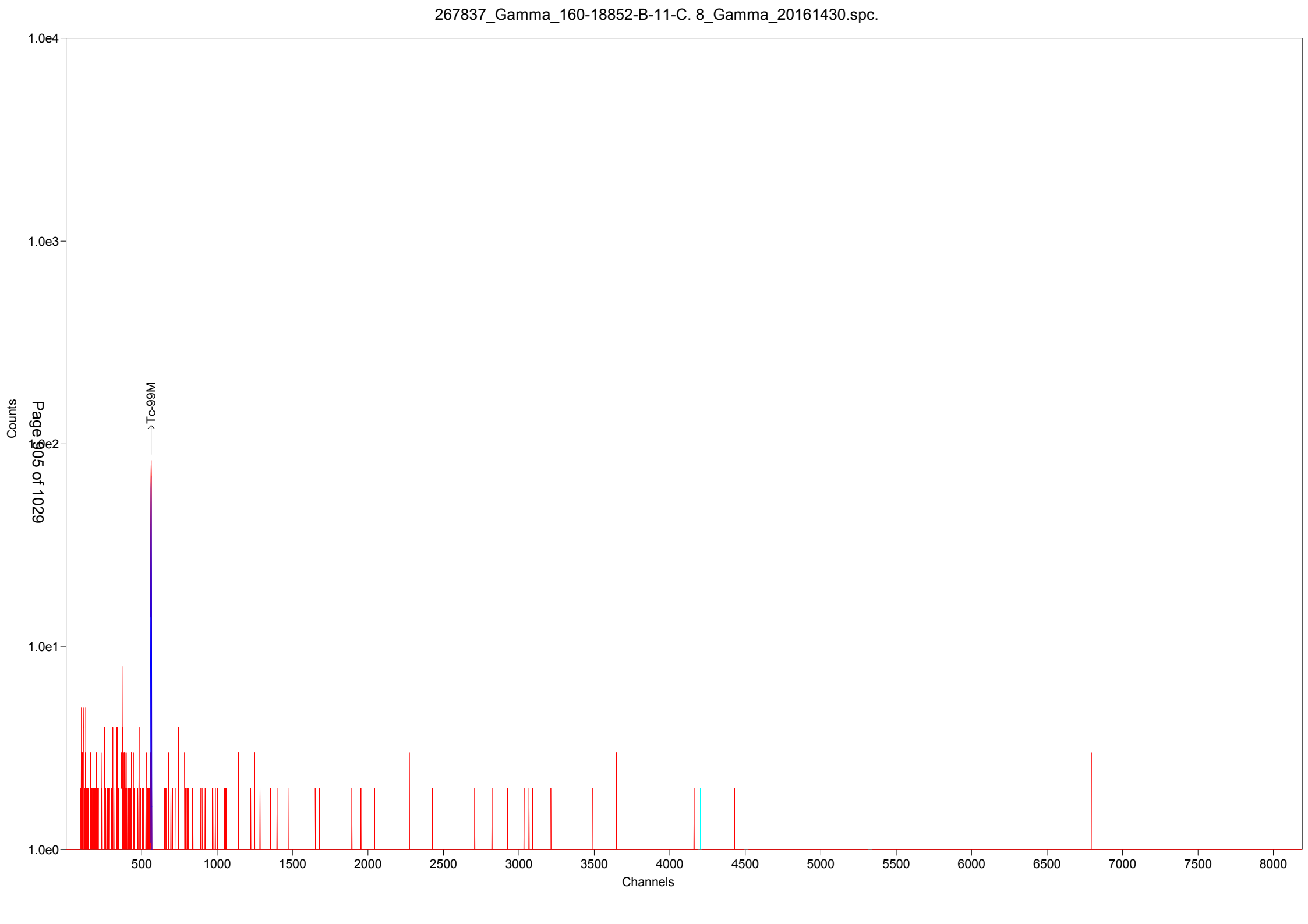
Nuclide	Time of Count Activity pCi/Sample	Time Corrected Activity pCi/Sample	Uncertainty 1 Sigma Counting	MDA pCi/Sample
TC-99M	4.0976E+02	9.1641E+02	5.801E+00%	4.22E+01

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.5 to 2000.0 keV) 4.098E+02 pCi/Sample
Total Decayed Activity (37.5 to 2000.0 keV) 9.1641339E+02 pCi/Sample

The library has energies which are not separable.


267837_Gamma_160-18852-B-11-C. 8_Gamma_20161430.spc.
1.0e4
1.0e3
1.0e2
1.0e1
1.0e0
Counts
Tc-99M
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000
Channels

Daily Checks

Test America
St. Louis
Background Check

Spectrum: 5_20160902001_BG
Description: Background Contamination Check
Acquired: 9/2/2016 12:16:37 AM
Detector: Detector # 5
Background Evaluation Criteria:
1) Place instrument out of service if Countrate exceeds Control Limits.
2) Investigate high countrate and take corrective action as necessary if Countrate exceeds Tolerance Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
Bkgd Countrate	1.45	1.30	1.35	1.37	1.55	1.60	PASS

Analyst: Aaron Schroder Reviewer: kody Saulters

Test America
St. Louis
Quality Control Check

Spectrum: 5_20160902002_QCAsLeft
Description: Quality control Check (QC Source 'A') Post Stabilization
Acquired: 9/2/2016 5:39:40 AM
Detector: Detector # 5
Quality Control Evaluation Criteria:
1) Notify Supervisor if 'AS FOUND' parameters exceed Tolerance or Control Limits.
2) Place out of service if 'AS LEFT' parameters exceed Tolerance or Control Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
QA-60							
Channel	238.00	236.00	237.00	237.90	239.00	240.00	PASS
Energy	59.54	59.04	59.29	59.59	59.79	60.04	PASS
FWHM	0.74	0.00	0.00	0.93	1.84	1.94	PASS
ActivityDiff	636.60	-5.00	-4.00	-0.30	4.00	5.00	PASS
QA-662							
FWHM	1.36	0.00	0.00	1.45	3.06	3.16	PASS
ActivityDiff	596.80	-5.00	-4.00	-2.82	4.00	5.00	PASS
QA-1332							
Channel	5330.00	5327.00	5328.00	5331.30	5332.00	5333.00	PASS
Energy	1332.51	1331.76	1332.01	1332.86	1333.01	1333.26	PASS
FWHM	1.90	0.00	0.00	1.97	4.10	4.20	PASS
ActivityDiff	1164.20	-5.00	-4.00	-2.89	4.00	5.00	PASS

Analyst: kody Saulters Reviewer: kody Saulters

Test America
St. Louis
Background Check

Spectrum: 7_20160902001_BG
Description: Background Contamination Check
Acquired: 9/2/2016 12:17:25 AM
Detector: Detector # 7
Background Evaluation Criteria:
1) Place instrument out of service if Countrate exceeds Control Limits.
2) Investigate high countrate and take corrective action as necessary if Countrate exceeds Tolerance Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
Bkgd Countrate	1.30	1.16	1.21	1.26	1.40	1.45	PASS

Analyst: Aaron Schroder Reviewer: kody Saulters

Test America
St. Louis
Quality Control Check

Spectrum: 7_20160902002_QCAsLeft
Description: Quality control Check (QC Source 'C') Post Stabilization
Acquired: 9/2/2016 5:39:10 AM
Detector: Detector # 7
Quality Control Evaluation Criteria:
1) Notify Supervisor if 'AS FOUND' parameters exceed Tolerance or Control Limits.
2) Place out of service if 'AS LEFT' parameters exceed Tolerance or Control Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
QA-60							
Channel	238.00	236.00	237.00	237.80	239.00	240.00	PASS
Energy	59.58	59.04	59.29	59.58	59.79	60.04	PASS
FWHM	0.84	0.00	0.00	0.88	1.94	2.04	PASS
ActivityDiff	647.00	-5.00	-4.00	1.64	4.00	5.00	PASS
QA-662							
FWHM	1.45	0.00	0.00	1.42	3.15	3.25	PASS
ActivityDiff	606.50	-5.00	-4.00	0.82	4.00	5.00	PASS
QA-1332							
Channel	5330.00	5327.00	5328.00	5330.30	5332.00	5333.00	PASS
Energy	1332.51	1331.76	1332.01	1332.66	1333.01	1333.26	PASS
FWHM	1.98	0.00	0.00	2.01	4.18	4.28	PASS
ActivityDiff	1183.00	-5.00	-4.00	-0.63	4.00	5.00	PASS

Analyst: kody Saulters Reviewer: kody Saulters

Test America
St. Louis
Background Check

Spectrum: 8_20160902001_BG
Description: Background Contamination Check
Acquired: 9/2/2016 12:19:23 AM
Detector: Detector # 8
Background Evaluation Criteria:
1) Place instrument out of service if Countrate exceeds Control Limits.
2) Investigate high countrate and take corrective action as necessary if Countrate exceeds Tolerance Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
Bkgd Countrate	1.56	1.39	1.45	1.54	1.68	1.74	PASS

Analyst: Aaron Schroder Reviewer: kody Saulters

Test America
St. Louis
Quality Control Check

Spectrum: 8_20160902002_QCAsLeft
Description: Quality control Check (QC Source 'D') Post Stabilization
Acquired: 9/2/2016 5:35:21 AM
Detector: Detector # 8
Quality Control Evaluation Criteria:
1) Notify Supervisor if 'AS FOUND' parameters exceed Tolerance or Control Limits.
2) Place out of service if 'AS LEFT' parameters exceed Tolerance or Control Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
QA-60							
Channel	238.00	236.00	237.00	238.00	239.00	240.00	PASS
Energy	59.54	59.04	59.29	59.56	59.79	60.04	PASS
FWHM	1.10	0.00	0.00	0.84	2.20	2.30	PASS
ActivityDiff	650.60	-5.00	-4.00	0.14	4.00	5.00	PASS
QA-662							
FWHM	1.53	0.00	0.00	1.30	3.23	3.33	PASS
ActivityDiff	609.90	-5.00	-4.00	-0.53	4.00	5.00	PASS
QA-1332							
Channel	5330.00	5327.00	5328.00	5330.60	5332.00	5333.00	PASS
Energy	1332.51	1331.76	1332.01	1332.65	1333.01	1333.26	PASS
FWHM	1.90	0.00	0.00	1.80	4.10	4.20	PASS
ActivityDiff	1189.70	-5.00	-4.00	-0.47	4.00	5.00	PASS

Analyst: kody Saulters Reviewer: kody Saulters

Initial Calibrations

Gamma Verification per Geometry

Detector: Ge5

Geometry: Tunacan

Reference date 1/1/2012

Calibration Standard: 90099

Standard volume g / vial 1550

Standard volume transferred in g / geometry 317.8

lab ID# of cal standard Rad12-0007

Isotope	Certified Activity gammas/sec	Geometry Activity gammas/sec	γ abundance	Bq/sample	Count Results	%recovery
Pb-210	3094	634	0.0425	14926	14353	96.2
Am-241	2037	418	0.3590	1163	1230.2	105.7
Cd-109	2881	591	0.0361	16363	16101	98.4
Co-57	1511	310	0.8560	362	347.72	96.1
Ce-139	2139	439	0.7990	549	538.4	98.1
Hg-203	4651	954	0.8146	1171	1208.4	103.2
Sn-113	3015	618	0.6400	966	972.07	100.6
Cs-137	1938	397	0.8510	467	462.35	99.0
Y-88	7264	1489	0.9370	1589	1559.3	98.1
Co-60	3580	734	0.9997	734	722.51	98.4
Co-60	3581	734	0.9999	734	739.67	100.7
Y-88	7690	1577	0.9920	1589	1613.8	101.5

Reviewed By: Jody Watson

Date: 3/27/2012

Calibration Data from file: 5_Soil_TunaCan.Clb
Energy Calibration Date: 3/27/2012 Time: 5:20:02 PM
Efficiency Calibration Date: 3/27/2012 Time: 5:20:37 PM

Calibration Description:
5_Soil_TunaCan_90099_032612

Energy Calibration Fit
Energy = 0.1351 +0.249831*Channel +2.72022e-008*Channel**2
FWHM (ch) = 2.8138 +0.001050*Channel -2.57606e-008*Channel**2

Energy/FWHM Table

Channel	Energy(keV)	Fit(keV)	Delta	FWHM(keV)	Fit(keV)	Delta
186.01	46.54	46.61	-0.15%	0.74	0.75	-1.17%
237.86	59.54	59.56	-0.04%	0.74	0.77	-4.07%
351.46	88.03	87.95	0.10%	0.80	0.79	1.28%
487.52	122.06	121.94	0.10%	0.85	0.83	2.66%
663.26	165.85	165.85	0.00%	0.88	0.87	0.98%
1116.90	279.17	279.20	-0.01%	0.97	0.99	-2.35%
1567.36	391.69	391.78	-0.02%	1.12	1.10	1.78%
2647.45	661.66	661.74	-0.01%	1.38	1.35	1.91%
3592.51	898.02	898.01	0.00%	1.55	1.56	-1.11%
4692.96	1173.24	1173.18	0.00%	1.77	1.79	-1.18%
5329.72	1332.50	1332.44	0.00%	1.93	1.92	0.31%
7342.77	1836.01	1836.05	-0.00%	2.29	2.29	0.24%

Efficiency Calibration Fit
Knee Energy = 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.8682 %
Ln(Eff) = 0.6466 -0.783045*Ln(Eng) -0.0041175*(Ln(Eng))**2
Below the Knee: Quadratic Uncertainty = 1.4296 %
Ln(Eff) = -24.6225 +9.075211*Ln(Eng) -0.966442*(Ln(Eng))**2

Efficiency Table

Energy	Efficiency	Fit	Delta
46.54	1.7205E-002	1.7882E-002	-3.93%
59.54	2.6619E-002	2.5335E-002	4.82%
88.03	3.4045E-002	3.4617E-002	-1.68%
122.06	3.4394E-002	3.5819E-002	-4.15%
165.85	========== Knee ==========		
165.85	3.0704E-002	3.1331E-002	-2.04%
279.17	2.1030E-002	2.0365E-002	3.17%
391.69	1.5475E-002	1.5370E-002	0.68%
661.66	9.8486E-003	9.9244E-003	-0.77%
898.02	7.5404E-003	7.6837E-003	-1.90%
1173.24	6.0360E-003	6.1381E-003	-1.69%
1332.50	5.5560E-003	5.5144E-003	0.75%
1836.01	4.2722E-003	4.2078E-003	1.51%

Calibration Certificate Table

Isotope	Energy	Pct	Halflife	Activity	GPS	Error	Date & Time
Pb-210	46.54	4.25	8.15E+003	14918.00	634.00	4.10%	1/1/2012 11:00:00 AM
Am-241	59.54	35.70	1.58E+005	1170.90	418.00	3.50%	1/1/2012 11:00:00 AM
Cd-109	88.03	3.61	4.63E+002	16371.00	591.00	4.70%	1/1/2012 11:00:00 AM
Co-57	122.06	85.60	2.72E+002	362.15	310.00	4.10%	1/1/2012 11:00:00 AM
Ce-139	165.85	79.90	1.38E+002	549.44	439.00	3.90%	1/1/2012 11:00:00 AM
Hg-203	279.17	81.50	4.66E+001	1170.60	954.00	3.80%	1/1/2012 11:00:00 AM
Sn-113	391.69	64.00	1.15E+002	965.63	618.00	3.90%	1/1/2012 11:00:00 AM
Cs-137	661.66	85.21	1.10E+004	465.91	397.00	4.00%	1/1/2012 11:00:00 AM
Y-88	898.02	93.70	1.07E+002	1589.10	1489.00	3.90%	1/1/2012 11:00:00 AM
Co-60	1173.24	99.90	1.93E+003	734.73	734.00	4.00%	1/1/2012 11:00:00 AM
Co-60	1332.50	99.98	1.93E+003	734.15	734.00	4.00%	1/1/2012 11:00:00 AM
Y-88	1836.01	99.20	1.07E+002	1589.70	1577.00	4.00%	1/1/2012 11:00:00 AM

```
     ORTEC g v - i (1087) Env32  G53W4.25  3/27/2012 5:22:03 PM
TestAmerica                    Spectrum name: 5_TunaCan_20120810.An1

Sample description
     5_TunaCan_90099_032612


Spectrum Filename: C:\User\SPC\Det5\5_TunaCan_20120810.An1

Acquisition information
       Start time:                 3/26/2012 3:05:42 PM
       Live time:                3600
       Real time:                3652
       Dead time:                   1.44 %
       Detector ID:                    5

Detector system
     Ge 5 SN/157


Calibration
       Filename:                   5_Soil_TunaCan.Clb
     5_Soil_TunaCan_90099_032612


       Energy Calibration
            Created:               3/27/2012 5:20:02 PM
            Zero offset:           0.135 keV
            Gain:                  0.250 keV/channel
            Quadratic:             2.720E-08 keV/channel^2

       Efficiency Calibration
            Created:               3/27/2012 5:20:37 PM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   0.87 %
            Log(Eff):              6.466115E-01 + (-7.830454E-01*Log(E) ) +
                                   ( -4.117504E-03*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.43 %
            Log(Eff):             -2.462251E+01 + ( 9.075211E+00*Log(E) ) +
                                   ( -9.664422E-01*Log(E)^2 )

Library Files
       Main analysis library:      DET_EnergyStandardMix & Pb.Lib
       Library Match Width:        0.500
       Peak stripping:             Library based

Analysis parameters
       Analysis engine:            Env32   G53W4.25
       Start channel:            150 (    37.61keV )
       Stop channel:            8000 (  2000.53keV )
       Peak rejection level:      10.000%
       Peak search sensitivity:    3
       Sample Size:                1.0000E+00
       Activity scaling factor:    1.0000E+00/(  1.0000E+00*  1.0000E+00) =
                                   1.0000E+00
       Detection limit method:     Reg. Guide 4.16 Method
```

ORTEC g v - i (1087) Env32 G53W4.25 3/27/2012 5:22:03 PM
TestAmerica Spectrum name: 5_TunaCan_20120810.An1

Random error:	4.0000000E+00
Systematic error:	4.0000000E+00
Fraction Limit:	0.000%
Background width:	average of three points.
Half lives decay limit:	12.000
Activity range factor:	2.000
Min. step backg. energy	0.000
Multiplet shift channel	2.000

Corrections	Status	Comments
Decay correct to date:	YES	1/1/2012 11:00:00 AM
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 12 cutoff: 5.00E+01%

Energy Calibration

Normalized diff: 0.0527

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq	Nuc
46.61	38986.	0.74	0.74	1.793E-02	46.54	4.250	1.435E+04	Pb210
59.56	40041.	0.74	0.74	2.535E-02	59.54	35.700	1.230E+03	AM241
70.85	1493.	9.22	0.78	3.019E-02				
72.87	2354.	5.96	0.78	3.089E-02				
87.95	63754.	0.53	0.80	3.460E-02	88.03	3.610	1.610E+04	CD109
121.94	30888.	0.76	0.85	3.583E-02	122.06	85.600	3.477E+02	CO57
136.41	3768.	3.80	0.89	3.457E-02				
165.85	31597.	0.74	0.88	3.066E-02	165.85	79.900	5.384E+02	Ce139
279.20	20358.	0.87	0.97	2.036E-02	279.17	81.500	1.208E+03	Hg203
391.78	20611.	0.93	1.12	1.537E-02	391.69	64.000	9.721E+02	SN113
661.74	14000.	1.10	1.38	9.923E-03	661.66	85.210	4.623E+02	CS137
898.01	23228.	0.82	1.55	7.684E-03	898.02	93.700	1.559E+03	Y898
1173.18	15468.	0.93	1.77	6.138E-03	1173.24	99.900	7.225E+02	Co1173
1332.44	14238.	0.98	1.93	5.515E-03	1332.50	99.982	7.397E+02	Co1332
1836.04	13938.	0.87	2.30	4.208E-03	1836.01	99.200	1.614E+03	Y1836

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Efficiency * Area	Uncert 1 Sigma %	FWHM keV	Suspected Nuclide
291.16	72.88	8722.	2253.	7.295E+04	7.09	0.801	-
545.44	136.41	5274.	3768.	1.090E+05	3.80	0.888	-

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: DET_EnergyStandardMix & Pb.Lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
Pb-210	186.01	46.61	12895.	38986.	10.829	0.74	0.743
AM-241	237.86	59.56	13293.	40041.	11.122	0.74	0.735
CD-109	351.46	87.95	12894.	63754.	17.710	0.53	0.805
CO-57	487.52	121.94	6935.	30888.	8.580	0.76	0.852
Ce-139	663.26	165.85	5616.	31597.	8.777	0.74	0.883
Hg-203	1116.90	279.20	2848.	20358.	5.655	0.87	0.966
SN-113	1567.36	391.78	3046.	20611.	5.725	0.93	1.119
CS-137	2647.45	661.74	1982.	14000.	3.889	1.10	1.380
Y-898	3592.51	898.01	1944.	23228.	6.452	0.82	1.547
Co-1173	4692.96	1173.18	847.	15468.	4.297	0.93	1.774
Co-1332	5329.75	1332.44	693.	14238.	3.955	0.98	1.927
Y-1836	7342.72	1836.04	102.	13938.	3.872	0.87	2.295

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity Bq	Peak Energy keV	Peak Activity Bq	Code	Peak MDA Value Bq			COMMENTS
Pb-210	N	1.4353E+04				8.15E+03			
			46.54	1.435E+04	(	1.958E+02	7.44E-01	4.25E+00	G
AM-241		1.2302E+03				1.58E+05			
			59.54	1.230E+03	(	1.659E+01	7.44E-01	3.57E+01	G
CD-109		1.6101E+04				4.63E+02			
			88.03	1.610E+04	(	1.343E+02	5.28E-01	3.61E+00	G
CO-57		3.4772E+02				2.72E+02			
			122.06	3.477E+02	(	4.399E+00	7.60E-01	8.56E+01	G

ORTEC g v - i (1087) Env32 G53W4.25 3/27/2012 5:22:03 PM
TestAmerica Spectrum name: 5_TunaCan_20120810.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Ce-139	5.3840E+02					1.38E+02	
		165.85	5.384E+02	(	5.997E+00	7.36E-01	7.99E+01 G
Hg-203	1.2084E+03					4.66E+01	
		279.17	1.208E+03	(	1.492E+01	8.69E-01	8.15E+01 G
SN-113	9.7207E+02					1.15E+02	
		391.69	9.721E+02	(	1.226E+01	9.31E-01	6.40E+01 G
CS-137	4.6235E+02					1.10E+04	
		661.66	4.623E+02	(	6.941E+00	1.10E+00	8.52E+01 G
Y-898	1.5593E+03					1.07E+02	
		898.02	1.559E+03	(	1.397E+01	8.19E-01	9.37E+01 G
Co-1173	7.2251E+02					1.93E+03	
		1173.24	7.225E+02	(	6.463E+00	9.30E-01	9.99E+01 G
Co-1332	7.3967E+02					1.93E+03	
		1332.50	7.397E+02	(	6.515E+00	9.82E-01	1.00E+02 G
Y-1836	1.6138E+03					1.07E+02	
		1836.01	1.614E+03	(	5.776E+00	8.71E-01	9.92E+01 G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
\+ - Peak activity higher than counting uncertainty range.
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= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation
F - Fast Neutron Activation
I - Fission Product
N - Naturally Occurring Isotope

Peak Codes:
G - Gamma Ray
X - X-Ray
P - Positron Decay
S - Single-Escape

ORTEC g v - i (1087) Env32 G53W4.25 3/27/2012 5:22:03 PM
TestAmerica Spectrum name: 5_TunaCan_20120810.An1

P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded

D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

*************** D I S C A R D E D I S O T O P E P E A K S ***************

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity Bq	Time Corrected Activity Bq	Uncertainty 1 Sigma Counting	MDA
Pb-210	1.4250E+04	1.4353E+04	7.439E-01%	1.96E+02
AM-241	1.2297E+03	1.2302E+03	7.442E-01%	1.66E+01
CD-109	1.4172E+04	1.6101E+04	5.277E-01%	1.34E+02
CO-57	2.7983E+02	3.4772E+02	7.604E-01%	4.40E+00
Ce-139	3.5061E+02	5.3840E+02	7.359E-01%	6.00E+00
Hg-203	3.4071E+02	1.2084E+03	8.687E-01%	1.49E+01
SN-113	5.8200E+02	9.7207E+02	9.315E-01%	1.23E+01
CS-137	4.5987E+02	4.6235E+02	1.097E+00%	6.94E+00
Y-898	8.9620E+02	1.5593E+03	8.189E-01%	1.40E+01
Co-1173	7.0069E+02	7.2251E+02	9.300E-01%	6.46E+00
Co-1332	7.1733E+02	7.3967E+02	9.821E-01%	6.52E+00
Y-1836	9.2756E+02	1.6138E+03	8.711E-01%	5.78E+00

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------------------------- S U M M A R Y ----------------------------

Total Activity (37.6 to 2000.5 keV) 3.491E+04 Bq
Total Decayed Activity (37.6 to 2000.5 keV) 3.9848164E+04 Bq

Analyzed by: ______________________
Admin

Reviewed by: ______________________
Supervisor

Laboratory: TestAmerica

Gamma Verification per Geometry

Detector: Ge7

Geometry: Tunacan

Reference date 1/1/2012

Calibration Standard: 90099

Standard volume g / vial 1550

Standard volume transferred in g / geometry 317.8

lab ID# of cal standard 6699

Isotope	Certified Activity gammas/sec	Geometry Activity gammas/sec	γ abundance	Bq/sample	Count Results	%recovery
Pb-210	3094	634	0.0425	14926	14726	98.7
Am-241	2037	418	0.3590	1163	1241.6	106.7
Cd-109	2881	591	0.0361	16363	15976	97.6
Co-57	1511	310	0.8560	362	346.77	95.8
Ce-139	2139	439	0.7990	549	539.48	98.3
Hg-203	4651	954	0.8146	1171	1199.2	102.4
Sn-113	3015	618	0.6400	966	976.76	101.1
Cs-137	1938	397	0.8510	467	467.66	100.2
Y-88	7264	1489	0.9370	1589	1567.3	98.6
Co-60	3580	734	0.9997	734	726.23	98.9
Co-60	3581	734	0.9999	734	719.64	98.0
Y-88	7690	1577	0.9920	1589	1635.7	102.9

Reviewed By: Jody Watson

Date: 3/16/2012

Calibration Data from file: 7_Soil_TunaCan.Clb
Energy Calibration Date: 3/16/2012 Time: 11:44:50 AM
Efficiency Calibration Date: 3/16/2012 Time: 11:45:14 AM

Calibration Description:
7_TunaCan_90099_030512

Energy Calibration Fit
Energy = 0.1533 +0.249954*Channel +6.71576e-009*Channel**2
FWHM (ch) = 3.2969 +0.001030*Channel -2.25091e-008*Channel**2

Energy/FWHM Table

Channel	Energy(keV)	Fit(keV)	Delta	FWHM(keV)	Fit(keV)	Delta
185.73	46.54	46.58	-0.08%	0.86	0.87	-1.80%
237.72	59.54	59.57	-0.06%	0.86	0.88	-3.29%
351.56	88.03	88.03	0.00%	0.91	0.91	-0.17%
487.42	122.06	121.99	0.06%	0.97	0.95	2.36%
662.55	165.85	165.76	0.05%	1.00	0.99	1.26%
1116.52	279.17	279.24	-0.03%	1.13	1.10	1.85%
1566.54	391.69	391.73	-0.01%	1.21	1.21	-0.23%
2646.25	661.66	661.64	0.00%	1.47	1.47	0.54%
3591.85	898.02	898.04	-0.00%	1.66	1.68	-1.15%
4692.53	1173.24	1173.22	0.00%	1.92	1.91	0.69%
5329.58	1332.50	1332.49	0.00%	2.02	2.04	-0.87%
7343.37	1836.01	1836.02	-0.00%	2.42	2.41	0.28%

Efficiency Calibration Fit
Knee Energy = 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.8690 %
Ln(Eff) = 0.6717 -0.616654*Ln(Eng) -0.0206592*(Ln(Eng))**2
Below the Knee: Quadratic Uncertainty = 1.4845 %
Ln(Eff) = -26.8969 +10.195443*Ln(Eng) -1.08167*(Ln(Eng))**2

Efficiency Table

Energy	Efficiency	Fit	Delta
46.54	2.3732E-002	2.4829E-002	-4.62%
59.54	3.9252E-002	3.7016E-002	5.70%
88.03	5.1999E-002	5.3285E-002	-2.47%
122.06	5.3679E-002	5.6057E-002	-4.43%
165.85	========== Knee ==========		
165.85	4.7932E-002	4.8811E-002	-1.83%
279.17	3.2322E-002	3.1541E-002	2.42%
391.69	2.3837E-002	2.3601E-002	0.99%
661.66	1.4947E-002	1.4924E-002	0.15%
898.02	1.1205E-002	1.1367E-002	-1.45%
1173.24	8.8255E-003	8.9287E-003	-1.17%
1332.50	7.7833E-003	7.9508E-003	-2.15%
1836.01	6.0876E-003	5.9192E-003	2.77%

Calibration Certificate Table

Isotope	Energy	Pct	Halflife	Activity	GPS	Error	Date & Time
Pb-210	46.54	4.25	8.15E+003	14941.00	635.00	4.10%	1/1/2012 11:00:00 AM
Am-241	59.54	35.70	1.58E+005	1170.90	418.00	3.50%	1/1/2012 11:00:00 AM
Cd-109	88.03	3.61	4.63E+002	16371.00	591.00	4.70%	1/1/2012 11:00:00 AM
Co-57	122.06	85.60	2.72E+002	362.15	310.00	4.10%	1/1/2012 11:00:00 AM
Ce-139	165.85	79.90	1.38E+002	549.44	439.00	3.90%	1/1/2012 11:00:00 AM
Hg-203	279.17	81.50	4.66E+001	1170.60	954.00	3.80%	1/1/2012 11:00:00 AM
Sn-113	391.69	64.00	1.15E+002	967.19	619.00	3.90%	1/1/2012 11:00:00 AM
Cs-137	661.66	85.21	1.10E+004	467.08	398.00	4.00%	1/1/2012 11:00:00 AM
Y-88	898.02	93.70	1.07E+002	1590.20	1490.00	3.90%	1/1/2012 11:00:00 AM
Co-60	1173.24	99.90	1.93E+003	734.73	734.00	4.00%	1/1/2012 11:00:00 AM
Co-60	1332.50	99.98	1.93E+003	735.15	735.00	4.00%	1/1/2012 11:00:00 AM
Y-88	1836.01	99.20	1.07E+002	1590.70	1578.00	4.00%	1/1/2012 11:00:00 AM

```
     ORTEC g v - i (1087) Env32  G53W4.25  2/28/2014 11:43:43 AM
TestAmerica                    Spectrum name: 7_TunaCan_20120388.An1

Sample description
     7_TunaCan_90099_030512


Spectrum Filename: C:\User\SPC\Det7\7_TunaCan_20120388.An1

Acquisition information
       Start time:                3/5/2012 2:07:36 PM
       Live time:               3600
       Real time:               3721
       Dead time:                 3.25 %
       Detector ID:                  7

Detector system
     Ge 7 SN/154


Calibration
       Filename:                  7_Soil_TunaCan.Clb
     7_TunaCan_90099_032712


       Energy Calibration
            Created:              3/16/2012 11:44:50 AM
            Zero offset:          0.153 keV
            Gain:                 0.250 keV/channel
            Quadratic:            6.716E-09 keV/channel^2

       Efficiency Calibration
            Created:              3/16/2012 11:45:14 AM
            Knee Energy:        165.85 keV
            Above the Knee:       Quadratic        Uncertainty =   0.87 %
            Log(Eff):             6.716580E-01 + (-6.166540E-01*Log(E) ) +
                                  ( -2.065917E-02*Log(E)^2 )
            Below the Knee:       Quadratic        Uncertainty =   1.48 %
            Log(Eff):            -2.689695E+01 + ( 1.019544E+01*Log(E) ) +
                                  ( -1.081671E+00*Log(E)^2 )

Library Files
       Main analysis library:     DET_EnergyStandardMix & Pb.Lib
       Library Match Width:       0.500
       Peak stripping:            Library based

Analysis parameters
       Analysis engine:           Env32   G53W4.25
       Start channel:           150 (    37.65keV )
       Stop channel:           8000 (  2000.21keV )
       Peak rejection level:     10.000%
       Peak search sensitivity:  3
       Sample Size:              1.0000E+00
       Activity scaling factor:  1.0000E+00/(  1.0000E+00*  1.0000E+00) =
                                 1.0000E+00
       Detection limit method:   Reg. Guide 4.16 Method
```

Random error:	4.0000000E+00
Systematic error:	4.0000000E+00
Fraction Limit:	0.000%
Background width:	average of three points.
Half lives decay limit:	12.000
Activity range factor:	2.000
Min. step backg. energy	0.000
Multiplet shift channel	2.000

Corrections	Status	Comments
Decay correct to date:	YES	1/1/2012 11:00:00 AM
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 12 cutoff: 5.00E+01%

Energy Calibration

Normalized diff: 0.0324

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq	Nuc
46.63	53946.	0.53	0.87	2.487E-02	46.54	4.250	1.428E+04	Pb210
59.57	59050.	0.65	0.86	3.704E-02	59.54	35.700	1.242E+03	AM241
70.74	2770.	6.58	0.90	4.527E-02				
72.95	4536.	4.27	0.90	4.661E-02				
88.03	100494.	0.43	0.91	5.328E-02	88.03	3.610	1.598E+04	CD109
121.99	50865.	0.71	0.97	5.606E-02	122.06	85.600	3.468E+02	CO57
136.41	6524.	3.77	0.93	5.411E-02				
165.76	54838.	0.57	1.00	4.767E-02	165.85	79.900	5.395E+02	Ce139
255.13	1772.	7.37	1.21	3.404E-02				
279.24	42776.	0.59	1.13	3.153E-02	279.17	81.500	1.199E+03	Hg203
391.73	36096.	0.66	1.21	2.360E-02	391.69	64.000	9.768E+02	SN113
661.68	21323.	0.77	1.47	1.492E-02	661.66	85.210	4.677E+02	CS137
898.03	39603.	0.63	1.66	1.137E-02	898.02	93.700	1.567E+03	Y898
1173.21	22788.	0.85	1.92	8.929E-03	1173.24	99.900	7.262E+02	Co1173
1332.49	20124.	0.85	2.02	7.951E-03	1332.50	99.982	7.196E+02	Co1332
1836.00	22787.	0.70	2.43	5.919E-03	1836.01	99.200	1.636E+03	Y1836

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Centroid Channel	Energy	Background Counts	Net Area Counts	Efficiency * Area	Uncert 1 Sigma %	FWHM keV	Suspected Nuclide	
282.41	70.73	15146.	2828.	6.248E+04	6.43	0.896	-	D
291.25	72.94	16305.	4682.	1.005E+05	4.12	0.899	-	D
545.11	136.41	12980.	6524.	1.206E+05	3.77	0.932	-	
1020.07	255.13	4580.	1772.	5.204E+04	7.37	1.209	-	

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: DET_EnergyStandardMix & Pb.Lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
Pb-210	185.73	46.58	19825.	55636.	15.454	0.65	0.856
AM-241	237.72	59.57	21942.	59050.	16.403	0.65	0.857
CD-109	351.56	88.03	21396.	100494.	27.915	0.43	0.912
CO-57	487.42	121.99	16859.	50865.	14.129	0.71	0.971
Ce-139	662.55	165.76	9893.	54838.	15.233	0.57	1.005
Hg-203	1116.52	279.24	5111.	42776.	11.882	0.59	1.126
SN-113	1566.54	391.73	4106.	36096.	10.027	0.66	1.211
CS-137	2646.33	661.66	2922.	21323.	5.923	0.77	1.466D
Y-898	3591.84	898.03	3210.	39603.	11.001	0.63	1.659
Co-1173	4692.50	1173.21	1804.	22788.	6.330	0.85	1.924
Co-1332	5329.58	1332.49	1286.	20124.	5.590	0.85	2.020
Y-1836	7343.30	1836.00	283.	22787.	6.330	0.70	2.426

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity Bq	Peak Energy keV	Peak Activity Bq		Peak MDA Value Bq			COMMENTS
Pb-210	N	1.4726E+04						8.15E+03	
			46.54	1.473E+04	(	1.744E+02	6.52E-01	4.25E+00	G
AM-241		1.2416E+03						1.58E+05	
			59.54	1.242E+03	(	1.457E+01	6.49E-01	3.57E+01	G
CD-109		1.5976E+04						4.63E+02	
			88.03	1.598E+04	(	1.088E+02	4.29E-01	3.61E+00	G
CO-57		3.4677E+02						2.72E+02	
			122.06	3.468E+02	(	4.144E+00	7.08E-01	8.56E+01	G

ORTEC g v - i (1087) Env32 G53W4.25 2/28/2014 11:43:43 AM
TestAmerica Spectrum name: 7_TunaCan_20120388.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak MDA	Comments
Ce-139	5.3948E+02				1.38E+02	
		165.85	5.395E+02	(	4.586E+00 5.65E-01 7.99E+01	G
Hg-203	1.1992E+03				4.66E+01	
		279.17	1.199E+03	(	9.415E+00 5.92E-01 8.15E+01	G
SN-113	9.7676E+02				1.15E+02	
		391.69	9.768E+02	(	8.153E+00 6.55E-01 6.40E+01	G
CS-137	4.6766E+02				1.10E+04	
		661.66	4.677E+02	(	5.584E+00 7.73E-01 8.52E+01	G
Y-898	1.5673E+03				1.07E+02	
		898.02	1.567E+03	(	1.056E+01 6.29E-01 9.37E+01	G
Co-1173	7.2623E+02				1.93E+03	
		1173.24	7.262E+02	(	6.394E+00 8.53E-01 9.99E+01	G
Co-1332	7.1964E+02				1.93E+03	
		1332.50	7.196E+02	(	6.072E+00 8.54E-01 1.00E+02	G
Y-1836	1.6357E+03				1.07E+02	
		1836.01	1.636E+03	(	5.819E+00 7.02E-01 9.92E+01	G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
\+ - Peak activity higher than counting uncertainty range.
\- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation
F - Fast Neutron Activation
I - Fission Product
N - Naturally Occurring Isotope

Peak Codes:
G - Gamma Ray
X - X-Ray
P - Positron Decay
S - Single-Escape

ORTEC g v - i (1087) Env32 G53W4.25 2/28/2014 11:43:43 AM
TestAmerica Spectrum name: 7_TunaCan_20120388.An1

P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded

D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

*************** D I S C A R D E D I S O T O P E P E A K S ***************

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity Bq	Time Corrected Activity Bq	Uncertainty 1 Sigma Counting	MDA
Pb-210	1.4646E+04	1.4726E+04	6.521E-01%	1.74E+02
AM-241	1.2413E+03	1.2416E+03	6.489E-01%	1.46E+01
CD-109	1.4512E+04	1.5976E+04	4.292E-01%	1.09E+02
CO-57	2.9445E+02	3.4677E+02	7.076E-01%	4.14E+00
Ce-139	3.9059E+02	5.3948E+02	5.652E-01%	4.59E+00
Hg-203	4.6224E+02	1.1992E+03	5.917E-01%	9.42E+00
SN-113	6.6381E+02	9.7676E+02	6.552E-01%	8.15E+00
CS-137	4.6577E+02	4.6766E+02	7.730E-01%	5.58E+00
Y-898	1.0329E+03	1.5673E+03	6.291E-01%	1.06E+01
Co-1173	7.0966E+02	7.2623E+02	8.534E-01%	6.39E+00
Co-1332	7.0321E+02	7.1964E+02	8.542E-01%	6.07E+00
Y-1836	1.0780E+03	1.6357E+03	7.017E-01%	5.82E+00

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

S U M M A R Y

Total Activity (701.8 to 2000.2 keV) 3.620E+04 Bq
Total Decayed Activity (701.8 to 2000.2 keV) 4.0121711E+04 Bq

Analyzed by: ______________________
Admin

Reviewed by: ______________________
Supervisor

Laboratory: TestAmerica

Gamma Verification per Geometry

Detector: Ge8
Geometry: Tunacan
Reference date 1/1/2012
Calibration Standard: 90099
Standard volume g / vial 1550
Standard volume transferred in g / geometry 317.8
lab ID# of cal standard 6699

Isotope	Certified Activity gammas/sec	Geometry Activity gammas/sec	γ abundance	Bq/sample	Count Results	%recovery
Pb-210	3094	634	0.0425	14926	14960	100.2
Am-241	2037	418	0.3590	1163	1240.5	106.6
Cd-109	2881	591	0.0361	16363	16066	98.2
Co-57	1511	310	0.8560	362	345.12	95.4
Ce-139	2139	439	0.7990	549	536.34	97.7
Hg-203	4651	954	0.8146	1171	1218.2	104.1
Sn-113	3015	618	0.6400	966	967.15	100.1
Cs-137	1938	397	0.8510	467	465.86	99.8
Y-88	7264	1489	0.9370	1589	1552.1	97.6
Co-60	3580	734	0.9997	734	724.48	98.7
Co-60	3581	734	0.9999	734	729.98	99.4
Y-88	7690	1577	0.9920	1589	1627.2	102.4

Reviewed By: Jody Watson

Date: 3/28/2012

Calibration Data from file: 8_Soil_TunaCan.Clb
Energy Calibration Date: 3/28/2012 Time: 10:35:07 AM
Efficiency Calibration Date: 3/28/2012 Time: 10:35:20 AM

Calibration Description:
8_Soil_TunaCan_90099_032712

Energy Calibration Fit
Energy = 0.0505 +0.250025*Channel +8.06699e-010*Channel**2
FWHM (ch) = 3.6351 +0.000832*Channel -2.49195e-008*Channel**2

Energy/FWHM Table

Channel	Energy(keV)	Fit(keV)	Delta	FWHM(keV)	Fit(keV)	Delta
185.74	46.54	46.49	0.11%	0.94	0.95	-0.61%
237.86	59.54	59.52	0.03%	0.95	0.96	-1.36%
351.89	88.03	88.03	-0.00%	0.97	0.98	-1.63%
488.04	122.06	122.07	-0.01%	1.01	1.01	0.12%
663.26	165.85	165.88	-0.02%	1.07	1.04	2.17%
1116.59	279.17	279.23	-0.02%	1.15	1.13	1.73%
1566.40	391.69	391.69	-0.00%	1.22	1.22	0.24%
2645.92	661.66	661.60	0.01%	1.39	1.42	-1.95%
3591.62	898.02	898.05	-0.00%	1.61	1.58	2.16%
4692.17	1173.24	1173.23	0.00%	1.74	1.75	-0.61%
5329.14	1332.50	1332.49	0.00%	1.82	1.84	-1.05%
7342.97	1836.01	1836.02	-0.00%	2.11	2.10	0.42%

Efficiency Calibration Fit
Knee Energy = 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.3942 %
Ln(Eff) = -0.1099 -0.495854*Ln(Eng) -0.0257227*(Ln(Eng))**2
Below the Knee: Quadratic Uncertainty = 1.7131 %
Ln(Eff) = -25.2530 +9.398253*Ln(Eng) -1.00003*(Ln(Eng))**2

Efficiency Table

Energy	Efficiency	Fit	Delta
46.54	1.9170E-002	2.0055E-002	-4.62%
59.54	3.0526E-002	2.8813E-002	5.61%
88.03	3.9175E-002	3.9918E-002	-1.90%
122.06	3.9509E-002	4.1457E-002	-4.93%
165.85	========== Knee ==========		
165.85	3.5429E-002	3.6291E-002	-2.43%
279.17	2.5270E-002	2.4275E-002	3.94%
391.69	1.8582E-002	1.8550E-002	0.17%
661.66	1.2089E-002	1.2090E-002	-0.01%
898.02	9.1435E-003	9.3604E-003	-2.37%
1173.24	7.3487E-003	7.4527E-003	-1.42%
1332.50	6.6398E-003	6.6776E-003	-0.57%
1836.01	5.1654E-003	5.0457E-003	2.32%

Calibration Certificate Table

Isotope	Energy	Pct	Halflife	Activity	GPS	Error	Date & Time
Pb-210	46.54	4.25	8.15E+003	14918.00	634.00	4.10%	1/1/2012 11:00:00 AM
Am-241	59.54	35.70	1.58E+005	1170.90	418.00	3.50%	1/1/2012 11:00:00 AM
Cd-109	88.03	3.61	4.63E+002	16371.00	591.00	4.70%	1/1/2012 11:00:00 AM
Co-57	122.06	85.60	2.72E+002	362.15	310.00	4.10%	1/1/2012 11:00:00 AM
Ce-139	165.85	79.90	1.38E+002	549.44	439.00	3.90%	1/1/2012 11:00:00 AM
Hg-203	279.17	81.50	4.66E+001	1170.60	954.00	3.80%	1/1/2012 11:00:00 AM
Sn-113	391.69	64.00	1.15E+002	965.63	618.00	3.90%	1/1/2012 11:00:00 AM
Cs-137	661.66	85.21	1.10E+004	465.91	397.00	4.00%	1/1/2012 11:00:00 AM
Y-88	898.02	93.70	1.07E+002	1589.10	1489.00	3.90%	1/1/2012 11:00:00 AM
Co-60	1173.24	99.90	1.93E+003	734.73	734.00	4.00%	1/1/2012 11:00:00 AM
Co-60	1332.50	99.98	1.93E+003	734.15	734.00	4.00%	1/1/2012 11:00:00 AM
Y-88	1836.01	99.20	1.07E+002	1589.70	1577.00	4.00%	1/1/2012 11:00:00 AM

```
     ORTEC g v - i (1087) Env32  G53W4.25  3/28/2012 10:36:01 AM
TestAmerica                      Spectrum name: 8_TunaCan_20120676.An1

Sample description
     8_TunaCan_90099_032712


Spectrum Filename: C:\User\SPC\Det8\8_TunaCan_20120676.An1

Acquisition information
       Start time:                 3/27/2012 10:58:29 AM
       Live time:                3600
       Real time:                3655
       Dead time:                   1.49 %
       Detector ID:                    8

Detector system
     Ge 8 SN/174


Calibration
       Filename:                   8_Soil_TunaCan.Clb
     8_Soil_TunaCan_90099_032712


       Energy Calibration
            Created:               3/28/2012 10:35:07 AM
            Zero offset:           0.050 keV
            Gain:                  0.250 keV/channel
            Quadratic:             8.067E-10 keV/channel^2

       Efficiency Calibration
            Created:               3/28/2012 10:35:20 AM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   1.39 %
            Log(Eff):             -1.098764E-01 + (-4.958544E-01*Log(E) ) +
                                   ( -2.572270E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.71 %
            Log(Eff):             -2.525301E+01 + ( 9.398253E+00*Log(E) ) +
                                   ( -1.000034E+00*Log(E)^2 )

Library Files
       Main analysis library:      DET_EnergyStandardMix & Pb.Lib
       Library Match Width:        0.500
       Peak stripping:             Library based

Analysis parameters
       Analysis engine:            Env32   G53W4.25
       Start channel:            150 (    37.55keV )
       Stop channel:            8000 (  2000.30keV )
       Peak rejection level:      10.000%
       Peak search sensitivity:    3
       Sample Size:                1.0000E+00
       Activity scaling factor:    1.0000E+00/(  1.0000E+00*  1.0000E+00) =
                                   1.0000E+00
       Detection limit method:     Reg. Guide 4.16 Method
```

Random error:	4.0000000E+00
Systematic error:	4.0000000E+00
Fraction Limit:	0.000%
Background width:	average of three points.
Half lives decay limit:	12.000
Activity range factor:	2.000
Min. step backg. energy	0.000
Multiplet shift channel	2.000

Corrections	Status	Comments
Decay correct to date:	YES	1/1/2012 11:00:00 AM
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 12 cutoff: 5.00E+01%

Energy Calibration

Normalized diff: 0.0205

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq	Nuc
46.54	43426.	0.60	0.95	2.002E-02	46.54	4.250	1.426E+04	Pb210
59.52	45918.	0.77	0.95	2.880E-02	59.54	35.700	1.240E+03	AM241
72.86	2434.	6.68	0.97	3.542E-02				
88.03	73269.	0.53	0.97	3.992E-02	88.03	3.610	1.607E+04	CD109
122.07	35407.	0.77	1.01	4.146E-02	122.06	85.600	3.451E+02	CO57
136.51	4312.	4.44	1.06	3.999E-02				
165.88	36308.	0.76	1.07	3.629E-02	165.85	79.900	5.363E+02	Ce139
279.23	24162.	0.88	1.15	2.427E-02	279.17	81.500	1.218E+03	Hg203
391.69	24625.	0.77	1.22	1.855E-02	391.69	64.000	9.671E+02	SN113
661.60	17184.	1.10	1.39	1.209E-02	661.66	85.210	4.659E+02	CS137
898.05	28015.	0.71	1.61	9.360E-03	898.02	93.700	1.552E+03	Y898
1173.23	18826.	0.79	1.74	7.453E-03	1173.24	99.900	7.245E+02	Co1173
1332.49	17010.	0.84	1.82	6.678E-03	1332.50	99.982	7.300E+02	Co1332
1836.02	16762.	0.79	2.11	5.046E-03	1836.01	99.200	1.627E+03	Y1836

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Centroid Channel	Energy	Background Counts	Net Area Counts	Efficiency * Area	Uncert 1 Sigma %	FWHM keV	Suspected Nuclide	
291.19	72.85	12003.	2434.	6.872E+04	6.68	0.969	-	D
545.78	136.51	8432.	4312.	1.078E+05	4.44	1.059	-	

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: DET_EnergyStandardMix & Pb.Lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
Pb-210	185.74	46.49	17505.	45568.	12.658	0.76	0.942
AM-241	237.86	59.52	18397.	45918.	12.755	0.77	0.945
CD-109	351.89	88.03	17370.	73269.	20.353	0.53	0.966
CO-57	488.04	122.07	9639.	35407.	9.835	0.77	1.010
Ce-139	663.26	165.88	8356.	36308.	10.085	0.76	1.067
Hg-203	1116.59	279.23	4382.	24162.	6.712	0.88	1.153
SN-113	1566.40	391.69	2677.	24625.	6.840	0.77	1.223
CS-137	2645.92	661.60	3145.	17184.	4.773	1.10	1.389
Y-898	3591.62	898.05	1881.	28015.	7.782	0.71	1.611
Co-1173	4692.17	1173.23	650.	18826.	5.229	0.79	1.738
Co-1332	5329.14	1332.49	576.	17010.	4.725	0.84	1.822
Y-1836	7342.97	1836.02	111.	16762.	4.656	0.79	2.110

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity Bq	Peak Energy keV	Peak Activity Bq		Peak Code	MDA Value Bq		COMMENTS
Pb-210	N	1.4960E+04					8.15E+03		
			46.54	1.496E+04	(	2.033E+02	7.55E-01	4.25E+00	G
AM-241		1.2405E+03					1.58E+05		
			59.54	1.240E+03	(	1.715E+01	7.72E-01	3.57E+01	G
CD-109		1.6066E+04					4.63E+02		
			88.03	1.607E+04	(	1.353E+02	5.26E-01	3.61E+00	G
CO-57		3.4512E+02					2.72E+02		
			122.06	3.451E+02	(	4.486E+00	7.68E-01	8.56E+01	G

ORTEC g v - i (1087) Env32 G53W4.25 3/28/2012 10:36:01 AM
TestAmerica Spectrum name: 8_TunaCan_20120676.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Ce-139	5.3634E+02					1.38E+02	
		165.85	5.363E+02	(	6.333E+00	7.56E-01	7.99E+01 G
Hg-203	1.2182E+03					4.66E+01	
		279.17	1.218E+03	(	1.569E+01	8.81E-01	8.15E+01 G
SN-113	9.6715E+02					1.15E+02	
		391.69	9.671E+02	(	9.575E+00	7.73E-01	6.40E+01 G
CS-137	4.6586E+02					1.10E+04	
		661.66	4.659E+02	(	7.158E+00	1.10E+00	8.52E+01 G
Y-898	1.5521E+03					1.07E+02	
		898.02	1.552E+03	(	1.135E+01	7.10E-01	9.37E+01 G
Co-1173	7.2448E+02					1.93E+03	
		1173.24	7.245E+02	(	4.676E+00	7.93E-01	9.99E+01 G
Co-1332	7.2998E+02					1.93E+03	
		1332.50	7.300E+02	(	4.916E+00	8.45E-01	1.00E+02 G
Y-1836	1.6272E+03					1.07E+02	
		1836.01	1.627E+03	(	5.029E+00	7.91E-01	9.92E+01 G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
\+ - Peak activity higher than counting uncertainty range.
\- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation
F - Fast Neutron Activation
I - Fission Product
N - Naturally Occurring Isotope

Peak Codes:
G - Gamma Ray
X - X-Ray
P - Positron Decay
S - Single-Escape

ORTEC g v - i (1087) Env32 G53W4.25 3/28/2012 10:36:01 AM
TestAmerica Spectrum name: 8_TunaCan_20120676.An1

P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded
D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity Bq	Time Corrected Activity Bq	Uncertainty 1 Sigma Counting	MDA
Pb-210	1.4851E+04	1.4960E+04	7.555E-01%	2.03E+02
AM-241	1.2400E+03	1.2405E+03	7.719E-01%	1.71E+01
CD-109	1.4124E+04	1.6066E+04	5.260E-01%	1.35E+02
CO-57	2.7715E+02	3.4512E+02	7.681E-01%	4.49E+00
Ce-139	3.4782E+02	5.3634E+02	7.558E-01%	6.33E+00
Hg-203	3.3925E+02	1.2182E+03	8.812E-01%	1.57E+01
SN-113	5.7617E+02	9.6715E+02	7.729E-01%	9.58E+00
CS-137	4.6334E+02	4.6586E+02	1.105E+00%	7.16E+00
Y-898	8.8728E+02	1.5521E+03	7.104E-01%	1.13E+01
Co-1173	7.0239E+02	7.2448E+02	7.931E-01%	4.68E+00
Co-1332	7.0772E+02	7.2998E+02	8.450E-01%	4.92E+00
Y-1836	9.3024E+02	1.6272E+03	7.905E-01%	5.03E+00

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (82.3 to 2000.3 keV) 3.545E+04 Bq
Total Decayed Activity (82.3 to 2000.3 keV) 4.0432598E+04 Bq

Analyzed by: _____
Admin

Reviewed by: _____
Supervisor

Laboratory: TestAmerica

Initial Calibration Verifications

2nd Source Verification

Detector: Ge5

Geometry: Tunacan

Reference date 1/1/2010

Source: 81427-334

Standard volume g / vial 1550

Standard volume transferred in g / geometry 318.5

lab ID# of cal standard 6665

Isotope	Certified Activity gammas/sec	Geometry Activity	γ abundance	Bq/sample	Count Results	%recovery
Am-241	2034	418	0.359	1164	1160.9	99.7
Cs-137	1926	396	0.851	465	442.36	95.1
Co-60	3611	742	0.99974	742	700.21	94.3
Co-60	3612	742	0.999856	742	701.86	94.6

Reviewed By: Jody Watson

Date: 3/27/2012

```
     ORTEC g v - i (3263) Env32  G53W4.25  3/28/2012 7:35:49 AM    Page  1
TestAmerica                     Spectrum name: 5_TunaCan2nd_20120813.An1

Sample description
     5_TunaCan2nd_Rad10_032712


Spectrum Filename: C:\User\SPC\Det5\5_TunaCan2nd_20120813.An1

Acquisition information
       Start time:                 3/27/2012 10:12:05 AM
       Live time:                7200
       Real time:                7250
       Dead time:                   0.69 %
       Detector ID:                    5

Detector system
     Ge 5 SN/157


Calibration
       Filename:                   5_Soil_TunaCan.Clb
     5_Soil_TunaCan_90099_032612


       Energy Calibration
            Created:               3/27/2012 5:20:02 PM
            Zero offset:           0.135 keV
            Gain:                  0.250 keV/channel
            Quadratic:             2.720E-08 keV/channel^2

       Efficiency Calibration
            Created:               3/27/2012 5:20:37 PM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   0.87 %
            Log(Eff):              6.466115E-01 + (-7.830454E-01*Log(E) ) +
                                   ( -4.117504E-03*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.43 %
            Log(Eff):             -2.462251E+01 + ( 9.075211E+00*Log(E) ) +
                                   ( -9.664422E-01*Log(E)^2 )

Library Files
       Main analysis library:      DET_EnergyStandardMix & Pb.Lib
       Library Match Width:        0.500
       Peak stripping:             Library based

Analysis parameters
       Analysis engine:            Env32   G53W4.25
       Start channel:            150 (    37.61keV )
       Stop channel:            8000 (  2000.53keV )
       Peak rejection level:    1000.000%
       Peak search sensitivity:    3
       Sample Size:                1.0000E+00
       Activity scaling factor:    1.0000E+00/(  1.0000E+00*  1.0000E+00) =
                                   1.0000E+00
       Detection limit method:     Reg. Guide 4.16 Method

□

     ORTEC g v - i (3263) Env32  G53W4.25  3/28/2012 7:35:49 AM    Page  2
TestAmerica                     Spectrum name: 5_TunaCan2nd_20120813.An1
                                      Page 1
```

Random error: 4.0000000E+00
Systematic error: 4.0000000E+00
Fraction Limit: 0.000%
Background width: average of three points.

Half lives decay limit: 12.000
Activity range factor: 2.000
Min. step backg. energy 0.000
Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	YES	1/1/2010 11:00:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	5_2012-02-26_0305.PBC 2/26/2012 3:05:30 AM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 12 cutoff: 5.00E+01%
Energy Calibration
Normalized diff: 33.1557

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/Sampl	Nuc
36.81	1005.	12.08	0.62	1.151E-02				
46.61	72616.	0.49	0.73	1.792E-02	46.54	4.250	1.421E+04	Pb210
49.73	1326.	15.18	0.68	1.987E-02				
59.57	75329.	0.49	0.74	2.535E-02	59.54	35.700	1.161E+03	AM241
87.94	40851.	0.68	0.80	3.460E-02	88.03	3.610	1.542E+04	CD109
96.44	148.	47.31	0.80	3.568E-02				
99.01	160.	48.52	0.81	3.589E-02				
105.59	109.	69.79	0.52	3.619E-02				
121.94	9225.	1.66	0.84	3.583E-02	122.06	85.600	3.348E+02	CO57
129.89	126.	62.97	0.30	3.522E-02				
136.43	1263.	7.42	0.90	3.457E-02				
165.86	1574.	6.14	0.84	3.133E-02	165.85	79.900	5.319E+02	Ce139
238.72	327.	27.04	0.86	2.319E-02				
247.25	57.	84.47	0.31	2.252E-02				
259.02	93.	60.17	0.97	2.167E-02				
260.46	98.	58.62	0.97	2.157E-02				
322.65	45.	91.14	0.46	1.806E-02				
351.63	256.	27.79	1.06	1.681E-02				
391.95	494.	16.33	1.15	1.536E-02	391.69	64.000	9.501E+02	SN113
407.02	43.	90.43	0.56	1.489E-02				
412.80	202.	35.90	0.77	1.471E-02				
420.83	123.	52.91	0.72	1.448E-02				
510.72	188.	44.32	0.50	1.232E-02				
542.81	148.	28.69	0.36	1.171E-02				
583.30	161.	33.50	0.69	1.103E-02				
661.70	25605.	0.71	1.39	9.924E-03	661.66	85.210	4.424E+02	CS137
762.61	129.	36.06	0.79	8.812E-03				
796.90	151.	38.71	0.30	8.493E-03				
886.67	129.	46.77	0.30	7.766E-03				
897.77	428.	19.21	1.38	7.686E-03	898.02	93.700	1.665E+03	Y898
932.49	230.	35.52	0.82	7.445E-03				

1008.65	104.	56.29	0.28	6.970E-03				
1173.15	23044.	0.73	1.79	6.138E-03	1173.24	99.900	7.002E+02	Co1173
1332.39	20769.	0.71	1.87	5.515E-03	1332.50	99.982	7.019E+02	Co1332
1836.05	245.	7.47	1.56	4.208E-03	1836.01	99.200	1.642E+03	Y1836

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Centroid Channel	Energy	Background Counts	Net Area Counts	Efficiency * Area	Uncert 1 Sigma %	FWHM keV	Suspected Nuclide	
146.78	36.81	4847.	1005.	8.731E+04	12.08	0.625	-	
198.52	49.73	12365.	1326.	6.673E+04	15.18	0.681	-	s
385.40	96.42	1874.	90.	2.532E+03	71.31	0.588	-	sc
395.68	98.99	2103.	121.	3.381E+03	58.44	0.394	-	s

Channel	Energy	Background	Net area	Eff*Area	Uncert	FWHM	Suspected	
422.09	105.59	2271.	109.	3.012E+03	69.79	0.518	-	sc
519.32	129.89	2194.	126.	3.592E+03	62.97	0.298	-	s
545.51	136.43	2377.	1263.	3.654E+04	7.42	0.900	-	s
954.90	238.72	2247.	327.	1.410E+04	27.04	0.863	-	sM
989.00	247.25	1031.	57.	2.516E+03	84.47	0.312	-	sc
1036.13	259.01	1532.	93.	4.309E+03	60.17	0.968	-	D
1041.90	260.46	1588.	98.	4.525E+03	58.62	0.970	-	D
1290.76	322.65	744.	45.	2.473E+03	91.14	0.455	-	c
1406.70	351.63	1442.	256.	1.523E+04	27.79	1.058	-	s
1628.36	407.02	667.	43.	2.866E+03	90.43	0.562	-	sc
1651.47	412.80	1438.	202.	1.370E+04	35.90	0.775	-	s
1683.60	420.83	1291.	123.	8.472E+03	52.91	0.720	-	s
2043.25	510.72	1553.	188.	1.523E+04	44.32	0.503	-	s
2171.67	542.81	587.	148.	1.267E+04	28.69	0.362	-	s
2333.63	583.30	785.	161.	1.460E+04	33.50	0.694	-	s
3050.97	762.61	614.	129.	1.468E+04	36.06	0.794	-	s
3188.11	796.90	856.	151.	1.782E+04	38.71	0.295	-	s
3547.15	886.67	963.	129.	1.665E+04	46.77	0.296	-	s
3730.41	932.49	1438.	230.	3.096E+04	35.52	0.818	-	s
4035.01	1008.65	864.	104.	1.490E+04	56.29	0.275	-	s

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.
M - Peak is close to a library peak.

This section based on library: DET_EnergyStandardMix & Pb.Lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
Pb-210	186.01	46.61	16470.	72552.	10.077	0.49	0.733
AM-241	237.88	59.57	15419.	75329.	10.462	0.49	0.735
CD-109	351.46	87.94	8772.	40851.	5.674	0.68	0.804
CO-57	487.54	121.94	3880.	9225.	1.281	1.66	0.838
Ce-139	663.30	165.86	2329.	1574.	0.219	6.14	0.840
SN-113	1568.04	391.95	1640.	494.	0.069	16.33	1.153
CS-137	2647.28	661.70	1362.	25582.	3.553	0.71	1.394
Y-898	3591.55	897.77	1410.	428.	0.060	19.21	1.376

Co-1173	4692.83	1173.15	788.	23044.	3.201	0.73	1.786
Co-1332	5329.55	1332.39	98.	20769.	2.885	0.71	1.870
Y-1836	7342.76	1836.05	15.	245.	0.034	7.47	1.556s

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

Nuclide Name	Code	Average Activity Bq/Sample	Peak Energy keV	Peak Activity Bq/Sample	Code	MDA Value Bq/Sample		COMMENTS
Pb-210	N	1.4212E+04				8.15E+03		
			46.54	1.421E+04	(P	1.177E+02	4.91E-01	4.25E+00 G
AM-241		1.1609E+03				1.58E+05		
			59.54	1.161E+03	(	8.959E+00	4.87E-01	3.57E+01 G
CD-109		1.5419E+04				4.63E+02		
			88.03	1.542E+04	(	1.658E+02	6.81E-01	3.61E+00 G
CO-57		3.3478E+02				2.72E+02		
			122.06	3.348E+02	(	1.063E+01	1.66E+00	8.56E+01 G
Ce-139		5.3191E+02				1.38E+02		
			165.85	5.319E+02	(	7.689E+01	6.14E+00	7.99E+01 G
Hg-203		-6.5193E-03				4.66E+01		
			279.17	-6.519E-03	%(	1.788E+00	8.22E+03	8.15E+01 G
SN-113		9.5011E+02				1.15E+02		
			391.69	9.501E+02	(	3.682E+02	1.63E+01	6.40E+01 G
CS-137		4.4236E+02				1.10E+04		
			661.66	4.424E+02	(P	3.020E+00	7.12E-01	8.52E+01 G
Y-898		1.6655E+03				1.07E+02		
			898.02	1.665E+03	(	6.908E+02	1.92E+01	9.37E+01 G
Co-1173		7.0021E+02				1.93E+03		
			1173.24	7.002E+02	(	4.056E+00	7.32E-01	9.99E+01 G
Co-1332		7.0186E+02				1.93E+03		
			1332.50	7.019E+02	(	1.651E+00	7.07E-01	1.00E+02 G
Y-1836		1.6424E+03				1.07E+02		
			1836.01	1.642E+03	(	1.392E+02	7.47E+00	9.92E+01 G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.

@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide
failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the
library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity
to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity Bq/Sample	Time Corrected Activity Bq/Sample	Uncertainty 1 Sigma Counting		MDA Bq/Sample
Pb-210	1.3259E+04	1.4212E+04	4.918E-01%		1.18E+02
AM-241	1.1568E+03	1.1609E+03	4.867E-01%		8.96E+00
CD-109	4.5403E+03	1.5419E+04	6.810E-01%		1.66E+02
CO-57	4.1787E+01	3.3478E+02	1.660E+00%		1.06E+01
Ce-139	8.7347E+00	5.3191E+02	6.138E+00%		7.69E+01
Hg-203 #A	-6.5193E-03	>12 Halflives	8.2197E+03%	1.7882E+00	
SN-113	6.9747E+00	9.5011E+02	1.633E+01%		3.68E+02
CS-137	4.2015E+02	4.4236E+02	7.122E-01%		3.02E+00
Y-898	8.2662E+00	1.6655E+03	1.921E+01%		6.91E+02
Co-1173	5.2196E+02	7.0021E+02	7.316E-01%		4.06E+00
Co-1332	5.2320E+02	7.0186E+02	7.069E-01%		1.65E+00
Y-1836	8.1520E+00	1.6424E+03	7.471E+00%		1.39E+02

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.

```
  < - MDA value printed.
  A - Activity printed, but activity < MDA.
  B - Activity < MDA and failed test.
  C - Area < Critical level.
  F - Failed fraction or key line test.
  H - Halflife limit exceeded
----------------------------   S U M M A R Y   ----------------------------
Total Activity (  279.0 to  2000.5 keV)     2.050E+04  Bq/Sample
Total Decayed Activity (  279.0 to  2000.5 keV) 3.7761527E+04  Bq/Sample
```

2nd Source Verification

Detector: Ge7

Geometry: Tunacan

Reference date 1/1/2010

Source: 81427-334

Standard volume g / vial 1550

Standard volume transferred in g / geometry 318.5

lab ID# of cal standard 6665

Isotope	Certified Activity gammas/sec	Geometry Activity	γ abundance	Bq/sample	Count Results	%recovery
Am-241	2034	418	0.359	1164	1150.4	98.8
Cs-137	1926	396	0.851	465	440.47	94.7
Co-60	3611	742	0.99974	742	681.72	91.9
Co-60	3612	742	0.999856	742	692.1	93.2

Reviewed By: Jody Watson

Date: 3/27/2012

ORTEC g v - i (3263) Env32 G53W4.25 3/28/2012 8:52:25 AM
TestAmerica Spectrum name: 7_TunaCan2ndSource_20120479.An1

Sample description
7_TunaCan2ndSource_81427-334_032712

Spectrum Filename: C:\User\SPC\Det7\7_TunaCan2ndSource_20120479.An1

Acquisition information
Start time: 3/27/2012 3:25:25 PM
Live time: 3600
Real time: 3684
Dead time: 2.28 %
Detector ID: 7

Detector system
Ge 7 SN/154

Calibration
Filename: 7_Soil_TunaCan.Clb
7_TunaCan_90099_032712

Energy Calibration
Created: 3/16/2012 11:44:50 AM
Zero offset: 0.153 keV
Gain: 0.250 keV/channel
Quadratic: 6.716E-09 keV/channel^2

Efficiency Calibration
Created: 3/16/2012 11:45:14 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.87 %
Log(Eff): 6.716580E-01 + (-6.166540E-01*Log(E)) +
(-2.065917E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.48 %
Log(Eff): -2.689695E+01 + (1.019544E+01*Log(E)) +
(-1.081671E+00*Log(E)^2)

Library Files
Main analysis library: DET_EnergyStandardMix & Pb.Lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G53W4.25
Start channel: 150 (37.65keV)
Stop channel: 8000 (2000.21keV)
Peak rejection level: 1000.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00
Activity scaling factor: 1.0000E+00/(1.0000E+00* 1.0000E+00) =
1.0000E+00
Detection limit method: Reg. Guide 4.16 Method

ORTEC g v - i (3263) Env32 G53W4.25 3/28/2012 8:52:25 AM
TestAmerica Spectrum name: 7_TunaCan2ndSource_20120479.An1

Random error:	4.0000000E+00
Systematic error:	4.0000000E+00
Fraction Limit:	0.000%
Background width:	average of three points.
Half lives decay limit:	12.000
Activity range factor:	2.000
Min. step backg. energy	0.000
Multiplet shift channel	2.000

Corrections	Status	Comments
Decay correct to date:	YES	1/1/2010 11:00:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	7_2012-02-26_0327.PBC 2/26/2012 3:27:47 AM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 11 cutoff: 5.00E+01%
Energy Calibration
Normalized diff: 0.0270

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/Sampl	Nuc
36.65	788.	12.78	0.82	1.487E-02				
40.49	109.	96.90	0.59	1.869E-02				
46.62	49142.	0.63	0.84	2.491E-02	46.54	4.250	1.386E+04	Pb210
49.64	876.	18.72	0.86	2.792E-02				
59.61	54530.	0.58	0.87	3.707E-02	59.54	35.700	1.150E+03	AM241
76.99	260.	38.90	1.03	4.881E-02				
88.06	31019.	0.77	0.89	5.329E-02	88.03	3.610	1.522E+04	CD109
122.04	6834.	2.04	0.94	5.606E-02	122.06	85.600	3.171E+02	CO57
136.41	810.	9.51	1.00	5.411E-02				
165.84	1193.	6.45	0.96	4.765E-02	165.85	79.900	5.180E+02	Ce139
185.66	92.	57.01	0.73	4.445E-02				
213.19	122.	50.56	0.75	3.960E-02				
272.80	146.	47.29	0.28	3.217E-02				
391.67	372.	19.60	1.11	2.360E-02	391.69	64.000	9.332E+02	SN113
442.91	47.	93.72	0.45	2.122E-02				
483.77	95.	38.10	0.62	1.965E-02				
524.63	67.	65.12	0.73	1.831E-02				
604.78	31.	59.37	0.27	1.616E-02				
628.99	32.	94.37	0.58	1.561E-02				
661.67	19152.	0.86	1.47	1.492E-02	661.66	85.210	4.405E+02	CS137
898.03	322.	23.53	1.90	1.137E-02	898.02	93.700	1.694E+03	Y898
910.18	180.	33.99	0.85	1.123E-02				
963.79	49.	71.39	0.69	1.067E-02				
1173.23	16317.	0.86	1.89	8.929E-03	1173.24	99.900	6.817E+02	Co1173
1332.49	14763.	0.85	2.04	7.951E-03	1332.50	99.982	6.921E+02	Co1332
1836.09	186.	9.19	1.40	5.919E-03	1836.01	99.200	1.780E+03	Y1836

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Centroid Channel	Energy	Background Counts	Net Area Counts	Efficiency * Area	Uncert 1 Sigma %	FWHM keV	Suspected Nuclide	
146.00	36.65	3116.	788.	5.300E+04	12.78	0.819	-	
161.37	40.49	4419.	109.	5.831E+03	96.90	0.587	-	c
197.99	49.64	8222.	876.	3.139E+04	18.72	0.855	-	sM

307.39	76.99	3728.	260.	5.319E+03	38.90	1.033	-

ORTEC g v - i (3263) Env32 G53W4.25 3/28/2012 8:52:25 AM
TestAmerica Spectrum name: 7_TunaCan2ndSource_20120479.An1

Channel	Energy	Background	Net area	Eff*Area	Uncert	FWHM	Suspected	
545.11	136.41	1706.	810.	1.497E+04	9.51	1.002	-	
742.15	185.66	1076.	92.	2.081E+03	57.01	0.725	-	s
852.30	213.19	1296.	122.	3.077E+03	50.56	0.748	-	s
1090.74	272.80	1320.	146.	4.539E+03	47.29	0.283	-	s
1771.26	442.91	710.	47.	2.215E+03	93.72	0.453	-	sc
1934.71	483.77	486.	95.	4.835E+03	38.10	0.616	-	s
2098.18	524.63	583.	67.	3.669E+03	65.12	0.732	-	s
2418.80	604.78	172.	31.	1.939E+03	59.37	0.268	-	s
2515.62	628.99	330.	32.	2.050E+03	94.37	0.581	-	sc
3640.41	910.18	855.	180.	1.603E+04	33.99	0.852	-	s
3854.87	963.79	447.	49.	4.625E+03	71.39	0.695	-	s

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.
M - Peak is close to a library peak.

This section based on library: DET_EnergyStandardMix & Pb.Lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
Pb-210	185.90	46.62	12530.	49107.	13.641	0.63	0.840
AM-241	237.87	59.61	10985.	54530.	15.147	0.58	0.871
CD-109	351.70	88.06	6100.	31019.	8.616	0.77	0.892
CO-57	487.62	122.04	3040.	6834.	1.898	2.04	0.937
Ce-139	662.88	165.84	1495.	1193.	0.331	6.45	0.956
Hg-203	1114.79	278.81	2119.	-42.	-0.012	155.58	1.105s
SN-113	1566.31	391.67	1236.	372.	0.103	19.60	1.107
CS-137	2646.35	661.67	1156.	19152.	5.320	0.86	1.474
Y-898	3591.81	898.03	1084.	322.	0.089	23.53	1.897
Co-1173	4692.59	1173.23	493.	16317.	4.532	0.86	1.893
Co-1332	5329.55	1332.49	127.	14763.	4.101	0.85	2.038
Y-1836	7343.66	1836.09	16.	186.	0.052	9.19	1.399s

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** SUMMARY OF LIBRARY PEAK USAGE *****

- Nuclide - Name	Code	Average Activity Bq/Sample	Peak Energy keV	Peak Activity Bq/Sample	Code	MDA Value Bq/Sample			COMMENTS
Pb-210	N	1.3857E+04						8.15E+03	
			46.54	1.386E+04	(P	1.480E+02	6.34E-01	4.25E+00	G
AM-241		1.1504E+03						1.58E+05	
			59.54	1.150E+03	(	1.036E+01	5.81E-01	3.57E+01	G
CD-109		1.5217E+04						4.63E+02	
			88.03	1.522E+04	(	1.799E+02	7.73E-01	3.61E+00	G
CO-57		3.1712E+02						2.72E+02	
			122.06	3.171E+02	(	1.205E+01	2.04E+00	8.56E+01	G
Ce-139		5.1801E+02						1.38E+02	
			165.85	5.180E+02	(	7.941E+01	6.45E+00	7.99E+01	G
Hg-203		-4.5441E-01						4.66E+01	
			279.17	-4.544E-01	?(	2.347E+00	1.56E+02	8.15E+01	G
SN-113		9.3315E+02						1.15E+02	
			391.69	9.332E+02	(	4.178E+02	1.96E+01	6.40E+01	G
CS-137		4.4047E+02						1.10E+04	
			661.66	4.405E+02	(	3.706E+00	8.56E-01	8.52E+01	G
Y-898		1.6944E+03						1.07E+02	
			898.02	1.694E+03	(	8.216E+02	2.35E+01	9.37E+01	G
Co-1173		6.8172E+02						1.93E+03	
			1173.24	6.817E+02	(	4.436E+00	8.58E-01	9.99E+01	G
Co-1332		6.9210E+02						1.93E+03	
			1332.50	6.921E+02	(	2.586E+00	8.49E-01	1.00E+02	G
Y-1836		1.7801E+03						1.07E+02	
			1836.01	1.780E+03	(	2.065E+02	9.19E+00	9.92E+01	G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.

@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide
failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the
library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity
to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity
Hg-203	278.81	2119.	-42.	-0.012	155.58	0.000E+00

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity Bq/Sample	Time Corrected Activity Bq/Sample	Uncertainty 1 Sigma Counting		MDA Bq/Sample
Pb-210	1.2927E+04	1.3857E+04	6.344E-01%		1.48E+02
AM-241	1.1462E+03	1.1504E+03	5.808E-01%		1.04E+01
CD-109	4.4794E+03	1.5217E+04	7.727E-01%		1.80E+02
CO-57	3.9561E+01	3.1712E+02	2.043E+00%		1.20E+01
Ce-139	8.4971E+00	5.1801E+02	6.453E+00%		7.94E+01
Hg-203 #A	-4.5441E-01	>12 Halflives	1.5558E+02%	2.3474E+00	
SN-113	6.8413E+00	9.3315E+02	1.960E+01%		4.18E+02
CS-137	4.1835E+02	4.4047E+02	8.557E-01%		3.71E+00
Y-898	8.3979E+00	1.6944E+03	2.353E+01%		8.22E+02
Co-1173	5.0814E+02	6.8172E+02	8.581E-01%		4.44E+00
Co-1332	5.1588E+02	6.9210E+02	8.485E-01%		2.59E+00
Y-1836	8.8227E+00	1.7801E+03	9.190E+00%		2.07E+02

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (	37.6 to	2000.2 keV)	2.007E+04 Bq/Sample
Total Decayed Activity (	37.6 to	2000.2 keV)	3.7281199E+04 Bq/Sample

Analyzed by: _____
Admin

Reviewed by: _____
Supervisor

Laboratory: TestAmerica

2nd Source Verification

Detector: Ge8

Geometry: Tunacan

Reference date 1/1/2010

Source: 81427-334

Standard volume g / vial 1550

Standard volume transferred in g / geometry 318.5

lab ID# of cal standard 6665

Isotope	Certified Activity gammas/sec	Geometry Activity	γ abundance	Bq/sample	Count Results	%recovery
Am-241	2034	418	0.359	1164	1175.4	101.0
Cs-137	1926	396	0.851	465	446.61	96.0
Co-60	3611	742	0.99974	742	697.22	93.9
Co-60	3612	742	0.999856	742	691.92	93.2

Reviewed By: Jody Watson

Date: 3/29/2012

```
     ORTEC g v - i (3263) Env32  G53W4.25  3/29/2012 7:45:38 AM    Page  1
TestAmerica                     Spectrum name: 8_TunaCan2nd_20120697.An1

Sample description
     8_TunaCan_81427-334_2ndsource_032912


Spectrum Filename: C:\User\SPC\Det8\8_TunaCan2nd_20120697.An1

Acquisition information
       Start time:                 3/29/2012 1:58:04 AM
       Live time:                3600
       Real time:                3622
       Dead time:                   0.61 %
       Detector ID:                    8

Detector system
     Ge 8 SN/174


Calibration
       Filename:                   8_Soil_TunaCan.Clb
     8_Soil_TunaCan_90099_032712


       Energy Calibration
            Created:               3/28/2012 10:35:07 AM
            Zero offset:           0.050 keV
            Gain:                  0.250 keV/channel
            Quadratic:             8.067E-10 keV/channel^2

       Efficiency Calibration
            Created:               3/28/2012 10:35:20 AM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   1.39 %
            Log(Eff):             -1.098764E-01 + (-4.958544E-01*Log(E) ) +
                                   ( -2.572270E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.71 %
            Log(Eff):             -2.525301E+01 + ( 9.398253E+00*Log(E) ) +
                                   ( -1.000034E+00*Log(E)^2 )

Library Files
       Main analysis library:      DET_EnergyStandardMix & Pb.Lib
       Library Match Width:        0.500
       Peak stripping:             Library based

Analysis parameters
       Analysis engine:            Env32   G53W4.25
       Start channel:            150 (    37.55keV )
       Stop channel:            8000 (  2000.30keV )
       Peak rejection level:    1000.000%
       Peak search sensitivity:    3
       Sample Size:                1.0000E+00
       Activity scaling factor:    1.0000E+00/(  1.0000E+00*  1.0000E+00) =
                                   1.0000E+00
       Detection limit method:     Reg. Guide 4.16 Method


     ORTEC g v - i (3263) Env32  G53W4.25  3/29/2012 7:45:38 AM    Page  2
TestAmerica                     Spectrum name: 8_TunaCan2nd_20120697.An1
                                      Page 1
```

Random error: 4.0000000E+00
Systematic error: 4.0000000E+00
Fraction Limit: 0.000%
Background width: average of three points.

Half lives decay limit: 12.000
Activity range factor: 2.000
Min. step backg. energy 0.000
Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	YES	1/1/2010 11:00:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	8_2012-03-02_0402.PBC 3/2/2012 4:02:11 AM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 12 cutoff: 5.00E+01%
Energy Calibration
Normalized diff: 27.9595

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. Bq/Sampl	Nuc
36.61	594.	17.47	1.15	1.254E-02				
46.53	38495.	0.62	0.95	2.001E-02	46.54	4.250	1.345E+04	Pb210
49.81	542.	25.92	1.04	2.243E-02				
59.48	43371.	0.71	0.98	2.878E-02	59.54	35.700	1.175E+03	AM241
84.86	327.	26.82	0.98	3.922E-02				
88.03	22911.	0.76	0.98	3.992E-02	88.03	3.610	1.504E+04	CD109
122.06	5318.	2.55	1.03	4.146E-02	122.06	85.600	3.349E+02	CO57
136.54	691.	14.03	0.89	3.998E-02				
165.93	1033.	8.62	1.19	3.628E-02	165.85	79.900	6.077E+02	Ce139
177.05	71.	70.08	0.69	3.453E-02				
185.74	128.	40.98	0.85	3.329E-02				
227.93	52.	65.04	0.45	2.844E-02				
270.79	87.	50.41	0.41	2.486E-02				
278.94	44.	131.33	1.13	2.428E-02	279.17	81.500	HL>Cutoff	Hg203
302.52	63.	54.81	0.69	2.279E-02				
370.09	35.	84.23	0.41	1.941E-02				
391.61	316.	17.91	0.81	1.855E-02	391.69	64.000	1.016E+03	SN113
409.22	93.	50.95	0.41	1.791E-02				
428.24	88.	46.51	0.39	1.726E-02				
564.57	72.	45.26	0.57	1.378E-02				
591.73	73.	42.60	0.61	1.326E-02				
661.62	15734.	0.88	1.38	1.209E-02	661.66	85.210	4.466E+02	CS137
720.39	41.	72.89	0.46	1.126E-02				
831.73	36.	50.61	0.44	9.986E-03				
897.91	396.	17.93	1.52	9.360E-03	898.02	93.700	2.554E+03	Y898
1092.31	69.	44.41	0.50	7.924E-03				
1173.30	13922.	0.92	1.73	7.452E-03	1173.24	99.900	6.972E+02	Co1173
1332.56	12390.	0.92	1.75	6.677E-03	1332.50	99.982	6.919E+02	Co1332
1836.18	152.	9.00	1.63	5.046E-03	1836.01	99.200	1.724E+03	Y1836

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Efficiency * Area	Uncert 1 Sigma %	FWHM keV	Suspected Nuclide
146.23	36.61	3218.	594.	4.742E+04	17.47	1.147	- s
199.01	49.81	6400.	542.	2.416E+04	25.92	1.039	- sM
339.16	84.85	3491.	236.	6.026E+03	42.58	0.697	- sM

Channel	Energy	Background	Net area	Eff*Area	Uncert	FWHM	Suspected
545.91	136.54	2178.	691.	1.728E+04	14.03	0.888	-
707.94	177.05	893.	71.	2.046E+03	70.08	0.693	- sM
742.68	185.74	978.	128.	3.835E+03	40.98	0.847	- sM
911.43	227.93	546.	52.	1.829E+03	65.04	0.445	- sc
1082.86	270.79	683.	87.	3.486E+03	50.41	0.413	- sM
1209.76	302.52	484.	63.	2.765E+03	54.81	0.692	- s
1480.00	370.09	385.	35.	1.803E+03	84.23	0.412	- sc
1636.49	409.22	685.	93.	5.212E+03	50.95	0.407	- s
1712.56	428.24	565.	88.	5.117E+03	46.51	0.393	- s
2257.86	564.57	330.	72.	5.224E+03	45.26	0.565	- s
2366.45	591.73	298.	73.	5.505E+03	42.60	0.613	- s
2881.06	720.39	284.	41.	3.640E+03	72.89	0.464	- s
3326.37	831.73	148.	36.	3.605E+03	50.61	0.439	- s
4368.55	1092.31	290.	69.	8.708E+03	44.41	0.495	- s

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.
M - Peak is close to a library peak.

This section based on library: DET_EnergyStandardMix & Pb.Lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
Pb-210	185.71	46.48	12173.	40702.	11.306	0.74	0.992
AM-241	237.70	59.48	10649.	43371.	12.047	0.71	0.984
CD-109	351.85	88.02	4506.	23196.	6.443	0.88	1.056
CO-57	487.99	122.06	2908.	5318.	1.477	2.55	1.026
Ce-139	663.47	165.93	1722.	1033.	0.287	8.62	1.189s
Hg-203	1115.46	278.94	1642.	44.	0.012	131.33	1.133
SN-113	1566.07	391.61	822.	316.	0.088	17.91	0.806s
CS-137	2646.01	661.62	665.	15731.	4.370	0.88	1.379
Y-898	3591.03	897.91	871.	396.	0.110	17.93	1.524
Co-1173	4692.46	1173.30	374.	13922.	3.867	0.92	1.726
Co-1332	5329.42	1332.56	82.	12390.	3.442	0.92	1.753
Y-1836	7343.62	1836.18	6.	152.	0.042	9.00	1.626s

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity Bq/Sample	Peak Energy keV	Peak Activity Bq/Sample	Code	MDA Value Bq/Sample		COMMENTS
Pb-210	N	1.4221E+04				8.15E+03		
			46.54	1.422E+04	(	1.806E+02	7.43E-01 4.25E+00	G
AM-241		1.1754E+03				1.58E+05		
			59.54	1.175E+03	(	1.311E+01	7.10E-01 3.57E+01	G
CD-109		1.5223E+04				4.63E+02		
			88.03	1.522E+04	(	2.071E+02	8.83E-01 3.61E+00	G
CO-57		3.3494E+02				2.72E+02		
			122.06	3.349E+02	(	1.600E+01	2.55E+00 8.56E+01	G
Ce-139		6.0766E+02				1.38E+02		
			165.85	6.077E+02	*(	1.153E+02	8.62E+00 7.99E+01	G
Hg-203		6.1671E-01				4.66E+01		
			279.17	6.167E-01	(	2.689E+00	1.31E+02 8.15E+01	G
SN-113		1.0157E+03				1.15E+02		
			391.69	1.016E+03	(	4.390E+02	1.79E+01 6.40E+01	G
CS-137		4.4661E+02				1.10E+04		
			661.66	4.466E+02	(P	3.489E+00	8.85E-01 8.52E+01	G
Y-898		2.5543E+03				1.07E+02		
			898.02	2.554E+03	(	9.046E+02	1.79E+01 9.37E+01	G
Co-1173		6.9722E+02				1.93E+03		
			1173.24	6.972E+02	(	4.649E+00	9.19E-01 9.99E+01	G
Co-1332		6.9192E+02				1.93E+03		
			1332.50	6.919E+02	(	2.515E+00	9.18E-01 1.00E+02	G
Y-1836		1.7236E+03				1.07E+02		
			1836.01	1.724E+03	(	1.542E+02	9.00E+00 9.92E+01	G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.

@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.

P - Peakbackground subtraction
} - Peak is too close to another for the activity
to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average
R - Coincidence Corrected	C - Coincidence Peak
H - Halflife limit exceeded	

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity Bq/Sample	Time Corrected Activity Bq/Sample	Uncertainty 1 Sigma Counting		MDA Bq/Sample
Pb-210	1.3265E+04	1.4221E+04	7.429E-01%		1.81E+02
AM-241	1.1712E+03	1.1754E+03	7.101E-01%		1.31E+01
CD-109	4.4713E+03	1.5223E+04	8.832E-01%		2.07E+02
CO-57	4.1631E+01	3.3494E+02	2.551E+00%		1.60E+01
Ce-139 #	9.8959E+00	6.0766E+02	8.616E+00%		1.15E+02
Hg-203 A	6.1671E-01	>12 Halflives	1.3133E+02%	2.6892E+00	
SN-113	7.3819E+00	1.0157E+03	1.791E+01%		4.39E+02
CS-137	4.2415E+02	4.4661E+02	8.848E-01%		3.49E+00
Y-898	1.2542E+01	2.5543E+03	1.793E+01%		9.05E+02
Co-1173	5.1942E+02	6.9722E+02	9.185E-01%		4.65E+00
Co-1332	5.1548E+02	6.9192E+02	9.176E-01%		2.52E+00
Y-1836	8.4633E+00	1.7236E+03	8.997E+00%		1.54E+02

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

S U M M A R Y

Total Activity (37.6 to 2000.3 keV) 2.045E+04 Bq/Sample
Total Decayed Activity (37.6 to 2000.3 keV) 3.8690848E+04 Bq/Sample

Annual Calibration Verifications

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANNUAL CALIBRATION VERIFICATION

Detector ID: **Detector # 5**
SpectrumID: 5_20160128006_EffVerif
Analysis Description: ACVTop-776670;TunaCan2006
Calibration: 5_Soil_TunaCan_90099_032612
Detector: Ge 5 SN/157

Verification Date: 2016-01-28 10:21
Source Assay Date/Time: 2006-10-01 11:00

Isotope	Gamma Energy (kev)	Source Emission Rate (GPS) (Assay)	Observed Activity (GPS) (Actual)	Percent Difference (%) Assay-Actual / Assay
Am-241	59.54	449	4.57E+02	-1.7%
Cs-137	661.66	400	3.97E+02	0.7%
Co-1332	1332.5	777	7.71E+02	0.8%

Comments:

Perform ___Jody Watson 1/28/16_____ Reviev _____Rachel Mueller 1/28/16_____

C:\User\CRpt\5_20160128006_EffVerif.xls

Sample Description: ACVTop-776670;TunaCan2006
Detector: Ge 5 SN/157
Source Date: 10/1/2006 11:00
Acquired: 1/28/2016 10:21:33
Analyzed: 2/4/2016 10:52

Analyst: Jody Watson

Efficiency: 5_Soil_TunaCan_90099_032612
Library: DET_EfficiencyVerification.lib

Nuclide	Activity uCi/Source	Uncertainty %
AM-241	4.566E+02	0.45
CS-137	3.974E+02	0.71
Co-1332	7.707E+02	1.09
Total	1.625E+03	

TestAmerica Spectrum name: 5_20160128006_EffVerif.An1

Sample description
ACVTop-776670;TunaCan2006

Spectrum Filename: C:\User\SPC\Det5\5_20160128006_EffVerif.An1

Acquisition information
Start time: 1/28/2016 10:21:33 AM
Live time: 7200
Real time: 7242
Dead time: 0.59 %
Detector ID: 5

Detector system
Ge 5 SN/157

Calibration
Filename: 5_Soil_TunaCan.Clb
5_Soil_TunaCan_90099_032612

Energy Calibration
Created: 2/28/2012 7:35:48 PM
Zero offset: 0.158 keV
Gain: 0.250 keV/channel
Quadratic: 3.911E-08 keV/channel^2

Efficiency Calibration
Created: 3/27/2012 5:20:37 PM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.87 %
Log(Eff): 6.466115E-01 + (-7.830454E-01*Log(E)) +
(-4.117504E-03*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.43 %
Log(Eff): -2.462251E+01 + (9.075211E+00*Log(E)) +
(-9.664422E-01*Log(E)^2)

Library Files
Main analysis library: DET_EfficiencyVerification.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G53W4.25
Start channel: 150 (37.62keV)
Stop channel: 8000 (2000.81keV)
Peak rejection level: 10.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00
Activity scaling factor: 1.0000E+00/(1.0000E+00* 1.0000E+00) =
1.0000E+00
Detection limit method: Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            average of three points.
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                          Status          Comments
       Decay correct to date:         YES       10/1/2006 11:00:00 AM
       Decay during acquisition:      YES
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  NO
       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.    3 cutoff: 5.00E+01%
       Energy Calibration
            Normalized diff:       0.0281

*****   S U M M A R Y   O F   P E A K S   I N   R A N G E   *****
 Peak       Area   Uncert  FWHM    Corrctn   Nuclide  Brnch.     Act.   Nuc
 Energy                             Factor    Energy   Ratio    uCi/Sour
_____________________________________________________________________________
   46.59    62614.   0.54   0.73  1.791E-02
   59.55    82059.   0.45   0.73  2.534E-02    59.54 100.000  4.566E+02 AM241
   87.79     1068.   8.88   0.81  3.458E-02
  661.63    22901.   0.71   1.29  9.925E-03   661.66 100.000  3.973E+02 CS137
 1173.12     9966.   1.10   1.75  6.139E-03
 1332.41     8977.   1.09   1.90  5.515E-03  1332.50 100.000  7.707E+02 Co1332


************ U N I D E N T I F I E D     P E A K    S U M M A R Y ************
  Peak Centroid  Background Net Area  Efficiency  Uncert   FWHM  Suspected
Channel   Energy   Counts     Counts   * Area    1 Sigma %  keV   Nuclide
_____________________________________________________________________________
  185.88    46.59     15162.     62614. 3.496E+06    0.54   0.733  -
  350.82    87.79      2502.      1068. 3.087E+04    8.88   0.809  -      s
 4692.76  1173.12       266.      9966. 1.624E+06    1.10   1.754  -

  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  L - Peak written from unknown list.
  C - Area < Critical level.

------------------------------------------------------------
This section based on library: DET_EfficiencyVerification.lib
```

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
AM-241	237.79	59.55	13086.	82059.	11.397	0.45	0.731
CS-137	2647.26	661.63	612.	22901.	3.181	0.71	1.293
Co-1332	5329.50	1332.41	77.	8977.	1.247	1.09	1.898

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity uCi/Source	Peak Energy keV	Peak Activity uCi/Source	Code	MDA Value uCi/Source	COMMENTS
AM-241		4.5663E+02				1.58E+05	
			59.54	4.566E+02	(	2.981E+00 4.47E-01 1.00E+02 G	
CS-137		3.9735E+02				1.10E+04	
			661.66	3.973E+02	(	2.047E+00 7.08E-01 1.00E+02 G	
Co-1332		7.7068E+02				1.93E+03	
			1332.50	7.707E+02	(	3.743E+00 1.09E+00 1.00E+02 G	

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation
F - Fast Neutron Activation
I - Fission Product

Peak Codes:
G - Gamma Ray
X - X-Ray
P - Positron Decay

N - Naturally Occurring Isotope
P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded
S - Single-Escape
D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity uCi/Source	Time Corrected Activity uCi/Source	Uncertainty 1 Sigma Counting	MDA
AM-241	4.4986E+02	4.5663E+02	4.468E-01%	2.98E+00
CS-137	3.2049E+02	3.9735E+02	7.077E-01%	2.05E+00
Co-1332	2.2610E+02	7.7068E+02	1.091E+00%	3.74E+00

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.8 keV) 9.965E+02 uCi/Source
Total Decayed Activity (37.6 to 2000.8 keV) 1.6246621E+03 uCi/Source

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANNUAL CALIBRATION VERIFICATION

Detector ID: Detector # 7
SpectrumID: 7_20160123003_EffVerif
Analysis Description: ACVTop-776670;TunaCan2006
Calibration: 7_TunaCan_90099_032712
Detector: Ge 7 SN/154

Verification Date: 2016-01-23 19:25
Source Assay Date/Time: 2006-10-01 11:00

Isotope	Gamma Energy (kev)	Source Emission Rate (GPS) (Assay)	Observed Activity (GPS) (Actual)	Percent Difference (%) Assay-Actual / Assay
Am-241	59.54	449	4.38E+02	2.5%
Cs-137	661.66	400	3.86E+02	3.6%
Co-1332	1332.5	777	7.19E+02	7.5%

Comments:

Perform ____Kody Saulters 2/4/16_____ Reviev ___Jody Watson 2/4/16_____

C:\User\CRpt\7_20160123003_EffVerif.xls

Sample Description: ACVTop-776670;TunaCan2006
Detector: Ge 7 SN/154
Source Date: 10/1/2006 11:00
Acquired: 1/23/2016 19:25:53
Analyzed: 2/4/2016 10:49

Analyst: Jody Watson

Efficiency: 7_TunaCan_90099_032712
Library: DET_EfficiencyVerification.lib

Nuclide	Activity uCi/Source	Uncertainty %
AM-241	4.380E+02	0.38
CS-137	3.857E+02	0.59
Co-1332	7.189E+02	0.94
Total	1.543E+03	

TestAmerica Spectrum name: 7_20160123003_EffVerif.An1

Sample description
ACVTop-776670;TunaCan2006

Spectrum Filename: C:\User\SPC\Det7\7_20160123003_EffVerif.An1

Acquisition information
Start time: 1/23/2016 7:25:53 PM
Live time: 7200
Real time: 7361
Dead time: 2.18 %
Detector ID: 7

Detector system
Ge 7 SN/154

Calibration
Filename: 7_Soil_TunaCan.Clb
7_TunaCan_90099_032712

Energy Calibration
Created: 2/23/2012 8:40:56 AM
Zero offset: 0.117 keV
Gain: 0.250 keV/channel
Quadratic: 3.508E-09 keV/channel^2

Efficiency Calibration
Created: 3/16/2012 11:45:14 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.87 %
Log(Eff): 6.716580E-01 + (-6.166540E-01*Log(E)) + (-2.065917E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.48 %
Log(Eff): -2.689695E+01 + (1.019544E+01*Log(E)) + (-1.081671E+00*Log(E)^2)

Library Files
Main analysis library: DET_EfficiencyVerification.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G53W4.25
Start channel: 150 (37.61keV)
Stop channel: 8000 (2000.12keV)
Peak rejection level: 10.000%
Peak search sensitivity: 3
Sample Size: 1.0000E+00
Activity scaling factor: 1.0000E+00/(1.0000E+00* 1.0000E+00) = 1.0000E+00
Detection limit method: Reg. Guide 4.16 Method

```
       Random error:               4.0000000E+00
       Systematic error:           4.0000000E+00
       Fraction Limit:             0.000%
       Background width:           average of three points.
       Half lives decay limit:    12.000
       Activity range factor:      2.000
       Min. step backg. energy     0.000
       Multiplet shift channel     2.000

Corrections                          Status          Comments
       Decay correct to date:         YES       10/1/2006 11:00:00 AM
       Decay during acquisition:      YES
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  NO
       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.    3 cutoff: 5.00E+01%
       Energy Calibration
            Normalized diff:       0.0434
```

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. uCi/Sour	Nuc
36.52	1402.	9.33	1.11	1.474E-02				
46.60	75982.	0.45	0.84	2.485E-02				
59.55	114994.	0.38	0.89	3.702E-02	59.54	100.000	4.380E+02	AM241
87.94	1428.	8.44	0.97	5.326E-02				
661.74	33440.	0.59	1.49	1.492E-02	661.66	100.000	3.857E+02	CS137
1173.38	13650.	0.99	1.95	8.928E-03				
1332.63	12093.	0.94	1.99	7.950E-03	1332.50	100.000	7.189E+02	Co1332

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Efficiency * Area	Uncert 1 Sigma %	FWHM keV	Suspected Nuclide	
145.62	36.52	4964.	1402.	9.512E+04	9.33	1.111	-	s
185.78	46.56	20640.	82430.	3.318E+06	0.48	0.912	-	
351.31	87.94	3932.	1428.	2.682E+04	8.44	0.972	-	s
4693.26	1173.38	567.	13650.	1.529E+06	0.99	1.950	-	

```
  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  L - Peak written from unknown list.
  C - Area < Critical level.

------------------------------------------------------------
This section based on library: DET_EfficiencyVerification.lib
```

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
AM-241	237.75	59.55	18759.	114994.	15.971	0.38	0.895
CS-137	2646.69	661.74	882.	33440.	4.644	0.59	1.494
Co-1332	5330.24	1332.63	117.	12093.	1.680	0.94	1.990

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity uCi/Source	Peak Energy keV	Peak Activity uCi/Source	Code	MDA Value uCi/Source	COMMENTS
AM-241		4.3796E+02				1.58E+05	
			59.54	4.380E+02	(	2.441E+00 3.82E-01 1.00E+02 G	
CS-137		3.8573E+02				1.10E+04	
			661.66	3.857E+02	(	1.628E+00 5.85E-01 1.00E+02 G	
Co-1332		7.1885E+02				1.93E+03	
			1332.50	7.189E+02	(	3.157E+00 9.42E-01 1.00E+02 G	

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation
F - Fast Neutron Activation
I - Fission Product

Peak Codes:
G - Gamma Ray
X - X-Ray
P - Positron Decay

N - Naturally Occurring Isotope
P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded
S - Single-Escape
D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity uCi/Source	Time Corrected Activity uCi/Source	Uncertainty 1 Sigma Counting	MDA
AM-241	4.3147E+02	4.3796E+02	3.822E-01%	2.44E+00
CS-137	3.1121E+02	3.8573E+02	5.852E-01%	1.63E+00
Co-1332	2.1125E+02	7.1885E+02	9.418E-01%	3.16E+00

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.6 to 2000.1 keV) 9.539E+02 uCi/Source
Total Decayed Activity (37.6 to 2000.1 keV) 1.5425436E+03 uCi/Source

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANNUAL CALIBRATION VERIFICATION

Detector ID: **Detector # 8**
SpectrumID: 8_20160128004_EffVerif
Analysis Description: ACVTop-776670;TunaCan2006
Calibration: 8_Soil_TunaCan_90099_032712
Detector: Ge 8 SN/174

Verification Date: 2016-01-28 18:34
Source Assay Date/Time: 2006-10-01 11:00

Isotope	Gamma Energy (kev)	Source Emission Rate (GPS) (Assay)	Observed Activity (GPS) (Actual)	Percent Difference (%) Assay-Actual / Assay
Am-241	59.54	449	4.79E+02	-6.7%
Cs-137	661.66	400	3.90E+02	2.5%
Co-1332	1332.5	777	7.56E+02	2.7%

Comments:

Perform Aaron Schroder 1/28/16

Reviev __Jody Watson_____1/29/16_____

C:\User\CRpt\8_20160128004_EffVerif.xls

Sample Description: ACVTop-776670;TunaCan2006
Detector: Ge 8 SN/174
Source Date: 10/1/2006 11:00
Acquired: 1/28/2016 18:34:05
Analyzed: 2/4/2016 10:51

Analyst: Jody Watson

Efficiency: 8_Soil_TunaCan_90099_032712
Library: DET_EfficiencyVerification.lib

Nuclide	Activity uCi/Source	Uncertainty %
AM-241	4.789E+02	0.41
CS-137	3.899E+02	0.64
Co-1332	7.564E+02	0.99
Total	1.625E+03	

TestAmerica Spectrum name: 8_20160128004_EffVerif.An1

Sample description
ACVTop-776670;TunaCan2006

Spectrum Filename: C:\User\SPC\Det8\8_20160128004_EffVerif.An1

Acquisition information
Start time:	1/28/2016 6:34:05 PM
Live time:	7200
Real time:	7434
Dead time:	3.15 %
Detector ID:	8

Detector system
Ge 8 SN/174

Calibration
Filename: 8_Soil_TunaCan.Clb
8_Soil_TunaCan_90099_032712

Energy Calibration
Created:	2/28/2012 10:34:41 AM
Zero offset:	0.052 keV
Gain:	0.250 keV/channel
Quadratic:	5.282E-10 keV/channel^2

Efficiency Calibration
Created:	3/28/2012 10:35:20 AM
Knee Energy:	165.85 keV
Above the Knee:	Quadratic Uncertainty = 1.39 %
Log(Eff):	-1.098764E-01 + (-4.958544E-01*Log(E)) + (-2.572270E-02*Log(E)^2)
Below the Knee:	Quadratic Uncertainty = 1.71 %
Log(Eff):	-2.525301E+01 + (9.398253E+00*Log(E)) + (-1.000034E+00*Log(E)^2)

Library Files
Main analysis library:	DET_EfficiencyVerification.lib
Library Match Width:	0.500
Peak stripping:	Library based

Analysis parameters
Analysis engine:	Env32 G53W4.25
Start channel:	150 (37.55keV)
Stop channel:	8000 (1999.96keV)
Peak rejection level:	10.000%
Peak search sensitivity:	3
Sample Size:	1.0000E+00
Activity scaling factor:	1.0000E+00/(1.0000E+00* 1.0000E+00) = 1.0000E+00
Detection limit method:	Reg. Guide 4.16 Method

```
       Random error:                4.0000000E+00
       Systematic error:            4.0000000E+00
       Fraction Limit:              0.000%
       Background width:            average of three points.
       Half lives decay limit:     12.000
       Activity range factor:       2.000
       Min. step backg. energy      0.000
       Multiplet shift channel      2.000

Corrections                          Status          Comments
       Decay correct to date:         YES       10/1/2006 11:00:00 AM
       Decay during acquisition:      YES
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  NO
       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.    3 cutoff: 5.00E+01%
       Energy Calibration
            Normalized diff:       0.0632
```

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. uCi/Sour	Nuc
46.57	74004.	0.44	1.01	2.005E-02				
59.58	102880.	0.35	1.02	2.881E-02	59.54	100.000	5.034E+02	AM241
88.09	1218.	9.96	0.76	3.993E-02				
661.54	27378.	0.64	1.34	1.209E-02	661.66	100.000	3.899E+02	CS137
1173.07	11810.	1.00	1.56	7.454E-03				
1332.31	10667.	0.99	1.75	6.678E-03	1332.50	100.000	7.564E+02	Co1332

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Efficiency * Area	Uncert 1 Sigma %	FWHM keV	Suspected Nuclide	
185.94	46.53	19029.	71370.	3.560E+06	0.54	0.847	-	
352.16	88.09	3683.	1218.	3.051E+04	9.96	0.764	-	s
4692.32	1173.07	306.	11810.	1.584E+06	1.00	1.561	-	

```
  s - Peak fails shape tests.
  D - Peak area deconvoluted.
  L - Peak written from unknown list.
  C - Area < Critical level.

------------------------------------------------------------
This section based on library: DET_EfficiencyVerification.lib
```

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
AM-241	237.97	59.54	15110.	97876.	13.594	0.41	0.867D
CS-137	2646.10	661.54	638.	27378.	3.802	0.64	1.335
Co-1332	5329.28	1332.31	68.	10667.	1.482	0.99	1.753

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity uCi/Source	Peak Energy keV	Peak Activity uCi/Source	Code	MDA Value uCi/Source	COMMENTS
AM-241		4.7889E+02				1.58E+05	
			59.54	4.789E+02	(	2.816E+00 4.13E-01 1.00E+02 G	
CS-137		3.8993E+02				1.10E+04	
			661.66	3.899E+02	(	1.714E+00 6.40E-01 1.00E+02 G	
Co-1332		7.5635E+02				1.93E+03	
			1332.50	7.564E+02	(	2.913E+00 9.90E-01 1.00E+02 G	

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:
T - Thermal Neutron Activation
F - Fast Neutron Activation
I - Fission Product

Peak Codes:
G - Gamma Ray
X - X-Ray
P - Positron Decay

N - Naturally Occurring Isotope
P - Photon Reaction
C - Charged Particle Reaction
M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded
S - Single-Escape
D - Double-Escape
K - Key Line
A - Not in Average
C - Coincidence Peak

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide	Time of Count Activity uCi/Source	Time Corrected Activity uCi/Source	Uncertainty 1 Sigma Counting	MDA
AM-241	4.7179E+02	4.7889E+02	4.129E-01%	2.82E+00
CS-137	3.1450E+02	3.8993E+02	6.397E-01%	1.71E+00
Co-1332	2.2187E+02	7.5635E+02	9.900E-01%	2.91E+00

< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.5 to 2000.0 keV) 1.008E+03 uCi/Source
Total Decayed Activity (37.5 to 2000.0 keV) 1.6251797E+03 uCi/Source

Monthly Backgrounds

Test America
St. Louis
Background Check

Spectrum: 5_20160730007_BGLong
Description: Background Long PBC Count
Acquired: 7/30/2016 5:50:09 PM
Detector: Detector # 5
Background Evaluation Criteria:
1) Place instrument out of service if Countrate exceeds Control Limits.
2) Investigate high countrate and take corrective action as necessary if Countrate exceeds Tolerance Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
Bkgd Countrate	1.45	1.30	1.35	1.43	1.55	1.60	PASS

Analyst: Mike Aldridge Reviewer: Rachel Mueller

Test America
St. Louis
Background Check

Spectrum: 7_20160730008_BGLong
Description: Background Long PBC Count
Acquired: 7/30/2016 6:29:26 PM
Detector: Detector # 7
Background Evaluation Criteria:
1) Place instrument out of service if Countrate exceeds Control Limits.
2) Investigate high countrate and take corrective action as necessary if Countrate exceeds Tolerance Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
Bkgd Countrate	1.30	1.16	1.21	1.29	1.40	1.45	PASS

Analyst: Mike Aldridge Reviewer: Rachel Mueller

Test America
St. Louis
Background Check

Spectrum: 8_20160807001_BGLong
Description: Background Long PBC Count
Acquired: 8/7/2016 10:06:19 PM
Detector: Detector # 8
Background Evaluation Criteria:
1) Place instrument out of service if Countrate exceeds Control Limits.
2) Investigate high countrate and take corrective action as necessary if Countrate exceeds Tolerance Limits.

	Target	L_Ctrl	L_Tol	Measured	H_Tol	H_Ctrl	Results
Bkgd Countrate	1.56	1.39	1.45	1.58	1.68	1.74	PASS

Analyst: Aaron Schroder Reviewer: Aaron Schroder

TestAmerica Inc Spectrum name: 8_20160807001_BGLong.An1

Sample description
Background Long PBC Count

Spectrum Filename: C:\User\SPC\Det8\8_20160807001_BGLong.An1

Acquisition information
Start time:	8/7/2016 10:06:19 PM
Live time:	72000
Real time:	73864
Dead time:	2.52 %
Detector ID:	8

Detector system
Ge 8 SN/174

Calibration
Filename: 8_QC.Clb
Ge8_QC

Energy Calibration
Created:	2/28/2012 10:34:41 AM
Zero offset:	0.052 keV
Gain:	0.250 keV/channel
Quadratic:	5.282E-10 keV/channel^2

Efficiency Calibration
Created:	1/6/2011 8:07:20 AM		
Knee Energy:	0.00 keV		
Above the Knee:	Interpolative	Uncertainty =	0.00 %
Below the Knee:	Interpolative	Uncertainty =	0.00 %

Library Files
Main analysis library:	DET_Long Background PBC.lib
Library Match Width:	0.500
Peak stripping:	Library based

Analysis parameters
Analysis engine:	Env32 G800W064
Start channel:	150 (37.55keV)
Stop channel:	8000 (1999.97keV)
Peak rejection level:	30.000%
Peak search sensitivity:	3
Sample Size:	1.0000E+00 +/- 0.000E+00%
Activity scaling factor:	1.0000E+00/(1.0000E+00* 1.0000E+00) = 1.0000E+00
Detection limit method:	Reg. Guide 4.16 Method
Random error:	4.0000000E+00
Systematic error:	4.0000000E+00
Fraction Limit:	0.000%
Background width:	3

Half lives decay limit: 12.000
Activity range factor: 2.000
Min. step backg. energy 0.000
Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	NO	
Decay during acquisition:	NO	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	NO	
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 16 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.0882

***** S U M M A R Y O F P E A K S I N R A N G E *****

Peak Energy	Area	Uncert	FWHM	Corrctn Factor	Nuclide Energy	Brnch. Ratio	Act. DPS	Nuc
59.59	443.	9.67	1.02	8.697E-02	59.54	35.900	1.971E-01	AM241
63.26	1018.	4.71	1.03	9.237E-02	63.29	3.810	4.015E+00	TH234
84.16	249.	20.41	0.81	1.232E-01				
92.66	2098.	3.77	1.06	1.295E-01	92.59	5.584	4.029E+00	TH234
					93.35	5.561	4.043E+00	AC228
98.58	180.	27.23	0.69	1.303E-01				
143.65	260.	19.95	0.89	1.248E-01	143.79	10.960	2.637E-01	U235
185.84	1118.	6.00	1.00	1.107E-01	185.72	54.000	2.596E-01	U235
					185.99	3.280	4.276E+00	Ra226
238.77	370.	14.28	1.05	9.635E-02	238.63	43.300	1.232E-01	PB212
582.93	136.	29.71	1.21	3.958E-02	583.02	84.500	5.627E-02	TL208
661.65	252.	13.69	1.06	3.334E-02	661.66	85.210	1.234E-01	CS137
1001.01	156.	19.09	1.20	2.158E-02	1001.00	0.837	1.201E+01	PA234M
1332.62	135.	19.92	0.43	1.637E-02	1332.50	99.980	1.145E-01	CO60
					1332.50	99.980	1.145E-01	CO60
1460.44	142.	16.98	2.24	1.543E-02	1460.83	10.670	1.201E+00	K40

********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Efficiency * Area	Uncert 1 Sigma %	FWHM keV	Suspected Nuclide
336.46	84.16	700.	249.	2.021E+03	20.41	0.813	- s
394.13	98.58	635.	180.	1.382E+03	27.23	0.688	- s

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: DET_Long Background PBC.lib

********** I D E N T I F I E D P E A K S U M M A R Y **********

Nuclide	Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	FWHM keV
AM-241	237.95	59.54	751.	444.	0.006	9.94	1.022D
TH-234	252.96	63.29	686.	1018.	0.014	4.80	1.025D
TH-234	370.45	92.66	994.	2098.	0.029	3.77	1.055
U-235	574.42	143.65	661.	260.	0.004	19.95	0.887s
U-235	742.71	185.72	780.	1090.	0.015	4.27	1.003D
PB-212	954.94	238.77	583.	370.	0.005	14.28	1.053
TL-208	2331.65	582.93	288.	136.	0.002	29.71	1.214
CS-137	2646.52	661.65	202.	252.	0.004	13.69	1.062s
PA-234M	4004.05	1001.01	119.	156.	0.002	19.09	1.196s
CO-60	5330.55	1332.62	84.	135.	0.002	19.92	0.434s
K-40	5841.82	1460.44	62.	142.	0.002	16.98	2.244

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

Nuclide Name	Code	Average Activity DPS	Peak Energy keV	Peak Activity DPS	Code	MDA Value DPS		COMMENTS
K-40	N	1.2010E+00				4.66E+11		
			1460.83	1.201E+00	(	3.316E-01	1.70E+01	1.07E+01 G
CO-60	F	1.1454E-01				1.93E+03		
			1332.50	1.145E-01	?(	3.854E-02	1.99E+01	1.00E+02 G
CS-137	I	1.2336E-01				1.10E+04		
			661.66	1.234E-01	(	3.368E-02	1.37E+01	8.52E+01 G
TL-208	N	5.6266E-02				6.98E+02		
			583.02	5.627E-02	(	3.394E-02	2.97E+01	8.45E+01 G
			277.28	0.000E+00	%	1.592E-01	9.63E+01	6.31E+00 G
			860.56	0.000E+00	%	1.660E-01	6.24E+01	1.24E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PB-212	N	1.2324E-01					6.98E+02	
			238.63	1.232E-01	(	3.834E-02	1.43E+01	4.33E+01 G
			300.03	0.000E+00	%	3.039E-01	3.89E+01	3.28E+00 GA
TH-234	N	4.0234E+00					1.63E+12	
			63.29	4.015E+00	(	4.921E-01	4.80E+00	3.81E+00 G
			92.59	4.029E+00	(	2.874E-01	3.77E+00	5.58E+00 G
PA-234M	N	1.2010E+01					1.63E+12	
			1001.00	1.201E+01	?(	4.115E+00	1.91E+01	8.37E-01 G
			766.41	0.000E+00	%	6.184E+00	3.21E+01	2.94E-01 G
U-235	N	2.6374E-01					2.57E+11	
			185.72	2.530E-01	}	3.085E-02	4.27E+00	5.40E+01 GA
			143.79	2.637E-01	*(	1.245E-01	2.00E+01	1.10E+01 G
			205.33	0.000E+00	%	1.857E-01	3.16E+01	5.01E+00 G
			163.38	0.000E+00	%	1.792E-01	4.01E+01	5.08E+00 G
AM-241	T	1.9758E-01					1.58E+05	
			59.54	1.976E-01	(	5.807E-02	9.94E+00	3.59E+01 G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.
! - Peak is part of a multiplet and this area went negative during deconvolution.
? - Peak is too narrow.
@ - Peak is too wide at FW25M, but ok at FWHM.
% - Peak fails sensitivity test.
$ - Peak identified, but first peak of this nuclide failed one or more qualification tests.
+ - Peak activity higher than counting uncertainty range.
- - Peak activity lower than counting uncertainty range.
= - Peak outside analysis energy range.
& - Calculated peak centroid is not close enough to the library energy centroid for positive identification.
P - Peakbackground subtraction
} - Peak is too close to another for the activity to be found directly.

Nuclide Codes:	Peak Codes:
T - Thermal Neutron Activation	G - Gamma Ray
F - Fast Neutron Activation	X - X-Ray
I - Fission Product	P - Positron Decay
N - Naturally Occurring Isotope	S - Single-Escape
P - Photon Reaction	D - Double-Escape
C - Charged Particle Reaction	K - Key Line
M - No MDA Calculation	A - Not in Average

R - Coincidence Corrected C - Coincidence Peak
H - Halflife limit exceeded

- -

********** D I S C A R D E D I S O T O P E P E A K S **********

Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity

P - Peakbackground subtraction

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide		Time of Count Activity DPS	Uncertainty 1 Sigma Counting	MDA
BE-7	<	2.1074E-01		
NA-22	<	3.2759E-02		
K-40		1.2010E+00	1.6983E+01%	3.316E-01
Sc-46	<	1.2420E-02		
CR-51	<	1.0349E-01		
MN-54	<	2.1811E-02		
FE-59	<	4.3605E-02		
Co-56	<	2.1139E-02		
CO-57	<	1.0718E-02		
CO-58	<	1.9336E-02		
CO-60	#	1.1454E-01	1.9918E+01%	3.854E-02
ZN-65	<	5.8930E-02		
NB-94	<	2.2388E-02		
ZR-95	<	3.7566E-02		
NB-95	<	3.0190E-02		
RU-103	<	1.7382E-02		
RH-106	<	1.1298E-01		
AG-108M	<	1.7064E-02		
AG-110M	<	3.6859E-02		
SN-113	<	2.2462E-02		
SB-124	<	1.5810E-02		
SB-125	<	5.0181E-02		
I-131	<	1.6793E-02		
BA-133	<	1.7715E-02		
CS-134	<	2.9686E-02		
CS-137		1.2336E-01	1.3691E+01%	3.368E-02
CE-139	<	1.1188E-02		
Ba-140	<	6.6143E-02		
La-140	<	3.0947E-02		
CE-141	<	1.3058E-02		
CE-144	<	8.7434E-02		
PM-144	<	2.3000E-02		
EU-152	<	6.2071E-02		
EU-154	<	2.7305E-01		
EU-155	<	3.8049E-02		

HF-181	<	2.6820E-02			
Ta-182	<	3.8846E-02			
Hg-203	<	1.6311E-02			
TL-208		5.6266E-02	2.9713E+01%		3.394E-02
pm-146	<	5.8568E-02			
y-88	<	3.0340E-02			
PB-210	<	3.8810E-01			
PB-212		1.2324E-01	1.4284E+01%		3.834E-02
PB-214	<	3.2306E-02			
BI-207	<	2.6400E-02			
BI-212	<	2.5440E-01			
BI-214	<	4.1397E-02			
BI-210M	<	1.8907E-02			
RA-224	<	3.8591E-01			
AC-228	<	1.0933E-01			
TH-227	<	1.1459E-01			
TH-229	<	2.1056E-01			
TH-234		4.0234E+00	3.0513E+00%		4.921E-01
PA-231	<	4.0252E-01			
PA-233	<	2.9282E-02			
PA-234	<	5.1695E-02			
PA-234M#		1.2010E+01	1.9092E+01%		4.115E+00
U-235		2.6374E-01	1.9954E+01%		1.245E-01
AM-241		1.9758E-01	9.9404E+00%		5.807E-02
Np-237	<	9.7820E-02			

  # - All peaks for activity calculation had bad shape.
  * - Activity omitted from total
  & - Activity omitted from total and all peaks had bad shape.
  < - MDA value printed.
  A - Activity printed, but activity < MDA.
  B - Activity < MDA and failed test.
  C - Area < Critical level.
  F - Failed fraction or key line test.
  H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (37.5 to 2000.0 keV) 1.811E+01 DPS

Run Logs

Gamma Spectroscopy Run Log

Detector: GV5

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
03/26/12 15:05		IC 160-12297/1		12297			JLW
03/27/12 10:12		ICV 160-12297/2		12297			JLW
01/28/16 10:21		ACVTOP 160-236240/1		236240			PS
07/30/16 17:50		ICB 160-262848/1		262848			RTM
09/02/16 00:16		CCB 160-267882/1		267882			RTM
09/02/16 05:17		CCV 160-267882/2		267882			
09/02/16 05:39		CCV 160-267882/3		267882			RTM
09/02/16 08:50	30	ZZZZZ		267882			
09/02/16 09:32	30	ZZZZZ		267882			
09/02/16 10:26	30	ZZZZZ		267882			
09/02/16 12:13		TCCLBA 160-267833/1-A		267882	267833	TC-02-RC	RTM
09/02/16 12:27		TCCLBC 160-267833/3-A		267882	267833	TC-02-RC	RTM
09/02/16 12:47		TCCLBB 160-267833/2-A		267882	267833	TC-02-RC	RTM
09/02/16 16:19		ZZZZZ		267882			
09/02/16 16:33		ZZZZZ		267882			
09/02/16 16:57		ZZZZZ		267882			
09/02/16 17:11		ZZZZZ		267882			
09/02/16 17:27		ZZZZZ		267882			
09/02/16 17:43		ZZZZZ		267882			
09/02/16 18:11		ZZZZZ		267882			
09/02/16 18:34		160-18852-2	GW-BR10RB-082516	267882	267837	TC-02-RC	RTM
09/02/16 19:00		ZZZZZ		267882			
09/02/16 19:25		LCS 160-267837/2-A		267882	267837	TC-02-RC	RTM

Detector: GV7

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
03/27/12 08:10		IC 160-12302/1		12302			JLW
03/27/12 15:25		ICV 160-12302/2		12302			JLW
01/23/16 19:25		ACVTOP 160-236241/1		236241			PS
07/30/16 18:29		ICB 160-262849/1		262849			RTM
09/02/16 00:17		CCB 160-267883/1		267883			RTM
09/02/16 05:16		CCV 160-267883/2		267883			
09/02/16 05:39		CCV 160-267883/3		267883			RTM
09/02/16 08:48	60	ZZZZZ		267883			
09/02/16 10:27	30	ZZZZZ		267883			
09/02/16 11:05	30	ZZZZZ		267883			
09/02/16 12:14		TCCLBB 160-267833/2-A		267883	267833	TC-02-RC	RTM
09/02/16 12:28		TCCLBA 160-267833/1-A		267883	267833	TC-02-RC	RTM
09/02/16 12:40		TCCLBC 160-267833/3-A		267883	267833	TC-02-RC	RTM
09/02/16 16:20		ZZZZZ		267883			
09/02/16 16:34		ZZZZZ		267883			
09/02/16 16:58		ZZZZZ		267883			
09/02/16 17:12		ZZZZZ		267883			
09/02/16 17:28		ZZZZZ		267883			
09/02/16 17:44		ZZZZZ		267883			
09/02/16 18:12		160-18742-A-13-F MS		267883	267837	TC-02-RC	RTM

Gamma Spectroscopy Run Log

Detector: GV7 (Continued)

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
09/02/16 18:35		160-18852-3	GW-GWJJ-082516	267883	267837	TC-02-RC	RTM
09/02/16 19:10		ZZZZZ		267883			
09/02/16 19:37		160-18852-5	GW-BR04JC-082516	267883	267837	TC-02-RC	RTM

Detector: GV8

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
03/27/12 10:58		IC 160-12311/1		12311			JLW
03/29/12 01:58		ICV 160-12311/2		12311			JLW
01/28/16 18:34		ACVTOP 160-236248/1		236248			PS
08/07/16 22:06		ICB 160-263973/1		263973			ALS
09/02/16 00:19		CCB 160-267884/1		267884			RTM
09/02/16 05:12		CCV 160-267884/2		267884			
09/02/16 05:35		CCV 160-267884/3		267884			RTM
09/02/16 08:46	60	ZZZZZ		267884			
09/02/16 09:52	60	ZZZZZ		267884			
09/02/16 11:06	30	ZZZZZ		267884			
09/02/16 12:16		TCCLBC 160-267833/3-A		267884	267833	TC-02-RC	RTM
09/02/16 12:30		TCCLBB 160-267833/2-A		267884	267833	TC-02-RC	RTM
09/02/16 12:43		TCCLBA 160-267833/1-A		267884	267833	TC-02-RC	RTM
09/02/16 16:21		ZZZZZ		267884			
09/02/16 16:35		ZZZZZ		267884			
09/02/16 17:00		ZZZZZ		267884			
09/02/16 17:14		ZZZZZ		267884			
09/02/16 17:30		ZZZZZ		267884			
09/02/16 17:46		ZZZZZ		267884			
09/02/16 18:14		160-18742-B-13-D MSD		267884	267837	TC-02-RC	RTM
09/02/16 18:36		160-18852-4	GW-BR13JC-082516	267884	267837	TC-02-RC	RTM
09/02/16 18:59		160-18852-11	GW-NB34-082516	267884	267837	TC-02-RC	RTM
09/02/16 19:19		MB 160-267837/1-A		267884	267837	TC-02-RC	RTM
09/02/16 19:35		ZZZZZ		267884			

LIQUID SCINTILLATION COUNTER

Method TC-02-RC

Technetium-99 (LSC) by Method TC-02-RC

Prep Batch: 267772

Preparation, Extraction
Chromatography

Liquid Scintillation Counter Analysis Detail Report
Prep Batch: 267772

Lab ID: MB 160-267772/1-A | Analyzed: 09/06/16 05:37 | Sigma: 2 | Decay Corrected: No | Ts: 45
Client ID: | Detector: LSC3170 | Dil Fac: 1 | Yield Truncated: Yes | Tb: 45

Analyte	MB Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Technetium 99	0.2068	1.07	1.07	U	pCi/L	3.00	1.81	309.6	301.95	6.880	6.710	0.92500	0.93200	268294

Tracer	MB Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Tc-99m	463.3				pCi/L		441	105	30 - 110

Lab ID: LCS 160-267772/2-A | Analyzed: 09/06/16 06:23 | Sigma: 2 | Decay Corrected: No | Ts: 45
Client ID: | Detector: LSC3170 | Dil Fac: 1 | Yield Truncated: Yes | Tb: 45

Analyte	LCS Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Technetium 99	193.4	4.21	19.0		pCi/L	3.00	1.79	9360	301.95	208.000	6.710	0.93500	0.93200	268294

Tracer	LCS Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Tc-99m	440.4				pCi/L		422	104	30 - 110

Lab ID: 160-18742-A-13-D MS | Analyzed: 09/06/16 12:31 | Sigma: 2 | Decay Corrected: No | Ts: 45
Client ID: | Detector: LSC3170 | Dil Fac: 1 | Yield Truncated: Yes | Tb: 45

Analyte	MS Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Technetium 99	192.5	4.21	19.0		pCi/L	3.00	1.80	9270	301.95	206.000	6.710	0.93000	0.93200	268294

Tracer	MS Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Tc-99m	488.4				pCi/L		476	103	30 - 110

Lab ID: 160-18742-B-13-C MSD | Analyzed: 09/06/16 13:18 | Sigma: 2 | Decay Corrected: No | Ts: 45
Client ID: | Detector: LSC3170 | Dil Fac: 1 | Yield Truncated: Yes | Tb: 45

Analyte	MSD Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Technetium 99	194.3	4.23	19.1		pCi/L	3.00	1.81	9315	301.95	207.000	6.710	0.92800	0.93200	268294

Tracer	MSD Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Tc-99m	447.3				pCi/L		441	101	30 - 110

Lab ID: 160-18852-2 | Analyzed: 09/06/16 14:04 | Sigma: 2 | Decay Corrected: No | Ts: 45
Client ID: GW-BR10RB-082516 | Detector: LSC3170 | Dil Fac: 1 | Yield Truncated: Yes | Tb: 45

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Technetium 99	-0.162	1.05	1.05	U	pCi/L	3.00	1.80	295.2	301.95	6.560	6.710	0.93400	0.93200	268294

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Tc-99m	450				pCi/L		422	107	30 - 110

Liquid Scintillation Counter Analysis Detail Report
Prep Batch: 267772

Lab ID: 160-18852-3 Analyzed: 09/06/16 14:50 Sigma: 2 Decay Corrected: No Ts: 45
Client ID: GW-GWJJ-082516 Detector: LSC3170 Dil Fac: 1 Yield Truncated: Yes Tb: 45

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Technetium 99	4.12	1.28	1.34		pCi/L	3.00	1.91	481.5	301.95	10.700	6.710	0.93500	0.93200	268294

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Tc-99m	447				pCi/L		476	93.9	30 - 110

Lab ID: 160-18852-4 Analyzed: 09/06/16 15:36 Sigma: 2 Decay Corrected: No Ts: 45
Client ID: GW-BR13JC-082516 Detector: LSC3170 Dil Fac: 1 Yield Truncated: Yes Tb: 45

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Technetium 99	-0.117	1.05	1.05	U	pCi/L	3.00	1.80	296.55	301.95	6.590	6.710	0.93300	0.93200	268294

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Tc-99m	486				pCi/L		441	110	30 - 110

Lab ID: 160-18852-5 Analyzed: 09/06/16 16:22 Sigma: 2 Decay Corrected: No Ts: 45
Client ID: GW-BR04JC-082516 Detector: LSC3170 Dil Fac: 1 Yield Truncated: Yes Tb: 45

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Technetium 99	-0.266	1.10	1.10	U	pCi/L	3.00	1.90	290.7	301.95	6.460	6.710	0.93200	0.93200	268294

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Tc-99m	451				pCi/L		476	94.8	30 - 110

Lab ID: 160-18852-11 Analyzed: 09/06/16 17:08 Sigma: 2 Decay Corrected: No Ts: 45
Client ID: GW-NB34-082516 Detector: LSC3170 Dil Fac: 1 Yield Truncated: Yes Tb: 45

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Cs	Cb	CPMs	CPMb	EFFs	EFFb	Anly Batch
Technetium 99	4.50	1.22	1.30		pCi/L	3.00	1.80	508.5	301.95	11.300	6.710	0.93200	0.93200	268294

Tracer	Result	Count Unc	Total Unc	Qualifier	Unit	MDC	Spike Added	% Rec	% Rec Limits
Tc-99m	458				pCi/L		441	104	30 - 110

Liquid Scintillation Counter Analysis Detail Report
Prep Batch: 267772

Quality Control Summary

Method Blank ID:	Analyte	Parent Result	Spike Added	MB Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
MB 160-267772/1-A	Technetium 99			0.2068	U	pCi/L							.38707144

Lab Control Sample ID:	Analyte	Parent Result	Spike Added	LCS Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
LCS 160-267772/2-A	Technetium 99		206	193.4		pCi/L	94	75 - 125					-.9066317

Matrix Spike ID:	Analyte	Parent Result	Spike Added	MS Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
160-18742-A-13-D MS	Technetium 99	0.513	206	192.5		pCi/L	93	68 - 121	1				

Matrix Spike Duplicate ID:	Analyte	Parent Result	Spike Added	MSD Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	RER Limit	Z Factor
160-18742-B-13-C MSD	Technetium 99	0.513	206	194.3		pCi/L	94	68 - 121	1	0.05	0.13	1	

Glossary:

Ts = Count Duration, Sample
Tb = Count Duration, Background
Cs = Total Counts, Sample
Cb = Total Counts, Background
CPMs = Counts Per Minute, Sample
CPMb = Counts Per Minute, Background
EFFs = Efficiency, Sample
EFFb = Efficiency, Background

LIQUID SCINTILLATION COUNTER BATCH WORKSHEET

Lab Name: TestAmerica St. Louis Job No.: 160-18852-1

SDG No.:

Batch Number: 267772 Batch Start Date: 09/01/16 14:31 Batch Analyst: Burt, Matthew R

Batch Method: Ext_Chrom_LSC Batch End Date: 09/02/16 13:52

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	Tc (T) Dil #2 00247	Tc-99 00019			
MB 160-267772/1		Ext_Chrom_LSC, TC-02-RC		500.97 mL	0.3 mL				
LCS 160-267772/2		Ext_Chrom_LSC, TC-02-RC		500.19 mL	0.3 mL	1 mL			
160-18742-A-13 MS		Ext_Chrom_LSC, TC-02-RC	T	500.22 mL	0.3 mL	1 mL			
160-18742-B-13 MSD		Ext_Chrom_LSC, TC-02-RC	T	500.39 mL	0.3 mL	1 mL			
160-18852-B-2	GW-BR10RB-082516	Ext_Chrom_LSC, TC-02-RC	T	500.34 mL	0.3 mL				
160-18852-B-3	GW-GWJJ-082516	Ext_Chrom_LSC, TC-02-RC	T	500.49 mL	0.3 mL				
160-18852-B-4	GW-BR13JC-082516	Ext_Chrom_LSC, TC-02-RC	T	500.78 mL	0.3 mL				
160-18852-B-5	GW-BR04JC-082516	Ext_Chrom_LSC, TC-02-RC	T	500.96 mL	0.3 mL				
160-18852-B-11	GW-NB34-082516	Ext_Chrom_LSC, TC-02-RC	T	500.62 mL	0.3 mL				

Batch Notes	
Balance ID	1122021820
Pipette ID	SEP003
Analyst ID - Reagent Drop Witness	MCJ per MRB
Analyst ID - Reagent Drop	MRB
SOP Number	ST-RC-0125

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Tc99_2016 Protocol 8

Assay Definition-

Assay Description:

Assay Type: DPM (Single)
Report Name: Tc99_Protocol 8
Output Data Path: \Stlfs01\rad\Upload\PACK_LSC_3170
Raw Results Path: C:\Packard\Tricarb\Results\Default\Tc99_2016 Protocol 8\20160906_0450
\20160906_0450.results
Assay File Name: C:\Packard\TriCarb\Assays\Tc99_2016 Protocol 8.lsa

Count Conditions-

Nuclide: Tc99_2016
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 15 sec
  Pre-Count Delay (min): 0.00
Quench Set:
  Low Energy: Tc99_2016
Count Time (min): 45.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: On - Any Region

Regions	LL	UL	2Sigma % Terminator
A	0.0	292.0	1.50
B	2.0	292.0	0.00
C	292.1	450.0	0.00

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

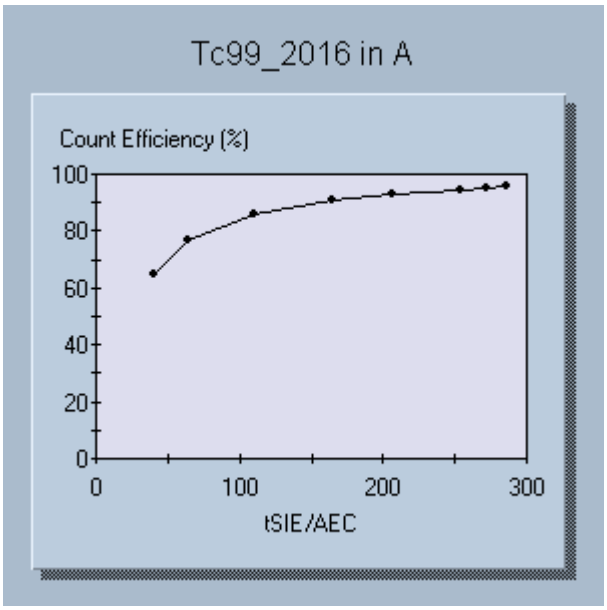
Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results
Quench Curve Block Data

Tc99_2016 Protocol 8

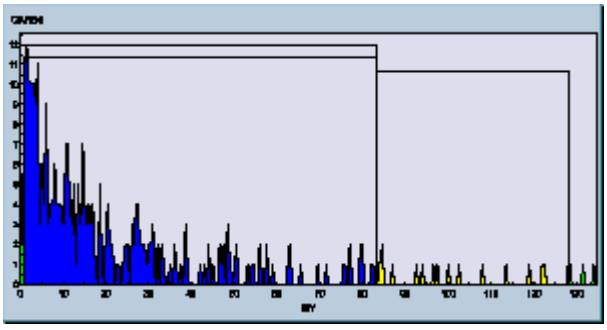


Date Acquired: 06/09/2016
Date Modified:
Tc99_2016 in A

tSIE/AEC	Count Efficiency (%)
285.51	95.61
272.05	95.12
254.47	94.42
207.12	93.11
164.10	91.03
109.60	86.22
63.62	76.43
40.24	64.64

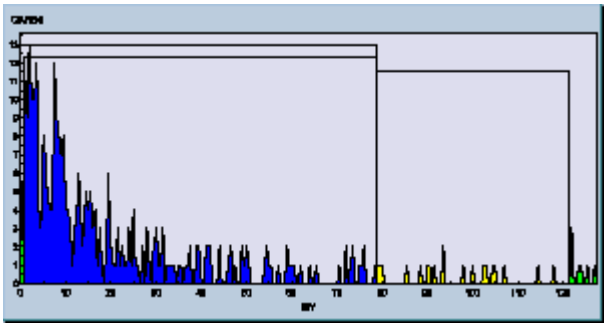
S#	SMPL_ID	Count Time	CPMA	DPM1	TIME	DATE	EFF	tSIE	LUM	MESSAGES
1	BKG	45.00	6.71e+000	7.20e+000	4:50:59 AM	9/6/2016	1	212.16	100	

SpectraView Block Data



2	MB 160-267772/1-A	45.00	6.88e+000	7.43e+000	5:37:07 AM	9/6/2016	1	195.33	100	

SpectraView Block Data



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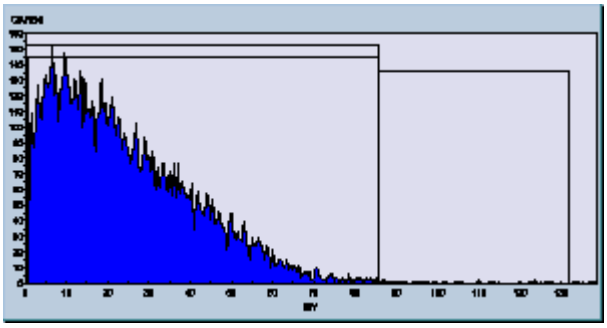
3 LCS 160-267772/2-A 45.00 2.08e+002 2.22e+002 6:23:11 AM
9/6/2016 1 221.18 100

SpectraView Block Data



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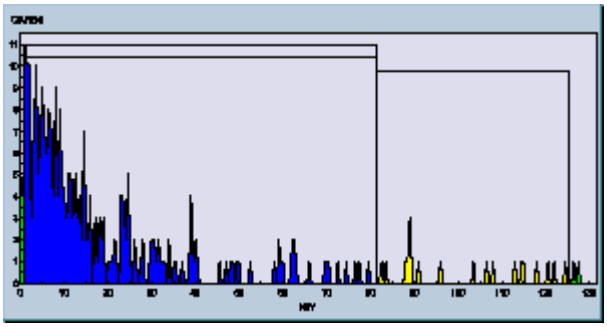
4 160-18742-B-4-B 45.00 6.20e+000 6.67e+000 7:09:18 AM
9/6/2016 1 204.89 100

SpectraView Block Data

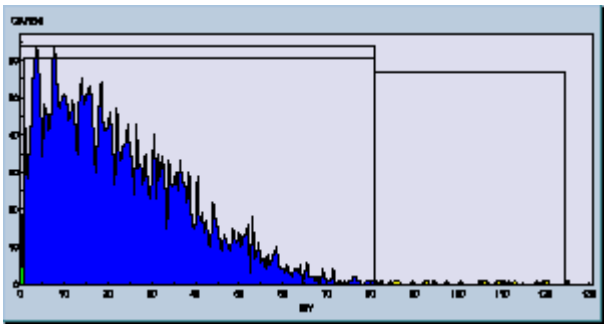


---

5 160-18742-B-5-B 45.00 8.00e+001 8.61e+001 7:55:24 AM
9/6/2016 1 203.23 100

SpectraView Block Data

Tc99_2016 Protocol 8



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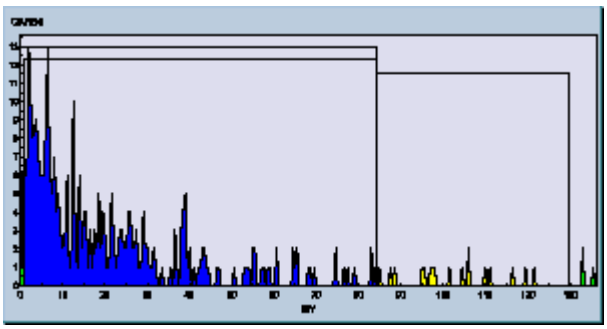
6 160-18742-A-6-A 45.00 7.14e+000 7.65e+000 8:41:32 AM
9/6/2016 1 215.92 100

SpectraView Block Data



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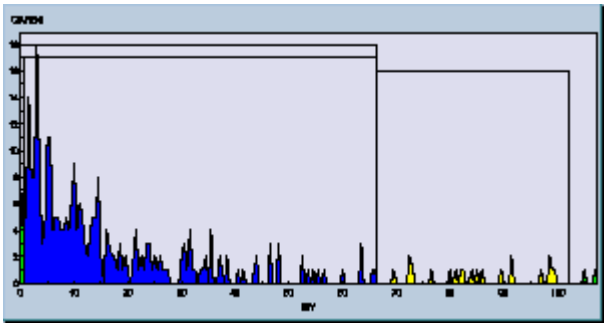
7 160-18742-B-7-A 45.00 6.32e+000 7.06e+000 9:27:37 AM
9/6/2016 1 147.84 100

SpectraView Block Data



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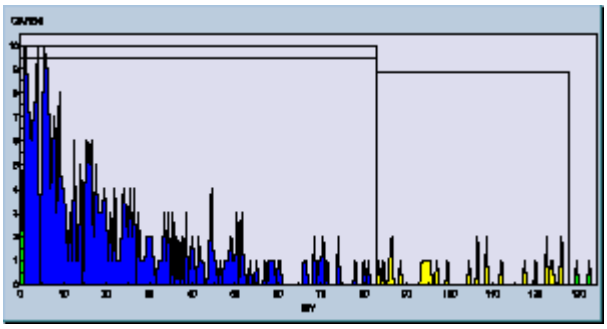
8 160-18742-B-8-A 45.00 7.02e+000 7.53e+000 10:13:43 AM
9/6/2016 1 211.09 100

SpectraView Block Data



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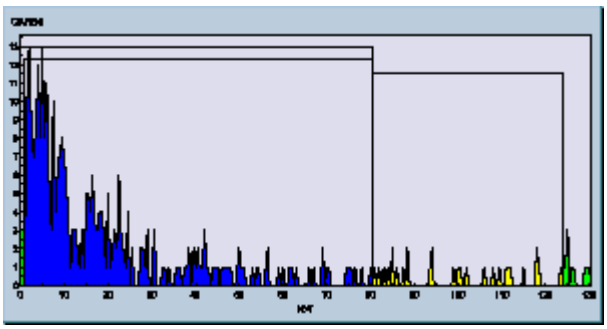
9 160-18742-B-12-B 45.00 7.16e+000 7.71e+000 10:59:49 AM
9/6/2016 1 201.87 100

SpectraView Block Data

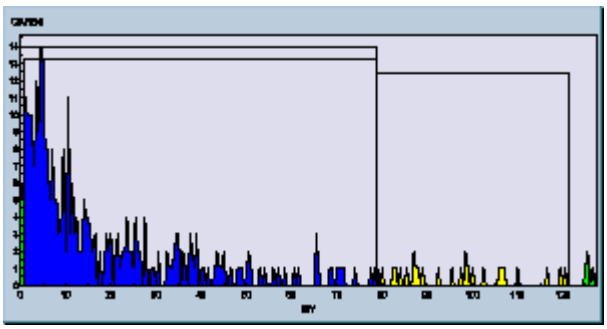


Recounted due to MDC>RL.
09/12/2016 ALD

---

10 160-18742-A-13-C 45.00 7.19e+000 7.77e+000 11:45:54 AM
9/6/2016 1 195.35 100

SpectraView Block Data



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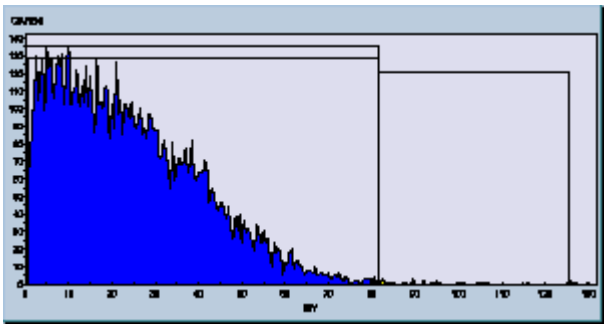
11 160-18742-A-13-D MS 45.00 2.06e+002 2.21e+002 12:31:59 PM
9/6/2016 1 205.71 100

SpectraView Block Data



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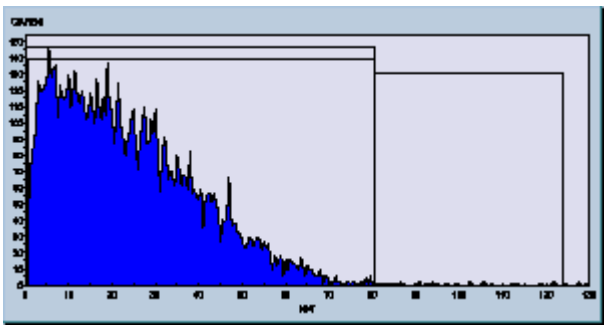
12 160-18742-B-13-C MSD 45.00 2.07e+002 2.23e+002 1:18:06 PM 9/6/2016 1 201.58 100

SpectraView Block Data



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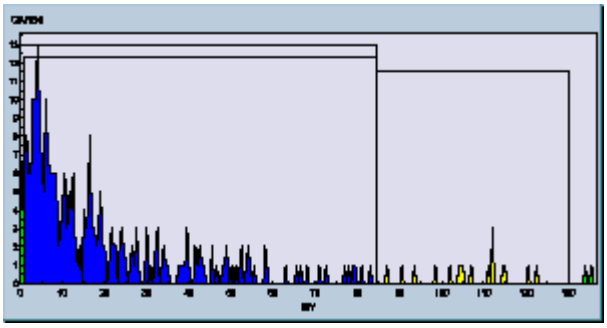
13 160-18852-B-2-B 45.00 6.56e+000 7.02e+000 2:04:18 PM 9/6/2016 1 216.95 100

SpectraView Block Data



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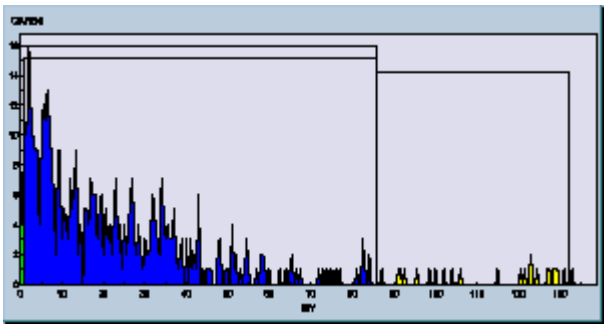
14 160-18852-B-3-B 45.00 1.07e+001 1.15e+001 2:50:24 PM 9/6/2016 1 221.92 100

SpectraView Block Data



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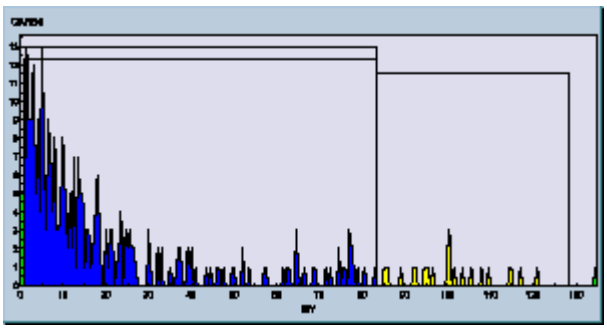
15 160-18852-B-4-A 45.00 6.59e+000 7.07e+000 3:36:30 PM 9/6/2016 1 212.62 100

SpectraView Block Data



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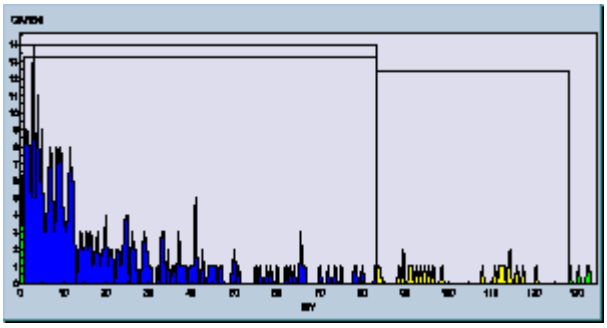
16 160-18852-B-5-B 45.00 6.46e+000 6.92e+000 4:22:36 PM 9/6/2016 1 212.20 100

SpectraView Block Data

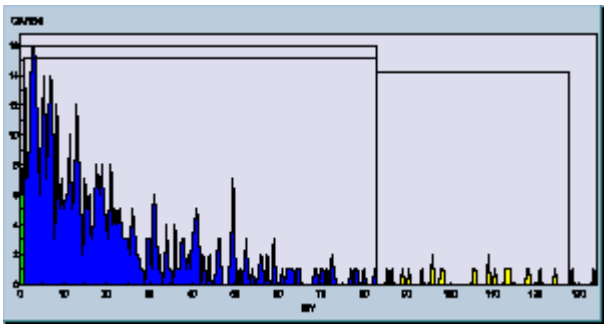


---

17 160-18852-B-11-B 45.00 1.13e+001 1.22e+001 5:08:42 PM 9/6/2016 1 211.04 100

SpectraView Block Data

Tc99_2016 Protocol 8



ERROR: undefinedfilename
OFFENDING COMMAND: C:\DOCUME~1\STLCOU~1\LOCALS~1\Temp\PDFCreator\Spool\24E2263D52D64043999

STACK:

Daily Checks

SNC Protocol

Calibration Information
Software Version IC: 2.12
Software Version EC: 2.03
Instrument Model: Tri-Carb 3170TR/SL
Instrument Serial Number: 429774
3H Chi Square: 20.24 Date Processed: 9/6/2016 2:02:10 AM
14C Chi Square: 20.81 Date Processed: 9/6/2016 2:02:10 AM
3H E^2/B (1-18.6 keV): 1957.64 Date Processed: 9/6/2016 2:02:10 AM
14C E^2/B (4-156 keV): 8826.23 Date Processed: 9/6/2016 2:02:10 AM
3H Efficiency (0-18.6 keV): 62.54 Date Processed: 9/6/2016 2:02:10 AM
14C Efficiency (0-156 keV): 95.69 Date Processed: 9/6/2016 2:02:10 AM
IPA Background Date Processed: 9/6/2016 2:02:10 AM
3H Background CPM (0-18.6 keV): 2.04 Date Processed: 9/6/2016 2:02:10 AM
14C Background CPM (0-156 keV): 2.18 Date Processed: 9/6/2016 2:02:10 AM
3H Calibration DPM: 286200
3H Reference Date: 2/23/2016
14C Calibration DPM: 112100

Initial Calibrations

Technecium-99 Initial Calibration
2016
LSC 3170

Tc-99 Initial Calibration

STD: Tc-99_00007 (6345)
Activity: 22186dpm/mL
Reference Date: 1/1/2000

Vial #	Insta Gel (mL)	Teva Column	Tc-99_00007 (6345) (mL)	DI Water (mL)	Nitromethane (uL)
1	11	1	0.1	3.9	0
2	10.5	1	0.1	4.4	0
3	10	1	0.1	4.9	0
4	10	1	0.1	4.9	10
5	10	1	0.1	4.9	25
6	10	1	0.1	4.9	50
7	10	1	0.1	4.9	100
8	10	1	0.1	4.9	150

0.25mL of 2M HNO_3 was added to vials to mimic the tracer amount added to counting standards (A, B, C).

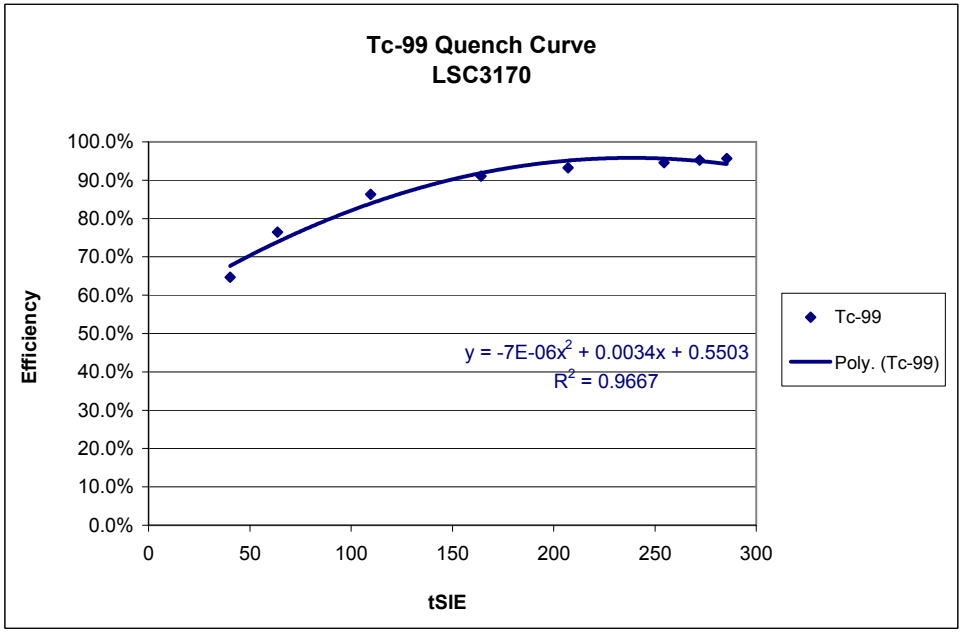
Teva column: conditioned with 5mL 0.01M HNO_3.

Prepared by: Rachel T. Mueller and Amanda L. Dick
Date: 6/8/2016

Tc-99 Quench Curve (IC)
LSC3170

Position	Known (DPM)	CPM	Count (Min)	Counts	Quench (tSIE)	(tSIE)^2	Efficiency
1	2219	2123	60	127380	285.51	81515.96	95.7%
2	2219	2113	60	126780	272.05	74011.2	95.2%
3	2219	2098	60	125880	254.47	64754.98	94.6%
4	2219	2068	60	124080	207.12	42898.69	93.2%
5	2219	2021	60	121260	164.1	26928.81	91.1%
6	2219	1915	60	114900	109.6	12012.16	86.3%
7	2219	1697	60	101820	63.62	4047.504	76.5%
8	2219	1435	60	86100	40.24	1619.258	64.7%
9							

Count Date: 6/9/2016
Standard used: Tc-99_00007 (6345); 22186 dpm/



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.983207228
R Square	0.966696454
Adjusted R Squ	0.953375035
Standard Error	0.024001586
Observations	8

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	0.083608326	0.041804	72.567081	0.000202407
Residual	5	0.002880381	0.000576		
Total	7	0.086488707			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	0.550337873	0.034789363	15.81914	1.836E-05	0.460908969	0.63976678
X Variable 1	0.003421527	0.000515783	6.633656	0.0011728	0.002095665	0.00474739
X Variable 2	-7.1761E-06	1.53674E-06	-4.66969	0.0054841	-1.11264E-05	-3.226E-06

RESIDUAL OUTPUT

Observation	*Predicted Y*	*Residuals*	*%Diff*
1	0.942252227	0.014657536	1.6%
2	0.95005329	0.002349126	0.2%
3	0.956326324	-0.010684929	-1.1%
4	0.951159698	-0.019040344	-2.0%
5	0.91856693	-0.007632106	-0.8%
6	0.839136922	0.024020024	2.9%
7	0.738970185	0.025926597	3.5%
8	0.676400195	-0.029595904	-4.4%

1st Level Reviewed: ALD 07/08/2016

2nd Level Reviewed: RM 07/08/2016

FORM: Tc99_3170_2016_Quench Curve.xls Revised: 6/7/2016

Tc99_2016 Quench Curve

Assay Definition-

Assay Description:

Assay Type: Quench Standards
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\
Raw Results Path: C:\Packard\Tricarb\Results\Default\Tc99_2016 Quench Curve\20160609_1054\20160609_1054.results
Assay File Name: C:\Packard\TriCarb\Assays\Tc99_2016 Quench Curve.lsa

Count Conditions-

Nuclide: Tc99_2016
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 60.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: n/a
#Vials/Sample: n/a Calculate % Reference: n/a

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: On - Any Region

Regions	LL	UL	2Sigma % Terminator
A	0.0	2000.0	0.50

Count Corrections-

Static Controller: On Luminescence Correction: n/a
Colored Samples: On Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

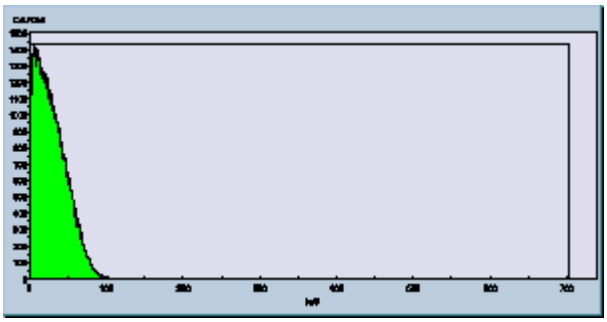
Regions	Half Life	Units	Reference Date	Reference Time
A				

Cycle 1 Results

S#	Count Time	CPMA	SIS	tSIE	MESSAGES
1	60.00	2123	94.92	285.51	S

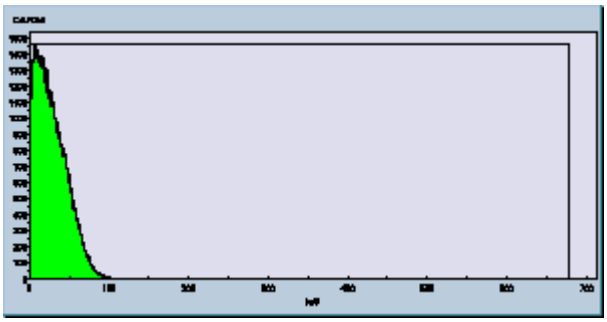
SpectraView Block Data

Tc99_2016 Quench Curve



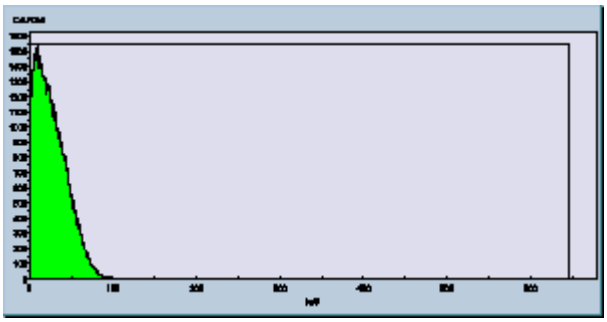
2	60.00	2113	92.07	272.05	S

SpectraView Block Data



3	60.00	2098	88.48	254.47	S

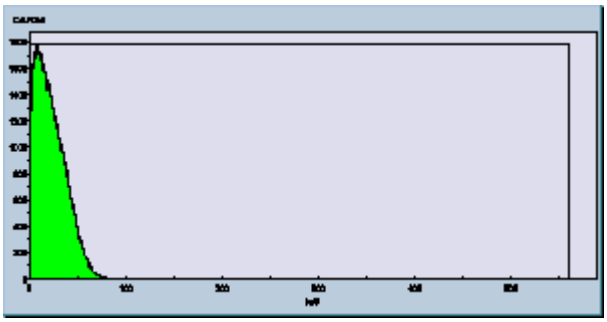
SpectraView Block Data



4	60.00	2068	74.06	207.12	S

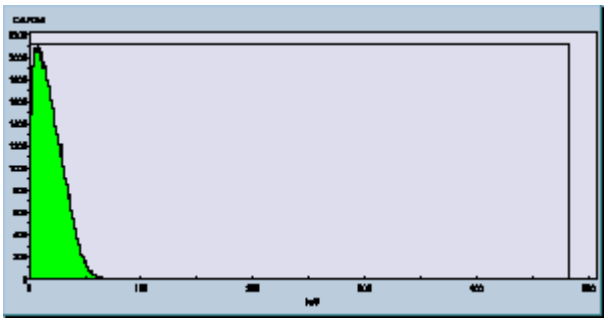
SpectraView Block Data

Tc99_2016 Quench Curve



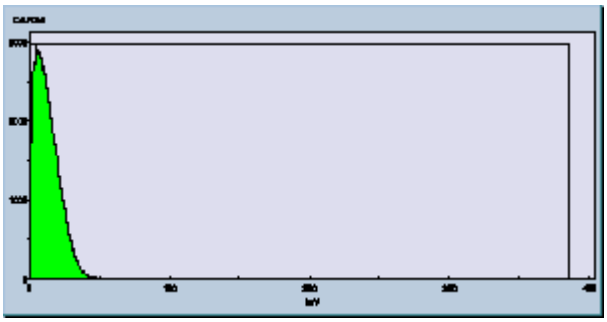
5	60.00	2021	60.60	164.10	S

SpectraView Block Data



6	60.00	1915	42.64	109.60	S

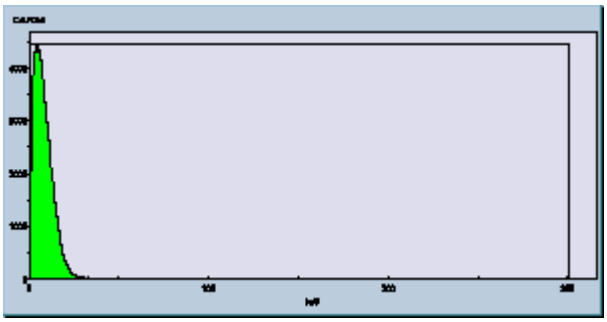
SpectraView Block Data



7	60.00	1697	26.28	63.62	S

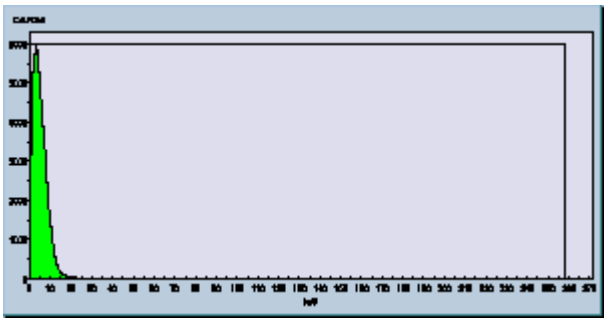
SpectraView Block Data

Tc99_2016 Quench Curve

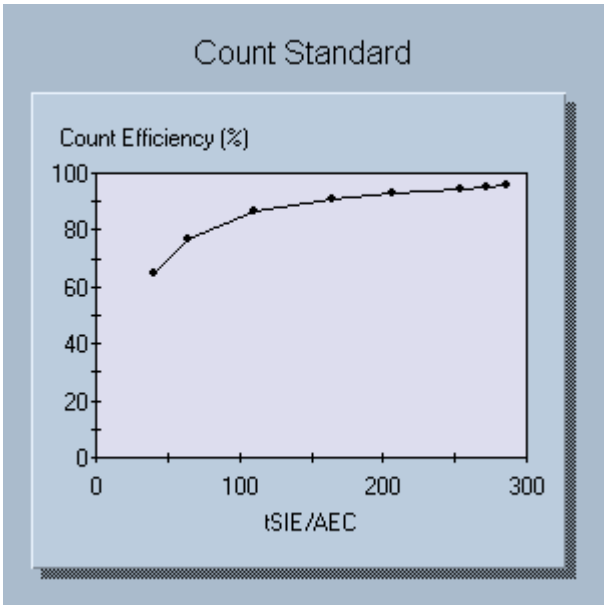


8	60.00	1435	17.89	40.24	S

SpectraView Block Data



Quench Curve Block Data



Date Acquired: 6/10/2016
Date Modified:
Count Standard

tSIE/AEC	Count Efficiency (%)
285.51	95.68

Tc99_2016 Quench Curve

272.05	95.21
254.47	94.53
207.12	93.19
164.10	91.09
109.60	86.28
63.62	76.49
40.24	64.67

Initial Calibration Verifications

Technecium-99 Initial Calibration Verification
2016
LSC 3170

Tc-99 Initial Calibration Verification:

Std #: Tc-99_00019 (869867)
Activity: 228.82dpm/mL
Reference Date: 9/1/1996

Vial #	InstaGel (mL)	Teva Column	Tc-99_00019 (869867) (mL)	DI Water (mL)	Nitromethane (uL)
1	10	1	1	4	0
2	10	1	1	4	25
3	10	1	1	4	100

0.25mL of 2M HNO_3 was added to vials to mimic the tracer amount added to counting standards (A, B, C).

Teva column: conditioned with 5mL 0.01M HNO_3.

Prepared By: Rachel T. Mueller and Amanda L. Dick
Date: 9/1/2016

Tc-99 Verification
LSC3170

Recovery

	CPM	Cnt (Min)	Counts	tSIE	Eff	DPM	Known	Recovery
Analyte ICV 1	203.73	60	12223.8	219.42	0.9556	213	229	93.2%
Analyte ICV 2	200.73	60	12043.8	164.04	0.9185	219	229	95.4%
Analyte ICV 3	166.73	60	10003.8	78.38	0.7744	215	229	94.0%
							Avg:	94.2%

Count Date: 6/13/2016

Tc99_2016 Protocol 8

Assay Definition-

Assay Description:

Assay Type: DPM (Single)
Report Name: Tc99_Protocol 8
Output Data Path: \Stlfs01\rad\Upload\PACK_LSC_3170
Raw Results Path: C:\Packard\Tricarb\Results\Default\Tc99_2016 Protocol 8\20160613_1722
\20160613_1722.results
Assay File Name: C:\Packard\TriCarb\Assays\Tc99_2016 Protocol 8.lsa

Count Conditions-

Nuclide: Tc99_2016
   Quench Indicator: tSIE
   External Std Terminator (sec): 15 sec
   Pre-Count Delay (min): 0.00
Quench Set:
   Low Energy: Tc99_2016
Count Time (min): 60.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: On - Any Region

Regions	LL	UL	2Sigma % Terminator
A	0.0	292.0	1.50
B	2.0	292.0	0.00
C	292.1	450.0	0.00

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

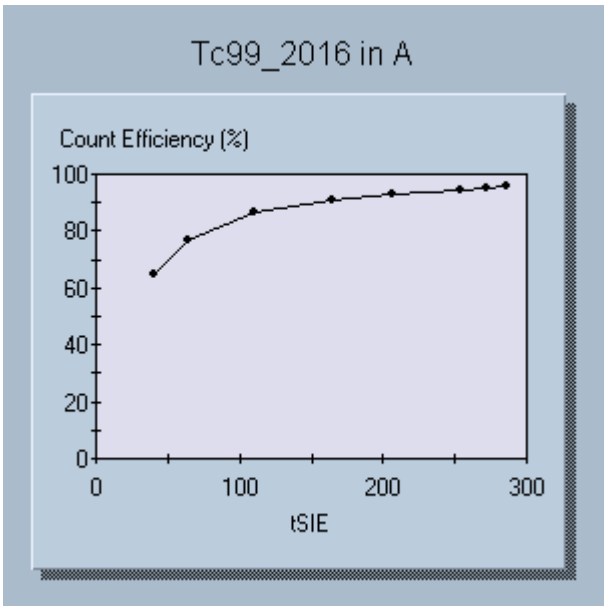
Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results
Quench Curve Block Data

Tc99_2016 Protocol 8

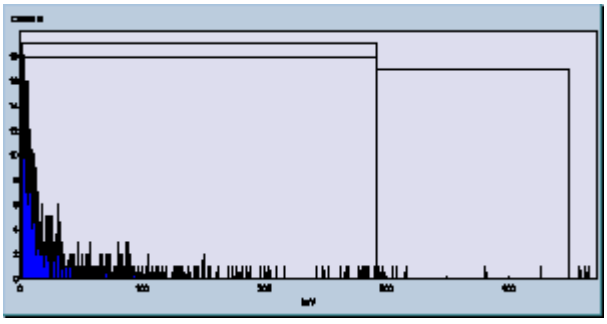


Date Acquired: 06/09/2016
Date Modified:
Tc99_2016 in A

tSIE	Count Efficiency (%)
285.51	95.67
272.05	95.19
254.47	94.51
207.12	93.18
164.10	91.09
109.60	86.28
63.62	76.48
40.24	64.68

S#	SMPL_ID	Count Time	CPMA	DPM1	TIME	DATE	EFF	tSIE	LUM	MESSAGES
1	BKG	60.00	9.27e+000	9.73e+000	5:23:06 PM	6/13/2016	1	272.46	100	

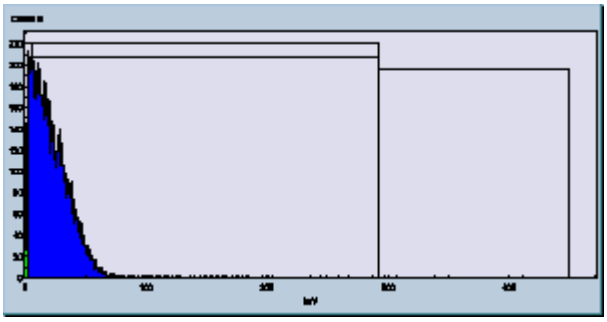
SpectraView Block Data



2	ICV 1	60.00	2.13e+002	2.28e+002	6:25:08 PM	6/13/2016	1	219.42	100	

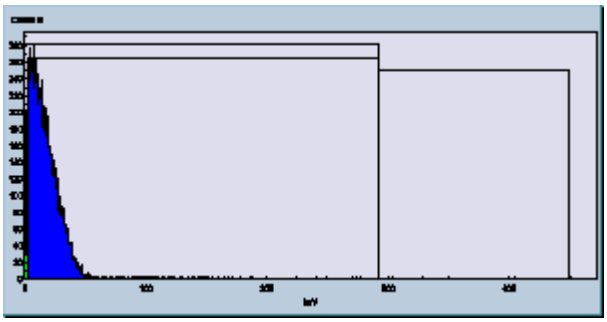
SpectraView Block Data

Tc99_2016 Protocol 8



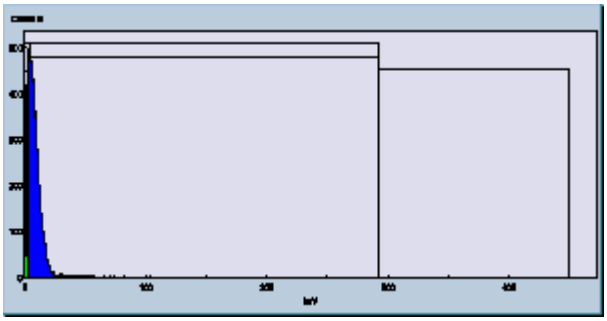
3			ICV	2	60.00	2.10e+002	2.30e+002	7:27:09 PM	6/13/2016	1	164.04	100

SpectraView Block Data



4			ICV	3	60.00	1.76e+002	2.21e+002	8:29:06 PM	6/13/2016	1	78.38	100

SpectraView Block Data



Run Logs

Liquid Scintillation Counter Run Log

Detector: LSC3170 **Serial Number: 429774**

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
06/09/16 12:00		IC 160-257601/1		257601			ALD
06/13/16 12:00		ICV 160-257601/2		257601			ALD
09/06/16 02:02		CCV 160-268848/1		268848			ALD
09/06/16 04:50		BBKG 160-268294/1		268294			
09/06/16 05:37	45	MB 160-267772/1-A		268294	267772	TC-02-RC	ALD
09/06/16 06:23	45	LCS 160-267772/2-A		268294	267772	TC-02-RC	ALD
09/06/16 07:09	45	ZZZZZ		268294			
09/06/16 07:55	45	ZZZZZ		268294			
09/06/16 08:41	45	ZZZZZ		268294			
09/06/16 09:27	45	ZZZZZ		268294			
09/06/16 10:13	45	ZZZZZ		268294			
09/06/16 10:59	45	ZZZZZ		268294			
09/06/16 11:45	45	ZZZZZ		268294			
09/06/16 12:31	45	160-18742-A-13-D MS		268294	267772	TC-02-RC	ALD
09/06/16 13:18	45	160-18742-B-13-C MSD		268294	267772	TC-02-RC	ALD
09/06/16 14:04	45	160-18852-2	GW-BR10RB-082516	268294	267772	TC-02-RC	ALD
09/06/16 14:50	45	160-18852-3	GW-GWJJ-082516	268294	267772	TC-02-RC	ALD
09/06/16 15:36	45	160-18852-4	GW-BR13JC-082516	268294	267772	TC-02-RC	ALD
09/06/16 16:22	45	160-18852-5	GW-BR04JC-082516	268294	267772	TC-02-RC	ALD
09/06/16 17:08	45	160-18852-11	GW-NB34-082516	268294	267772	TC-02-RC	ALD

Shipping and Receiving Documents

FORM HDP-PR-QA-006-1
CHAIN OF CUSTODY

Instructions: Each time the container is transferred to another organization, a person from each organization should sign the CoC. The Laboratory/End User must verify that the sample is correctly identified before the sample is released for use or analysis and send the completed CoC to HDP.

Chain of Cutody ID No. 082516-01 **Page** 1/2

Project Name:
Westinghouse Electric Company

Contact Person:
W. Clark Evers

Phone Number:
314-810-3336

Sampler Name:
Thomas Yardy

Laboratory Name:
TA-MO

Laboratory Address:
13715 Rider Trail North
Earth City, MO 63045

Phone No.
314-298-8566

Laboratory Contact Person:
Ivan Vania

Phone No.
708-870-8453

Turn Around Time
Normal (21 days)

Sample ID	Date	Time	Matrix	Comp (C) or Grab (G)	Gross Alpha/Beta (Total)	Isotopic Uranium	Tc-99	TSS	VOCs						Total Containers	Remarks
					Requested Analysis											
TB-082516	8/25/2016	7:00	L	G					X						2	Trip Blank
GW-BR10RB-082516	8/25/2016	8:00	L	G		X	X		X						4	3Q16 IGMP Sampling Event
GW-GWJJ-082516	8/25/2016	8:35	L	G		X	X		X						4	3Q16 IGMP Sampling Event
GW-BR13JC-082516	8/25/2016	9:25	L	G		X	X		X						4	3Q16 IGMP Sampling Event
GW-BR04JC-082516	8/25/2016	10:05	L	G		X	X		X						4	3Q16 IGMP Sampling Event
GW-BR08JC-082516	8/25/2016	10:40	L	G					X						2	3Q16 IGMP Sampling Event
GW-BR08JC-082516-FD	8/25/2016	10:40	L	G					X						2	3Q16 IGMP Sampling Event
GW-BR08JC-082516-MS	8/25/2016	10:40	L	G					X						2	3Q16 IGMP Sampling Event
GW-BR08JC-082516-MSD	8/25/2016	10:40	L	G					X						2	3Q16 IGMP Sampling Event
GW-BR10JC-082516	8/25/2016	13:10	L	G					X						2	3Q16 IGMP Sampling Event
GW-NB72-082516	8/25/2016	13:40	L	G					X						2	3Q16 IGMP Sampling Event
GW-NB73-082516	8/25/2016	14:10	L	G					X						2	3Q16 IGMP Sampling Event

160-18852 Chain of Custody

Relinquished by:	Date/Time	Received by:	Date/Time	Total Number of Containers:	Cooler Temperature:
M. DeKeyser	8-29-16 0900		8-29-16 09:00	36	4 Degrees C
Company Name: WEC		Company Name: CROSS ROADS		Container ID: N/A	Shipper and Numbe
Received by:	Date/Time	Relinquished by:	Date/Time	Comments: PO #4500404709	
Company Name:		Company Name:			
Relinquished by:	Date/Time	Received by:	Date/Time	Verified By: M. DeKeyser 8-25-16	
Company Name: CROSS ROADS	8-29-16 11:10	Company Name: TA-STL	8-29-16 11:10		

FORM HDP-PR-QA-006-1
CHAIN OF CUSTODY

Instructions: Each time the container is transferred to another organization, a person from each organization should sign the CoC. The Laboratory/End User must verify that the sample is correctly identified before the sample is released for use or analysis and send the completed CoC to HDP.

Chain of Cutody ID No. 082516-01 **Page** 2/2

Project Name:
Westinghouse Electric Company

Contact Person:
W. Clark Evers

Phone Number:
314-810-3336

Sampler Name:
Thomas Yardy

Laboratory Name:
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Laboratory Address:
13715 Rider Trail North
Earth City, MO 63045

Phone No.
314-298-8566

Laboratory Contact Person:
Ivan Vania

Phone No.
708-870-8453

Turn Around Time
Normal (21 days)

Sample ID	Date	Time	Matrix	Comp (C) or Grab (G)	Gross Alpha/Beta (Total)	Isotopic Uranium	Tc-99	TSS	VOCs						Total Containers	Remarks
					Requested Analysis											
GW-NB34-082516	8/25/2016	14:55	L	G		X	X		X						4	3Q16 IGMP Sampling Event

Relinquished by:	Date/Time	Received by:	Date/Time	Total Number of Containers:	Cooler Temperature:
M. DeKeyser	8-29-16 0900	[signature] 3815	8-29-16 09:00	36	4 Degrees C
Company Name: WEC		Company Name: CROSS BOADS		Container ID: N/A	Shipper and Number:
Received by:	Date/Time	Relinquished by:	Date/Time	Comments: PO #4500404709	
Company Name:		Company Name:			
Relinquished by: [signature] 3815	Date/Time 8-29-16 11:10	Received by: C DeKeyser	Date/Time 8-29-16 11:10	Verified By: M. DeKeyser 8-25-16	
Company Name: CROSS BOADS		Company Name: TA St. Louis			

Login Sample Receipt Checklist

Client: Westinghouse Electric Company LLC

Job Number: 160-18852-1

Login Number: 18852
List Number: 1
Creator: Dedner, Connie L

List Source: TestAmerica St. Louis

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	