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ANALYTICAL REPORT

Job Number: 160-36526-1

Job Description: ACMS - Yerington OU-4B_OU-5_SOIL

Contract Number: EPSCM 2017-009//BP01498843

For:
Wood E&I Solutions Inc
10940 White Rock Road Suite 190
Rancho Cordova, CA 95670

Attention: Kent Parrish

Approved for release.
Jayna K Awalt
Project Manager II
12/31/2019 9:41 AM

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12/31/2019

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.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Job Number: 160-36526-1

Job Description: ACMS - Yerington OU-4B_OU-5_SOIL

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the BPLAMP Technical Specifications, applicable federal, state, local regulations and certification requirements as well as the methodologies as described in laboratory SOPs reviewed by the BPLAMP. This Laboratory Report is confidential and is intended for the sole use of Eurofins TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. The signature on the cover page extends to the case narrative and all the data and forms in the package. The Chain of Custody is included and is an integral part of this report.

Approved for release.
Jayna K Awalt
Project Manager II
12/31/2019 9:41 AM

Jayna K Awalt

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Definitions/Glossary

Client: Wood E&I Solutions Inc
Job ID: 160-36526-1
Project/Site: ACMS - Yerington OU-4B_OU-5_SOIL

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
V	Serial Dilution exceeds the control limits

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
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 (Radiochemistry)
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: Wood E&I Solutions Inc

Project: ACMS - Yerington OU-4B_OU-5_SOIL

Report Number: 160-36526-1

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.

Eurofins TestAmerica, St. Louis attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins 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."

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Manual Integrations and ROIs were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

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

RECEIPT

The samples were received on 11/26/2019 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were -0.1º C and 0.0º C.

METALS (ICPMS)

Samples STSB27_0-0.5 (160-36526-1), STSB27_0.5-3 (160-36526-2), STSB27_3-6 (160-36526-3), STSB27_6-15 (160-36526-4), STSB28_0-0.5 (160-36526-5), STSB28-FD_0-0.5 (160-36526-6), STSB28_0.5-3 (160-36526-7), STSB28_3-6 (160-36526-8), STSB28_6-15 (160-36526-9), STSB29_0-0.5 (160-36526-10), STSB29_0.5-3 (160-36526-11), STSB29_3-6 (160-36526-12), STSB29_6-15 (160-36526-13), STSB29-FD_6-15 (160-36526-14), STSB30_0-0.5 (160-36526-15), STSB30_0.5-3 (160-36526-16), STSB30_3-6 (160-36526-17), STSB30_6-15 (160-36526-18), STSB31_0-0.5 (160-36526-19), STSB31_0.5-3 (160-36526-20), STSB31_3-6 (160-36526-21) and STSB31_6-15 (160-36526-22) were analyzed for metals (ICPMS) in accordance with EPA SW-846 Methods 6020A. The samples were prepared on 12/02/2019 and analyzed on 12/10/2019 and 12/11/2019.

For ICPMS Metals, a 2X dilution was performed. This is a standard dilution that is performed by TestAmerica St. Louis on all samples analyzed by method SW-846 6020A. The dilution is performed in order to have the matrix of the samples (i.e. the concentration of acids) match the matrix of the standards used for calibration and instrument quality control purposes. The MDL studies analyzed by this method undergo the same 2X dilution, and all detection limits are based on this. As such, MDL's and RL's are not affected by the dilution.

The serial dilution performed for the following samples associated with batch preparation batch 160-452612 and analytical batch

160-453935 was outside control limits for Thorium indicating potential matrix interference: (160-36526-B-20-A SD).

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

PERCENT SOLIDS

Samples STSB27_0-0.5 (160-36526-1), STSB27_0.5-3 (160-36526-2), STSB27_3-6 (160-36526-3), STSB27_6-15 (160-36526-4), STSB28_0-0.5 (160-36526-5), STSB28-FD_0-0.5 (160-36526-6), STSB28_0.5-3 (160-36526-7), STSB28_3-6 (160-36526-8), STSB28_6-15 (160-36526-9), STSB29_0-0.5 (160-36526-10), STSB29_0.5-3 (160-36526-11), STSB29_3-6 (160-36526-12), STSB29_6-15 (160-36526-13), STSB29-FD_6-15 (160-36526-14), STSB30_0-0.5 (160-36526-15), STSB30_0.5-3 (160-36526-16), STSB30_3-6 (160-36526-17), STSB30_6-15 (160-36526-18), STSB31_0-0.5 (160-36526-19), STSB31_0.5-3 (160-36526-20), STSB31_3-6 (160-36526-21) and STSB31_6-15 (160-36526-22) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 11/28/2019.

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

RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples STSB27_0-0.5 (160-36526-1), STSB27_0.5-3 (160-36526-2), STSB27_3-6 (160-36526-3), STSB27_6-15 (160-36526-4), STSB28_0-0.5 (160-36526-5), STSB28-FD_0-0.5 (160-36526-6), STSB28_0.5-3 (160-36526-7), STSB28_3-6 (160-36526-8), STSB28_6-15 (160-36526-9), STSB29_0-0.5 (160-36526-10), STSB29_0.5-3 (160-36526-11), STSB29_3-6 (160-36526-12), STSB29_6-15 (160-36526-13), STSB29-FD_6-15 (160-36526-14), STSB30_0-0.5 (160-36526-15), STSB30_0.5-3 (160-36526-16), STSB30_3-6 (160-36526-17), STSB30_6-15 (160-36526-18), STSB31_0-0.5 (160-36526-19), STSB31_0.5-3 (160-36526-20), STSB31_3-6 (160-36526-21) and STSB31_6-15 (160-36526-22) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA 901.1. The samples were dried on 11/29/2019, prepared on 12/01/2019 and analyzed on 12/25/2019.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from	Reported to Analyte
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Pb-212	Po-216
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-211
Th-227	Pb-211
Bi-214	Ra-226

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

Client Sample ID: STSB27_0-0.5
Lab Sample ID: 160-36526-1

Date Collected: 11/21/19 09:15
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.68		0.215	0.277	1.00	0.145	pCi/g	12/01/19 08:08	12/25/19 08:19	1
Radium-228	0.731		0.258	0.269	1.00	0.244	pCi/g	12/01/19 08:08	12/25/19 08:19	1

Client Sample ID: STSB27_0-0.5
Lab Sample ID: 160-36526-1

Date Collected: 11/21/19 09:15
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 98.5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	3.1		0.19	0.084	mg/Kg	☼	12/02/19 10:13	12/10/19 22:15	2
Uranium	1.6		0.093	0.037	mg/Kg	☼	12/02/19 10:13	12/10/19 22:15	2

Client Sample ID: STSB27_0.5-3
Lab Sample ID: 160-36526-2

Date Collected: 11/21/19 09:25
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	2.01		0.230	0.311	1.00	0.146	pCi/g	12/01/19 08:08	12/25/19 08:19	1
Radium-228	0.787		0.188	0.204	1.00	0.197	pCi/g	12/01/19 08:08	12/25/19 08:19	1

Client Sample ID: STSB27_0.5-3
Lab Sample ID: 160-36526-2

Date Collected: 11/21/19 09:25
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 96.7

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	3.3		0.20	0.089	mg/Kg	☼	12/02/19 10:13	12/10/19 22:22	2
Uranium	1.2		0.099	0.039	mg/Kg	☼	12/02/19 10:13	12/10/19 22:22	2

Client Sample ID: STSB27_3-6
Lab Sample ID: 160-36526-3

Date Collected: 11/21/19 09:31
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.96		0.254	0.326	1.00	0.146	pCi/g	12/01/19 08:08	12/25/19 08:20	1
Radium-228	0.702		0.218	0.229	1.00	0.279	pCi/g	12/01/19 08:08	12/25/19 08:20	1

Client Sample ID: STSB27_3-6
Lab Sample ID: 160-36526-3

Date Collected: 11/21/19 09:31
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 95.5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	2.8		0.19	0.088	mg/Kg	☼	12/02/19 10:13	12/10/19 22:28	2

Client Sample ID: STSB27_3-6
Lab Sample ID: 160-36526-3

Date Collected: 11/21/19 09:31
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 95.5

Method: 6020A - Metals (ICP/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	1.0		0.097	0.039	mg/Kg	☼	12/02/19 10:13	12/10/19 22:28	2

Client Sample ID: STSB27_6-15
Lab Sample ID: 160-36526-4

Date Collected: 11/21/19 09:55
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.69		0.247	0.303	1.00	0.168	pCi/g	12/01/19 08:08	12/25/19 09:01	1
Radium-228	1.11		0.312	0.332	1.00	0.310	pCi/g	12/01/19 08:08	12/25/19 09:01	1

Client Sample ID: STSB27_6-15
Lab Sample ID: 160-36526-4

Date Collected: 11/21/19 09:55
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 91.5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	7.4		0.20	0.090	mg/Kg	☼	12/02/19 10:13	12/10/19 22:35	2
Uranium	1.9		0.10	0.040	mg/Kg	☼	12/02/19 10:13	12/10/19 22:35	2

Client Sample ID: STSB28_0-0.5
Lab Sample ID: 160-36526-5

Date Collected: 11/21/19 11:45
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.93		0.216	0.295	1.00	0.113	pCi/g	12/01/19 08:08	12/25/19 09:02	1
Radium-228	0.863		0.225	0.242	1.00	0.258	pCi/g	12/01/19 08:08	12/25/19 09:02	1

Client Sample ID: STSB28_0-0.5
Lab Sample ID: 160-36526-5

Date Collected: 11/21/19 11:45
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 94.9

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	3.5		0.18	0.081	mg/Kg	☼	12/02/19 10:13	12/10/19 22:42	2
Uranium	4.2		0.090	0.036	mg/Kg	☼	12/02/19 10:13	12/10/19 22:42	2

Client Sample ID: STSB28-FD_0-0.5
Lab Sample ID: 160-36526-6

Date Collected: 11/21/19 11:50
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.77		0.255	0.315	1.00	0.175	pCi/g	12/01/19 08:08	12/25/19 09:03	1
Radium-228	0.807		0.249	0.262	1.00	0.213	pCi/g	12/01/19 08:08	12/25/19 09:03	1

Client Sample ID: STSB28-FD_0-0.5
Lab Sample ID: 160-36526-6

Date Collected: 11/21/19 11:50
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 94.8

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	4.0		0.20	0.090	mg/Kg	☼	12/02/19 10:13	12/10/19 22:48	2
Uranium	2.6		0.10	0.040	mg/Kg	☼	12/02/19 10:13	12/10/19 22:48	2

Client Sample ID: STSB28_0.5-3
Lab Sample ID: 160-36526-7

Date Collected: 11/21/19 11:55
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	2.72		0.238	0.370	1.00	0.120	pCi/g	12/01/19 08:08	12/25/19 09:34	1
Radium-228	0.684		0.205	0.216	1.00	0.354	pCi/g	12/01/19 08:08	12/25/19 09:34	1

Client Sample ID: STSB28_0.5-3
Lab Sample ID: 160-36526-7

Date Collected: 11/21/19 11:55
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 95.5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	3.8		0.19	0.087	mg/Kg	☼	12/02/19 10:13	12/10/19 23:15	2
Uranium	1.3		0.097	0.039	mg/Kg	☼	12/02/19 10:13	12/10/19 23:15	2

Client Sample ID: STSB28_3-6
Lab Sample ID: 160-36526-8

Date Collected: 11/21/19 12:15
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	3.11		0.317	0.448	1.00	0.181	pCi/g	12/01/19 08:08	12/25/19 09:35	1
Radium-228	1.13		0.229	0.256	1.00	0.0977	pCi/g	12/01/19 08:08	12/25/19 09:35	1

Client Sample ID: STSB28_3-6
Lab Sample ID: 160-36526-8

Date Collected: 11/21/19 12:15
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 95.3

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	4.2		0.19	0.085	mg/Kg	☼	12/02/19 10:13	12/10/19 23:22	2
Uranium	1.3		0.095	0.038	mg/Kg	☼	12/02/19 10:13	12/10/19 23:22	2

Client Sample ID: STSB28_6-15
Lab Sample ID: 160-36526-9

Date Collected: 11/21/19 12:25
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	2.28		0.339	0.413	1.00	0.205	pCi/g	12/01/19 08:08	12/25/19 09:35	1

Client Sample ID: STSB28_6-15
Lab Sample ID: 160-36526-9
Date Collected: 11/21/19 12:25
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.98		0.337	0.393	1.00	0.174	pCi/g	12/01/19 08:08	12/25/19 09:35	1

Client Sample ID: STSB28_6-15
Lab Sample ID: 160-36526-9
Date Collected: 11/21/19 12:25
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 83.1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	8.1		0.23	0.10	mg/Kg	☼	12/02/19 10:13	12/10/19 23:29	2
Uranium	2.3		0.11	0.046	mg/Kg	☼	12/02/19 10:13	12/10/19 23:29	2

Client Sample ID: STSB29_0-0.5
Lab Sample ID: 160-36526-10
Date Collected: 11/21/19 15:00
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.22		0.230	0.263	1.00	0.175	pCi/g	12/01/19 08:08	12/25/19 09:36	1
Radium-228	0.740		0.165	0.181	1.00	0.245	pCi/g	12/01/19 08:08	12/25/19 09:36	1

Client Sample ID: STSB29_0-0.5
Lab Sample ID: 160-36526-10
Date Collected: 11/21/19 15:00
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 95.5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	4.7		0.19	0.087	mg/Kg	☼	12/02/19 10:13	12/10/19 23:36	2
Uranium	0.74		0.096	0.038	mg/Kg	☼	12/02/19 10:13	12/10/19 23:36	2

Client Sample ID: STSB29_0.5-3
Lab Sample ID: 160-36526-11
Date Collected: 11/21/19 15:10
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.34		0.209	0.251	1.00	0.137	pCi/g	12/01/19 08:08	12/25/19 09:36	1
Radium-228	0.962		0.177	0.202	1.00	0.0877	pCi/g	12/01/19 08:08	12/25/19 09:36	1

Client Sample ID: STSB29_0.5-3
Lab Sample ID: 160-36526-11
Date Collected: 11/21/19 15:10
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 95.4

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	2.9		0.18	0.081	mg/Kg	☼	12/02/19 10:13	12/10/19 23:42	2
Uranium	0.85		0.090	0.036	mg/Kg	☼	12/02/19 10:13	12/10/19 23:42	2

Client Sample ID: STSB29_3-6
Lab Sample ID: 160-36526-12

Date Collected: 11/21/19 15:30
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.14		0.253	0.280	1.00	0.242	pCi/g	12/01/19 08:08	12/25/19 09:37	1
Radium-228	1.16		0.290	0.314	1.00	0.331	pCi/g	12/01/19 08:08	12/25/19 09:37	1

Client Sample ID: STSB29_3-6
Lab Sample ID: 160-36526-12

Date Collected: 11/21/19 15:30
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 95.7

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	7.1		0.19	0.085	mg/Kg	☼	12/02/19 10:13	12/11/19 00:16	2
Uranium	1.4		0.094	0.038	mg/Kg	☼	12/02/19 10:13	12/11/19 00:16	2

Client Sample ID: STSB29_6-15
Lab Sample ID: 160-36526-13

Date Collected: 11/21/19 15:45
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.79		0.360	0.404	1.00	0.291	pCi/g	12/01/19 08:08	12/25/19 10:11	1
Radium-228	1.33		0.345	0.371	1.00	0.206	pCi/g	12/01/19 08:08	12/25/19 10:11	1

Client Sample ID: STSB29_6-15
Lab Sample ID: 160-36526-13

Date Collected: 11/21/19 15:45
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 92.2

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	7.4		0.21	0.094	mg/Kg	☼	12/02/19 10:13	12/11/19 00:43	2
Uranium	1.9		0.10	0.042	mg/Kg	☼	12/02/19 10:13	12/11/19 00:43	2

Client Sample ID: STSB29-FD_6-15
Lab Sample ID: 160-36526-14

Date Collected: 11/21/19 15:50
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.66		0.279	0.328	1.00	0.207	pCi/g	12/01/19 08:08	12/25/19 10:11	1
Radium-228	1.42		0.229	0.271	1.00	0.212	pCi/g	12/01/19 08:08	12/25/19 10:11	1

Client Sample ID: STSB29-FD_6-15
Lab Sample ID: 160-36526-14

Date Collected: 11/21/19 15:50
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 90.1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	7.8		0.20	0.089	mg/Kg	☼	12/02/19 10:13	12/11/19 00:50	2

Client Sample ID: STSB29-FD_6-15
Lab Sample ID: 160-36526-14

Date Collected: 11/21/19 15:50
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 90.1

Method: 6020A - Metals (ICP/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Uranium	2.1		0.099	0.039	mg/Kg	☼	12/02/19 10:13	12/11/19 00:50	2

Client Sample ID: STSB30_0-0.5
Lab Sample ID: 160-36526-15

Date Collected: 11/22/19 08:55
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	2.82		0.274	0.401	1.00	0.167	pCi/g	12/01/19 08:08	12/25/19 10:12	1
Radium-228	0.735		0.286	0.296	1.00	0.279	pCi/g	12/01/19 08:08	12/25/19 10:12	1

Client Sample ID: STSB30_0-0.5
Lab Sample ID: 160-36526-15

Date Collected: 11/22/19 08:55
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 94.8

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	1.9		0.20	0.091	mg/Kg	☼	12/02/19 10:13	12/11/19 00:57	2
Uranium	1.4		0.10	0.040	mg/Kg	☼	12/02/19 10:13	12/11/19 00:57	2

Client Sample ID: STSB30_0.5-3
Lab Sample ID: 160-36526-16

Date Collected: 11/22/19 09:02
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	2.35		0.240	0.343	1.00	0.120	pCi/g	12/01/19 08:08	12/25/19 10:13	1
Radium-228	0.832		0.235	0.250	1.00	0.173	pCi/g	12/01/19 08:08	12/25/19 10:13	1

Client Sample ID: STSB30_0.5-3
Lab Sample ID: 160-36526-16

Date Collected: 11/22/19 09:02
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 94.8

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	2.7		0.18	0.082	mg/Kg	☼	12/02/19 10:13	12/11/19 01:03	2
Uranium	0.82		0.091	0.036	mg/Kg	☼	12/02/19 10:13	12/11/19 01:03	2

Client Sample ID: STSB30_3-6
Lab Sample ID: 160-36526-17

Date Collected: 11/22/19 09:10
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	2.15		0.288	0.364	1.00	0.181	pCi/g	12/01/19 08:08	12/25/19 10:14	1
Radium-228	0.972		0.302	0.317	1.00	0.230	pCi/g	12/01/19 08:08	12/25/19 10:14	1

Client Sample ID: STSB30_3-6
Lab Sample ID: 160-36526-17

Date Collected: 11/22/19 09:10
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 95.5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	2.8		0.19	0.084	mg/Kg	☼	12/02/19 10:13	12/11/19 01:10	2
Uranium	0.72		0.093	0.037	mg/Kg	☼	12/02/19 10:13	12/11/19 01:10	2

Client Sample ID: STSB30_6-15
Lab Sample ID: 160-36526-18

Date Collected: 11/22/19 09:25
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	2.17		0.303	0.377	1.00	0.200	pCi/g	12/01/19 08:08	12/25/19 10:42	1
Radium-228	1.43		0.274	0.310	1.00	0.203	pCi/g	12/01/19 08:08	12/25/19 10:42	1

Client Sample ID: STSB30_6-15
Lab Sample ID: 160-36526-18

Date Collected: 11/22/19 09:25
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 83.8

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	12		0.22	0.10	mg/Kg	☼	12/02/19 10:13	12/11/19 01:17	2
Uranium	2.6		0.11	0.045	mg/Kg	☼	12/02/19 10:13	12/11/19 01:17	2

Client Sample ID: STSB31_0-0.5
Lab Sample ID: 160-36526-19

Date Collected: 11/22/19 11:56
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	4.73		0.425	0.643	1.00	0.245	pCi/g	12/01/19 08:08	12/25/19 10:43	1
Radium-228	0.866		0.338	0.349	1.00	0.530	pCi/g	12/01/19 08:08	12/25/19 10:43	1

Client Sample ID: STSB31_0-0.5
Lab Sample ID: 160-36526-19

Date Collected: 11/22/19 11:56
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 92.2

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	5.0		0.19	0.084	mg/Kg	☼	12/02/19 10:13	12/11/19 01:23	2
Uranium	3.1		0.093	0.037	mg/Kg	☼	12/02/19 10:13	12/11/19 01:23	2

Client Sample ID: STSB31_0.5-3
Lab Sample ID: 160-36526-20

Date Collected: 11/22/19 12:03
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	3.60		0.308	0.485	1.00	0.144	pCi/g	12/01/19 08:08	12/25/19 10:43	1

Client Sample ID: STSB31_0.5-3
Lab Sample ID: 160-36526-20

Date Collected: 11/22/19 12:03
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS) (Continued)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.970		0.225	0.246	1.00	0.216	pCi/g	12/01/19 08:08	12/25/19 10:43	1

Client Sample ID: STSB31_0.5-3
Lab Sample ID: 160-36526-20

Date Collected: 11/22/19 12:03
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 94.4

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	5.0		0.19	0.085	mg/Kg	☼	12/02/19 10:16	12/11/19 04:12	2
Uranium	1.4		0.095	0.038	mg/Kg	☼	12/02/19 10:16	12/11/19 04:12	2

Client Sample ID: STSB31_3-6
Lab Sample ID: 160-36526-21

Date Collected: 11/22/19 12:10
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	4.63		0.433	0.648	1.00	0.247	pCi/g	12/01/19 10:17	12/25/19 10:46	1
Radium-228	0.947		0.312	0.326	1.00	0.302	pCi/g	12/01/19 10:17	12/25/19 10:46	1

Client Sample ID: STSB31_3-6
Lab Sample ID: 160-36526-21

Date Collected: 11/22/19 12:10
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 94.1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	4.8		0.20	0.089	mg/Kg	☼	12/02/19 10:16	12/11/19 04:59	2
Uranium	1.7		0.099	0.040	mg/Kg	☼	12/02/19 10:16	12/11/19 04:59	2

Client Sample ID: STSB31_6-15
Lab Sample ID: 160-36526-22

Date Collected: 11/22/19 12:20
Matrix: Solid
Date Received: 11/26/19 09:15

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	2.45		0.384	0.458	1.00	0.271	pCi/g	12/01/19 10:17	12/25/19 11:23	1
Radium-228	1.55		0.612	0.632	1.00	0.569	pCi/g	12/01/19 10:17	12/25/19 11:23	1

Client Sample ID: STSB31_6-15
Lab Sample ID: 160-36526-22

Date Collected: 11/22/19 12:20
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 94.7

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	6.4		0.18	0.081	mg/Kg	☼	12/02/19 10:16	12/11/19 05:06	2
Uranium	4.0		0.090	0.036	mg/Kg	☼	12/02/19 10:16	12/11/19 05:06	2

Default Detection Limits

Client: Wood E&I Solutions Inc
Job ID: 160-36526-1
Project/Site: ACMS - Yerington OU-4B_OU-5_SOIL

Method: 6020A - Metals (ICP/MS)

Prep: 3050B

Analyte	RL	MDL	Units
Thorium	0.20	0.090	mg/Kg
Uranium	0.10	0.040	mg/Kg

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 160-452611/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 453933 — **Prep Batch: 452611**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	ND		0.18	0.082	mg/Kg		12/02/19 10:13	12/10/19 21:55	2
Uranium	ND		0.091	0.036	mg/Kg		12/02/19 10:13	12/10/19 21:55	2

Lab Sample ID: LCS 160-452611/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 453933 — **Prep Batch: 452611**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Thorium	94.7	91.6		mg/Kg		97	80 - 120

Lab Sample ID: LCSSRM 160-452611/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 453933 — **Prep Batch: 452611**

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Uranium	98.1	97.5		mg/Kg		99.4	74.0 - 126.4

Lab Sample ID: 160-36526-11 MS — **Client Sample ID: STSB29_0.5-3**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 453933 — **Prep Batch: 452611**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Thorium	2.9		91.4	93.2		mg/Kg	☼	99	75 - 125
Uranium	0.85		91.4	90.3		mg/Kg	☼	98	75 - 125

Lab Sample ID: 160-36526-11 MSD — **Client Sample ID: STSB29_0.5-3**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 453933 — **Prep Batch: 452611**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Thorium	2.9		96.4	102		mg/Kg	☼	103	75 - 125	9	30
Uranium	0.85		96.4	95.5		mg/Kg	☼	98	75 - 125	6	30

Lab Sample ID: 160-36526-11 DU — **Client Sample ID: STSB29_0.5-3**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 453933 — **Prep Batch: 452611**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Thorium	2.9		3.66		mg/Kg	☼	23	30
Uranium	0.85		1.02		mg/Kg	☼	18	30

Lab Sample ID: MB 160-452612/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 453935 — **Prep Batch: 452612**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thorium	ND		0.19	0.087	mg/Kg		12/02/19 10:16	12/11/19 03:52	2
Uranium	ND		0.097	0.039	mg/Kg		12/02/19 10:16	12/11/19 03:52	2

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 160-452612/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 453935 — **Prep Batch: 452612**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Thorium	89.9	90.8		mg/Kg		101	80 - 120

Lab Sample ID: LCSSRM 160-452612/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 453935 — **Prep Batch: 452612**

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Uranium	98.1	101		mg/Kg		103.2	74.0 - 126.4

Lab Sample ID: 160-36526-20 MS — **Client Sample ID: STSB31_0.5-3**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 453935 — **Prep Batch: 452612**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Thorium	5.0		104	108		mg/Kg	☼	99	75 - 125
Uranium	1.4		104	105		mg/Kg	☼	100	75 - 125

Lab Sample ID: 160-36526-20 MSD — **Client Sample ID: STSB31_0.5-3**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 453935 — **Prep Batch: 452612**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Thorium	5.0		89.2	96.8		mg/Kg	☼	103	75 - 125	11	30
Uranium	1.4		89.2	93.2		mg/Kg	☼	103	75 - 125	12	30

Lab Sample ID: LRC 160-453933/11 — **Client Sample ID: Lab Control Sample**
Matrix: Solid
Analysis Batch: 453933

Analyte	Spike Added	LRC Result	LRC Qualifier	Unit	D	%Rec	%Rec. Limits
Thorium	2000	2100		ug/L		105	90 - 110
Uranium	2000	2040		ug/L		102	90 - 110

Lab Sample ID: LRC 160-453935/2 — **Client Sample ID: Lab Control Sample**
Matrix: Solid
Analysis Batch: 453935

Analyte	Spike Added	LRC Result	LRC Qualifier	Unit	D	%Rec	%Rec. Limits
Thorium	2000	2100		ug/L		105	90 - 110
Uranium	2000	2040		ug/L		102	90 - 110

Method: 901.1 - Radium-226 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-452567/1-A
Client Sample ID: Method Blank
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 455099
Prep Batch: 452567

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.05823	U	0.152	0.152	1.00	0.355	pCi/g	12/01/19 08:08	12/25/19 10:44	1
Radium-228	-0.01981	U	0.167	0.167	1.00	0.249	pCi/g	12/01/19 08:08	12/25/19 10:44	1

Lab Sample ID: LCS 160-452567/2-A
Client Sample ID: Lab Control Sample
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 455100
Prep Batch: 452567

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	96.6	94.90		9.97		1.11	pCi/g	98	75 - 125
Cesium-137	27.3	27.06		2.89		0.218	pCi/g	99	75 - 125
Cobalt-60	10.8	10.48		1.10		0.0972	pCi/g	97	75 - 125

Lab Sample ID: 160-36526-11 DU
Client Sample ID: STSB29_0.5-3
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 455101
Prep Batch: 452567

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	DER	DER Limit
Radium-226	1.34		1.419		0.274	1.00	0.162	pCi/g	0.41	2
Radium-228	0.962		0.6580		0.240	1.00	0.209	pCi/g	1.94	2

Lab Sample ID: MB 160-452568/1-A
Client Sample ID: Method Blank
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 455099
Prep Batch: 452568

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.008814	U	0.159	0.159	1.00	0.281	pCi/g	12/01/19 10:17	12/25/19 11:24	1
Radium-228	0.02422	U	0.174	0.174	1.00	0.249	pCi/g	12/01/19 10:17	12/25/19 11:24	1

Lab Sample ID: LCS 160-452568/2-A
Client Sample ID: Lab Control Sample
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 455100
Prep Batch: 452568

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	96.6	93.75		9.86		1.18	pCi/g	97	75 - 125
Cesium-137	27.3	27.44		2.93		0.196	pCi/g	100	75 - 125
Cobalt-60	10.8	10.71		1.13		0.0911	pCi/g	100	75 - 125

Lab Sample ID: 160-36526-21 DU
Client Sample ID: STSB31_3-6
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 455101
Prep Batch: 452568

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	DER	DER Limit
Radium-226	4.63		4.568		0.570	1.00	0.146	pCi/g	0.14	2
Radium-228	0.947		0.9845		0.324	1.00	0.234	pCi/g	0.16	2

QC Association Summary

Client: Wood E&I Solutions Inc
Job ID: 160-36526-1
Project/Site: ACMS - Yerington OU-4B_OU-5_SOIL

Metals

Prep Batch: 452611

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-36526-1	STSB27_0-0.5	Total/NA	Solid	3050B	
160-36526-2	STSB27_0.5-3	Total/NA	Solid	3050B	
160-36526-3	STSB27_3-6	Total/NA	Solid	3050B	
160-36526-4	STSB27_6-15	Total/NA	Solid	3050B	
160-36526-5	STSB28_0-0.5	Total/NA	Solid	3050B	
160-36526-6	STSB28-FD_0-0.5	Total/NA	Solid	3050B	
160-36526-7	STSB28_0.5-3	Total/NA	Solid	3050B	
160-36526-8	STSB28_3-6	Total/NA	Solid	3050B	
160-36526-9	STSB28_6-15	Total/NA	Solid	3050B	
160-36526-10	STSB29_0-0.5	Total/NA	Solid	3050B	
160-36526-11	STSB29_0.5-3	Total/NA	Solid	3050B	
160-36526-12	STSB29_3-6	Total/NA	Solid	3050B	
160-36526-13	STSB29_6-15	Total/NA	Solid	3050B	
160-36526-14	STSB29-FD_6-15	Total/NA	Solid	3050B	
160-36526-15	STSB30_0-0.5	Total/NA	Solid	3050B	
160-36526-16	STSB30_0.5-3	Total/NA	Solid	3050B	
160-36526-17	STSB30_3-6	Total/NA	Solid	3050B	
160-36526-18	STSB30_6-15	Total/NA	Solid	3050B	
160-36526-19	STSB31_0-0.5	Total/NA	Solid	3050B	
MB 160-452611/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 160-452611/2-A	Lab Control Sample	Total/NA	Solid	3050B	
LCSSRM 160-452611/3-A	Lab Control Sample	Total/NA	Solid	3050B	
160-36526-11 MS	STSB29_0.5-3	Total/NA	Solid	3050B	
160-36526-11 MSD	STSB29_0.5-3	Total/NA	Solid	3050B	
160-36526-11 DU	STSB29_0.5-3	Total/NA	Solid	3050B	

Prep Batch: 452612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-36526-20	STSB31_0.5-3	Total/NA	Solid	3050B	
160-36526-21	STSB31_3-6	Total/NA	Solid	3050B	
160-36526-22	STSB31_6-15	Total/NA	Solid	3050B	
MB 160-452612/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 160-452612/2-A	Lab Control Sample	Total/NA	Solid	3050B	
LCSSRM 160-452612/3-A	Lab Control Sample	Total/NA	Solid	3050B	
160-36526-20 MS	STSB31_0.5-3	Total/NA	Solid	3050B	
160-36526-20 MSD	STSB31_0.5-3	Total/NA	Solid	3050B	

Analysis Batch: 453933

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-36526-1	STSB27_0-0.5	Total/NA	Solid	6020A	452611
160-36526-2	STSB27_0.5-3	Total/NA	Solid	6020A	452611
160-36526-3	STSB27_3-6	Total/NA	Solid	6020A	452611
160-36526-4	STSB27_6-15	Total/NA	Solid	6020A	452611
160-36526-5	STSB28_0-0.5	Total/NA	Solid	6020A	452611
160-36526-6	STSB28-FD_0-0.5	Total/NA	Solid	6020A	452611
160-36526-7	STSB28_0.5-3	Total/NA	Solid	6020A	452611
160-36526-8	STSB28_3-6	Total/NA	Solid	6020A	452611
160-36526-9	STSB28_6-15	Total/NA	Solid	6020A	452611
160-36526-10	STSB29_0-0.5	Total/NA	Solid	6020A	452611
160-36526-11	STSB29_0.5-3	Total/NA	Solid	6020A	452611
160-36526-12	STSB29_3-6	Total/NA	Solid	6020A	452611

Metals (Continued)

Analysis Batch: 453933 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-36526-13	STSB29_6-15	Total/NA	Solid	6020A	452611
160-36526-14	STSB29-FD_6-15	Total/NA	Solid	6020A	452611
160-36526-15	STSB30_0-0.5	Total/NA	Solid	6020A	452611
160-36526-16	STSB30_0.5-3	Total/NA	Solid	6020A	452611
160-36526-17	STSB30_3-6	Total/NA	Solid	6020A	452611
160-36526-18	STSB30_6-15	Total/NA	Solid	6020A	452611
160-36526-19	STSB31_0-0.5	Total/NA	Solid	6020A	452611
MB 160-452611/1-A	Method Blank	Total/NA	Solid	6020A	452611
LCS 160-452611/2-A	Lab Control Sample	Total/NA	Solid	6020A	452611
LCSSRM 160-452611/3-A	Lab Control Sample	Total/NA	Solid	6020A	452611
LRC 160-453933/11	Lab Control Sample		Solid	6020A	
160-36526-11 MS	STSB29_0.5-3	Total/NA	Solid	6020A	452611
160-36526-11 MSD	STSB29_0.5-3	Total/NA	Solid	6020A	452611
160-36526-11 DU	STSB29_0.5-3	Total/NA	Solid	6020A	452611

Analysis Batch: 453935

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-36526-20	STSB31_0.5-3	Total/NA	Solid	6020A	452612
160-36526-21	STSB31_3-6	Total/NA	Solid	6020A	452612
160-36526-22	STSB31_6-15	Total/NA	Solid	6020A	452612
MB 160-452612/1-A	Method Blank	Total/NA	Solid	6020A	452612
LCS 160-452612/2-A	Lab Control Sample	Total/NA	Solid	6020A	452612
LCSSRM 160-452612/3-A	Lab Control Sample	Total/NA	Solid	6020A	452612
LRC 160-453935/2	Lab Control Sample		Solid	6020A	
160-36526-20 MS	STSB31_0.5-3	Total/NA	Solid	6020A	452612
160-36526-20 MSD	STSB31_0.5-3	Total/NA	Solid	6020A	452612

General Chemistry

Analysis Batch: 452332

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-36526-1	STSB27_0-0.5	Total/NA	Solid	Moisture	
160-36526-2	STSB27_0.5-3	Total/NA	Solid	Moisture	
160-36526-3	STSB27_3-6	Total/NA	Solid	Moisture	
160-36526-4	STSB27_6-15	Total/NA	Solid	Moisture	
160-36526-5	STSB28_0-0.5	Total/NA	Solid	Moisture	
160-36526-6	STSB28-FD_0-0.5	Total/NA	Solid	Moisture	
160-36526-7	STSB28_0.5-3	Total/NA	Solid	Moisture	
160-36526-8	STSB28_3-6	Total/NA	Solid	Moisture	
160-36526-9	STSB28_6-15	Total/NA	Solid	Moisture	
160-36526-10	STSB29_0-0.5	Total/NA	Solid	Moisture	
160-36526-11	STSB29_0.5-3	Total/NA	Solid	Moisture	
160-36526-12	STSB29_3-6	Total/NA	Solid	Moisture	
160-36526-13	STSB29_6-15	Total/NA	Solid	Moisture	
160-36526-14	STSB29-FD_6-15	Total/NA	Solid	Moisture	
160-36526-15	STSB30_0-0.5	Total/NA	Solid	Moisture	
160-36526-16	STSB30_0.5-3	Total/NA	Solid	Moisture	
160-36526-17	STSB30_3-6	Total/NA	Solid	Moisture	
160-36526-18	STSB30_6-15	Total/NA	Solid	Moisture	
160-36526-19	STSB31_0-0.5	Total/NA	Solid	Moisture	
160-36526-20	STSB31_0.5-3	Total/NA	Solid	Moisture	

General Chemistry (Continued)

Analysis Batch: 452332 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-36526-20 DU	STSB31_0.5-3	Total/NA	Solid	Moisture	

Analysis Batch: 452334

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-36526-21	STSB31_3-6	Total/NA	Solid	Moisture	
160-36526-22	STSB31_6-15	Total/NA	Solid	Moisture	
160-36453-A-23 DU	Duplicate	Total/NA	Solid	Moisture	

Rad

Leach Batch: 452495

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-36526-1	STSB27_0-0.5	Total/NA	Solid	Dry and Grind	
160-36526-2	STSB27_0.5-3	Total/NA	Solid	Dry and Grind	
160-36526-3	STSB27_3-6	Total/NA	Solid	Dry and Grind	
160-36526-4	STSB27_6-15	Total/NA	Solid	Dry and Grind	
160-36526-5	STSB28_0-0.5	Total/NA	Solid	Dry and Grind	
160-36526-6	STSB28-FD_0-0.5	Total/NA	Solid	Dry and Grind	
160-36526-7	STSB28_0.5-3	Total/NA	Solid	Dry and Grind	
160-36526-8	STSB28_3-6	Total/NA	Solid	Dry and Grind	
160-36526-9	STSB28_6-15	Total/NA	Solid	Dry and Grind	
160-36526-10	STSB29_0-0.5	Total/NA	Solid	Dry and Grind	
160-36526-11	STSB29_0.5-3	Total/NA	Solid	Dry and Grind	
160-36526-12	STSB29_3-6	Total/NA	Solid	Dry and Grind	
160-36526-13	STSB29_6-15	Total/NA	Solid	Dry and Grind	
160-36526-14	STSB29-FD_6-15	Total/NA	Solid	Dry and Grind	
160-36526-15	STSB30_0-0.5	Total/NA	Solid	Dry and Grind	
160-36526-16	STSB30_0.5-3	Total/NA	Solid	Dry and Grind	
160-36526-17	STSB30_3-6	Total/NA	Solid	Dry and Grind	
160-36526-18	STSB30_6-15	Total/NA	Solid	Dry and Grind	
160-36526-19	STSB31_0-0.5	Total/NA	Solid	Dry and Grind	
160-36526-20	STSB31_0.5-3	Total/NA	Solid	Dry and Grind	
160-36526-21	STSB31_3-6	Total/NA	Solid	Dry and Grind	
160-36526-22	STSB31_6-15	Total/NA	Solid	Dry and Grind	
160-36526-11 DU	STSB29_0.5-3	Total/NA	Solid	Dry and Grind	
160-36526-21 DU	STSB31_3-6	Total/NA	Solid	Dry and Grind	

Prep Batch: 452567

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-36526-1	STSB27_0-0.5	Total/NA	Solid	Fill_Geo-21	452495
160-36526-2	STSB27_0.5-3	Total/NA	Solid	Fill_Geo-21	452495
160-36526-3	STSB27_3-6	Total/NA	Solid	Fill_Geo-21	452495
160-36526-4	STSB27_6-15	Total/NA	Solid	Fill_Geo-21	452495
160-36526-5	STSB28_0-0.5	Total/NA	Solid	Fill_Geo-21	452495
160-36526-6	STSB28-FD_0-0.5	Total/NA	Solid	Fill_Geo-21	452495
160-36526-7	STSB28_0.5-3	Total/NA	Solid	Fill_Geo-21	452495
160-36526-8	STSB28_3-6	Total/NA	Solid	Fill_Geo-21	452495
160-36526-9	STSB28_6-15	Total/NA	Solid	Fill_Geo-21	452495
160-36526-10	STSB29_0-0.5	Total/NA	Solid	Fill_Geo-21	452495
160-36526-11	STSB29_0.5-3	Total/NA	Solid	Fill_Geo-21	452495
160-36526-12	STSB29_3-6	Total/NA	Solid	Fill_Geo-21	452495

Rad (Continued)

Prep Batch: 452567 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-36526-13	STSB29_6-15	Total/NA	Solid	Fill_Geo-21	452495
160-36526-14	STSB29-FD_6-15	Total/NA	Solid	Fill_Geo-21	452495
160-36526-15	STSB30_0-0.5	Total/NA	Solid	Fill_Geo-21	452495
160-36526-16	STSB30_0.5-3	Total/NA	Solid	Fill_Geo-21	452495
160-36526-17	STSB30_3-6	Total/NA	Solid	Fill_Geo-21	452495
160-36526-18	STSB30_6-15	Total/NA	Solid	Fill_Geo-21	452495
160-36526-19	STSB31_0-0.5	Total/NA	Solid	Fill_Geo-21	452495
160-36526-20	STSB31_0.5-3	Total/NA	Solid	Fill_Geo-21	452495
MB 160-452567/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	
LCS 160-452567/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
160-36526-11 DU	STSB29_0.5-3	Total/NA	Solid	Fill_Geo-21	452495

Prep Batch: 452568

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-36526-21	STSB31_3-6	Total/NA	Solid	Fill_Geo-21	452495
160-36526-22	STSB31_6-15	Total/NA	Solid	Fill_Geo-21	452495
MB 160-452568/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	
LCS 160-452568/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
160-36526-21 DU	STSB31_3-6	Total/NA	Solid	Fill_Geo-21	452495

Lab Chronicle

Client: Wood E&I Solutions Inc
Job ID: 160-36526-1
Project/Site: ACMS - Yerington OU-4B_OU-5_SOIL

Client Sample ID: STSB27_0-0.5
Lab Sample ID: 160-36526-1
Date Collected: 11/21/19 09:15
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455099	12/25/19 08:19	KLS	TAL SL

Client Sample ID: STSB27_0-0.5
Lab Sample ID: 160-36526-1
Date Collected: 11/21/19 09:15
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 98.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/10/19 22:15	LKP	TAL SL

Client Sample ID: STSB27_0.5-3
Lab Sample ID: 160-36526-2
Date Collected: 11/21/19 09:25
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455100	12/25/19 08:19	KLS	TAL SL

Client Sample ID: STSB27_0.5-3
Lab Sample ID: 160-36526-2
Date Collected: 11/21/19 09:25
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 96.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/10/19 22:22	LKP	TAL SL

Client Sample ID: STSB27_3-6
Lab Sample ID: 160-36526-3
Date Collected: 11/21/19 09:31
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455104	12/25/19 08:20	KLS	TAL SL

Client Sample ID: STSB27_3-6
Lab Sample ID: 160-36526-3

Date Collected: 11/21/19 09:31
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 95.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/10/19 22:28	LKP	TAL SL

Client Sample ID: STSB27_6-15
Lab Sample ID: 160-36526-4

Date Collected: 11/21/19 09:55
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455099	12/25/19 09:01	KLS	TAL SL

Client Sample ID: STSB27_6-15
Lab Sample ID: 160-36526-4

Date Collected: 11/21/19 09:55
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 91.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/10/19 22:35	LKP	TAL SL

Client Sample ID: STSB28_0-0.5
Lab Sample ID: 160-36526-5

Date Collected: 11/21/19 11:45
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455100	12/25/19 09:02	KLS	TAL SL

Client Sample ID: STSB28_0-0.5
Lab Sample ID: 160-36526-5

Date Collected: 11/21/19 11:45
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 94.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/10/19 22:42	LKP	TAL SL

Client Sample ID: STSB28-FD_0-0.5
Lab Sample ID: 160-36526-6

Date Collected: 11/21/19 11:50
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL

Client Sample ID: STSB28-FD_0-0.5
Lab Sample ID: 160-36526-6

Date Collected: 11/21/19 11:50
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455104	12/25/19 09:03	KLS	TAL SL

Client Sample ID: STSB28-FD_0-0.5
Lab Sample ID: 160-36526-6

Date Collected: 11/21/19 11:50
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 94.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/10/19 22:48	LKP	TAL SL

Client Sample ID: STSB28_0.5-3
Lab Sample ID: 160-36526-7

Date Collected: 11/21/19 11:55
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455101	12/25/19 09:34	KLS	TAL SL

Client Sample ID: STSB28_0.5-3
Lab Sample ID: 160-36526-7

Date Collected: 11/21/19 11:55
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 95.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/10/19 23:15	LKP	TAL SL

Client Sample ID: STSB28_3-6
Lab Sample ID: 160-36526-8

Date Collected: 11/21/19 12:15
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455102	12/25/19 09:35	KLS	TAL SL

Client Sample ID: STSB28_3-6
Lab Sample ID: 160-36526-8

Date Collected: 11/21/19 12:15
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 95.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/10/19 23:22	LKP	TAL SL

Client Sample ID: STSB28_6-15
Lab Sample ID: 160-36526-9

Date Collected: 11/21/19 12:25
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455098	12/25/19 09:35	KLS	TAL SL

Client Sample ID: STSB28_6-15
Lab Sample ID: 160-36526-9

Date Collected: 11/21/19 12:25
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 83.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/10/19 23:29	LKP	TAL SL

Client Sample ID: STSB29_0-0.5
Lab Sample ID: 160-36526-10

Date Collected: 11/21/19 15:00
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455099	12/25/19 09:36	KLS	TAL SL

Client Sample ID: STSB29_0-0.5
Lab Sample ID: 160-36526-10

Date Collected: 11/21/19 15:00
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 95.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/10/19 23:36	LKP	TAL SL

Client Sample ID: STSB29_0.5-3
Lab Sample ID: 160-36526-11

Date Collected: 11/21/19 15:10
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL

Client Sample ID: STSB29_0.5-3
Lab Sample ID: 160-36526-11

Date Collected: 11/21/19 15:10
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455100	12/25/19 09:36	KLS	TAL SL

Client Sample ID: STSB29_0.5-3
Lab Sample ID: 160-36526-11

Date Collected: 11/21/19 15:10
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 95.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/10/19 23:42	LKP	TAL SL

Client Sample ID: STSB29_3-6
Lab Sample ID: 160-36526-12

Date Collected: 11/21/19 15:30
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455104	12/25/19 09:37	KLS	TAL SL

Client Sample ID: STSB29_3-6
Lab Sample ID: 160-36526-12

Date Collected: 11/21/19 15:30
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 95.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/11/19 00:16	LKP	TAL SL

Client Sample ID: STSB29_6-15
Lab Sample ID: 160-36526-13

Date Collected: 11/21/19 15:45
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455102	12/25/19 10:11	KLS	TAL SL

Client Sample ID: STSB29_6-15
Lab Sample ID: 160-36526-13

Date Collected: 11/21/19 15:45
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 92.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/11/19 00:43	LKP	TAL SL

Client Sample ID: STSB29-FD_6-15
Lab Sample ID: 160-36526-14

Date Collected: 11/21/19 15:50
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455098	12/25/19 10:11	KLS	TAL SL

Client Sample ID: STSB29-FD_6-15
Lab Sample ID: 160-36526-14

Date Collected: 11/21/19 15:50
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 90.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/11/19 00:50	LKP	TAL SL

Client Sample ID: STSB30_0-0.5
Lab Sample ID: 160-36526-15

Date Collected: 11/22/19 08:55
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455099	12/25/19 10:12	KLS	TAL SL

Client Sample ID: STSB30_0-0.5
Lab Sample ID: 160-36526-15

Date Collected: 11/22/19 08:55
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 94.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/11/19 00:57	LKP	TAL SL

Client Sample ID: STSB30_0.5-3
Lab Sample ID: 160-36526-16

Date Collected: 11/22/19 09:02
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL

Client Sample ID: STSB30_0.5-3
Lab Sample ID: 160-36526-16

Date Collected: 11/22/19 09:02
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455100	12/25/19 10:13	KLS	TAL SL

Client Sample ID: STSB30_0.5-3
Lab Sample ID: 160-36526-16

Date Collected: 11/22/19 09:02
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 94.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/11/19 01:03	LKP	TAL SL

Client Sample ID: STSB30_3-6
Lab Sample ID: 160-36526-17

Date Collected: 11/22/19 09:10
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455104	12/25/19 10:14	KLS	TAL SL

Client Sample ID: STSB30_3-6
Lab Sample ID: 160-36526-17

Date Collected: 11/22/19 09:10
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 95.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/11/19 01:10	LKP	TAL SL

Client Sample ID: STSB30_6-15
Lab Sample ID: 160-36526-18

Date Collected: 11/22/19 09:25
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455101	12/25/19 10:42	KLS	TAL SL

Client Sample ID: STSB30_6-15
Lab Sample ID: 160-36526-18

Date Collected: 11/22/19 09:25
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 83.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/11/19 01:17	LKP	TAL SL

Client Sample ID: STSB31_0-0.5
Lab Sample ID: 160-36526-19

Date Collected: 11/22/19 11:56
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455102	12/25/19 10:43	KLS	TAL SL

Client Sample ID: STSB31_0-0.5
Lab Sample ID: 160-36526-19

Date Collected: 11/22/19 11:56
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 92.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452611	12/02/19 10:13	LAM	TAL SL
Total/NA	Analysis	6020A		2	453933	12/11/19 01:23	LKP	TAL SL

Client Sample ID: STSB31_0.5-3
Lab Sample ID: 160-36526-20

Date Collected: 11/22/19 12:03
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452332	11/28/19 11:12	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452567	12/01/19 08:08	SJS	TAL SL
Total/NA	Analysis	901.1		1	455098	12/25/19 10:43	KLS	TAL SL

Client Sample ID: STSB31_0.5-3
Lab Sample ID: 160-36526-20

Date Collected: 11/22/19 12:03
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 94.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452612	12/02/19 10:16	LAM	TAL SL
Total/NA	Analysis	6020A		2	453935	12/11/19 04:12	LKP	TAL SL

Client Sample ID: STSB31_3-6
Lab Sample ID: 160-36526-21

Date Collected: 11/22/19 12:10
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452334	11/28/19 12:00	KPP	TAL SL

Lab Chronicle

Client: Wood E&I Solutions Inc
Job ID: 160-36526-1
Project/Site: ACMS - Yerington OU-4B_OU-5_SOIL

Client Sample ID: STSB31_3-6
Lab Sample ID: 160-36526-21

Date Collected: 11/22/19 12:10
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452568	12/01/19 10:17	SJS	TAL SL
Total/NA	Analysis	901.1		1	455104	12/25/19 10:46	KLS	TAL SL

Client Sample ID: STSB31_3-6
Lab Sample ID: 160-36526-21

Date Collected: 11/22/19 12:10
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 94.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452612	12/02/19 10:16	LAM	TAL SL
Total/NA	Analysis	6020A		2	453935	12/11/19 04:59	LKP	TAL SL

Client Sample ID: STSB31_6-15
Lab Sample ID: 160-36526-22

Date Collected: 11/22/19 12:20
Matrix: Solid
Date Received: 11/26/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	452334	11/28/19 12:00	KPP	TAL SL
Total/NA	Leach	Dry and Grind			452495	11/29/19 11:49	EJQ	TAL SL
Total/NA	Prep	Fill_Geo-21			452568	12/01/19 10:17	SJS	TAL SL
Total/NA	Analysis	901.1		1	455102	12/25/19 11:23	KLS	TAL SL

Client Sample ID: STSB31_6-15
Lab Sample ID: 160-36526-22

Date Collected: 11/22/19 12:20
Matrix: Solid
Date Received: 11/26/19 09:15
Percent Solids: 94.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			452612	12/02/19 10:16	LAM	TAL SL
Total/NA	Analysis	6020A		2	453935	12/11/19 05:06	LKP	TAL SL

Laboratory References:

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

Accreditation/Certification Summary

Client: Wood E&I Solutions Inc
Job ID: 160-36526-1
Project/Site: ACMS - Yerington OU-4B_OU-5_SOIL

Laboratory: Eurofins TestAmerica, St. Louis

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

Authority	Program	Identification Number	Expiration Date
Louisiana	NELAP	04080	06-30-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
901.1	Fill_Geo-21	Solid	Radium-226
901.1	Fill_Geo-21	Solid	Radium-228
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Nevada	State Program	MO000542018-1	07-31-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
6020A	3050B	Solid	Thorium
901.1	Fill_Geo-21	Solid	Radium-226
901.1	Fill_Geo-21	Solid	Radium-228
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Method Summary

Client: Wood E&I Solutions Inc
Project/Site: ACMS - Yerington OU-4B_OU-5_SOIL

Job ID: 160-36526-1

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS)	SW846	TAL SL
Moisture	Percent Moisture	EPA	TAL SL
901.1	Radium-226 & Other Gamma Emitters (GS)	EPA	TAL SL
3050B	Preparation, Metals	SW846	TAL SL
Dry and Grind	Preparation, Dry and Grind	None	TAL SL
Fill_Geo-21	Fill Geometry, 21-Day In-Growth	None	TAL SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

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

Laboratory References:

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

Sample Summary

Client: Wood E&I Solutions Inc
Job ID: 160-36526-1
Project/Site: ACMS - Yerington OU-4B_OU-5_SOIL

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
160-36526-1	STSB27_0-0.5	Solid	11/21/19 09:15	11/26/19 09:15	
160-36526-2	STSB27_0.5-3	Solid	11/21/19 09:25	11/26/19 09:15	
160-36526-3	STSB27_3-6	Solid	11/21/19 09:31	11/26/19 09:15	
160-36526-4	STSB27_6-15	Solid	11/21/19 09:55	11/26/19 09:15	
160-36526-5	STSB28_0-0.5	Solid	11/21/19 11:45	11/26/19 09:15	
160-36526-6	STSB28-FD_0-0.5	Solid	11/21/19 11:50	11/26/19 09:15	
160-36526-7	STSB28_0.5-3	Solid	11/21/19 11:55	11/26/19 09:15	
160-36526-8	STSB28_3-6	Solid	11/21/19 12:15	11/26/19 09:15	
160-36526-9	STSB28_6-15	Solid	11/21/19 12:25	11/26/19 09:15	
160-36526-10	STSB29_0-0.5	Solid	11/21/19 15:00	11/26/19 09:15	
160-36526-11	STSB29_0.5-3	Solid	11/21/19 15:10	11/26/19 09:15	
160-36526-12	STSB29_3-6	Solid	11/21/19 15:30	11/26/19 09:15	
160-36526-13	STSB29_6-15	Solid	11/21/19 15:45	11/26/19 09:15	
160-36526-14	STSB29-FD_6-15	Solid	11/21/19 15:50	11/26/19 09:15	
160-36526-15	STSB30_0-0.5	Solid	11/22/19 08:55	11/26/19 09:15	
160-36526-16	STSB30_0.5-3	Solid	11/22/19 09:02	11/26/19 09:15	
160-36526-17	STSB30_3-6	Solid	11/22/19 09:10	11/26/19 09:15	
160-36526-18	STSB30_6-15	Solid	11/22/19 09:25	11/26/19 09:15	
160-36526-19	STSB31_0-0.5	Solid	11/22/19 11:56	11/26/19 09:15	
160-36526-20	STSB31_0.5-3	Solid	11/22/19 12:03	11/26/19 09:15	
160-36526-21	STSB31_3-6	Solid	11/22/19 12:10	11/26/19 09:15	
160-36526-22	STSB31_6-15	Solid	11/22/19 12:20	11/26/19 09:15	

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
MPREP1-A_00004	11/26/20	CPI International, Lot 10094019-9			(Purchased Reagent)		Ag	40 mg/L
							Al	2000 mg/L
							As	200 mg/L
							B	40 mg/L
							Ba	200 mg/L
							Be	20 mg/L
							Bi	200 mg/L
							Ca	2000 mg/L
							Cd	200 mg/L
							Co	200 mg/L
							Cr	200 mg/L
							Cu	200 mg/L
							Fe	2000 mg/L
							K	2000 mg/L
							Li	20 mg/L
							Mg	2000 mg/L
							Mn	200 mg/L
							Na	2000 mg/L
							Ni	200 mg/L
							P	200 mg/L
							Pb	200 mg/L
							Se	100 mg/L
							Sm	200 mg/L
							Sr	200 mg/L
							Thorium	200 mg/L
							Tl	40 mg/L
							Uranium	200 mg/L
							V	200 mg/L
							Zn	200 mg/L
MPREP1-B_00004	11/26/20	CPI International, Lot 10094019-8			(Purchased Reagent)		Sulfur	2000 mg/L
MPREP2_00022	11/26/20	CPI International, Lot 10094019-7			(Purchased Reagent)		Mo	100 mg/L
							Sb	99.99 mg/L
							Si	1000 mg/L
							Sn	200 mg/L
							Ti	200 mg/L
							W	200 mg/L
							Zr	200 mg/L
MS A CAL1 LLC_00418	01/05/20	12/05/19	2% HCL 2% HN03, Lot 1843378	500 mL	MS CAL 1 A_00006	0.5 mL	Thorium	2 ug/L
							Uranium	1 ug/L
.MS CAL 1 A_00006	09/18/20	CPI, Lot 10103046-1			(Purchased Reagent)		Thorium	2 ug/mL
							Uranium	1 ug/mL
MS A CAL2 CCV_00375	01/05/20	12/05/19	2% HCL 2% HN03, Lot 1843378	500 mL	MS CAL3 A_00011	0.5 mL	Thorium	100 ug/L
							Uranium	100 ug/L
.MS CAL3 A_00011	05/31/20	CPI, Lot 10097743-1			(Purchased Reagent)		Thorium	100 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Uranium	100 ug/mL
MS A CAL3_00334	01/05/20	12/05/19	2% HCL 2% HN03, Lot 1843378	200 mL	MS CAL3 A_00011	0.4 mL	Thorium	200 ug/L
							Uranium	200 ug/L
.MS CAL3 A_00011	05/31/20	CPI, Lot 10097743-1			(Purchased Reagent)		Thorium	100 ug/mL
							Uranium	100 ug/mL
MS A ICSA_00326	12/11/19	12/04/19	2% HCL 2% HN03, Lot 1843378	100 mL	STD AL_00019	1 mL	Al	100 mg/L
.STD AL_00019	07/30/20	Inorganic Ventures, Lot 169484-37			(Purchased Reagent)		Al	10000 ug/mL
MS A ICSAB_00338	12/11/19	12/04/19	2% HCL 2% HN03, Lot 1843378	100 mL	MS CAL3 A_00012	0.05 mL	Thorium	50 ug/L
							Uranium	50 ug/L
.MS CAL3 A_00012	11/20/20	CPI, Lot 10097743-1			(Purchased Reagent)		Thorium	100 ug/mL
							Uranium	100 ug/mL
MS A ICV_01071	12/11/19	12/10/19	2% Nitric Acid, Lot 1843378	100 mL	MS ICV 2_00009	0.05 mL	Thorium	100 ug/L
							Uranium	100 ug/L
.MS ICV 2_00009	05/31/20	CPI, Lot 10097743-4			(Purchased Reagent)		Thorium	200 ug/mL
							Uranium	200 ug/mL
MS LDR 2_00186	12/25/19	11/25/19	2% HCL 2% HNO3, Lot 1831732	100 mL	MS CAL3 A_00011	2 mL	Thorium	2 ug/mL
							Uranium	2 ug/mL
.MS CAL3 A_00011	05/31/20	CPI, Lot 10097743-1			(Purchased Reagent)		Thorium	100 ug/mL
							Uranium	100 ug/mL
PR_LCSSRM U_00001	03/31/20	ERA, Lot D099-540			(Purchased Reagent)		Ag	43.3 mg/Kg
							Al	8360 mg/Kg
							As	161 mg/Kg
							B	81.6 mg/Kg
							Ba	260 mg/Kg
							Be	97.6 mg/Kg
							Ca	4760 mg/Kg
							Cd	211 mg/Kg
							Co	48.2 mg/Kg
							Cr	136 mg/Kg
							Cu	166 mg/Kg
							Fe	14100 mg/Kg
							Hg	11.5 mg/Kg
							K	2020 mg/Kg
							Mg	2340 mg/Kg
							Mn	228 mg/Kg
							Mo	110 mg/Kg
							Na	218 mg/Kg
							Ni	91.9 mg/Kg
							Pb	111 mg/Kg
							Sb	75.5 mg/Kg
							Se	191 mg/Kg

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Sn	99.9 mg/Kg
							Sr	107 mg/Kg
							Ti	376 mg/Kg
							Tl	156 mg/Kg
							Uranium	98.1 mg/Kg
							V	56.7 mg/Kg
							Zn	199 mg/Kg
Source A_00001	04/01/59	02/23/11	water, Lot 79670-334	0.9986 Source	Gamma Ampuole_00001	0.9986 g	Americium-241	9.4429 Bq
							Cd-109	132.909 Bq
							Ce-139	4.4538 Bq
							Cesium-137	3.7296 Bq
							Co-57	2.9513 Bq
							Cobalt-60	6.2002 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)		Americium-241	9442.9 Bq
							Cd-109	132909 Bq
							Ce-139	4453.8 Bq
							Cesium-137	3729.6 Bq
							Co-57	2951.3 Bq
							Cobalt-60	6200.2 Bq
							Hg-203	9699.6 Bq
							Sn-113	7626.6 Bq
							Y-88	12712 Bq
Source E_00001	04/01/59	02/23/11	water, Lot 79670-334	1.0205 g	Gamma Ampuole_00001	1.0205 g	Americium-241	9442.9 Bq
							Cd-109	132909 Bq
							Ce-139	4453.8 Bq
							Cesium-137	3729.6 Bq
							Co-57	2951.3 Bq
							Cobalt-60	6200.2 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)		Americium-241	9442.9 Bq
							Cd-109	132909 Bq
							Ce-139	4453.8 Bq
							Cesium-137	3729.6 Bq
							Co-57	2951.3 Bq
							Cobalt-60	6200.2 Bq
							Hg-203	9699.6 Bq
							Sn-113	7626.6 Bq
							Y-88	12712 Bq
Source G_00001	01/01/61	01/01/11	water, Lot 83725-334	10 mL	Gamma Ampuole_00003	1.8639 g	Americium-241	1693.09 Bq
							Cd-109	24592.1 Bq
							Ce-139	816.481 Bq

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Cesium-137	681.815 Bq
							Co-57	532.386 Bq
							Cobalt-60	1120.87 Bq
							Hg-203	1766.08 Bq
							Sn-113	1445.98 Bq
							Y-88	2359.21 Bq
.Gamma Ampuole_00003	01/19/61		Analytics, Lot 83725-334		(Purchased Reagent)		Americium-241	9083.6 Bq
							Cd-109	131939 Bq
							Ce-139	4380.5 Bq
							Cesium-137	3658 Bq
							Co-57	2856.3 Bq
							Cobalt-60	6013.6 Bq
							Hg-203	9475.2 Bq
							Sn-113	7757.8 Bq
							Y-88	12657.4 Bq
Source H_00002	01/01/51	01/01/12	wataer, Lot 83725-334	10 mL	Gamma Ampuole_00003	2.1184 g	Americium-241	1924.27 Bq
							Cd-109	27950 Bq
							Ce-139	927.965 Bq
							Cesium-137	774.911 Bq
							Co-57	605.079 Bq
							Cobalt-60	1273.92 Bq
							Hg-203	2007.23 Bq
							Sn-113	1643.41 Bq
							Y-88	2681.34 Bq
.Gamma Ampuole_00003	01/19/61		Analytics, Lot 83725-334		(Purchased Reagent)		Americium-241	9083.6 Bq
							Cd-109	131939 Bq
							Ce-139	4380.5 Bq
							Cesium-137	3658 Bq
							Co-57	2856.3 Bq
							Cobalt-60	6013.6 Bq
							Hg-203	9475.2 Bq
							Sn-113	7757.8 Bq
							Y-88	12657.4 Bq
Tuna Can LCS_00009	09/13/20		Analytics, Lot 74139-334		(Purchased Reagent)		Americium-241	219 dpm/g
							Cesium-137	82.3 dpm/g
							Cobalt-60	136 dpm/g
Tuna Can_00002	02/03/15		Eckert & Ziegler, Lot 81427-334		(Purchased Reagent)		Americium-241	1164 Bq
							Cd-109	16063 Bq
							Ce-139	546 Bq
							Cesium-137	465 Bq
							Co-57	357 Bq
							Cobalt-60	742 Bq
							Hg-203	1208 Bq
							Pb-210	15186 Bq
							Sn-113	943 Bq
							Y-88	1571 Bq

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
Tuna Can_00003	02/09/17	Eckert & Ziegler, Lot 90099			(Purchased Reagent)		Americium-241	1164 Bq
							Cd-109	16373 Bq
							Ce-139	549 Bq
							Cesium-137	467 Bq
							Co-57	362 Bq
							Cobalt-60	735 Bq
							Hg-203	1171 Bq
							Pb-210	14936 Bq
							Sn-113	967 Bq
							Y-88	1590 Bq
Tuna Can_00006	03/01/16	Eckert & Ziegler, Lot 83814-334			(Purchased Reagent)		Americium-241	1195 Bq
							Cd-109	16353 Bq
							Ce-139	543 Bq
							Cesium-137	453 Bq
							Co-57	354 Bq
							Cobalt-60	745 Bq
							Hg-203	1175 Bq
							Pb-210	14606 Bq
							Sn-113	961 Bq
							Y-88	1568 Bq

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: [signature] for
W. Mao, Radiochemist

QA Approved: [signature] 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

Gamma Ampuole_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

83725-334
5 mL Liquid in Flame Sealed Vial

Customer: Test America St. Louis/Earth City, MO
P.O. No.: 2397508, Item 1
Reference Date: 01-Jan-2011 12:00 PM EST **Grams of Master Source:** 0.028066

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
Am-241	59.5	1.580E+05	———	3.261E+03	0.1	0.9	1.8	4π LS
Cd-109	88.0	4.626E+02	1.697E+05	4.763E+03	0.8	1.7	3.8	HPGe
Co-57	122.1	2.718E+02	8.711E+04	2.445E+03	0.5	1.3	2.8	HPGe
Ce-139	165.9	1.376E+02	1.247E+05	3.500E+03	0.5	1.1	2.4	HPGe
Hg-203	279.2	4.661E+01	2.753E+05	7.727E+03	0.4	1.1	2.3	HPGe
Sn-113	391.7	1.151E+02	1.769E+05	4.965E+03	0.5	1.1	2.4	HPGe
Cs-137	661.7	1.098E+04	1.109E+05	3.113E+03	0.7	1.2	2.8	HPGe
Y-88	898.0	1.066E+02	4.224E+05	1.186E+04	0.5	1.1	2.4	HPGe
Co-60	1173.2	1.925E+03	2.142E+05	6.012E+03	0.6	1.1	2.5	HPGe
Co-60	1332.5	1.925E+03	2.143E+05	6.015E+03	0.6	1.1	2.5	HPGe
Y-88	1836.1	1.066E+02	4.472E+05	1.255E+04	0.5	1.1	2.4	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:
5.30203 grams 4M HCl solution with approximately 30 μg/g each of Cd, Co, Ce, Hg, Sn, Cs, and Y carriers.

This standard will expire one year after the reference date.

Source Prepared by: MITaskaeva
M. I. Taskaeva, Radiochemist

QA Approved: _____ Date: 13/JAN/11
J. D. McCorvey, QA Manager Alternate

Reagent

MPREP1-A_00004

CPI INTERNATIONAL

1842468
ID MPREP1-A_00004
Exp.11/26/20 Prpd:LAM Opn 11/26/19
Metals Prep 1 Spike A

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: TA-CM-FEB19-STL1-A

Custom ISO G34 Metals Prep 1 Spike A

Lot #: 10094019-9

Matrix: 5% HNO_3

Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty
Ag	40.00 ± 0.40 µg/mL	Cr	200.0 ± 2.0 µg/mL	Pb	200.0 ± 2.0 µg/mL
Al	2000 ± 10 µg/mL	Cu	200.0 ± 2.0 µg/mL	Se	100.0 ± 1.0 µg/mL
As	200.0 ± 2.0 µg/mL	Fe	2000 ± 10 µg/mL	Sm	200.0 ± 2.0 µg/mL
B	40.00 ± 0.20 µg/mL	K	2000 ± 10 µg/mL	Sr	200.0 ± 2.0 µg/mL
Ba	200.0 ± 2.0 µg/mL	Li	20.00 ± 0.20 µg/mL	Th	200.0 ± 2.0 µg/mL
Be	20.00 ± 0.20 µg/mL	Mg	2000 ± 10 µg/mL	Tl	40.00 ± 0.40 µg/mL
Bi	200.0 ± 2.0 µg/mL	Mn	200.0 ± 2.0 µg/mL	U	200.0 ± 2.0 µg/mL
Ca	2000 ± 10 µg/mL	Na	2000 ± 10 µg/mL	V	200.0 ± 2.0 µg/mL
Cd	200.0 ± 2.0 µg/mL	Ni	200.0 ± 2.0 µg/mL	Zn	200.0 ± 2.0 µg/mL
Co	200.0 ± 2.0 µg/mL	P	200.0 ± 2.0 µg/mL		

Source Material Lot# Chart

Element	Source Material Lot#	Element	Source Material Lot#	Element	Source Material Lot#
Ag	975475	Cr	880115	Pb	168223
Al	992545	Cu	148793	Se	929078
As	166531	Fe	1004971	Sm	120677R
B	982524	K	983959	Sr	976606
Ba	150283R	Li	156949	Th	122067
Be	998969	Mg	738337	Tl	991734
Bi	753003	Mn	985851	U	AM17-111UX
Ca	150704	Na	994710	V	983037
Cd	173171	Ni	752769	Zn	979871
Co	979870	P	122196R		

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to **NIST SRMs (see reverse side)**. The solution was stabilized using high purity nitric acid (HNO_3) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against **NIST SRMs (see reverse side)**. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

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F: 707.545.7901

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Nieuwe Hemweg 7P P: +31 20 638 05 97
1013BG Amsterdam F: +31 20 420 28 36
The Netherlands

www.cpiinternational.com

12/31/2019

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

November 8, 2019

Certification Date

CPI International waives all responsibility for any damages resulting from the usage and/or implementation of the products/data described herein.

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

This CRM is traceable to the following NIST SRMs:

Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM
Ag	3151	1077a		Hf	3122	—		S	3154	2770
Al	3101a	1075a		Hg	3133	3133		Sb	3102a	3102a
As	3103a	3103a		Ho	3123a	—		Sc	3148a	3148a
Au	3121	—		In	3124a	3124a		Se	3149	3149
B	3107	3107		K	3141a	3141a		Si	3150	1066a
Ba	3104a	1051b		La	3127a	3127a		Sm	3147a	—
Be	3105a	3105a		Li	3129a	3129a		Sn	3161a	1057b
Bi	3106	3106		Lu	3130a	—		SO_4^{-2}	3181	—
Br^-	3184	—		Mg	3131a	3131a		Sr	3153a	3153a
Ca	3109a	3109a		Mn	3132	3132		Ta	3155	—
Cd	3108	1053a		Mo	3134	3134		Tb	3157a	—
Ce	3110	3110		Na	3152a	3152a		Te	3156	—
Cl^-	3182	1818a		Nb	3137	—		Th	3159	—
Co	3113	3113		Nd	3135a	—		Ti	3162a	3162a
Cr	3112a	1078b		Ni	3136	1065b		Tl	3158	3158
Cs	3111a	—		NO_3^-	3185	—		Tm	3160a	—
Cu	3114	1080a		P	3139a	3139a		U	3164	—
Dy	3115a	—		Pb	3128	3128		V	3165	1052b
Er	3116a	—		Pd	3138	—		W	3163	3163
Eu	3117a	—		PO_4^{-3}	3186	—		Y	3167a	3167a
F^-	3183	—		Pr	3142a	—		Yb	3166a	—
Fe	3126a	1079b		Pt	3140	3140		Zn	3168a	3168a
Ga	3119a	—		Rb	3145a	—		Zr	3169	3169
Gd	3118a	—		Re	3143	—				
Ge	3120a	—		Rh	3144	3144				

Reagent

MPREP1-B_00004

1842490
ID: MPREP1-B_00004
Exp:11/26/20 Prpd:LAM Opn:11/26/19
Metals Prep 1 Spike B

CERTIFICATE OF ANALYSIS

Single-Element Aqueous CRM — Product #: TA-CM-FEB19-STL1-B

Custom ISO G34 Metals Prep 1 Spike Std. Solution B — Product Lot #: 10094019-8

Matrix: H_2O — Source Material Lot #: 983063

Element	Certified Concentration & Uncertainty
S	**2000 ± 10 µg/mL**

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to a nominal concentration of 2000 µg/mL by gravimetric methods using a single-element concentrate dissolved in high purity nitric acid (HNO_3) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentration and uncertainty were determined using the "High Performance ICP-OES" protocol developed by NIST, and both the certified concentration and uncertainty values are traceable to **NIST SRM 3154**. The uncertainty associated with the certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

November 8, 2019
Certification Date

CPI International waives all responsibility for any damages resulting from the usage and/or implementation of the products/data described herein.

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1013BG Amsterdam F: +31 20 420 28 36
The Netherlands

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

Reagent

MPREP2_00022

1842492
ID: MPREP2_00022
Exp:11/26/20 Prpd:LAM Opn 11/26/19
Metals Prep 2 Spike

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: TA-CM-FEB19-STL2-500

Custom ISO G34 Metals Prep 2 Spike Standard

Lot #: 10094019-7

Matrix: 5% HNO_3/tr. HF

Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty
Mo	100.0 ± 1.0 µg/mL	Sn	200.0 ± 2.0 µg/mL	Zr	200.0 ± 2.0 µg/mL
Sb	99.99 ± 0.50 µg/mL	Ti	200.0 ± 2.0 µg/mL		
Si	1000 ± 10 µg/mL	W	200.0 ± 2.0 µg/mL		

Source Material Lot# Chart

Element	Source Material Lot#	Element	Source Material Lot#	Element	Source Material Lot#
Mo	175215	Sn	171360	Zr	172925
Sb	978317	Ti	161694		
Si	977647	W	997482		

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to **NIST SRMs (see reverse side)**. The solution was stabilized using high purity nitric acid (HNO_3), trace hydrofluoric acid (HF) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against **NIST SRMs (see reverse side)**. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

November 8, 2019
Certification Date

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Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

This CRM is traceable to the following NIST SRMs:

Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM
Ag	3151	1077a		Hf	3122	—		S	3154	2770
Al	3101a	1075a		Hg	3133	3133		Sb	3102a	3102a
As	3103a	3103a		Ho	3123a	—		Sc	3148a	3148a
Au	3121	—		In	3124a	3124a		Se	3149	3149
B	3107	3107		K	3141a	3141a		Si	3150	1066a
Ba	3104a	1051b		La	3127a	3127a		Sm	3147a	—
Be	3105a	3105a		Li	3129a	3129a		Sn	3161a	1057b
Bi	3106	3106		Lu	3130a	—		SO_4^{-2}	3181	—
Br^-	3184	—		Mg	3131a	3131a		Sr	3153a	3153a
Ca	3109a	3109a		Mn	3132	3132		Ta	3155	—
Cd	3108	1053a		Mo	3134	3134		Tb	3157a	—
Ce	3110	3110		Na	3152a	3152a		Te	3156	—
Cl^-	3182	1818a		Nb	3137	—		Th	3159	—
Co	3113	3113		Nd	3135a	—		Ti	3162a	3162a
Cr	3112a	1078b		Ni	3136	1065b		Tl	3158	3158
Cs	3111a	—		NO_3^-	3185	—		Tm	3160a	—
Cu	3114	1080a		P	3139a	3139a		U	3164	—
Dy	3115a	—		Pb	3128	3128		V	3165	1052b
Er	3116a	—		Pd	3138	—		W	3163	3163
Eu	3117a	—		PO_4^{-3}	3186	—		Y	3167a	3167a
F^-	3183	—		Pr	3142a	—		Yb	3166a	—
Fe	3126a	1079b		Pt	3140	3140		Zn	3168a	3168a
Ga	3119a	—		Rb	3145a	—		Zr	3169	3169
Gd	3118a	—		Re	3143	—				
Ge	3120a	—		Rh	3144	3144				

Reagent

MS CAL 1 A_00006

1799532
ID: MS CAL 1 A_00006
Exp:09/18/20 Prpd:cb Opn:09/18/19
MS CAL 1 A

CPI INTERNATIONAL

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: TA-CM-AUG19-STL4

Custom Standard

Lot #: 10103046-1

Matrix: 5% HNO_3

Element	Certified Concentration	Element	Certified Concentration	Element	Certified Concentration
Ag	2.0 µg/mL	Cr	10.0 µg/mL	Sm	10.0 µg/mL
As	10.0 µg/mL	Cu	3.0 µg/mL	Sr	5.0 µg/mL
B	100 µg/mL	Li	5.0 µg/mL	Th	2.0 µg/mL
Ba	2.0 µg/mL	Mn	4.0 µg/mL	Tl	2.0 µg/mL
Be	0.5 µg/mL	Ni	5.0 µg/mL	U	1.0 µg/mL
Cd	0.5 µg/mL	Pb	3.0 µg/mL	V	10.0 µg/mL
Co	2.0 µg/mL	Se	5.0 µg/mL	Zn	20.0 µg/mL

Source Material Lot # Chart

Element	Source Material Lot#	Element	Source Material Lot#	Element	Source Material Lot#
Ag	975475	Cr	975466	Sm	148251
As	175385	Cu	982446	Sr	998106
B	982186	Li	751942	Th	987024
Ba	994634	Mn	997487	Tl	991734
Be	998969	Ni	984273	U	992180
Cd	996631	Pb	981329	V	990117
Co	979906	Se	982461	Zn	984272

Intended Use: This solution is intended for use as a reference material (RM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This RM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This RM was prepared to the certified concentrations shown above by gravimetric methods using single-element concentrates, and was stabilized using high purity nitric acid (HNO_3), and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this RM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against **NIST SRMs (see reverse side)**. The uncertainty associated with the certified concentration is ±0.5% relative, which is the sum of the estimated errors due to the purity of the raw materials, the gravimetric preparation of the solution, and transpiration through the container. This represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

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1013BG Amsterdam F: +31 20 420 28 36
The Netherlands

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the RM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original RM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

September 12, 2019

Certification Date

CPI International waives all responsibility for any damages resulting from the usage and/or implementation of the products/data described herein.

This RM is traceable to the following NIST SRMs:

Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM
Ag	3151	1077a		Hf	3122	—		S	3154	2770
Al	3101a	1075a		Hg	3133	3133		Sb	3102a	3102a
As	3103a	3103a		Ho	3123a	—		Sc	3148a	3148a
Au	3121	—		In	3124a	3124a		Se	3149	3149
B	3107	3107		K	3141a	3141a		Si	3150	1066a
Ba	3104a	1051b		La	3127a	3127a		Sm	3147a	—
Be	3105a	3105a		Li	3129a	3129a		Sn	3161a	1057b
Bi	3106	3106		Lu	3130a	—		SO_4^{2-}	3181	—
Br	3184	—		Mg	3131a	3131a		Sr	3153a	3153a
Ca	3109a	3109a		Mn	3132	3132		Ta	3155	—
Cd	3108	1053a		Mo	3134	3134		Tb	3157a	—
Ce	3110	3110		Na	3152a	3152a		Te	3156	—
Cl^-	3182	1818a		Nb	3137	—		Th	3159	—
Co	3113	3113		Nd	3135a	—		Ti	3162a	3162a
Cr	3112a	1078b		Ni	3136	1065b		Tl	3158	3158
Cs	3111a	—		NO_3^-	3186	—		Tm	3160a	—
Cu	3114	1080a		P	3139a	3139a		U	3164	—
Dy	3115a	—		Pb	3128	3128		V	3165	1052b
Er	3116a	—		Pd	3138	—		W	3163	3163
Eu	3117a	—		PO_4^{3-}	3186	—		Y	3167a	3167a
F^-	3183	—		Pr	3142a	—		Yb	3166a	—
Fe	3126a	1079b		Pt	3140	3140		Zn	3168a	3168a
Ga	3119a	—		Rb	3145a	—		Zr	3169	3169
Gd	3118a	—		Re	3143	—				
Ge	3120a	—		Rh	3144	3144				

Reagent

MS CAL3 A_00011

1738191
ID: MS CAL3 A_00011
Exp:05/31/20 Prpd:cb Opn:05/31/19
MS CAL 3 A

CPI INTERNATIONAL

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: TA-CM-APR19-STL5

Mix Name: TA-CAL-3

Lot #: 10097743-1

Matrix: 2% HNO_3

Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty
Ag	20.02 ± 0.10 µg/mL	Cr	100.1 ± 0.5 µg/mL	Sm	100.1 ± 0.5 µg/mL
As	100.0 ± 0.5 µg/mL	Cu	100.0 ± 0.5 µg/mL	Sr	100.1 ± 0.5 µg/mL
B	200.0 ± 1.0 µg/mL	Li	100.1 ± 0.5 µg/mL	Th	100.1 ± 0.5 µg/mL
Ba	100.1 ± 0.5 µg/mL	Mn	100.1 ± 0.5 µg/mL	Tl	20.02 ± 0.10 µg/mL
Be	100.0 ± 0.5 µg/mL	Ni	100.0 ± 0.5 µg/mL	U	100.1 ± 0.5 µg/mL
Cd	100.0 ± 0.5 µg/mL	Pb	100.1 ± 0.5 µg/mL	V	100.0 ± 0.5 µg/mL
Co	100.0 ± 0.5 µg/mL	Se	50.01 ± 0.25 µg/mL	Zn	100.0 ± 0.5 µg/mL

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to **NIST SRMs (see reverse side)**. The solution was stabilized using high purity nitric acid (HNO_3) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against **NIST SRMs (see reverse side)**. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

May 23, 2019
Certification Date

CPI International waives all responsibility for any damages resulting from the usage and/or implementation of the products/data described herein.

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12/31/2019

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

This CRM is traceable to the following NIST SRMs:

Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM
Ag	3151	1077a		Hf	3122	—		S	3154	2770
Al	3101a	1075a		Hg	3133	3133		Sb	3102a	3102a
As	3103a	3103a		Ho	3123a	—		Sc	3148a	3148a
Au	3121	—		In	3124a	3124a		Se	3149	3149
B	3107	3107		K	3141a	3141a		Si	3150	1066a
Ba	3104a	1051b		La	3127a	3127a		Sm	3147a	—
Be	3105a	3105a		Li	3129a	3129a		Sn	3161a	1057b
Bi	3106	3106		Lu	3130a	—		SO_4^{-2}	3181	—
Br^-	3184	—		Mg	3131a	3131a		Sr	3153a	3153a
Ca	3109a	3109a		Mn	3132	3132		Ta	3155	—
Cd	3108	1053a		Mo	3134	3134		Tb	3157a	—
Ce	3110	3110		Na	3152a	3152a		Te	3156	—
Cl^-	3182	1818a		Nb	3137	—		Th	3159	—
Co	3113	3113		Nd	3135a	—		Ti	3162a	3162a
Cr	3112a	1078b		Ni	3136	1065b		Tl	3158	3158
Cs	3111a	—		NO_3^-	3185	—		Tm	3160a	—
Cu	3114	1080a		P	3139a	3139a		U	3164	—
Dy	3115a	—		Pb	3128	3128		V	3165	1052b
Er	3116a	—		Pd	3138	—		W	3163	3163
Eu	3117a	—		PO_4^{-3}	3186	—		Y	3167a	3167a
F^-	3183	—		Pr	3142a	—		Yb	3166a	—
Fe	3126a	1079b		Pt	3140	3140		Zn	3168a	3168a
Ga	3119a	—		Rb	3145a	—		Zr	3169	3169
Gd	3118a	—		Re	3143	—				
Ge	3120a	—		Rh	3144	3144				

Reagent

MS CAL3 A_00012

1837637
ID: MS CAL3 A_00012
Exp:11/20/20 Prpd:LKP Opn 11/20/19
MS CAL 3 A

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: TA-CM-APR19-STL5

Mix Name: TA-CAL-3

Lot #: 10097743-1

Matrix: 2% HNO_3

Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty
Ag	20.02 ± 0.10 µg/mL	Cr	100.1 ± 0.5 µg/mL	Sm	100.1 ± 0.5 µg/mL
As	100.0 ± 0.5 µg/mL	Cu	100.0 ± 0.5 µg/mL	Sr	100.1 ± 0.5 µg/mL
B	200.0 ± 1.0 µg/mL	Li	100.1 ± 0.5 µg/mL	Th	100.1 ± 0.5 µg/mL
Ba	100.1 ± 0.5 µg/mL	Mn	100.1 ± 0.5 µg/mL	Tl	20.02 ± 0.10 µg/mL
Be	100.0 ± 0.5 µg/mL	Ni	100.0 ± 0.5 µg/mL	U	100.1 ± 0.5 µg/mL
Cd	100.0 ± 0.5 µg/mL	Pb	100.1 ± 0.5 µg/mL	V	100.0 ± 0.5 µg/mL
Co	100.0 ± 0.5 µg/mL	Se	50.01 ± 0.25 µg/mL	Zn	100.0 ± 0.5 µg/mL

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to **NIST SRMs (see reverse side)**. The solution was stabilized using high purity nitric acid (HNO_3) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against **NIST SRMs (see reverse side)**. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

November 12, 2019
Certification Date

CPI International waives all responsibility for any damages resulting from the usage and/or implementation of the products/data described herein.

USA
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F: 707.545.7901

Europe
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1013BG Amsterdam F: +31 20 420 28 36
The Netherlands

www.cpiinternational.com

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

This CRM is traceable to the following NIST SRMs:

Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM
Ag	3151	1077a		Hf	3122	—		S	3154	2770
Al	3101a	1075a		Hg	3133	3133		Sb	3102a	3102a
As	3103a	3103a		Ho	3123a	—		Sc	3148a	3148a
Au	3121	—		In	3124a	3124a		Se	3149	3149
B	3107	3107		K	3141a	3141a		Si	3150	1066a
Ba	3104a	1051b		La	3127a	3127a		Sm	3147a	—
Be	3105a	3105a		Li	3129a	3129a		Sn	3161a	1057b
Bi	3106	3106		Lu	3130a	—		SO_4^{-2}	3181	—
Br^-	3184	—		Mg	3131a	3131a		Sr	3153a	3153a
Ca	3109a	3109a		Mn	3132	3132		Ta	3155	—
Cd	3108	1053a		Mo	3134	3134		Tb	3157a	—
Ce	3110	3110		Na	3152a	3152a		Te	3156	—
Cl^-	3182	1818a		Nb	3137	—		Th	3159	—
Co	3113	3113		Nd	3135a	—		Ti	3162a	3162a
Cr	3112a	1078b		Ni	3136	1065b		Tl	3158	3158
Cs	3111a	—		NO_3^-	3185	—		Tm	3160a	—
Cu	3114	1080a		P	3139a	3139a		U	3164	—
Dy	3115a	—		Pb	3128	3128		V	3165	1052b
Er	3116a	—		Pd	3138	—		W	3163	3163
Eu	3117a	—		PO_4^{-3}	3186	—		Y	3167a	3167a
F^-	3183	—		Pr	3142a	—		Yb	3166a	—
Fe	3126a	1079b		Pt	3140	3140		Zn	3168a	3168a
Ga	3119a	—		Rb	3145a	—		Zr	3169	3169
Gd	3118a	—		Re	3143	—				
Ge	3120a	—		Rh	3144	3144				

Reagent

MS ICV 2_00009

1738164
ID MS ICV 2_00009
Exp 05/31/20 Prpd:cb Opn 05/31/19
ICV 2 - new

CPI INTERNATIONAL

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: G34-TA-CM-APR19-STL8

Mix Name: G34 MC ICV 2

Lot #: 10097743-4

Matrix: 2% HNO_3

Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty
Ag	39.98 ± 0.20 µg/mL	Li	200.1 ± 1.0 µg/mL	Tl	40.17 ± 0.20 µg/mL
Ba	200.0 ± 1.0 µg/mL	Mn	200.4 ± 1.0 µg/mL	U	200.4 ± 1.0 µg/mL
Be	200.4 ± 1.0 µg/mL	Ni	200.1 ± 1.0 µg/mL	V	200.1 ± 1.0 µg/mL
Cd	200.3 ± 1.0 µg/mL	Pb	200.1 ± 1.0 µg/mL	Zn	200.1 ± 1.0 µg/mL
Co	200.1 ± 1.0 µg/mL	Sm	200.2 ± 1.0 µg/mL	Zr	200.5 ± 1.0 µg/mL
Cr	200.2 ± 1.0 µg/mL	Sr	200.5 ± 1.0 µg/mL		
Cu	200.2 ± 1.0 µg/mL	Th	200.0 ± 1.0 µg/mL		

Intended Use: This solution is intended for use as a second source certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to **NIST SRMs (see reverse side)**. The solution was stabilized using high purity nitric acid (HNO_3) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against **NIST SRMs (see reverse side)**. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

May 23, 2019
Certification Date

CPI International waives all responsibility for any damages resulting from the usage and/or implementation of the products/data described herein.

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1013BG Amsterdam F: +31 20 420 28 36
The Netherlands

www.cpiinternational.com

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

This CRM is traceable to the following NIST SRMs:

Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM
Ag	3151	1077a		Hf	3122	—		S	3154	2770
Al	3101a	1075a		Hg	3133	3133		Sb	3102a	3102a
As	3103a	3103a		Ho	3123a	—		Sc	3148a	3148a
Au	3121	—		In	3124a	3124a		Se	3149	3149
B	3107	3107		K	3141a	3141a		Si	3150	1066a
Ba	3104a	1051b		La	3127a	3127a		Sm	3147a	—
Be	3105a	3105a		Li	3129a	3129a		Sn	3161a	1057b
Bi	3106	3106		Lu	3130a	—		SO_4^{-2}	3181	—
Br^-	3184	—		Mg	3131a	3131a		Sr	3153a	3153a
Ca	3109a	3109a		Mn	3132	3132		Ta	3155	—
Cd	3108	1053a		Mo	3134	3134		Tb	3157a	—
Ce	3110	3110		Na	3152a	3152a		Te	3156	—
Cl^-	3182	1818a		Nb	3137	—		Th	3159	—
Co	3113	3113		Nd	3135a	—		Ti	3162a	3162a
Cr	3112a	1078b		Ni	3136	1065b		Tl	3158	3158
Cs	3111a	—		NO_3^-	3185	—		Tm	3160a	—
Cu	3114	1080a		P	3139a	3139a		U	3164	—
Dy	3115a	—		Pb	3128	3128		V	3165	1052b
Er	3116a	—		Pd	3138	—		W	3163	3163
Eu	3117a	—		PO_4^{-3}	3186	—		Y	3167a	3167a
F^-	3183	—		Pr	3142a	—		Yb	3166a	—
Fe	3126a	1079b		Pt	3140	3140		Zn	3168a	3168a
Ga	3119a	—		Rb	3145a	—		Zr	3169	3169
Gd	3118a	—		Re	3143	—				
Ge	3120a	—		Rh	3144	3144				

Reagent

PR_LCSSRM U_00001

Reference Materials

▪ Certificate of Analysis ▪

Product: Metals in Soil
Catalog Number: 540
Lot No. D099-540
Certificate Issue Date: September 25, 2017
Expiration Date: May 31, 2020
Revision Number: Original

1598419
ID PR_LCSSRM_00023
Exp:05/31/20 Prep: LKP Opn:06/23/19
Soil ERA

Product use instructions are included as part of the certification packet and are paginated separately from this Certificate of Analysis. Please reference the product use instructions for catalog #540 revision 030512.

CERTIFICATION

Parameter	Certified Value[1]	Reference Value	Uncertainty[2]	QC Performance Acceptance Limits[3]	PT Performance Acceptance Limits[4]
	mg/kg	mg/kg	%	mg/kg	mg/kg
Aluminum	10100	8360	6.40	4150 - 12600	4200 - 12500
Antimony	145	75.5	4.11	2.85 - 148	14.5 - 199
Arsenic	171	161	5.55	134 - 188	113 - 209
Barium	272	260	1.63	215 - 305	195 - 325
Beryllium	102	97.6	6.04	81.4 - 114	73.2 - 122
Boron	102	81.6	5.55	59.2 - 104	49.0 - 114
Cadmium	225	211	4.08	176 - 246	158 - 264
Calcium	5190	4760	5.49	3890 - 5640	3460 - 6070
Chromium	144	136	5.99	112 - 160	95.2 - 177
Cobalt	48.8	48.2	5.95	40.6 - 55.7	36.1 - 60.2
Copper	174	166	6.60	139 - 192	124 - 207
Iron	15000	14100	7.12	8470 - 19700	4930 - 23200
Lead	111	111	5.58	92.1 - 130	78.8 - 143
Magnesium	2570	2340	5.51	1780 - 2900	1450 - 3220
Manganese	232	228	3.96	188 - 268	165 - 291
Mercury	12.0	11.5	1.02	8.23 - 14.7	6.87 - 16.0
Molybdenum	123	110	2.96	88.2 - 132	77.5 - 142
Nickel	98.3	91.9	5.89	76.2 - 108	64.3 - 119
Potassium	2420	2020	6.79	1410 - 2630	1190 - 2850
Selenium	206	191	6.44	152 - 231	131 - 252
Silver	45.5	43.3	6.26	34.6 - 51.9	30.1 - 56.5
Sodium	252	218	6.53	159 - 278	105 - 332
Strontium	111	107	5.08	87.0 - 127	77.2 - 137
Thallium	167	156	6.28	127 - 186	110 - 202

16341 Table Mountain Pkwy ▪ Golden, CO 80403 ▪ T: 800.372.0122 ▪ 303.431.8454 ▪ www.eraqc.com

▪ Certificate of Analysis ▪

Parameter	Certified Value[1]	Reference Value	Uncertainty[2]	QC Performance Acceptance Limits[3]	PT Performance Acceptance Limits[4]
	mg/kg	mg/kg	%	mg/kg	mg/kg
Tin	111	99.9	6.00	78.1 - 122	56.7 - 143
Titanium	512	376	5.98	68.8 - 683	51.2 - 803
Uranium	97.6	98.1	6.22	74.9 - 121	72.6 - 124
Vanadium	61.8	56.7	9.53	44.8 - 68.7	32.2 - 81.3
Zinc	207	199	7.09	162 - 237	139 - 259

ANALYTICAL VERIFICATION

Parameter	Certified Value[1]	Proficiency Testing Study			NIST Traceability	
		Mean	Recovery[5]	n	SRM Number	Recovery
	mg/kg	mg/kg	%			%
Aluminum	10100	8360	82.8	157	-	-
Antimony	145	75.5	52.0	160	-	-
Arsenic	171	161	94.2	200	-	-
Barium	272	260	95.6	182	-	-
Beryllium	102	97.6	95.6	167	-	-
Boron	102	81.6	80.0	115	-	-
Cadmium	225	211	93.7	200	-	-
Calcium	5190	4760	91.8	140	-	-
Chromium	144	136	94.5	191	-	-
Cobalt	48.8	48.2	98.7	168	-	-
Copper	174	166	95.2	202	-	-
Iron	15000	14100	93.6	153	-	-
Lead	111	111	99.9	208	-	-
Magnesium	2570	2340	90.9	143	-	-
Manganese	232	228	98.4	170	-	-
Mercury	12.0	11.5	95.5	133	-	-
Molybdenum	123	110	89.4	168	-	-
Nickel	98.3	91.9	93.5	197	-	-
Potassium	2420	2020	83.6	142	-	-
Selenium	206	191	92.9	184	-	-

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▪ Certificate of Analysis ▪

Parameter	Certified Value[1]	Proficiency Testing Study			NIST Traceability	
		Mean	Recovery[5]	n	SRM Number	Recovery
	mg/kg	mg/kg	%			%
Silver	45.5	43.3	95.1	165	-	-
Sodium	252	218	86.6	138	-	-
Strontium	111	107	96.5	118	-	-
Thallium	167	156	93.6	163	-	-
Tin	111	99.9	90.0	126	-	-
Titanium	512	376	73.4	122	-	-
Uranium	97.6	98.1	100	36	-	-
Vanadium	61.8	56.7	91.8	163	-	-
Zinc	207	199	96.2	200	-	-

1. The **Certified Values** are the actual "made-to" concentrations confirmed by ERA analytical verification. The certified values are monitored and purchasers will be notified of any significant changes resulting in recertification or withdrawal of this certified reference material during the period of validity of this certificate.

2. The **Uncertainty** is the total propagated uncertainty at the 95% confidence interval. The uncertainty is based on the preparation and internal analytical verification of the product by ERA, multiplied by a coverage factor. The uncertainty applies to the product as supplied and does not take into account any required or optional dilution and/or preparations the laboratory may perform while using this product.

3. The **QC Performance Acceptance Limits (QC PALs™)** are based on actual historical data collected in ERA's Proficiency Testing program. The QC PALs™ reflect any inherent biases in the methods used to establish the limits and closely approximate a 95% confidence interval of the performance that experienced laboratories should achieve using accepted environmental methods. Use the QC PALs™ to realistically evaluate your performance against your peers.

4. The **PT Performance Acceptance Limits (PT PALs™)** are calculated using the regression equations and fixed acceptance criteria specified in the NELAC proficiency testing requirements. Use the PT PALs™ when analyzing this QC standard alongside USEPA and NELAC compliant PT standards. Please note that many PT study acceptance limits are concentration dependent (some non-linearly) and, therefore, the acceptance limits of this QC standard and any PT standard may differ relative to their difference in concentrations.

5. The **PT Data/Traceability** data include the mean value, percent recovery and number of data points reported by the laboratories in our Proficiency Testing study compared to the Certified Values. In addition, where NIST Standard Reference Materials (SRMs) are available, each analyte has been analytically traced to the NIST SRM listed. This product is traceable to the lot numbers of its starting materials. All gravimetric and volumetric measurements related to its manufacture are traceable to NIST through an unbroken chain of comparisons.
Traceability Recovery (%) = [(% recovery certified standard)/(% recovery NIST SRM)]*100
The traceability data shown were compiled by analyzing the ERA standards or their associated stock solutions against the applicable NIST SRMs.

6. For additional information on this product such as intended use, instructions for use, level of homogeneity, and safety information, please refer to the provided Instruction Sheet

If you have any questions or need technical assistance, please call ERA technical assistance at 1-800-372-0122 or send an email to info@eraqc.com.

Certifying Officer

Brian Miller

Quality Officer

Patrick Larson

16341 Table Mountain Pkwy ▪ Golden, CO 80403 ▪ T: 800.372.0122 ▪ 303.431.8454 ▪ www.eraqc.com

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: [signature] for
W. Mao, Radiochemist

QA Approved: [signature] 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 E_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: [signature] for
W. Mao, Radiochemist

QA Approved: [signature] 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 G_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: [signature] for
W. Mao, Radiochemist

QA Approved: [signature] 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

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

83725-334
5 mL Liquid in Flame Sealed Vial

Customer: Test America St. Louis/Earth City, MO
P.O. No.: 2397508, Item 1
Reference Date: 01-Jan-2011 12:00 PM EST **Grams of Master Source:** 0.028066

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
Am-241	59.5	1.580E+05	———	3.261E+03	0.1	0.9	1.8	4π LS
Cd-109	88.0	4.626E+02	1.697E+05	4.763E+03	0.8	1.7	3.8	HPGe
Co-57	122.1	2.718E+02	8.711E+04	2.445E+03	0.5	1.3	2.8	HPGe
Ce-139	165.9	1.376E+02	1.247E+05	3.500E+03	0.5	1.1	2.4	HPGe
Hg-203	279.2	4.661E+01	2.753E+05	7.727E+03	0.4	1.1	2.3	HPGe
Sn-113	391.7	1.151E+02	1.769E+05	4.965E+03	0.5	1.1	2.4	HPGe
Cs-137	661.7	1.098E+04	1.109E+05	3.113E+03	0.7	1.2	2.8	HPGe
Y-88	898.0	1.066E+02	4.224E+05	1.186E+04	0.5	1.1	2.4	HPGe
Co-60	1173.2	1.925E+03	2.142E+05	6.012E+03	0.6	1.1	2.5	HPGe
Co-60	1332.5	1.925E+03	2.143E+05	6.015E+03	0.6	1.1	2.5	HPGe
Y-88	1836.1	1.066E+02	4.472E+05	1.255E+04	0.5	1.1	2.4	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:
5.30203 grams 4M HCl solution with approximately 30 μg/g each of Cd, Co, Ce, Hg, Sn, Cs, and Y carriers.

This standard will expire one year after the reference date.

Source Prepared by: MITaskaeva
M. I. Taskaeva, Radiochemist

QA Approved: _____ Date: 13/JAN/11
J. D. McCorvey, QA Manager Alternate

Reagent

Source H_00002

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

83725-334
5 mL Liquid in Flame Sealed Vial

Customer: Test America St. Louis/Earth City, MO
P.O. No.: 2397508, Item 1
Reference Date: 01-Jan-2011 12:00 PM EST **Grams of Master Source:** 0.028066

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
Am-241	59.5	1.580E+05	———	3.261E+03	0.1	0.9	1.8	4π LS
Cd-109	88.0	4.626E+02	1.697E+05	4.763E+03	0.8	1.7	3.8	HPGe
Co-57	122.1	2.718E+02	8.711E+04	2.445E+03	0.5	1.3	2.8	HPGe
Ce-139	165.9	1.376E+02	1.247E+05	3.500E+03	0.5	1.1	2.4	HPGe
Hg-203	279.2	4.661E+01	2.753E+05	7.727E+03	0.4	1.1	2.3	HPGe
Sn-113	391.7	1.151E+02	1.769E+05	4.965E+03	0.5	1.1	2.4	HPGe
Cs-137	661.7	1.098E+04	1.109E+05	3.113E+03	0.7	1.2	2.8	HPGe
Y-88	898.0	1.066E+02	4.224E+05	1.186E+04	0.5	1.1	2.4	HPGe
Co-60	1173.2	1.925E+03	2.142E+05	6.012E+03	0.6	1.1	2.5	HPGe
Co-60	1332.5	1.925E+03	2.143E+05	6.015E+03	0.6	1.1	2.5	HPGe
Y-88	1836.1	1.066E+02	4.472E+05	1.255E+04	0.5	1.1	2.4	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:
5.30203 grams 4M HCl solution with approximately 30 μg/g each of Cd, Co, Ce, Hg, Sn, Cs, and Y carriers.

This standard will expire one year after the reference date.

Source Prepared by: MITaskaeva
M. I. Taskaeva, Radiochemist

QA Approved: _____ Date: 13/JAN/11
J. D. McCorvey, QA Manager Alternate

Reagent

STD AL_00019

1773038
ID: STD AL_00019
Exp 07/30/20 Prod DAS Dpn 07/30/19
AL

CERTIFICATE OF ANALYSIS

Single-Element Aqueous CRM — Product #: TA-10M11

SE Std Aluminum (Al) – 10,000 µg/mL — Lot #: 169484-37

Matrix: 5% HNO_3

Element	Certified Concentration & Uncertainty
Al	10,030 ± 20 µg/mL (w/v)
	9428 ± 22 µg/g (w/w)

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to a nominal concentration of 10,000 µg/mL by gravimetric methods using 99.999% pure aluminum nitrate [$Al(NO_3)_3$] dissolved in high purity nitric acid (HNO_3) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentration and uncertainty were determined using the "High Performance ICP-OES" protocol developed by NIST, and both the certified concentration and uncertainty values are traceable to **NIST SRM 3101a, lot #140903**. The uncertainty associated with the certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Indicative Values: ICP-MS was used to determine trace metal concentrations for this product (nd = not determined).

Trace Concentrations (µg/L)

Ag	<5	Co	<10	Ge	<5	Mg	<50	Pd	<5	Si	<1000	V	<10
Al	MAJOR	Cs	<5	Hf	<2	Mn	<10	Pr	<2	Sm	<2	W	16
As	<20	Cr	89	Hg	<5	Mo	<5	Pt	<5	Sn	<5	Y	<5
Au	<5	Cu	<10	Ho	<2	Na	3315	Rb	<5	Sr	<10	Yb	<2
B	<50	Dy	<2	In	nd	Nb	<5	Re	<2	Ta	<5	Zn	30
Ba	<10	Er	<2	Ir	<2	Nd	<2	Rh	<5	Tb	<5		
Bi	<2	Eu	<2	K	<250	Ni	<20	Ru	<5	Te	<10		
Ca	330	Fe	890	La	<5	Os	<5	Sb	<5	Ti	<20		
Cd	<5	Ga	681	Li	<20	P	<1000	Sc	<50	Tl	10		
Ce	<2	Gd	<2	Lu	<2	Pb	<10	Se	<20	Tm	<2		

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

July 19, 2019
Certification Date

CPI International waives all responsibility for any damages resulting from the usage and/or implementation of the products/data described herein.

USA
5580 Skylane Boulevard P: 707.525.5788
Santa Rosa, CA 95403 P: 800.878.7654
F: 707.545.7901

Europe
Nieuwe Hemweg 7P P: +31 20 638 05 97
1013BG Amsterdam F: +31 20 420 28 36
The Netherlands

www.cpiinternational.com

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

Reagent

Tuna Can LCS_00009

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

St. Louis Radiological Standard Verification

Printed: 9/17/2019 12:40 PM

Standard ID Number: 1798543
True Value = 27.51 pCi/L or g
Date Analyzed: 9/13/2019

Radionuclide: Cs-137

Replicates

#1	28.54	pCi/L or g
#2	26.76	pCi/L or g
#3	26.73	pCi/L or g

Tuna can LCS-00009

Mean = 27.343333

1 sigma = 1.0364523

1.96 sigma = 2.031446

True Value minus 5% = 26.1345 (True Value - 5%)
True Value plus 5% = 28.8855 (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: cmm 9/17/19

2nd Reviewed By/Date: CJP 9/17/19

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

St. Louis Radiological Standard Verification

Printed: 9/17/2019 12:43 PM

Standard ID Number: 1798543
True Value = 11.16 pCi/L or g
Date Analyzed: 9/13/2019

Radionuclide: Co-60

	Replicates	
#1	11	pCi/L or g
#2	10.57	pCi/L or g
#3	10.6	pCi/L or g

Mean = 10.723333

1 sigma = 0.2400694

1.96 sigma = 0.470536

True Value minus 5% = 10.602 (True Value - 5%)
True Value plus 5% = 11.718 (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: umm 9/17/19

2nd Reviewed By/Date: [illegible] 9/17/19

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

St. Louis Radiological Standard Verification

Printed: 9/17/2019 12:44 PM

Standard ID Number: 1798543
True Value = 96.62 pCi/L or g
Date Analyzed: 9/13/2019

Radionuclide: Am-241

	Replicates	
#1	101.7	pCi/L or g
#2	96.41	pCi/L or g
#3	95.48	pCi/L or g

Mean = 97.863333

1 sigma = 3.355031

1.96 sigma = 6.575861

True Value minus 5% = 91.789 (True Value - 5%)
True Value plus 5% = 101.451 (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: Cmm 9/17/19

2nd Reviewed By/Date: CJP 9/17/19

eurofins Environment Testing TestAmerica

Analysis Report for Gamma Spectroscopy

Batch: 442821 **Operator:**

MQO

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
LCS 160-442821~2-	LCS	341.90g	1.00	GammaVision	GV05	9 / 13 / 19 11:44	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA	
AC-228	11136	4.065E-001pCi/g	3.032E-001	3.025E-001	1.192E+000	5.689E-001	0.34	0.3032
AG-108M	10982	1.185E-001pCi/g	7.877E-002	7.853E-002	3.100E-001	1.503E-001	0.38	0.0788
AG-110M	10973	2.000E-001pCi/g	9.003E-002	8.945E-002	5.914E-001	2.852E-001	0.34	0.0900
AM-241	10818	1.017E+002pCi/g	5.329E+000	7.416E-001	8.130E-001	4.000E-001	125.08	5.3292
BA-133	10469	1.514E-001pCi/g	1.488E-001	1.485E-001	4.938E-001	2.411E-001	0.31	0.1488
BA-140	10463	2.083E-001pCi/g	2.262E-001	2.259E-001	9.621E-001	4.604E-001	0.22	0.2262
BE-7	10435	1.114E+000pCi/g	1.027E+000	1.025E+000	3.407E+000	1.660E+000	0.33	1.0267
BI-207	10195	-2.863E-001pCi/g	2.010E-001	2.004E-001	5.293E-001	2.527E-001	-0.54	0.2010
BI-210M	10173	-1.581E-001pCi/g	2.131E-001	2.129E-001	4.979E-001	2.433E-001	-0.32	0.2131
BI-212	10160	9.310E-001pCi/g	1.149E+000	1.148E+000	3.868E+000	1.848E+000	0.24	1.1488
BI-214	10154	2.326E-001pCi/g	2.064E-001	2.060E-001	1.071E+000	5.232E-001	0.22	0.2064
CD-109	9254	1.444E+000pCi/g	2.033E+000	2.031E+000	6.744E+000	3.327E+000	0.21	2.0327
CD-113M	17462	8.913E+002pCi/g	1.147E+003	1.145E+003	3.822E+003	1.865E+003	0.23	1,146.6992
CE-139	9241	4.620E-002pCi/g	7.074E-002	7.060E-002	2.355E-001	1.154E-001	0.20	0.0707
CE-141	9235	-8.939E-002pCi/g	1.306E-001	1.305E-001	4.344E-001	2.135E-001	-0.21	0.1306
CE-144	9221	-3.028E-002pCi/g	5.116E-001	5.116E-001	1.716E+000	8.424E-001	-0.02	0.5116
CF-249	9215	9.341E-002pCi/g	1.575E-001	1.574E-001	5.640E-001	2.762E-001	0.17	0.1575
CF-251	13690	2.026E-002pCi/g	3.341E-001	3.341E-001	8.977E-001	4.371E-001	0.02	0.3341
CO-56	8704	-5.180E-002pCi/g	6.396E-002	6.391E-002	3.155E-001	1.504E-001	-0.16	0.0640
CO-57	13694	5.022E-002pCi/g	6.294E-002	6.288E-002	2.192E-001	1.077E-001	0.23	0.0629
CO-58	8698	1.213E-001pCi/g	1.166E-001	1.164E-001	3.887E-001	1.872E-001	0.31	0.1166
CO-60	8692	1.100E+001pCi/g	5.892E-001	2.058E-001	5.871E-002	1.856E-002	187.32	0.5892
CR-51	8604	8.324E-001pCi/g	8.498E-001	8.486E-001	2.823E+000	1.378E+000	0.29	0.8498
CS-134	8553	1.015E-001pCi/g	1.246E-001	1.244E-001	4.184E-001	2.010E-001	0.24	0.1246
CS-136	8546	-1.530E-001pCi/g	1.378E-001	1.376E-001	4.578E-001	2.217E-001	-0.33	0.1378
CS-137	8539	2.854E+001pCi/g	1.538E+000	4.012E-001	2.446E-001	1.153E-001	116.69	1.5381
EU-152	7145	3.020E-001pCi/g	2.418E-001	2.413E-001	6.436E-001	3.160E-001	0.47	0.2418
EU-154	7138	2.290E-001pCi/g	2.544E-001	2.542E-001	4.328E-001	2.123E-001	0.53	0.2544
EU-155	7131	-2.454E-001pCi/g	3.675E-001	3.673E-001	1.219E+000	6.019E-001	-0.20	0.3675
FE-59	7073	-3.237E-001pCi/g	3.238E-001	3.234E-001	7.052E-001	3.364E-001	-0.46	0.3238
GA-68	18005	-9.487E-001pCi/g	6.188E+000	6.188E+000	1.372E+001	6.538E+000	-0.07	6.1878
GD-153	6824	1.957E-001pCi/g	1.591E-001	1.586E-001	6.377E-001	3.133E-001	0.31	0.1591
HF-181	6495	-1.709E-001pCi/g	1.588E-001	1.585E-001	5.263E-001	2.574E-001	-0.32	0.1588
HG-203	6466	4.060E-002pCi/g	9.570E-002	9.567E-002	2.441E-001	1.184E-001	0.17	0.0957
I-131	6380	1.133E-001pCi/g	1.081E-001	1.079E-001	2.735E-001	1.323E-001	0.41	0.1081
IR-192	6303	-1.012E-001pCi/g	1.012E-001	1.010E-001	3.357E-001	1.641E-001	-0.30	0.1012
K-40	6148	8.569E-001pCi/g	3.415E-001	3.387E-001	9.090E-001	3.452E-001	0.94	0.3415
KR-85	6111	9.028E+000pCi/g	2.406E+001	2.405E+001	8.100E+001	3.937E+001	0.11	24.0589
LA-140	6096	7.687E-002pCi/g	2.802E-002	2.772E-002	7.164E-002	2.265E-002	1.07	0.0280
MN-54	5382	1.261E-001pCi/g	1.134E-001	1.132E-001	2.567E-001	1.210E-001	0.49	0.1134
NA-22	5201	-5.117E-003pCi/g	3.600E-002	3.600E-002	1.376E-001	5.841E-002	-0.04	0.0360
NB-94	5160	1.661E-002pCi/g	9.748E-002	9.747E-002	2.349E-001	1.110E-001	0.07	0.0975
NB-95	5154	1.187E-001pCi/g	9.088E-002	9.067E-002	3.014E-001	1.439E-001	0.39	0.0909
ND-147	5083	3.185E-001pCi/g	3.051E-001	3.045E-001	1.867E+000	8.952E-001	0.17	0.3051
NP-237	4757	-4.197E-001pCi/g	6.528E-001	6.524E-001	2.166E+000	1.070E+000	-0.19	0.6528
NP-239	4751	2.244E-001pCi/g	3.296E-001	3.293E-001	1.094E+000	5.396E-001	0.21	0.3296
PA-231	4541	1.010E+000pCi/g	4.359E+000	4.359E+000	1.455E+001	7.166E+000	0.07	4.3590
PA-233	4535	2.171E-001pCi/g	3.533E-001	3.532E-001	1.175E+000	5.785E-001	0.18	0.3533
PA-234	4528	2.721E-001pCi/g	3.471E-001	3.468E-001	1.153E+000	5.669E-001	0.24	0.3471

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PA-234M	19453	-2.323E+001pCi/g	1.952E+001	1.948E+001	6.495E+001	3.146E+001	-0.36	19.5162
PB-210	4467	7.535E+002pCi/g	4.494E+001	7.890E+000	1.440E+001	7.124E+000	52.31	44.9442
PB-212	4454	5.468E-001pCi/g	1.146E-001	1.090E-001	3.328E-001	1.605E-001	1.64	0.1146
PB-214	4448	4.716E-001pCi/g	1.908E-001	1.892E-001	8.029E-001	3.920E-001	0.59	0.1908
PM-144	19585	1.555E-002pCi/g	9.547E-002	9.547E-002	2.297E-001	1.085E-001	0.07	0.0955
PM-146	2464	5.132E-002pCi/g	8.496E-002	8.492E-002	4.790E-001	2.327E-001	0.11	0.0850
RH-106	1882	6.982E-001pCi/g	1.483E+000	1.482E+000	4.967E+000	2.426E+000	0.14	1.4829
RU-103	1828	-3.450E-002pCi/g	1.159E-001	1.159E-001	2.848E-001	1.372E-001	-0.12	0.1159
SB-124	1784	1.827E-001pCi/g	1.472E-001	1.469E-001	4.788E-001	2.337E-001	0.38	0.1472
SB-125	1777	2.430E-001pCi/g	3.275E-001	3.273E-001	9.103E-001	4.411E-001	0.27	0.3275
SC-46	1739	-1.702E-001pCi/g	1.569E-001	1.567E-001	5.215E-001	2.531E-001	-0.33	0.1569
SN-113	1570	1.532E-001pCi/g	1.719E-001	1.717E-001	5.714E-001	2.796E-001	0.27	0.1719
SN-126	17459	7.612E-001pCi/g	7.746E-001	7.736E-001	2.567E+000	1.261E+000	0.30	0.7746
TA-182	1301	7.726E-002pCi/g	1.583E-001	1.582E-001	9.973E-001	4.719E-001	0.08	0.1583
TC-99M	17412	5.631E-002pCi/g	7.110E-002	7.103E-002	2.361E-001	1.161E-001	0.24	0.0711
TH-227	1058	4.902E-001pCi/g	6.613E-001	6.606E-001	2.739E+000	1.330E+000	0.18	0.6613
TH-229	1046	5.186E-001pCi/g	1.499E+000	1.498E+000	4.004E+000	1.953E+000	0.13	1.4985
TH-234	1027	4.812E-001pCi/g	1.366E+000	1.366E+000	4.548E+000	2.244E+000	0.11	1.3664
TL-208	929	1.257E-001pCi/g	1.203E-001	1.201E-001	2.658E-001	1.265E-001	0.47	0.1203
TL-210	20861	4.217E-002pCi/g	6.801E-002	6.796E-002	3.680E-001	1.769E-001	0.11	0.0680
U-235	281	5.621E-001pCi/g	5.410E-001	5.402E-001	1.918E+000	9.431E-001	0.29	0.5410
Y-88	74	3.754E-002pCi/g	6.236E-002	6.233E-002	1.503E-001	6.088E-002	0.25	0.0624
ZN-65	31	9.256E-003pCi/g	2.828E-001	2.828E-001	9.678E-001	4.655E-001	0.01	0.2828
ZR-95	7	-1.121E-001pCi/g	1.959E-001	1.958E-001	4.656E-001	2.205E-001	-0.24	0.1959

Laboratory Control Sample Information

Sample ID	WRKNO	Analyte	Activity	StdAdded	Recovery	ZFactor
LCS 160-442821~2-A	LCS 160-442821~2-A	CS-137	2.854E-001 pCi/g	2.751E+001	103.76%	0.6435
		CO-60	1.100E+001 pCi/g	1.116E+001	98.53%	-0.2636
		AM-241	1.017E+002 pCi/g	9.662E+001	105.24%	0.9035

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 160-442821~1-A	MB	AC-228	4.342E-002	4.965E-002	0.8746	
MB 160-442821~1-A	MB	AG-108M	1.098E-003	9.817E-004	1.1182	
MB 160-442821~1-A	MB	AG-110M	2.340E-002	1.797E-002	1.3022	
MB 160-442821~1-A	MB	AM-241	-5.731E-002	8.274E-002	-0.6926	
MB 160-442821~1-A	MB	BA-133	2.852E-002	3.243E-002	0.8794	
MB 160-442821~1-A	MB	BA-140	5.953E-002	6.662E-002	0.8937	
MB 160-442821~1-A	MB	BE-7	-2.994E-001	3.208E-001	-0.9335	
MB 160-442821~1-A	MB	BI-207	-1.018E-002	4.105E-002	-0.2481	
MB 160-442821~1-A	MB	BI-210M	-9.908E-003	3.572E-002	-0.2774	
MB 160-442821~1-A	MB	BI-212	1.756E-001	3.078E-001	0.5704	
MB 160-442821~1-A	MB	BI-214	1.393E-001	5.312E-002	2.6221	B
MB 160-442821~1-A	MB	CD-109	0.000E+000	1.699E-001	0.0000	
MB 160-442821~1-A	MB	CD-113M	2.503E+002	2.082E+002	1.2023	
MB 160-442821~1-A	MB	CE-139	-2.124E-002	2.417E-002	-0.8787	
MB 160-442821~1-A	MB	CE-141	-2.884E-002	3.258E-002	-0.8852	
MB 160-442821~1-A	MB	CE-144	1.170E-001	2.066E-001	0.5664	
MB 160-442821~1-A	MB	CF-249	1.170E-002	1.645E-002	0.7112	
MB 160-442821~1-A	MB	CF-251	1.837E-002	8.164E-002	0.2250	
MB 160-442821~1-A	MB	CO-56	-4.823E-002	4.988E-002	-0.9671	
MB 160-442821~1-A	MB	CO-57	5.510E-003	2.192E-002	0.2514	
MB 160-442821~1-A	MB	CO-58	4.697E-003	2.933E-002	0.1601	
MB 160-442821~1-A	MB	CO-60	1.531E-002	6.888E-003	2.2223	
MB 160-442821~1-A	MB	CR-51	-3.047E-001	5.786E-001	-0.5267	
MB 160-442821~1-A	MB	CS-134	3.841E-002	1.494E-002	2.5710	
MB 160-442821~1-A	MB	CS-136	1.257E-002	3.856E-003	3.2593	B
MB 160-442821~1-A	MB	CS-137	2.393E-002	2.558E-002	0.9358	
MB 160-442821~1-A	MB	EU-152	6.044E-002	2.721E-002	2.2212	
MB 160-442821~1-A	MB	EU-154	7.072E-002	5.279E-002	1.3396	
MB 160-442821~1-A	MB	EU-155	2.661E-002	4.693E-002	0.5670	
MB 160-442821~1-A	MB	FE-59	2.751E-002	5.674E-002	0.4849	
MB 160-442821~1-A	MB	GA-68	-6.817E-002	1.080E+000	-0.0631	
MB 160-442821~1-A	MB	GD-153	-4.201E-002	6.752E-002	-0.6221	
MB 160-442821~1-A	MB	HF-181	5.102E-003	8.664E-003	0.5889	
MB 160-442821~1-A	MB	HG-203	-1.206E-002	2.101E-002	-0.5742	
MB 160-442821~1-A	MB	I-131	3.155E-003	2.491E-002	0.1267	
MB 160-442821~1-A	MB	IR-192	3.111E-002	6.103E-002	0.5098	
MB 160-442821~1-A	MB	K-40	-5.436E-001	7.228E-001	-0.7520	
MB 160-442821~1-A	MB	KR-85	-4.929E+000	1.024E+001	-0.4813	
MB 160-442821~1-A	MB	LA-140	1.338E-002	1.479E-002	0.9047	
MB 160-442821~1-A	MB	MN-54	-1.909E-002	3.907E-002	-0.4885	
MB 160-442821~1-A	MB	NA-22	1.521E-002	2.411E-002	0.6309	
MB 160-442821~1-A	MB	NB-94	5.593E-002	1.577E-002	3.5459	B
MB 160-442821~1-A	MB	NB-95	7.234E-003	2.219E-002	0.3260	
MB 160-442821~1-A	MB	ND-147	-1.671E-001	2.340E-001	-0.7140	
MB 160-442821~1-A	MB	NP-237	1.084E-001	1.795E-001	0.6038	
MB 160-442821~1-A	MB	NP-239	4.730E-002	7.053E-002	0.6706	
MB 160-442821~1-A	MB	PA-231	-9.465E-001	1.811E+000	-0.5226	
MB 160-442821~1-A	MB	PA-233	0.000E+000	2.543E-002	0.0000	
MB 160-442821~1-A	MB	PA-234	1.397E-001	4.096E-002	3.4108	B
MB 160-442821~1-A	MB	PA-234M	0.000E+000	1.839E+000	0.0000	
MB 160-442821~1-A	MB	PB-210	-1.447E+000	8.300E-001	-1.7435	

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MB 160-442821~1-A	MB	PB-212	-4.364E-002	5.625E-002	-0.7757
MB 160-442821~1-A	MB	PB-214	-1.562E-002	5.292E-002	-0.2952
MB 160-442821~1-A	MB	PM-144	-4.228E-003	3.382E-002	-0.1250
MB 160-442821~1-A	MB	PM-146	1.686E-002	2.497E-002	0.6753
MB 160-442821~1-A	MB	RH-106	-3.312E-001	5.169E-001	-0.6409
MB 160-442821~1-A	MB	RU-103	-2.513E-002	3.575E-002	-0.7031
MB 160-442821~1-A	MB	SB-124	5.135E-002	2.113E-002	2.4307
MB 160-442821~1-A	MB	SB-125	5.517E-002	4.524E-002	1.2193
MB 160-442821~1-A	MB	SC-46	0.000E+000	7.064E-003	0.0000
MB 160-442821~1-A	MB	SN-113	3.065E-002	3.577E-002	0.8568
MB 160-442821~1-A	MB	SN-126	1.684E-001	2.381E-001	0.7074
MB 160-442821~1-A	MB	TA-182	-1.911E-001	1.577E-001	-1.2114
MB 160-442821~1-A	MB	TC-99M	1.568E-009	2.393E-002	0.0000
MB 160-442821~1-A	MB	TH-227	1.868E-001	1.347E-001	1.3870
MB 160-442821~1-A	MB	TH-229	8.086E-001	3.483E-001	2.3215
MB 160-442821~1-A	MB	TH-234	2.642E-001	3.173E-001	0.8327
MB 160-442821~1-A	MB	TL-208	1.480E-002	1.817E-002	0.8144
MB 160-442821~1-A	MB	TL-210	3.150E-002	2.108E-002	1.4946
MB 160-442821~1-A	MB	U-235	-2.885E-002	2.377E-002	-1.2138
MB 160-442821~1-A	MB	Y-88	-3.249E-002	6.078E-002	-0.5346
MB 160-442821~1-A	MB	ZN-65	0.000E+000	1.165E-002	0.0000
MB 160-442821~1-A	MB	ZR-95	3.349E-002	2.726E-002	1.2286

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Analysis Report for Gamma Spectroscopy

Batch: 442120 **Operator:**

MQO

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
LCS 160-442120~2-	LCS	341.90g	1.00	GammaVision	GV09	9 / 14 / 19 8:40	60

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA	
AC-228	11136	7.971E-001pCi/g	1.503E-001	1.447E-001	4.116E-001	1.986E-001	1.94	0.1503
AG-108M	10982	3.273E-002pCi/g	4.460E-002	4.457E-002	1.527E-001	7.503E-002	0.21	0.0446
AG-110M	10973	5.611E-002pCi/g	3.263E-002	3.250E-002	2.862E-001	1.403E-001	0.20	0.0326
AM-241	10818	9.641E+001pCi/g	5.030E+000	5.156E-001	7.152E-001	3.553E-001	134.81	5.0300
BA-133	10469	2.162E-002pCi/g	7.888E-002	7.887E-002	2.627E-001	1.297E-001	0.08	0.0789
BA-140	10463	-1.914E-001pCi/g	1.490E-001	1.486E-001	4.960E-001	2.422E-001	-0.39	0.1490
BE-7	10435	-7.246E-001pCi/g	6.106E-001	6.094E-001	2.407E+000	1.191E+000	-0.30	0.6106
BI-207	10195	5.167E-002pCi/g	2.099E-002	2.083E-002	2.146E-001	1.041E-001	0.24	0.0210
BI-210M	10173	-6.957E-002pCi/g	5.753E-002	5.738E-002	2.573E-001	1.269E-001	-0.27	0.0575
BI-212	10160	-5.523E-002pCi/g	5.526E-001	5.526E-001	1.865E+000	9.090E-001	-0.03	0.5526
BI-214	10154	3.852E-001pCi/g	9.766E-002	9.559E-002	1.944E-001	9.385E-002	1.98	0.0977
CD-109	9254	-1.750E-007pCi/g	1.700E+000	1.700E+000	5.634E+000	2.802E+000	0.00	1.7005
CD-113M	17462	-3.881E+002pCi/g	6.515E+002	6.511E+002	2.163E+003	1.067E+003	-0.18	651.5354
CE-139	9241	3.894E-002pCi/g	2.479E-002	2.452E-002	8.082E-002	3.962E-002	0.48	0.0248
CE-141	9235	-1.547E-002pCi/g	6.406E-002	6.405E-002	1.753E-001	8.643E-002	-0.09	0.0641
CE-144	9221	-3.154E-001pCi/g	4.499E-001	4.496E-001	1.487E+000	7.386E-001	-0.21	0.4499
CF-249	9215	1.781E-001pCi/g	7.734E-002	7.680E-002	1.477E-001	7.216E-002	1.21	0.0773
CF-251	13690	4.070E-002pCi/g	1.991E-001	1.991E-001	5.029E-001	2.476E-001	0.08	0.1991
CO-56	8704	4.653E-002pCi/g	2.373E-002	2.361E-002	1.308E-001	6.340E-002	0.36	0.0237
CO-57	13694	-7.288E-003pCi/g	3.710E-002	3.710E-002	1.234E-001	6.105E-002	-0.06	0.0371
CO-58	8698	-1.897E-003pCi/g	4.758E-002	4.758E-002	1.605E-001	7.834E-002	-0.01	0.0476
CO-60	8692	1.057E+001pCi/g	5.418E-001	1.102E-001	6.740E-002	3.087E-002	156.79	0.5418
CR-51	8604	-4.284E-001pCi/g	4.158E-001	4.152E-001	1.418E+000	6.993E-001	-0.30	0.4158
CS-134	8553	1.120E-001pCi/g	6.138E-002	6.111E-002	1.766E-001	8.610E-002	0.63	0.0614
CS-136	8546	5.864E-002pCi/g	5.392E-002	5.381E-002	1.583E-001	7.721E-002	0.37	0.0539
CS-137	8539	2.676E+001pCi/g	1.407E+000	2.042E-001	1.233E-001	5.972E-002	217.05	1.4070
EU-152	7145	2.923E-003pCi/g	2.591E-003	2.586E-003	3.641E-001	1.801E-001	0.01	0.0026
EU-154	7138	1.735E-001pCi/g	1.133E-001	1.130E-001	2.371E-001	1.172E-001	0.73	0.1133
EU-155	7131	-1.792E-001pCi/g	9.195E-002	9.143E-002	8.405E-001	4.176E-001	-0.21	0.0920
FE-59	7073	8.888E-002pCi/g	1.334E-001	1.333E-001	2.797E-001	1.356E-001	0.32	0.1334
GA-68	18005	1.010E+000pCi/g	2.873E+000	2.873E+000	6.059E+000	2.932E+000	0.17	2.8732
GD-153	6824	-1.271E-001pCi/g	1.790E-001	1.788E-001	5.913E-001	2.938E-001	-0.21	0.1790
HF-181	6495	2.184E-001pCi/g	6.810E-002	6.717E-002	1.316E-001	6.420E-002	1.66	0.0681
HG-203	6466	-6.342E-002pCi/g	4.983E-002	4.970E-002	1.642E-001	8.104E-002	-0.39	0.0498
I-131	6380	-7.256E-002pCi/g	6.388E-002	6.377E-002	1.531E-001	7.523E-002	-0.47	0.0639
IR-192	6303	5.827E-002pCi/g	8.760E-002	8.753E-002	2.897E-001	1.438E-001	0.20	0.0876
K-40	6148	-4.085E-001pCi/g	2.930E-001	2.922E-001	8.645E-001	4.037E-001	-0.47	0.2930
KR-85	6111	0.000E+000pCi/g	5.958E+000	5.958E+000	3.921E+001	1.929E+001	0.00	5.9582
LA-140	6096	4.473E-002pCi/g	5.970E-002	5.965E-002	6.482E-002	2.897E-002	0.69	0.0597
MN-54	5382	-7.301E-002pCi/g	4.126E-002	4.109E-002	1.409E-001	6.850E-002	-0.52	0.0413
NA-22	5201	2.624E-002pCi/g	2.169E-002	2.165E-002	7.265E-002	3.359E-002	0.36	0.0217
NB-94	5160	6.374E-002pCi/g	3.242E-002	3.225E-002	1.519E-001	7.421E-002	0.42	0.0324
NB-95	5154	1.963E-003pCi/g	3.822E-002	3.822E-002	1.295E-001	6.292E-002	0.02	0.0382
ND-147	5083	3.119E-001pCi/g	3.848E-001	3.844E-001	8.917E-001	4.351E-001	0.35	0.3848
NP-237	4757	-2.992E-001pCi/g	4.987E-001	4.984E-001	1.648E+000	8.195E-001	-0.18	0.4987
NP-239	4751	1.640E-001pCi/g	2.323E-001	2.321E-001	7.677E-001	3.814E-001	0.21	0.2323
PA-231	4541	0.000E+000pCi/g	8.169E-001	8.169E-001	8.598E+000	4.266E+000	0.00	0.8169
PA-233	4535	-1.500E-003pCi/g	1.125E-001	1.125E-001	7.025E-001	3.486E-001	0.00	0.1125
PA-234	4528	-1.929E-001pCi/g	2.743E-001	2.742E-001	9.070E-001	4.503E-001	-0.21	0.2743

			MQO					
PA-234M	19453	-6.978E-002pCi/g	7.541E+000	7.541E+000	2.662E+001	1.304E+001	0.00	7.5414
PB-210	4467	7.539E+002pCi/g	4.451E+001	4.662E+000	8.529E+000	4.237E+000	88.39	44.5104
PB-212	4454	4.619E-001pCi/g	6.836E-002	6.148E-002	1.884E-001	9.237E-002	2.45	0.0684
PB-214	4448	5.844E-001pCi/g	1.236E-001	1.198E-001	2.710E-001	1.327E-001	2.16	0.1236
PM-144	19585	-6.206E-002pCi/g	4.852E-002	4.841E-002	1.603E-001	7.840E-002	-0.39	0.0485
PM-146	2464	-6.084E-002pCi/g	1.020E-001	1.019E-001	2.355E-001	1.159E-001	-0.26	0.1020
RH-106	1882	-5.583E-001pCi/g	4.539E-001	4.529E-001	1.500E+000	7.343E-001	-0.37	0.4539
RU-103	1828	1.549E-002pCi/g	6.208E-002	6.208E-002	1.443E-001	7.070E-002	0.11	0.0621
SB-124	1784	1.007E-001pCi/g	7.453E-002	7.434E-002	2.350E-001	1.160E-001	0.43	0.0745
SB-125	1777	3.494E-002pCi/g	3.557E-002	3.553E-002	4.848E-001	2.384E-001	0.07	0.0356
SC-46	1739	-8.326E-002pCi/g	6.719E-002	6.705E-002	2.219E-001	1.089E-001	-0.38	0.0672
SN-113	1570	2.746E-002pCi/g	8.897E-002	8.896E-002	2.960E-001	1.462E-001	0.09	0.0890
SN-126	17459	-9.609E-001pCi/g	2.197E+000	2.197E+000	7.250E+000	3.617E+000	-0.13	2.1975
TA-182	1301	1.103E-001pCi/g	1.129E-001	1.128E-001	6.531E-001	3.195E-001	0.17	0.1129
TC-99M	17412	0.000E+000pCi/g	2.204E-002	2.204E-002	2.009E-001	9.974E-002	0.00	0.0220
TH-227	1058	1.587E-001pCi/g	6.160E-001	6.159E-001	1.487E+000	7.316E-001	0.11	0.6160
TH-229	1046	8.150E-002pCi/g	9.665E-001	9.665E-001	2.331E+000	1.150E+000	0.03	0.9665
TH-234	1027	-6.906E-001pCi/g	9.853E-001	9.845E-001	3.256E+000	1.618E+000	-0.21	0.9853
TL-208	929	2.594E-001pCi/g	5.669E-002	5.507E-002	1.124E-001	5.442E-002	2.31	0.0567
TL-210	20861	6.163E-002pCi/g	4.864E-002	4.851E-002	1.607E-001	7.843E-002	0.38	0.0486
U-235	281	-7.046E-003pCi/g	2.801E-001	2.801E-001	1.559E+000	7.744E-001	0.00	0.2801
Y-88	74	-2.679E-002pCi/g	3.451E-002	3.447E-002	7.939E-002	3.598E-002	-0.34	0.0345
ZN-65	31	0.000E+000pCi/g	5.246E-002	5.246E-002	4.458E-001	2.180E-001	0.00	0.0525
ZR-95	7	-4.438E-002pCi/g	9.905E-002	9.902E-002	2.154E-001	1.044E-001	-0.21	0.0990

Laboratory Control Sample Information

Sample ID	WRKNO	Analyte	Activity	StdAdded	Recovery	ZFactor
LCS 160-442120~2-A	LCS 160-442120~2-A	CS-137	2.676E+001 pCi/g	2.751E+001	97.29%	-0.5032
		CO-60	1.057E+001 pCi/g	1.116E+001	94.72%	-1.0238
		AM-241	9.641E+001 pCi/g	9.662E+001	99.78%	-0.0397

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 160-442120~1-A	MB	AC-228	5.038E-002	6.932E-002	0.7269	
MB 160-442120~1-A	MB	AG-108M	-2.019E-003	1.779E-002	-0.1135	
MB 160-442120~1-A	MB	AG-110M	1.355E-002	8.550E-003	1.5843	
MB 160-442120~1-A	MB	AM-241	8.122E-002	3.041E-002	2.6706	B
MB 160-442120~1-A	MB	BA-133	3.808E-002	3.757E-002	1.0134	
MB 160-442120~1-A	MB	BA-140	5.589E-002	6.413E-002	0.8716	
MB 160-442120~1-A	MB	BE-7	-2.362E-001	2.241E-001	-1.0541	
MB 160-442120~1-A	MB	BI-207	-3.482E-002	3.785E-002	-0.9199	
MB 160-442120~1-A	MB	BI-210M	2.544E-002	3.260E-002	0.7805	
MB 160-442120~1-A	MB	BI-212	-8.612E-002	2.928E-001	-0.2941	
MB 160-442120~1-A	MB	BI-214	5.043E-002	2.960E-002	1.7036	
MB 160-442120~1-A	MB	CD-109	0.000E+000	5.558E-002	0.0000	
MB 160-442120~1-A	MB	CD-113M	-2.718E+002	2.332E+002	-1.1655	
MB 160-442120~1-A	MB	CE-139	8.248E-003	1.261E-002	0.6540	
MB 160-442120~1-A	MB	CE-141	1.554E-002	2.028E-002	0.7666	
MB 160-442120~1-A	MB	CE-144	-8.111E-002	1.145E-001	-0.7084	
MB 160-442120~1-A	MB	CF-249	-1.188E-002	1.048E-002	-1.1341	
MB 160-442120~1-A	MB	CF-251	5.139E-002	5.501E-002	0.9341	
MB 160-442120~1-A	MB	CO-56	-2.889E-002	2.222E-002	-1.3004	
MB 160-442120~1-A	MB	CO-57	0.000E+000	3.364E-003	0.0000	
MB 160-442120~1-A	MB	CO-58	-3.584E-002	3.227E-002	-1.1107	
MB 160-442120~1-A	MB	CO-60	4.012E-002	1.616E-002	2.4828	
MB 160-442120~1-A	MB	CR-51	-1.270E-001	1.698E-001	-0.7477	
MB 160-442120~1-A	MB	CS-134	-1.612E-002	1.891E-002	-0.8523	
MB 160-442120~1-A	MB	CS-136	-3.609E-002	3.421E-002	-1.0549	
MB 160-442120~1-A	MB	CS-137	-1.037E-002	2.149E-002	-0.4826	
MB 160-442120~1-A	MB	EU-152	3.567E-002	4.750E-002	0.7510	
MB 160-442120~1-A	MB	EU-154	-2.863E-003	3.819E-003	-0.7496	
MB 160-442120~1-A	MB	EU-155	3.121E-002	5.034E-002	0.6200	
MB 160-442120~1-A	MB	FE-59	0.000E+000	1.408E-002	0.0000	
MB 160-442120~1-A	MB	GA-68	-3.205E-001	1.137E+000	-0.2819	
MB 160-442120~1-A	MB	GD-153	-8.809E-003	2.630E-002	-0.3350	
MB 160-442120~1-A	MB	HF-181	-7.435E-003	1.632E-002	-0.4555	
MB 160-442120~1-A	MB	HG-203	-3.647E-003	1.563E-002	-0.2334	
MB 160-442120~1-A	MB	I-131	1.087E-002	2.227E-002	0.4882	
MB 160-442120~1-A	MB	IR-192	1.725E-002	1.795E-002	0.9608	
MB 160-442120~1-A	MB	K-40	-3.512E-001	2.481E-001	-1.4153	
MB 160-442120~1-A	MB	KR-85	4.077E-001	7.276E+000	0.0560	
MB 160-442120~1-A	MB	LA-140	2.570E-002	3.839E-002	0.6695	
MB 160-442120~1-A	MB	MN-54	3.578E-002	1.805E-002	1.9827	
MB 160-442120~1-A	MB	NA-22	2.253E-002	1.014E-002	2.2222	
MB 160-442120~1-A	MB	NB-94	6.478E-003	2.167E-002	0.2990	
MB 160-442120~1-A	MB	NB-95	1.486E-002	1.298E-002	1.1450	
MB 160-442120~1-A	MB	ND-147	-6.652E-002	1.630E-001	-0.4081	
MB 160-442120~1-A	MB	NP-237	-6.577E-002	1.185E-001	-0.5549	
MB 160-442120~1-A	MB	NP-239	2.935E-002	4.639E-002	0.6326	
MB 160-442120~1-A	MB	PA-231	4.500E-001	7.725E-001	0.5825	
MB 160-442120~1-A	MB	PA-233	-3.527E-003	4.296E-003	-0.8211	
MB 160-442120~1-A	MB	PA-234	7.125E-002	2.403E-002	2.9648	B
MB 160-442120~1-A	MB	PA-234M	-3.788E-001	3.085E+000	-0.1228	
MB 160-442120~1-A	MB	PB-210	4.436E-001	4.168E-001	1.0644	

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MB 160-442120~1-A	MB	PB-212	2.139E-002	3.051E-002	0.7012
MB 160-442120~1-A	MB	PB-214	-8.911E-002	4.874E-002	-1.8281
MB 160-442120~1-A	MB	PM-144	-1.187E-002	2.398E-002	-0.4951
MB 160-442120~1-A	MB	PM-146	2.447E-002	2.423E-002	1.0103
MB 160-442120~1-A	MB	RH-106	1.992E-001	2.993E-001	0.6655
MB 160-442120~1-A	MB	RU-103	1.656E-002	1.646E-002	1.0059
MB 160-442120~1-A	MB	SB-124	0.000E+000	2.446E-003	0.0000
MB 160-442120~1-A	MB	SB-125	-2.440E-002	6.866E-002	-0.3554
MB 160-442120~1-A	MB	SC-46	3.218E-002	3.784E-002	0.8503
MB 160-442120~1-A	MB	SN-113	2.292E-002	3.145E-002	0.7289
MB 160-442120~1-A	MB	SN-126	-8.506E-002	1.236E-001	-0.6881
MB 160-442120~1-A	MB	TA-182	3.492E-002	3.263E-002	1.0702
MB 160-442120~1-A	MB	TC-99M	8.082E-003	1.222E-002	0.6612
MB 160-442120~1-A	MB	TH-227	9.868E-002	7.124E-002	1.3853
MB 160-442120~1-A	MB	TH-229	-1.062E-001	2.439E-001	-0.4355
MB 160-442120~1-A	MB	TH-234	3.187E-001	1.473E-001	2.1643
MB 160-442120~1-A	MB	TL-208	2.143E-002	2.075E-002	1.0326
MB 160-442120~1-A	MB	TL-210	0.000E+000	6.153E-003	0.0000
MB 160-442120~1-A	MB	U-235	0.000E+000	6.083E-002	0.0000
MB 160-442120~1-A	MB	Y-88	-8.251E-003	3.406E-002	-0.2423
MB 160-442120~1-A	MB	ZN-65	0.000E+000	1.591E-002	0.0000
MB 160-442120~1-A	MB	ZR-95	-5.364E-002	4.850E-002	-1.1060

eurofins

Environment Testing
TestAmerica

Analysis Report for Gamma Spectroscopy

Batch: 442823 **Operator:**

MQO

SampID	WRKNO	Aliquot	Sigma	Instrument	Detector	CountDateTime	CountDuration
LCS 160-442823~2-	LCS	341.90g	1.00	GammaVision	GV09	9 / 16 / 19 12:14	30

Analyte	Cmpnd#	Activity	TotalUnc	CountUnc	MDA	MLCC	Act/MDA	
AC-228	11136	6.724E-001pCi/g	2.591E-001	2.568E-001	7.430E-001	3.570E-001	0.91	0.2591
AG-108M	10982	-1.190E-001pCi/g	9.958E-002	9.939E-002	2.499E-001	1.223E-001	-0.48	0.0996
AG-110M	10973	1.853E-001pCi/g	9.373E-002	9.325E-002	2.068E-001	9.777E-002	0.90	0.0937
AM-241	10818	9.548E+001pCi/g	5.008E+000	7.231E-001	1.000E+000	4.956E-001	95.46	5.0078
BA-133	10469	-1.290E-001pCi/g	1.142E-001	1.140E-001	3.776E-001	1.854E-001	-0.34	0.1142
BA-140	10463	1.955E-001pCi/g	2.786E-001	2.784E-001	6.644E-001	3.207E-001	0.29	0.2786
BE-7	10435	-9.489E-001pCi/g	9.176E-001	9.163E-001	3.134E+000	1.542E+000	-0.30	0.9176
BI-207	10195	2.664E-001pCi/g	1.265E-001	1.258E-001	2.603E-001	1.238E-001	1.02	0.1265
BI-210M	10173	1.661E-001pCi/g	1.132E-001	1.127E-001	3.306E-001	1.619E-001	0.50	0.1132
BI-212	10160	2.393E-001pCi/g	7.710E-001	7.709E-001	2.616E+000	1.261E+000	0.09	0.7710
BI-214	10154	7.373E-001pCi/g	1.497E-001	1.447E-001	3.057E-001	1.462E-001	2.41	0.1497
CD-109	9254	0.000E+000pCi/g	2.460E+000	2.460E+000	8.144E+000	4.041E+000	0.00	2.4597
CD-113M	17462	6.783E+002pCi/g	7.899E+002	7.887E+002	2.626E+003	1.285E+003	0.26	789.9314
CE-139	9241	1.721E-002pCi/g	5.608E-002	5.606E-002	1.873E-001	9.206E-002	0.09	0.0561
CE-141	9235	1.046E-001pCi/g	1.449E-001	1.448E-001	4.799E-001	2.375E-001	0.22	0.1449
CE-144	9221	-4.470E-001pCi/g	6.207E-001	6.203E-001	2.056E+000	1.017E+000	-0.22	0.6207
CF-249	9215	1.160E-001pCi/g	1.282E-001	1.280E-001	4.248E-001	2.090E-001	0.27	0.1282
CF-251	13690	5.206E-001pCi/g	2.747E-001	2.708E-001	6.761E-001	3.304E-001	0.77	0.2747
CO-56	8704	-8.547E-002pCi/g	1.448E-002	1.380E-002	2.127E-001	1.024E-001	-0.40	0.0145
CO-57	13694	2.886E-002pCi/g	4.356E-002	4.353E-002	1.450E-001	7.119E-002	0.20	0.0436
CO-58	8698	-9.765E-002pCi/g	7.729E-002	7.712E-002	2.558E-001	1.241E-001	-0.38	0.0773
CO-60	8692	1.060E+001pCi/g	5.540E-001	1.547E-001	9.301E-002	4.084E-002	113.91	0.5540
CR-51	8604	7.292E-001pCi/g	1.114E+000	1.113E+000	3.690E+000	1.826E+000	0.20	1.1135
CS-134	8553	7.654E-002pCi/g	7.075E-002	7.064E-002	2.642E-001	1.277E-001	0.29	0.0708
CS-136	8546	6.184E-002pCi/g	7.324E-002	7.315E-002	1.602E-001	7.624E-002	0.39	0.0732
CS-137	8539	2.673E+001pCi/g	1.418E+000	2.785E-001	1.324E-001	6.235E-002	201.85	1.4182
EU-152	7145	2.260E-001pCi/g	1.711E-001	1.706E-001	5.105E-001	2.513E-001	0.44	0.1711
EU-154	7138	2.733E-001pCi/g	2.123E-001	2.119E-001	3.313E-001	1.629E-001	0.82	0.2123
EU-155	7131	-7.752E-004pCi/g	8.424E-001	8.424E-001	9.424E-001	4.659E-001	0.00	0.8424
FE-59	7073	1.249E-001pCi/g	1.787E-001	1.786E-001	3.787E-001	1.808E-001	0.33	0.1787
GA-68	18005	3.556E+000pCi/g	3.616E+000	3.610E+000	7.614E+000	3.637E+000	0.47	3.6158
GD-153	6824	-1.813E-003pCi/g	3.058E-001	3.058E-001	1.015E+000	5.038E-001	0.00	0.3058
HF-181	6495	-5.114E-002pCi/g	3.197E-002	3.186E-002	4.147E-001	2.041E-001	-0.12	0.0320
HG-203	6466	0.000E+000pCi/g	4.588E-002	4.588E-002	2.137E-001	1.047E-001	0.00	0.0459
I-131	6380	-2.889E-002pCi/g	8.399E-002	8.398E-002	2.043E-001	9.955E-002	-0.14	0.0840
IR-192	6303	2.376E-002pCi/g	2.199E-002	2.194E-002	4.211E-001	2.083E-001	0.06	0.0220
K-40	6148	6.048E-001pCi/g	4.192E-001	4.181E-001	9.646E-001	4.251E-001	0.63	0.4192
KR-85	6111	1.568E+001pCi/g	1.702E+001	1.700E+001	5.656E+001	2.765E+001	0.28	17.0214
LA-140	6096	3.176E-002pCi/g	2.687E-002	2.682E-002	1.433E-001	6.478E-002	0.22	0.0269
MN-54	5382	8.473E-002pCi/g	7.587E-002	7.575E-002	1.653E-001	7.874E-002	0.51	0.0759
NA-22	5201	2.692E-002pCi/g	3.216E-002	3.213E-002	1.111E-001	5.008E-002	0.24	0.0322
NB-94	5160	5.878E-002pCi/g	6.815E-002	6.808E-002	2.277E-001	1.103E-001	0.26	0.0682
NB-95	5154	-4.254E-002pCi/g	6.355E-002	6.351E-002	2.136E-001	1.031E-001	-0.20	0.0636
ND-147	5083	6.142E-001pCi/g	5.324E-001	5.312E-001	1.235E+000	5.958E-001	0.50	0.5324
NP-237	4757	0.000E+000pCi/g	7.137E-001	7.137E-001	2.363E+000	1.173E+000	0.00	0.7137
NP-239	4751	2.218E-001pCi/g	2.468E-001	2.465E-001	8.166E-001	4.034E-001	0.27	0.2468
PA-231	4541	1.832E-007pCi/g	3.612E+000	3.612E+000	1.203E+001	5.951E+000	0.00	3.6123
PA-233	4535	-2.068E-001pCi/g	1.061E-001	1.055E-001	1.003E+000	4.961E-001	-0.21	0.1061
PA-234	4528	1.581E-001pCi/g	1.386E-001	1.383E-001	1.273E+000	6.304E-001	0.12	0.1386

MQO

PA-234M	19453	1.368E+001pCi/g	1.117E+001	1.115E+001	3.699E+001	1.796E+001	0.37	11.1677
PB-210	4467	7.468E+002pCi/g	4.435E+001	6.596E+000	1.224E+001	6.066E+000	61.01	44.3456
PB-212	4454	1.469E-001pCi/g	1.416E-001	1.412E-001	4.680E-001	2.303E-001	0.31	0.1416
PB-214	4448	3.138E-001pCi/g	1.033E-001	1.020E-001	3.489E-001	1.689E-001	0.90	0.1033
PM-144	19585	-7.643E-002pCi/g	6.127E-002	6.114E-002	2.031E-001	9.808E-002	-0.38	0.0613
PM-146	2464	-1.680E-001pCi/g	1.637E-001	1.635E-001	5.415E-001	2.669E-001	-0.31	0.1637
RA-226	1950	-6.088E-001pCi/g	1.720E+000	1.719E+000	4.352E+000	2.135E+000	-0.14	1.7203
RH-106	1882	-1.486E-002pCi/g	1.004E+000	1.004E+000	3.371E+000	1.654E+000	0.00	1.0040
RU-103	1828	-7.203E-002pCi/g	8.998E-002	8.990E-002	2.091E-001	1.016E-001	-0.34	0.0900
SB-124	1784	6.042E-002pCi/g	5.935E-002	5.926E-002	1.535E-001	6.235E-002	0.39	0.0594
SB-125	1777	6.502E-002pCi/g	8.889E-002	8.883E-002	6.829E-001	3.334E-001	0.10	0.0889
SC-46	1739	9.829E-002pCi/g	7.906E-002	7.890E-002	2.619E-001	1.268E-001	0.38	0.0791
SN-113	1570	1.196E-001pCi/g	1.325E-001	1.324E-001	4.393E-001	2.161E-001	0.27	0.1325
SN-126	17459	-1.363E+000pCi/g	3.097E+000	3.097E+000	1.023E+001	5.098E+000	-0.13	3.0975
TA-182	1301	9.317E-002pCi/g	1.172E-001	1.171E-001	4.631E-001	2.120E-001	0.20	0.1172
TC-99M	17412	9.948E-003pCi/g	8.246E-002	8.246E-002	2.742E-001	1.358E-001	0.04	0.0825
TH-227	1058	4.056E-001pCi/g	8.725E-001	8.721E-001	2.114E+000	1.033E+000	0.19	0.8725
TH-229	1046	2.328E-001pCi/g	1.336E+000	1.336E+000	3.238E+000	1.587E+000	0.07	1.3360
TH-234	1027	1.014E+000pCi/g	1.182E+000	1.181E+000	3.911E+000	1.935E+000	0.26	1.1823
TL-208	929	9.316E-002pCi/g	9.328E-002	9.316E-002	2.088E-001	1.009E-001	0.45	0.0933
TL-210	20861	-6.981E-002pCi/g	6.709E-002	6.697E-002	2.234E-001	1.079E-001	-0.31	0.0671
U-235	281	2.461E-001pCi/g	6.522E-001	6.520E-001	2.165E+000	1.072E+000	0.11	0.6522
Y-88	74	1.431E-002pCi/g	3.545E-002	3.544E-002	7.939E-002	3.227E-002	0.18	0.0355
ZN-65	31	2.116E-001pCi/g	1.817E-001	1.814E-001	6.031E-001	2.918E-001	0.35	0.1817
ZR-95	7	9.079E-002pCi/g	6.198E-002	6.180E-002	3.173E-001	1.520E-001	0.29	0.0620

Laboratory Control Sample Information

Sample ID	WRKNO	Analyte	Activity	StdAdded	Recovery	ZFactor
LCS 160-442823~2-A	LCS 160-442823~2-A	CS-137	2.673E+001 pCi/g	2.750E+001	97.19%	-0.5172
		CO-60	1.060E+001 pCi/g	1.115E+001	95.04%	-0.9417
		AM-241	9.548E+001 pCi/g	9.662E+001	98.82%	-0.2149

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 160-442823~1-A	MB	AC-228	-2.670E-001	1.221E-001	-2.1868	
MB 160-442823~1-A	MB	AG-108M	8.076E-003	2.308E-002	0.3499	
MB 160-442823~1-A	MB	AG-110M	2.302E-002	2.088E-002	1.1024	
MB 160-442823~1-A	MB	AM-241	-9.497E-003	4.616E-002	-0.2058	
MB 160-442823~1-A	MB	BA-133	2.048E-002	2.342E-002	0.8744	
MB 160-442823~1-A	MB	BA-140	-5.370E-002	1.253E-001	-0.4285	
MB 160-442823~1-A	MB	BE-7	4.138E-001	1.266E-001	3.2697	B
MB 160-442823~1-A	MB	BI-207	-3.668E-003	2.589E-002	-0.1417	
MB 160-442823~1-A	MB	BI-210M	-1.420E-002	3.524E-002	-0.4029	
MB 160-442823~1-A	MB	BI-212	-4.888E-002	4.215E-001	-0.1160	
MB 160-442823~1-A	MB	BI-214	-3.981E-002	6.986E-002	-0.5698	
MB 160-442823~1-A	MB	CD-109	1.223E-001	5.078E-001	0.2408	
MB 160-442823~1-A	MB	CD-113M	2.431E+002	2.488E+002	0.9773	
MB 160-442823~1-A	MB	CE-139	9.176E-003	1.152E-002	0.7962	
MB 160-442823~1-A	MB	CE-141	1.703E-002	1.988E-002	0.8563	
MB 160-442823~1-A	MB	CE-144	0.000E+000	3.266E-002	0.0000	
MB 160-442823~1-A	MB	CF-249	1.966E-002	3.165E-002	0.6213	
MB 160-442823~1-A	MB	CF-251	4.419E-002	7.716E-002	0.5727	
MB 160-442823~1-A	MB	CO-56	4.158E-002	1.830E-002	2.2722	
MB 160-442823~1-A	MB	CO-57	8.727E-003	1.124E-002	0.7767	
MB 160-442823~1-A	MB	CO-58	2.064E-002	2.951E-002	0.6997	
MB 160-442823~1-A	MB	CO-60	-6.800E-004	1.850E-003	-0.3677	
MB 160-442823~1-A	MB	CR-51	-5.597E-002	2.692E-001	-0.2079	
MB 160-442823~1-A	MB	CS-134	5.739E-002	2.362E-002	2.4301	
MB 160-442823~1-A	MB	CS-136	4.922E-003	1.775E-002	0.2773	
MB 160-442823~1-A	MB	CS-137	-1.613E-002	3.318E-002	-0.4862	
MB 160-442823~1-A	MB	EU-152	2.338E-001	7.497E-002	3.1193	B
MB 160-442823~1-A	MB	EU-154	-2.806E-002	3.302E-002	-0.8499	
MB 160-442823~1-A	MB	EU-155	2.834E-002	4.016E-002	0.7056	
MB 160-442823~1-A	MB	FE-59	7.038E-002	3.167E-002	2.2222	
MB 160-442823~1-A	MB	GA-68	2.782E-001	1.396E+000	0.1993	
MB 160-442823~1-A	MB	GD-153	-3.444E-002	4.289E-002	-0.8028	
MB 160-442823~1-A	MB	HF-181	-9.881E-003	1.492E-002	-0.6621	
MB 160-442823~1-A	MB	HG-203	1.554E-003	1.954E-002	0.0796	
MB 160-442823~1-A	MB	I-131	-3.610E-002	4.098E-002	-0.8810	
MB 160-442823~1-A	MB	IR-192	-4.305E-003	2.237E-002	-0.1924	
MB 160-442823~1-A	MB	K-40	-3.196E-001	3.711E-001	-0.8614	
MB 160-442823~1-A	MB	KR-85	-3.262E-001	9.021E+000	-0.0362	
MB 160-442823~1-A	MB	LA-140	5.449E-002	2.532E-002	2.1521	
MB 160-442823~1-A	MB	MN-54	2.105E-002	3.117E-002	0.6753	
MB 160-442823~1-A	MB	NA-22	4.506E-002	2.028E-002	2.2222	
MB 160-442823~1-A	MB	NB-94	-3.259E-002	3.136E-002	-1.0392	
MB 160-442823~1-A	MB	NB-95	3.923E-003	2.587E-002	0.1516	
MB 160-442823~1-A	MB	ND-147	-9.977E-002	2.329E-001	-0.4284	
MB 160-442823~1-A	MB	NP-237	5.696E-002	1.302E-001	0.4375	
MB 160-442823~1-A	MB	NP-239	1.829E-002	6.185E-002	0.2957	
MB 160-442823~1-A	MB	PA-231	5.165E-001	7.402E-001	0.6977	
MB 160-442823~1-A	MB	PA-233	5.654E-002	9.581E-002	0.5902	
MB 160-442823~1-A	MB	PA-234	5.529E-002	7.081E-002	0.7808	
MB 160-442823~1-A	MB	PA-234M	-3.788E-001	4.634E+000	-0.0817	
MB 160-442823~1-A	MB	PB-210	-5.436E-001	5.026E-001	-1.0817	

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MB 160-442823~1-A	MB	PB-212	2.182E-002	5.574E-002	0.3915
MB 160-442823~1-A	MB	PB-214	-1.606E-002	2.120E-002	-0.7576
MB 160-442823~1-A	MB	PM-144	2.009E-002	2.556E-002	0.7861
MB 160-442823~1-A	MB	PM-146	0.000E+000	1.429E-002	0.0000
MB 160-442823~1-A	MB	RA-226	-8.911E-001	5.769E-001	-1.5448
MB 160-442823~1-A	MB	RH-106	-3.984E-001	5.691E-001	-0.7001
MB 160-442823~1-A	MB	RU-103	-1.800E-002	3.639E-002	-0.4947
MB 160-442823~1-A	MB	SB-124	-1.501E-002	3.062E-002	-0.4903
MB 160-442823~1-A	MB	SB-125	7.401E-002	1.104E-001	0.6704
MB 160-442823~1-A	MB	SC-46	0.000E+000	6.658E-003	0.0000
MB 160-442823~1-A	MB	SN-113	2.050E-002	3.589E-002	0.5713
MB 160-442823~1-A	MB	SN-126	-1.522E-001	2.089E-001	-0.7283
MB 160-442823~1-A	MB	TA-182	-2.146E-001	2.532E-001	-0.8474
MB 160-442823~1-A	MB	TC-99M	1.200E-002	8.068E-003	1.4873
MB 160-442823~1-A	MB	TH-227	5.859E-002	4.199E-002	1.3951
MB 160-442823~1-A	MB	TH-229	2.743E-001	2.554E-001	1.0741
MB 160-442823~1-A	MB	TH-234	4.142E-001	2.246E-001	1.8439
MB 160-442823~1-A	MB	TL-208	1.547E-002	2.050E-002	0.7547
MB 160-442823~1-A	MB	TL-210	2.520E-002	2.582E-002	0.9760
MB 160-442823~1-A	MB	U-235	-7.543E-003	1.229E-001	-0.0613
MB 160-442823~1-A	MB	Y-88	-2.074E-003	4.228E-002	-0.0491
MB 160-442823~1-A	MB	ZN-65	0.000E+000	3.183E-002	0.0000
MB 160-442823~1-A	MB	ZR-95	0.000E+000	1.068E-002	0.0000

Reagent

Tuna Can_00002

Rc'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)

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

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318
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)

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

METALS

COVER PAGE
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job Number: 160-36526-1

SDG No.:

Project: ACMS - Yerington OU-4B_OU-5_SOIL

Client Sample ID	Lab Sample ID
STSB27_0-0.5	160-36526-1
STSB27_0.5-3	160-36526-2
STSB27_3-6	160-36526-3
STSB27_6-15	160-36526-4
STSB28_0-0.5	160-36526-5
STSB28-FD_0-0.5	160-36526-6
STSB28_0.5-3	160-36526-7
STSB28_3-6	160-36526-8
STSB28_6-15	160-36526-9
STSB29_0-0.5	160-36526-10
STSB29_0.5-3	160-36526-11
STSB29_3-6	160-36526-12
STSB29_6-15	160-36526-13
STSB29-FD_6-15	160-36526-14
STSB30_0-0.5	160-36526-15
STSB30_0.5-3	160-36526-16
STSB30_3-6	160-36526-17
STSB30_6-15	160-36526-18
STSB31_0-0.5	160-36526-19
STSB31_0.5-3	160-36526-20
STSB31_3-6	160-36526-21
STSB31_6-15	160-36526-22

Comments:

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB27_0-0.5

Lab Sample ID: 160-36526-1

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/21/2019 09:15

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 98.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	3.1	0.19	0.084	mg/Kg			2	6020A
7440-61-1	Uranium	1.6	0.093	0.037	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB27_0.5-3

Lab Sample ID: 160-36526-2

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/21/2019 09:25

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 96.7

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	3.3	0.20	0.089	mg/Kg			2	6020A
7440-61-1	Uranium	1.2	0.099	0.039	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB27_3-6

Lab Sample ID: 160-36526-3

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/21/2019 09:31

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 95.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	2.8	0.19	0.088	mg/Kg			2	6020A
7440-61-1	Uranium	1.0	0.097	0.039	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB27_6-15

Lab Sample ID: 160-36526-4

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/21/2019 09:55

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 91.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	7.4	0.20	0.090	mg/Kg			2	6020A
7440-61-1	Uranium	1.9	0.10	0.040	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB28_0-0.5
Lab Sample ID: 160-36526-5
Lab Name: Eurofins TestAmerica, St. Louis
Job No.: 160-36526-1
SDG ID.:
Matrix: Solid
Date Sampled: 11/21/2019 11:45
Reporting Basis: DRY
Date Received: 11/26/2019 09:15
% Solids: 94.9

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	3.5	0.18	0.081	mg/Kg			2	6020A
7440-61-1	Uranium	4.2	0.090	0.036	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB28-FD_0-0.5

Lab Sample ID: 160-36526-6

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/21/2019 11:50

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 94.8

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	4.0	0.20	0.090	mg/Kg			2	6020A
7440-61-1	Uranium	2.6	0.10	0.040	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB28_0.5-3

Lab Sample ID: 160-36526-7

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/21/2019 11:55

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 95.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	3.8	0.19	0.087	mg/Kg			2	6020A
7440-61-1	Uranium	1.3	0.097	0.039	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB28_3-6

Lab Sample ID: 160-36526-8

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/21/2019 12:15

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 95.3

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	4.2	0.19	0.085	mg/Kg			2	6020A
7440-61-1	Uranium	1.3	0.095	0.038	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB28_6-15

Lab Sample ID: 160-36526-9

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/21/2019 12:25

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 83.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	8.1	0.23	0.10	mg/Kg			2	6020A
7440-61-1	Uranium	2.3	0.11	0.046	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB29_0-0.5

Lab Sample ID: 160-36526-10

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/21/2019 15:00

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 95.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	4.7	0.19	0.087	mg/Kg			2	6020A
7440-61-1	Uranium	0.74	0.096	0.038	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB29_0.5-3

Lab Sample ID: 160-36526-11

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/21/2019 15:10

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 95.4

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	2.9	0.18	0.081	mg/Kg			2	6020A
7440-61-1	Uranium	0.85	0.090	0.036	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB29_3-6

Lab Sample ID: 160-36526-12

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/21/2019 15:30

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 95.7

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	7.1	0.19	0.085	mg/Kg			2	6020A
7440-61-1	Uranium	1.4	0.094	0.038	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB29_6-15

Lab Sample ID: 160-36526-13

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/21/2019 15:45

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 92.2

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	7.4	0.21	0.094	mg/Kg			2	6020A
7440-61-1	Uranium	1.9	0.10	0.042	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB29-FD_6-15

Lab Sample ID: 160-36526-14

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/21/2019 15:50

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 90.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	7.8	0.20	0.089	mg/Kg			2	6020A
7440-61-1	Uranium	2.1	0.099	0.039	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB30_0-0.5

Lab Sample ID: 160-36526-15

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/22/2019 08:55

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 94.8

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	1.9	0.20	0.091	mg/Kg			2	6020A
7440-61-1	Uranium	1.4	0.10	0.040	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB30_0.5-3

Lab Sample ID: 160-36526-16

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/22/2019 09:02

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 94.8

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	2.7	0.18	0.082	mg/Kg			2	6020A
7440-61-1	Uranium	0.82	0.091	0.036	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB30_3-6

Lab Sample ID: 160-36526-17

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/22/2019 09:10

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 95.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	2.8	0.19	0.084	mg/Kg			2	6020A
7440-61-1	Uranium	0.72	0.093	0.037	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB30_6-15

Lab Sample ID: 160-36526-18

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/22/2019 09:25

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 83.8

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	12	0.22	0.10	mg/Kg			2	6020A
7440-61-1	Uranium	2.6	0.11	0.045	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB31_0-0.5

Lab Sample ID: 160-36526-19

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/22/2019 11:56

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 92.2

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	5.0	0.19	0.084	mg/Kg			2	6020A
7440-61-1	Uranium	3.1	0.093	0.037	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB31_0.5-3

Lab Sample ID: 160-36526-20

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/22/2019 12:03

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 94.4

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	5.0	0.19	0.085	mg/Kg			2	6020A
7440-61-1	Uranium	1.4	0.095	0.038	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB31_3-6

Lab Sample ID: 160-36526-21

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/22/2019 12:10

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 94.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	4.8	0.20	0.089	mg/Kg			2	6020A
7440-61-1	Uranium	1.7	0.099	0.040	mg/Kg			2	6020A

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: STSB31_6-15

Lab Sample ID: 160-36526-22

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG ID.:

Matrix: Solid

Date Sampled: 11/22/2019 12:20

Reporting Basis: DRY

Date Received: 11/26/2019 09:15

% Solids: 94.7

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-29-1	Thorium	6.4	0.18	0.081	mg/Kg			2	6020A
7440-61-1	Uranium	4.0	0.090	0.036	mg/Kg			2	6020A

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

ICV Source: MS A ICV_01071 Concentration Units: ug/L

CCV Source: MS A CAL1 LLC_00418

Analyte	ICV 160-453933/5 12/10/2019 16:24				CCVL 160-453933/50 12/10/2019 21:28				CCVL 160-453933/63 12/10/2019 22:55			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Thorium	99.7		100	100	1.68	J	2.00	84	1.77	J	2.00	89
Uranium	101		100	101	0.871	J	1.00	87	0.896	J	1.00	90

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

ICV Source: MS A ICV_01071 Concentration Units: ug/L

CCV Source: MS A CAL1 LLC_00418

Analyte	CCVL 160-453933/76 12/11/2019 00:23				CCVL 160-453933/86 12/11/2019 01:30							
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Thorium	1.83	J	2.00	91	1.76	J	2.00	88				
Uranium	0.903	J	1.00	90	0.883	J	1.00	88				

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

ICV Source: MS A ICV_01071 Concentration Units: ug/L

CCV Source: MS A CAL2 CCV_00375

Analyte	ICV 160-453933/5 12/10/2019 16:24				CCV 160-453933/51 12/10/2019 21:34				CCV 160-453933/64 12/10/2019 23:02			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Thorium	99.7		100	100	97.6		100	98	96.4		100	96
Uranium	101		100	101	97.3		100	97	96.3		100	96

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

ICV Source: MS A ICV_01071 Concentration Units: ug/L

CCV Source: MS A CAL2 CCV_00375

Analyte	CCV 160-453933/77 12/11/2019 00:30				CCV 160-453933/87 12/11/2019 01:37							
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Thorium	97.3		100	97	96.4		100	96				
Uranium	97.2		100	97	95.7		100	96				

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

ICV Source: MS A ICV_01071 Concentration Units: ug/L

CCV Source: MS A CAL1 LLC_00418

Analyte	ICV 160-453935/7 12/11/2019 02:24				CCVL 160-453935/24 12/11/2019 04:19				CCVL 160-453935/37 12/11/2019 05:46			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Thorium	99.5		100	100	1.88	J	2.00	94	1.86	J	2.00	93
Uranium	101		100	101	0.944	J	1.00	94	0.961	J	1.00	96

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

ICV Source: MS A ICV_01071 Concentration Units: ug/L

CCV Source: MS A CAL2 CCV_00375

Analyte	ICV 160-453935/7 12/11/2019 02:24				CCV 160-453935/12 12/11/2019 02:58				CCV 160-453935/25 12/11/2019 04:25			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Thorium	99.5		100	100	97.4		100	97	98.7		100	99
Uranium	101		100	101	98.5		100	99	99.5		100	100

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

ICV Source: MS A ICV_01071 Concentration Units: ug/L

CCV Source: MS A CAL2 CCV_00375

Analyte	CCV 160-453935/38 12/11/2019 05:53											
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Thorium	99.2		100	99								
Uranium	99.4		100	99								

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2B-IN
CRQL CHECK STANDARD
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Method: 6020A Instrument ID: ICPMS7700

Lab Sample ID: CRI 160-453933/7 Concentration Units: ug/L

CRQL Check Standard Source: MS A CAL1 LLC_00418

Analyte	CRQL Check Standard				
	True	Found	Qualifiers	%R(1)	Limits
Thorium	2.00	1.79	J	90	70-130
Uranium	1.00	0.881	J	88	70-130

Lab Sample ID: CRI 160-453935/9 Concentration Units: ug/L

CRQL Check Standard Source: MS A CAL1 LLC_00418

Analyte	CRQL Check Standard				
	True	Found	Qualifiers	%R(1)	Limits
Thorium	2.00	1.84	J	92	70-130
Uranium	1.00	0.930	J	93	70-130

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

FORM IIB-IN

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	ICB 160-453933/6 12/10/2019 16:31		CCB 160-453933/52 12/10/2019 21:41		CCB 160-453933/65 12/10/2019 23:09		CCB 160-453933/78 12/11/2019 00:36	
		Found	C	Found	C	Found	C	Found	C
Thorium	2.0	ND		ND		ND		ND	
Uranium	1.0	ND		ND		ND		ND	

Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	CCB 160-453933/88 12/11/2019 01:44							
		Found	C	Found	C	Found	C	Found	C
Thorium	2.0	ND							
Uranium	1.0	ND							

Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	ICB 160-453935/8 12/11/2019 02:31		CCB 160-453935/13 12/11/2019 03:05		CCB 160-453935/26 12/11/2019 04:32		CCB 160-453935/39 12/11/2019 06:00	
		Found	C	Found	C	Found	C	Found	C
Thorium	2.0	ND		ND		ND		ND	
Uranium	1.0	ND		ND		ND		ND	

Italicized analytes were not requested for this sequence.

3-IN
METHOD BLANK
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Concentration Units: mg/Kg Lab Sample ID: MB 160-452611/1-A

Instrument Code: ICPMS7700 Batch No.: 453933

CAS No.	Analyte	Concentration	C	Q	Method
7440-29-1	Thorium	ND			6020A
7440-61-1	Uranium	ND			6020A

FORM III-IN

3-IN
METHOD BLANK
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Concentration Units: mg/Kg Lab Sample ID: MB 160-452612/1-A

Instrument Code: ICPMS7700 Batch No.: 453935

CAS No.	Analyte	Concentration	C	Q	Method
7440-29-1	Thorium	ND			6020A
7440-61-1	Uranium	ND			6020A

FORM III-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Lab Sample ID: ICSA 160-453933/8 Instrument ID: ICPMS7700

Lab File ID: 010ICSA.D ICS Source: MS A ICSA_00326

Concentration Units: ug/L

Analyte	True Solution A	Found Solution A	Percent Recovery
Thorium		**0.0710**	
Uranium		**0.0130**	
Aluminum	*100000*	*105486*	*105*

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

FORM IVA-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Lab Sample ID: ICSAB 160-453933/9 Instrument ID: ICPMS7700

Lab File ID: 011ICSB.D ICS Source: MS A ICSAB_00338

Concentration Units: ug/L

Analyte	True Solution AB	Found Solution AB	Percent Recovery
Thorium	**50.0**	**52.9**	**106**
Uranium	**50.0**	**53.4**	**107**

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

FORM IVA-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Lab Sample ID: ICSA 160-453935/10 Instrument ID: ICPMS7700

Lab File ID: 099ICSA.D ICS Source: MS A ICSA_00326

Concentration Units: ug/L

Analyte	True Solution A	Found Solution A	Percent Recovery
Thorium		**0.0670**	
Uranium		**0.0120**	
Aluminum	*100000*	*104487*	*104*

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

FORM IVA-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Lab Sample ID: ICSAB 160-453935/11 Instrument ID: ICPMS7700

Lab File ID: 100ICSB.D ICS Source: MS A ICSAB_00338

Concentration Units: ug/L

Analyte	True Solution AB	Found Solution AB	Percent Recovery
Thorium	**50.0**	**54.2**	**108**
Uranium	**50.0**	**54.4**	**109**

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

FORM IVA-IN

5A-IN
MATRIX SPIKE SAMPLE RECOVERY
METALS

Client ID: STSB29_0.5-3 MS

Lab ID: 160-36526-11 MS

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG No.:

Matrix: Solid

Concentration Units: mg/Kg

% Solids: 95.4

Analyte	SSR	C	Sample Result (SR)	C	Spike Added (SA)	%R	Control Limit %R	Q	Method
Thorium	93.2		2.9		91.4	99	75-125		6020A
Uranium	90.3		0.85		91.4	98	75-125		6020A

SSR = Spiked Sample Result

Calculations are performed before rounding to avoid round-off errors in calculated results.
Note - Results and Reporting Limits have been adjusted for dry weight.

FORM VA - IN

5A-IN
MATRIX SPIKE SAMPLE RECOVERY
METALS

Client ID: STSB31_0.5-3 MS

Lab ID: 160-36526-20 MS

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG No.:

Matrix: Solid

Concentration Units: mg/Kg

% Solids: 94.4

Analyte	SSR	C	Sample Result (SR)	C	Spike Added (SA)	%R	Control Limit %R	Q	Method
Thorium	108		5.0		104	99	75-125		6020A
Uranium	105		1.4		104	100	75-125		6020A

SSR = Spiked Sample Result

Calculations are performed before rounding to avoid round-off errors in calculated results.
Note - Results and Reporting Limits have been adjusted for dry weight.

FORM VA - IN

5A-IN
MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
METALS

Client ID: STSB29_0.5-3 MSD

Lab ID: 160-36526-11 MSD

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG No.:

Matrix: Solid

Concentration Units: mg/Kg

% Solids: 95.4

Analyte	(SDR)	C	Spike Added (SA)	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Thorium	102		96.4	103	75-125	9	30		6020A
Uranium	95.5		96.4	98	75-125	6	30		6020A

SDR = Sample Duplicate Result

Calculations are performed before rounding to avoid round-off errors in calculated results.
Note - Results and Reporting Limits have been adjusted for dry weight.

FORM VD - IN

5A-IN
MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
METALS

Client ID: STSB31_0.5-3 MSD

Lab ID: 160-36526-20 MSD

Lab Name: Eurofins TestAmerica, St. Louis

Job No.: 160-36526-1

SDG No.:

Matrix: Solid

Concentration Units: mg/Kg

% Solids: 94.4

Analyte	(SDR)	C	Spike Added (SA)	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Thorium	96.8		89.2	103	75-125	11	30		6020A
Uranium	93.2		89.2	103	75-125	12	30		6020A

SDR = Sample Duplicate Result

Calculations are performed before rounding to avoid round-off errors in calculated results.
Note - Results and Reporting Limits have been adjusted for dry weight.

FORM VD - IN

6-IN
DUPLICATES
METALS

Client ID: STSB29_0.5-3 DU
Lab ID: 160-36526-11 DU
Lab Name: Eurofins TestAmerica, St. Louis
Job No.: 160-36526-1
SDG No.:
% Solids for Sample: 95.4
% Solids for Duplicate: 95.4
Matrix: Solid
Concentration Units: mg/Kg

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Thorium	0.21	2.9		3.66		23		6020A
Uranium	0.10	0.85		1.02		18		6020A

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

FORM VI-IN

LINEAR RANGE CHECK STANDARD
METALS -

Lab ID: LRC 160-453933/11

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

Sample Matrix: Solid LCS Source: MS LDR 2_00186

Analyte	Solid(ug/L)							
	True	Found	C	%R	Limits		Q	Method
Thorium	2000	2100		105	90	110		6020A
Uranium	2000	2040		102	90	110		6020A

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

7A-IN
LAB CONTROL SAMPLE
METALS

Lab ID: LCS 160-452611/2-A

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

Sample Matrix: Solid LCS Source: MPREP1-A_00004

Analyte	Solid(mg/Kg)							
	True	Found	C	%R	Limits		Q	Method
Thorium	94.7	91.6		97	80	120		6020A

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

FORM VIIA - IN

7A-IN
LCS-CERTIFIED REFERENCE MATERIAL
METALS

Lab ID: LCSSRM 160-452611/3-A

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

Sample Matrix: Solid LCS Source: PR_LCSSRM U_00001

Analyte	Solid(mg/Kg)							
	True	Found	C	%R	Limits		Q	Method
Uranium	98.1	97.5		99.4	74.0	126.4		6020A

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

FORM VIIA - IN

LINEAR RANGE CHECK STANDARD
METALS -

Lab ID: LRC 160-453935/2

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

Sample Matrix: Solid LCS Source: MS LDR 2_00186

Analyte	Solid(ug/L)							
	True	Found	C	%R	Limits		Q	Method
Thorium	2000	2100		105	90	110		6020A
Uranium	2000	2040		102	90	110		6020A

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

7A-IN
LAB CONTROL SAMPLE
METALS

Lab ID: LCS 160-452612/2-A

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

Sample Matrix: Solid LCS Source: MPREP1-A_00004

Analyte	Solid(mg/Kg)							
	True	Found	C	%R	Limits		Q	Method
Thorium	89.9	90.8		101	80	120		6020A

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

FORM VIIA - IN

7A-IN
LCS-CERTIFIED REFERENCE MATERIAL
METALS

Lab ID: LCSSRM 160-452612/3-A

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

Sample Matrix: Solid LCS Source: PR_LCSSRM U_00001

Analyte	Solid(mg/Kg)							
	True	Found	C	%R	Limits		Q	Method
Uranium	98.1	101		103.2	74.0	126.4		6020A

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

FORM VIIA - IN

8-IN
ICP-AES AND ICP-MS SERIAL DILUTIONS
METALS

Lab ID: 160-36526-11

SDG No:

Lab Name: Eurofins TestAmerica, St. Louis Job No: 160-36526-1

Matrix: Solid Concentration Units: mg/Kg

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	Method
Thorium	2.9		2.47		NC		6020A
Uranium	0.85		0.838		NC		6020A

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

FORM VIII-IN

8-IN
ICP-AES AND ICP-MS SERIAL DILUTIONS
METALS

Lab ID: 160-36526-20

SDG No:

Lab Name: Eurofins TestAmerica, St. Louis Job No: 160-36526-1

Matrix: Solid Concentration Units: mg/Kg

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	Method
Thorium	5.0		4.22		16	V	6020A
Uranium	1.4		1.30		NC		6020A

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

FORM VIII-IN

9-IN
DETECTION LIMITS
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job Number: 160-36526-1

SDG Number:

Matrix: Solid Instrument ID: ICPMS7700

Method: 6020A MDL Date: 05/14/2018 10:39

Prep Method: 3050B

Analyte	Wavelength/ Mass	RL (mg/Kg)	MDL (mg/Kg)
Thorium	232	0.2	0.09
Uranium	238	0.1	0.04

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job Number: 160-36526-1

SDG Number:

Matrix: Solid Instrument ID: ICPMS7700

Method: 6020A XMDL Date: 06/27/2019 14:00

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Thorium	232	2	0.9
Uranium	238	1	0.4

FORM IX - IN

11-IN
LINEAR RANGES
METALS

Lab Name: Eurofins TestAmerica, St. Loui Job No: 160-36526-1

SDG No.:

Instrument ID: ICPMS7700 Date: 08/05/2019 16:42

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	Method
Thorium		2000	6020A
Uranium		2000	6020A

FORM XI - IN

12-IN
PREPARATION LOG
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Prep Method: 3050B

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight (g)	Initial Volume	Final Volume (mL)
MB 160-452611/1-A	12/02/2019 10:13	452611	0.5496		50
LCS 160-452611/2-A	12/02/2019 10:13	452611	0.5279		50
LCSSRM 160-452611/3-A	12/02/2019 10:13	452611	0.5580		50
160-36526-1	12/02/2019 10:13	452611	0.5443		50
160-36526-2	12/02/2019 10:13	452611	0.5242		50
160-36526-3	12/02/2019 10:13	452611	0.5374		50
160-36526-4	12/02/2019 10:13	452611	0.5449		50
160-36526-5	12/02/2019 10:13	452611	0.5854		50
160-36526-6	12/02/2019 10:13	452611	0.5289		50
160-36526-7	12/02/2019 10:13	452611	0.5414		50
160-36526-8	12/02/2019 10:13	452611	0.5532		50
160-36526-9	12/02/2019 10:13	452611	0.5255		50
160-36526-10	12/02/2019 10:13	452611	0.5444		50
160-36526-11	12/02/2019 10:13	452611	0.5808		50
160-36526-11 DU	12/02/2019 10:13	452611	0.5103		50
160-36526-11 MS	12/02/2019 10:13	452611	0.5730		50
160-36526-11 MSD	12/02/2019 10:13	452611	0.5433		50
160-36526-12	12/02/2019 10:13	452611	0.5553		50
160-36526-13	12/02/2019 10:13	452611	0.5193		50
160-36526-14	12/02/2019 10:13	452611	0.5623		50
160-36526-15	12/02/2019 10:13	452611	0.5238		50
160-36526-16	12/02/2019 10:13	452611	0.5815		50
160-36526-17	12/02/2019 10:13	452611	0.5642		50
160-36526-18	12/02/2019 10:13	452611	0.5346		50
160-36526-19	12/02/2019 10:13	452611	0.5845		50

FORM XII-IN

12-IN
PREPARATION LOG
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Prep Method: 3050B

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight (g)	Initial Volume	Final Volume (mL)
MB 160-452612/1-A	12/02/2019 10:16	452612	0.5161		50
LCS 160-452612/2-A	12/02/2019 10:16	452612	0.5559		50
LCSSRM 160-452612/3-A	12/02/2019 10:16	452612	0.5371		50
160-36526-20	12/02/2019 10:16	452612	0.5586		50
160-36526-20 MS	12/02/2019 10:16	452612	0.5114		50
160-36526-20 MSD	12/02/2019 10:16	452612	0.5934		50
160-36526-21	12/02/2019 10:16	452612	0.5363		50
160-36526-22	12/02/2019 10:16	452612	0.5838		50

FORM XII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Instrument ID: ICPMS7700 Analysis Method: 6020A

Start Date: 12/10/2019 15:57 End Date: 12/11/2019 01:44

Lab Sample Id	D/F	Type	Time	Analytes																							
				Th	U																						
ICIS 160-453933/1			15:57	X	X																						
IC 160-453933/2	1		16:04	X	X																						
IC 160-453933/3	1		16:11	X	X																						
IC 160-453933/4	1		16:17	X	X																						
ICV 160-453933/5	1		16:24	X	X																						
ICB 160-453933/6	1		16:31	X	X																						
CRI 160-453933/7	1		16:38	X	X																						
ICSA 160-453933/8	1		16:44	X	X																						
ICSAB 160-453933/9	1		16:51	X	X																						
LRC 160-453933/10			16:58																								
LRC 160-453933/11	1		17:05	X	X																						
CCV 160-453933/12			17:12																								
CCB 160-453933/13			17:18																								
ZZZZZZ			17:25																								
ZZZZZZ			17:32																								
ZZZZZZ			17:39																								
ZZZZZZ			17:45																								
ZZZZZZ			17:52																								
ZZZZZZ			17:59																								
ZZZZZZ			18:06																								
ZZZZZZ			18:12																								
ZZZZZZ			18:19																								
ZZZZZZ			18:26																								
CCVL 160-453933/24			18:33																								
CCV 160-453933/25			18:39																								
CCB 160-453933/26			18:46																								
ZZZZZZ			18:53																								
ZZZZZZ			18:59																								
ZZZZZZ			19:06																								
ZZZZZZ			19:13																								
ZZZZZZ			19:20																								
ZZZZZZ			19:26																								
ZZZZZZ			19:33																								
ZZZZZZ			19:40																								
ZZZZZZ			19:47																								
ZZZZZZ			19:53																								
CCVL 160-453933/37			20:00																								
CCV 160-453933/38			20:07																								
CCB 160-453933/39			20:14																								
ZZZZZZ			20:20																								
ZZZZZZ			20:27																								
ZZZZZZ			20:34																								

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Instrument ID: ICPMS7700 Analysis Method: 6020A

Start Date: 12/10/2019 15:57 End Date: 12/11/2019 01:44

Lab Sample Id	D/F	Type	Time	Analytes																							
				Th	U																						
ZZZZZZ			20:41																								
ZZZZZZ			20:47																								
ZZZZZZ			20:54																								
ZZZZZZ			21:01																								
ZZZZZZ			21:07																								
ZZZZZZ			21:14																								
ZZZZZZ			21:21																								
CCVL 160-453933/50	1		21:28	X	X																						
CCV 160-453933/51	1		21:34	X	X																						
CCB 160-453933/52	1		21:41	X	X																						
ZZZZZZ			21:48																								
MB 160-452611/1-A	2	T	21:55	X	X																						
LCS 160-452611/2-A	2	T	22:01	X																							
LCSSRM 160-452611/3-A	10	T	22:08		X																						
160-36526-1	2	T	22:15	X	X																						
160-36526-2	2	T	22:22	X	X																						
160-36526-3	2	T	22:28	X	X																						
160-36526-4	2	T	22:35	X	X																						
160-36526-5	2	T	22:42	X	X																						
160-36526-6	2	T	22:48	X	X																						
CCVL 160-453933/63	1		22:55	X	X																						
CCV 160-453933/64	1		23:02	X	X																						
CCB 160-453933/65	1		23:09	X	X																						
160-36526-7	2	T	23:15	X	X																						
160-36526-8	2	T	23:22	X	X																						
160-36526-9	2	T	23:29	X	X																						
160-36526-10	2	T	23:36	X	X																						
160-36526-11	2	T	23:42	X	X																						
160-36526-11 SD	10	T	23:49	X	X																						
160-36526-11 DU	2	T	23:56	X	X																						
160-36526-11 MS	2	T	00:02	X	X																						
160-36526-11 MSD	2	T	00:09	X	X																						
160-36526-12	2	T	00:16	X	X																						
CCVL 160-453933/76	1		00:23	X	X																						
CCV 160-453933/77	1		00:30	X	X																						
CCB 160-453933/78	1		00:36	X	X																						
160-36526-13	2	T	00:43	X	X																						
160-36526-14	2	T	00:50	X	X																						
160-36526-15	2	T	00:57	X	X																						
160-36526-16	2	T	01:03	X	X																						
160-36526-17	2	T	01:10	X	X																						
160-36526-18	2	T	01:17	X	X																						

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Instrument ID: ICPMS7700 Analysis Method: 6020A

Start Date: 12/10/2019 15:57 End Date: 12/11/2019 01:44

Lab Sample Id	D/F	Type	Time	Analytes																							
				Th	U																						
160-36526-19	2	T	01:23	X	X																						
CCVL 160-453933/86	1		01:30	X	X																						
CCV 160-453933/87	1		01:37	X	X																						
CCB 160-453933/88	1		01:44	X	X																						

Prep Types:
T = Total/NA

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Instrument ID: ICPMS7700 Analysis Method: 6020A

Start Date: 12/10/2019 16:58 End Date: 12/11/2019 08:15

Lab Sample Id	D/F	Type	Time	Analytes																							
				Th	U																						
LRC 160-453935/1			16:58																								
LRC 160-453935/2	1		17:05	X	X																						
ICIS 160-453935/3			01:57	X	X																						
IC 160-453935/4	1		02:04	X	X																						
IC 160-453935/5	1		02:11	X	X																						
IC 160-453935/6	1		02:17	X	X																						
ICV 160-453935/7	1		02:24	X	X																						
ICB 160-453935/8	1		02:31	X	X																						
CRI 160-453935/9	1		02:38	X	X																						
ICSA 160-453935/10	1		02:44	X	X																						
ICSAB 160-453935/11	1		02:51	X	X																						
CCV 160-453935/12	1		02:58	X	X																						
CCB 160-453935/13	1		03:05	X	X																						
ZZZZZZ			03:11																								
ZZZZZZ			03:18																								
ZZZZZZ			03:25																								
ZZZZZZ			03:32																								
ZZZZZZ			03:38																								
ZZZZZZ			03:45																								
MB 160-452612/1-A	2	T	03:52	X	X																						
LCS 160-452612/2-A	2	T	03:58	X																							
LCSSRM 160-452612/3-A	10	T	04:05		X																						
160-36526-20	2	T	04:12	X	X																						
CCVL 160-453935/24	1		04:19	X	X																						
CCV 160-453935/25	1		04:25	X	X																						
CCB 160-453935/26	1		04:32	X	X																						
160-36526-20 SD	10	T	04:39	X	X																						
160-36526-20 MS	2	T	04:46	X	X																						
160-36526-20 MSD	2	T	04:52	X	X																						
160-36526-21	2	T	04:59	X	X																						
160-36526-22	2	T	05:06	X	X																						
ZZZZZZ			05:13																								
ZZZZZZ			05:19																								
ZZZZZZ			05:26																								
ZZZZZZ			05:33																								
ZZZZZZ			05:40																								
CCVL 160-453935/37	1		05:46	X	X																						
CCV 160-453935/38	1		05:53	X	X																						
CCB 160-453935/39	1		06:00	X	X																						
ZZZZZZ			06:07																								
ZZZZZZ			06:13																								
ZZZZZZ			06:20																								

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Instrument ID: ICPMS7700 Analysis Method: 6020A

Start Date: 12/10/2019 16:58 End Date: 12/11/2019 08:15

Lab Sample Id	D/F	Type	Time	Analytes																								
				Th	U																							
ZZZZZZ			06:27																									
ZZZZZZ			06:34																									
ZZZZZZ			06:41																									
ZZZZZZ			06:47																									
ZZZZZZ			06:54																									
ZZZZZZ			07:01																									
ZZZZZZ			07:07																									
CCVL 160-453935/50			07:14																									
CCV 160-453935/51			07:21																									
CCB 160-453935/52			07:28																									
ZZZZZZ			07:34																									
ZZZZZZ			07:41																									
ZZZZZZ			07:48																									
ZZZZZZ			07:55																									
CCVL 160-453935/57			08:01																									
CCV 160-453935/58			08:08																									
CCB 160-453935/59			08:15																									

Prep Types:
T = Total/NA

15-IN
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

ICP-MS Instrument ID: ICPMS7700 Start Date: 12/10/2019 End Date: 12/11/2019

Lab Sample ID	Time	Internal Standards %RI For:									
		Element Li-6	Q	Element Sc/2	Q	Element Sc/3	Q	Element Ge/2	Q	Element Ge/3	Q
IC 160-453933/2	16:04	100		95		100		97		100	
IC 160-453933/3	16:11	100		104		103		107		104	
IC 160-453933/4	16:17	99		106		104		112		106	
ICV 160-453933/5	16:24	100		107		103		111		106	
ICB 160-453933/6	16:31	103		106		105		105		105	
CRI 160-453933/7	16:38	103		111		106		109		106	
ICSA 160-453933/8	16:44	93		102		100		98		97	
ICSAB 160-453933/9	16:51	93		110		105		109		103	
LRC 160-453933/11	17:05	87		137		116		117		112	
CCVL 160-453933/50	21:28	85		109		117		114		125	
CCV 160-453933/51	21:34	79		103		114		114		122	
CCB 160-453933/52	21:41	82		106		114		110		120	
MB 160-452611/1-A	21:55	80		105		116		111		123	
LCS 160-452611/2-A	22:01	78		104		113		108		121	
LCSSRM 160-452611/3-A	22:08	79		108		121		110		121	
160-36526-1	22:15	74		123		135		111		120	
160-36526-2	22:22	74		121		135		113		124	
160-36526-3	22:28	75		119		132		115		125	
160-36526-4	22:35	75		121		135		116		127	
160-36526-5	22:42	74		111		133		109		127	
160-36526-6	22:48	71		116		127		114		122	
CCVL 160-453933/63	22:55	76		107		118		113		126	
CCV 160-453933/64	23:02	76		109		119		119		127	
CCB 160-453933/65	23:09	77		110		120		115		126	
160-36526-7	23:15	74		119		130		114		125	
160-36526-8	23:22	73		118		133		116		127	
160-36526-9	23:29	73		119		132		116		125	
160-36526-10	23:36	72		124		134		117		129	
160-36526-11	23:42	71		121		133		119		129	
160-36526-11 SD	23:49	75		114		127		119		131	
160-36526-11 DU	23:56	72		120		136		117		128	
160-36526-11 MS	00:02	72		130				116		126	
160-36526-11 MSD	00:09	71		122		134		115		125	
160-36526-12	00:16	75		115		130		115		127	
CCVL 160-453933/76	00:23	78		112		122		119		130	
CCV 160-453933/77	00:30	75		111		121		122		130	
CCB 160-453933/78	00:36	77		111		121		117		128	
160-36526-13	00:43	73		117		132		116		129	
160-36526-14	00:50	73		121		135		120		130	
160-36526-15	00:57	73		123		138		118		130	
160-36526-16	01:03	72		120		135		118		130	

FORM XV - IN

15-IN
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

ICP-MS Instrument ID: ICPMS7700 Start Date: 12/10/2019 End Date: 12/11/2019

Lab Sample ID	Time	Internal Standards %RI For:									
		Element Li-6	Q	Element Sc/2	Q	Element Sc/3	Q	Element Ge/2	Q	Element Ge/3	Q
160-36526-17	01:10	70		121		134		118		129	
160-36526-18	01:17	72		127		140		123		132	
160-36526-19	01:23	72		124		138		120		130	
CCVL 160-453933/86	01:30	75		115		126		122		131	
CCV 160-453933/87	01:37	75		114		125		126		133	
CCB 160-453933/88	01:44	76		114		123		119		129	

FORM XV - IN

15-IN
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

ICP-MS Instrument ID: ICPMS7700 Start Date: 12/10/2019 End Date: 12/11/2019

Lab Sample ID	Time	Internal Standards %RI For:									
		Element In	Q	Element Ho/2	Q	Element Ho/3	Q	Element Ir/2	Q	Element Ir/3	Q
IC 160-453933/2	16:04	99		94		99		94		99	
IC 160-453933/3	16:11	100		99		100		98		99	
IC 160-453933/4	16:17	100		101		103		98		100	
ICV 160-453933/5	16:24	102		103		103		101		101	
ICB 160-453933/6	16:31	105		102		104		103		103	
CRI 160-453933/7	16:38	105		105		104		104		103	
ICSA 160-453933/8	16:44	91		97		95		88		88	
ICSAB 160-453933/9	16:51	95		100		97		89		90	
LRC 160-453933/11	17:05	102		106		106		95		95	
CCVL 160-453933/50	21:28	122		109		121		115		122	
CCV 160-453933/51	21:34	116		108		119		110		116	
CCB 160-453933/52	21:41	119		108		120		113		119	
MB 160-452611/1-A	21:55	119		109		120		113		118	
LCS 160-452611/2-A	22:01	115		106		119		107		115	
LCSSRM 160-452611/3-A	22:08	117		108		119		112		118	
160-36526-1	22:15	112		107		116		106		110	
160-36526-2	22:22	116		108		120		106		113	
160-36526-3	22:28	117		109		121		109		114	
160-36526-4	22:35	119		109		123		108		115	
160-36526-5	22:42	119		102		121		101		115	
160-36526-6	22:48	113		105		115		103		108	
CCVL 160-453933/63	22:55	121		103		118		106		116	
CCV 160-453933/64	23:02	121		107		120		109		116	
CCB 160-453933/65	23:09	123		109		120		112		120	
160-36526-7	23:15	117		108		119		106		113	
160-36526-8	23:22	117		108		120		106		112	
160-36526-9	23:29	117		106		118		103		111	
160-36526-10	23:36	119		107		121		106		114	
160-36526-11	23:42	118		107		120		106		113	
160-36526-11 SD	23:49	123		108		121		106		116	
160-36526-11 DU	23:56	118		105		120		104		113	
160-36526-11 MS	00:02	116		107		121		103		112	
160-36526-11 MSD	00:09	117		107		120		105		113	
160-36526-12	00:16	121		107		121		106		114	
CCVL 160-453933/76	00:23	126		110		123		111		119	
CCV 160-453933/77	00:30	123		108		123		110		117	
CCB 160-453933/78	00:36	125		109		122		112		119	
160-36526-13	00:43	119		107		121		106		113	
160-36526-14	00:50	122		108		123		106		116	
160-36526-15	00:57	122		108		123		107		115	
160-36526-16	01:03	122		108		124		106		116	

FORM XV - IN

15-IN
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

ICP-MS Instrument ID: ICPMS7700 Start Date: 12/10/2019 End Date: 12/11/2019

Lab Sample ID	Time	Internal Standards %RI For:									
		Element In	Q	Element Ho/2	Q	Element Ho/3	Q	Element Ir/2	Q	Element Ir/3	Q
160-36526-17	01:10	119		105		120		103		112	
160-36526-18	01:17	122		112		123		109		115	
160-36526-19	01:23	121		108		121		105		113	
CCVL 160-453933/86	01:30	127		111		124		113		119	
CCV 160-453933/87	01:37	124		110		123		112		118	
CCB 160-453933/88	01:44	125		109		122		113		119	

FORM XV - IN

15-IN
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

ICP-MS Instrument ID: ICPMS7700 Start Date: 12/10/2019 End Date: 12/11/2019

Lab Sample ID	Time	Internal Standards %RI For:									
		Element Li-6	Q	Element Sc/2	Q	Element Sc/3	Q	Element Ge/2	Q	Element Ge/3	Q
LRC 160-453935/2	17:05	87		137		116		117		112	
IC 160-453935/4	02:04	102		110		100		107		101	
IC 160-453935/5	02:11	99		102		100		107		101	
IC 160-453935/6	02:17	98		102		98		107		101	
ICV 160-453935/7	02:24	99		100		97		105		99	
ICB 160-453935/8	02:31	100		100		96		99		98	
CRI 160-453935/9	02:38	103		101		99		101		100	
ICSA 160-453935/10	02:44	100		99		96		94		92	
ICSAB 160-453935/11	02:51	100		103		97		100		93	
CCV 160-453935/12	02:58	102		101		99		105		101	
CCB 160-453935/13	03:05	100		100		98		99		99	
MB 160-452612/1-A	03:52	100		95		93		97		97	
LCS 160-452612/2-A	03:58	98		93		92		93		95	
LCSSRM 160-452612/3-A	04:05	98		95		97		93		93	
160-36526-20	04:12	96		107		109		97		96	
CCVL 160-453935/24	04:19	101		99		96		99		98	
CCV 160-453935/25	04:25	100		97		96		102		98	
CCB 160-453935/26	04:32	102		98		96		96		96	
160-36526-20 SD	04:39	100		100		98		98		97	
160-36526-20 MS	04:46	97		110		109		95		95	
160-36526-20 MSD	04:52	95		116		113		96		94	
160-36526-21	04:59	98		106		103		99		96	
160-36526-22	05:06	94		105		104		98		96	
CCVL 160-453935/37	05:46	103		96		95		97		96	
CCV 160-453935/38	05:53	97		93		92		96		94	
CCB 160-453935/39	06:00	99		93		93		93		93	

FORM XV - IN

15-IN
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
METALS

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

ICP-MS Instrument ID: ICPMS7700 Start Date: 12/10/2019 End Date: 12/11/2019

Lab Sample ID	Time	Internal Standards %RI For:									
		Element In	Q	Element Ho/2	Q	Element Ho/3	Q	Element Ir/2	Q	Element Ir/3	Q
LRC 160-453935/2	17:05	102		106		106		95		95	
IC 160-453935/4	02:04	100		107		100		106		100	
IC 160-453935/5	02:11	98		100		101		99		98	
IC 160-453935/6	02:17	96		101		101		98		98	
ICV 160-453935/7	02:24	98		100		100		100		99	
ICB 160-453935/8	02:31	98		100		100		101		99	
CRI 160-453935/9	02:38	99		100		100		100		100	
ICSA 160-453935/10	02:44	88		96		94		87		87	
ICSAB 160-453935/11	02:51	88		95		93		87		86	
CCV 160-453935/12	02:58	99		102		102		101		101	
CCB 160-453935/13	03:05	100		102		101		101		102	
MB 160-452612/1-A	03:52	96		100		100		99		100	
LCS 160-452612/2-A	03:58	95		98		100		94		98	
LCSSRM 160-452612/3-A	04:05	94		98		100		97		99	
160-36526-20	04:12	93		98		100		94		95	
CCVL 160-453935/24	04:19	97		100		100		100		99	
CCV 160-453935/25	04:25	96		100		99		99		99	
CCB 160-453935/26	04:32	98		100		99		100		100	
160-36526-20 SD	04:39	96		100		100		97		98	
160-36526-20 MS	04:46	93		97		99		92		95	
160-36526-20 MSD	04:52	91		97		97		92		93	
160-36526-21	04:59	93		101		98		96		95	
160-36526-22	05:06	94		100		100		95		96	
CCVL 160-453935/37	05:46	98		100		100		99		99	
CCV 160-453935/38	05:53	96		99		99		100		100	
CCB 160-453935/39	06:00	97		99		100		100		100	

FORM XV - IN

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, St. Loui Job No.: 160-36526-1

SDG No.:

Batch Number: 452611 Batch Start Date: 12/02/19 10:13 Batch Analyst: Mazariegos, Leonel A

Batch Method: 3050B Batch End Date: 12/02/19 15:26

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	MPREP1-A 00004	MPREP1-B 00004	MPREP2 00022	PR_LCSSRM U 00001
MB 160-452611/1		3050B, 6020A		0.5496 g	50 mL				
LCS 160-452611/2		3050B, 6020A		0.5279 g	50 mL	0.25 mL	0.25 mL	0.25 mL	
LCSSRM 160-452611/3		3050B, 6020A		0.5580 g	50 mL				0.558 g
160-36526-B-1	STSB27_0-0.5	3050B, 6020A	T	0.5443 g	50 mL				
160-36526-B-2	STSB27_0.5-3	3050B, 6020A	T	0.5242 g	50 mL				
160-36526-B-3	STSB27_3-6	3050B, 6020A	T	0.5374 g	50 mL				
160-36526-B-4	STSB27_6-15	3050B, 6020A	T	0.5449 g	50 mL				
160-36526-B-5	STSB28_0-0.5	3050B, 6020A	T	0.5854 g	50 mL				
160-36526-B-6	STSB28-FD_0-0.5	3050B, 6020A	T	0.5289 g	50 mL				
160-36526-B-7	STSB28_0.5-3	3050B, 6020A	T	0.5414 g	50 mL				
160-36526-B-8	STSB28_3-6	3050B, 6020A	T	0.5532 g	50 mL				
160-36526-B-9	STSB28_6-15	3050B, 6020A	T	0.5255 g	50 mL				
160-36526-B-10	STSB29_0-0.5	3050B, 6020A	T	0.5444 g	50 mL				
160-36526-B-11	STSB29_0.5-3	3050B, 6020A	T	0.5808 g	50 mL				
160-36526-B-11 DU	STSB29_0.5-3	3050B, 6020A	T	0.5103 g	50 mL				
160-36526-B-11 MS	STSB29_0.5-3	3050B, 6020A	T	0.5730 g	50 mL	0.25 mL	0.25 mL	0.25 mL	
160-36526-B-11 MSD	STSB29_0.5-3	3050B, 6020A	T	0.5433 g	50 mL	0.25 mL	0.25 mL	0.25 mL	
160-36526-B-12	STSB29_3-6	3050B, 6020A	T	0.5553 g	50 mL				
160-36526-B-13	STSB29_6-15	3050B, 6020A	T	0.5193 g	50 mL				
160-36526-B-14	STSB29-FD_6-15	3050B, 6020A	T	0.5623 g	50 mL				
160-36526-B-15	STSB30_0-0.5	3050B, 6020A	T	0.5238 g	50 mL				
160-36526-B-16	STSB30_0.5-3	3050B, 6020A	T	0.5815 g	50 mL				
160-36526-B-17	STSB30_3-6	3050B, 6020A	T	0.5642 g	50 mL				
160-36526-B-18	STSB30_6-15	3050B, 6020A	T	0.5346 g	50 mL				
160-36526-B-19	STSB31_0-0.5	3050B, 6020A	T	0.5845 g	50 mL				

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.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, St. Loui Job No.: 160-36526-1

SDG No.:

Batch Number: 452611 Batch Start Date: 12/02/19 10:13 Batch Analyst: Mazariegos, Leonel A

Batch Method: 3050B Batch End Date: 12/02/19 15:26

Batch Notes	
Balance ID	27150420
Blank Soil Lot Number	25438819
Temperature - Corrected - End	C2: 93.5 Degrees C
Temperature - Corrected - Start	B2: 93.8 Degrees C
Digestion End Time	12/02/2019 14:58
Digestion Start Time	12/02/2019 12:34
Digestion Unit ID	HOTBLOCK 1
Digestion Tube/Cup ID	348541-4653
Hydrogen Peroxide ID	1819373
Hydrochloric Acid ID	1824059
Nitric Acid ID	1841775, 1836217
Pipette/Syringe/Dispenser ID	MET-12
Analyst ID - Spike Analyst	LAM
Sufficient Volume for Batch QC	YES
Thermometer ID	160322347

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.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, St. Loui Job No.: 160-36526-1

SDG No.:

Batch Number: 452612 Batch Start Date: 12/02/19 10:16 Batch Analyst: Mazariegos, Leonel A

Batch Method: 3050B Batch End Date: 12/02/19 15:26

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	MPREP1-A 00004	MPREP1-B 00004	MPREP2 00022	PR_LCSSRM U 00001
MB 160-452612/1		3050B, 6020A		0.5161 g	50 mL				
LCS 160-452612/2		3050B, 6020A		0.5559 g	50 mL	0.25 mL	0.25 mL	0.25 mL	
LCSSRM 160-452612/3		3050B, 6020A		0.5371 g	50 mL				0.5371 g
160-36526-B-20	STSB31_0.5-3	3050B, 6020A	T	0.5586 g	50 mL				
160-36526-B-20 MS	STSB31_0.5-3	3050B, 6020A	T	0.5114 g	50 mL	0.25 mL	0.25 mL	0.25 mL	
160-36526-B-20 MSD	STSB31_0.5-3	3050B, 6020A	T	0.5934 g	50 mL	0.25 mL	0.25 mL	0.25 mL	
160-36526-B-21	STSB31_3-6	3050B, 6020A	T	0.5363 g	50 mL				
160-36526-B-22	STSB31_6-15	3050B, 6020A	T	0.5838 g	50 mL				

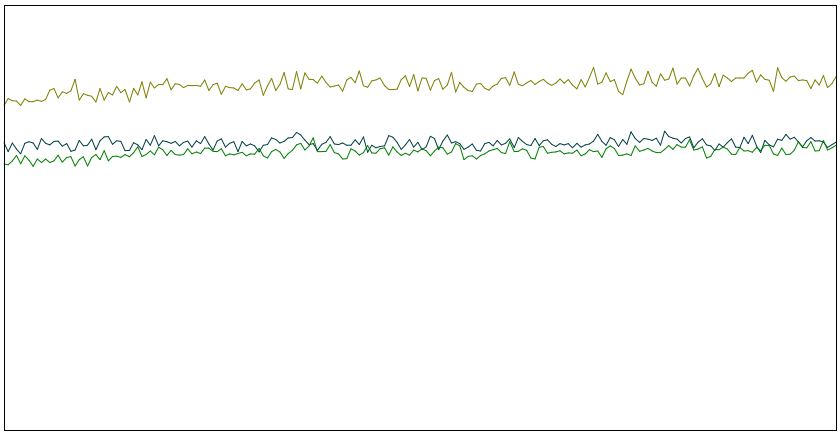
Batch Notes	
Balance ID	27150420
Blank Soil Lot Number	25438819
Temperature - Corrected - End	C2: 93.5 Degrees C
Temperature - Corrected - Start	B2: 93.8 Degrees C
Digestion End Time	12/02/2019 14:58
Digestion Start Time	12/02/2019 12:34
Digestion Unit ID	HOTBLOCK 1
Digestion Tube/Cup ID	348541-4653
Hydrogen Peroxide ID	1819373
Hydrochloric Acid ID	1824059
Nitric Acid ID	1841775, 1836217
Pipette/Syringe/Dispenser ID	MET-12
Analyst ID - Spike Analyst	LAM
Sufficient Volume for Batch QC	YES
Thermometer ID	160322347

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.

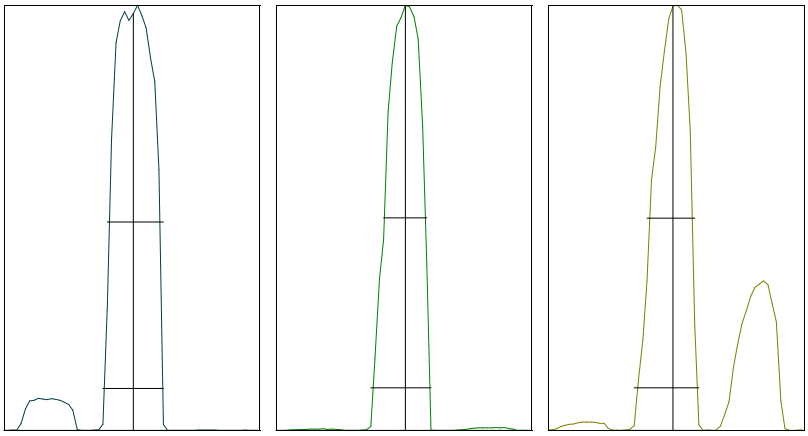
Tune Report

Tune File : autotune.u
Comment :



Integration Time:	0.1000 sec	
Sampling Period:	0.3100 sec	
n:	200	
Oxide:	156/140	0.535%
Doubly Charged:	70/140	1.171%

m/z	Range	Count	Mean	RSD%	Background
7	50,000	33942.0	33830.2	1.53	1.20
89	100,000	67141.0	65460.4	1.82	1.90
205	50,000	41673.0	40699.1	2.26	4.00



m/z:	7	89	205
Height:	33,807	66,519	40,303
Axis:	7.05	89.05	205.00
W-50%:	0.65	0.50	0.55
W-10%:	0.700	0.700	0.7500

Integration Time: 0.1000 sec
Acquisition Time: 22.7600 sec

Y axis : Linear

Tune Report

Tune File : autotune.u
Comment :

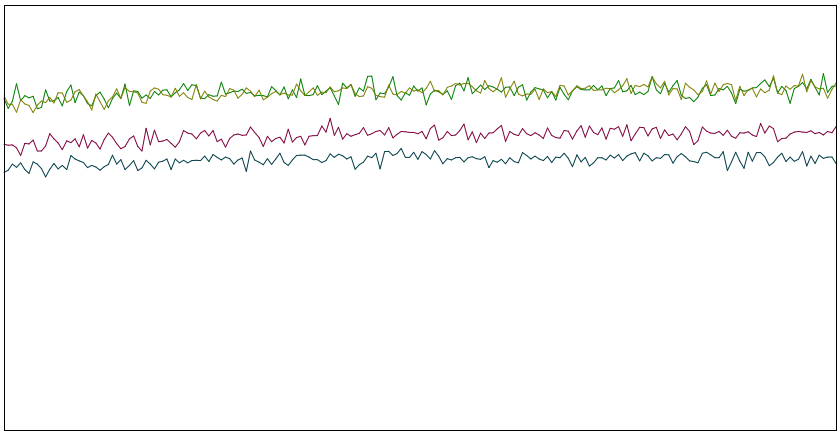
Tuning Parameters

===Plasma Condition===			===Ion Lenses===			===Q-Pole Parameters===		
RF Power	:	1550 W	Extract 1	:	0 V	AMU Gain	:	118
RF Matching	:	1.5 V	Extract 2	:	-120 V	AMU Offset	:	128
Smpl Depth	:	8 mm	Omega Bias	:	-90 V	Axis Gain	:	0.998
Torch-H	:	0.1 mm	Omega Lens	:	8 V	Axis Offset	:	0.11
Torch-V	:	0.1 mm	Cell Entrance	:	-30 V	QP Bias	:	-3 V
Carrier Gas	:	0.55 L/min	Cell Exit	:	-50 V			
Dilution Mode	:	ON	Deflect	:	12.2 V	===Detector Parameters===		
Dilution Gas	:	0.5 L/min	Plate Bias	:	-40 V	Discriminator	:	4.5 mV
Optional Gas	:	0 %	===Octopole Parameters===			Analog HV	:	1919 V
Nebulizer Pump	:	0.1 rps	OctP RF	:	190 V	Pulse HV	:	1104 V
Sample Pump	:	--- rps	OctP Bias	:	-8 V			
S/C Temp	:	2 degC						

===Reaction Cell===								
Reaction Mode	:	OFF						
H2 Gas	:	0 mL/min	He Gas	:	0 mL/min	Optional Gas	:	--- %

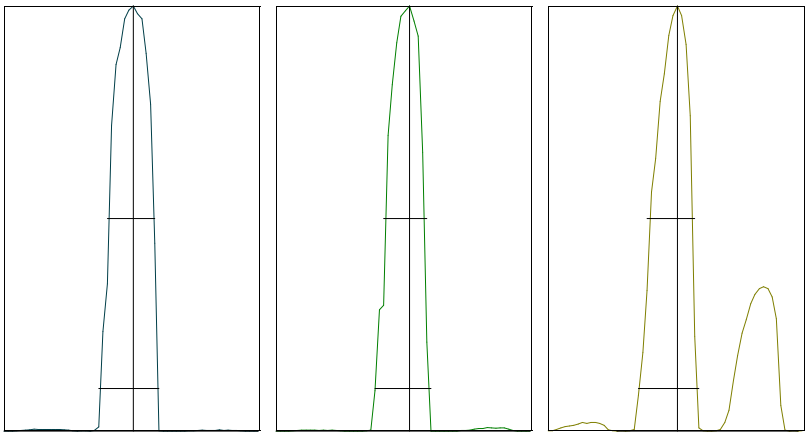
Tune Report

Tune File : he.u
Comment :



Integration Time: 0.1000 sec
Sampling Period: 0.6200 sec
n: 200
Oxide: 156/140 0.247%
Doubly Charged: 70/140 1.286%

m/z	Range	Count	Mean	RSD%	Background
59	20,000	12555.0	12734.6	1.93	0.00
89	20,000	16212.0	15941.2	1.97	0.20
140	50,000	40899.0	39843.3	1.94	0.20
205	50,000	35802.0	34693.3	2.14	0.50
156/140	1	0.196%	0.233%	12.67	
70/140	2	1.374%	1.263%	6.41	



m/z:	59	89	205
Height:	13,037	16,439	35,819
Axis:	59.05	89.10	205.05
W-50%:	0.55	0.50	0.55
W-10%:	0.700	0.6500	0.700

Integration Time: 0.1000 sec
Acquisition Time: 22.5600 sec

Y axis : Linear

Tune Report

Tune File : he.u
Comment :

Tuning Parameters

===Plasma Condition===			===Ion Lenses===			===Q-Pole Parameters===		
RF Power	:	1550 W	Extract 1	:	0 V	AMU Gain	:	118
RF Matching	:	1.5 V	Extract 2	:	-120 V	AMU Offset	:	128
Smpl Depth	:	8 mm	Omega Bias	:	-80 V	Axis Gain	:	0.998
Torch-H	:	0.1 mm	Omega Lens	:	8.5 V	Axis Offset	:	0.11
Torch-V	:	0.1 mm	Cell Entrance	:	-40 V	QP Bias	:	-15 V
Carrier Gas	:	0.55 L/min	Cell Exit	:	-60 V			
Dilution Mode	:	ON	Deflect	:	-0.4 V	===Detector Parameters===		
Dilution Gas	:	0.5 L/min	Plate Bias	:	-60 V	Discriminator	:	4.5 mV
Optional Gas	:	0 %	===Octopole Parameters===			Analog HV	:	1919 V
Nebulizer Pump	:	0.1 rps	OctP RF	:	190 V	Pulse HV	:	1104 V
Sample Pump	:	--- rps	OctP Bias	:	-18 V			
S/C Temp	:	2 degC						

===Reaction Cell===								
Reaction Mode	:	ON						
H2 Gas	:	0 mL/min	He Gas	:	4.3 mL/min	Optional Gas	:	--- %

QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D
Date Acquired: 10 Dec 2019 03:42:44 pm
Operator: LP 7700
Misc Info:
Vial Number: 1307
Current Method: C:\ICPMH\1\METHODS\TN_6020.m

Minimum Response(CPS)

Element	Actual	Required	Flag

RSD (%)

Element	Actual	Required	Flag
6 Li	0.17	5.00	
59 Co	1.06	5.00	
115 In	0.63	5.00	
205 Tl	0.57	5.00	

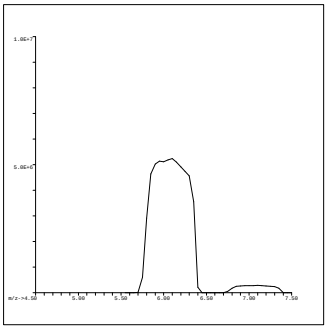
Ion Ratio

Element	Actual	Required	Flag

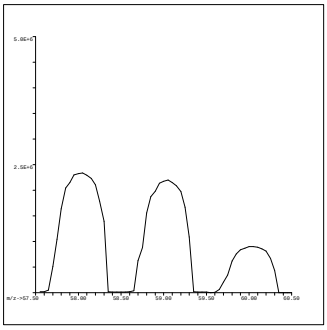
Maximum Bkg. Count(CPS)

Element	Actual	Required	Flag

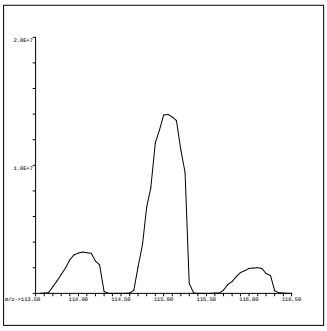
C:\ICPMH\1\DATA\121019B2.B\QCTUNE00.D



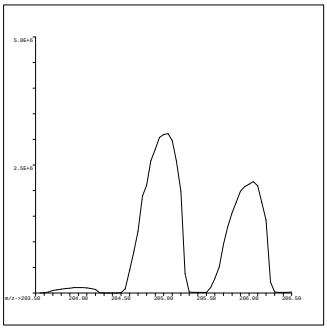
6 Li
Mass Calib.
Actual: 6.05
Required: 5.90-6.10
Flag:
Peak Width
Actual: 0.60
Required: 0.90
Flag:



59 Co
Mass Calib.
Actual: 59.05
Required: 58.90-59.10
Flag:
Peak Width
Actual: 0.60
Required: 0.90
Flag:



115 In
Mass Calib.
Actual: 115.05
Required: 114.90-115.10
Flag:
Peak Width
Actual: 0.60
Required: 0.90
Flag:



205 Tl
Mass Calib.
Actual: 205.00
Required: 204.90-205.10
Flag:
Peak Width
Actual: 0.65
Required: 0.90
Flag:

QC Tune Result:Pass

C:\ICPMH\1\DATA\121019B2.B\QCTUNE00.D

Replicated Data: Tune #1

Mass	Count(CPS)				
6	2877351.00	2862537.00	2853527.00	2829811.00	2840811.00
7	158721.09	156592.50	154929.91	155404.70	154440.41
8	36.00	31.50	35.00	41.50	28.00
58	1225560.00	1223748.00	1209847.00	1207828.00	1200629.00
59	1137512.00	1123184.00	1127595.00	1119311.00	1112796.00
60	457138.00	456799.41	458767.41	455067.59	454458.69
95	582518.19	581706.63	578256.50	574551.81	577642.19
111	605780.00	606448.19	606370.19	604968.88	608564.19
114	1422587.00	1415358.00	1418130.00	1412034.00	1406409.00
115	6134521.00	6097464.00	6103727.00	6128907.00	6099688.00
116	889908.81	884251.00	882771.31	885372.00	886322.88
118	834597.50	834124.81	834758.00	832982.31	829008.00
204	50164.42	50722.34	51239.73	52245.21	52375.13
205	1449399.00	1444889.00	1463075.00	1467627.00	1475043.00
206	1013061.00	1021512.00	1026749.00	1022823.00	1028747.00
207	911532.81	907450.31	912652.00	916670.63	914989.13
208	2188323.00	2179130.00	2193981.00	2195687.00	2166986.00

Blank Sample

Sample Name	**RINSE**
Data File Name	**002BLNK.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T15:50:57-06:00**
Type	**6-Blank**
VialNumber	**1**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	

TuneStep	TuneFile
2	he.u
3	nogas.u

Calibration Blank Report

Sample Name	**ICIS 1843378**
Data File Name	**003CALB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T15:57:44-06:00**
Type	**CalBlk**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**

QC Analyte Table

Element	m/z	ISTD	Tune Step	CPS	%RSD
Li	7	6	3	396592	1.25
Be	9	6	3	226	2.26
B	11	6	3	12858	5.37
Na	23	45	2	13850	2.58
Mg	24	45	2	322	7.83
Al	27	45	2	273	13.85
P	31	45	2	72	41.88
K	39	45	2	31721	0.86
Ca	44	45	3	27540	1.18
Ti	47	45	3	338	3.65
V	51	45	2	1573	5.06
Cr	52	45	2	1105	6.95
Mn	55	72	2	270	6.53
Fe	57	72	2	466	10.03
Co	59	72	2	443	9.15
Ni	60	72	2	150	21.20
Cu	63	72	2	7527	2.72
Zn	66	72	2	541	12.84
As	75	72	2	176	10.80
Se	78	72	2	47	18.90
Sr	88	72	3	1398	7.49
Y	89	72	2	144	27.72
Zr	90	72	2	221	9.09
Nb	93	72	2	4297	7.70
Mo	95	72	3	1811	6.95
Ru	101	72	2	71	25.81
Rh	103	72	2	650	3.20
Pd	105	72	2	91	22.06
Ag	107	115	3	373	17.38
Cd	111	115	3	114	20.79
Sn	118	115	3	3215	0.47
Sb	121	115	3	1367	5.51
Te	125	165	2	6	91.64
Cs	133	165	2	277	5.25
Ba	137	165	3	360	11.60
La	139	165	2	219	7.51
Ce	140	165	2	259	14.47
Pr	141	165	2	197	17.94
Nd	146	165	2	30	11.10
Sm	147	165	3	82	4.68
Hf	178	165	2	194	1.98
Ta	181	165	2	14382	1.01
W	182	165	2	3279	10.44
Re	185	193	3	127	20.89
Pt	195	193	2	204	7.35
Au	197	193	3	1387	11.61
Tl	205	193	3	2914	2.55
(Pb)	206	193	3	1959	6.01
(Pb)	207	193	3	2159	7.37
Pb	208	193	3	8179	3.72
Bi	209	193	2	4753	2.86
Th	232	193	3	1601	8.23
U	238	193	3	473	6.72

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD
Li (IS)	6	3	7411413	0.54
Sc (IS)	45	2	143379	0.48
Sc (IS)	45	3	2392712	0.82
Ge (IS)	72	2	323154	1.89
Ge (IS)	72	3	1861986	0.36
In (IS)	115	3	12119833	0.63
Ho (IS)	165	2	9598706	0.65
Ho (IS)	165	3	13687738	0.50
Ir (IS)	193	2	6085322	0.86
Ir (IS)	193	3	6951639	0.86

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Calibration Standard Report

Sample Name	**IC 1847444**
Data File Name	**004CALS.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:04:31-06:00**
Type	**CalStd**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**

QC Analyte Table

Element	m/z	ISTD	Tune Step	CPS	%RSD
Li	7	6	3	594877	0.26
Be	9	6	3	5716	2.68
B	11	6	3	786949	0.53
Na	23	45	2	155363	0.39
Mg	24	45	2	38700	0.88
Al	27	45	2	17461	0.85
P	31	45	2	2428	4.84
K	39	45	2	108062	0.89
Ca	44	45	3	265869	0.24
Ti	47	45	3	17878	1.06
V	51	45	2	80158	1.83
Cr	52	45	2	98111	1.62
Mn	55	72	2	24841	3.62
Fe	57	72	2	11004	1.35
Co	59	72	2	29702	0.96
Ni	60	72	2	19309	1.38
Cu	63	72	2	38643	1.82
Zn	66	72	2	40291	1.61
As	75	72	2	13683	1.17
Se	78	72	2	617	12.87
Sr	88	72	3	293531	0.95
Y	89	72	2	85499	1.86
Zr	90	72	2	64078	0.68
Nb	93	72	2	502532	1.33
Mo	95	72	3	58508	1.51
Ru	101	72	2	71335	0.23
Rh	103	72	2	402608	0.77
Pd	105	72	2	4078	2.10
Ag	107	115	3	58697	1.33
Cd	111	115	3	3300	3.77
Sn	118	115	3	35294	0.16
Sb	121	115	3	107197	1.22
Te	125	165	2	2537	2.57
Cs	133	165	2	18219	1.03
Ba	137	165	3	16801	1.85
La	139	165	2	74537	1.09
Ce	140	165	2	433180	1.14
Pr	141	165	2	92447	0.69
Nd	146	165	2	16740	1.74
Sm	147	165	3	128985	2.51
Hf	178	165	2	170085	1.42
Ta	181	165	2	589452	0.59
W	182	165	2	86127	0.44
Re	185	193	3	268215	0.90
Pt	195	193	2	11635	3.23
Au	197	193	3	107409	0.82
Tl	205	193	3	90235	1.24
(Pb)	206	193	3	47849	1.21
(Pb)	207	193	3	42877	0.95
Pb	208	193	3	193637	0.46
Bi	209	193	2	840621	0.93
Th	232	193	3	143496	1.32
U	238	193	3	69637	2.18

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	QC Flag
Li (IS)	6	3	7393428	0.73	7411413	99.8	80	120	
Sc (IS)	45	2	135713	10.63	143379	94.7	80	120	
Sc (IS)	45	3	2382183	0.44	2392712	99.6	80	120	
Ge (IS)	72	2	312750	9.07	323154	96.8	80	120	
Ge (IS)	72	3	1859584	0.55	1861986	99.9	80	120	
In (IS)	115	3	12032588	0.30	12119833	99.3	80	120	
Ho (IS)	165	2	9037315	9.66	9598706	94.2	80	120	
Ho (IS)	165	3	13600554	1.48	13687738	99.4	80	120	
Ir (IS)	193	2	5724754	8.97	6085322	94.1	80	120	
Ir (IS)	193	3	6850877	0.61	6951639	98.6	80	120	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Calibration Standard Report

Sample Name	**IC 1847445**
Data File Name	**005CALS.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:11:12-06:00**
Type	**CalStd**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**

QC Analyte Table

Element	m/z	ISTD	Tune Step	CPS	%RSD
Li	7	6	3	4415162	0.85
Be	9	6	3	1143217	0.42
B	11	6	3	1669036	0.83
Na	23	45	2	3623335	0.74
Mg	24	45	2	1937594	0.46
Al	27	45	2	821199	0.70
P	31	45	2	59527	1.17
K	39	45	2	2051268	0.67
Ca	44	45	3	3220002	0.87
Ti	47	45	3	365094	0.10
V	51	45	2	790819	2.14
Cr	52	45	2	977245	3.80
Mn	55	72	2	610331	0.27
Fe	57	72	2	524496	0.93
Co	59	72	2	1518766	0.60
Ni	60	72	2	370161	1.72
Cu	63	72	2	975903	2.05
Zn	66	72	2	198370	1.91
As	75	72	2	139362	2.56
Se	78	72	2	5506	3.09
Sr	88	72	3	6313172	0.25
Y	89	72	2	1893235	0.76
Zr	90	72	2	1399687	0.74
Nb	93	72	2	1400798	0.45
Mo	95	72	3	585341	0.77
Ru	101	72	2	710873	0.59
Rh	103	72	2	4420506	0.63
Pd	105	72	2	81922	2.23
Ag	107	115	3	571584	0.55
Cd	111	115	3	609039	0.80
Sn	118	115	3	1832502	0.74
Sb	121	115	3	1188326	0.82
Te	125	165	2	25618	2.09
Cs	133	165	2	2027849	0.56
Ba	137	165	3	835159	1.24
La	139	165	2	4110616	1.15
Ce	140	165	2	4713930	1.13
Pr	141	165	2	4982557	0.72
Nd	146	165	2	848837	0.93
Sm	147	165	3	1416465	0.55
Hf	178	165	2	1907988	0.09
Ta	181	165	2	7568973	0.41
W	182	165	2	1848070	0.47
Re	185	193	3	3034795	0.11
Pt	195	193	2	114024	1.55
Au	197	193	3	2385660	0.91
Tl	205	193	3	888079	1.02
(Pb)	206	193	3	1731184	0.72
(Pb)	207	193	3	1523699	0.68
Pb	208	193	3	6913070	0.13
Bi	209	193	2	4751821	0.71
Th	232	193	3	8041545	0.67
U	238	193	3	7692089	0.31

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	QC Flag
Li (IS)	6	3	7403748	0.76	7411413	99.9	80	120	
Sc (IS)	45	2	149177	0.76	143379	104.0	80	120	
Sc (IS)	45	3	2451692	0.61	2392712	102.5	80	120	
Ge (IS)	72	2	346142	1.86	323154	107.1	80	120	
Ge (IS)	72	3	1933598	0.67	1861986	103.8	80	120	
In (IS)	115	3	12125197	0.55	12119833	100.0	80	120	
Ho (IS)	165	2	9545047	0.74	9598706	99.4	80	120	
Ho (IS)	165	3	13718005	1.12	13687738	100.2	80	120	
Ir (IS)	193	2	5969551	0.65	6085322	98.1	80	120	
Ir (IS)	193	3	6897432	0.82	6951639	99.2	80	120	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Calibration Standard Report

Sample Name	**IC 1847446**
Data File Name	**006CALS.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:17:57-06:00**
Type	**CalStd**
VialNumber	**1103**
Dilution	**1**
Comment	
Operator	**LP 7700**

QC Analyte Table

Element	m/z	ISTD	Tune Step	CPS	%RSD
Li	7	6	3	8633038	0.57
Be	9	6	3	2327190	0.61
B	11	6	3	3409942	0.83
Na	23	45	2	7433005	0.57
Mg	24	45	2	3944453	0.11
Al	27	45	2	1770876	0.62
P	31	45	2	119944	0.27
K	39	45	2	4185423	0.31
Ca	44	45	3	6437027	0.58
Ti	47	45	3	737814	0.63
V	51	45	2	1738303	0.44
Cr	52	45	2	2104224	0.26
Mn	55	72	2	1356068	0.29
Fe	57	72	2	1156357	0.24
Co	59	72	2	3132836	0.61
Ni	60	72	2	756041	0.73
Cu	63	72	2	2215284	0.89
Zn	66	72	2	408302	0.38
As	75	72	2	287602	1.26
Se	78	72	2	11521	2.93
Sr	88	72	3	12915888	0.78
Y	89	72	2	3867030	0.84
Zr	90	72	2	2907152	0.36
Nb	93	72	2	2916346	0.71
Mo	95	72	3	1300195	0.37
Ru	101	72	2	1587943	0.71
Rh	103	72	2	9013546	0.88
Pd	105	72	2	164413	0.84
Ag	107	115	3	1303962	0.99
Cd	111	115	3	1350375	0.77
Sn	118	115	3	3752226	0.52
Sb	121	115	3	2436480	0.58
Te	125	165	2	53516	0.99
Cs	133	165	2	4169346	0.76
Ba	137	165	3	1957442	0.94
La	139	165	2	8474806	0.54
Ce	140	165	2	9752219	0.17
Pr	141	165	2	10208641	0.36
Nd	146	165	2	1920310	0.68
Sm	147	165	3	2917402	0.75
Hf	178	165	2	3993388	0.37
Ta	181	165	2	15709082	0.55
W	182	165	2	3830444	0.48
Re	185	193	3	6248847	0.85
Pt	195	193	2	230629	1.02
Au	197	193	3	4883393	0.74
Tl	205	193	3	2059496	0.76
(Pb)	206	193	3	3563138	1.11
(Pb)	207	193	3	3147020	1.76
Pb	208	193	3	14336497	1.08
Bi	209	193	2	9695457	0.67
Th	232	193	3	16875389	1.08
U	238	193	3	16064954	0.65

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	QC Flag
Li (IS)	6	3	7340346	0.57	7411413	99.0	80	120	
Sc (IS)	45	2	152248	0.87	143379	106.2	80	120	
Sc (IS)	45	3	2486064	0.53	2392712	103.9	80	120	
Ge (IS)	72	2	360584	0.61	323154	111.6	80	120	
Ge (IS)	72	3	1981714	0.48	1861986	106.4	80	120	
In (IS)	115	3	12162441	0.38	12119833	100.4	80	120	
Ho (IS)	165	2	9690580	0.75	9598706	101.0	80	120	
Ho (IS)	165	3	14064147	1.09	13687738	102.7	80	120	
Ir (IS)	193	2	5945960	0.48	6085322	97.7	80	120	
Ir (IS)	193	3	6980867	0.46	6951639	100.4	80	120	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Initial Calibration Verification (ICV) - US EPA Method 6020

Sample Name	**ICV 1848645**
Data File Name	**007_ICV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:24:37-06:00**
Type	**ICV**
VialNumber	**1104**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	100.71013	ug/l	100	100.7	90	110	Li	
Be	9	6	3	101.04806	ug/l	100	101.0	90	110	Be	
B	11	6	3	203.03760	ug/l	200	101.5	90	110	B	
Na	23	45	2	1007.96907	ug/l	1000	100.8	90	110	Na	
Mg	24	45	2	974.05586	ug/l	1000	97.4	90	110	Mg	
Al	27	45	2	957.07425	ug/l	1000	95.7	90	110	Al	
P	31	45	2	993.61976	ug/l	1000	99.4	90	110	P	
K	39	45	2	956.51629	ug/l	1000	95.7	90	110	K	
Ca	44	45	3	1052.94612	ug/l	1000	105.3	90	110	Ca	
Ti	47	45	3	101.51940	ug/l	100	101.5	90	110	Ti	
V	51	45	2	94.99006	ug/l	100	95.0	90	110	V	
Cr	52	45	2	100.96961	ug/l	100	101.0	90	110	Cr	
Mn	55	72	2	96.66307	ug/l	100	96.7	90	110	Mn	
Fe	57	72	2	941.25566	ug/l	1000	94.1	90	110	Fe	
Co	59	72	2	101.87137	ug/l	100	101.9	90	110	Co	
Ni	60	72	2	104.69704	ug/l	100	104.7	90	110	Ni	
Cu	63	72	2	104.41728	ug/l	100	104.4	90	110	Cu	
Zn	66	72	2	102.41889	ug/l	100	102.4	90	110	Zn	
As	75	72	2	102.54310	ug/l	100	102.5	90	110	As	
Se	78	72	2	51.42433	ug/l	50	102.8	90	110	Se	
Sr	88	72	3	101.87716	ug/l	100	101.9	90	110	Sr	
Y	89	72	2	103.43636	ug/l	100	103.4	90	110	Y	
Zr	90	72	2	100.21761	ug/l	100	100.2	90	110	Zr	
Nb	93	72	2	48.13657	ug/l	50	96.3	90	110	Nb	
Mo	95	72	3	47.26197	ug/l	50	94.5	90	110	Mo	
Ru	101	72	2	95.04727	ug/l	100	95.0	90	110	Ru	
Rh	103	72	2	106.60396	ug/l	100	106.6	90	110	Rh	
Pd	105	72	2	10.40961	ug/l	10	104.1	90	110	Pd	
Ag	107	115	3	18.19718	ug/l	20	91.0	90	110	Ag	
Cd	111	115	3	96.01377	ug/l	100	96.0	90	110	Cd	
Sn	118	115	3	97.93383	ug/l	100	97.9	90	110	Sn	
Sb	121	115	3	50.18458	ug/l	50	100.4	90	110	Sb	
Te	125	165	2	98.38613	ug/l	100	98.4	90	110	Te	
Cs	133	165	2	100.51795	ug/l	100	100.5	90	110	Cs	
Ba	137	165	3	90.06965	ug/l	100	90.1	90	110	Ba	
La	139	165	2	99.01681	ug/l	100	99.0	90	110	La	
Ce	140	165	2	101.26811	ug/l	100	101.3	90	110	Ce	
Pr	141	165	2	100.00982	ug/l	100	100.0	90	110	Pr	
Nd	146	165	2	94.75311	ug/l	100	94.8	90	110	Nd	
Sm	147	165	3	101.06637	ug/l	100	101.1	90	110	Sm	
Hf	178	165	2	99.24502	ug/l	100	99.2	90	110	Hf	
Ta	181	165	2	76.10582	ug/l	100	76.1	90	110	Ta	FAILED
W	182	165	2	97.47607	ug/l	100	97.5	90	110	W	
Re	185	193	3	103.00898	ug/l	100	103.0	90	110	Re	
Pt	195	193	2	10.13928	ug/l	10	101.4	90	110	Pt	
Au	197	193	3	103.83625	ug/l	100	103.8	90	110	Au	
Tl	205	193	3	19.07016	ug/l	20	95.4	90	110	Tl	
Pb	208	193	3	100.27707	ug/l	100	100.3	90	110	Pb	
Bi	209	193	2	101.89876	ug/l	100	101.9	90	110	Bi	
Th	232	193	3	99.72431	ug/l	100	99.7	90	110	Th	
U	238	193	3	100.77913	ug/l	100	100.8	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7426400	2.44	7411413	100.2	80	120	Li (IS)	
Sc (IS)	45	2	152727	2.11	143379	106.5	80	120	Sc (IS)	
Sc (IS)	45	3	2472843	2.60	2392712	103.3	80	120	Sc (IS)	
Ge (IS)	72	2	360096	0.52	323154	111.4	80	120	Ge (IS)	
Ge (IS)	72	3	1974843	1.55	1861986	106.1	80	120	Ge (IS)	
In (IS)	115	3	12385121	2.52	12119833	102.2	80	120	In (IS)	
Ho (IS)	165	2	9886953	0.87	9598706	103.0	80	120	Ho (IS)	
Ho (IS)	165	3	14049759	2.78	13687738	102.6	80	120	Ho (IS)	
Ir (IS)	193	2	6172014	0.23	6085322	101.4	80	120	Ir (IS)	
Ir (IS)	193	3	7035023	1.68	6951639	101.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Initial Calibration Blank (ICB) - US EPA Method 6020

Sample Name	**ICB 1843378**
Data File Name	**008_ICB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:31:25-06:00**
Type	**ICB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.13689	ug/l	1.388	Li	
Be	9	6	3	0.02042	ug/l	0.7	Be	
B	11	6	3	1.27176	ug/l	20	B	
Na	23	45	2	0.76900	ug/l	30	Na	
Mg	24	45	2	0.36962	ug/l	11.18	Mg	
Al	27	45	2	0.42382	ug/l	25.8	Al	
P	31	45	2	1.03887	ug/l	16.46	P	
K	39	45	2	1.83761	ug/l	83.2	K	
Ca	44	45	3	0.76279	ug/l	136.2	Ca	
Ti	47	45	3	0.03283	ug/l	4.2	Ti	
V	51	45	2	0.02159	ug/l	4.74	V	
Cr	52	45	2	0.02358	ug/l	6.52	Cr	
Mn	55	72	2	0.03528	ug/l	0.49	Mn	
Fe	57	72	2	0.25695	ug/l	40.7	Fe	
Co	59	72	2	0.03053	ug/l	0.434	Co	
Ni	60	72	2	0.01972	ug/l	0.8	Ni	
Cu	63	72	2	-0.04858	ug/l	0.902	Cu	
Zn	66	72	2	0.08271	ug/l	16.58	Zn	
As	75	72	2	0.03654	ug/l	2.36	As	
Se	78	72	2	0.16056	ug/l	3.18	Se	
Sr	88	72	3	0.01738	ug/l	2	Sr	
Y	89	72	2	0.03025	ug/l	0.424	Y	
Zr	90	72	2	0.02895	ug/l	0.496	Zr	
Nb	93	72	2	0.54319	ug/l	4.62	Nb	
Mo	95	72	3	0.01341	ug/l	2	Mo	
Ru	101	72	2	0.02693	ug/l	2	Ru	
Rh	103	72	2	0.03056	ug/l	1.634	Rh	
Pd	105	72	2	-0.00022	ug/l	0.08	Pd	
Ag	107	115	3	0.00470	ug/l	1.54	Ag	
Cd	111	115	3	0.02030	ug/l	0.4	Cd	
Sn	118	115	3	0.03724	ug/l	2	Sn	
Sb	121	115	3	-0.00266	ug/l	3.34	Sb	
Te	125	165	2	0.11535	ug/l	1.072	Te	
Cs	133	165	2	0.03226	ug/l	0.106	Cs	
Ba	137	165	3	0.01724	ug/l	0.446	Ba	
La	139	165	2	0.02485	ug/l	0.102	La	
Ce	140	165	2	0.02708	ug/l	1.772	Ce	
Pr	141	165	2	0.03017	ug/l	0.084	Pr	
Nd	146	165	2	0.03233	ug/l	0.208	Nd	
Sm	147	165	3	0.02425	ug/l	0.652	Sm	
Hf	178	165	2	0.04534	ug/l	2.26	Hf	
Ta	181	165	2	0.13660	ug/l	1.46	Ta	
W	182	165	2	0.49391	ug/l	4	W	
Re	185	193	3	0.01569	ug/l	0.05	Re	
Pt	195	193	2	0.00472	ug/l	0.12	Pt	
Au	197	193	3	0.22315	ug/l	1	Au	
Tl	205	193	3	-0.00687	ug/l	1.1	Tl	
Pb	208	193	3	0.00330	ug/l	0.346	Pb	
Bi	209	193	2	0.06385	ug/l	1.464	Bi	
Th	232	193	3	0.04382	ug/l	1.104	Th	
U	238	193	3	0.02059	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7611228	0.27	7411413	102.7	80	120	Li (IS)	
Sc (IS)	45	2	151485	0.79	143379	105.7	80	120	Sc (IS)	
Sc (IS)	45	3	2516775	0.79	2392712	105.2	80	120	Sc (IS)	
Ge (IS)	72	2	340569	0.80	323154	105.4	80	120	Ge (IS)	
Ge (IS)	72	3	1951877	1.18	1861986	104.8	80	120	Ge (IS)	
In (IS)	115	3	12683038	0.33	12119833	104.6	80	120	In (IS)	
Ho (IS)	165	2	9793975	0.84	9598706	102.0	80	120	Ho (IS)	
Ho (IS)	165	3	14178525	1.22	13687738	103.6	80	120	Ho (IS)	
Ir (IS)	193	2	6241977	0.50	6085322	102.6	80	120	Ir (IS)	
Ir (IS)	193	3	7167117	0.17	6951639	103.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CRI 1847444**
Data File Name	**009LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:38:09-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	5.05490	ug/l	5	101.1	80	120	Li	
Be	9	6	3	0.51520	ug/l	0.5	103.0	80	120	Be	
B	11	6	3	99.15587	ug/l	100	99.2	80	120	B	
Na	23	45	2	96.58371	ug/l	100	96.6	80	120	Na	
Mg	24	45	2	48.74643	ug/l	50	97.5	80	120	Mg	
Al	27	45	2	49.85786	ug/l	50	99.7	80	120	Al	
P	31	45	2	98.22347	ug/l	100	98.2	80	120	P	
K	39	45	2	93.63167	ug/l	100	93.6	80	120	K	
Ca	44	45	3	197.93684	ug/l	200	99.0	80	120	Ca	
Ti	47	45	3	5.06387	ug/l	5	101.3	80	120	Ti	
V	51	45	2	9.37223	ug/l	10	93.7	80	120	V	
Cr	52	45	2	9.53676	ug/l	10	95.4	80	120	Cr	
Mn	55	72	2	4.03302	ug/l	4	100.8	80	120	Mn	
Fe	57	72	2	50.84703	ug/l	50	101.7	80	120	Fe	
Co	59	72	2	2.01212	ug/l	2	100.6	80	120	Co	
Ni	60	72	2	5.50569	ug/l	5	110.1	80	120	Ni	
Cu	63	72	2	3.00883	ug/l	3	100.3	80	120	Cu	
Zn	66	72	2	21.29749	ug/l	20	106.5	80	120	Zn	
As	75	72	2	10.34379	ug/l	10	103.4	80	120	As	
Se	78	72	2	5.54668	ug/l	5	110.9	80	120	Se	
Sr	88	72	3	4.86244	ug/l	5	97.2	80	120	Sr	
Y	89	72	2	4.77823	ug/l	5	95.6	80	120	Y	
Zr	90	72	2	4.95328	ug/l	5	99.1	80	120	Zr	
Nb	93	72	2	19.13452	ug/l	25	76.5	80	120	Nb	FAILED
Mo	95	72	3	4.78380	ug/l	5	95.7	80	120	Mo	
Ru	101	72	2	9.84024	ug/l	10	98.4	80	120	Ru	
Rh	103	72	2	9.73090	ug/l	10	97.3	80	120	Rh	
Pd	105	72	2	0.52297	ug/l	0.5	104.6	80	120	Pd	
Ag	107	115	3	1.86284	ug/l	2	93.1	80	120	Ag	
Cd	111	115	3	0.47112	ug/l	0.5	94.2	80	120	Cd	
Sn	118	115	3	1.75241	ug/l	2	87.6	80	120	Sn	
Sb	121	115	3	4.43729	ug/l	5	88.7	80	120	Sb	
Te	125	165	2	9.52696	ug/l	10	95.3	80	120	Te	
Cs	133	165	2	0.89145	ug/l	1	89.1	80	120	Cs	
Ba	137	165	3	1.84576	ug/l	2	92.3	80	120	Ba	
La	139	165	2	1.76276	ug/l	2	88.1	80	120	La	
Ce	140	165	2	8.81636	ug/l	10	88.2	80	120	Ce	
Pr	141	165	2	1.79681	ug/l	2	89.8	80	120	Pr	
Nd	146	165	2	1.81002	ug/l	2	90.5	80	120	Nd	
Sm	147	165	3	9.16890	ug/l	10	91.7	80	120	Sm	
Hf	178	165	2	8.72604	ug/l	10	87.3	80	120	Hf	
Ta	181	165	2	7.47752	ug/l	10	74.8	80	120	Ta	FAILED
W	182	165	2	4.47703	ug/l	5	89.5	80	120	W	
Re	185	193	3	8.96158	ug/l	10	89.6	80	120	Re	
Pt	195	193	2	1.00616	ug/l	1	100.6	80	120	Pt	
Au	197	193	3	4.50747	ug/l	5	90.1	80	120	Au	
Tl	205	193	3	1.78293	ug/l	2	89.1	80	120	Tl	
Pb	208	193	3	2.65791	ug/l	3	88.6	80	120	Pb	
Bi	209	193	2	16.83177	ug/l	20	84.2	80	120	Bi	
Th	232	193	3	1.79102	ug/l	2	89.6	80	120	Th	
U	238	193	3	0.88113	ug/l	1	88.1	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7661066	0.29	7411413	103.4	80	120	Li (IS)	
Sc (IS)	45	2	158538	4.63	143379	110.6	80	120	Sc (IS)	
Sc (IS)	45	3	2536622	0.50	2392712	106.0	80	120	Sc (IS)	
Ge (IS)	72	2	351488	3.59	323154	108.8	80	120	Ge (IS)	
Ge (IS)	72	3	1968413	0.58	1861986	105.7	80	120	Ge (IS)	
In (IS)	115	3	12731067	0.29	12119833	105.0	80	120	In (IS)	
Ho (IS)	165	2	10107244	4.34	9598706	105.3	80	120	Ho (IS)	
Ho (IS)	165	3	14289938	0.39	13687738	104.4	80	120	Ho (IS)	
Ir (IS)	193	2	6297786	3.90	6085322	103.5	80	120	Ir (IS)	
Ir (IS)	193	3	7182298	0.69	6951639	103.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Interference Check Sample A (ICS-A) - US EPA Method 6020

Sample Name	**ICSA 1845716**
Data File Name	**010ICSA.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:44:52-06:00**
Type	**ICSA**
VialNumber	**1105**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.36790	ug/l	1.388	Li	
Be	9	6	3	-0.01161	ug/l	0.7	Be	
B	11	6	3	1.12622	ug/l	20	B	
Na	23	45	2	103314.82026	ug/l	120000	Na	
Mg	24	45	2	102981.56601	ug/l	120000	Mg	
Al	27	45	2	105485.85390	ug/l	120000	Al	
P	31	45	2	114066.49421	ug/l	120000	P	
K	39	45	2	102113.03880	ug/l	120000	K	
Ca	44	45	3	97768.10507	ug/l	120000	Ca	
Ti	47	45	3	2143.52448	ug/l	2400	Ti	
V	51	45	2	0.21506	ug/l	4.74	V	
Cr	52	45	2	1.32792	ug/l	6.52	Cr	
Mn	55	72	2	3.15511	ug/l	0.49	Mn	FAILED
Fe	57	72	2	111066.92032	ug/l	120000	Fe	
Co	59	72	2	0.31965	ug/l	0.434	Co	
Ni	60	72	2	1.56198	ug/l	0.8	Ni	FAILED
Cu	63	72	2	1.03640	ug/l	0.902	Cu	FAILED
Zn	66	72	2	4.10781	ug/l	16.58	Zn	
As	75	72	2	0.09877	ug/l	2.36	As	
Se	78	72	2	0.43954	ug/l	3.18	Se	
Sr	88	72	3	1.02072	ug/l	2	Sr	
Y	89	72	2	0.05990	ug/l	0.424	Y	
Zr	90	72	2	2.38433	ug/l	0.496	Zr	FAILED
Nb	93	72	2	0.51959	ug/l	4.62	Nb	
Mo	95	72	3	2136.46817	ug/l	2400	Mo	
Ru	101	72	2	-0.00015	ug/l	2	Ru	
Rh	103	72	2	-0.00414	ug/l	1.634	Rh	
Pd	105	72	2	-0.00222	ug/l	0.08	Pd	
Ag	107	115	3	0.11095	ug/l	1.54	Ag	
Cd	111	115	3	0.22469	ug/l	0.4	Cd	
Sn	118	115	3	0.09361	ug/l	2	Sn	
Sb	121	115	3	0.00215	ug/l	3.34	Sb	
Te	125	165	2	0.02279	ug/l	1.072	Te	
Cs	133	165	2	0.04405	ug/l	0.106	Cs	
Ba	137	165	3	0.54247	ug/l	0.446	Ba	FAILED
La	139	165	2	0.00694	ug/l	0.102	La	
Ce	140	165	2	0.55462	ug/l	1.772	Ce	
Pr	141	165	2	0.00160	ug/l	0.084	Pr	
Nd	146	165	2	0.01296	ug/l	0.208	Nd	
Sm	147	165	3	0.00248	ug/l	0.652	Sm	
Hf	178	165	2	0.14069	ug/l	2.26	Hf	
Ta	181	165	2	0.17101	ug/l	1.46	Ta	
W	182	165	2	0.51164	ug/l	4	W	
Re	185	193	3	0.02239	ug/l	0.05	Re	
Pt	195	193	2	0.01820	ug/l	0.12	Pt	
Au	197	193	3	0.01988	ug/l	1	Au	
Tl	205	193	3	-0.03290	ug/l	1.1	Tl	
Pb	208	193	3	0.09917	ug/l	0.346	Pb	
Bi	209	193	2	0.18369	ug/l	1.464	Bi	
Th	232	193	3	0.07051	ug/l	1.104	Th	
U	238	193	3	0.01299	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6871105	0.17	7411413	92.7	80	120	Li (IS)	
Sc (IS)	45	2	146268	0.92	143379	102.0	80	120	Sc (IS)	
Sc (IS)	45	3	2392024	0.78	2392712	100.0	80	120	Sc (IS)	
Ge (IS)	72	2	316248	1.28	323154	97.9	80	120	Ge (IS)	
Ge (IS)	72	3	1808972	0.93	1861986	97.2	80	120	Ge (IS)	
In (IS)	115	3	11002952	0.79	12119833	90.8	80	120	In (IS)	
Ho (IS)	165	2	9261139	1.18	9598706	96.5	80	120	Ho (IS)	
Ho (IS)	165	3	12961015	1.08	13687738	94.7	80	120	Ho (IS)	
Ir (IS)	193	2	5364762	1.50	6085322	88.2	80	120	Ir (IS)	
Ir (IS)	193	3	6107493	0.40	6951639	87.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Interference Check Sample AB (ICS-AB) - US EPA Method 6020

Sample Name	**ICSAB 1845717**
Data File Name	**011ICSB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:51:43-06:00**
Type	**ICSAB**
VialNumber	**1106**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	52.92866	ug/l	50	105.9	80	120	Li	
Be	9	6	3	52.23465	ug/l	50	104.5	80	120	Be	
B	11	6	3	100.26012	ug/l	100	100.3	80	120	B	
Na	23	45	2	100451.14621	ug/l	100000	100.5	80	120	Na	
Mg	24	45	2	100022.67117	ug/l	100000	100.0	80	120	Mg	
Al	27	45	2	103529.48637	ug/l	100000	103.5	80	120	Al	
P	31	45	2	111656.43067	ug/l	100000	111.7	80	120	P	
K	39	45	2	101173.82661	ug/l	100000	101.2	80	120	K	
Ca	44	45	3	97989.29571	ug/l	100000	98.0	80	120	Ca	
Ti	47	45	3	2215.02255	ug/l	2100	105.5	80	120	Ti	
V	51	45	2	49.96991	ug/l	50	99.9	80	120	V	
Cr	52	45	2	48.90385	ug/l	50	97.8	80	120	Cr	
Mn	55	72	2	51.89754	ug/l	50	103.8	80	120	Mn	
Fe	57	72	2	105839.15314	ug/l	100000	105.8	80	120	Fe	
Co	59	72	2	47.74169	ug/l	50	95.5	80	120	Co	
Ni	60	72	2	51.30923	ug/l	50	102.6	80	120	Ni	
Cu	63	72	2	46.97078	ug/l	50	93.9	80	120	Cu	
Zn	66	72	2	54.26846	ug/l	50	108.5	80	120	Zn	
As	75	72	2	54.18110	ug/l	50	108.4	80	120	As	
Se	78	72	2	25.80683	ug/l	25	103.2	80	120	Se	
Sr	88	72	3	53.73785	ug/l	50	107.5	80	120	Sr	
Y	89	72	2	50.47385	ug/l	50	100.9	80	120	Y	
Zr	90	72	2	38.34369	ug/l	50	76.7	80	120	Zr	FAILED
Nb	93	72	2	23.97395	ug/l	25	95.9	80	120	Nb	
Mo	95	72	3	2117.66622	ug/l	2050	103.3	80	120	Mo	
Ru	101	72	2	46.96589	ug/l	50	93.9	80	120	Ru	
Rh	103	72	2	49.36419	ug/l	50	98.7	80	120	Rh	
Pd	105	72	2	4.86078	ug/l	5	97.2	80	120	Pd	
Ag	107	115	3	9.33201	ug/l	10	93.3	80	120	Ag	
Cd	111	115	3	47.18618	ug/l	50	94.4	80	120	Cd	
Sn	118	115	3	47.81470	ug/l	50	95.6	80	120	Sn	
Sb	121	115	3	23.88316	ug/l	25	95.5	80	120	Sb	
Te	125	165	2	48.54781	ug/l	50	97.1	80	120	Te	
Cs	133	165	2	46.61380	ug/l	50	93.2	80	120	Cs	
Ba	137	165	3	48.57443	ug/l	50	97.1	80	120	Ba	
La	139	165	2	51.29571	ug/l	50	102.6	80	120	La	
Ce	140	165	2	51.75065	ug/l	50	103.5	80	120	Ce	
Pr	141	165	2	51.59752	ug/l	50	103.2	80	120	Pr	
Nd	146	165	2	46.97831	ug/l	50	94.0	80	120	Nd	
Sm	147	165	3	48.78959	ug/l	50	97.6	80	120	Sm	
Hf	178	165	2	34.63329	ug/l	50	69.3	80	120	Hf	FAILED
Ta	181	165	2	49.45937	ug/l	50	98.9	80	120	Ta	
W	182	165	2	45.83918	ug/l	50	91.7	80	120	W	
Re	185	193	3	53.27777	ug/l	50	106.6	80	120	Re	
Pt	195	193	2	5.08723	ug/l	5	101.7	80	120	Pt	
Au	197	193	3	51.95093	ug/l	50	103.9	80	120	Au	
Tl	205	193	3	9.52216	ug/l	10	95.2	80	120	Tl	
Pb	208	193	3	48.79765	ug/l	50	97.6	80	120	Pb	
Bi	209	193	2	50.33069	ug/l	50	100.7	80	120	Bi	
Th	232	193	3	52.85159	ug/l	50	105.7	80	120	Th	
U	238	193	3	53.37504	ug/l	50	106.8	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6858047	1.11	7411413	92.5	80	120	Li (IS)	
Sc (IS)	45	2	157726	0.68	143379	110.0	80	120	Sc (IS)	
Sc (IS)	45	3	2515399	0.71	2392712	105.1	80	120	Sc (IS)	
Ge (IS)	72	2	350561	0.78	323154	108.5	80	120	Ge (IS)	
Ge (IS)	72	3	1919140	0.49	1861986	103.1	80	120	Ge (IS)	
In (IS)	115	3	11520111	0.68	12119833	95.1	80	120	In (IS)	
Ho (IS)	165	2	9546797	0.48	9598706	99.5	80	120	Ho (IS)	
Ho (IS)	165	3	13291337	0.91	13687738	97.1	80	120	Ho (IS)	
Ir (IS)	193	2	5421390	0.29	6085322	89.1	80	120	Ir (IS)	
Ir (IS)	193	3	6226112	0.72	6951639	89.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LRC 1841695**
Data File Name	**012SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:58:34-06:00**
Type	**Sample**
VialNumber	**1301**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	1056.59829	1056.59829	ug/l	1000	Li	FAILED
Be	9	6	3	1039.33724	1039.33724	ug/l	1000	Be	FAILED
B	11	6	3	2074.27730	2074.27730	ug/l	2000	B	FAILED
Na	23	45	2	48871.96611	48871.96611	ug/l	50000	Na	
Mg	24	45	2	48461.82352	48461.82352	ug/l	50000	Mg	
Al	27	45	2	49677.15948	49677.15948	ug/l	100000	Al	
P	31	45	2	53906.98038	53906.98038	ug/l	100000	P	
K	39	45	2	47888.53326	47888.53326	ug/l	100000	K	
Ca	44	45	3	48519.92399	48519.92399	ug/l	100000	Ca	
Ti	47	45	3	2083.90333	2083.90333	ug/l	2000	Ti	FAILED
V	51	45	2	966.09788	966.09788	ug/l	2000	V	
Cr	52	45	2	935.29158	935.29158	ug/l	2000	Cr	
Mn	55	72	2	1091.18185	1091.18185	ug/l	5000	Mn	
Fe	57	72	2	54236.02539	54236.02539	ug/l	100000	Fe	
Co	59	72	2	1038.77521	1038.77521	ug/l	2000	Co	
Ni	60	72	2	1110.83299	1110.83299	ug/l	2000	Ni	
Cu	63	72	2	1009.62663	1009.62663	ug/l	2000	Cu	
Zn	66	72	2	1121.73834	1121.73834	ug/l	5000	Zn	
As	75	72	2	1167.25242	1167.25242	ug/l	2000	As	
Se	78	72	2	533.31831	533.31831	ug/l	1000	Se	
Sr	88	72	3	1034.38669	1034.38669	ug/l	2000	Sr	
Y	89	72	2	0.03974	0.03974	ug/l	200	Y	
Zr	90	72	2	1011.13083	1011.13083	ug/l	2000	Zr	
Nb	93	72	2	0.54351	0.54351	ug/l	100	Nb	
Mo	95	72	3	1577.88326	1577.88326	ug/l	1000	Mo	FAILED
Ru	101	72	2	0.00581	0.00581	ug/l	200	Ru	
Rh	103	72	2	0.04746	0.04746	ug/l	200	Rh	
Pd	105	72	2	0.05308	0.05308	ug/l	20	Pd	
Ag	107	115	3	165.16870	165.16870	ug/l	400	Ag	
Cd	111	115	3	992.73856	992.73856	ug/l	2000	Cd	
Sn	118	115	3	972.87118	972.87118	ug/l	2000	Sn	
Sb	121	115	3	506.91829	506.91829	ug/l	1000	Sb	
Te	125	165	2	0.13552	0.13552	ug/l	200	Te	
Cs	133	165	2	0.03064	0.03064	ug/l	2000	Cs	
Ba	137	165	3	980.37969	980.37969	ug/l	5000	Ba	
La	139	165	2	1.55245	1.55245	ug/l	200	La	
Ce	140	165	2	0.31804	0.31804	ug/l	200	Ce	
Pr	141	165	2	0.00924	0.00924	ug/l	200	Pr	
Nd	146	165	2	0.02771	0.02771	ug/l	200	Nd	
Sm	147	165	3	989.85527	989.85527	ug/l	2000	Sm	
Hf	178	165	2	0.22645	0.22645	ug/l	200	Hf	
Ta	181	165	2	0.29043	0.29043	ug/l	200	Ta	
W	182	165	2	949.80256	949.80256	ug/l	2000	W	
Re	185	193	3	0.02874	0.02874	ug/l	200	Re	
Pt	195	193	2	0.00967	0.00967	ug/l	200	Pt	
Au	197	193	3	0.06984	0.06984	ug/l	2000	Au	
Tl	205	193	3	206.06472	206.06472	ug/l	400	Tl	
Pb	208	193	3	984.32965	984.32965	ug/l	5000	Pb	
Bi	209	193	2	0.13176	0.13176	ug/l	2000	Bi	
Th	232	193	3	1025.88634	1025.88634	ug/l	2000	Th	
U	238	193	3	1017.23251	1017.23251	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6967016	1.03	7411413	94.0	80	120	Li (IS)	
Sc (IS)	45	2	174476	0.84	143379	121.7	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	2651588	3.64	2392712	110.8	80	120	Sc (IS)	
Ge (IS)	72	2	355368	0.29	323154	110.0	80	120	Ge (IS)	
Ge (IS)	72	3	2005428	1.78	1861986	107.7	80	120	Ge (IS)	
In (IS)	115	3	12418057	3.44	12119833	102.5	80	120	In (IS)	
Ho (IS)	165	2	10070556	0.77	9598706	104.9	80	120	Ho (IS)	
Ho (IS)	165	3	14589090	3.82	13687738	106.6	80	120	Ho (IS)	
Ir (IS)	193	2	5888553	0.30	6085322	96.8	80	120	Ir (IS)	
Ir (IS)	193	3	6853432	3.65	6951639	98.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LRC 1841696**
Data File Name	**013SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:05:16-06:00**
Type	**Sample**
VialNumber	**1302**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	2362.93628	2362.93628	ug/l	1000	Li	FAILED
Be	9	6	3	2305.69576	2305.69576	ug/l	1000	Be	FAILED
B	11	6	3	4641.54815	4641.54815	ug/l	2000	B	FAILED
Na	23	45	2	88950.18428	88950.18428	ug/l	50000	Na	FAILED
Mg	24	45	2	87440.36055	87440.36055	ug/l	50000	Mg	FAILED
Al	27	45	2	89994.75295	89994.75295	ug/l	100000	Al	
P	31	45	2	96728.39053	96728.39053	ug/l	100000	P	
K	39	45	2	87975.60529	87975.60529	ug/l	100000	K	
Ca	44	45	3	98937.81123	98937.81123	ug/l	100000	Ca	
Ti	47	45	3	4175.47968	4175.47968	ug/l	2000	Ti	FAILED
V	51	45	2	1760.42673	1760.42673	ug/l	2000	V	
Cr	52	45	2	1700.73166	1700.73166	ug/l	2000	Cr	
Mn	55	72	2	5251.13081	5251.13081	ug/l	5000	Mn	FAILED
Fe	57	72	2	104349.72278	104349.72278	ug/l	100000	Fe	FAILED
Co	59	72	2	1984.97298	1984.97298	ug/l	2000	Co	
Ni	60	72	2	2094.05432	2094.05432	ug/l	2000	Ni	FAILED
Cu	63	72	2	1882.67033	1882.67033	ug/l	2000	Cu	
Zn	66	72	2	5258.42742	5258.42742	ug/l	5000	Zn	FAILED
As	75	72	2	2256.41552	2256.41552	ug/l	2000	As	FAILED
Se	78	72	2	983.43387	983.43387	ug/l	1000	Se	
Sr	88	72	3	2062.44013	2062.44013	ug/l	2000	Sr	FAILED
Y	89	72	2	0.08344	0.08344	ug/l	200	Y	
Zr	90	72	2	2067.85671	2067.85671	ug/l	2000	Zr	FAILED
Nb	93	72	2	0.27957	0.27957	ug/l	100	Nb	
Mo	95	72	3	3105.46123	3105.46123	ug/l	1000	Mo	FAILED
Ru	101	72	2	0.00136	0.00136	ug/l	200	Ru	
Rh	103	72	2	0.21832	0.21832	ug/l	200	Rh	
Pd	105	72	2	0.10834	0.10834	ug/l	20	Pd	
Ag	107	115	3	297.72205	297.72205	ug/l	400	Ag	
Cd	111	115	3	1984.17547	1984.17547	ug/l	2000	Cd	
Sn	118	115	3	2005.81155	2005.81155	ug/l	2000	Sn	FAILED
Sb	121	115	3	1031.68364	1031.68364	ug/l	1000	Sb	FAILED
Te	125	165	2	0.13818	0.13818	ug/l	200	Te	
Cs	133	165	2	0.04790	0.04790	ug/l	2000	Cs	
Ba	137	165	3	5044.39563	5044.39563	ug/l	5000	Ba	FAILED
La	139	165	2	3.03293	3.03293	ug/l	200	La	
Ce	140	165	2	0.61710	0.61710	ug/l	200	Ce	
Pr	141	165	2	0.01897	0.01897	ug/l	200	Pr	
Nd	146	165	2	0.04652	0.04652	ug/l	200	Nd	
Sm	147	165	3	2036.28200	2036.28200	ug/l	2000	Sm	FAILED
Hf	178	165	2	0.20805	0.20805	ug/l	200	Hf	
Ta	181	165	2	0.30250	0.30250	ug/l	200	Ta	
W	182	165	2	1801.12091	1801.12091	ug/l	2000	W	
Re	185	193	3	0.05624	0.05624	ug/l	200	Re	
Pt	195	193	2	0.01804	0.01804	ug/l	200	Pt	
Au	197	193	3	0.01808	0.01808	ug/l	2000	Au	
Tl	205	193	3	415.57160	415.57160	ug/l	400	Tl	FAILED
Pb	208	193	3	5001.21325	5001.21325	ug/l	5000	Pb	FAILED
Bi	209	193	2	1974.22016	1974.22016	ug/l	2000	Bi	
Th	232	193	3	2095.02732	2095.02732	ug/l	2000	Th	FAILED
U	238	193	3	2038.09025	2038.09025	ug/l	2000	U	FAILED

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6467926	2.12	7411413	87.3	80	120	Li (IS)	
Sc (IS)	45	2	196106	0.83	143379	136.8	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	2778466	0.91	2392712	116.1	80	120	Sc (IS)	
Ge (IS)	72	2	377813	0.97	323154	116.9	80	120	Ge (IS)	
Ge (IS)	72	3	2090159	1.27	1861986	112.3	80	120	Ge (IS)	
In (IS)	115	3	12380824	0.94	12119833	102.2	80	120	In (IS)	
Ho (IS)	165	2	10148882	2.35	9598706	105.7	80	120	Ho (IS)	
Ho (IS)	165	3	14443441	0.98	13687738	105.5	80	120	Ho (IS)	
Ir (IS)	193	2	5766741	1.14	6085322	94.8	80	120	Ir (IS)	
Ir (IS)	193	3	6633721	2.01	6951639	95.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**014_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:12:08-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	100.62074	ug/l	100	100.6	90	110	Li	
Be	9	6	3	101.65446	ug/l	100	101.7	90	110	Be	
B	11	6	3	270.35458	ug/l	200	135.2	90	110	B	FAILED
Na	23	45	2	2544.20500	ug/l	2500	101.8	90	110	Na	
Mg	24	45	2	2542.15656	ug/l	2500	101.7	90	110	Mg	
Al	27	45	2	2405.06971	ug/l	2500	96.2	90	110	Al	
P	31	45	2	2559.84123	ug/l	2500	102.4	90	110	P	
K	39	45	2	2566.31351	ug/l	2500	102.7	90	110	K	
Ca	44	45	3	2566.11954	ug/l	2500	102.6	90	110	Ca	
Ti	47	45	3	102.23061	ug/l	100	102.2	90	110	Ti	
V	51	45	2	97.26836	ug/l	100	97.3	90	110	V	
Cr	52	45	2	103.11004	ug/l	100	103.1	90	110	Cr	
Mn	55	72	2	94.37132	ug/l	100	94.4	90	110	Mn	
Fe	57	72	2	2383.89679	ug/l	2500	95.4	90	110	Fe	
Co	59	72	2	101.65908	ug/l	100	101.7	90	110	Co	
Ni	60	72	2	100.93572	ug/l	100	100.9	90	110	Ni	
Cu	63	72	2	101.30504	ug/l	100	101.3	90	110	Cu	
Zn	66	72	2	101.61800	ug/l	100	101.6	90	110	Zn	
As	75	72	2	101.40619	ug/l	100	101.4	90	110	As	
Se	78	72	2	52.27755	ug/l	50	104.6	90	110	Se	
Sr	88	72	3	101.83574	ug/l	100	101.8	90	110	Sr	
Y	89	72	2	102.90676	ug/l	100	102.9	90	110	Y	
Zr	90	72	2	104.05774	ug/l	100	104.1	90	110	Zr	
Nb	93	72	2	50.72666	ug/l	50	101.5	90	110	Nb	
Mo	95	72	3	48.61099	ug/l	50	97.2	90	110	Mo	
Ru	101	72	2	94.29690	ug/l	100	94.3	90	110	Ru	
Rh	103	72	2	101.76703	ug/l	100	101.8	90	110	Rh	
Pd	105	72	2	10.15105	ug/l	10	101.5	90	110	Pd	
Ag	107	115	3	18.07542	ug/l	20	90.4	90	110	Ag	
Cd	111	115	3	93.46551	ug/l	100	93.5	90	110	Cd	
Sn	118	115	3	100.45664	ug/l	100	100.5	90	110	Sn	
Sb	121	115	3	50.20997	ug/l	50	100.4	90	110	Sb	
Te	125	165	2	100.91604	ug/l	100	100.9	90	110	Te	
Cs	133	165	2	103.06600	ug/l	100	103.1	90	110	Cs	
Ba	137	165	3	92.36333	ug/l	100	92.4	90	110	Ba	
La	139	165	2	102.31674	ug/l	100	102.3	90	110	La	
Ce	140	165	2	101.56320	ug/l	100	101.6	90	110	Ce	
Pr	141	165	2	101.16690	ug/l	100	101.2	90	110	Pr	
Nd	146	165	2	92.19631	ug/l	100	92.2	90	110	Nd	
Sm	147	165	3	101.69486	ug/l	100	101.7	90	110	Sm	
Hf	178	165	2	98.03008	ug/l	100	98.0	90	110	Hf	
Ta	181	165	2	98.45783	ug/l	100	98.5	90	110	Ta	
W	182	165	2	110.76858	ug/l	100	110.8	90	110	W	FAILED
Re	185	193	3	100.56976	ug/l	100	100.6	90	110	Re	
Pt	195	193	2	9.90281	ug/l	10	99.0	90	110	Pt	
Au	197	193	3	100.65504	ug/l	100	100.7	90	110	Au	
Tl	205	193	3	21.04192	ug/l	20	105.2	90	110	Tl	
Pb	208	193	3	100.48349	ug/l	100	100.5	90	110	Pb	
Bi	209	193	2	100.56921	ug/l	100	100.6	90	110	Bi	
Th	232	193	3	98.35265	ug/l	100	98.4	90	110	Th	
U	238	193	3	97.11945	ug/l	100	97.1	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7583811	1.33	7411413	102.3	80	120	Li (IS)	
Sc (IS)	45	2	164764	3.13	143379	114.9	80	120	Sc (IS)	
Sc (IS)	45	3	2723759	2.10	2392712	113.8	80	120	Sc (IS)	
Ge (IS)	72	2	392117	3.17	323154	121.3	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2172163	1.01	1861986	116.7	80	120	Ge (IS)	
In (IS)	115	3	13410940	2.00	12119833	110.7	80	120	In (IS)	
Ho (IS)	165	2	10480758	2.57	9598706	109.2	80	120	Ho (IS)	
Ho (IS)	165	3	14963684	2.17	13687738	109.3	80	120	Ho (IS)	
Ir (IS)	193	2	6442022	1.81	6085322	105.9	80	120	Ir (IS)	
Ir (IS)	193	3	7320281	1.14	6951639	105.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**015_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:18:52-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.53920	ug/l	1.388	Li	
Be	9	6	3	0.02100	ug/l	0.7	Be	
B	11	6	3	51.04497	ug/l	20	B	FAILED
Na	23	45	2	6.59469	ug/l	30	Na	
Mg	24	45	2	1.47649	ug/l	11.18	Mg	
Al	27	45	2	1.75472	ug/l	25.8	Al	
P	31	45	2	3.89677	ug/l	16.46	P	
K	39	45	2	2.48765	ug/l	83.2	K	
Ca	44	45	3	-0.07139	ug/l	136.2	Ca	
Ti	47	45	3	0.57779	ug/l	4.2	Ti	
V	51	45	2	0.09083	ug/l	4.74	V	
Cr	52	45	2	0.04450	ug/l	6.52	Cr	
Mn	55	72	2	0.11695	ug/l	0.49	Mn	
Fe	57	72	2	2.54430	ug/l	40.7	Fe	
Co	59	72	2	0.05213	ug/l	0.434	Co	
Ni	60	72	2	0.04474	ug/l	0.8	Ni	
Cu	63	72	2	-0.09973	ug/l	0.902	Cu	
Zn	66	72	2	0.90967	ug/l	16.58	Zn	
As	75	72	2	0.11582	ug/l	2.36	As	
Se	78	72	2	0.37902	ug/l	3.18	Se	
Sr	88	72	3	0.01716	ug/l	2	Sr	
Y	89	72	2	0.03192	ug/l	0.424	Y	
Zr	90	72	2	0.96186	ug/l	0.496	Zr	FAILED
Nb	93	72	2	0.33131	ug/l	4.62	Nb	
Mo	95	72	3	1.08982	ug/l	2	Mo	
Ru	101	72	2	0.03418	ug/l	2	Ru	
Rh	103	72	2	0.03310	ug/l	1.634	Rh	
Pd	105	72	2	-0.00457	ug/l	0.08	Pd	
Ag	107	115	3	0.01582	ug/l	1.54	Ag	
Cd	111	115	3	0.04520	ug/l	0.4	Cd	
Sn	118	115	3	0.47511	ug/l	2	Sn	
Sb	121	115	3	0.07130	ug/l	3.34	Sb	
Te	125	165	2	0.11660	ug/l	1.072	Te	
Cs	133	165	2	0.03318	ug/l	0.106	Cs	
Ba	137	165	3	0.03387	ug/l	0.446	Ba	
La	139	165	2	0.03179	ug/l	0.102	La	
Ce	140	165	2	0.03277	ug/l	1.772	Ce	
Pr	141	165	2	0.03112	ug/l	0.084	Pr	
Nd	146	165	2	0.03514	ug/l	0.208	Nd	
Sm	147	165	3	0.01657	ug/l	0.652	Sm	
Hf	178	165	2	0.07342	ug/l	2.26	Hf	
Ta	181	165	2	0.04594	ug/l	1.46	Ta	
W	182	165	2	3.27441	ug/l	4	W	
Re	185	193	3	0.00869	ug/l	0.05	Re	
Pt	195	193	2	0.00569	ug/l	0.12	Pt	
Au	197	193	3	0.15321	ug/l	1	Au	
Tl	205	193	3	0.14547	ug/l	1.1	Tl	
Pb	208	193	3	0.26974	ug/l	0.346	Pb	
Bi	209	193	2	0.22335	ug/l	1.464	Bi	
Th	232	193	3	0.13807	ug/l	1.104	Th	
U	238	193	3	0.02340	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7609057	0.84	7411413	102.7	80	120	Li (IS)	
Sc (IS)	45	2	163591	0.82	143379	114.1	80	120	Sc (IS)	
Sc (IS)	45	3	2766998	0.47	2392712	115.6	80	120	Sc (IS)	
Ge (IS)	72	2	369128	0.49	323154	114.2	80	120	Ge (IS)	
Ge (IS)	72	3	2167844	2.01	1861986	116.4	80	120	Ge (IS)	
In (IS)	115	3	13717766	1.01	12119833	113.2	80	120	In (IS)	
Ho (IS)	165	2	10299686	0.54	9598706	107.3	80	120	Ho (IS)	
Ho (IS)	165	3	15203523	0.50	13687738	111.1	80	120	Ho (IS)	
Ir (IS)	193	2	6433020	0.38	6085322	105.7	80	120	Ir (IS)	
Ir (IS)	193	3	7500458	0.79	6951639	107.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LB 160-453305/1-C**
Data File Name	**016SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:25:37-06:00**
Type	**Sample**
VialNumber	**2101**
Dilution	**2**
Comment	**453488**
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.73499	1.46997	ug/l	1000	Li	
Be	9	6	3	0.00611	0.01222	ug/l	1000	Be	
B	11	6	3	39.27917	78.55835	ug/l	2000	B	
Na	23	45	2	56566.22877	113132.45753	ug/l	50000	Na	FAILED
Mg	24	45	2	16.18744	32.37489	ug/l	50000	Mg	
Al	27	45	2	4.79844	9.59688	ug/l	100000	Al	
P	31	45	2	3.69079	7.38158	ug/l	100000	P	
K	39	45	2	17.79149	35.58298	ug/l	100000	K	
Ca	44	45	3	92.39848	184.79696	ug/l	100000	Ca	
Ti	47	45	3	0.51945	1.03891	ug/l	2000	Ti	
V	51	45	2	0.09087	0.18173	ug/l	2000	V	
Cr	52	45	2	0.11526	0.23051	ug/l	2000	Cr	
Mn	55	72	2	0.24840	0.49679	ug/l	5000	Mn	
Fe	57	72	2	1.84696	3.69392	ug/l	100000	Fe	
Co	59	72	2	0.00589	0.01178	ug/l	2000	Co	
Ni	60	72	2	0.00559	0.01118	ug/l	2000	Ni	
Cu	63	72	2	-0.14407	-0.28814	ug/l	2000	Cu	
Zn	66	72	2	1.36363	2.72725	ug/l	5000	Zn	
As	75	72	2	0.04617	0.09234	ug/l	2000	As	
Se	78	72	2	0.41377	0.82755	ug/l	1000	Se	
Sr	88	72	3	0.18409	0.36818	ug/l	2000	Sr	
Y	89	72	2	0.00389	0.00778	ug/l	200	Y	
Zr	90	72	2	0.77999	1.55998	ug/l	2000	Zr	
Nb	93	72	2	0.09226	0.18451	ug/l	100	Nb	
Mo	95	72	3	0.68518	1.37035	ug/l	1000	Mo	
Ru	101	72	2	-0.00156	-0.00312	ug/l	200	Ru	
Rh	103	72	2	-0.00486	-0.00971	ug/l	200	Rh	
Pd	105	72	2	-0.00747	-0.01494	ug/l	20	Pd	
Ag	107	115	3	0.01171	0.02341	ug/l	400	Ag	
Cd	111	115	3	0.00650	0.01301	ug/l	2000	Cd	
Sn	118	115	3	0.30047	0.60095	ug/l	2000	Sn	
Sb	121	115	3	0.02026	0.04052	ug/l	1000	Sb	
Te	125	165	2	0.03187	0.06373	ug/l	200	Te	
Cs	133	165	2	0.00156	0.00311	ug/l	2000	Cs	
Ba	137	165	3	0.21140	0.42280	ug/l	5000	Ba	
La	139	165	2	-0.00071	-0.00142	ug/l	200	La	
Ce	140	165	2	0.00047	0.00094	ug/l	200	Ce	
Pr	141	165	2	-0.00099	-0.00199	ug/l	200	Pr	
Nd	146	165	2	0.00347	0.00693	ug/l	200	Nd	
Sm	147	165	3	0.00289	0.00578	ug/l	2000	Sm	
Hf	178	165	2	0.03240	0.06479	ug/l	200	Hf	
Ta	181	165	2	0.01801	0.03602	ug/l	200	Ta	
W	182	165	2	2.61843	5.23687	ug/l	2000	W	
Re	185	193	3	-0.00011	-0.00022	ug/l	200	Re	
Pt	195	193	2	0.00197	0.00393	ug/l	200	Pt	
Au	197	193	3	0.01162	0.02325	ug/l	2000	Au	
Tl	205	193	3	0.03191	0.06381	ug/l	400	Tl	
Pb	208	193	3	0.17897	0.35794	ug/l	5000	Pb	
Bi	209	193	2	0.08282	0.16565	ug/l	2000	Bi	
Th	232	193	3	0.07911	0.15821	ug/l	2000	Th	
U	238	193	3	0.00657	0.01315	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7449859	6.58	7411413	100.5	80	120	Li (IS)	
Sc (IS)	45	2	158067	7.94	143379	110.2	80	120	Sc (IS)	
Sc (IS)	45	3	2734928	9.50	2392712	114.3	80	120	Sc (IS)	
Ge (IS)	72	2	357960	6.72	323154	110.8	80	120	Ge (IS)	
Ge (IS)	72	3	2091370	7.05	1861986	112.3	80	120	Ge (IS)	
In (IS)	115	3	13226863	9.81	12119833	109.1	80	120	In (IS)	
Ho (IS)	165	2	9923692	8.38	9598706	103.4	80	120	Ho (IS)	
Ho (IS)	165	3	14744652	9.19	13687738	107.7	80	120	Ho (IS)	
Ir (IS)	193	2	6145985	7.86	6085322	101.0	80	120	Ir (IS)	
Ir (IS)	193	3	7254687	10.37	6951639	104.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCS 160-453488/2-A**
Data File Name	**017SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:32:22-06:00**
Type	**Sample**
VialNumber	**2102**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	10.74286	21.48573	ug/l	1000	Li	
Be	9	6	3	9.81786	19.63572	ug/l	1000	Be	
B	11	6	3	40.32011	80.64021	ug/l	2000	B	
Na	23	45	2	52350.32112	104700.64224	ug/l	50000	Na	FAILED
Mg	24	45	2	965.07494	1930.14987	ug/l	50000	Mg	
Al	27	45	2	941.92015	1883.84030	ug/l	100000	Al	
P	31	45	2	95.08173	190.16346	ug/l	100000	P	
K	39	45	2	961.78622	1923.57243	ug/l	100000	K	
Ca	44	45	3	1107.92548	2215.85097	ug/l	100000	Ca	
Ti	47	45	3	96.62823	193.25647	ug/l	2000	Ti	
V	51	45	2	95.66941	191.33882	ug/l	2000	V	
Cr	52	45	2	100.84117	201.68234	ug/l	2000	Cr	
Mn	55	72	2	95.80961	191.61922	ug/l	5000	Mn	
Fe	57	72	2	963.08977	1926.17955	ug/l	100000	Fe	
Co	59	72	2	104.17209	208.34418	ug/l	2000	Co	
Ni	60	72	2	103.32925	206.65849	ug/l	2000	Ni	
Cu	63	72	2	106.54375	213.08750	ug/l	2000	Cu	
Zn	66	72	2	103.23436	206.46872	ug/l	5000	Zn	
As	75	72	2	102.37477	204.74953	ug/l	2000	As	
Se	78	72	2	50.53355	101.06711	ug/l	1000	Se	
Sr	88	72	3	99.81269	199.62537	ug/l	2000	Sr	
Y	89	72	2	0.00175	0.00350	ug/l	200	Y	
Zr	90	72	2	105.60612	211.21224	ug/l	2000	Zr	
Nb	93	72	2	0.27500	0.55000	ug/l	100	Nb	
Mo	95	72	3	46.18242	92.36483	ug/l	1000	Mo	
Ru	101	72	2	-0.00150	-0.00300	ug/l	200	Ru	
Rh	103	72	2	0.00020	0.00040	ug/l	200	Rh	
Pd	105	72	2	-0.00095	-0.00190	ug/l	20	Pd	
Ag	107	115	3	17.54015	35.08031	ug/l	400	Ag	
Cd	111	115	3	90.42894	180.85788	ug/l	2000	Cd	
Sn	118	115	3	95.90959	191.81918	ug/l	2000	Sn	
Sb	121	115	3	48.46962	96.93923	ug/l	1000	Sb	
Te	125	165	2	0.01114	0.02227	ug/l	200	Te	
Cs	133	165	2	0.00033	0.00067	ug/l	2000	Cs	
Ba	137	165	3	88.72857	177.45713	ug/l	5000	Ba	
La	139	165	2	0.14867	0.29734	ug/l	200	La	
Ce	140	165	2	0.00470	0.00941	ug/l	200	Ce	
Pr	141	165	2	-0.00081	-0.00163	ug/l	200	Pr	
Nd	146	165	2	0.00299	0.00598	ug/l	200	Nd	
Sm	147	165	3	98.69516	197.39032	ug/l	2000	Sm	
Hf	178	165	2	0.34063	0.68127	ug/l	200	Hf	
Ta	181	165	2	0.17013	0.34026	ug/l	200	Ta	
W	182	165	2	99.84327	199.68655	ug/l	2000	W	
Re	185	193	3	-0.00067	-0.00135	ug/l	200	Re	
Pt	195	193	2	0.00234	0.00468	ug/l	200	Pt	
Au	197	193	3	-0.01114	-0.02227	ug/l	2000	Au	
Tl	205	193	3	17.60194	35.20388	ug/l	400	Tl	
Pb	208	193	3	95.43336	190.86673	ug/l	5000	Pb	
Bi	209	193	2	97.64554	195.29109	ug/l	2000	Bi	
Th	232	193	3	94.62927	189.25854	ug/l	2000	Th	
U	238	193	3	95.42949	190.85897	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7492211	0.84	7411413	101.1	80	120	Li (IS)	
Sc (IS)	45	2	165989	7.32	143379	115.8	80	120	Sc (IS)	
Sc (IS)	45	3	2749933	0.48	2392712	114.9	80	120	Sc (IS)	
Ge (IS)	72	2	375767	5.61	323154	116.3	80	120	Ge (IS)	
Ge (IS)	72	3	2150028	1.73	1861986	115.5	80	120	Ge (IS)	
In (IS)	115	3	13377699	1.35	12119833	110.4	80	120	In (IS)	
Ho (IS)	165	2	10348488	8.31	9598706	107.8	80	120	Ho (IS)	
Ho (IS)	165	3	15129737	0.92	13687738	110.5	80	120	Ho (IS)	
Ir (IS)	193	2	6328083	7.16	6085322	104.0	80	120	Ir (IS)	
Ir (IS)	193	3	7375155	1.42	6951639	106.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36545-A-1-B**
Data File Name	**018SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:39:05-06:00**
Type	**Sample**
VialNumber	**2103**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	4.84956	9.69913	ug/l	1000	Li	
Be	9	6	3	0.00872	0.01744	ug/l	1000	Be	
B	11	6	3	70.25087	140.50175	ug/l	2000	B	
Na	23	45	2	50969.10583	101938.21167	ug/l	50000	Na	FAILED
Mg	24	45	2	1746.30959	3492.61917	ug/l	50000	Mg	
Al	27	45	2	293.82584	587.65168	ug/l	100000	Al	
P	31	45	2	9.02012	18.04024	ug/l	100000	P	
K	39	45	2	300.51653	601.03307	ug/l	100000	K	
Ca	44	45	3	10211.26721	20422.53442	ug/l	100000	Ca	
Ti	47	45	3	0.55600	1.11199	ug/l	2000	Ti	
V	51	45	2	0.01716	0.03433	ug/l	2000	V	
Cr	52	45	2	1.74075	3.48150	ug/l	2000	Cr	
Mn	55	72	2	183.36491	366.72982	ug/l	5000	Mn	
Fe	57	72	2	1466.56196	2933.12391	ug/l	100000	Fe	
Co	59	72	2	6.55741	13.11483	ug/l	2000	Co	
Ni	60	72	2	37.48309	74.96619	ug/l	2000	Ni	
Cu	63	72	2	18.57388	37.14775	ug/l	2000	Cu	
Zn	66	72	2	12818.43307	25636.86615	ug/l	5000	Zn	FAILED
As	75	72	2	0.07528	0.15056	ug/l	2000	As	
Se	78	72	2	0.42373	0.84746	ug/l	1000	Se	
Sr	88	72	3	35.14381	70.28763	ug/l	2000	Sr	
Y	89	72	2	0.25525	0.51049	ug/l	200	Y	
Zr	90	72	2	0.16367	0.32734	ug/l	2000	Zr	
Nb	93	72	2	-0.02932	-0.05864	ug/l	100	Nb	
Mo	95	72	3	0.48699	0.97398	ug/l	1000	Mo	
Ru	101	72	2	-0.00224	-0.00448	ug/l	200	Ru	
Rh	103	72	2	0.00011	0.00022	ug/l	200	Rh	
Pd	105	72	2	-0.00737	-0.01474	ug/l	20	Pd	
Ag	107	115	3	0.01081	0.02163	ug/l	400	Ag	
Cd	111	115	3	6.77427	13.54854	ug/l	2000	Cd	
Sn	118	115	3	0.22165	0.44331	ug/l	2000	Sn	
Sb	121	115	3	0.27101	0.54202	ug/l	1000	Sb	
Te	125	165	2	-0.00544	-0.01089	ug/l	200	Te	
Cs	133	165	2	0.00419	0.00838	ug/l	2000	Cs	
Ba	137	165	3	22.77134	45.54267	ug/l	5000	Ba	
La	139	165	2	0.24016	0.48032	ug/l	200	La	
Ce	140	165	2	0.36478	0.72956	ug/l	200	Ce	
Pr	141	165	2	0.11642	0.23284	ug/l	200	Pr	
Nd	146	165	2	1.07510	2.15020	ug/l	200	Nd	
Sm	147	165	3	0.15881	0.31762	ug/l	2000	Sm	
Hf	178	165	2	0.00126	0.00253	ug/l	200	Hf	
Ta	181	165	2	0.00015	0.00030	ug/l	200	Ta	
W	182	165	2	1.69469	3.38938	ug/l	2000	W	
Re	185	193	3	-0.00268	-0.00535	ug/l	200	Re	
Pt	195	193	2	0.00241	0.00482	ug/l	200	Pt	
Au	197	193	3	-0.02282	-0.04563	ug/l	2000	Au	
Tl	205	193	3	0.03637	0.07273	ug/l	400	Tl	
Pb	208	193	3	99.84260	199.68520	ug/l	5000	Pb	
Bi	209	193	2	0.03557	0.07114	ug/l	2000	Bi	
Th	232	193	3	0.08101	0.16202	ug/l	2000	Th	
U	238	193	3	0.04973	0.09946	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7390775	0.90	7411413	99.7	80	120	Li (IS)	
Sc (IS)	45	2	166669	2.41	143379	116.2	80	120	Sc (IS)	
Sc (IS)	45	3	2785261	0.38	2392712	116.4	80	120	Sc (IS)	
Ge (IS)	72	2	373990	1.15	323154	115.7	80	120	Ge (IS)	
Ge (IS)	72	3	2149986	0.46	1861986	115.5	80	120	Ge (IS)	
In (IS)	115	3	13539817	0.24	12119833	111.7	80	120	In (IS)	
Ho (IS)	165	2	10478834	2.43	9598706	109.2	80	120	Ho (IS)	
Ho (IS)	165	3	15246892	0.46	13687738	111.4	80	120	Ho (IS)	
Ir (IS)	193	2	6347044	2.19	6085322	104.3	80	120	Ir (IS)	
Ir (IS)	193	3	7400395	0.60	6951639	106.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36545-A-1-B SD**
Data File Name	**019SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:45:49-06:00**
Type	**Sample**
VialNumber	**2104**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	1.41361	14.13607	ug/l	1000	Li	
Be	9	6	3	-0.00440	-0.04397	ug/l	1000	Be	
B	11	6	3	18.58787	185.87871	ug/l	2000	B	
Na	23	45	2	10139.80114	101398.01142	ug/l	50000	Na	
Mg	24	45	2	327.69901	3276.99011	ug/l	50000	Mg	
Al	27	45	2	85.09173	850.91730	ug/l	100000	Al	
P	31	45	2	1.61247	16.12472	ug/l	100000	P	
K	39	45	2	60.58341	605.83409	ug/l	100000	K	
Ca	44	45	3	2125.22697	21252.26965	ug/l	100000	Ca	
Ti	47	45	3	0.19007	1.90069	ug/l	2000	Ti	
V	51	45	2	0.03598	0.35975	ug/l	2000	V	
Cr	52	45	2	0.34541	3.45410	ug/l	2000	Cr	
Mn	55	72	2	33.51190	335.11897	ug/l	5000	Mn	
Fe	57	72	2	296.58828	2965.88275	ug/l	100000	Fe	
Co	59	72	2	1.29203	12.92032	ug/l	2000	Co	
Ni	60	72	2	7.51745	75.17448	ug/l	2000	Ni	
Cu	63	72	2	3.76548	37.65482	ug/l	2000	Cu	
Zn	66	72	2	2586.80539	25868.05386	ug/l	5000	Zn	
As	75	72	2	-0.00334	-0.03336	ug/l	2000	As	
Se	78	72	2	0.34942	3.49419	ug/l	1000	Se	
Sr	88	72	3	6.55636	65.56359	ug/l	2000	Sr	
Y	89	72	2	0.04572	0.45718	ug/l	200	Y	
Zr	90	72	2	0.07660	0.76604	ug/l	2000	Zr	
Nb	93	72	2	-0.02452	-0.24519	ug/l	100	Nb	
Mo	95	72	3	0.33102	3.31017	ug/l	1000	Mo	
Ru	101	72	2	-0.00363	-0.03632	ug/l	200	Ru	
Rh	103	72	2	-0.00358	-0.03582	ug/l	200	Rh	
Pd	105	72	2	-0.00888	-0.08878	ug/l	20	Pd	
Ag	107	115	3	0.00540	0.05396	ug/l	400	Ag	
Cd	111	115	3	1.39825	13.98252	ug/l	2000	Cd	
Sn	118	115	3	0.07156	0.71556	ug/l	2000	Sn	
Sb	121	115	3	0.04362	0.43625	ug/l	1000	Sb	
Te	125	165	2	-0.00548	-0.05479	ug/l	200	Te	
Cs	133	165	2	-0.00279	-0.02787	ug/l	2000	Cs	
Ba	137	165	3	4.67697	46.76975	ug/l	5000	Ba	
La	139	165	2	0.04410	0.44096	ug/l	200	La	
Ce	140	165	2	0.06837	0.68366	ug/l	200	Ce	
Pr	141	165	2	0.01838	0.18384	ug/l	200	Pr	
Nd	146	165	2	0.20792	2.07922	ug/l	200	Nd	
Sm	147	165	3	0.02886	0.28856	ug/l	2000	Sm	
Hf	178	165	2	0.00027	0.00274	ug/l	200	Hf	
Ta	181	165	2	0.00381	0.03810	ug/l	200	Ta	
W	182	165	2	0.91614	9.16143	ug/l	2000	W	
Re	185	193	3	-0.00316	-0.03165	ug/l	200	Re	
Pt	195	193	2	0.00128	0.01278	ug/l	200	Pt	
Au	197	193	3	-0.02340	-0.23403	ug/l	2000	Au	
Tl	205	193	3	-0.00315	-0.03150	ug/l	400	Tl	
Pb	208	193	3	18.61558	186.15578	ug/l	5000	Pb	
Bi	209	193	2	0.02042	0.20420	ug/l	2000	Bi	
Th	232	193	3	0.01248	0.12484	ug/l	2000	Th	
U	238	193	3	0.00801	0.08006	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7360306	3.92	7411413	99.3	80	120	Li (IS)	
Sc (IS)	45	2	163861	1.25	143379	114.3	80	120	Sc (IS)	
Sc (IS)	45	3	2696852	6.10	2392712	112.7	80	120	Sc (IS)	
Ge (IS)	72	2	368594	1.79	323154	114.1	80	120	Ge (IS)	
Ge (IS)	72	3	2132506	4.27	1861986	114.5	80	120	Ge (IS)	
In (IS)	115	3	13344312	6.14	12119833	110.1	80	120	In (IS)	
Ho (IS)	165	2	10309130	0.70	9598706	107.4	80	120	Ho (IS)	
Ho (IS)	165	3	14765380	6.19	13687738	107.9	80	120	Ho (IS)	
Ir (IS)	193	2	6345093	1.27	6085322	104.3	80	120	Ir (IS)	
Ir (IS)	193	3	7297403	5.10	6951639	105.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36545-A-1-C MS**
Data File Name	**020SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:52:32-06:00**
Type	**Sample**
VialNumber	**2105**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	15.07052	30.14104	ug/l	1000	Li	
Be	9	6	3	10.01397	20.02794	ug/l	1000	Be	
B	11	6	3	90.16188	180.32375	ug/l	2000	B	
Na	23	45	2	53368.14885	106736.29770	ug/l	50000	Na	FAILED
Mg	24	45	2	2771.06725	5542.13451	ug/l	50000	Mg	
Al	27	45	2	1211.94652	2423.89305	ug/l	100000	Al	
P	31	45	2	106.30072	212.60144	ug/l	100000	P	
K	39	45	2	1306.73836	2613.47672	ug/l	100000	K	
Ca	44	45	3	11552.30661	23104.61321	ug/l	100000	Ca	
Ti	47	45	3	96.28713	192.57426	ug/l	2000	Ti	
V	51	45	2	95.50702	191.01403	ug/l	2000	V	
Cr	52	45	2	102.87627	205.75254	ug/l	2000	Cr	
Mn	55	72	2	284.98527	569.97054	ug/l	5000	Mn	
Fe	57	72	2	2424.94203	4849.88407	ug/l	100000	Fe	
Co	59	72	2	109.98109	219.96218	ug/l	2000	Co	
Ni	60	72	2	137.74462	275.48923	ug/l	2000	Ni	
Cu	63	72	2	124.13303	248.26605	ug/l	2000	Cu	
Zn	66	72	2	12916.97341	25833.94682	ug/l	5000	Zn	FAILED
As	75	72	2	100.81179	201.62358	ug/l	2000	As	
Se	78	72	2	48.83719	97.67438	ug/l	1000	Se	
Sr	88	72	3	132.84491	265.68983	ug/l	2000	Sr	
Y	89	72	2	0.26036	0.52071	ug/l	200	Y	
Zr	90	72	2	103.21040	206.42080	ug/l	2000	Zr	
Nb	93	72	2	0.09110	0.18219	ug/l	100	Nb	
Mo	95	72	3	45.66705	91.33410	ug/l	1000	Mo	
Ru	101	72	2	0.00022	0.00044	ug/l	200	Ru	
Rh	103	72	2	0.00491	0.00981	ug/l	200	Rh	
Pd	105	72	2	0.00126	0.00251	ug/l	20	Pd	
Ag	107	115	3	17.31866	34.63731	ug/l	400	Ag	
Cd	111	115	3	96.05098	192.10197	ug/l	2000	Cd	
Sn	118	115	3	95.39591	190.79183	ug/l	2000	Sn	
Sb	121	115	3	49.05674	98.11349	ug/l	1000	Sb	
Te	125	165	2	-0.00536	-0.01072	ug/l	200	Te	
Cs	133	165	2	0.00688	0.01376	ug/l	2000	Cs	
Ba	137	165	3	122.62796	245.25592	ug/l	5000	Ba	
La	139	165	2	0.39789	0.79578	ug/l	200	La	
Ce	140	165	2	0.38622	0.77244	ug/l	200	Ce	
Pr	141	165	2	0.11757	0.23513	ug/l	200	Pr	
Nd	146	165	2	1.06975	2.13950	ug/l	200	Nd	
Sm	147	165	3	98.37027	196.74055	ug/l	2000	Sm	
Hf	178	165	2	0.10224	0.20447	ug/l	200	Hf	
Ta	181	165	2	0.12875	0.25749	ug/l	200	Ta	
W	182	165	2	100.62442	201.24884	ug/l	2000	W	
Re	185	193	3	-0.00065	-0.00131	ug/l	200	Re	
Pt	195	193	2	0.00233	0.00465	ug/l	200	Pt	
Au	197	193	3	-0.03061	-0.06122	ug/l	2000	Au	
Tl	205	193	3	17.65145	35.30291	ug/l	400	Tl	
Pb	208	193	3	198.56270	397.12541	ug/l	5000	Pb	
Bi	209	193	2	94.30796	188.61593	ug/l	2000	Bi	
Th	232	193	3	95.35680	190.71360	ug/l	2000	Th	
U	238	193	3	97.25215	194.50430	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7415399	1.05	7411413	100.1	80	120	Li (IS)	
Sc (IS)	45	2	164014	1.41	143379	114.4	80	120	Sc (IS)	
Sc (IS)	45	3	2838168	0.51	2392712	118.6	80	120	Sc (IS)	
Ge (IS)	72	2	373767	2.06	323154	115.7	80	120	Ge (IS)	
Ge (IS)	72	3	2237656	1.21	1861986	120.2	80	120	Ge (IS)	FAILED
In (IS)	115	3	13684607	1.31	12119833	112.9	80	120	In (IS)	
Ho (IS)	165	2	10247759	1.51	9598706	106.8	80	120	Ho (IS)	
Ho (IS)	165	3	15433671	1.35	13687738	112.8	80	120	Ho (IS)	
Ir (IS)	193	2	6329922	2.86	6085322	104.0	80	120	Ir (IS)	
Ir (IS)	193	3	7458520	1.90	6951639	107.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36545-A-1-D MSD**
Data File Name	**021SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:59:14-06:00**
Type	**Sample**
VialNumber	**2106**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	14.98152	29.96304	ug/l	1000	Li	
Be	9	6	3	9.85653	19.71307	ug/l	1000	Be	
B	11	6	3	98.93003	197.86006	ug/l	2000	B	
Na	23	45	2	56704.89205	113409.78410	ug/l	50000	Na	FAILED
Mg	24	45	2	2912.49922	5824.99844	ug/l	50000	Mg	
Al	27	45	2	1324.00977	2648.01954	ug/l	100000	Al	
P	31	45	2	103.65101	207.30203	ug/l	100000	P	
K	39	45	2	1371.89007	2743.78014	ug/l	100000	K	
Ca	44	45	3	11867.81478	23735.62956	ug/l	100000	Ca	
Ti	47	45	3	97.39126	194.78252	ug/l	2000	Ti	
V	51	45	2	99.49454	198.98908	ug/l	2000	V	
Cr	52	45	2	107.40129	214.80258	ug/l	2000	Cr	
Mn	55	72	2	300.50856	601.01712	ug/l	5000	Mn	
Fe	57	72	2	2555.42952	5110.85903	ug/l	100000	Fe	
Co	59	72	2	114.35348	228.70697	ug/l	2000	Co	
Ni	60	72	2	145.15865	290.31729	ug/l	2000	Ni	
Cu	63	72	2	129.48938	258.97876	ug/l	2000	Cu	
Zn	66	72	2	13687.38053	27374.76106	ug/l	5000	Zn	FAILED
As	75	72	2	105.37291	210.74582	ug/l	2000	As	
Se	78	72	2	52.39554	104.79108	ug/l	1000	Se	
Sr	88	72	3	136.72754	273.45507	ug/l	2000	Sr	
Y	89	72	2	0.27837	0.55673	ug/l	200	Y	
Zr	90	72	2	107.35064	214.70129	ug/l	2000	Zr	
Nb	93	72	2	0.05033	0.10065	ug/l	100	Nb	
Mo	95	72	3	46.41772	92.83544	ug/l	1000	Mo	
Ru	101	72	2	0.00160	0.00319	ug/l	200	Ru	
Rh	103	72	2	0.00541	0.01083	ug/l	200	Rh	
Pd	105	72	2	0.00031	0.00061	ug/l	20	Pd	
Ag	107	115	3	17.28632	34.57264	ug/l	400	Ag	
Cd	111	115	3	97.26070	194.52140	ug/l	2000	Cd	
Sn	118	115	3	95.09089	190.18179	ug/l	2000	Sn	
Sb	121	115	3	49.01576	98.03152	ug/l	1000	Sb	
Te	125	165	2	0.03485	0.06969	ug/l	200	Te	
Cs	133	165	2	0.00659	0.01318	ug/l	2000	Cs	
Ba	137	165	3	122.46809	244.93619	ug/l	5000	Ba	
La	139	165	2	0.41829	0.83658	ug/l	200	La	
Ce	140	165	2	0.40711	0.81421	ug/l	200	Ce	
Pr	141	165	2	0.12794	0.25589	ug/l	200	Pr	
Nd	146	165	2	1.13899	2.27799	ug/l	200	Nd	
Sm	147	165	3	97.74909	195.49818	ug/l	2000	Sm	
Hf	178	165	2	0.11507	0.23014	ug/l	200	Hf	
Ta	181	165	2	0.12191	0.24383	ug/l	200	Ta	
W	182	165	2	104.34876	208.69753	ug/l	2000	W	
Re	185	193	3	-0.00068	-0.00137	ug/l	200	Re	
Pt	195	193	2	-0.00024	-0.00047	ug/l	200	Pt	
Au	197	193	3	-0.03337	-0.06674	ug/l	2000	Au	
Tl	205	193	3	17.71800	35.43600	ug/l	400	Tl	
Pb	208	193	3	201.70414	403.40829	ug/l	5000	Pb	
Bi	209	193	2	99.67651	199.35303	ug/l	2000	Bi	
Th	232	193	3	95.14232	190.28464	ug/l	2000	Th	
U	238	193	3	96.38900	192.77800	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7299130	0.58	7411413	98.5	80	120	Li (IS)	
Sc (IS)	45	2	160078	6.42	143379	111.6	80	120	Sc (IS)	
Sc (IS)	45	3	2750339	1.25	2392712	114.9	80	120	Sc (IS)	
Ge (IS)	72	2	365142	5.06	323154	113.0	80	120	Ge (IS)	
Ge (IS)	72	3	2161256	0.42	1861986	116.1	80	120	Ge (IS)	
In (IS)	115	3	13367891	0.67	12119833	110.3	80	120	In (IS)	
Ho (IS)	165	2	10003347	6.88	9598706	104.2	80	120	Ho (IS)	
Ho (IS)	165	3	15194308	0.72	13687738	111.0	80	120	Ho (IS)	
Ir (IS)	193	2	6102023	6.51	6085322	100.3	80	120	Ir (IS)	
Ir (IS)	193	3	7325099	0.91	6951639	105.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**MB 160-452973/1-A**
Data File Name	**022SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:06:01-06:00**
Type	**Sample**
VialNumber	**2107**
Dilution	**2**
Comment	**452973**
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.60232	1.20463	ug/l	1000	Li	
Be	9	6	3	-0.00965	-0.01931	ug/l	1000	Be	
B	11	6	3	5.30270	10.60540	ug/l	2000	B	
Na	23	45	2	12.08509	24.17018	ug/l	50000	Na	
Mg	24	45	2	1.26963	2.53926	ug/l	50000	Mg	
Al	27	45	2	57.82610	115.65219	ug/l	100000	Al	
P	31	45	2	8.86137	17.72273	ug/l	100000	P	
K	39	45	2	2.41910	4.83820	ug/l	100000	K	
Ca	44	45	3	13.72439	27.44878	ug/l	100000	Ca	
Ti	47	45	3	0.23897	0.47795	ug/l	2000	Ti	
V	51	45	2	0.09653	0.19306	ug/l	2000	V	
Cr	52	45	2	0.03345	0.06691	ug/l	2000	Cr	
Mn	55	72	2	0.11312	0.22623	ug/l	5000	Mn	
Fe	57	72	2	1.61327	3.22655	ug/l	100000	Fe	
Co	59	72	2	0.00001	0.00001	ug/l	2000	Co	
Ni	60	72	2	0.03232	0.06464	ug/l	2000	Ni	
Cu	63	72	2	0.31838	0.63676	ug/l	2000	Cu	
Zn	66	72	2	6.00260	12.00520	ug/l	5000	Zn	
As	75	72	2	0.05322	0.10645	ug/l	2000	As	
Se	78	72	2	0.07675	0.15350	ug/l	1000	Se	
Sr	88	72	3	0.02402	0.04803	ug/l	2000	Sr	
Y	89	72	2	-0.00385	-0.00770	ug/l	200	Y	
Zr	90	72	2	0.05393	0.10787	ug/l	2000	Zr	
Nb	93	72	2	-0.06514	-0.13027	ug/l	100	Nb	
Mo	95	72	3	0.23538	0.47076	ug/l	1000	Mo	
Ru	101	72	2	-0.00184	-0.00369	ug/l	200	Ru	
Rh	103	72	2	-0.00463	-0.00927	ug/l	200	Rh	
Pd	105	72	2	-0.00786	-0.01571	ug/l	20	Pd	
Ag	107	115	3	0.00836	0.01671	ug/l	400	Ag	
Cd	111	115	3	-0.00163	-0.00325	ug/l	2000	Cd	
Sn	118	115	3	0.19455	0.38910	ug/l	2000	Sn	
Sb	121	115	3	-0.00116	-0.00232	ug/l	1000	Sb	
Te	125	165	2	0.00567	0.01134	ug/l	200	Te	
Cs	133	165	2	-0.00362	-0.00724	ug/l	2000	Cs	
Ba	137	165	3	0.04948	0.09896	ug/l	5000	Ba	
La	139	165	2	-0.00309	-0.00618	ug/l	200	La	
Ce	140	165	2	-0.00276	-0.00553	ug/l	200	Ce	
Pr	141	165	2	-0.00251	-0.00502	ug/l	200	Pr	
Nd	146	165	2	-0.00126	-0.00251	ug/l	200	Nd	
Sm	147	165	3	-0.00350	-0.00699	ug/l	2000	Sm	
Hf	178	165	2	-0.00385	-0.00769	ug/l	200	Hf	
Ta	181	165	2	0.00178	0.00357	ug/l	200	Ta	
W	182	165	2	1.78510	3.57020	ug/l	2000	W	
Re	185	193	3	-0.00231	-0.00462	ug/l	200	Re	
Pt	195	193	2	0.00300	0.00599	ug/l	200	Pt	
Au	197	193	3	-0.03372	-0.06743	ug/l	2000	Au	
Tl	205	193	3	0.02988	0.05976	ug/l	400	Tl	
Pb	208	193	3	0.23695	0.47389	ug/l	5000	Pb	
Bi	209	193	2	0.04521	0.09042	ug/l	2000	Bi	
Th	232	193	3	0.09049	0.18098	ug/l	2000	Th	
U	238	193	3	-0.00014	-0.00028	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7372179	0.85	7411413	99.5	80	120	Li (IS)	
Sc (IS)	45	2	165227	0.70	143379	115.2	80	120	Sc (IS)	
Sc (IS)	45	3	2815182	0.15	2392712	117.7	80	120	Sc (IS)	
Ge (IS)	72	2	380792	0.49	323154	117.8	80	120	Ge (IS)	
Ge (IS)	72	3	2276530	1.25	1861986	122.3	80	120	Ge (IS)	FAILED
In (IS)	115	3	14049871	1.20	12119833	115.9	80	120	In (IS)	
Ho (IS)	165	2	10501864	0.77	9598706	109.4	80	120	Ho (IS)	
Ho (IS)	165	3	15890261	0.89	13687738	116.1	80	120	Ho (IS)	
Ir (IS)	193	2	6568056	1.49	6085322	107.9	80	120	Ir (IS)	
Ir (IS)	193	3	7832421	1.51	6951639	112.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCS 160-452973/2-A**
Data File Name	**023SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:12:45-06:00**
Type	**Sample**
VialNumber	**2108**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	50.02939	100.05878	ug/l	1000	Li	
Be	9	6	3	48.10450	96.20900	ug/l	1000	Be	
B	11	6	3	105.64347	211.28694	ug/l	2000	B	
Na	23	45	2	5073.02595	10146.05190	ug/l	50000	Na	
Mg	24	45	2	4943.02164	9886.04328	ug/l	50000	Mg	
Al	27	45	2	4832.21656	9664.43313	ug/l	100000	Al	
P	31	45	2	466.87164	933.74329	ug/l	100000	P	
K	39	45	2	4890.34804	9780.69609	ug/l	100000	K	
Ca	44	45	3	5119.32298	10238.64597	ug/l	100000	Ca	
Ti	47	45	3	504.24403	1008.48806	ug/l	2000	Ti	
V	51	45	2	481.50898	963.01796	ug/l	2000	V	
Cr	52	45	2	490.48606	980.97213	ug/l	2000	Cr	
Mn	55	72	2	515.72752	1031.45503	ug/l	5000	Mn	
Fe	57	72	2	5193.44703	10386.89406	ug/l	100000	Fe	
Co	59	72	2	527.09446	1054.18892	ug/l	2000	Co	
Ni	60	72	2	572.71830	1145.43660	ug/l	2000	Ni	
Cu	63	72	2	528.63022	1057.26045	ug/l	2000	Cu	
Zn	66	72	2	548.67021	1097.34042	ug/l	5000	Zn	
As	75	72	2	492.93985	985.87971	ug/l	2000	As	
Se	78	72	2	237.03525	474.07050	ug/l	1000	Se	
Sr	88	72	3	503.61417	1007.22835	ug/l	2000	Sr	
Y	89	72	2	0.00479	0.00958	ug/l	200	Y	
Zr	90	72	2	523.02992	1046.05985	ug/l	2000	Zr	
Nb	93	72	2	0.53934	1.07867	ug/l	100	Nb	
Mo	95	72	3	245.86470	491.72940	ug/l	1000	Mo	
Ru	101	72	2	-0.00376	-0.00751	ug/l	200	Ru	
Rh	103	72	2	0.01968	0.03936	ug/l	200	Rh	
Pd	105	72	2	0.02730	0.05460	ug/l	20	Pd	
Ag	107	115	3	96.94938	193.89875	ug/l	400	Ag	
Cd	111	115	3	490.42510	980.85020	ug/l	2000	Cd	
Sn	118	115	3	486.15151	972.30302	ug/l	2000	Sn	
Sb	121	115	3	245.20300	490.40601	ug/l	1000	Sb	
Te	125	165	2	0.05326	0.10653	ug/l	200	Te	
Cs	133	165	2	-0.00191	-0.00383	ug/l	2000	Cs	
Ba	137	165	3	481.75734	963.51469	ug/l	5000	Ba	
La	139	165	2	0.74997	1.49994	ug/l	200	La	
Ce	140	165	2	0.02250	0.04499	ug/l	200	Ce	
Pr	141	165	2	0.00142	0.00285	ug/l	200	Pr	
Nd	146	165	2	0.00784	0.01568	ug/l	200	Nd	
Sm	147	165	3	491.92456	983.84913	ug/l	2000	Sm	
Hf	178	165	2	0.25921	0.51842	ug/l	200	Hf	
Ta	181	165	2	0.64276	1.28551	ug/l	200	Ta	
W	182	165	2	506.44116	1012.88231	ug/l	2000	W	
Re	185	193	3	0.00848	0.01696	ug/l	200	Re	
Pt	195	193	2	0.00588	0.01177	ug/l	200	Pt	
Au	197	193	3	-0.02625	-0.05249	ug/l	2000	Au	
Tl	205	193	3	103.34679	206.69358	ug/l	400	Tl	
Pb	208	193	3	499.42581	998.85161	ug/l	5000	Pb	
Bi	209	193	2	485.85769	971.71538	ug/l	2000	Bi	
Th	232	193	3	495.17687	990.35374	ug/l	2000	Th	
U	238	193	3	497.29605	994.59209	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7207219	0.47	7411413	97.2	80	120	Li (IS)	
Sc (IS)	45	2	166809	0.94	143379	116.3	80	120	Sc (IS)	
Sc (IS)	45	3	2794574	0.22	2392712	116.8	80	120	Sc (IS)	
Ge (IS)	72	2	366428	0.71	323154	113.4	80	120	Ge (IS)	
Ge (IS)	72	3	2245777	0.70	1861986	120.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	13776305	0.82	12119833	113.7	80	120	In (IS)	
Ho (IS)	165	2	10336213	0.60	9598706	107.7	80	120	Ho (IS)	
Ho (IS)	165	3	15998045	0.88	13687738	116.9	80	120	Ho (IS)	
Ir (IS)	193	2	6353630	0.44	6085322	104.4	80	120	Ir (IS)	
Ir (IS)	193	3	7630785	0.45	6951639	109.8	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-2-A**
Data File Name	**024SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:19:27-06:00**
Type	**Sample**
VialNumber	**2109**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	34.37570	68.75140	ug/l	1000	Li	
Be	9	6	3	0.00001	0.00003	ug/l	1000	Be	
B	11	6	3	506.02985	1012.05969	ug/l	2000	B	
Na	23	45	2	80991.88191	161983.76383	ug/l	50000	Na	FAILED
Mg	24	45	2	19358.38530	38716.77060	ug/l	50000	Mg	
Al	27	45	2	9.57735	19.15470	ug/l	100000	Al	
P	31	45	2	997.94449	1995.88897	ug/l	100000	P	
K	39	45	2	5942.05317	11884.10634	ug/l	100000	K	
Ca	44	45	3	147507.68786	295015.37572	ug/l	100000	Ca	FAILED
Ti	47	45	3	1.51105	3.02211	ug/l	2000	Ti	
V	51	45	2	0.61685	1.23370	ug/l	2000	V	
Cr	52	45	2	0.19901	0.39802	ug/l	2000	Cr	
Mn	55	72	2	2563.92915	5127.85830	ug/l	5000	Mn	
Fe	57	72	2	47707.14213	95414.28425	ug/l	100000	Fe	
Co	59	72	2	5.68706	11.37411	ug/l	2000	Co	
Ni	60	72	2	9.74897	19.49794	ug/l	2000	Ni	
Cu	63	72	2	4.58612	9.17224	ug/l	2000	Cu	
Zn	66	72	2	5.26521	10.53042	ug/l	5000	Zn	
As	75	72	2	73.99269	147.98537	ug/l	2000	As	
Se	78	72	2	0.88497	1.76995	ug/l	1000	Se	
Sr	88	72	3	1464.36940	2928.73881	ug/l	2000	Sr	
Y	89	72	2	0.36210	0.72421	ug/l	200	Y	
Zr	90	72	2	0.41248	0.82496	ug/l	2000	Zr	
Nb	93	72	2	-0.06659	-0.13319	ug/l	100	Nb	
Mo	95	72	3	1.19326	2.38651	ug/l	1000	Mo	
Ru	101	72	2	0.00082	0.00165	ug/l	200	Ru	
Rh	103	72	2	-0.00402	-0.00803	ug/l	200	Rh	
Pd	105	72	2	0.06561	0.13123	ug/l	20	Pd	
Ag	107	115	3	0.02916	0.05832	ug/l	400	Ag	
Cd	111	115	3	0.10539	0.21077	ug/l	2000	Cd	
Sn	118	115	3	0.35884	0.71767	ug/l	2000	Sn	
Sb	121	115	3	0.24594	0.49188	ug/l	1000	Sb	
Te	125	165	2	0.04671	0.09343	ug/l	200	Te	
Cs	133	165	2	0.00096	0.00191	ug/l	2000	Cs	
Ba	137	165	3	810.80909	1621.61819	ug/l	5000	Ba	
La	139	165	2	0.09437	0.18873	ug/l	200	La	
Ce	140	165	2	0.18141	0.36281	ug/l	200	Ce	
Pr	141	165	2	0.01752	0.03505	ug/l	200	Pr	
Nd	146	165	2	0.08341	0.16682	ug/l	200	Nd	
Sm	147	165	3	0.04557	0.09114	ug/l	2000	Sm	
Hf	178	165	2	-0.00095	-0.00191	ug/l	200	Hf	
Ta	181	165	2	0.00333	0.00665	ug/l	200	Ta	
W	182	165	2	1.76853	3.53705	ug/l	2000	W	
Re	185	193	3	0.00256	0.00511	ug/l	200	Re	
Pt	195	193	2	0.00239	0.00478	ug/l	200	Pt	
Au	197	193	3	-0.03946	-0.07892	ug/l	2000	Au	
Tl	205	193	3	0.09809	0.19618	ug/l	400	Tl	
Pb	208	193	3	3.42729	6.85457	ug/l	5000	Pb	
Bi	209	193	2	0.11089	0.22179	ug/l	2000	Bi	
Th	232	193	3	0.21590	0.43180	ug/l	2000	Th	
U	238	193	3	0.53400	1.06801	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6641328	0.19	7411413	89.6	80	120	Li (IS)	
Sc (IS)	45	2	159988	4.96	143379	111.6	80	120	Sc (IS)	
Sc (IS)	45	3	2920783	1.04	2392712	122.1	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	359206	3.74	323154	111.2	80	120	Ge (IS)	
Ge (IS)	72	3	2224251	0.80	1861986	119.5	80	120	Ge (IS)	
In (IS)	115	3	13457718	1.26	12119833	111.0	80	120	In (IS)	
Ho (IS)	165	2	10127702	5.30	9598706	105.5	80	120	Ho (IS)	
Ho (IS)	165	3	15503991	1.18	13687738	113.3	80	120	Ho (IS)	
Ir (IS)	193	2	6124972	4.75	6085322	100.7	80	120	Ir (IS)	
Ir (IS)	193	3	7466895	1.04	6951639	107.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-3-A**
Data File Name	**025SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:26:16-06:00**
Type	**Sample**
VialNumber	**2110**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	20.27631	40.55263	ug/l	1000	Li	
Be	9	6	3	-0.00853	-0.01707	ug/l	1000	Be	
B	11	6	3	403.26632	806.53265	ug/l	2000	B	
Na	23	45	2	50521.90203	101043.80406	ug/l	50000	Na	FAILED
Mg	24	45	2	15725.19215	31450.38429	ug/l	50000	Mg	
Al	27	45	2	52.89729	105.79458	ug/l	100000	Al	
P	31	45	2	201.58581	403.17162	ug/l	100000	P	
K	39	45	2	3539.54971	7079.09941	ug/l	100000	K	
Ca	44	45	3	102772.52254	205545.04509	ug/l	100000	Ca	FAILED
Ti	47	45	3	1.66207	3.32414	ug/l	2000	Ti	
V	51	45	2	0.30923	0.61845	ug/l	2000	V	
Cr	52	45	2	7.98119	15.96239	ug/l	2000	Cr	
Mn	55	72	2	159.38616	318.77232	ug/l	5000	Mn	
Fe	57	72	2	3676.91099	7353.82198	ug/l	100000	Fe	
Co	59	72	2	0.15150	0.30299	ug/l	2000	Co	
Ni	60	72	2	5.07950	10.15901	ug/l	2000	Ni	
Cu	63	72	2	0.66070	1.32140	ug/l	2000	Cu	
Zn	66	72	2	9.35658	18.71315	ug/l	5000	Zn	
As	75	72	2	2.11287	4.22575	ug/l	2000	As	
Se	78	72	2	0.15764	0.31528	ug/l	1000	Se	
Sr	88	72	3	614.73024	1229.46047	ug/l	2000	Sr	
Y	89	72	2	0.02034	0.04069	ug/l	200	Y	
Zr	90	72	2	0.12622	0.25245	ug/l	2000	Zr	
Nb	93	72	2	-0.08083	-0.16166	ug/l	100	Nb	
Mo	95	72	3	26.75429	53.50859	ug/l	1000	Mo	
Ru	101	72	2	-0.00442	-0.00885	ug/l	200	Ru	
Rh	103	72	2	-0.00542	-0.01084	ug/l	200	Rh	
Pd	105	72	2	0.02931	0.05862	ug/l	20	Pd	
Ag	107	115	3	0.01066	0.02132	ug/l	400	Ag	
Cd	111	115	3	0.00813	0.01626	ug/l	2000	Cd	
Sn	118	115	3	0.18049	0.36098	ug/l	2000	Sn	
Sb	121	115	3	0.05210	0.10420	ug/l	1000	Sb	
Te	125	165	2	0.01674	0.03347	ug/l	200	Te	
Cs	133	165	2	0.02897	0.05794	ug/l	2000	Cs	
Ba	137	165	3	26.60870	53.21740	ug/l	5000	Ba	
La	139	165	2	0.04019	0.08038	ug/l	200	La	
Ce	140	165	2	0.08489	0.16977	ug/l	200	Ce	
Pr	141	165	2	0.00697	0.01394	ug/l	200	Pr	
Nd	146	165	2	0.03811	0.07623	ug/l	200	Nd	
Sm	147	165	3	0.00704	0.01408	ug/l	2000	Sm	
Hf	178	165	2	0.00049	0.00098	ug/l	200	Hf	
Ta	181	165	2	-0.00795	-0.01590	ug/l	200	Ta	
W	182	165	2	1.14491	2.28983	ug/l	2000	W	
Re	185	193	3	0.04412	0.08825	ug/l	200	Re	
Pt	195	193	2	0.00166	0.00333	ug/l	200	Pt	
Au	197	193	3	-0.04018	-0.08036	ug/l	2000	Au	
Tl	205	193	3	0.00860	0.01720	ug/l	400	Tl	
Pb	208	193	3	0.24087	0.48175	ug/l	5000	Pb	
Bi	209	193	2	0.04595	0.09190	ug/l	2000	Bi	
Th	232	193	3	0.08650	0.17299	ug/l	2000	Th	
U	238	193	3	0.07932	0.15864	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6936718	0.24	7411413	93.6	80	120	Li (IS)	
Sc (IS)	45	2	169834	1.74	143379	118.5	80	120	Sc (IS)	
Sc (IS)	45	3	2987384	0.98	2392712	124.9	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	382564	1.75	323154	118.4	80	120	Ge (IS)	
Ge (IS)	72	3	2345474	0.70	1861986	126.0	80	120	Ge (IS)	FAILED
In (IS)	115	3	14248061	0.99	12119833	117.6	80	120	In (IS)	
Ho (IS)	165	2	10648431	1.16	9598706	110.9	80	120	Ho (IS)	
Ho (IS)	165	3	16213034	0.34	13687738	118.4	80	120	Ho (IS)	
Ir (IS)	193	2	6430384	1.39	6085322	105.7	80	120	Ir (IS)	
Ir (IS)	193	3	7815842	0.74	6951639	112.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**026LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:33:02-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	5.62890	ug/l	5	112.6	80	120	Li	
Be	9	6	3	0.50193	ug/l	0.5	100.4	80	120	Be	
B	11	6	3	117.93531	ug/l	100	117.9	80	120	B	
Na	23	45	2	109.57099	ug/l	100	109.6	80	120	Na	
Mg	24	45	2	50.15557	ug/l	50	100.3	80	120	Mg	
Al	27	45	2	50.06708	ug/l	50	100.1	80	120	Al	
P	31	45	2	103.28785	ug/l	100	103.3	80	120	P	
K	39	45	2	99.11624	ug/l	100	99.1	80	120	K	
Ca	44	45	3	199.88967	ug/l	200	99.9	80	120	Ca	
Ti	47	45	3	5.09350	ug/l	5	101.9	80	120	Ti	
V	51	45	2	9.78370	ug/l	10	97.8	80	120	V	
Cr	52	45	2	9.79812	ug/l	10	98.0	80	120	Cr	
Mn	55	72	2	4.06241	ug/l	4	101.6	80	120	Mn	
Fe	57	72	2	51.11033	ug/l	50	102.2	80	120	Fe	
Co	59	72	2	2.03014	ug/l	2	101.5	80	120	Co	
Ni	60	72	2	5.59475	ug/l	5	111.9	80	120	Ni	
Cu	63	72	2	3.26531	ug/l	3	108.8	80	120	Cu	
Zn	66	72	2	21.87527	ug/l	20	109.4	80	120	Zn	
As	75	72	2	10.55572	ug/l	10	105.6	80	120	As	
Se	78	72	2	5.22567	ug/l	5	104.5	80	120	Se	
Sr	88	72	3	4.82202	ug/l	5	96.4	80	120	Sr	
Y	89	72	2	4.73994	ug/l	5	94.8	80	120	Y	
Zr	90	72	2	4.87838	ug/l	5	97.6	80	120	Zr	
Nb	93	72	2	18.39257	ug/l	25	73.6	80	120	Nb	FAILED
Mo	95	72	3	4.78116	ug/l	5	95.6	80	120	Mo	
Ru	101	72	2	9.86161	ug/l	10	98.6	80	120	Ru	
Rh	103	72	2	9.64741	ug/l	10	96.5	80	120	Rh	
Pd	105	72	2	0.53318	ug/l	0.5	106.6	80	120	Pd	
Ag	107	115	3	1.87497	ug/l	2	93.7	80	120	Ag	
Cd	111	115	3	0.47134	ug/l	0.5	94.3	80	120	Cd	
Sn	118	115	3	1.79660	ug/l	2	89.8	80	120	Sn	
Sb	121	115	3	4.52639	ug/l	5	90.5	80	120	Sb	
Te	125	165	2	9.67442	ug/l	10	96.7	80	120	Te	
Cs	133	165	2	0.92150	ug/l	1	92.1	80	120	Cs	
Ba	137	165	3	1.86685	ug/l	2	93.3	80	120	Ba	
La	139	165	2	1.86603	ug/l	2	93.3	80	120	La	
Ce	140	165	2	9.24556	ug/l	10	92.5	80	120	Ce	
Pr	141	165	2	1.86288	ug/l	2	93.1	80	120	Pr	
Nd	146	165	2	1.90511	ug/l	2	95.3	80	120	Nd	
Sm	147	165	3	9.27433	ug/l	10	92.7	80	120	Sm	
Hf	178	165	2	8.51404	ug/l	10	85.1	80	120	Hf	
Ta	181	165	2	7.28387	ug/l	10	72.8	80	120	Ta	FAILED
W	182	165	2	4.77791	ug/l	5	95.6	80	120	W	
Re	185	193	3	9.00931	ug/l	10	90.1	80	120	Re	
Pt	195	193	2	1.00770	ug/l	1	100.8	80	120	Pt	
Au	197	193	3	4.49139	ug/l	5	89.8	80	120	Au	
Tl	205	193	3	1.79780	ug/l	2	89.9	80	120	Tl	
Pb	208	193	3	2.78419	ug/l	3	92.8	80	120	Pb	
Bi	209	193	2	19.25963	ug/l	20	96.3	80	120	Bi	
Th	232	193	3	1.72178	ug/l	2	86.1	80	120	Th	
U	238	193	3	0.84856	ug/l	1	84.9	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7788602	0.45	7411413	105.1	80	120	Li (IS)	
Sc (IS)	45	2	182497	0.97	143379	127.3	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3083066	0.79	2392712	128.9	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	415715	0.67	323154	128.6	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2460409	1.28	1861986	132.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	15404734	0.35	12119833	127.1	80	120	In (IS)	FAILED
Ho (IS)	165	2	11283204	0.57	9598706	117.5	80	120	Ho (IS)	
Ho (IS)	165	3	17184927	1.40	13687738	125.5	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	7174729	0.20	6085322	117.9	80	120	Ir (IS)	
Ir (IS)	193	3	8442902	0.80	6951639	121.5	80	120	Ir (IS)	FAILED

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**027_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:39:43-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	102.12442	ug/l	100	102.1	90	110	Li	
Be	9	6	3	107.75470	ug/l	100	107.8	90	110	Be	
B	11	6	3	226.81858	ug/l	200	113.4	90	110	B	FAILED
Na	23	45	2	2536.81993	ug/l	2500	101.5	90	110	Na	
Mg	24	45	2	2489.52648	ug/l	2500	99.6	90	110	Mg	
Al	27	45	2	2333.99203	ug/l	2500	93.4	90	110	Al	
P	31	45	2	2427.24657	ug/l	2500	97.1	90	110	P	
K	39	45	2	2477.81509	ug/l	2500	99.1	90	110	K	
Ca	44	45	3	2557.37914	ug/l	2500	102.3	90	110	Ca	
Ti	47	45	3	101.05589	ug/l	100	101.1	90	110	Ti	
V	51	45	2	98.49477	ug/l	100	98.5	90	110	V	
Cr	52	45	2	101.48168	ug/l	100	101.5	90	110	Cr	
Mn	55	72	2	93.98965	ug/l	100	94.0	90	110	Mn	
Fe	57	72	2	2392.43382	ug/l	2500	95.7	90	110	Fe	
Co	59	72	2	101.90740	ug/l	100	101.9	90	110	Co	
Ni	60	72	2	101.69211	ug/l	100	101.7	90	110	Ni	
Cu	63	72	2	102.50325	ug/l	100	102.5	90	110	Cu	
Zn	66	72	2	100.80541	ug/l	100	100.8	90	110	Zn	
As	75	72	2	101.33614	ug/l	100	101.3	90	110	As	
Se	78	72	2	49.24608	ug/l	50	98.5	90	110	Se	
Sr	88	72	3	100.93831	ug/l	100	100.9	90	110	Sr	
Y	89	72	2	100.68852	ug/l	100	100.7	90	110	Y	
Zr	90	72	2	101.35833	ug/l	100	101.4	90	110	Zr	
Nb	93	72	2	50.69180	ug/l	50	101.4	90	110	Nb	
Mo	95	72	3	46.44635	ug/l	50	92.9	90	110	Mo	
Ru	101	72	2	95.87075	ug/l	100	95.9	90	110	Ru	
Rh	103	72	2	103.23224	ug/l	100	103.2	90	110	Rh	
Pd	105	72	2	10.46929	ug/l	10	104.7	90	110	Pd	
Ag	107	115	3	17.96520	ug/l	20	89.8	90	110	Ag	FAILED
Cd	111	115	3	92.73077	ug/l	100	92.7	90	110	Cd	
Sn	118	115	3	99.52655	ug/l	100	99.5	90	110	Sn	
Sb	121	115	3	49.75240	ug/l	50	99.5	90	110	Sb	
Te	125	165	2	99.56287	ug/l	100	99.6	90	110	Te	
Cs	133	165	2	99.82216	ug/l	100	99.8	90	110	Cs	
Ba	137	165	3	98.88833	ug/l	100	98.9	90	110	Ba	
La	139	165	2	101.48463	ug/l	100	101.5	90	110	La	
Ce	140	165	2	101.27025	ug/l	100	101.3	90	110	Ce	
Pr	141	165	2	100.84056	ug/l	100	100.8	90	110	Pr	
Nd	146	165	2	102.42491	ug/l	100	102.4	90	110	Nd	
Sm	147	165	3	99.55293	ug/l	100	99.6	90	110	Sm	
Hf	178	165	2	97.78182	ug/l	100	97.8	90	110	Hf	
Ta	181	165	2	99.63827	ug/l	100	99.6	90	110	Ta	
W	182	165	2	101.10767	ug/l	100	101.1	90	110	W	
Re	185	193	3	100.05539	ug/l	100	100.1	90	110	Re	
Pt	195	193	2	10.03307	ug/l	10	100.3	90	110	Pt	
Au	197	193	3	99.13766	ug/l	100	99.1	90	110	Au	
Tl	205	193	3	20.23304	ug/l	20	101.2	90	110	Tl	
Pb	208	193	3	98.16499	ug/l	100	98.2	90	110	Pb	
Bi	209	193	2	96.60272	ug/l	100	96.6	90	110	Bi	
Th	232	193	3	96.85058	ug/l	100	96.9	90	110	Th	
U	238	193	3	95.75137	ug/l	100	95.8	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7460268	0.90	7411413	100.7	80	120	Li (IS)	
Sc (IS)	45	2	176909	1.20	143379	123.4	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3048595	0.12	2392712	127.4	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	416690	0.32	323154	128.9	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2462341	1.02	1861986	132.2	80	120	Ge (IS)	FAILED
In (IS)	115	3	15312588	1.57	12119833	126.3	80	120	In (IS)	FAILED
Ho (IS)	165	2	11246935	0.17	9598706	117.2	80	120	Ho (IS)	
Ho (IS)	165	3	17205399	0.70	13687738	125.7	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	7148624	0.25	6085322	117.5	80	120	Ir (IS)	
Ir (IS)	193	3	8497620	0.56	6951639	122.2	80	120	Ir (IS)	FAILED

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**028_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:46:28-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.50588	ug/l	1.388	Li	
Be	9	6	3	-0.00028	ug/l	0.7	Be	
B	11	6	3	7.27523	ug/l	20	B	
Na	23	45	2	6.03286	ug/l	30	Na	
Mg	24	45	2	0.75799	ug/l	11.18	Mg	
Al	27	45	2	0.82935	ug/l	25.8	Al	
P	31	45	2	2.07902	ug/l	16.46	P	
K	39	45	2	3.21138	ug/l	83.2	K	
Ca	44	45	3	0.87485	ug/l	136.2	Ca	
Ti	47	45	3	0.04208	ug/l	4.2	Ti	
V	51	45	2	0.07111	ug/l	4.74	V	
Cr	52	45	2	0.01136	ug/l	6.52	Cr	
Mn	55	72	2	0.05876	ug/l	0.49	Mn	
Fe	57	72	2	1.09104	ug/l	40.7	Fe	
Co	59	72	2	0.02381	ug/l	0.434	Co	
Ni	60	72	2	0.02132	ug/l	0.8	Ni	
Cu	63	72	2	0.09173	ug/l	0.902	Cu	
Zn	66	72	2	0.49559	ug/l	16.58	Zn	
As	75	72	2	0.03213	ug/l	2.36	As	
Se	78	72	2	0.24218	ug/l	3.18	Se	
Sr	88	72	3	0.00585	ug/l	2	Sr	
Y	89	72	2	0.02709	ug/l	0.424	Y	
Zr	90	72	2	0.03348	ug/l	0.496	Zr	
Nb	93	72	2	0.27535	ug/l	4.62	Nb	
Mo	95	72	3	0.09659	ug/l	2	Mo	
Ru	101	72	2	0.02334	ug/l	2	Ru	
Rh	103	72	2	0.02414	ug/l	1.634	Rh	
Pd	105	72	2	-0.00429	ug/l	0.08	Pd	
Ag	107	115	3	0.00560	ug/l	1.54	Ag	
Cd	111	115	3	0.00179	ug/l	0.4	Cd	
Sn	118	115	3	0.01688	ug/l	2	Sn	
Sb	121	115	3	-0.00720	ug/l	3.34	Sb	
Te	125	165	2	0.06521	ug/l	1.072	Te	
Cs	133	165	2	0.02893	ug/l	0.106	Cs	
Ba	137	165	3	0.01582	ug/l	0.446	Ba	
La	139	165	2	0.02290	ug/l	0.102	La	
Ce	140	165	2	0.02597	ug/l	1.772	Ce	
Pr	141	165	2	0.02392	ug/l	0.084	Pr	
Nd	146	165	2	0.02306	ug/l	0.208	Nd	
Sm	147	165	3	0.00696	ug/l	0.652	Sm	
Hf	178	165	2	0.03384	ug/l	2.26	Hf	
Ta	181	165	2	0.03901	ug/l	1.46	Ta	
W	182	165	2	0.50652	ug/l	4	W	
Re	185	193	3	0.00465	ug/l	0.05	Re	
Pt	195	193	2	0.00598	ug/l	0.12	Pt	
Au	197	193	3	0.14193	ug/l	1	Au	
Tl	205	193	3	0.00277	ug/l	1.1	Tl	
Pb	208	193	3	0.07484	ug/l	0.346	Pb	
Bi	209	193	2	0.03846	ug/l	1.464	Bi	
Th	232	193	3	0.02762	ug/l	1.104	Th	
U	238	193	3	0.00762	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7405413	1.33	7411413	99.9	80	120	Li (IS)	
Sc (IS)	45	2	181516	0.17	143379	126.6	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3112448	1.17	2392712	130.1	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	410734	0.77	323154	127.1	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2507002	0.51	1861986	134.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	15533475	1.00	12119833	128.2	80	120	In (IS)	FAILED
Ho (IS)	165	2	11243736	0.32	9598706	117.1	80	120	Ho (IS)	
Ho (IS)	165	3	17074416	0.70	13687738	124.7	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	7114251	0.53	6085322	116.9	80	120	Ir (IS)	
Ir (IS)	193	3	8417939	0.46	6951639	121.1	80	120	Ir (IS)	FAILED

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-3-A SD**
Data File Name	**029SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:53:13-06:00**
Type	**Sample**
VialNumber	**2111**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	4.45922	44.59221	ug/l	1000	Li	
Be	9	6	3	-0.00814	-0.08141	ug/l	1000	Be	
B	11	6	3	75.80919	758.09187	ug/l	2000	B	
Na	23	45	2	10198.50384	101985.03842	ug/l	50000	Na	
Mg	24	45	2	3164.02776	31640.27761	ug/l	50000	Mg	
Al	27	45	2	15.67505	156.75047	ug/l	100000	Al	
P	31	45	2	39.94598	399.45982	ug/l	100000	P	
K	39	45	2	669.99889	6699.98886	ug/l	100000	K	
Ca	44	45	3	20954.44062	209544.40616	ug/l	100000	Ca	
Ti	47	45	3	0.42313	4.23135	ug/l	2000	Ti	
V	51	45	2	0.08327	0.83272	ug/l	2000	V	
Cr	52	45	2	1.62914	16.29143	ug/l	2000	Cr	
Mn	55	72	2	29.37977	293.79770	ug/l	5000	Mn	
Fe	57	72	2	731.89714	7318.97138	ug/l	100000	Fe	
Co	59	72	2	0.03019	0.30193	ug/l	2000	Co	
Ni	60	72	2	1.29895	12.98947	ug/l	2000	Ni	
Cu	63	72	2	0.03859	0.38588	ug/l	2000	Cu	
Zn	66	72	2	2.36755	23.67554	ug/l	5000	Zn	
As	75	72	2	0.36968	3.69680	ug/l	2000	As	
Se	78	72	2	0.41432	4.14319	ug/l	1000	Se	
Sr	88	72	3	123.38821	1233.88210	ug/l	2000	Sr	
Y	89	72	2	0.00627	0.06268	ug/l	200	Y	
Zr	90	72	2	0.03333	0.33328	ug/l	2000	Zr	
Nb	93	72	2	0.03976	0.39763	ug/l	100	Nb	
Mo	95	72	3	5.27215	52.72152	ug/l	1000	Mo	
Ru	101	72	2	0.00016	0.00162	ug/l	200	Ru	
Rh	103	72	2	-0.00124	-0.01237	ug/l	200	Rh	
Pd	105	72	2	-0.00100	-0.01004	ug/l	20	Pd	
Ag	107	115	3	0.00009	0.00087	ug/l	400	Ag	
Cd	111	115	3	-0.00713	-0.07126	ug/l	2000	Cd	
Sn	118	115	3	-0.00988	-0.09880	ug/l	2000	Sn	
Sb	121	115	3	-0.01197	-0.11973	ug/l	1000	Sb	
Te	125	165	2	0.02214	0.22138	ug/l	200	Te	
Cs	133	165	2	0.00554	0.05542	ug/l	2000	Cs	
Ba	137	165	3	5.31674	53.16737	ug/l	5000	Ba	
La	139	165	2	0.00888	0.08880	ug/l	200	La	
Ce	140	165	2	0.01704	0.17035	ug/l	200	Ce	
Pr	141	165	2	0.00201	0.02006	ug/l	200	Pr	
Nd	146	165	2	0.00867	0.08672	ug/l	200	Nd	
Sm	147	165	3	0.00030	0.00302	ug/l	2000	Sm	
Hf	178	165	2	0.01903	0.19030	ug/l	200	Hf	
Ta	181	165	2	0.00564	0.05638	ug/l	200	Ta	
W	182	165	2	0.33440	3.34400	ug/l	2000	W	
Re	185	193	3	0.00806	0.08058	ug/l	200	Re	
Pt	195	193	2	0.00131	0.01311	ug/l	200	Pt	
Au	197	193	3	0.00105	0.01052	ug/l	2000	Au	
Tl	205	193	3	-0.02905	-0.29049	ug/l	400	Tl	
Pb	208	193	3	0.08609	0.86090	ug/l	5000	Pb	
Bi	209	193	2	0.01420	0.14202	ug/l	2000	Bi	
Th	232	193	3	0.01447	0.14475	ug/l	2000	Th	
U	238	193	3	0.01381	0.13814	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7261060	0.26	7411413	98.0	80	120	Li (IS)	
Sc (IS)	45	2	174847	1.52	143379	121.9	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3075569	0.60	2392712	128.5	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	402353	1.10	323154	124.5	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2471990	1.08	1861986	132.8	80	120	Ge (IS)	FAILED
In (IS)	115	3	15325409	1.25	12119833	126.4	80	120	In (IS)	FAILED
Ho (IS)	165	2	11174087	1.56	9598706	116.4	80	120	Ho (IS)	
Ho (IS)	165	3	17035131	1.42	13687738	124.5	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6871645	1.73	6085322	112.9	80	120	Ir (IS)	
Ir (IS)	193	3	8309747	0.79	6951639	119.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-3-B MS**
Data File Name	**030SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:59:57-06:00**
Type	**Sample**
VialNumber	**2112**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	71.80857	143.61715	ug/l	1000	Li	
Be	9	6	3	54.21664	108.43328	ug/l	1000	Be	
B	11	6	3	528.00860	1056.01721	ug/l	2000	B	
Na	23	45	2	54000.72730	108001.45460	ug/l	50000	Na	FAILED
Mg	24	45	2	19919.57734	39839.15469	ug/l	50000	Mg	
Al	27	45	2	4700.10504	9400.21007	ug/l	100000	Al	
P	31	45	2	659.17537	1318.35074	ug/l	100000	P	
K	39	45	2	8013.97640	16027.95280	ug/l	100000	K	
Ca	44	45	3	105248.36155	210496.72310	ug/l	100000	Ca	FAILED
Ti	47	45	3	489.64432	979.28865	ug/l	2000	Ti	
V	51	45	2	490.45213	980.90426	ug/l	2000	V	
Cr	52	45	2	497.66842	995.33683	ug/l	2000	Cr	
Mn	55	72	2	657.68038	1315.36077	ug/l	5000	Mn	
Fe	57	72	2	9032.67992	18065.35984	ug/l	100000	Fe	
Co	59	72	2	505.35482	1010.70964	ug/l	2000	Co	
Ni	60	72	2	547.28377	1094.56754	ug/l	2000	Ni	
Cu	63	72	2	496.90274	993.80549	ug/l	2000	Cu	
Zn	66	72	2	532.35594	1064.71188	ug/l	5000	Zn	
As	75	72	2	504.20636	1008.41273	ug/l	2000	As	
Se	78	72	2	238.67930	477.35860	ug/l	1000	Se	
Sr	88	72	3	1104.97383	2209.94766	ug/l	2000	Sr	
Y	89	72	2	0.02828	0.05656	ug/l	200	Y	
Zr	90	72	2	512.81352	1025.62704	ug/l	2000	Zr	
Nb	93	72	2	0.82859	1.65717	ug/l	100	Nb	
Mo	95	72	3	275.93983	551.87966	ug/l	1000	Mo	
Ru	101	72	2	-0.00466	-0.00932	ug/l	200	Ru	
Rh	103	72	2	0.01705	0.03409	ug/l	200	Rh	
Pd	105	72	2	0.05159	0.10318	ug/l	20	Pd	
Ag	107	115	3	93.23475	186.46949	ug/l	400	Ag	
Cd	111	115	3	487.66375	975.32750	ug/l	2000	Cd	
Sn	118	115	3	493.73128	987.46256	ug/l	2000	Sn	
Sb	121	115	3	248.68646	497.37292	ug/l	1000	Sb	
Te	125	165	2	0.08867	0.17735	ug/l	200	Te	
Cs	133	165	2	0.02868	0.05736	ug/l	2000	Cs	
Ba	137	165	3	497.90031	995.80062	ug/l	5000	Ba	
La	139	165	2	0.76237	1.52474	ug/l	200	La	
Ce	140	165	2	0.10553	0.21106	ug/l	200	Ce	
Pr	141	165	2	0.01041	0.02081	ug/l	200	Pr	
Nd	146	165	2	0.04361	0.08722	ug/l	200	Nd	
Sm	147	165	3	486.87740	973.75479	ug/l	2000	Sm	
Hf	178	165	2	0.34170	0.68340	ug/l	200	Hf	
Ta	181	165	2	0.56442	1.12884	ug/l	200	Ta	
W	182	165	2	509.66194	1019.32387	ug/l	2000	W	
Re	185	193	3	0.05416	0.10831	ug/l	200	Re	
Pt	195	193	2	0.00586	0.01172	ug/l	200	Pt	
Au	197	193	3	-0.00642	-0.01285	ug/l	2000	Au	
Tl	205	193	3	99.30458	198.60915	ug/l	400	Tl	
Pb	208	193	3	478.99578	957.99157	ug/l	5000	Pb	
Bi	209	193	2	469.75079	939.50158	ug/l	2000	Bi	
Th	232	193	3	487.04859	974.09718	ug/l	2000	Th	
U	238	193	3	499.49956	998.99913	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6397069	0.72	7411413	86.3	80	120	Li (IS)	
Sc (IS)	45	2	170141	1.09	143379	118.7	80	120	Sc (IS)	
Sc (IS)	45	3	3010990	1.97	2392712	125.8	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	381070	0.73	323154	117.9	80	120	Ge (IS)	
Ge (IS)	72	3	2349353	0.90	1861986	126.2	80	120	Ge (IS)	FAILED
In (IS)	115	3	14286280	1.16	12119833	117.9	80	120	In (IS)	
Ho (IS)	165	2	10682700	0.31	9598706	111.3	80	120	Ho (IS)	
Ho (IS)	165	3	17016287	1.53	13687738	124.3	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6555728	0.72	6085322	107.7	80	120	Ir (IS)	
Ir (IS)	193	3	8042965	1.00	6951639	115.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-3-C MSD**
Data File Name	**031SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T19:06:44-06:00**
Type	**Sample**
VialNumber	**2201**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	71.01919	142.03839	ug/l	1000	Li	
Be	9	6	3	53.24758	106.49517	ug/l	1000	Be	
B	11	6	3	530.50159	1061.00319	ug/l	2000	B	
Na	23	45	2	54358.01462	108716.02924	ug/l	50000	Na	FAILED
Mg	24	45	2	20006.42162	40012.84325	ug/l	50000	Mg	
Al	27	45	2	4671.98820	9343.97640	ug/l	100000	Al	
P	31	45	2	652.20942	1304.41885	ug/l	100000	P	
K	39	45	2	8114.68788	16229.37577	ug/l	100000	K	
Ca	44	45	3	104570.23844	209140.47688	ug/l	100000	Ca	FAILED
Ti	47	45	3	486.63774	973.27548	ug/l	2000	Ti	
V	51	45	2	493.93059	987.86118	ug/l	2000	V	
Cr	52	45	2	499.32832	998.65664	ug/l	2000	Cr	
Mn	55	72	2	655.42351	1310.84703	ug/l	5000	Mn	
Fe	57	72	2	8929.35823	17858.71646	ug/l	100000	Fe	
Co	59	72	2	506.20011	1012.40023	ug/l	2000	Co	
Ni	60	72	2	546.96759	1093.93519	ug/l	2000	Ni	
Cu	63	72	2	501.82914	1003.65829	ug/l	2000	Cu	
Zn	66	72	2	537.40299	1074.80597	ug/l	5000	Zn	
As	75	72	2	502.54140	1005.08281	ug/l	2000	As	
Se	78	72	2	238.30703	476.61406	ug/l	1000	Se	
Sr	88	72	3	1105.78777	2211.57554	ug/l	2000	Sr	
Y	89	72	2	0.02872	0.05743	ug/l	200	Y	
Zr	90	72	2	516.73103	1033.46207	ug/l	2000	Zr	
Nb	93	72	2	0.32910	0.65819	ug/l	100	Nb	
Mo	95	72	3	274.65960	549.31920	ug/l	1000	Mo	
Ru	101	72	2	-0.00558	-0.01115	ug/l	200	Ru	
Rh	103	72	2	0.01830	0.03661	ug/l	200	Rh	
Pd	105	72	2	0.05202	0.10403	ug/l	20	Pd	
Ag	107	115	3	92.28053	184.56105	ug/l	400	Ag	
Cd	111	115	3	484.58609	969.17219	ug/l	2000	Cd	
Sn	118	115	3	491.38664	982.77328	ug/l	2000	Sn	
Sb	121	115	3	245.14968	490.29936	ug/l	1000	Sb	
Te	125	165	2	0.08902	0.17804	ug/l	200	Te	
Cs	133	165	2	0.02767	0.05534	ug/l	2000	Cs	
Ba	137	165	3	498.39004	996.78009	ug/l	5000	Ba	
La	139	165	2	0.75710	1.51421	ug/l	200	La	
Ce	140	165	2	0.10141	0.20281	ug/l	200	Ce	
Pr	141	165	2	0.01056	0.02113	ug/l	200	Pr	
Nd	146	165	2	0.04140	0.08279	ug/l	200	Nd	
Sm	147	165	3	489.94203	979.88405	ug/l	2000	Sm	
Hf	178	165	2	0.12883	0.25766	ug/l	200	Hf	
Ta	181	165	2	0.43843	0.87685	ug/l	200	Ta	
W	182	165	2	509.76830	1019.53661	ug/l	2000	W	
Re	185	193	3	0.05415	0.10830	ug/l	200	Re	
Pt	195	193	2	0.00211	0.00422	ug/l	200	Pt	
Au	197	193	3	-0.01934	-0.03869	ug/l	2000	Au	
Tl	205	193	3	98.09231	196.18461	ug/l	400	Tl	
Pb	208	193	3	473.98515	947.97030	ug/l	5000	Pb	
Bi	209	193	2	463.80346	927.60691	ug/l	2000	Bi	
Th	232	193	3	483.44459	966.88918	ug/l	2000	Th	
U	238	193	3	489.00635	978.01271	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6301082	0.93	7411413	85.0	80	120	Li (IS)	
Sc (IS)	45	2	164615	0.77	143379	114.8	80	120	Sc (IS)	
Sc (IS)	45	3	2962095	0.91	2392712	123.8	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	368075	1.18	323154	113.9	80	120	Ge (IS)	
Ge (IS)	72	3	2326130	1.46	1861986	124.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	14260427	0.67	12119833	117.7	80	120	In (IS)	
Ho (IS)	165	2	10643878	0.73	9598706	110.9	80	120	Ho (IS)	
Ho (IS)	165	3	16841369	1.21	13687738	123.0	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6548643	0.40	6085322	107.6	80	120	Ir (IS)	
Ir (IS)	193	3	8142148	0.02	6951639	117.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-4-A**
Data File Name	**032SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T19:13:32-06:00**
Type	**Sample**
VialNumber	**2202**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	27.94357	55.88715	ug/l	1000	Li	
Be	9	6	3	0.00446	0.00892	ug/l	1000	Be	
B	11	6	3	242.07832	484.15663	ug/l	2000	B	
Na	23	45	2	61594.44138	123188.88276	ug/l	50000	Na	FAILED
Mg	24	45	2	14593.60157	29187.20313	ug/l	50000	Mg	
Al	27	45	2	11.61622	23.23243	ug/l	100000	Al	
P	31	45	2	16354.37470	32708.74940	ug/l	100000	P	
K	39	45	2	13247.74288	26495.48577	ug/l	100000	K	
Ca	44	45	3	92705.50866	185411.01733	ug/l	100000	Ca	
Ti	47	45	3	9.75885	19.51770	ug/l	2000	Ti	
V	51	45	2	1.36992	2.73983	ug/l	2000	V	
Cr	52	45	2	0.25388	0.50777	ug/l	2000	Cr	
Mn	55	72	2	1622.56940	3245.13880	ug/l	5000	Mn	
Fe	57	72	2	13971.29567	27942.59134	ug/l	100000	Fe	
Co	59	72	2	4.31713	8.63425	ug/l	2000	Co	
Ni	60	72	2	15.64559	31.29117	ug/l	2000	Ni	
Cu	63	72	2	3.60331	7.20661	ug/l	2000	Cu	
Zn	66	72	2	6.42210	12.84420	ug/l	5000	Zn	
As	75	72	2	46.13713	92.27427	ug/l	2000	As	
Se	78	72	2	1.60994	3.21989	ug/l	1000	Se	
Sr	88	72	3	333.40403	666.80806	ug/l	2000	Sr	
Y	89	72	2	0.03660	0.07320	ug/l	200	Y	
Zr	90	72	2	0.34619	0.69238	ug/l	2000	Zr	
Nb	93	72	2	-0.03754	-0.07507	ug/l	100	Nb	
Mo	95	72	3	0.64528	1.29055	ug/l	1000	Mo	
Ru	101	72	2	-0.00422	-0.00843	ug/l	200	Ru	
Rh	103	72	2	-0.00555	-0.01110	ug/l	200	Rh	
Pd	105	72	2	0.00935	0.01870	ug/l	20	Pd	
Ag	107	115	3	0.02124	0.04247	ug/l	400	Ag	
Cd	111	115	3	0.09195	0.18391	ug/l	2000	Cd	
Sn	118	115	3	0.32819	0.65638	ug/l	2000	Sn	
Sb	121	115	3	0.98787	1.97574	ug/l	1000	Sb	
Te	125	165	2	0.14492	0.28985	ug/l	200	Te	
Cs	133	165	2	0.00138	0.00275	ug/l	2000	Cs	
Ba	137	165	3	259.40412	518.80825	ug/l	5000	Ba	
La	139	165	2	0.01619	0.03237	ug/l	200	La	
Ce	140	165	2	0.02852	0.05705	ug/l	200	Ce	
Pr	141	165	2	-0.00065	-0.00130	ug/l	200	Pr	
Nd	146	165	2	0.01363	0.02727	ug/l	200	Nd	
Sm	147	165	3	0.02395	0.04790	ug/l	2000	Sm	
Hf	178	165	2	-0.00037	-0.00073	ug/l	200	Hf	
Ta	181	165	2	0.00670	0.01341	ug/l	200	Ta	
W	182	165	2	1.95528	3.91056	ug/l	2000	W	
Re	185	193	3	0.01064	0.02127	ug/l	200	Re	
Pt	195	193	2	0.00429	0.00857	ug/l	200	Pt	
Au	197	193	3	-0.03544	-0.07088	ug/l	2000	Au	
Tl	205	193	3	0.12062	0.24124	ug/l	400	Tl	
Pb	208	193	3	1.75164	3.50328	ug/l	5000	Pb	
Bi	209	193	2	0.13219	0.26438	ug/l	2000	Bi	
Th	232	193	3	0.16543	0.33086	ug/l	2000	Th	
U	238	193	3	0.05602	0.11204	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6446681	2.95	7411413	87.0	80	120	Li (IS)	
Sc (IS)	45	2	139760	4.50	143379	97.5	80	120	Sc (IS)	
Sc (IS)	45	3	2912387	3.12	2392712	121.7	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	326915	3.71	323154	101.2	80	120	Ge (IS)	
Ge (IS)	72	3	2270636	3.12	1861986	121.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	14223566	5.01	12119833	117.4	80	120	In (IS)	
Ho (IS)	165	2	9471790	4.60	9598706	98.7	80	120	Ho (IS)	
Ho (IS)	165	3	16575085	3.64	13687738	121.1	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	5926783	3.71	6085322	97.4	80	120	Ir (IS)	
Ir (IS)	193	3	7952722	3.63	6951639	114.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-5-A**
Data File Name	**033SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T19:20:15-06:00**
Type	**Sample**
VialNumber	**2203**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	26.62513	53.25025	ug/l	1000	Li	
Be	9	6	3	-0.00902	-0.01804	ug/l	1000	Be	
B	11	6	3	209.00478	418.00955	ug/l	2000	B	
Na	23	45	2	49970.40055	99940.80111	ug/l	50000	Na	
Mg	24	45	2	25451.51010	50903.02019	ug/l	50000	Mg	
Al	27	45	2	8.95469	17.90938	ug/l	100000	Al	
P	31	45	2	2243.46517	4486.93033	ug/l	100000	P	
K	39	45	2	5276.19668	10552.39335	ug/l	100000	K	
Ca	44	45	3	99761.76926	199523.53851	ug/l	100000	Ca	
Ti	47	45	3	2.18311	4.36622	ug/l	2000	Ti	
V	51	45	2	0.21489	0.42978	ug/l	2000	V	
Cr	52	45	2	0.07888	0.15775	ug/l	2000	Cr	
Mn	55	72	2	1547.67560	3095.35121	ug/l	5000	Mn	
Fe	57	72	2	26912.91810	53825.83620	ug/l	100000	Fe	
Co	59	72	2	0.49580	0.99161	ug/l	2000	Co	
Ni	60	72	2	0.92277	1.84554	ug/l	2000	Ni	
Cu	63	72	2	0.47084	0.94169	ug/l	2000	Cu	
Zn	66	72	2	2.24561	4.49121	ug/l	5000	Zn	
As	75	72	2	72.09873	144.19745	ug/l	2000	As	
Se	78	72	2	0.50544	1.01087	ug/l	1000	Se	
Sr	88	72	3	855.98269	1711.96538	ug/l	2000	Sr	
Y	89	72	2	0.05750	0.11500	ug/l	200	Y	
Zr	90	72	2	0.23901	0.47802	ug/l	2000	Zr	
Nb	93	72	2	-0.08800	-0.17601	ug/l	100	Nb	
Mo	95	72	3	0.30898	0.61796	ug/l	1000	Mo	
Ru	101	72	2	-0.00055	-0.00110	ug/l	200	Ru	
Rh	103	72	2	-0.00431	-0.00862	ug/l	200	Rh	
Pd	105	72	2	0.03107	0.06215	ug/l	20	Pd	
Ag	107	115	3	0.00901	0.01802	ug/l	400	Ag	
Cd	111	115	3	0.01522	0.03045	ug/l	2000	Cd	
Sn	118	115	3	0.16474	0.32947	ug/l	2000	Sn	
Sb	121	115	3	0.03802	0.07605	ug/l	1000	Sb	
Te	125	165	2	0.03455	0.06910	ug/l	200	Te	
Cs	133	165	2	-0.00184	-0.00367	ug/l	2000	Cs	
Ba	137	165	3	325.66575	651.33151	ug/l	5000	Ba	
La	139	165	2	0.00861	0.01722	ug/l	200	La	
Ce	140	165	2	0.02570	0.05141	ug/l	200	Ce	
Pr	141	165	2	-0.00043	-0.00086	ug/l	200	Pr	
Nd	146	165	2	0.01282	0.02563	ug/l	200	Nd	
Sm	147	165	3	0.00648	0.01295	ug/l	2000	Sm	
Hf	178	165	2	-0.00383	-0.00767	ug/l	200	Hf	
Ta	181	165	2	-0.01054	-0.02108	ug/l	200	Ta	
W	182	165	2	0.79818	1.59637	ug/l	2000	W	
Re	185	193	3	0.00472	0.00945	ug/l	200	Re	
Pt	195	193	2	0.00220	0.00440	ug/l	200	Pt	
Au	197	193	3	-0.03615	-0.07231	ug/l	2000	Au	
Tl	205	193	3	0.02544	0.05087	ug/l	400	Tl	
Pb	208	193	3	0.14549	0.29098	ug/l	5000	Pb	
Bi	209	193	2	0.03233	0.06466	ug/l	2000	Bi	
Th	232	193	3	0.06181	0.12363	ug/l	2000	Th	
U	238	193	3	0.03849	0.07698	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6234356	0.59	7411413	84.1	80	120	Li (IS)	
Sc (IS)	45	2	154803	3.63	143379	108.0	80	120	Sc (IS)	
Sc (IS)	45	3	2787097	1.60	2392712	116.5	80	120	Sc (IS)	
Ge (IS)	72	2	351994	3.01	323154	108.9	80	120	Ge (IS)	
Ge (IS)	72	3	2190578	0.13	1861986	117.6	80	120	Ge (IS)	
In (IS)	115	3	13467203	0.17	12119833	111.1	80	120	In (IS)	
Ho (IS)	165	2	10407938	4.99	9598706	108.4	80	120	Ho (IS)	
Ho (IS)	165	3	15738514	0.91	13687738	115.0	80	120	Ho (IS)	
Ir (IS)	193	2	6439697	4.15	6085322	105.8	80	120	Ir (IS)	
Ir (IS)	193	3	7697000	1.30	6951639	110.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-6-A**
Data File Name	**034SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T19:26:57-06:00**
Type	**Sample**
VialNumber	**2204**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	21.59949	43.19898	ug/l	1000	Li	
Be	9	6	3	-0.01510	-0.03019	ug/l	1000	Be	
B	11	6	3	99.10911	198.21823	ug/l	2000	B	
Na	23	45	2	64198.03460	128396.06920	ug/l	50000	Na	FAILED
Mg	24	45	2	8439.35302	16878.70604	ug/l	50000	Mg	
Al	27	45	2	6.31187	12.62375	ug/l	100000	Al	
P	31	45	2	57.21157	114.42313	ug/l	100000	P	
K	39	45	2	3678.66987	7357.33974	ug/l	100000	K	
Ca	44	45	3	56118.49877	112236.99755	ug/l	100000	Ca	
Ti	47	45	3	0.59316	1.18632	ug/l	2000	Ti	
V	51	45	2	0.19812	0.39625	ug/l	2000	V	
Cr	52	45	2	0.16636	0.33273	ug/l	2000	Cr	
Mn	55	72	2	119.47567	238.95134	ug/l	5000	Mn	
Fe	57	72	2	359.35453	718.70907	ug/l	100000	Fe	
Co	59	72	2	0.20793	0.41587	ug/l	2000	Co	
Ni	60	72	2	0.86649	1.73297	ug/l	2000	Ni	
Cu	63	72	2	0.42371	0.84742	ug/l	2000	Cu	
Zn	66	72	2	2.82878	5.65757	ug/l	5000	Zn	
As	75	72	2	3.13372	6.26744	ug/l	2000	As	
Se	78	72	2	0.26738	0.53477	ug/l	1000	Se	
Sr	88	72	3	344.00274	688.00548	ug/l	2000	Sr	
Y	89	72	2	0.01398	0.02795	ug/l	200	Y	
Zr	90	72	2	0.04213	0.08426	ug/l	2000	Zr	
Nb	93	72	2	-0.10242	-0.20484	ug/l	100	Nb	
Mo	95	72	3	22.99985	45.99970	ug/l	1000	Mo	
Ru	101	72	2	-0.00544	-0.01087	ug/l	200	Ru	
Rh	103	72	2	-0.00604	-0.01208	ug/l	200	Rh	
Pd	105	72	2	0.00427	0.00855	ug/l	20	Pd	
Ag	107	115	3	0.00591	0.01182	ug/l	400	Ag	
Cd	111	115	3	0.00586	0.01172	ug/l	2000	Cd	
Sn	118	115	3	0.15524	0.31049	ug/l	2000	Sn	
Sb	121	115	3	0.03699	0.07398	ug/l	1000	Sb	
Te	125	165	2	0.00987	0.01973	ug/l	200	Te	
Cs	133	165	2	-0.00147	-0.00295	ug/l	2000	Cs	
Ba	137	165	3	73.05397	146.10795	ug/l	5000	Ba	
La	139	165	2	0.00549	0.01099	ug/l	200	La	
Ce	140	165	2	0.01643	0.03287	ug/l	200	Ce	
Pr	141	165	2	-0.00128	-0.00257	ug/l	200	Pr	
Nd	146	165	2	0.00863	0.01727	ug/l	200	Nd	
Sm	147	165	3	-0.00148	-0.00296	ug/l	2000	Sm	
Hf	178	165	2	-0.00459	-0.00918	ug/l	200	Hf	
Ta	181	165	2	-0.00754	-0.01507	ug/l	200	Ta	
W	182	165	2	0.46505	0.93010	ug/l	2000	W	
Re	185	193	3	0.00891	0.01783	ug/l	200	Re	
Pt	195	193	2	0.00243	0.00487	ug/l	200	Pt	
Au	197	193	3	-0.03933	-0.07866	ug/l	2000	Au	
Tl	205	193	3	-0.00138	-0.00277	ug/l	400	Tl	
Pb	208	193	3	0.11266	0.22531	ug/l	5000	Pb	
Bi	209	193	2	0.01948	0.03895	ug/l	2000	Bi	
Th	232	193	3	0.02064	0.04128	ug/l	2000	Th	
U	238	193	3	1.59658	3.19317	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6362011	1.08	7411413	85.8	80	120	Li (IS)	
Sc (IS)	45	2	158483	0.67	143379	110.5	80	120	Sc (IS)	
Sc (IS)	45	3	2878979	1.19	2392712	120.3	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	367903	0.31	323154	113.8	80	120	Ge (IS)	
Ge (IS)	72	3	2299857	0.97	1861986	123.5	80	120	Ge (IS)	FAILED
In (IS)	115	3	14073467	0.39	12119833	116.1	80	120	In (IS)	
Ho (IS)	165	2	10433983	0.44	9598706	108.7	80	120	Ho (IS)	
Ho (IS)	165	3	16159042	0.69	13687738	118.1	80	120	Ho (IS)	
Ir (IS)	193	2	6385457	1.88	6085322	104.9	80	120	Ir (IS)	
Ir (IS)	193	3	7765528	1.16	6951639	111.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-7-A**
Data File Name	**035SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T19:33:46-06:00**
Type	**Sample**
VialNumber	**2205**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.59018	1.18037	ug/l	1000	Li	
Be	9	6	3	-0.01500	-0.03000	ug/l	1000	Be	
B	11	6	3	5.92822	11.85644	ug/l	2000	B	
Na	23	45	2	20.78891	41.57781	ug/l	50000	Na	
Mg	24	45	2	1.77592	3.55184	ug/l	50000	Mg	
Al	27	45	2	11.81972	23.63944	ug/l	100000	Al	
P	31	45	2	9.59338	19.18677	ug/l	100000	P	
K	39	45	2	7.77595	15.55191	ug/l	100000	K	
Ca	44	45	3	18.27747	36.55494	ug/l	100000	Ca	
Ti	47	45	3	0.19766	0.39532	ug/l	2000	Ti	
V	51	45	2	0.13786	0.27571	ug/l	2000	V	
Cr	52	45	2	0.06020	0.12040	ug/l	2000	Cr	
Mn	55	72	2	0.71632	1.43264	ug/l	5000	Mn	
Fe	57	72	2	5.06595	10.13189	ug/l	100000	Fe	
Co	59	72	2	-0.00257	-0.00514	ug/l	2000	Co	
Ni	60	72	2	0.03984	0.07967	ug/l	2000	Ni	
Cu	63	72	2	0.50503	1.01006	ug/l	2000	Cu	
Zn	66	72	2	1.15433	2.30866	ug/l	5000	Zn	
As	75	72	2	0.03947	0.07894	ug/l	2000	As	
Se	78	72	2	0.31027	0.62054	ug/l	1000	Se	
Sr	88	72	3	0.08478	0.16955	ug/l	2000	Sr	
Y	89	72	2	-0.00216	-0.00433	ug/l	200	Y	
Zr	90	72	2	0.00584	0.01169	ug/l	2000	Zr	
Nb	93	72	2	-0.11128	-0.22256	ug/l	100	Nb	
Mo	95	72	3	0.02531	0.05062	ug/l	1000	Mo	
Ru	101	72	2	-0.00483	-0.00967	ug/l	200	Ru	
Rh	103	72	2	-0.00527	-0.01053	ug/l	200	Rh	
Pd	105	72	2	-0.01102	-0.02203	ug/l	20	Pd	
Ag	107	115	3	0.00533	0.01066	ug/l	400	Ag	
Cd	111	115	3	-0.00436	-0.00871	ug/l	2000	Cd	
Sn	118	115	3	0.15844	0.31688	ug/l	2000	Sn	
Sb	121	115	3	-0.01618	-0.03236	ug/l	1000	Sb	
Te	125	165	2	-0.00584	-0.01167	ug/l	200	Te	
Cs	133	165	2	-0.00158	-0.00317	ug/l	2000	Cs	
Ba	137	165	3	0.11039	0.22079	ug/l	5000	Ba	
La	139	165	2	-0.00268	-0.00536	ug/l	200	La	
Ce	140	165	2	-0.00078	-0.00155	ug/l	200	Ce	
Pr	141	165	2	-0.00253	-0.00505	ug/l	200	Pr	
Nd	146	165	2	-0.00049	-0.00098	ug/l	200	Nd	
Sm	147	165	3	-0.00309	-0.00617	ug/l	2000	Sm	
Hf	178	165	2	-0.00602	-0.01205	ug/l	200	Hf	
Ta	181	165	2	-0.00482	-0.00964	ug/l	200	Ta	
W	182	165	2	0.41188	0.82376	ug/l	2000	W	
Re	185	193	3	-0.00251	-0.00503	ug/l	200	Re	
Pt	195	193	2	0.00366	0.00733	ug/l	200	Pt	
Au	197	193	3	-0.03793	-0.07586	ug/l	2000	Au	
Tl	205	193	3	-0.01917	-0.03835	ug/l	400	Tl	
Pb	208	193	3	0.10930	0.21859	ug/l	5000	Pb	
Bi	209	193	2	0.02101	0.04203	ug/l	2000	Bi	
Th	232	193	3	0.00440	0.00880	ug/l	2000	Th	
U	238	193	3	0.06032	0.12063	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6552353	0.07	7411413	88.4	80	120	Li (IS)	
Sc (IS)	45	2	159766	0.81	143379	111.4	80	120	Sc (IS)	
Sc (IS)	45	3	2891795	0.58	2392712	120.9	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	374354	0.59	323154	115.8	80	120	Ge (IS)	
Ge (IS)	72	3	2361717	0.89	1861986	126.8	80	120	Ge (IS)	FAILED
In (IS)	115	3	14738818	0.82	12119833	121.6	80	120	In (IS)	FAILED
Ho (IS)	165	2	10502095	1.03	9598706	109.4	80	120	Ho (IS)	
Ho (IS)	165	3	16587773	1.65	13687738	121.2	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6704406	2.41	6085322	110.2	80	120	Ir (IS)	
Ir (IS)	193	3	8241581	1.46	6951639	118.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**MB 160-452721/1-A**
Data File Name	**036SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T19:40:29-06:00**
Type	**Sample**
VialNumber	**2206**
Dilution	**2**
Comment	**452721**
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.51320	1.02641	ug/l	1000	Li	
Be	9	6	3	-0.01487	-0.02974	ug/l	1000	Be	
B	11	6	3	3.70266	7.40531	ug/l	2000	B	
Na	23	45	2	20.12390	40.24779	ug/l	50000	Na	
Mg	24	45	2	1.08469	2.16938	ug/l	50000	Mg	
Al	27	45	2	4.71429	9.42857	ug/l	100000	Al	
P	31	45	2	10.84513	21.69025	ug/l	100000	P	
K	39	45	2	3.83337	7.66674	ug/l	100000	K	
Ca	44	45	3	43.12881	86.25762	ug/l	100000	Ca	
Ti	47	45	3	0.16902	0.33804	ug/l	2000	Ti	
V	51	45	2	0.03840	0.07679	ug/l	2000	V	
Cr	52	45	2	0.06204	0.12409	ug/l	2000	Cr	
Mn	55	72	2	0.09131	0.18261	ug/l	5000	Mn	
Fe	57	72	2	1.33549	2.67097	ug/l	100000	Fe	
Co	59	72	2	-0.00173	-0.00345	ug/l	2000	Co	
Ni	60	72	2	0.00429	0.00859	ug/l	2000	Ni	
Cu	63	72	2	0.13633	0.27267	ug/l	2000	Cu	
Zn	66	72	2	1.69338	3.38675	ug/l	5000	Zn	
As	75	72	2	0.00554	0.01109	ug/l	2000	As	
Se	78	72	2	0.35574	0.71148	ug/l	1000	Se	
Sr	88	72	3	0.05034	0.10067	ug/l	2000	Sr	
Y	89	72	2	-0.00267	-0.00533	ug/l	200	Y	
Zr	90	72	2	-0.00029	-0.00058	ug/l	2000	Zr	
Nb	93	72	2	-0.11260	-0.22519	ug/l	100	Nb	
Mo	95	72	3	0.01214	0.02427	ug/l	1000	Mo	
Ru	101	72	2	-0.00566	-0.01131	ug/l	200	Ru	
Rh	103	72	2	-0.00557	-0.01115	ug/l	200	Rh	
Pd	105	72	2	-0.00883	-0.01765	ug/l	20	Pd	
Ag	107	115	3	0.00401	0.00802	ug/l	400	Ag	
Cd	111	115	3	-0.00280	-0.00561	ug/l	2000	Cd	
Sn	118	115	3	0.10521	0.21041	ug/l	2000	Sn	
Sb	121	115	3	-0.02110	-0.04221	ug/l	1000	Sb	
Te	125	165	2	-0.00568	-0.01136	ug/l	200	Te	
Cs	133	165	2	-0.00229	-0.00458	ug/l	2000	Cs	
Ba	137	165	3	0.02523	0.05046	ug/l	5000	Ba	
La	139	165	2	-0.00378	-0.00755	ug/l	200	La	
Ce	140	165	2	-0.00018	-0.00035	ug/l	200	Ce	
Pr	141	165	2	-0.00330	-0.00661	ug/l	200	Pr	
Nd	146	165	2	-0.00245	-0.00491	ug/l	200	Nd	
Sm	147	165	3	-0.00305	-0.00610	ug/l	2000	Sm	
Hf	178	165	2	-0.00649	-0.01297	ug/l	200	Hf	
Ta	181	165	2	-0.01186	-0.02371	ug/l	200	Ta	
W	182	165	2	0.46114	0.92229	ug/l	2000	W	
Re	185	193	3	-0.00292	-0.00584	ug/l	200	Re	
Pt	195	193	2	0.00398	0.00797	ug/l	200	Pt	
Au	197	193	3	-0.03927	-0.07855	ug/l	2000	Au	
Tl	205	193	3	-0.02837	-0.05673	ug/l	400	Tl	
Pb	208	193	3	0.08120	0.16240	ug/l	5000	Pb	
Bi	209	193	2	0.01569	0.03137	ug/l	2000	Bi	
Th	232	193	3	0.00499	0.00999	ug/l	2000	Th	
U	238	193	3	-0.00283	-0.00566	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6251361	4.50	7411413	84.3	80	120	Li (IS)	
Sc (IS)	45	2	154030	1.63	143379	107.4	80	120	Sc (IS)	
Sc (IS)	45	3	2754564	6.12	2392712	115.1	80	120	Sc (IS)	
Ge (IS)	72	2	361944	1.66	323154	112.0	80	120	Ge (IS)	
Ge (IS)	72	3	2266668	3.71	1861986	121.7	80	120	Ge (IS)	FAILED
In (IS)	115	3	14067558	6.36	12119833	116.1	80	120	In (IS)	
Ho (IS)	165	2	10323931	1.80	9598706	107.6	80	120	Ho (IS)	
Ho (IS)	165	3	16083073	6.04	13687738	117.5	80	120	Ho (IS)	
Ir (IS)	193	2	6668987	1.19	6085322	109.6	80	120	Ir (IS)	
Ir (IS)	193	3	8006125	6.90	6951639	115.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCS 160-452721/2-A**
Data File Name	**037SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T19:47:12-06:00**
Type	**Sample**
VialNumber	**2207**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	51.62695	103.25390	ug/l	1000	Li	
Be	9	6	3	51.79937	103.59875	ug/l	1000	Be	
B	11	6	3	109.57528	219.15056	ug/l	2000	B	
Na	23	45	2	5181.20191	10362.40382	ug/l	50000	Na	
Mg	24	45	2	5047.04813	10094.09626	ug/l	50000	Mg	
Al	27	45	2	4837.23533	9674.47065	ug/l	100000	Al	
P	31	45	2	463.32413	926.64825	ug/l	100000	P	
K	39	45	2	4869.17781	9738.35563	ug/l	100000	K	
Ca	44	45	3	5097.12144	10194.24288	ug/l	100000	Ca	
Ti	47	45	3	504.34539	1008.69079	ug/l	2000	Ti	
V	51	45	2	491.37116	982.74232	ug/l	2000	V	
Cr	52	45	2	502.49539	1004.99078	ug/l	2000	Cr	
Mn	55	72	2	500.40906	1000.81811	ug/l	5000	Mn	
Fe	57	72	2	5138.29471	10276.58942	ug/l	100000	Fe	
Co	59	72	2	517.64797	1035.29594	ug/l	2000	Co	
Ni	60	72	2	558.13963	1116.27926	ug/l	2000	Ni	
Cu	63	72	2	519.99108	1039.98216	ug/l	2000	Cu	
Zn	66	72	2	500.78774	1001.57548	ug/l	5000	Zn	
As	75	72	2	473.68499	947.36998	ug/l	2000	As	
Se	78	72	2	224.12001	448.24002	ug/l	1000	Se	
Sr	88	72	3	493.42315	986.84629	ug/l	2000	Sr	
Y	89	72	2	0.00007	0.00014	ug/l	200	Y	
Zr	90	72	2	511.23079	1022.46159	ug/l	2000	Zr	
Nb	93	72	2	0.18672	0.37344	ug/l	100	Nb	
Mo	95	72	3	242.28729	484.57459	ug/l	1000	Mo	
Ru	101	72	2	-0.00619	-0.01238	ug/l	200	Ru	
Rh	103	72	2	0.01746	0.03493	ug/l	200	Rh	
Pd	105	72	2	0.02633	0.05266	ug/l	20	Pd	
Ag	107	115	3	96.19011	192.38022	ug/l	400	Ag	
Cd	111	115	3	492.10949	984.21899	ug/l	2000	Cd	
Sn	118	115	3	485.97154	971.94308	ug/l	2000	Sn	
Sb	121	115	3	243.66632	487.33265	ug/l	1000	Sb	
Te	125	165	2	0.03644	0.07287	ug/l	200	Te	
Cs	133	165	2	-0.00262	-0.00525	ug/l	2000	Cs	
Ba	137	165	3	475.37419	950.74837	ug/l	5000	Ba	
La	139	165	2	0.71239	1.42478	ug/l	200	La	
Ce	140	165	2	0.01654	0.03307	ug/l	200	Ce	
Pr	141	165	2	0.00053	0.00105	ug/l	200	Pr	
Nd	146	165	2	0.00660	0.01320	ug/l	200	Nd	
Sm	147	165	3	491.19895	982.39791	ug/l	2000	Sm	
Hf	178	165	2	0.09351	0.18702	ug/l	200	Hf	
Ta	181	165	2	0.41355	0.82710	ug/l	200	Ta	
W	182	165	2	507.13747	1014.27493	ug/l	2000	W	
Re	185	193	3	0.00673	0.01347	ug/l	200	Re	
Pt	195	193	2	0.00582	0.01164	ug/l	200	Pt	
Au	197	193	3	-0.03617	-0.07234	ug/l	2000	Au	
Tl	205	193	3	100.77156	201.54311	ug/l	400	Tl	
Pb	208	193	3	490.82149	981.64297	ug/l	5000	Pb	
Bi	209	193	2	475.93176	951.86351	ug/l	2000	Bi	
Th	232	193	3	487.88031	975.76063	ug/l	2000	Th	
U	238	193	3	491.76817	983.53633	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6065710	1.05	7411413	81.8	80	120	Li (IS)	
Sc (IS)	45	2	151702	9.40	143379	105.8	80	120	Sc (IS)	
Sc (IS)	45	3	2698906	0.39	2392712	112.8	80	120	Sc (IS)	
Ge (IS)	72	2	347647	8.08	323154	107.6	80	120	Ge (IS)	
Ge (IS)	72	3	2262111	0.47	1861986	121.5	80	120	Ge (IS)	FAILED
In (IS)	115	3	13986912	0.42	12119833	115.4	80	120	In (IS)	
Ho (IS)	165	2	10334151	10.39	9598706	107.7	80	120	Ho (IS)	
Ho (IS)	165	3	16517652	0.87	13687738	120.7	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6459283	9.40	6085322	106.1	80	120	Ir (IS)	
Ir (IS)	193	3	8105532	1.78	6951639	116.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36400-A-7-B**
Data File Name	**038SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T19:53:55-06:00**
Type	**Sample**
VialNumber	**2208**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	3.28027	6.56055	ug/l	1000	Li	
Be	9	6	3	-0.00018	-0.00036	ug/l	1000	Be	
B	11	6	3	8.46457	16.92913	ug/l	2000	B	
Na	23	45	2	25522.96876	51045.93751	ug/l	50000	Na	
Mg	24	45	2	8524.55423	17049.10847	ug/l	50000	Mg	
Al	27	45	2	513.27756	1026.55513	ug/l	100000	Al	
P	31	45	2	31.64448	63.28896	ug/l	100000	P	
K	39	45	2	2753.55798	5507.11596	ug/l	100000	K	
Ca	44	45	3	24378.06075	48756.12151	ug/l	100000	Ca	
Ti	47	45	3	45.60191	91.20382	ug/l	2000	Ti	
V	51	45	2	9.65816	19.31631	ug/l	2000	V	
Cr	52	45	2	12.09271	24.18541	ug/l	2000	Cr	
Mn	55	72	2	21.75254	43.50508	ug/l	5000	Mn	
Fe	57	72	2	747.90691	1495.81381	ug/l	100000	Fe	
Co	59	72	2	0.28560	0.57120	ug/l	2000	Co	
Ni	60	72	2	1.59480	3.18961	ug/l	2000	Ni	
Cu	63	72	2	0.91876	1.83752	ug/l	2000	Cu	
Zn	66	72	2	15.78709	31.57417	ug/l	5000	Zn	
As	75	72	2	1.36505	2.73010	ug/l	2000	As	
Se	78	72	2	2.10035	4.20070	ug/l	1000	Se	
Sr	88	72	3	112.64864	225.29728	ug/l	2000	Sr	
Y	89	72	2	0.23183	0.46365	ug/l	200	Y	
Zr	90	72	2	0.65438	1.30877	ug/l	2000	Zr	
Nb	93	72	2	-0.05160	-0.10321	ug/l	100	Nb	
Mo	95	72	3	2.91509	5.83019	ug/l	1000	Mo	
Ru	101	72	2	-0.00650	-0.01300	ug/l	200	Ru	
Rh	103	72	2	-0.00702	-0.01404	ug/l	200	Rh	
Pd	105	72	2	-0.00218	-0.00436	ug/l	20	Pd	
Ag	107	115	3	0.01936	0.03872	ug/l	400	Ag	
Cd	111	115	3	0.03735	0.07470	ug/l	2000	Cd	
Sn	118	115	3	0.25504	0.51009	ug/l	2000	Sn	
Sb	121	115	3	0.07349	0.14698	ug/l	1000	Sb	
Te	125	165	2	-0.01324	-0.02649	ug/l	200	Te	
Cs	133	165	2	0.01429	0.02858	ug/l	2000	Cs	
Ba	137	165	3	31.92516	63.85033	ug/l	5000	Ba	
La	139	165	2	0.25988	0.51976	ug/l	200	La	
Ce	140	165	2	0.56725	1.13450	ug/l	200	Ce	
Pr	141	165	2	0.06398	0.12796	ug/l	200	Pr	
Nd	146	165	2	0.28517	0.57035	ug/l	200	Nd	
Sm	147	165	3	0.06794	0.13588	ug/l	2000	Sm	
Hf	178	165	2	0.01025	0.02050	ug/l	200	Hf	
Ta	181	165	2	-0.01173	-0.02346	ug/l	200	Ta	
W	182	165	2	1.12403	2.24806	ug/l	2000	W	
Re	185	193	3	0.00063	0.00127	ug/l	200	Re	
Pt	195	193	2	0.00410	0.00820	ug/l	200	Pt	
Au	197	193	3	-0.04214	-0.08428	ug/l	2000	Au	
Tl	205	193	3	0.11255	0.22511	ug/l	400	Tl	
Pb	208	193	3	0.45116	0.90232	ug/l	5000	Pb	
Bi	209	193	2	0.06327	0.12655	ug/l	2000	Bi	
Th	232	193	3	0.21951	0.43901	ug/l	2000	Th	
U	238	193	3	0.86201	1.72402	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5934054	0.46	7411413	80.1	80	120	Li (IS)	
Sc (IS)	45	2	147790	0.83	143379	103.1	80	120	Sc (IS)	
Sc (IS)	45	3	2790329	0.72	2392712	116.6	80	120	Sc (IS)	
Ge (IS)	72	2	348930	0.68	323154	108.0	80	120	Ge (IS)	
Ge (IS)	72	3	2263523	0.92	1861986	121.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	13905010	0.45	12119833	114.7	80	120	In (IS)	
Ho (IS)	165	2	10232236	0.50	9598706	106.6	80	120	Ho (IS)	
Ho (IS)	165	3	16290569	0.62	13687738	119.0	80	120	Ho (IS)	
Ir (IS)	193	2	6484187	1.16	6085322	106.6	80	120	Ir (IS)	
Ir (IS)	193	3	7862719	0.35	6951639	113.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**039LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:00:38-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	5.66261	ug/l	5	113.3	80	120	Li	
Be	9	6	3	0.55822	ug/l	0.5	111.6	80	120	Be	
B	11	6	3	108.14286	ug/l	100	108.1	80	120	B	
Na	23	45	2	110.42619	ug/l	100	110.4	80	120	Na	
Mg	24	45	2	50.49601	ug/l	50	101.0	80	120	Mg	
Al	27	45	2	48.57076	ug/l	50	97.1	80	120	Al	
P	31	45	2	96.91312	ug/l	100	96.9	80	120	P	
K	39	45	2	99.47624	ug/l	100	99.5	80	120	K	
Ca	44	45	3	200.17354	ug/l	200	100.1	80	120	Ca	
Ti	47	45	3	5.07502	ug/l	5	101.5	80	120	Ti	
V	51	45	2	9.88816	ug/l	10	98.9	80	120	V	
Cr	52	45	2	9.97997	ug/l	10	99.8	80	120	Cr	
Mn	55	72	2	4.06162	ug/l	4	101.5	80	120	Mn	
Fe	57	72	2	51.02305	ug/l	50	102.0	80	120	Fe	
Co	59	72	2	2.04577	ug/l	2	102.3	80	120	Co	
Ni	60	72	2	5.60148	ug/l	5	112.0	80	120	Ni	
Cu	63	72	2	3.01121	ug/l	3	100.4	80	120	Cu	
Zn	66	72	2	21.64181	ug/l	20	108.2	80	120	Zn	
As	75	72	2	10.37248	ug/l	10	103.7	80	120	As	
Se	78	72	2	5.14153	ug/l	5	102.8	80	120	Se	
Sr	88	72	3	4.86726	ug/l	5	97.3	80	120	Sr	
Y	89	72	2	4.81673	ug/l	5	96.3	80	120	Y	
Zr	90	72	2	5.00077	ug/l	5	100.0	80	120	Zr	
Nb	93	72	2	18.76494	ug/l	25	75.1	80	120	Nb	FAILED
Mo	95	72	3	4.64574	ug/l	5	92.9	80	120	Mo	
Ru	101	72	2	10.37522	ug/l	10	103.8	80	120	Ru	
Rh	103	72	2	10.02783	ug/l	10	100.3	80	120	Rh	
Pd	105	72	2	0.56340	ug/l	0.5	112.7	80	120	Pd	
Ag	107	115	3	1.86101	ug/l	2	93.1	80	120	Ag	
Cd	111	115	3	0.49972	ug/l	0.5	99.9	80	120	Cd	
Sn	118	115	3	1.85552	ug/l	2	92.8	80	120	Sn	
Sb	121	115	3	4.60644	ug/l	5	92.1	80	120	Sb	
Te	125	165	2	9.16440	ug/l	10	91.6	80	120	Te	
Cs	133	165	2	0.89131	ug/l	1	89.1	80	120	Cs	
Ba	137	165	3	1.88202	ug/l	2	94.1	80	120	Ba	
La	139	165	2	1.82193	ug/l	2	91.1	80	120	La	
Ce	140	165	2	9.07605	ug/l	10	90.8	80	120	Ce	
Pr	141	165	2	1.85499	ug/l	2	92.7	80	120	Pr	
Nd	146	165	2	1.86655	ug/l	2	93.3	80	120	Nd	
Sm	147	165	3	9.21247	ug/l	10	92.1	80	120	Sm	
Hf	178	165	2	8.64563	ug/l	10	86.5	80	120	Hf	
Ta	181	165	2	7.46754	ug/l	10	74.7	80	120	Ta	FAILED
W	182	165	2	4.85468	ug/l	5	97.1	80	120	W	
Re	185	193	3	9.12014	ug/l	10	91.2	80	120	Re	
Pt	195	193	2	1.01331	ug/l	1	101.3	80	120	Pt	
Au	197	193	3	4.43740	ug/l	5	88.7	80	120	Au	
Tl	205	193	3	1.84863	ug/l	2	92.4	80	120	Tl	
Pb	208	193	3	2.78571	ug/l	3	92.9	80	120	Pb	
Bi	209	193	2	17.58531	ug/l	20	87.9	80	120	Bi	
Th	232	193	3	1.77762	ug/l	2	88.9	80	120	Th	
U	238	193	3	0.88831	ug/l	1	88.8	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6460645	0.33	7411413	87.2	80	120	Li (IS)	
Sc (IS)	45	2	158522	1.07	143379	110.6	80	120	Sc (IS)	
Sc (IS)	45	3	2831749	0.49	2392712	118.3	80	120	Sc (IS)	
Ge (IS)	72	2	371410	0.93	323154	114.9	80	120	Ge (IS)	
Ge (IS)	72	3	2314201	0.17	1861986	124.3	80	120	Ge (IS)	FAILED
In (IS)	115	3	14698856	0.34	12119833	121.3	80	120	In (IS)	FAILED
Ho (IS)	165	2	10609600	0.68	9598706	110.5	80	120	Ho (IS)	
Ho (IS)	165	3	16633773	1.15	13687738	121.5	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6888235	0.63	6085322	113.2	80	120	Ir (IS)	
Ir (IS)	193	3	8230114	1.49	6951639	118.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**040_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:07:20-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	100.37465	ug/l	100	100.4	90	110	Li	
Be	9	6	3	106.89134	ug/l	100	106.9	90	110	Be	
B	11	6	3	221.70799	ug/l	200	110.9	90	110	B	FAILED
Na	23	45	2	2562.64833	ug/l	2500	102.5	90	110	Na	
Mg	24	45	2	2526.14240	ug/l	2500	101.0	90	110	Mg	
Al	27	45	2	2287.46514	ug/l	2500	91.5	90	110	Al	
P	31	45	2	2337.31642	ug/l	2500	93.5	90	110	P	
K	39	45	2	2483.22299	ug/l	2500	99.3	90	110	K	
Ca	44	45	3	2489.69711	ug/l	2500	99.6	90	110	Ca	
Ti	47	45	3	98.24519	ug/l	100	98.2	90	110	Ti	
V	51	45	2	99.05223	ug/l	100	99.1	90	110	V	
Cr	52	45	2	105.27667	ug/l	100	105.3	90	110	Cr	
Mn	55	72	2	92.04312	ug/l	100	92.0	90	110	Mn	
Fe	57	72	2	2367.54915	ug/l	2500	94.7	90	110	Fe	
Co	59	72	2	101.16543	ug/l	100	101.2	90	110	Co	
Ni	60	72	2	101.16918	ug/l	100	101.2	90	110	Ni	
Cu	63	72	2	99.97904	ug/l	100	100.0	90	110	Cu	
Zn	66	72	2	100.55063	ug/l	100	100.6	90	110	Zn	
As	75	72	2	98.89909	ug/l	100	98.9	90	110	As	
Se	78	72	2	49.79586	ug/l	50	99.6	90	110	Se	
Sr	88	72	3	99.87632	ug/l	100	99.9	90	110	Sr	
Y	89	72	2	101.63423	ug/l	100	101.6	90	110	Y	
Zr	90	72	2	101.63450	ug/l	100	101.6	90	110	Zr	
Nb	93	72	2	50.52013	ug/l	50	101.0	90	110	Nb	
Mo	95	72	3	45.06745	ug/l	50	90.1	90	110	Mo	
Ru	101	72	2	99.20031	ug/l	100	99.2	90	110	Ru	
Rh	103	72	2	105.08430	ug/l	100	105.1	90	110	Rh	
Pd	105	72	2	10.87492	ug/l	10	108.7	90	110	Pd	
Ag	107	115	3	17.47003	ug/l	20	87.4	90	110	Ag	FAILED
Cd	111	115	3	90.80761	ug/l	100	90.8	90	110	Cd	
Sn	118	115	3	97.87612	ug/l	100	97.9	90	110	Sn	
Sb	121	115	3	48.71739	ug/l	50	97.4	90	110	Sb	
Te	125	165	2	94.52892	ug/l	100	94.5	90	110	Te	
Cs	133	165	2	96.13717	ug/l	100	96.1	90	110	Cs	
Ba	137	165	3	92.44193	ug/l	100	92.4	90	110	Ba	
La	139	165	2	99.91483	ug/l	100	99.9	90	110	La	
Ce	140	165	2	100.05134	ug/l	100	100.1	90	110	Ce	
Pr	141	165	2	99.50283	ug/l	100	99.5	90	110	Pr	
Nd	146	165	2	91.43404	ug/l	100	91.4	90	110	Nd	
Sm	147	165	3	97.30777	ug/l	100	97.3	90	110	Sm	
Hf	178	165	2	101.02620	ug/l	100	101.0	90	110	Hf	
Ta	181	165	2	104.85005	ug/l	100	104.9	90	110	Ta	
W	182	165	2	105.59402	ug/l	100	105.6	90	110	W	
Re	185	193	3	96.67640	ug/l	100	96.7	90	110	Re	
Pt	195	193	2	10.06350	ug/l	10	100.6	90	110	Pt	
Au	197	193	3	94.30346	ug/l	100	94.3	90	110	Au	
Tl	205	193	3	19.46077	ug/l	20	97.3	90	110	Tl	
Pb	208	193	3	96.42757	ug/l	100	96.4	90	110	Pb	
Bi	209	193	2	94.96150	ug/l	100	95.0	90	110	Bi	
Th	232	193	3	93.77701	ug/l	100	93.8	90	110	Th	
U	238	193	3	94.11742	ug/l	100	94.1	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6455138	3.06	7411413	87.1	80	120	Li (IS)	
Sc (IS)	45	2	151719	1.15	143379	105.8	80	120	Sc (IS)	
Sc (IS)	45	3	2830590	6.12	2392712	118.3	80	120	Sc (IS)	
Ge (IS)	72	2	375046	1.07	323154	116.1	80	120	Ge (IS)	
Ge (IS)	72	3	2355860	3.64	1861986	126.5	80	120	Ge (IS)	FAILED
In (IS)	115	3	14816929	5.34	12119833	122.3	80	120	In (IS)	FAILED
Ho (IS)	165	2	10450882	0.57	9598706	108.9	80	120	Ho (IS)	
Ho (IS)	165	3	17103911	5.76	13687738	125.0	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6880816	0.75	6085322	113.1	80	120	Ir (IS)	
Ir (IS)	193	3	8585466	5.34	6951639	123.5	80	120	Ir (IS)	FAILED

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**041_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:14:05-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.43972	ug/l	1.388	Li	
Be	9	6	3	-0.00203	ug/l	0.7	Be	
B	11	6	3	3.15915	ug/l	20	B	
Na	23	45	2	7.50637	ug/l	30	Na	
Mg	24	45	2	0.45026	ug/l	11.18	Mg	
Al	27	45	2	0.48435	ug/l	25.8	Al	
P	31	45	2	1.23370	ug/l	16.46	P	
K	39	45	2	2.48780	ug/l	83.2	K	
Ca	44	45	3	-0.29288	ug/l	136.2	Ca	
Ti	47	45	3	0.02419	ug/l	4.2	Ti	
V	51	45	2	-0.02791	ug/l	4.74	V	
Cr	52	45	2	-0.00086	ug/l	6.52	Cr	
Mn	55	72	2	0.05045	ug/l	0.49	Mn	
Fe	57	72	2	0.71336	ug/l	40.7	Fe	
Co	59	72	2	0.02131	ug/l	0.434	Co	
Ni	60	72	2	0.00643	ug/l	0.8	Ni	
Cu	63	72	2	-0.15280	ug/l	0.902	Cu	
Zn	66	72	2	0.13179	ug/l	16.58	Zn	
As	75	72	2	-0.00382	ug/l	2.36	As	
Se	78	72	2	0.27370	ug/l	3.18	Se	
Sr	88	72	3	0.00941	ug/l	2	Sr	
Y	89	72	2	0.01474	ug/l	0.424	Y	
Zr	90	72	2	0.02346	ug/l	0.496	Zr	
Nb	93	72	2	0.23894	ug/l	4.62	Nb	
Mo	95	72	3	0.03367	ug/l	2	Mo	
Ru	101	72	2	0.01762	ug/l	2	Ru	
Rh	103	72	2	0.01806	ug/l	1.634	Rh	
Pd	105	72	2	-0.00488	ug/l	0.08	Pd	
Ag	107	115	3	0.00519	ug/l	1.54	Ag	
Cd	111	115	3	0.00447	ug/l	0.4	Cd	
Sn	118	115	3	0.02632	ug/l	2	Sn	
Sb	121	115	3	-0.00384	ug/l	3.34	Sb	
Te	125	165	2	0.03641	ug/l	1.072	Te	
Cs	133	165	2	0.01444	ug/l	0.106	Cs	
Ba	137	165	3	0.01594	ug/l	0.446	Ba	
La	139	165	2	0.01383	ug/l	0.102	La	
Ce	140	165	2	0.01604	ug/l	1.772	Ce	
Pr	141	165	2	0.01634	ug/l	0.084	Pr	
Nd	146	165	2	0.01857	ug/l	0.208	Nd	
Sm	147	165	3	0.00804	ug/l	0.652	Sm	
Hf	178	165	2	0.02847	ug/l	2.26	Hf	
Ta	181	165	2	0.01692	ug/l	1.46	Ta	
W	182	165	2	0.43121	ug/l	4	W	
Re	185	193	3	0.00669	ug/l	0.05	Re	
Pt	195	193	2	0.00389	ug/l	0.12	Pt	
Au	197	193	3	0.13506	ug/l	1	Au	
Tl	205	193	3	0.00749	ug/l	1.1	Tl	
Pb	208	193	3	0.05826	ug/l	0.346	Pb	
Bi	209	193	2	0.02836	ug/l	1.464	Bi	
Th	232	193	3	0.03039	ug/l	1.104	Th	
U	238	193	3	0.00837	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6446074	0.49	7411413	87.0	80	120	Li (IS)	
Sc (IS)	45	2	155680	0.42	143379	108.6	80	120	Sc (IS)	
Sc (IS)	45	3	2800297	0.69	2392712	117.0	80	120	Sc (IS)	
Ge (IS)	72	2	364569	0.68	323154	112.8	80	120	Ge (IS)	
Ge (IS)	72	3	2284019	0.73	1861986	122.7	80	120	Ge (IS)	FAILED
In (IS)	115	3	14575940	1.31	12119833	120.3	80	120	In (IS)	FAILED
Ho (IS)	165	2	10551449	0.63	9598706	109.9	80	120	Ho (IS)	
Ho (IS)	165	3	16500932	0.81	13687738	120.6	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6921374	0.51	6085322	113.7	80	120	Ir (IS)	
Ir (IS)	193	3	8371718	1.05	6951639	120.4	80	120	Ir (IS)	FAILED

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36400-A-8-B**
Data File Name	**042SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:20:48-06:00**
Type	**Sample**
VialNumber	**2209**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	3.09871	6.19742	ug/l	1000	Li	
Be	9	6	3	-0.01460	-0.02920	ug/l	1000	Be	
B	11	6	3	7.49674	14.99347	ug/l	2000	B	
Na	23	45	2	24767.40271	49534.80542	ug/l	50000	Na	
Mg	24	45	2	8201.74869	16403.49739	ug/l	50000	Mg	
Al	27	45	2	13.36830	26.73659	ug/l	100000	Al	
P	31	45	2	19.89019	39.78037	ug/l	100000	P	
K	39	45	2	2626.77587	5253.55174	ug/l	100000	K	
Ca	44	45	3	24675.59133	49351.18267	ug/l	100000	Ca	
Ti	47	45	3	0.74991	1.49981	ug/l	2000	Ti	
V	51	45	2	8.02363	16.04725	ug/l	2000	V	
Cr	52	45	2	9.99984	19.99968	ug/l	2000	Cr	
Mn	55	72	2	0.17759	0.35517	ug/l	5000	Mn	
Fe	57	72	2	8.42540	16.85079	ug/l	100000	Fe	
Co	59	72	2	0.05986	0.11972	ug/l	2000	Co	
Ni	60	72	2	0.12212	0.24425	ug/l	2000	Ni	
Cu	63	72	2	0.08843	0.17685	ug/l	2000	Cu	
Zn	66	72	2	2.13586	4.27172	ug/l	5000	Zn	
As	75	72	2	1.13111	2.26222	ug/l	2000	As	
Se	78	72	2	1.63710	3.27419	ug/l	1000	Se	
Sr	88	72	3	112.51496	225.02991	ug/l	2000	Sr	
Y	89	72	2	-0.00042	-0.00085	ug/l	200	Y	
Zr	90	72	2	0.08995	0.17991	ug/l	2000	Zr	
Nb	93	72	2	0.08305	0.16610	ug/l	100	Nb	
Mo	95	72	3	2.81235	5.62470	ug/l	1000	Mo	
Ru	101	72	2	-0.00426	-0.00852	ug/l	200	Ru	
Rh	103	72	2	-0.00504	-0.01009	ug/l	200	Rh	
Pd	105	72	2	-0.00147	-0.00294	ug/l	20	Pd	
Ag	107	115	3	0.00652	0.01304	ug/l	400	Ag	
Cd	111	115	3	-0.00238	-0.00475	ug/l	2000	Cd	
Sn	118	115	3	0.11652	0.23305	ug/l	2000	Sn	
Sb	121	115	3	0.06967	0.13935	ug/l	1000	Sb	
Te	125	165	2	0.03602	0.07204	ug/l	200	Te	
Cs	133	165	2	0.00257	0.00513	ug/l	2000	Cs	
Ba	137	165	3	27.40420	54.80841	ug/l	5000	Ba	
La	139	165	2	-0.00208	-0.00416	ug/l	200	La	
Ce	140	165	2	-0.00050	-0.00100	ug/l	200	Ce	
Pr	141	165	2	-0.00271	-0.00542	ug/l	200	Pr	
Nd	146	165	2	0.00029	0.00058	ug/l	200	Nd	
Sm	147	165	3	0.00024	0.00049	ug/l	2000	Sm	
Hf	178	165	2	0.09938	0.19877	ug/l	200	Hf	
Ta	181	165	2	0.02167	0.04334	ug/l	200	Ta	
W	182	165	2	0.42393	0.84786	ug/l	2000	W	
Re	185	193	3	0.00160	0.00320	ug/l	200	Re	
Pt	195	193	2	0.00325	0.00650	ug/l	200	Pt	
Au	197	193	3	-0.00215	-0.00429	ug/l	2000	Au	
Tl	205	193	3	-0.02458	-0.04917	ug/l	400	Tl	
Pb	208	193	3	0.06839	0.13678	ug/l	5000	Pb	
Bi	209	193	2	0.00822	0.01643	ug/l	2000	Bi	
Th	232	193	3	0.04273	0.08545	ug/l	2000	Th	
U	238	193	3	0.82339	1.64678	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5856834	2.53	7411413	79.0	80	120	Li (IS)	FAILED
Sc (IS)	45	2	148780	3.46	143379	103.8	80	120	Sc (IS)	
Sc (IS)	45	3	2721930	3.42	2392712	113.8	80	120	Sc (IS)	
Ge (IS)	72	2	352839	2.90	323154	109.2	80	120	Ge (IS)	
Ge (IS)	72	3	2231232	2.72	1861986	119.8	80	120	Ge (IS)	
In (IS)	115	3	13876789	4.17	12119833	114.5	80	120	In (IS)	
Ho (IS)	165	2	10459348	3.28	9598706	109.0	80	120	Ho (IS)	
Ho (IS)	165	3	16303237	3.60	13687738	119.1	80	120	Ho (IS)	
Ir (IS)	193	2	6630864	2.52	6085322	109.0	80	120	Ir (IS)	
Ir (IS)	193	3	7903203	4.44	6951639	113.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36400-A-10-B**
Data File Name	**043SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:27:32-06:00**
Type	**Sample**
VialNumber	**2210**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	2.70292	5.40584	ug/l	1000	Li	
Be	9	6	3	-0.01332	-0.02663	ug/l	1000	Be	
B	11	6	3	9.72065	19.44131	ug/l	2000	B	
Na	23	45	2	6778.26256	13556.52512	ug/l	50000	Na	
Mg	24	45	2	8734.47138	17468.94276	ug/l	50000	Mg	
Al	27	45	2	13.22924	26.45849	ug/l	100000	Al	
P	31	45	2	11.30681	22.61362	ug/l	100000	P	
K	39	45	2	2188.93752	4377.87503	ug/l	100000	K	
Ca	44	45	3	25868.44105	51736.88210	ug/l	100000	Ca	
Ti	47	45	3	0.77767	1.55533	ug/l	2000	Ti	
V	51	45	2	11.92005	23.84009	ug/l	2000	V	
Cr	52	45	2	4.87784	9.75567	ug/l	2000	Cr	
Mn	55	72	2	0.14911	0.29821	ug/l	5000	Mn	
Fe	57	72	2	4.90490	9.80979	ug/l	100000	Fe	
Co	59	72	2	0.03774	0.07548	ug/l	2000	Co	
Ni	60	72	2	0.48523	0.97046	ug/l	2000	Ni	
Cu	63	72	2	-0.05929	-0.11857	ug/l	2000	Cu	
Zn	66	72	2	5.37557	10.75113	ug/l	5000	Zn	
As	75	72	2	0.72537	1.45075	ug/l	2000	As	
Se	78	72	2	1.74418	3.48836	ug/l	1000	Se	
Sr	88	72	3	108.74345	217.48690	ug/l	2000	Sr	
Y	89	72	2	-0.00368	-0.00736	ug/l	200	Y	
Zr	90	72	2	0.02845	0.05690	ug/l	2000	Zr	
Nb	93	72	2	-0.01448	-0.02896	ug/l	100	Nb	
Mo	95	72	3	2.30044	4.60089	ug/l	1000	Mo	
Ru	101	72	2	-0.00402	-0.00804	ug/l	200	Ru	
Rh	103	72	2	-0.00490	-0.00980	ug/l	200	Rh	
Pd	105	72	2	-0.00191	-0.00382	ug/l	20	Pd	
Ag	107	115	3	0.00512	0.01025	ug/l	400	Ag	
Cd	111	115	3	-0.00303	-0.00606	ug/l	2000	Cd	
Sn	118	115	3	0.08967	0.17934	ug/l	2000	Sn	
Sb	121	115	3	0.03591	0.07182	ug/l	1000	Sb	
Te	125	165	2	0.00971	0.01942	ug/l	200	Te	
Cs	133	165	2	-0.00059	-0.00119	ug/l	2000	Cs	
Ba	137	165	3	21.21995	42.43989	ug/l	5000	Ba	
La	139	165	2	-0.00355	-0.00710	ug/l	200	La	
Ce	140	165	2	-0.00278	-0.00556	ug/l	200	Ce	
Pr	141	165	2	-0.00321	-0.00642	ug/l	200	Pr	
Nd	146	165	2	-0.00180	-0.00360	ug/l	200	Nd	
Sm	147	165	3	-0.00280	-0.00560	ug/l	2000	Sm	
Hf	178	165	2	0.02235	0.04470	ug/l	200	Hf	
Ta	181	165	2	-0.00492	-0.00985	ug/l	200	Ta	
W	182	165	2	0.33321	0.66643	ug/l	2000	W	
Re	185	193	3	0.00058	0.00116	ug/l	200	Re	
Pt	195	193	2	0.00208	0.00416	ug/l	200	Pt	
Au	197	193	3	-0.01541	-0.03081	ug/l	2000	Au	
Tl	205	193	3	-0.02791	-0.05581	ug/l	400	Tl	
Pb	208	193	3	0.05976	0.11952	ug/l	5000	Pb	
Bi	209	193	2	0.00981	0.01962	ug/l	2000	Bi	
Th	232	193	3	0.01480	0.02960	ug/l	2000	Th	
U	238	193	3	0.38199	0.76399	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5894742	0.86	7411413	79.5	80	120	Li (IS)	FAILED
Sc (IS)	45	2	150001	0.32	143379	104.6	80	120	Sc (IS)	
Sc (IS)	45	3	2851298	0.47	2392712	119.2	80	120	Sc (IS)	
Ge (IS)	72	2	357985	0.54	323154	110.8	80	120	Ge (IS)	
Ge (IS)	72	3	2325644	0.32	1861986	124.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	14496203	0.75	12119833	119.6	80	120	In (IS)	
Ho (IS)	165	2	10482424	0.27	9598706	109.2	80	120	Ho (IS)	
Ho (IS)	165	3	16816597	1.31	13687738	122.9	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6735104	0.13	6085322	110.7	80	120	Ir (IS)	
Ir (IS)	193	3	8180824	1.07	6951639	117.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36400-A-11-B**
Data File Name	**044SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:34:16-06:00**
Type	**Sample**
VialNumber	**2211**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	2.88430	5.76860	ug/l	1000	Li	
Be	9	6	3	-0.01577	-0.03153	ug/l	1000	Be	
B	11	6	3	8.48653	16.97307	ug/l	2000	B	
Na	23	45	2	6841.43728	13682.87456	ug/l	50000	Na	
Mg	24	45	2	8986.07795	17972.15591	ug/l	50000	Mg	
Al	27	45	2	9.94838	19.89676	ug/l	100000	Al	
P	31	45	2	13.38065	26.76129	ug/l	100000	P	
K	39	45	2	2229.84314	4459.68629	ug/l	100000	K	
Ca	44	45	3	26440.17043	52880.34086	ug/l	100000	Ca	
Ti	47	45	3	1.25006	2.50012	ug/l	2000	Ti	
V	51	45	2	12.30483	24.60966	ug/l	2000	V	
Cr	52	45	2	9.58767	19.17534	ug/l	2000	Cr	
Mn	55	72	2	1.04969	2.09937	ug/l	5000	Mn	
Fe	57	72	2	41.21493	82.42987	ug/l	100000	Fe	
Co	59	72	2	0.03205	0.06410	ug/l	2000	Co	
Ni	60	72	2	1.04314	2.08629	ug/l	2000	Ni	
Cu	63	72	2	-0.00198	-0.00396	ug/l	2000	Cu	
Zn	66	72	2	8.36581	16.73162	ug/l	5000	Zn	
As	75	72	2	0.75734	1.51468	ug/l	2000	As	
Se	78	72	2	2.30451	4.60903	ug/l	1000	Se	
Sr	88	72	3	113.43615	226.87231	ug/l	2000	Sr	
Y	89	72	2	0.00140	0.00280	ug/l	200	Y	
Zr	90	72	2	0.02690	0.05380	ug/l	2000	Zr	
Nb	93	72	2	-0.06083	-0.12166	ug/l	100	Nb	
Mo	95	72	3	2.47682	4.95364	ug/l	1000	Mo	
Ru	101	72	2	-0.00524	-0.01049	ug/l	200	Ru	
Rh	103	72	2	-0.00648	-0.01297	ug/l	200	Rh	
Pd	105	72	2	-0.00327	-0.00655	ug/l	20	Pd	
Ag	107	115	3	0.00628	0.01255	ug/l	400	Ag	
Cd	111	115	3	-0.00130	-0.00259	ug/l	2000	Cd	
Sn	118	115	3	0.08993	0.17986	ug/l	2000	Sn	
Sb	121	115	3	0.00395	0.00790	ug/l	1000	Sb	
Te	125	165	2	-0.01345	-0.02689	ug/l	200	Te	
Cs	133	165	2	-0.00050	-0.00101	ug/l	2000	Cs	
Ba	137	165	3	21.99743	43.99486	ug/l	5000	Ba	
La	139	165	2	0.00164	0.00329	ug/l	200	La	
Ce	140	165	2	0.00895	0.01790	ug/l	200	Ce	
Pr	141	165	2	-0.00216	-0.00431	ug/l	200	Pr	
Nd	146	165	2	0.00346	0.00691	ug/l	200	Nd	
Sm	147	165	3	-0.00118	-0.00236	ug/l	2000	Sm	
Hf	178	165	2	0.01140	0.02279	ug/l	200	Hf	
Ta	181	165	2	-0.01480	-0.02961	ug/l	200	Ta	
W	182	165	2	0.23291	0.46582	ug/l	2000	W	
Re	185	193	3	0.00117	0.00235	ug/l	200	Re	
Pt	195	193	2	0.00265	0.00530	ug/l	200	Pt	
Au	197	193	3	-0.03246	-0.06491	ug/l	2000	Au	
Tl	205	193	3	-0.03592	-0.07185	ug/l	400	Tl	
Pb	208	193	3	0.07407	0.14813	ug/l	5000	Pb	
Bi	209	193	2	0.00332	0.00664	ug/l	2000	Bi	
Th	232	193	3	0.00723	0.01445	ug/l	2000	Th	
U	238	193	3	0.39797	0.79594	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5753809	5.22	7411413	77.6	80	120	Li (IS)	FAILED
Sc (IS)	45	2	148257	0.61	143379	103.4	80	120	Sc (IS)	
Sc (IS)	45	3	2828323	6.92	2392712	118.2	80	120	Sc (IS)	
Ge (IS)	72	2	353583	0.23	323154	109.4	80	120	Ge (IS)	
Ge (IS)	72	3	2291733	5.35	1861986	123.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	14440242	6.04	12119833	119.1	80	120	In (IS)	
Ho (IS)	165	2	10452543	0.39	9598706	108.9	80	120	Ho (IS)	
Ho (IS)	165	3	16911042	8.09	13687738	123.5	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6745307	0.64	6085322	110.8	80	120	Ir (IS)	
Ir (IS)	193	3	8166913	7.44	6951639	117.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36419-A-12-D**
Data File Name	**045SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:41:01-06:00**
Type	**Sample**
VialNumber	**2212**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	3.29355	6.58710	ug/l	1000	Li	
Be	9	6	3	-0.01596	-0.03193	ug/l	1000	Be	
B	11	6	3	24.44423	48.88845	ug/l	2000	B	
Na	23	45	2	12210.88899	24421.77797	ug/l	50000	Na	
Mg	24	45	2	8029.72485	16059.44971	ug/l	50000	Mg	
Al	27	45	2	7.74818	15.49636	ug/l	100000	Al	
P	31	45	2	18.57519	37.15038	ug/l	100000	P	
K	39	45	2	3066.49140	6132.98279	ug/l	100000	K	
Ca	44	45	3	46473.95542	92947.91084	ug/l	100000	Ca	
Ti	47	45	3	0.52177	1.04354	ug/l	2000	Ti	
V	51	45	2	2.67981	5.35962	ug/l	2000	V	
Cr	52	45	2	0.74711	1.49423	ug/l	2000	Cr	
Mn	55	72	2	0.32039	0.64077	ug/l	5000	Mn	
Fe	57	72	2	6.70696	13.41393	ug/l	100000	Fe	
Co	59	72	2	0.09018	0.18036	ug/l	2000	Co	
Ni	60	72	2	1.17984	2.35967	ug/l	2000	Ni	
Cu	63	72	2	0.98196	1.96391	ug/l	2000	Cu	
Zn	66	72	2	14.70147	29.40294	ug/l	5000	Zn	
As	75	72	2	1.08486	2.16972	ug/l	2000	As	
Se	78	72	2	0.46688	0.93376	ug/l	1000	Se	
Sr	88	72	3	185.38910	370.77819	ug/l	2000	Sr	
Y	89	72	2	0.00382	0.00763	ug/l	200	Y	
Zr	90	72	2	0.01474	0.02949	ug/l	2000	Zr	
Nb	93	72	2	-0.07536	-0.15073	ug/l	100	Nb	
Mo	95	72	3	0.59202	1.18403	ug/l	1000	Mo	
Ru	101	72	2	-0.00471	-0.00942	ug/l	200	Ru	
Rh	103	72	2	-0.00564	-0.01128	ug/l	200	Rh	
Pd	105	72	2	-0.00253	-0.00505	ug/l	20	Pd	
Ag	107	115	3	0.02548	0.05096	ug/l	400	Ag	
Cd	111	115	3	0.00120	0.00239	ug/l	2000	Cd	
Sn	118	115	3	0.13031	0.26062	ug/l	2000	Sn	
Sb	121	115	3	0.05788	0.11576	ug/l	1000	Sb	
Te	125	165	2	-0.01352	-0.02703	ug/l	200	Te	
Cs	133	165	2	0.00136	0.00273	ug/l	2000	Cs	
Ba	137	165	3	31.59672	63.19344	ug/l	5000	Ba	
La	139	165	2	-0.00236	-0.00473	ug/l	200	La	
Ce	140	165	2	-0.00202	-0.00404	ug/l	200	Ce	
Pr	141	165	2	-0.00281	-0.00562	ug/l	200	Pr	
Nd	146	165	2	0.00049	0.00097	ug/l	200	Nd	
Sm	147	165	3	-0.00277	-0.00553	ug/l	2000	Sm	
Hf	178	165	2	0.00375	0.00750	ug/l	200	Hf	
Ta	181	165	2	-0.01130	-0.02260	ug/l	200	Ta	
W	182	165	2	0.25356	0.50713	ug/l	2000	W	
Re	185	193	3	-0.00096	-0.00191	ug/l	200	Re	
Pt	195	193	2	0.00617	0.01234	ug/l	200	Pt	
Au	197	193	3	-0.03686	-0.07373	ug/l	2000	Au	
Tl	205	193	3	-0.03827	-0.07655	ug/l	400	Tl	
Pb	208	193	3	0.06721	0.13441	ug/l	5000	Pb	
Bi	209	193	2	0.00177	0.00354	ug/l	2000	Bi	
Th	232	193	3	0.00281	0.00562	ug/l	2000	Th	
U	238	193	3	2.01541	4.03082	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5723322	0.87	7411413	77.2	80	120	Li (IS)	FAILED
Sc (IS)	45	2	148758	0.73	143379	103.8	80	120	Sc (IS)	
Sc (IS)	45	3	2835594	0.40	2392712	118.5	80	120	Sc (IS)	
Ge (IS)	72	2	356289	0.17	323154	110.3	80	120	Ge (IS)	
Ge (IS)	72	3	2302962	0.20	1861986	123.7	80	120	Ge (IS)	FAILED
In (IS)	115	3	14404233	0.21	12119833	118.8	80	120	In (IS)	
Ho (IS)	165	2	10495758	0.76	9598706	109.3	80	120	Ho (IS)	
Ho (IS)	165	3	16969932	0.77	13687738	124.0	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6714103	0.83	6085322	110.3	80	120	Ir (IS)	
Ir (IS)	193	3	8280711	0.57	6951639	119.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36419-A-12-D SD**
Data File Name	**046SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:47:43-06:00**
Type	**Sample**
VialNumber	**2301**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	1.02011	10.20112	ug/l	1000	Li	
Be	9	6	3	-0.01454	-0.14537	ug/l	1000	Be	
B	11	6	3	4.57793	45.77929	ug/l	2000	B	
Na	23	45	2	2420.88440	24208.84401	ug/l	50000	Na	
Mg	24	45	2	1597.84660	15978.46598	ug/l	50000	Mg	
Al	27	45	2	5.78910	57.89097	ug/l	100000	Al	
P	31	45	2	3.64756	36.47564	ug/l	100000	P	
K	39	45	2	582.06485	5820.64854	ug/l	100000	K	
Ca	44	45	3	9141.42049	91414.20486	ug/l	100000	Ca	
Ti	47	45	3	0.12844	1.28439	ug/l	2000	Ti	
V	51	45	2	0.54358	5.43579	ug/l	2000	V	
Cr	52	45	2	0.12878	1.28779	ug/l	2000	Cr	
Mn	55	72	2	0.08909	0.89090	ug/l	5000	Mn	
Fe	57	72	2	1.56698	15.66978	ug/l	100000	Fe	
Co	59	72	2	0.01545	0.15453	ug/l	2000	Co	
Ni	60	72	2	0.22995	2.29946	ug/l	2000	Ni	
Cu	63	72	2	-0.10880	-1.08803	ug/l	2000	Cu	
Zn	66	72	2	3.24642	32.46420	ug/l	5000	Zn	
As	75	72	2	0.18339	1.83390	ug/l	2000	As	
Se	78	72	2	0.33193	3.31929	ug/l	1000	Se	
Sr	88	72	3	36.16697	361.66973	ug/l	2000	Sr	
Y	89	72	2	-0.00217	-0.02166	ug/l	200	Y	
Zr	90	72	2	0.00201	0.02013	ug/l	2000	Zr	
Nb	93	72	2	-0.10710	-1.07098	ug/l	100	Nb	
Mo	95	72	3	0.06198	0.61984	ug/l	1000	Mo	
Ru	101	72	2	-0.00511	-0.05113	ug/l	200	Ru	
Rh	103	72	2	-0.00557	-0.05573	ug/l	200	Rh	
Pd	105	72	2	-0.00940	-0.09396	ug/l	20	Pd	
Ag	107	115	3	0.00420	0.04202	ug/l	400	Ag	
Cd	111	115	3	-0.01110	-0.11103	ug/l	2000	Cd	
Sn	118	115	3	-0.01873	-0.18728	ug/l	2000	Sn	
Sb	121	115	3	-0.01196	-0.11957	ug/l	1000	Sb	
Te	125	165	2	0.00535	0.05355	ug/l	200	Te	
Cs	133	165	2	-0.00492	-0.04920	ug/l	2000	Cs	
Ba	137	165	3	6.22605	62.26046	ug/l	5000	Ba	
La	139	165	2	-0.00308	-0.03081	ug/l	200	La	
Ce	140	165	2	-0.00283	-0.02831	ug/l	200	Ce	
Pr	141	165	2	-0.00312	-0.03123	ug/l	200	Pr	
Nd	146	165	2	-0.00043	-0.00431	ug/l	200	Nd	
Sm	147	165	3	-0.00304	-0.03039	ug/l	2000	Sm	
Hf	178	165	2	-0.00359	-0.03593	ug/l	200	Hf	
Ta	181	165	2	-0.02963	-0.29635	ug/l	200	Ta	
W	182	165	2	0.04464	0.44639	ug/l	2000	W	
Re	185	193	3	-0.00252	-0.02523	ug/l	200	Re	
Pt	195	193	2	0.00191	0.01914	ug/l	200	Pt	
Au	197	193	3	-0.03806	-0.38063	ug/l	2000	Au	
Tl	205	193	3	-0.04238	-0.42377	ug/l	400	Tl	
Pb	208	193	3	0.02235	0.22350	ug/l	5000	Pb	
Bi	209	193	2	-0.00538	-0.05377	ug/l	2000	Bi	
Th	232	193	3	-0.00843	-0.08425	ug/l	2000	Th	
U	238	193	3	0.38591	3.85908	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6359895	1.37	7411413	85.8	80	120	Li (IS)	
Sc (IS)	45	2	153176	0.46	143379	106.8	80	120	Sc (IS)	
Sc (IS)	45	3	2870235	4.50	2392712	120.0	80	120	Sc (IS)	
Ge (IS)	72	2	364298	0.79	323154	112.7	80	120	Ge (IS)	
Ge (IS)	72	3	2369889	3.25	1861986	127.3	80	120	Ge (IS)	FAILED
In (IS)	115	3	15049083	4.57	12119833	124.2	80	120	In (IS)	FAILED
Ho (IS)	165	2	10690102	0.71	9598706	111.4	80	120	Ho (IS)	
Ho (IS)	165	3	17125761	5.50	13687738	125.1	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6821980	0.60	6085322	112.1	80	120	Ir (IS)	
Ir (IS)	193	3	8459956	2.96	6951639	121.7	80	120	Ir (IS)	FAILED

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36419-A-12-E MS**
Data File Name	**047SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:54:27-06:00**
Type	**Sample**
VialNumber	**2302**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	53.91703	107.83407	ug/l	1000	Li	
Be	9	6	3	53.82135	107.64270	ug/l	1000	Be	
B	11	6	3	140.78710	281.57420	ug/l	2000	B	
Na	23	45	2	17690.24310	35380.48620	ug/l	50000	Na	
Mg	24	45	2	13228.28296	26456.56592	ug/l	50000	Mg	
Al	27	45	2	4961.64102	9923.28203	ug/l	100000	Al	
P	31	45	2	497.61847	995.23693	ug/l	100000	P	
K	39	45	2	8071.43645	16142.87291	ug/l	100000	K	
Ca	44	45	3	50069.81382	100139.62763	ug/l	100000	Ca	
Ti	47	45	3	492.80567	985.61135	ug/l	2000	Ti	
V	51	45	2	520.13432	1040.26865	ug/l	2000	V	
Cr	52	45	2	523.00124	1046.00249	ug/l	2000	Cr	
Mn	55	72	2	511.47364	1022.94728	ug/l	5000	Mn	
Fe	57	72	2	5212.79366	10425.58731	ug/l	100000	Fe	
Co	59	72	2	523.35159	1046.70318	ug/l	2000	Co	
Ni	60	72	2	562.51082	1125.02165	ug/l	2000	Ni	
Cu	63	72	2	522.87197	1045.74394	ug/l	2000	Cu	
Zn	66	72	2	554.43058	1108.86116	ug/l	5000	Zn	
As	75	72	2	506.72789	1013.45579	ug/l	2000	As	
Se	78	72	2	236.90264	473.80528	ug/l	1000	Se	
Sr	88	72	3	678.81303	1357.62605	ug/l	2000	Sr	
Y	89	72	2	0.00989	0.01977	ug/l	200	Y	
Zr	90	72	2	538.88181	1077.76362	ug/l	2000	Zr	
Nb	93	72	2	0.35503	0.71006	ug/l	100	Nb	
Mo	95	72	3	245.68413	491.36826	ug/l	1000	Mo	
Ru	101	72	2	-0.00467	-0.00933	ug/l	200	Ru	
Rh	103	72	2	0.01864	0.03729	ug/l	200	Rh	
Pd	105	72	2	0.03368	0.06737	ug/l	20	Pd	
Ag	107	115	3	93.92311	187.84622	ug/l	400	Ag	
Cd	111	115	3	484.07194	968.14389	ug/l	2000	Cd	
Sn	118	115	3	491.24025	982.48049	ug/l	2000	Sn	
Sb	121	115	3	246.73223	493.46446	ug/l	1000	Sb	
Te	125	165	2	0.08159	0.16318	ug/l	200	Te	
Cs	133	165	2	0.00276	0.00553	ug/l	2000	Cs	
Ba	137	165	3	512.01528	1024.03056	ug/l	5000	Ba	
La	139	165	2	0.74093	1.48187	ug/l	200	La	
Ce	140	165	2	0.01879	0.03758	ug/l	200	Ce	
Pr	141	165	2	0.00079	0.00158	ug/l	200	Pr	
Nd	146	165	2	0.00854	0.01707	ug/l	200	Nd	
Sm	147	165	3	493.72637	987.45273	ug/l	2000	Sm	
Hf	178	165	2	0.25160	0.50320	ug/l	200	Hf	
Ta	181	165	2	0.38062	0.76123	ug/l	200	Ta	
W	182	165	2	536.38288	1072.76576	ug/l	2000	W	
Re	185	193	3	0.00834	0.01668	ug/l	200	Re	
Pt	195	193	2	0.00401	0.00803	ug/l	200	Pt	
Au	197	193	3	-0.03433	-0.06867	ug/l	2000	Au	
Tl	205	193	3	99.90083	199.80166	ug/l	400	Tl	
Pb	208	193	3	486.30004	972.60008	ug/l	5000	Pb	
Bi	209	193	2	485.74221	971.48443	ug/l	2000	Bi	
Th	232	193	3	486.93895	973.87790	ug/l	2000	Th	
U	238	193	3	500.08664	1000.17328	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5698186	0.63	7411413	76.9	80	120	Li (IS)	FAILED
Sc (IS)	45	2	143814	4.04	143379	100.3	80	120	Sc (IS)	
Sc (IS)	45	3	2744886	0.65	2392712	114.7	80	120	Sc (IS)	
Ge (IS)	72	2	332565	4.11	323154	102.9	80	120	Ge (IS)	
Ge (IS)	72	3	2256867	1.14	1861986	121.2	80	120	Ge (IS)	FAILED
In (IS)	115	3	13958662	0.63	12119833	115.2	80	120	In (IS)	
Ho (IS)	165	2	9805269	4.13	9598706	102.2	80	120	Ho (IS)	
Ho (IS)	165	3	16568886	0.88	13687738	121.0	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6180597	4.15	6085322	101.6	80	120	Ir (IS)	
Ir (IS)	193	3	8021205	0.48	6951639	115.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36419-A-12-F MSD**
Data File Name	**048SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:01:09-06:00**
Type	**Sample**
VialNumber	**2303**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	54.94691	109.89382	ug/l	1000	Li	
Be	9	6	3	54.26920	108.53841	ug/l	1000	Be	
B	11	6	3	142.57175	285.14349	ug/l	2000	B	
Na	23	45	2	16644.13043	33288.26086	ug/l	50000	Na	
Mg	24	45	2	12386.69457	24773.38913	ug/l	50000	Mg	
Al	27	45	2	4604.10793	9208.21586	ug/l	100000	Al	
P	31	45	2	460.03025	920.06050	ug/l	100000	P	
K	39	45	2	7566.08733	15132.17466	ug/l	100000	K	
Ca	44	45	3	50174.49699	100348.99399	ug/l	100000	Ca	
Ti	47	45	3	491.52038	983.04076	ug/l	2000	Ti	
V	51	45	2	486.60080	973.20159	ug/l	2000	V	
Cr	52	45	2	489.70324	979.40648	ug/l	2000	Cr	
Mn	55	72	2	476.48374	952.96748	ug/l	5000	Mn	
Fe	57	72	2	4910.54629	9821.09258	ug/l	100000	Fe	
Co	59	72	2	493.21974	986.43948	ug/l	2000	Co	
Ni	60	72	2	527.99542	1055.99085	ug/l	2000	Ni	
Cu	63	72	2	488.52874	977.05749	ug/l	2000	Cu	
Zn	66	72	2	517.30163	1034.60327	ug/l	5000	Zn	
As	75	72	2	476.17010	952.34020	ug/l	2000	As	
Se	78	72	2	226.53196	453.06391	ug/l	1000	Se	
Sr	88	72	3	685.15781	1370.31563	ug/l	2000	Sr	
Y	89	72	2	0.00874	0.01747	ug/l	200	Y	
Zr	90	72	2	503.67243	1007.34486	ug/l	2000	Zr	
Nb	93	72	2	0.16833	0.33665	ug/l	100	Nb	
Mo	95	72	3	247.04419	494.08837	ug/l	1000	Mo	
Ru	101	72	2	-0.00327	-0.00655	ug/l	200	Ru	
Rh	103	72	2	0.01838	0.03676	ug/l	200	Rh	
Pd	105	72	2	0.03034	0.06068	ug/l	20	Pd	
Ag	107	115	3	94.12954	188.25909	ug/l	400	Ag	
Cd	111	115	3	491.74814	983.49628	ug/l	2000	Cd	
Sn	118	115	3	492.06968	984.13936	ug/l	2000	Sn	
Sb	121	115	3	248.81228	497.62456	ug/l	1000	Sb	
Te	125	165	2	0.06405	0.12810	ug/l	200	Te	
Cs	133	165	2	0.00088	0.00176	ug/l	2000	Cs	
Ba	137	165	3	514.82198	1029.64396	ug/l	5000	Ba	
La	139	165	2	0.69714	1.39428	ug/l	200	La	
Ce	140	165	2	0.01841	0.03681	ug/l	200	Ce	
Pr	141	165	2	0.00212	0.00425	ug/l	200	Pr	
Nd	146	165	2	0.01083	0.02166	ug/l	200	Nd	
Sm	147	165	3	489.05642	978.11285	ug/l	2000	Sm	
Hf	178	165	2	0.09574	0.19149	ug/l	200	Hf	
Ta	181	165	2	0.38337	0.76674	ug/l	200	Ta	
W	182	165	2	503.00020	1006.00041	ug/l	2000	W	
Re	185	193	3	0.01133	0.02266	ug/l	200	Re	
Pt	195	193	2	0.00396	0.00791	ug/l	200	Pt	
Au	197	193	3	-0.03323	-0.06645	ug/l	2000	Au	
Tl	205	193	3	100.64908	201.29816	ug/l	400	Tl	
Pb	208	193	3	484.92344	969.84688	ug/l	5000	Pb	
Bi	209	193	2	451.48158	902.96316	ug/l	2000	Bi	
Th	232	193	3	488.49710	976.99421	ug/l	2000	Th	
U	238	193	3	496.99416	993.98833	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5647482	1.00	7411413	76.2	80	120	Li (IS)	FAILED
Sc (IS)	45	2	152769	8.49	143379	106.5	80	120	Sc (IS)	
Sc (IS)	45	3	2765025	0.25	2392712	115.6	80	120	Sc (IS)	
Ge (IS)	72	2	351921	5.06	323154	108.9	80	120	Ge (IS)	
Ge (IS)	72	3	2237854	1.22	1861986	120.2	80	120	Ge (IS)	FAILED
In (IS)	115	3	13881948	0.35	12119833	114.5	80	120	In (IS)	
Ho (IS)	165	2	10434927	7.44	9598706	108.7	80	120	Ho (IS)	
Ho (IS)	165	3	16400680	0.68	13687738	119.8	80	120	Ho (IS)	
Ir (IS)	193	2	6587493	7.73	6085322	108.3	80	120	Ir (IS)	
Ir (IS)	193	3	8031833	0.42	6951639	115.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36419-A-12-D PDS**
Data File Name	**049SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:07:53-06:00**
Type	**Sample**
VialNumber	**2304**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	54.76366	109.52733	ug/l	1000	Li	
Be	9	6	3	5.52266	11.04532	ug/l	1000	Be	
B	11	6	3	1188.14899	2376.29798	ug/l	2000	B	
Na	23	45	2	12688.23527	25376.47054	ug/l	50000	Na	
Mg	24	45	2	8115.91332	16231.82664	ug/l	50000	Mg	
Al	27	45	2	441.11802	882.23604	ug/l	100000	Al	
P	31	45	2	943.89163	1887.78327	ug/l	100000	P	
K	39	45	2	3913.91702	7827.83404	ug/l	100000	K	
Ca	44	45	3	46681.43657	93362.87314	ug/l	100000	Ca	
Ti	47	45	3	47.85582	95.71163	ug/l	2000	Ti	
V	51	45	2	100.83433	201.66866	ug/l	2000	V	
Cr	52	45	2	104.27389	208.54778	ug/l	2000	Cr	
Mn	55	72	2	37.66718	75.33436	ug/l	5000	Mn	
Fe	57	72	2	480.85230	961.70460	ug/l	100000	Fe	
Co	59	72	2	19.27745	38.55489	ug/l	2000	Co	
Ni	60	72	2	52.01945	104.03891	ug/l	2000	Ni	
Cu	63	72	2	29.28861	58.57723	ug/l	2000	Cu	
Zn	66	72	2	212.12899	424.25798	ug/l	5000	Zn	
As	75	72	2	101.18049	202.36098	ug/l	2000	As	
Se	78	72	2	46.97172	93.94344	ug/l	1000	Se	
Sr	88	72	3	228.28945	456.57890	ug/l	2000	Sr	
Y	89	72	2	0.00393	0.00786	ug/l	200	Y	
Zr	90	72	2	47.80258	95.60515	ug/l	2000	Zr	
Nb	93	72	2	0.18170	0.36340	ug/l	100	Nb	
Mo	95	72	3	46.32616	92.65233	ug/l	1000	Mo	
Ru	101	72	2	-0.00534	-0.01069	ug/l	200	Ru	
Rh	103	72	2	-0.00354	-0.00708	ug/l	200	Rh	
Pd	105	72	2	0.00237	0.00474	ug/l	20	Pd	
Ag	107	115	3	17.77919	35.55837	ug/l	400	Ag	
Cd	111	115	3	4.58251	9.16502	ug/l	2000	Cd	
Sn	118	115	3	18.47682	36.95364	ug/l	2000	Sn	
Sb	121	115	3	49.65141	99.30282	ug/l	1000	Sb	
Te	125	165	2	0.00635	0.01270	ug/l	200	Te	
Cs	133	165	2	0.00179	0.00357	ug/l	2000	Cs	
Ba	137	165	3	48.82590	97.65181	ug/l	5000	Ba	
La	139	165	2	0.00596	0.01192	ug/l	200	La	
Ce	140	165	2	0.00565	0.01130	ug/l	200	Ce	
Pr	141	165	2	-0.00198	-0.00397	ug/l	200	Pr	
Nd	146	165	2	0.00214	0.00428	ug/l	200	Nd	
Sm	147	165	3	97.99964	195.99927	ug/l	2000	Sm	
Hf	178	165	2	0.07284	0.14567	ug/l	200	Hf	
Ta	181	165	2	0.41705	0.83410	ug/l	200	Ta	
W	182	165	2	51.84432	103.68864	ug/l	2000	W	
Re	185	193	3	0.00054	0.00108	ug/l	200	Re	
Pt	195	193	2	0.00368	0.00737	ug/l	200	Pt	
Au	197	193	3	-0.03568	-0.07135	ug/l	2000	Au	
Tl	205	193	3	20.85788	41.71576	ug/l	400	Tl	
Pb	208	193	3	28.36500	56.73000	ug/l	5000	Pb	
Bi	209	193	2	0.12903	0.25807	ug/l	2000	Bi	
Th	232	193	3	20.21069	40.42139	ug/l	2000	Th	
U	238	193	3	11.83676	23.67352	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5644392	1.30	7411413	76.2	80	120	Li (IS)	FAILED
Sc (IS)	45	2	145093	2.17	143379	101.2	80	120	Sc (IS)	
Sc (IS)	45	3	2741330	0.73	2392712	114.6	80	120	Sc (IS)	
Ge (IS)	72	2	349526	0.69	323154	108.2	80	120	Ge (IS)	
Ge (IS)	72	3	2232633	0.67	1861986	119.9	80	120	Ge (IS)	
In (IS)	115	3	13926772	0.96	12119833	114.9	80	120	In (IS)	
Ho (IS)	165	2	10271906	0.51	9598706	107.0	80	120	Ho (IS)	
Ho (IS)	165	3	16500963	1.83	13687738	120.6	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6579930	0.63	6085322	108.1	80	120	Ir (IS)	
Ir (IS)	193	3	7911727	0.28	6951639	113.8	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36419-A-13-B**
Data File Name	**050SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:14:38-06:00**
Type	**Sample**
VialNumber	**2305**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	3.23039	6.46079	ug/l	1000	Li	
Be	9	6	3	-0.01457	-0.02914	ug/l	1000	Be	
B	11	6	3	34.94070	69.88139	ug/l	2000	B	
Na	23	45	2	11978.33788	23956.67576	ug/l	50000	Na	
Mg	24	45	2	8000.84212	16001.68423	ug/l	50000	Mg	
Al	27	45	2	19.47304	38.94609	ug/l	100000	Al	
P	31	45	2	24.61827	49.23655	ug/l	100000	P	
K	39	45	2	3107.38906	6214.77812	ug/l	100000	K	
Ca	44	45	3	45624.85235	91249.70470	ug/l	100000	Ca	
Ti	47	45	3	1.47276	2.94551	ug/l	2000	Ti	
V	51	45	2	2.70910	5.41820	ug/l	2000	V	
Cr	52	45	2	1.23007	2.46014	ug/l	2000	Cr	
Mn	55	72	2	2.47165	4.94330	ug/l	5000	Mn	
Fe	57	72	2	63.69727	127.39453	ug/l	100000	Fe	
Co	59	72	2	0.08493	0.16985	ug/l	2000	Co	
Ni	60	72	2	1.63465	3.26930	ug/l	2000	Ni	
Cu	63	72	2	2.03309	4.06618	ug/l	2000	Cu	
Zn	66	72	2	18.24667	36.49335	ug/l	5000	Zn	
As	75	72	2	1.32181	2.64362	ug/l	2000	As	
Se	78	72	2	0.53053	1.06106	ug/l	1000	Se	
Sr	88	72	3	182.57284	365.14568	ug/l	2000	Sr	
Y	89	72	2	0.02865	0.05731	ug/l	200	Y	
Zr	90	72	2	0.06956	0.13912	ug/l	2000	Zr	
Nb	93	72	2	-0.12205	-0.24409	ug/l	100	Nb	
Mo	95	72	3	0.62623	1.25247	ug/l	1000	Mo	
Ru	101	72	2	-0.00680	-0.01359	ug/l	200	Ru	
Rh	103	72	2	-0.00586	-0.01173	ug/l	200	Rh	
Pd	105	72	2	0.00329	0.00658	ug/l	20	Pd	
Ag	107	115	3	0.04646	0.09292	ug/l	400	Ag	
Cd	111	115	3	0.02006	0.04013	ug/l	2000	Cd	
Sn	118	115	3	0.43093	0.86186	ug/l	2000	Sn	
Sb	121	115	3	0.07083	0.14167	ug/l	1000	Sb	
Te	125	165	2	0.01813	0.03625	ug/l	200	Te	
Cs	133	165	2	-0.00176	-0.00353	ug/l	2000	Cs	
Ba	137	165	3	32.03513	64.07027	ug/l	5000	Ba	
La	139	165	2	0.03225	0.06449	ug/l	200	La	
Ce	140	165	2	0.07970	0.15940	ug/l	200	Ce	
Pr	141	165	2	0.00613	0.01227	ug/l	200	Pr	
Nd	146	165	2	0.03340	0.06679	ug/l	200	Nd	
Sm	147	165	3	0.01337	0.02673	ug/l	2000	Sm	
Hf	178	165	2	-0.00398	-0.00796	ug/l	200	Hf	
Ta	181	165	2	-0.02104	-0.04208	ug/l	200	Ta	
W	182	165	2	0.58775	1.17551	ug/l	2000	W	
Re	185	193	3	-0.00134	-0.00269	ug/l	200	Re	
Pt	195	193	2	0.00415	0.00830	ug/l	200	Pt	
Au	197	193	3	-0.04373	-0.08746	ug/l	2000	Au	
Tl	205	193	3	0.06642	0.13285	ug/l	400	Tl	
Pb	208	193	3	0.45793	0.91587	ug/l	5000	Pb	
Bi	209	193	2	0.04657	0.09313	ug/l	2000	Bi	
Th	232	193	3	0.03689	0.07378	ug/l	2000	Th	
U	238	193	3	2.04196	4.08391	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5664455	1.22	7411413	76.4	80	120	Li (IS)	FAILED
Sc (IS)	45	2	142030	2.47	143379	99.1	80	120	Sc (IS)	
Sc (IS)	45	3	2779372	0.53	2392712	116.2	80	120	Sc (IS)	
Ge (IS)	72	2	347637	2.09	323154	107.6	80	120	Ge (IS)	
Ge (IS)	72	3	2286325	0.63	1861986	122.8	80	120	Ge (IS)	FAILED
In (IS)	115	3	14170022	0.16	12119833	116.9	80	120	In (IS)	
Ho (IS)	165	2	10194938	2.95	9598706	106.2	80	120	Ho (IS)	
Ho (IS)	165	3	16613580	0.85	13687738	121.4	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6519540	3.99	6085322	107.1	80	120	Ir (IS)	
Ir (IS)	193	3	8080476	0.34	6951639	116.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36424-A-18-B**
Data File Name	**051SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:21:21-06:00**
Type	**Sample**
VialNumber	**2306**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	7.79419	15.58837	ug/l	1000	Li	
Be	9	6	3	-0.01609	-0.03218	ug/l	1000	Be	
B	11	6	3	15.73612	31.47225	ug/l	2000	B	
Na	23	45	2	12109.73330	24219.46661	ug/l	50000	Na	
Mg	24	45	2	6219.58814	12439.17629	ug/l	50000	Mg	
Al	27	45	2	13.33093	26.66185	ug/l	100000	Al	
P	31	45	2	11.90956	23.81913	ug/l	100000	P	
K	39	45	2	3585.48476	7170.96953	ug/l	100000	K	
Ca	44	45	3	17313.93073	34627.86145	ug/l	100000	Ca	
Ti	47	45	3	0.70894	1.41788	ug/l	2000	Ti	
V	51	45	2	1.03461	2.06922	ug/l	2000	V	
Cr	52	45	2	0.48661	0.97322	ug/l	2000	Cr	
Mn	55	72	2	1.19205	2.38409	ug/l	5000	Mn	
Fe	57	72	2	13.17345	26.34690	ug/l	100000	Fe	
Co	59	72	2	0.01477	0.02955	ug/l	2000	Co	
Ni	60	72	2	3.04620	6.09241	ug/l	2000	Ni	
Cu	63	72	2	5.39112	10.78223	ug/l	2000	Cu	
Zn	66	72	2	4.58744	9.17487	ug/l	5000	Zn	
As	75	72	2	2.26742	4.53485	ug/l	2000	As	
Se	78	72	2	0.24763	0.49527	ug/l	1000	Se	
Sr	88	72	3	97.24057	194.48114	ug/l	2000	Sr	
Y	89	72	2	-0.00186	-0.00372	ug/l	200	Y	
Zr	90	72	2	0.00599	0.01198	ug/l	2000	Zr	
Nb	93	72	2	-0.13052	-0.26104	ug/l	100	Nb	
Mo	95	72	3	3.20632	6.41264	ug/l	1000	Mo	
Ru	101	72	2	-0.00704	-0.01407	ug/l	200	Ru	
Rh	103	72	2	-0.00645	-0.01291	ug/l	200	Rh	
Pd	105	72	2	-0.00483	-0.00967	ug/l	20	Pd	
Ag	107	115	3	0.00776	0.01552	ug/l	400	Ag	
Cd	111	115	3	0.01536	0.03072	ug/l	2000	Cd	
Sn	118	115	3	0.18370	0.36741	ug/l	2000	Sn	
Sb	121	115	3	0.02064	0.04128	ug/l	1000	Sb	
Te	125	165	2	-0.01717	-0.03433	ug/l	200	Te	
Cs	133	165	2	0.00677	0.01353	ug/l	2000	Cs	
Ba	137	165	3	17.03738	34.07476	ug/l	5000	Ba	
La	139	165	2	-0.00313	-0.00627	ug/l	200	La	
Ce	140	165	2	-0.00191	-0.00383	ug/l	200	Ce	
Pr	141	165	2	-0.00310	-0.00620	ug/l	200	Pr	
Nd	146	165	2	-0.00072	-0.00145	ug/l	200	Nd	
Sm	147	165	3	0.00019	0.00039	ug/l	2000	Sm	
Hf	178	165	2	-0.00602	-0.01205	ug/l	200	Hf	
Ta	181	165	2	-0.02780	-0.05560	ug/l	200	Ta	
W	182	165	2	0.36571	0.73142	ug/l	2000	W	
Re	185	193	3	0.00239	0.00479	ug/l	200	Re	
Pt	195	193	2	0.00144	0.00289	ug/l	200	Pt	
Au	197	193	3	-0.04378	-0.08757	ug/l	2000	Au	
Tl	205	193	3	0.00218	0.00435	ug/l	400	Tl	
Pb	208	193	3	0.22637	0.45275	ug/l	5000	Pb	
Bi	209	193	2	0.02956	0.05912	ug/l	2000	Bi	
Th	232	193	3	0.01091	0.02183	ug/l	2000	Th	
U	238	193	3	0.69978	1.39956	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5499809	1.25	7411413	74.2	80	120	Li (IS)	FAILED
Sc (IS)	45	2	141207	0.32	143379	98.5	80	120	Sc (IS)	
Sc (IS)	45	3	2769630	1.98	2392712	115.8	80	120	Sc (IS)	
Ge (IS)	72	2	343189	0.27	323154	106.2	80	120	Ge (IS)	
Ge (IS)	72	3	2269542	1.58	1861986	121.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	14267363	2.42	12119833	117.7	80	120	In (IS)	
Ho (IS)	165	2	10102602	0.35	9598706	105.2	80	120	Ho (IS)	
Ho (IS)	165	3	16409113	3.19	13687738	119.9	80	120	Ho (IS)	
Ir (IS)	193	2	6505067	0.71	6085322	106.9	80	120	Ir (IS)	
Ir (IS)	193	3	7928811	2.51	6951639	114.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**052LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:28:04-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	5.41854	ug/l	5	108.4	80	120	Li	
Be	9	6	3	0.55625	ug/l	0.5	111.2	80	120	Be	
B	11	6	3	112.34798	ug/l	100	112.3	80	120	B	
Na	23	45	2	109.80073	ug/l	100	109.8	80	120	Na	
Mg	24	45	2	50.65388	ug/l	50	101.3	80	120	Mg	
Al	27	45	2	48.69940	ug/l	50	97.4	80	120	Al	
P	31	45	2	93.13785	ug/l	100	93.1	80	120	P	
K	39	45	2	99.09036	ug/l	100	99.1	80	120	K	
Ca	44	45	3	201.23534	ug/l	200	100.6	80	120	Ca	
Ti	47	45	3	5.15645	ug/l	5	103.1	80	120	Ti	
V	51	45	2	9.91931	ug/l	10	99.2	80	120	V	
Cr	52	45	2	10.16357	ug/l	10	101.6	80	120	Cr	
Mn	55	72	2	4.03157	ug/l	4	100.8	80	120	Mn	
Fe	57	72	2	50.82666	ug/l	50	101.7	80	120	Fe	
Co	59	72	2	2.03560	ug/l	2	101.8	80	120	Co	
Ni	60	72	2	5.56530	ug/l	5	111.3	80	120	Ni	
Cu	63	72	2	2.85580	ug/l	3	95.2	80	120	Cu	
Zn	66	72	2	21.56996	ug/l	20	107.8	80	120	Zn	
As	75	72	2	10.23758	ug/l	10	102.4	80	120	As	
Se	78	72	2	4.98538	ug/l	5	99.7	80	120	Se	
Sr	88	72	3	4.95769	ug/l	5	99.2	80	120	Sr	
Y	89	72	2	4.83141	ug/l	5	96.6	80	120	Y	
Zr	90	72	2	4.75972	ug/l	5	95.2	80	120	Zr	
Nb	93	72	2	18.70583	ug/l	25	74.8	80	120	Nb	FAILED
Mo	95	72	3	4.61685	ug/l	5	92.3	80	120	Mo	
Ru	101	72	2	10.27219	ug/l	10	102.7	80	120	Ru	
Rh	103	72	2	10.06440	ug/l	10	100.6	80	120	Rh	
Pd	105	72	2	0.55451	ug/l	0.5	110.9	80	120	Pd	
Ag	107	115	3	1.85402	ug/l	2	92.7	80	120	Ag	
Cd	111	115	3	0.50020	ug/l	0.5	100.0	80	120	Cd	
Sn	118	115	3	1.84015	ug/l	2	92.0	80	120	Sn	
Sb	121	115	3	4.60988	ug/l	5	92.2	80	120	Sb	
Te	125	165	2	9.07999	ug/l	10	90.8	80	120	Te	
Cs	133	165	2	0.88430	ug/l	1	88.4	80	120	Cs	
Ba	137	165	3	1.89896	ug/l	2	94.9	80	120	Ba	
La	139	165	2	1.83714	ug/l	2	91.9	80	120	La	
Ce	140	165	2	9.22545	ug/l	10	92.3	80	120	Ce	
Pr	141	165	2	1.85559	ug/l	2	92.8	80	120	Pr	
Nd	146	165	2	1.84409	ug/l	2	92.2	80	120	Nd	
Sm	147	165	3	9.34210	ug/l	10	93.4	80	120	Sm	
Hf	178	165	2	8.70283	ug/l	10	87.0	80	120	Hf	
Ta	181	165	2	7.69009	ug/l	10	76.9	80	120	Ta	FAILED
W	182	165	2	4.78685	ug/l	5	95.7	80	120	W	
Re	185	193	3	8.98893	ug/l	10	89.9	80	120	Re	
Pt	195	193	2	0.97643	ug/l	1	97.6	80	120	Pt	
Au	197	193	3	4.33568	ug/l	5	86.7	80	120	Au	
Tl	205	193	3	1.80798	ug/l	2	90.4	80	120	Tl	
Pb	208	193	3	2.72118	ug/l	3	90.7	80	120	Pb	
Bi	209	193	2	16.35044	ug/l	20	81.8	80	120	Bi	
Th	232	193	3	1.67929	ug/l	2	84.0	80	120	Th	
U	238	193	3	0.87071	ug/l	1	87.1	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6285028	1.21	7411413	84.8	80	120	Li (IS)	
Sc (IS)	45	2	155824	0.67	143379	108.7	80	120	Sc (IS)	
Sc (IS)	45	3	2792947	0.43	2392712	116.7	80	120	Sc (IS)	
Ge (IS)	72	2	367745	0.71	323154	113.8	80	120	Ge (IS)	
Ge (IS)	72	3	2319481	0.08	1861986	124.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	14741492	0.52	12119833	121.6	80	120	In (IS)	FAILED
Ho (IS)	165	2	10480750	0.56	9598706	109.2	80	120	Ho (IS)	
Ho (IS)	165	3	16623272	0.46	13687738	121.4	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6988464	0.98	6085322	114.8	80	120	Ir (IS)	
Ir (IS)	193	3	8459056	0.75	6951639	121.7	80	120	Ir (IS)	FAILED

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**053_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:34:49-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	104.14203	ug/l	100	104.1	90	110	Li	
Be	9	6	3	111.89501	ug/l	100	111.9	90	110	Be	FAILED
B	11	6	3	229.23259	ug/l	200	114.6	90	110	B	FAILED
Na	23	45	2	2513.99434	ug/l	2500	100.6	90	110	Na	
Mg	24	45	2	2460.72088	ug/l	2500	98.4	90	110	Mg	
Al	27	45	2	2236.84384	ug/l	2500	89.5	90	110	Al	FAILED
P	31	45	2	2294.96218	ug/l	2500	91.8	90	110	P	
K	39	45	2	2431.56995	ug/l	2500	97.3	90	110	K	
Ca	44	45	3	2541.14431	ug/l	2500	101.6	90	110	Ca	
Ti	47	45	3	99.52144	ug/l	100	99.5	90	110	Ti	
V	51	45	2	98.15027	ug/l	100	98.2	90	110	V	
Cr	52	45	2	104.47126	ug/l	100	104.5	90	110	Cr	
Mn	55	72	2	90.73065	ug/l	100	90.7	90	110	Mn	
Fe	57	72	2	2325.91762	ug/l	2500	93.0	90	110	Fe	
Co	59	72	2	99.52800	ug/l	100	99.5	90	110	Co	
Ni	60	72	2	100.92126	ug/l	100	100.9	90	110	Ni	
Cu	63	72	2	97.71828	ug/l	100	97.7	90	110	Cu	
Zn	66	72	2	101.35443	ug/l	100	101.4	90	110	Zn	
As	75	72	2	98.88173	ug/l	100	98.9	90	110	As	
Se	78	72	2	48.64449	ug/l	50	97.3	90	110	Se	
Sr	88	72	3	102.18981	ug/l	100	102.2	90	110	Sr	
Y	89	72	2	100.58161	ug/l	100	100.6	90	110	Y	
Zr	90	72	2	100.84878	ug/l	100	100.8	90	110	Zr	
Nb	93	72	2	50.67116	ug/l	50	101.3	90	110	Nb	
Mo	95	72	3	46.30040	ug/l	50	92.6	90	110	Mo	
Ru	101	72	2	98.58468	ug/l	100	98.6	90	110	Ru	
Rh	103	72	2	104.82858	ug/l	100	104.8	90	110	Rh	
Pd	105	72	2	10.69816	ug/l	10	107.0	90	110	Pd	
Ag	107	115	3	18.01661	ug/l	20	90.1	90	110	Ag	
Cd	111	115	3	94.58844	ug/l	100	94.6	90	110	Cd	
Sn	118	115	3	100.96870	ug/l	100	101.0	90	110	Sn	
Sb	121	115	3	50.78951	ug/l	50	101.6	90	110	Sb	
Te	125	165	2	92.07623	ug/l	100	92.1	90	110	Te	
Cs	133	165	2	93.42294	ug/l	100	93.4	90	110	Cs	
Ba	137	165	3	93.04218	ug/l	100	93.0	90	110	Ba	
La	139	165	2	97.40485	ug/l	100	97.4	90	110	La	
Ce	140	165	2	98.43632	ug/l	100	98.4	90	110	Ce	
Pr	141	165	2	97.18102	ug/l	100	97.2	90	110	Pr	
Nd	146	165	2	89.94489	ug/l	100	89.9	90	110	Nd	FAILED
Sm	147	165	3	100.02890	ug/l	100	100.0	90	110	Sm	
Hf	178	165	2	98.00383	ug/l	100	98.0	90	110	Hf	
Ta	181	165	2	103.75296	ug/l	100	103.8	90	110	Ta	
W	182	165	2	104.06101	ug/l	100	104.1	90	110	W	
Re	185	193	3	100.47493	ug/l	100	100.5	90	110	Re	
Pt	195	193	2	10.08596	ug/l	10	100.9	90	110	Pt	
Au	197	193	3	97.95424	ug/l	100	98.0	90	110	Au	
Tl	205	193	3	20.44471	ug/l	20	102.2	90	110	Tl	
Pb	208	193	3	99.51173	ug/l	100	99.5	90	110	Pb	
Bi	209	193	2	95.61236	ug/l	100	95.6	90	110	Bi	
Th	232	193	3	97.62282	ug/l	100	97.6	90	110	Th	
U	238	193	3	97.32635	ug/l	100	97.3	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5861373	0.51	7411413	79.1	80	120	Li (IS)	FAILED
Sc (IS)	45	2	147948	0.57	143379	103.2	80	120	Sc (IS)	
Sc (IS)	45	3	2727080	0.36	2392712	114.0	80	120	Sc (IS)	
Ge (IS)	72	2	366653	1.38	323154	113.5	80	120	Ge (IS)	
Ge (IS)	72	3	2262555	1.13	1861986	121.5	80	120	Ge (IS)	FAILED
In (IS)	115	3	14080351	0.86	12119833	116.2	80	120	In (IS)	
Ho (IS)	165	2	10332634	0.67	9598706	107.6	80	120	Ho (IS)	
Ho (IS)	165	3	16315842	0.54	13687738	119.2	80	120	Ho (IS)	
Ir (IS)	193	2	6713436	0.77	6085322	110.3	80	120	Ir (IS)	
Ir (IS)	193	3	8081840	0.97	6951639	116.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**054_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:41:36-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.48346	ug/l	1.388	Li	
Be	9	6	3	0.01104	ug/l	0.7	Be	
B	11	6	3	4.16862	ug/l	20	B	
Na	23	45	2	7.13996	ug/l	30	Na	
Mg	24	45	2	0.78134	ug/l	11.18	Mg	
Al	27	45	2	0.60732	ug/l	25.8	Al	
P	31	45	2	2.19984	ug/l	16.46	P	
K	39	45	2	2.27081	ug/l	83.2	K	
Ca	44	45	3	0.20839	ug/l	136.2	Ca	
Ti	47	45	3	0.03798	ug/l	4.2	Ti	
V	51	45	2	-0.00825	ug/l	4.74	V	
Cr	52	45	2	0.01255	ug/l	6.52	Cr	
Mn	55	72	2	0.06215	ug/l	0.49	Mn	
Fe	57	72	2	0.80884	ug/l	40.7	Fe	
Co	59	72	2	0.04109	ug/l	0.434	Co	
Ni	60	72	2	0.02416	ug/l	0.8	Ni	
Cu	63	72	2	-0.24677	ug/l	0.902	Cu	
Zn	66	72	2	0.12413	ug/l	16.58	Zn	
As	75	72	2	0.02289	ug/l	2.36	As	
Se	78	72	2	0.11534	ug/l	3.18	Se	
Sr	88	72	3	0.02523	ug/l	2	Sr	
Y	89	72	2	0.02456	ug/l	0.424	Y	
Zr	90	72	2	0.02950	ug/l	0.496	Zr	
Nb	93	72	2	0.21354	ug/l	4.62	Nb	
Mo	95	72	3	0.00350	ug/l	2	Mo	
Ru	101	72	2	0.03261	ug/l	2	Ru	
Rh	103	72	2	0.03023	ug/l	1.634	Rh	
Pd	105	72	2	-0.00439	ug/l	0.08	Pd	
Ag	107	115	3	0.00530	ug/l	1.54	Ag	
Cd	111	115	3	0.01373	ug/l	0.4	Cd	
Sn	118	115	3	0.03038	ug/l	2	Sn	
Sb	121	115	3	-0.00214	ug/l	3.34	Sb	
Te	125	165	2	0.06851	ug/l	1.072	Te	
Cs	133	165	2	0.02367	ug/l	0.106	Cs	
Ba	137	165	3	0.01983	ug/l	0.446	Ba	
La	139	165	2	0.02542	ug/l	0.102	La	
Ce	140	165	2	0.02495	ug/l	1.772	Ce	
Pr	141	165	2	0.02792	ug/l	0.084	Pr	
Nd	146	165	2	0.02885	ug/l	0.208	Nd	
Sm	147	165	3	0.02113	ug/l	0.652	Sm	
Hf	178	165	2	0.03620	ug/l	2.26	Hf	
Ta	181	165	2	0.01022	ug/l	1.46	Ta	
W	182	165	2	0.39687	ug/l	4	W	
Re	185	193	3	0.01364	ug/l	0.05	Re	
Pt	195	193	2	0.00255	ug/l	0.12	Pt	
Au	197	193	3	0.12418	ug/l	1	Au	
Tl	205	193	3	-0.00118	ug/l	1.1	Tl	
Pb	208	193	3	0.04230	ug/l	0.346	Pb	
Bi	209	193	2	0.04467	ug/l	1.464	Bi	
Th	232	193	3	0.03614	ug/l	1.104	Th	
U	238	193	3	0.01697	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6054819	0.99	7411413	81.7	80	120	Li (IS)	
Sc (IS)	45	2	151371	0.21	143379	105.6	80	120	Sc (IS)	
Sc (IS)	45	3	2718481	0.53	2392712	113.6	80	120	Sc (IS)	
Ge (IS)	72	2	355525	1.11	323154	110.0	80	120	Ge (IS)	
Ge (IS)	72	3	2241796	0.19	1861986	120.4	80	120	Ge (IS)	FAILED
In (IS)	115	3	14376116	0.27	12119833	118.6	80	120	In (IS)	
Ho (IS)	165	2	10394154	0.69	9598706	108.3	80	120	Ho (IS)	
Ho (IS)	165	3	16467110	1.13	13687738	120.3	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6892177	0.45	6085322	113.3	80	120	Ir (IS)	
Ir (IS)	193	3	8262159	0.63	6951639	118.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36424-A-19-B**
Data File Name	**055SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:48:20-06:00**
Type	**Sample**
VialNumber	**2307**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	7.61205	15.22409	ug/l	1000	Li	
Be	9	6	3	-0.01406	-0.02811	ug/l	1000	Be	
B	11	6	3	13.00965	26.01930	ug/l	2000	B	
Na	23	45	2	12156.55390	24313.10779	ug/l	50000	Na	
Mg	24	45	2	6251.58716	12503.17431	ug/l	50000	Mg	
Al	27	45	2	6.20779	12.41557	ug/l	100000	Al	
P	31	45	2	9.52589	19.05177	ug/l	100000	P	
K	39	45	2	3557.71040	7115.42079	ug/l	100000	K	
Ca	44	45	3	17839.54236	35679.08472	ug/l	100000	Ca	
Ti	47	45	3	0.68911	1.37822	ug/l	2000	Ti	
V	51	45	2	1.03770	2.07540	ug/l	2000	V	
Cr	52	45	2	0.44624	0.89249	ug/l	2000	Cr	
Mn	55	72	2	0.33782	0.67564	ug/l	5000	Mn	
Fe	57	72	2	4.79739	9.59478	ug/l	100000	Fe	
Co	59	72	2	0.02605	0.05209	ug/l	2000	Co	
Ni	60	72	2	0.44327	0.88654	ug/l	2000	Ni	
Cu	63	72	2	0.59971	1.19943	ug/l	2000	Cu	
Zn	66	72	2	2.31012	4.62024	ug/l	5000	Zn	
As	75	72	2	2.19950	4.39899	ug/l	2000	As	
Se	78	72	2	0.15102	0.30205	ug/l	1000	Se	
Sr	88	72	3	99.20007	198.40015	ug/l	2000	Sr	
Y	89	72	2	-0.00107	-0.00214	ug/l	200	Y	
Zr	90	72	2	0.04951	0.09903	ug/l	2000	Zr	
Nb	93	72	2	0.06478	0.12957	ug/l	100	Nb	
Mo	95	72	3	3.25998	6.51996	ug/l	1000	Mo	
Ru	101	72	2	-0.00436	-0.00872	ug/l	200	Ru	
Rh	103	72	2	-0.00396	-0.00791	ug/l	200	Rh	
Pd	105	72	2	-0.00550	-0.01101	ug/l	20	Pd	
Ag	107	115	3	0.00758	0.01516	ug/l	400	Ag	
Cd	111	115	3	-0.00350	-0.00700	ug/l	2000	Cd	
Sn	118	115	3	0.16299	0.32598	ug/l	2000	Sn	
Sb	121	115	3	0.02254	0.04507	ug/l	1000	Sb	
Te	125	165	2	0.01940	0.03879	ug/l	200	Te	
Cs	133	165	2	0.01243	0.02487	ug/l	2000	Cs	
Ba	137	165	3	17.02851	34.05703	ug/l	5000	Ba	
La	139	165	2	-0.00291	-0.00582	ug/l	200	La	
Ce	140	165	2	-0.00221	-0.00442	ug/l	200	Ce	
Pr	141	165	2	-0.00237	-0.00474	ug/l	200	Pr	
Nd	146	165	2	-0.00070	-0.00141	ug/l	200	Nd	
Sm	147	165	3	-0.00186	-0.00371	ug/l	2000	Sm	
Hf	178	165	2	0.06218	0.12435	ug/l	200	Hf	
Ta	181	165	2	-0.00806	-0.01613	ug/l	200	Ta	
W	182	165	2	0.33239	0.66478	ug/l	2000	W	
Re	185	193	3	0.00265	0.00530	ug/l	200	Re	
Pt	195	193	2	0.00408	0.00817	ug/l	200	Pt	
Au	197	193	3	0.00141	0.00282	ug/l	2000	Au	
Tl	205	193	3	-0.02422	-0.04843	ug/l	400	Tl	
Pb	208	193	3	0.08746	0.17493	ug/l	5000	Pb	
Bi	209	193	2	0.01288	0.02577	ug/l	2000	Bi	
Th	232	193	3	0.03289	0.06578	ug/l	2000	Th	
U	238	193	3	0.71906	1.43813	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5503564	1.47	7411413	74.3	80	120	Li (IS)	FAILED
Sc (IS)	45	2	138775	0.99	143379	96.8	80	120	Sc (IS)	
Sc (IS)	45	3	2667706	0.78	2392712	111.5	80	120	Sc (IS)	
Ge (IS)	72	2	334469	0.41	323154	103.5	80	120	Ge (IS)	
Ge (IS)	72	3	2208019	0.42	1861986	118.6	80	120	Ge (IS)	
In (IS)	115	3	13817241	1.64	12119833	114.0	80	120	In (IS)	
Ho (IS)	165	2	9990881	1.01	9598706	104.1	80	120	Ho (IS)	
Ho (IS)	165	3	16065135	1.06	13687738	117.4	80	120	Ho (IS)	
Ir (IS)	193	2	6375569	1.19	6085322	104.8	80	120	Ir (IS)	
Ir (IS)	193	3	7765406	0.61	6951639	111.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**MB 160-452611/1-A**
Data File Name	**056SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:55:06-06:00**
Type	**Sample**
VialNumber	**2308**
Dilution	**2**
Comment	**452611**
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.51222	1.02444	ug/l	1000	Li	
Be	9	6	3	-0.01387	-0.02774	ug/l	1000	Be	
B	11	6	3	1.60663	3.21326	ug/l	2000	B	
Na	23	45	2	10.43555	20.87109	ug/l	50000	Na	
Mg	24	45	2	1.69004	3.38009	ug/l	50000	Mg	
Al	27	45	2	4.48096	8.96191	ug/l	100000	Al	
P	31	45	2	10.42927	20.85853	ug/l	100000	P	
K	39	45	2	10.73664	21.47329	ug/l	100000	K	
Ca	44	45	3	12.21489	24.42978	ug/l	100000	Ca	
Ti	47	45	3	0.15082	0.30164	ug/l	2000	Ti	
V	51	45	2	0.01521	0.03041	ug/l	2000	V	
Cr	52	45	2	0.20854	0.41707	ug/l	2000	Cr	
Mn	55	72	2	0.09284	0.18569	ug/l	5000	Mn	
Fe	57	72	2	4.88202	9.76403	ug/l	100000	Fe	
Co	59	72	2	0.00785	0.01570	ug/l	2000	Co	
Ni	60	72	2	0.12555	0.25110	ug/l	2000	Ni	
Cu	63	72	2	-0.11291	-0.22581	ug/l	2000	Cu	
Zn	66	72	2	0.46698	0.93397	ug/l	5000	Zn	
As	75	72	2	-0.03133	-0.06266	ug/l	2000	As	
Se	78	72	2	0.10980	0.21960	ug/l	1000	Se	
Sr	88	72	3	0.04740	0.09481	ug/l	2000	Sr	
Y	89	72	2	0.00206	0.00413	ug/l	200	Y	
Zr	90	72	2	0.01221	0.02442	ug/l	2000	Zr	
Nb	93	72	2	-0.03011	-0.06021	ug/l	100	Nb	
Mo	95	72	3	0.03460	0.06920	ug/l	1000	Mo	
Ru	101	72	2	-0.00117	-0.00234	ug/l	200	Ru	
Rh	103	72	2	-0.00366	-0.00732	ug/l	200	Rh	
Pd	105	72	2	-0.00826	-0.01653	ug/l	20	Pd	
Ag	107	115	3	0.00364	0.00729	ug/l	400	Ag	
Cd	111	115	3	-0.00636	-0.01271	ug/l	2000	Cd	
Sn	118	115	3	7.48952	14.97903	ug/l	2000	Sn	
Sb	121	115	3	-0.02666	-0.05332	ug/l	1000	Sb	
Te	125	165	2	0.00216	0.00433	ug/l	200	Te	
Cs	133	165	2	-0.00171	-0.00341	ug/l	2000	Cs	
Ba	137	165	3	0.06117	0.12234	ug/l	5000	Ba	
La	139	165	2	-0.00058	-0.00116	ug/l	200	La	
Ce	140	165	2	0.00136	0.00272	ug/l	200	Ce	
Pr	141	165	2	-0.00181	-0.00361	ug/l	200	Pr	
Nd	146	165	2	0.00073	0.00147	ug/l	200	Nd	
Sm	147	165	3	-0.00274	-0.00547	ug/l	2000	Sm	
Hf	178	165	2	0.01416	0.02832	ug/l	200	Hf	
Ta	181	165	2	-0.01361	-0.02722	ug/l	200	Ta	
W	182	165	2	0.19288	0.38575	ug/l	2000	W	
Re	185	193	3	-0.00250	-0.00500	ug/l	200	Re	
Pt	195	193	2	0.00480	0.00961	ug/l	200	Pt	
Au	197	193	3	-0.02021	-0.04041	ug/l	2000	Au	
Tl	205	193	3	-0.03068	-0.06135	ug/l	400	Tl	
Pb	208	193	3	0.22077	0.44153	ug/l	5000	Pb	
Bi	209	193	2	0.00667	0.01335	ug/l	2000	Bi	
Th	232	193	3	0.00762	0.01525	ug/l	2000	Th	
U	238	193	3	-0.00150	-0.00299	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5959079	1.10	7411413	80.4	80	120	Li (IS)	
Sc (IS)	45	2	150028	1.71	143379	104.6	80	120	Sc (IS)	
Sc (IS)	45	3	2770027	0.99	2392712	115.8	80	120	Sc (IS)	
Ge (IS)	72	2	358745	0.75	323154	111.0	80	120	Ge (IS)	
Ge (IS)	72	3	2291557	0.65	1861986	123.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	14458012	0.23	12119833	119.3	80	120	In (IS)	
Ho (IS)	165	2	10420582	0.33	9598706	108.6	80	120	Ho (IS)	
Ho (IS)	165	3	16441275	1.28	13687738	120.1	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6867960	0.07	6085322	112.9	80	120	Ir (IS)	
Ir (IS)	193	3	8168902	0.88	6951639	117.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCS 160-452611/2-A**
Data File Name	**057SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:01:52-06:00**
Type	**Sample**
VialNumber	**2309**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	51.01654	102.03308	ug/l	1000	Li	
Be	9	6	3	51.92419	103.84839	ug/l	1000	Be	
B	11	6	3	106.88483	213.76966	ug/l	2000	B	
Na	23	45	2	5115.18645	10230.37291	ug/l	50000	Na	
Mg	24	45	2	4999.47123	9998.94245	ug/l	50000	Mg	
Al	27	45	2	4734.98556	9469.97112	ug/l	100000	Al	
P	31	45	2	462.24329	924.48658	ug/l	100000	P	
K	39	45	2	4759.64715	9519.29430	ug/l	100000	K	
Ca	44	45	3	5041.72770	10083.45541	ug/l	100000	Ca	
Ti	47	45	3	498.66855	997.33709	ug/l	2000	Ti	
V	51	45	2	490.90381	981.80763	ug/l	2000	V	
Cr	52	45	2	501.90733	1003.81466	ug/l	2000	Cr	
Mn	55	72	2	490.40339	980.80679	ug/l	5000	Mn	
Fe	57	72	2	5002.96951	10005.93901	ug/l	100000	Fe	
Co	59	72	2	504.45417	1008.90834	ug/l	2000	Co	
Ni	60	72	2	550.88469	1101.76937	ug/l	2000	Ni	
Cu	63	72	2	504.46118	1008.92236	ug/l	2000	Cu	
Zn	66	72	2	479.37670	958.75339	ug/l	5000	Zn	
As	75	72	2	475.25896	950.51793	ug/l	2000	As	
Se	78	72	2	226.11391	452.22782	ug/l	1000	Se	
Sr	88	72	3	496.92945	993.85890	ug/l	2000	Sr	
Y	89	72	2	0.00144	0.00289	ug/l	200	Y	
Zr	90	72	2	508.17503	1016.35006	ug/l	2000	Zr	
Nb	93	72	2	0.39918	0.79837	ug/l	100	Nb	
Mo	95	72	3	241.45595	482.91191	ug/l	1000	Mo	
Ru	101	72	2	-0.00413	-0.00826	ug/l	200	Ru	
Rh	103	72	2	0.01776	0.03552	ug/l	200	Rh	
Pd	105	72	2	0.02165	0.04330	ug/l	20	Pd	
Ag	107	115	3	94.68822	189.37645	ug/l	400	Ag	
Cd	111	115	3	490.01201	980.02402	ug/l	2000	Cd	
Sn	118	115	3	499.64140	999.28280	ug/l	2000	Sn	
Sb	121	115	3	245.33352	490.66705	ug/l	1000	Sb	
Te	125	165	2	0.04662	0.09324	ug/l	200	Te	
Cs	133	165	2	-0.00058	-0.00116	ug/l	2000	Cs	
Ba	137	165	3	479.16441	958.32882	ug/l	5000	Ba	
La	139	165	2	0.71255	1.42509	ug/l	200	La	
Ce	140	165	2	0.01899	0.03798	ug/l	200	Ce	
Pr	141	165	2	0.00063	0.00126	ug/l	200	Pr	
Nd	146	165	2	0.00678	0.01356	ug/l	200	Nd	
Sm	147	165	3	487.86613	975.73226	ug/l	2000	Sm	
Hf	178	165	2	0.29362	0.58724	ug/l	200	Hf	
Ta	181	165	2	0.28963	0.57926	ug/l	200	Ta	
W	182	165	2	503.99456	1007.98913	ug/l	2000	W	
Re	185	193	3	0.00610	0.01219	ug/l	200	Re	
Pt	195	193	2	0.00736	0.01471	ug/l	200	Pt	
Au	197	193	3	-0.02244	-0.04487	ug/l	2000	Au	
Tl	205	193	3	101.59329	203.18658	ug/l	400	Tl	
Pb	208	193	3	492.33758	984.67515	ug/l	5000	Pb	
Bi	209	193	2	468.31367	936.62734	ug/l	2000	Bi	
Th	232	193	3	483.37798	966.75596	ug/l	2000	Th	
U	238	193	3	488.04803	976.09606	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5809357	0.40	7411413	78.4	80	120	Li (IS)	FAILED
Sc (IS)	45	2	149149	0.55	143379	104.0	80	120	Sc (IS)	
Sc (IS)	45	3	2708506	1.18	2392712	113.2	80	120	Sc (IS)	
Ge (IS)	72	2	347681	0.23	323154	107.6	80	120	Ge (IS)	
Ge (IS)	72	3	2250448	0.71	1861986	120.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	13978323	1.65	12119833	115.3	80	120	In (IS)	
Ho (IS)	165	2	10192013	1.12	9598706	106.2	80	120	Ho (IS)	
Ho (IS)	165	3	16317008	0.69	13687738	119.2	80	120	Ho (IS)	
Ir (IS)	193	2	6501974	0.88	6085322	106.8	80	120	Ir (IS)	
Ir (IS)	193	3	8023642	0.35	6951639	115.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCSSRM 160-452611/3-A**
Data File Name	**058SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:08:33-06:00**
Type	**Sample**
VialNumber	**2310**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	7.89252	15.78503	ug/l	1000	Li	
Be	9	6	3	130.49418	260.98837	ug/l	1000	Be	
B	11	6	3	103.70421	207.40842	ug/l	2000	B	
Na	23	45	2	263.34315	526.68630	ug/l	50000	Na	
Mg	24	45	2	2468.79403	4937.58806	ug/l	50000	Mg	
Al	27	45	2	7390.43386	14780.86772	ug/l	100000	Al	
P	31	45	2	613.08501	1226.17001	ug/l	100000	P	
K	39	45	2	2055.82897	4111.65794	ug/l	100000	K	
Ca	44	45	3	5221.88011	10443.76022	ug/l	100000	Ca	
Ti	47	45	3	384.56304	769.12607	ug/l	2000	Ti	
V	51	45	2	61.78953	123.57906	ug/l	2000	V	
Cr	52	45	2	161.64067	323.28135	ug/l	2000	Cr	
Mn	55	72	2	260.13192	520.26383	ug/l	5000	Mn	
Fe	57	72	2	16352.65996	32705.31992	ug/l	100000	Fe	
Co	59	72	2	53.93286	107.86572	ug/l	2000	Co	
Ni	60	72	2	113.57352	227.14703	ug/l	2000	Ni	
Cu	63	72	2	208.22716	416.45432	ug/l	2000	Cu	
Zn	66	72	2	237.85712	475.71424	ug/l	5000	Zn	
As	75	72	2	193.31906	386.63811	ug/l	2000	As	
Se	78	72	2	229.68528	459.37056	ug/l	1000	Se	
Sr	88	72	3	130.11741	260.23483	ug/l	2000	Sr	
Y	89	72	2	8.83909	17.67818	ug/l	200	Y	
Zr	90	72	2	5.74908	11.49815	ug/l	2000	Zr	
Nb	93	72	2	0.55645	1.11290	ug/l	100	Nb	
Mo	95	72	3	134.34694	268.69388	ug/l	1000	Mo	
Ru	101	72	2	-0.00411	-0.00823	ug/l	200	Ru	
Rh	103	72	2	0.00044	0.00088	ug/l	200	Rh	
Pd	105	72	2	0.00761	0.01523	ug/l	20	Pd	
Ag	107	115	3	51.19816	102.39632	ug/l	400	Ag	
Cd	111	115	3	250.52039	501.04078	ug/l	2000	Cd	
Sn	118	115	3	121.49023	242.98046	ug/l	2000	Sn	
Sb	121	115	3	69.44330	138.88661	ug/l	1000	Sb	
Te	125	165	2	0.03377	0.06753	ug/l	200	Te	
Cs	133	165	2	1.12855	2.25711	ug/l	2000	Cs	
Ba	137	165	3	298.60151	597.20303	ug/l	5000	Ba	
La	139	165	2	26.82080	53.64160	ug/l	200	La	
Ce	140	165	2	59.76528	119.53056	ug/l	200	Ce	
Pr	141	165	2	6.40539	12.81077	ug/l	200	Pr	
Nd	146	165	2	24.38818	48.77636	ug/l	200	Nd	
Sm	147	165	3	4.28017	8.56033	ug/l	2000	Sm	
Hf	178	165	2	0.12040	0.24079	ug/l	200	Hf	
Ta	181	165	2	-0.02059	-0.04118	ug/l	200	Ta	
W	182	165	2	1.31277	2.62554	ug/l	2000	W	
Re	185	193	3	-0.00188	-0.00375	ug/l	200	Re	
Pt	195	193	2	0.00179	0.00358	ug/l	200	Pt	
Au	197	193	3	-0.02908	-0.05815	ug/l	2000	Au	
Tl	205	193	3	185.18375	370.36751	ug/l	400	Tl	
Pb	208	193	3	127.47340	254.94681	ug/l	5000	Pb	
Bi	209	193	2	0.36391	0.72781	ug/l	2000	Bi	
Th	232	193	3	12.76335	25.52671	ug/l	2000	Th	
U	238	193	3	108.78653	217.57307	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5819237	5.67	7411413	78.5	80	120	Li (IS)	FAILED
Sc (IS)	45	2	155445	1.48	143379	108.4	80	120	Sc (IS)	
Sc (IS)	45	3	2890951	8.31	2392712	120.8	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	354851	0.61	323154	109.8	80	120	Ge (IS)	
Ge (IS)	72	3	2245653	5.85	1861986	120.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	14189469	8.69	12119833	117.1	80	120	In (IS)	
Ho (IS)	165	2	10320924	0.80	9598706	107.5	80	120	Ho (IS)	
Ho (IS)	165	3	16232805	7.98	13687738	118.6	80	120	Ho (IS)	
Ir (IS)	193	2	6787897	0.83	6085322	111.5	80	120	Ir (IS)	
Ir (IS)	193	3	8209858	7.29	6951639	118.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36526-B-1-A**
Data File Name	**059SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:15:18-06:00**
Type	**Sample**
VialNumber	**2311**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	48.40807	96.81614	ug/l	1000	Li	
Be	9	6	3	1.36506	2.73013	ug/l	1000	Be	
B	11	6	3	16.67413	33.34827	ug/l	2000	B	
Na	23	45	2	2021.03224	4042.06449	ug/l	50000	Na	
Mg	24	45	2	30894.02969	61788.05938	ug/l	50000	Mg	
Al	27	45	2	33313.81979	66627.63958	ug/l	100000	Al	
P	31	45	2	1695.22024	3390.44049	ug/l	100000	P	
K	39	45	2	2814.83899	5629.67798	ug/l	100000	K	
Ca	44	45	3	47328.42510	94656.85020	ug/l	100000	Ca	
Ti	47	45	3	1390.82048	2781.64096	ug/l	2000	Ti	
V	51	45	2	88.50433	177.00866	ug/l	2000	V	
Cr	52	45	2	57.11678	114.23356	ug/l	2000	Cr	
Mn	55	72	2	610.22373	1220.44747	ug/l	5000	Mn	
Fe	57	72	2	69532.78352	139065.56704	ug/l	100000	Fe	
Co	59	72	2	20.97016	41.94032	ug/l	2000	Co	
Ni	60	72	2	74.95395	149.90791	ug/l	2000	Ni	
Cu	63	72	2	3920.50145	7841.00291	ug/l	2000	Cu	FAILED
Zn	66	72	2	65.05120	130.10241	ug/l	5000	Zn	
As	75	72	2	28.90532	57.81063	ug/l	2000	As	
Se	78	72	2	13.73621	27.47242	ug/l	1000	Se	
Sr	88	72	3	546.83731	1093.67461	ug/l	2000	Sr	
Y	89	72	2	16.27100	32.54199	ug/l	200	Y	
Zr	90	72	2	10.56542	21.13085	ug/l	2000	Zr	
Nb	93	72	2	0.39273	0.78545	ug/l	100	Nb	
Mo	95	72	3	13.83629	27.67258	ug/l	1000	Mo	
Ru	101	72	2	-0.00603	-0.01207	ug/l	200	Ru	
Rh	103	72	2	-0.00370	-0.00740	ug/l	200	Rh	
Pd	105	72	2	0.04155	0.08310	ug/l	20	Pd	
Ag	107	115	3	0.36650	0.73300	ug/l	400	Ag	
Cd	111	115	3	0.21466	0.42932	ug/l	2000	Cd	
Sn	118	115	3	9.46586	18.93171	ug/l	2000	Sn	
Sb	121	115	3	4.11017	8.22033	ug/l	1000	Sb	
Te	125	165	2	0.54632	1.09265	ug/l	200	Te	
Cs	133	165	2	2.59681	5.19362	ug/l	2000	Cs	
Ba	137	165	3	344.94882	689.89765	ug/l	5000	Ba	
La	139	165	2	29.33101	58.66201	ug/l	200	La	
Ce	140	165	2	59.92861	119.85722	ug/l	200	Ce	
Pr	141	165	2	6.68374	13.36749	ug/l	200	Pr	
Nd	146	165	2	27.22891	54.45781	ug/l	200	Nd	
Sm	147	165	3	5.28136	10.56272	ug/l	2000	Sm	
Hf	178	165	2	0.36970	0.73941	ug/l	200	Hf	
Ta	181	165	2	-0.00990	-0.01981	ug/l	200	Ta	
W	182	165	2	3.06331	6.12662	ug/l	2000	W	
Re	185	193	3	0.00334	0.00669	ug/l	200	Re	
Pt	195	193	2	0.00798	0.01595	ug/l	200	Pt	
Au	197	193	3	-0.00530	-0.01060	ug/l	2000	Au	
Tl	205	193	3	0.57853	1.15706	ug/l	400	Tl	
Pb	208	193	3	21.38486	42.76973	ug/l	5000	Pb	
Bi	209	193	2	1.28268	2.56535	ug/l	2000	Bi	
Th	232	193	3	16.51769	33.03537	ug/l	2000	Th	
U	238	193	3	8.80123	17.60245	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5445301	3.34	7411413	73.5	80	120	Li (IS)	FAILED
Sc (IS)	45	2	176329	1.48	143379	123.0	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3237855	4.36	2392712	135.3	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	358521	0.92	323154	110.9	80	120	Ge (IS)	
Ge (IS)	72	3	2234409	4.09	1861986	120.0	80	120	Ge (IS)	FAILED
In (IS)	115	3	13521363	5.23	12119833	111.6	80	120	In (IS)	
Ho (IS)	165	2	10267084	0.49	9598706	107.0	80	120	Ho (IS)	
Ho (IS)	165	3	15870572	6.10	13687738	115.9	80	120	Ho (IS)	
Ir (IS)	193	2	6438498	0.60	6085322	105.8	80	120	Ir (IS)	
Ir (IS)	193	3	7628731	4.84	6951639	109.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36526-B-2-A**
Data File Name	**060SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:22:02-06:00**
Type	**Sample**
VialNumber	**2312**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	33.32618	66.65237	ug/l	1000	Li	
Be	9	6	3	1.11941	2.23882	ug/l	1000	Be	
B	11	6	3	11.51206	23.02411	ug/l	2000	B	
Na	23	45	2	1500.75138	3001.50275	ug/l	50000	Na	
Mg	24	45	2	32172.19777	64344.39553	ug/l	50000	Mg	
Al	27	45	2	31070.41515	62140.83029	ug/l	100000	Al	
P	31	45	2	1441.57610	2883.15219	ug/l	100000	P	
K	39	45	2	3187.17443	6374.34887	ug/l	100000	K	
Ca	44	45	3	29245.20728	58490.41457	ug/l	100000	Ca	
Ti	47	45	3	1217.15201	2434.30402	ug/l	2000	Ti	
V	51	45	2	81.35685	162.71369	ug/l	2000	V	
Cr	52	45	2	39.20655	78.41311	ug/l	2000	Cr	
Mn	55	72	2	445.88017	891.76034	ug/l	5000	Mn	
Fe	57	72	2	64326.74467	128653.48934	ug/l	100000	Fe	
Co	59	72	2	17.30417	34.60834	ug/l	2000	Co	
Ni	60	72	2	61.64217	123.28435	ug/l	2000	Ni	
Cu	63	72	2	4470.13734	8940.27468	ug/l	2000	Cu	FAILED
Zn	66	72	2	49.33636	98.67272	ug/l	5000	Zn	
As	75	72	2	29.22651	58.45303	ug/l	2000	As	
Se	78	72	2	19.24579	38.49157	ug/l	1000	Se	
Sr	88	72	3	324.98998	649.97996	ug/l	2000	Sr	
Y	89	72	2	9.90080	19.80161	ug/l	200	Y	
Zr	90	72	2	7.87552	15.75104	ug/l	2000	Zr	
Nb	93	72	2	0.26278	0.52557	ug/l	100	Nb	
Mo	95	72	3	13.88241	27.76483	ug/l	1000	Mo	
Ru	101	72	2	-0.00570	-0.01141	ug/l	200	Ru	
Rh	103	72	2	-0.00463	-0.00927	ug/l	200	Rh	
Pd	105	72	2	0.02682	0.05364	ug/l	20	Pd	
Ag	107	115	3	0.28415	0.56830	ug/l	400	Ag	
Cd	111	115	3	0.12546	0.25092	ug/l	2000	Cd	
Sn	118	115	3	8.37790	16.75580	ug/l	2000	Sn	
Sb	121	115	3	2.72499	5.44999	ug/l	1000	Sb	
Te	125	165	2	0.47326	0.94651	ug/l	200	Te	
Cs	133	165	2	2.42956	4.85912	ug/l	2000	Cs	
Ba	137	165	3	201.48190	402.96380	ug/l	5000	Ba	
La	139	165	2	19.96053	39.92106	ug/l	200	La	
Ce	140	165	2	44.72476	89.44953	ug/l	200	Ce	
Pr	141	165	2	4.98313	9.96625	ug/l	200	Pr	
Nd	146	165	2	20.31953	40.63906	ug/l	200	Nd	
Sm	147	165	3	3.73834	7.47669	ug/l	2000	Sm	
Hf	178	165	2	0.28198	0.56396	ug/l	200	Hf	
Ta	181	165	2	-0.01531	-0.03061	ug/l	200	Ta	
W	182	165	2	3.17882	6.35763	ug/l	2000	W	
Re	185	193	3	0.00026	0.00052	ug/l	200	Re	
Pt	195	193	2	0.00770	0.01541	ug/l	200	Pt	
Au	197	193	3	0.04465	0.08930	ug/l	2000	Au	
Tl	205	193	3	0.27806	0.55612	ug/l	400	Tl	
Pb	208	193	3	15.94251	31.88503	ug/l	5000	Pb	
Bi	209	193	2	1.08080	2.16161	ug/l	2000	Bi	
Th	232	193	3	16.89226	33.78452	ug/l	2000	Th	
U	238	193	3	6.30936	12.61872	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5510177	0.65	7411413	74.3	80	120	Li (IS)	FAILED
Sc (IS)	45	2	174044	0.17	143379	121.4	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3237414	0.86	2392712	135.3	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	366135	1.33	323154	113.3	80	120	Ge (IS)	
Ge (IS)	72	3	2308644	0.43	1861986	124.0	80	120	Ge (IS)	FAILED
In (IS)	115	3	14033542	0.41	12119833	115.8	80	120	In (IS)	
Ho (IS)	165	2	10315090	0.74	9598706	107.5	80	120	Ho (IS)	
Ho (IS)	165	3	16351937	0.54	13687738	119.5	80	120	Ho (IS)	
Ir (IS)	193	2	6419376	0.66	6085322	105.5	80	120	Ir (IS)	
Ir (IS)	193	3	7846214	0.22	6951639	112.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-3-A**
Data File Name	**061SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:28:46-06:00**
Type	**Sample**
VialNumber	**2401**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	14.70561	29.41122	ug/l	1000	Li	
Be	9	6	3	0.77830	1.55660	ug/l	1000	Be	
B	11	6	3	5.48583	10.97165	ug/l	2000	B	
Na	23	45	2	234.73091	469.46183	ug/l	50000	Na	
Mg	24	45	2	31088.36535	62176.73071	ug/l	50000	Mg	
Al	27	45	2	31744.56832	63489.13664	ug/l	100000	Al	
P	31	45	2	2037.69021	4075.38042	ug/l	100000	P	
K	39	45	2	1656.24808	3312.49615	ug/l	100000	K	
Ca	44	45	3	15301.74461	30603.48922	ug/l	100000	Ca	
Ti	47	45	3	1225.36657	2450.73313	ug/l	2000	Ti	
V	51	45	2	80.88518	161.77036	ug/l	2000	V	
Cr	52	45	2	24.33445	48.66890	ug/l	2000	Cr	
Mn	55	72	2	191.92770	383.85541	ug/l	5000	Mn	
Fe	57	72	2	55374.40432	110748.80864	ug/l	100000	Fe	
Co	59	72	2	19.09587	38.19174	ug/l	2000	Co	
Ni	60	72	2	38.72811	77.45622	ug/l	2000	Ni	
Cu	63	72	2	5884.94599	11769.89199	ug/l	2000	Cu	FAILED
Zn	66	72	2	31.16407	62.32815	ug/l	5000	Zn	
As	75	72	2	26.77988	53.55977	ug/l	2000	As	
Se	78	72	2	13.49653	26.99306	ug/l	1000	Se	
Sr	88	72	3	439.01301	878.02603	ug/l	2000	Sr	
Y	89	72	2	11.91389	23.82778	ug/l	200	Y	
Zr	90	72	2	4.53408	9.06816	ug/l	2000	Zr	
Nb	93	72	2	0.17466	0.34932	ug/l	100	Nb	
Mo	95	72	3	10.66194	21.32387	ug/l	1000	Mo	
Ru	101	72	2	-0.00610	-0.01221	ug/l	200	Ru	
Rh	103	72	2	-0.00438	-0.00875	ug/l	200	Rh	
Pd	105	72	2	0.03183	0.06366	ug/l	20	Pd	
Ag	107	115	3	0.31517	0.63034	ug/l	400	Ag	
Cd	111	115	3	0.04693	0.09386	ug/l	2000	Cd	
Sn	118	115	3	7.68160	15.36319	ug/l	2000	Sn	
Sb	121	115	3	3.19110	6.38220	ug/l	1000	Sb	
Te	125	165	2	0.48887	0.97773	ug/l	200	Te	
Cs	133	165	2	1.59752	3.19504	ug/l	2000	Cs	
Ba	137	165	3	153.73007	307.46013	ug/l	5000	Ba	
La	139	165	2	25.50496	51.00992	ug/l	200	La	
Ce	140	165	2	50.86665	101.73329	ug/l	200	Ce	
Pr	141	165	2	5.53787	11.07574	ug/l	200	Pr	
Nd	146	165	2	22.69321	45.38641	ug/l	200	Nd	
Sm	147	165	3	3.99987	7.99974	ug/l	2000	Sm	
Hf	178	165	2	0.17205	0.34409	ug/l	200	Hf	
Ta	181	165	2	-0.00821	-0.01642	ug/l	200	Ta	
W	182	165	2	3.11883	6.23766	ug/l	2000	W	
Re	185	193	3	-0.00072	-0.00144	ug/l	200	Re	
Pt	195	193	2	0.00587	0.01174	ug/l	200	Pt	
Au	197	193	3	-0.00747	-0.01495	ug/l	2000	Au	
Tl	205	193	3	0.07976	0.15951	ug/l	400	Tl	
Pb	208	193	3	17.33139	34.66279	ug/l	5000	Pb	
Bi	209	193	2	1.40263	2.80526	ug/l	2000	Bi	
Th	232	193	3	14.46963	28.93927	ug/l	2000	Th	
U	238	193	3	5.17613	10.35225	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5580643	0.59	7411413	75.3	80	120	Li (IS)	FAILED
Sc (IS)	45	2	170851	5.30	143379	119.2	80	120	Sc (IS)	
Sc (IS)	45	3	3168415	0.41	2392712	132.4	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	370444	4.75	323154	114.6	80	120	Ge (IS)	
Ge (IS)	72	3	2320983	0.34	1861986	124.7	80	120	Ge (IS)	FAILED
In (IS)	115	3	14188316	0.94	12119833	117.1	80	120	In (IS)	
Ho (IS)	165	2	10469532	6.52	9598706	109.1	80	120	Ho (IS)	
Ho (IS)	165	3	16523882	1.24	13687738	120.7	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6610776	5.31	6085322	108.6	80	120	Ir (IS)	
Ir (IS)	193	3	7906643	1.04	6951639	113.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36526-B-4-A**
Data File Name	**062SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:35:28-06:00**
Type	**Sample**
VialNumber	**2402**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	14.02583	28.05166	ug/l	1000	Li	
Be	9	6	3	1.06348	2.12695	ug/l	1000	Be	
B	11	6	3	5.37688	10.75377	ug/l	2000	B	
Na	23	45	2	368.97537	737.95074	ug/l	50000	Na	
Mg	24	45	2	23847.94519	47695.89038	ug/l	50000	Mg	
Al	27	45	2	23066.26268	46132.52537	ug/l	100000	Al	
P	31	45	2	3094.22253	6188.44506	ug/l	100000	P	
K	39	45	2	5680.83225	11361.66449	ug/l	100000	K	
Ca	44	45	3	19763.75349	39527.50698	ug/l	100000	Ca	
Ti	47	45	3	1495.05591	2990.11182	ug/l	2000	Ti	
V	51	45	2	79.36023	158.72047	ug/l	2000	V	
Cr	52	45	2	35.98860	71.97721	ug/l	2000	Cr	
Mn	55	72	2	451.09206	902.18411	ug/l	5000	Mn	
Fe	57	72	2	67166.42061	134332.84121	ug/l	100000	Fe	
Co	59	72	2	31.59464	63.18928	ug/l	2000	Co	
Ni	60	72	2	42.52729	85.05459	ug/l	2000	Ni	
Cu	63	72	2	4331.19589	8662.39177	ug/l	2000	Cu	FAILED
Zn	66	72	2	69.51243	139.02486	ug/l	5000	Zn	
As	75	72	2	10.14368	20.28735	ug/l	2000	As	
Se	78	72	2	7.35502	14.71004	ug/l	1000	Se	
Sr	88	72	3	171.53460	343.06920	ug/l	2000	Sr	
Y	89	72	2	15.71500	31.43000	ug/l	200	Y	
Zr	90	72	2	6.00112	12.00224	ug/l	2000	Zr	
Nb	93	72	2	0.38870	0.77741	ug/l	100	Nb	
Mo	95	72	3	10.80011	21.60022	ug/l	1000	Mo	
Ru	101	72	2	-0.00581	-0.01162	ug/l	200	Ru	
Rh	103	72	2	-0.00563	-0.01126	ug/l	200	Rh	
Pd	105	72	2	0.01761	0.03521	ug/l	20	Pd	
Ag	107	115	3	0.39239	0.78477	ug/l	400	Ag	
Cd	111	115	3	0.09330	0.18660	ug/l	2000	Cd	
Sn	118	115	3	8.83522	17.67044	ug/l	2000	Sn	
Sb	121	115	3	1.63346	3.26693	ug/l	1000	Sb	
Te	125	165	2	0.80111	1.60222	ug/l	200	Te	
Cs	133	165	2	2.57106	5.14211	ug/l	2000	Cs	
Ba	137	165	3	178.72740	357.45479	ug/l	5000	Ba	
La	139	165	2	33.95553	67.91106	ug/l	200	La	
Ce	140	165	2	73.43821	146.87641	ug/l	200	Ce	
Pr	141	165	2	8.41933	16.83865	ug/l	200	Pr	
Nd	146	165	2	34.78549	69.57098	ug/l	200	Nd	
Sm	147	165	3	6.48734	12.97469	ug/l	2000	Sm	
Hf	178	165	2	0.21951	0.43903	ug/l	200	Hf	
Ta	181	165	2	0.01673	0.03346	ug/l	200	Ta	
W	182	165	2	2.08687	4.17375	ug/l	2000	W	
Re	185	193	3	0.21634	0.43267	ug/l	200	Re	
Pt	195	193	2	0.00977	0.01954	ug/l	200	Pt	
Au	197	193	3	-0.02063	-0.04125	ug/l	2000	Au	
Tl	205	193	3	0.26875	0.53751	ug/l	400	Tl	
Pb	208	193	3	7.64828	15.29656	ug/l	5000	Pb	
Bi	209	193	2	1.54939	3.09878	ug/l	2000	Bi	
Th	232	193	3	37.08318	74.16635	ug/l	2000	Th	
U	238	193	3	9.65830	19.31659	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5588270	3.30	7411413	75.4	80	120	Li (IS)	FAILED
Sc (IS)	45	2	173567	2.81	143379	121.1	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3227011	4.79	2392712	134.9	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	375339	2.66	323154	116.1	80	120	Ge (IS)	
Ge (IS)	72	3	2361241	4.37	1861986	126.8	80	120	Ge (IS)	FAILED
In (IS)	115	3	14446204	4.36	12119833	119.2	80	120	In (IS)	
Ho (IS)	165	2	10443281	1.09	9598706	108.8	80	120	Ho (IS)	
Ho (IS)	165	3	16815809	5.18	13687738	122.9	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6581911	1.28	6085322	108.2	80	120	Ir (IS)	
Ir (IS)	193	3	7992084	4.51	6951639	115.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-5-A**
Data File Name	**063SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:42:11-06:00**
Type	**Sample**
VialNumber	**2403**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	12.90654	25.81307	ug/l	1000	Li	
Be	9	6	3	1.00930	2.01860	ug/l	1000	Be	
B	11	6	3	9.99198	19.98396	ug/l	2000	B	
Na	23	45	2	764.16392	1528.32784	ug/l	50000	Na	
Mg	24	45	2	22219.79005	44439.58010	ug/l	50000	Mg	
Al	27	45	2	27747.32922	55494.65845	ug/l	100000	Al	
P	31	45	2	1848.42958	3696.85917	ug/l	100000	P	
K	39	45	2	4030.63900	8061.27800	ug/l	100000	K	
Ca	44	45	3	17851.51601	35703.03202	ug/l	100000	Ca	
Ti	47	45	3	1670.03929	3340.07859	ug/l	2000	Ti	
V	51	45	2	72.97408	145.94816	ug/l	2000	V	
Cr	52	45	2	21.34695	42.69389	ug/l	2000	Cr	
Mn	55	72	2	146.80437	293.60874	ug/l	5000	Mn	
Fe	57	72	2	55098.86594	110197.73189	ug/l	100000	Fe	
Co	59	72	2	18.47807	36.95613	ug/l	2000	Co	
Ni	60	72	2	31.42639	62.85278	ug/l	2000	Ni	
Cu	63	72	2	2916.76833	5833.53665	ug/l	2000	Cu	FAILED
Zn	66	72	2	32.57096	65.14192	ug/l	5000	Zn	
As	75	72	2	35.19549	70.39099	ug/l	2000	As	
Se	78	72	2	24.49505	48.99009	ug/l	1000	Se	
Sr	88	72	3	404.39696	808.79393	ug/l	2000	Sr	
Y	89	72	2	9.33000	18.66001	ug/l	200	Y	
Zr	90	72	2	5.61884	11.23767	ug/l	2000	Zr	
Nb	93	72	2	0.47330	0.94659	ug/l	100	Nb	
Mo	95	72	3	15.83869	31.67738	ug/l	1000	Mo	
Ru	101	72	2	-0.00556	-0.01113	ug/l	200	Ru	
Rh	103	72	2	-0.00500	-0.01001	ug/l	200	Rh	
Pd	105	72	2	0.03001	0.06003	ug/l	20	Pd	
Ag	107	115	3	0.69023	1.38046	ug/l	400	Ag	
Cd	111	115	3	0.05125	0.10250	ug/l	2000	Cd	
Sn	118	115	3	8.52119	17.04238	ug/l	2000	Sn	
Sb	121	115	3	3.67194	7.34387	ug/l	1000	Sb	
Te	125	165	2	0.84280	1.68561	ug/l	200	Te	
Cs	133	165	2	2.48764	4.97529	ug/l	2000	Cs	
Ba	137	165	3	191.98322	383.96644	ug/l	5000	Ba	
La	139	165	2	29.72733	59.45466	ug/l	200	La	
Ce	140	165	2	62.44287	124.88575	ug/l	200	Ce	
Pr	141	165	2	7.05396	14.10793	ug/l	200	Pr	
Nd	146	165	2	29.70587	59.41175	ug/l	200	Nd	
Sm	147	165	3	5.10765	10.21531	ug/l	2000	Sm	
Hf	178	165	2	0.19407	0.38815	ug/l	200	Hf	
Ta	181	165	2	-0.00058	-0.00116	ug/l	200	Ta	
W	182	165	2	5.63566	11.27131	ug/l	2000	W	
Re	185	193	3	0.06668	0.13337	ug/l	200	Re	
Pt	195	193	2	0.00585	0.01171	ug/l	200	Pt	
Au	197	193	3	0.00250	0.00501	ug/l	2000	Au	
Tl	205	193	3	0.14775	0.29550	ug/l	400	Tl	
Pb	208	193	3	13.84129	27.68258	ug/l	5000	Pb	
Bi	209	193	2	2.20711	4.41421	ug/l	2000	Bi	
Th	232	193	3	19.19719	38.39437	ug/l	2000	Th	
U	238	193	3	23.32639	46.65278	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5459981	3.43	7411413	73.7	80	120	Li (IS)	FAILED
Sc (IS)	45	2	159679	8.47	143379	111.4	80	120	Sc (IS)	
Sc (IS)	45	3	3175151	2.40	2392712	132.7	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	353518	6.65	323154	109.4	80	120	Ge (IS)	
Ge (IS)	72	3	2366722	2.57	1861986	127.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	14466499	3.04	12119833	119.4	80	120	In (IS)	
Ho (IS)	165	2	9743216	9.48	9598706	101.5	80	120	Ho (IS)	
Ho (IS)	165	3	16619103	3.14	13687738	121.4	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6132455	8.61	6085322	100.8	80	120	Ir (IS)	
Ir (IS)	193	3	7967079	3.22	6951639	114.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36526-B-6-A**
Data File Name	**064SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:48:54-06:00**
Type	**Sample**
VialNumber	**2404**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	13.71431	27.42863	ug/l	1000	Li	
Be	9	6	3	1.20030	2.40061	ug/l	1000	Be	
B	11	6	3	10.19751	20.39502	ug/l	2000	B	
Na	23	45	2	638.88386	1277.76772	ug/l	50000	Na	
Mg	24	45	2	22372.19800	44744.39600	ug/l	50000	Mg	
Al	27	45	2	29617.85760	59235.71520	ug/l	100000	Al	
P	31	45	2	1752.79874	3505.59748	ug/l	100000	P	
K	39	45	2	4047.94441	8095.88882	ug/l	100000	K	
Ca	44	45	3	19664.88523	39329.77046	ug/l	100000	Ca	
Ti	47	45	3	1742.64179	3485.28358	ug/l	2000	Ti	
V	51	45	2	73.38559	146.77119	ug/l	2000	V	
Cr	52	45	2	21.89403	43.78806	ug/l	2000	Cr	
Mn	55	72	2	147.68141	295.36281	ug/l	5000	Mn	
Fe	57	72	2	55171.62588	110343.25176	ug/l	100000	Fe	
Co	59	72	2	15.68605	31.37209	ug/l	2000	Co	
Ni	60	72	2	29.50054	59.00108	ug/l	2000	Ni	
Cu	63	72	2	2919.23254	5838.46509	ug/l	2000	Cu	FAILED
Zn	66	72	2	35.52335	71.04671	ug/l	5000	Zn	
As	75	72	2	37.14770	74.29540	ug/l	2000	As	
Se	78	72	2	23.14248	46.28497	ug/l	1000	Se	
Sr	88	72	3	504.15386	1008.30772	ug/l	2000	Sr	
Y	89	72	2	8.16543	16.33086	ug/l	200	Y	
Zr	90	72	2	4.89248	9.78496	ug/l	2000	Zr	
Nb	93	72	2	0.38816	0.77632	ug/l	100	Nb	
Mo	95	72	3	16.73373	33.46746	ug/l	1000	Mo	
Ru	101	72	2	-0.00557	-0.01113	ug/l	200	Ru	
Rh	103	72	2	-0.00495	-0.00990	ug/l	200	Rh	
Pd	105	72	2	0.03471	0.06942	ug/l	20	Pd	
Ag	107	115	3	0.79521	1.59042	ug/l	400	Ag	
Cd	111	115	3	0.05538	0.11075	ug/l	2000	Cd	
Sn	118	115	3	8.83115	17.66229	ug/l	2000	Sn	
Sb	121	115	3	4.36264	8.72528	ug/l	1000	Sb	
Te	125	165	2	0.84252	1.68503	ug/l	200	Te	
Cs	133	165	2	2.46327	4.92655	ug/l	2000	Cs	
Ba	137	165	3	242.21781	484.43562	ug/l	5000	Ba	
La	139	165	2	28.98483	57.96966	ug/l	200	La	
Ce	140	165	2	58.82432	117.64864	ug/l	200	Ce	
Pr	141	165	2	6.56545	13.13090	ug/l	200	Pr	
Nd	146	165	2	27.07956	54.15911	ug/l	200	Nd	
Sm	147	165	3	4.82769	9.65538	ug/l	2000	Sm	
Hf	178	165	2	0.17128	0.34257	ug/l	200	Hf	
Ta	181	165	2	-0.00410	-0.00820	ug/l	200	Ta	
W	182	165	2	6.46251	12.92501	ug/l	2000	W	
Re	185	193	3	0.02107	0.04214	ug/l	200	Re	
Pt	195	193	2	0.00682	0.01364	ug/l	200	Pt	
Au	197	193	3	0.06934	0.13867	ug/l	2000	Au	
Tl	205	193	3	0.17445	0.34890	ug/l	400	Tl	
Pb	208	193	3	19.49811	38.99622	ug/l	5000	Pb	
Bi	209	193	2	2.15806	4.31612	ug/l	2000	Bi	
Th	232	193	3	19.97158	39.94316	ug/l	2000	Th	
U	238	193	3	12.93473	25.86945	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5289786	4.76	7411413	71.4	80	120	Li (IS)	FAILED
Sc (IS)	45	2	166110	5.05	143379	115.9	80	120	Sc (IS)	
Sc (IS)	45	3	3045793	6.89	2392712	127.3	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	366837	4.26	323154	113.5	80	120	Ge (IS)	
Ge (IS)	72	3	2276865	4.77	1861986	122.3	80	120	Ge (IS)	FAILED
In (IS)	115	3	13635205	8.30	12119833	112.5	80	120	In (IS)	
Ho (IS)	165	2	10088607	5.06	9598706	105.1	80	120	Ho (IS)	
Ho (IS)	165	3	15667378	7.77	13687738	114.5	80	120	Ho (IS)	
Ir (IS)	193	2	6285283	4.31	6085322	103.3	80	120	Ir (IS)	
Ir (IS)	193	3	7506234	7.87	6951639	108.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**065LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:55:40-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	6.05342	ug/l	5	121.1	80	120	Li	FAILED
Be	9	6	3	0.64350	ug/l	0.5	128.7	80	120	Be	FAILED
B	11	6	3	114.82512	ug/l	100	114.8	80	120	B	
Na	23	45	2	104.83385	ug/l	100	104.8	80	120	Na	
Mg	24	45	2	53.50396	ug/l	50	107.0	80	120	Mg	
Al	27	45	2	52.55906	ug/l	50	105.1	80	120	Al	
P	31	45	2	94.51055	ug/l	100	94.5	80	120	P	
K	39	45	2	98.81914	ug/l	100	98.8	80	120	K	
Ca	44	45	3	202.51526	ug/l	200	101.3	80	120	Ca	
Ti	47	45	3	5.36173	ug/l	5	107.2	80	120	Ti	
V	51	45	2	10.32646	ug/l	10	103.3	80	120	V	
Cr	52	45	2	10.38002	ug/l	10	103.8	80	120	Cr	
Mn	55	72	2	4.07291	ug/l	4	101.8	80	120	Mn	
Fe	57	72	2	59.29888	ug/l	50	118.6	80	120	Fe	
Co	59	72	2	2.09815	ug/l	2	104.9	80	120	Co	
Ni	60	72	2	5.74522	ug/l	5	114.9	80	120	Ni	
Cu	63	72	2	3.52556	ug/l	3	117.5	80	120	Cu	
Zn	66	72	2	21.79054	ug/l	20	109.0	80	120	Zn	
As	75	72	2	10.58972	ug/l	10	105.9	80	120	As	
Se	78	72	2	5.49225	ug/l	5	109.8	80	120	Se	
Sr	88	72	3	4.94272	ug/l	5	98.9	80	120	Sr	
Y	89	72	2	4.85823	ug/l	5	97.2	80	120	Y	
Zr	90	72	2	4.99159	ug/l	5	99.8	80	120	Zr	
Nb	93	72	2	18.65208	ug/l	25	74.6	80	120	Nb	FAILED
Mo	95	72	3	4.66743	ug/l	5	93.3	80	120	Mo	
Ru	101	72	2	10.46439	ug/l	10	104.6	80	120	Ru	
Rh	103	72	2	10.14325	ug/l	10	101.4	80	120	Rh	
Pd	105	72	2	0.55956	ug/l	0.5	111.9	80	120	Pd	
Ag	107	115	3	1.89674	ug/l	2	94.8	80	120	Ag	
Cd	111	115	3	0.49708	ug/l	0.5	99.4	80	120	Cd	
Sn	118	115	3	1.84174	ug/l	2	92.1	80	120	Sn	
Sb	121	115	3	4.64445	ug/l	5	92.9	80	120	Sb	
Te	125	165	2	9.72034	ug/l	10	97.2	80	120	Te	
Cs	133	165	2	0.94402	ug/l	1	94.4	80	120	Cs	
Ba	137	165	3	1.97408	ug/l	2	98.7	80	120	Ba	
La	139	165	2	1.97402	ug/l	2	98.7	80	120	La	
Ce	140	165	2	9.77091	ug/l	10	97.7	80	120	Ce	
Pr	141	165	2	1.94737	ug/l	2	97.4	80	120	Pr	
Nd	146	165	2	1.93550	ug/l	2	96.8	80	120	Nd	
Sm	147	165	3	9.66157	ug/l	10	96.6	80	120	Sm	
Hf	178	165	2	9.15594	ug/l	10	91.6	80	120	Hf	
Ta	181	165	2	7.74405	ug/l	10	77.4	80	120	Ta	FAILED
W	182	165	2	4.92149	ug/l	5	98.4	80	120	W	
Re	185	193	3	9.17417	ug/l	10	91.7	80	120	Re	
Pt	195	193	2	1.07322	ug/l	1	107.3	80	120	Pt	
Au	197	193	3	4.47847	ug/l	5	89.6	80	120	Au	
Tl	205	193	3	1.82637	ug/l	2	91.3	80	120	Tl	
Pb	208	193	3	2.78396	ug/l	3	92.8	80	120	Pb	
Bi	209	193	2	18.22398	ug/l	20	91.1	80	120	Bi	
Th	232	193	3	1.77386	ug/l	2	88.7	80	120	Th	
U	238	193	3	0.89610	ug/l	1	89.6	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5637074	0.78	7411413	76.1	80	120	Li (IS)	FAILED
Sc (IS)	45	2	153100	5.23	143379	106.8	80	120	Sc (IS)	
Sc (IS)	45	3	2829261	1.13	2392712	118.2	80	120	Sc (IS)	
Ge (IS)	72	2	366388	3.76	323154	113.4	80	120	Ge (IS)	
Ge (IS)	72	3	2338297	0.65	1861986	125.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	14621338	1.43	12119833	120.6	80	120	In (IS)	FAILED
Ho (IS)	165	2	9880174	5.13	9598706	102.9	80	120	Ho (IS)	
Ho (IS)	165	3	16155827	1.68	13687738	118.0	80	120	Ho (IS)	
Ir (IS)	193	2	6453676	4.02	6085322	106.1	80	120	Ir (IS)	
Ir (IS)	193	3	8069586	1.60	6951639	116.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**066_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:02:23-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	106.41810	ug/l	100	106.4	90	110	Li	
Be	9	6	3	118.49079	ug/l	100	118.5	90	110	Be	FAILED
B	11	6	3	238.16367	ug/l	200	119.1	90	110	B	FAILED
Na	23	45	2	2462.00275	ug/l	2500	98.5	90	110	Na	
Mg	24	45	2	2406.79176	ug/l	2500	96.3	90	110	Mg	
Al	27	45	2	2206.66819	ug/l	2500	88.3	90	110	Al	FAILED
P	31	45	2	2277.97769	ug/l	2500	91.1	90	110	P	
K	39	45	2	2436.90916	ug/l	2500	97.5	90	110	K	
Ca	44	45	3	2569.23681	ug/l	2500	102.8	90	110	Ca	
Ti	47	45	3	100.89625	ug/l	100	100.9	90	110	Ti	
V	51	45	2	98.43242	ug/l	100	98.4	90	110	V	
Cr	52	45	2	103.57677	ug/l	100	103.6	90	110	Cr	
Mn	55	72	2	91.02622	ug/l	100	91.0	90	110	Mn	
Fe	57	72	2	2324.18466	ug/l	2500	93.0	90	110	Fe	
Co	59	72	2	99.47945	ug/l	100	99.5	90	110	Co	
Ni	60	72	2	100.06683	ug/l	100	100.1	90	110	Ni	
Cu	63	72	2	101.02950	ug/l	100	101.0	90	110	Cu	
Zn	66	72	2	100.78266	ug/l	100	100.8	90	110	Zn	
As	75	72	2	99.61215	ug/l	100	99.6	90	110	As	
Se	78	72	2	48.78423	ug/l	50	97.6	90	110	Se	
Sr	88	72	3	103.04337	ug/l	100	103.0	90	110	Sr	
Y	89	72	2	99.32036	ug/l	100	99.3	90	110	Y	
Zr	90	72	2	100.71162	ug/l	100	100.7	90	110	Zr	
Nb	93	72	2	50.51158	ug/l	50	101.0	90	110	Nb	
Mo	95	72	3	46.62605	ug/l	50	93.3	90	110	Mo	
Ru	101	72	2	98.18062	ug/l	100	98.2	90	110	Ru	
Rh	103	72	2	104.05921	ug/l	100	104.1	90	110	Rh	
Pd	105	72	2	10.61714	ug/l	10	106.2	90	110	Pd	
Ag	107	115	3	18.17775	ug/l	20	90.9	90	110	Ag	
Cd	111	115	3	94.86477	ug/l	100	94.9	90	110	Cd	
Sn	118	115	3	100.75825	ug/l	100	100.8	90	110	Sn	
Sb	121	115	3	50.37977	ug/l	50	100.8	90	110	Sb	
Te	125	165	2	98.31716	ug/l	100	98.3	90	110	Te	
Cs	133	165	2	97.93151	ug/l	100	97.9	90	110	Cs	
Ba	137	165	3	101.32131	ug/l	100	101.3	90	110	Ba	
La	139	165	2	101.08417	ug/l	100	101.1	90	110	La	
Ce	140	165	2	101.72525	ug/l	100	101.7	90	110	Ce	
Pr	141	165	2	100.52681	ug/l	100	100.5	90	110	Pr	
Nd	146	165	2	93.04268	ug/l	100	93.0	90	110	Nd	
Sm	147	165	3	101.73972	ug/l	100	101.7	90	110	Sm	
Hf	178	165	2	99.22732	ug/l	100	99.2	90	110	Hf	
Ta	181	165	2	102.80829	ug/l	100	102.8	90	110	Ta	
W	182	165	2	103.74968	ug/l	100	103.7	90	110	W	
Re	185	193	3	102.23863	ug/l	100	102.2	90	110	Re	
Pt	195	193	2	10.15291	ug/l	10	101.5	90	110	Pt	
Au	197	193	3	98.15364	ug/l	100	98.2	90	110	Au	
Tl	205	193	3	20.19309	ug/l	20	101.0	90	110	Tl	
Pb	208	193	3	99.86388	ug/l	100	99.9	90	110	Pb	
Bi	209	193	2	95.60219	ug/l	100	95.6	90	110	Bi	
Th	232	193	3	96.38933	ug/l	100	96.4	90	110	Th	
U	238	193	3	96.29415	ug/l	100	96.3	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5638842	0.63	7411413	76.1	80	120	Li (IS)	FAILED
Sc (IS)	45	2	156540	1.42	143379	109.2	80	120	Sc (IS)	
Sc (IS)	45	3	2849561	0.98	2392712	119.1	80	120	Sc (IS)	
Ge (IS)	72	2	384535	1.03	323154	119.0	80	120	Ge (IS)	
Ge (IS)	72	3	2361857	0.84	1861986	126.8	80	120	Ge (IS)	FAILED
In (IS)	115	3	14599043	1.36	12119833	120.5	80	120	In (IS)	FAILED
Ho (IS)	165	2	10281826	1.19	9598706	107.1	80	120	Ho (IS)	
Ho (IS)	165	3	16416252	0.17	13687738	119.9	80	120	Ho (IS)	
Ir (IS)	193	2	6659649	1.50	6085322	109.4	80	120	Ir (IS)	
Ir (IS)	193	3	8069727	0.47	6951639	116.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**067_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:09:08-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.68433	ug/l	1.388	Li	
Be	9	6	3	0.00553	ug/l	0.7	Be	
B	11	6	3	2.70431	ug/l	20	B	
Na	23	45	2	3.05135	ug/l	30	Na	
Mg	24	45	2	0.94097	ug/l	11.18	Mg	
Al	27	45	2	0.97631	ug/l	25.8	Al	
P	31	45	2	0.54603	ug/l	16.46	P	
K	39	45	2	0.38814	ug/l	83.2	K	
Ca	44	45	3	-3.69078	ug/l	136.2	Ca	
Ti	47	45	3	0.05833	ug/l	4.2	Ti	
V	51	45	2	-0.02713	ug/l	4.74	V	
Cr	52	45	2	0.00208	ug/l	6.52	Cr	
Mn	55	72	2	0.04203	ug/l	0.49	Mn	
Fe	57	72	2	1.25492	ug/l	40.7	Fe	
Co	59	72	2	0.03310	ug/l	0.434	Co	
Ni	60	72	2	0.02133	ug/l	0.8	Ni	
Cu	63	72	2	-0.21995	ug/l	0.902	Cu	
Zn	66	72	2	0.08913	ug/l	16.58	Zn	
As	75	72	2	-0.01817	ug/l	2.36	As	
Se	78	72	2	0.19560	ug/l	3.18	Se	
Sr	88	72	3	0.00773	ug/l	2	Sr	
Y	89	72	2	0.03128	ug/l	0.424	Y	
Zr	90	72	2	0.03228	ug/l	0.496	Zr	
Nb	93	72	2	0.26273	ug/l	4.62	Nb	
Mo	95	72	3	-0.00994	ug/l	2	Mo	
Ru	101	72	2	0.03260	ug/l	2	Ru	
Rh	103	72	2	0.03084	ug/l	1.634	Rh	
Pd	105	72	2	-0.00435	ug/l	0.08	Pd	
Ag	107	115	3	0.00415	ug/l	1.54	Ag	
Cd	111	115	3	0.00259	ug/l	0.4	Cd	
Sn	118	115	3	-0.00530	ug/l	2	Sn	
Sb	121	115	3	-0.01389	ug/l	3.34	Sb	
Te	125	165	2	0.05984	ug/l	1.072	Te	
Cs	133	165	2	0.02724	ug/l	0.106	Cs	
Ba	137	165	3	0.01483	ug/l	0.446	Ba	
La	139	165	2	0.02989	ug/l	0.102	La	
Ce	140	165	2	0.02969	ug/l	1.772	Ce	
Pr	141	165	2	0.02937	ug/l	0.084	Pr	
Nd	146	165	2	0.02831	ug/l	0.208	Nd	
Sm	147	165	3	0.00901	ug/l	0.652	Sm	
Hf	178	165	2	0.03603	ug/l	2.26	Hf	
Ta	181	165	2	0.01780	ug/l	1.46	Ta	
W	182	165	2	0.35578	ug/l	4	W	
Re	185	193	3	0.00520	ug/l	0.05	Re	
Pt	195	193	2	0.00613	ug/l	0.12	Pt	
Au	197	193	3	0.13379	ug/l	1	Au	
Tl	205	193	3	-0.00121	ug/l	1.1	Tl	
Pb	208	193	3	0.01890	ug/l	0.346	Pb	
Bi	209	193	2	0.02219	ug/l	1.464	Bi	
Th	232	193	3	0.02241	ug/l	1.104	Th	
U	238	193	3	0.00730	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5701576	0.62	7411413	76.9	80	120	Li (IS)	FAILED
Sc (IS)	45	2	158184	0.52	143379	110.3	80	120	Sc (IS)	
Sc (IS)	45	3	2862692	0.92	2392712	119.6	80	120	Sc (IS)	
Ge (IS)	72	2	370866	0.52	323154	114.8	80	120	Ge (IS)	
Ge (IS)	72	3	2348430	1.39	1861986	126.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	14850143	0.78	12119833	122.5	80	120	In (IS)	FAILED
Ho (IS)	165	2	10469083	0.89	9598706	109.1	80	120	Ho (IS)	
Ho (IS)	165	3	16379062	0.44	13687738	119.7	80	120	Ho (IS)	
Ir (IS)	193	2	6820801	1.07	6085322	112.1	80	120	Ir (IS)	
Ir (IS)	193	3	8335962	1.55	6951639	119.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36526-B-7-A**
Data File Name	**068SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:15:51-06:00**
Type	**Sample**
VialNumber	**2405**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	11.86057	23.72115	ug/l	1000	Li	
Be	9	6	3	0.75957	1.51914	ug/l	1000	Be	
B	11	6	3	8.36939	16.73878	ug/l	2000	B	
Na	23	45	2	315.30026	630.60051	ug/l	50000	Na	
Mg	24	45	2	22219.52659	44439.05319	ug/l	50000	Mg	
Al	27	45	2	27024.43560	54048.87119	ug/l	100000	Al	
P	31	45	2	1542.98488	3085.96977	ug/l	100000	P	
K	39	45	2	3177.21052	6354.42104	ug/l	100000	K	
Ca	44	45	3	19260.67269	38521.34538	ug/l	100000	Ca	
Ti	47	45	3	1458.61755	2917.23511	ug/l	2000	Ti	
V	51	45	2	73.46690	146.93379	ug/l	2000	V	
Cr	52	45	2	24.22414	48.44827	ug/l	2000	Cr	
Mn	55	72	2	172.58861	345.17722	ug/l	5000	Mn	
Fe	57	72	2	57267.95044	114535.90088	ug/l	100000	Fe	
Co	59	72	2	14.61679	29.23359	ug/l	2000	Co	
Ni	60	72	2	29.80551	59.61103	ug/l	2000	Ni	
Cu	63	72	2	3992.27877	7984.55754	ug/l	2000	Cu	FAILED
Zn	66	72	2	30.66586	61.33172	ug/l	5000	Zn	
As	75	72	2	38.97893	77.95787	ug/l	2000	As	
Se	78	72	2	33.98833	67.97666	ug/l	1000	Se	
Sr	88	72	3	343.32186	686.64371	ug/l	2000	Sr	
Y	89	72	2	8.21329	16.42658	ug/l	200	Y	
Zr	90	72	2	4.83500	9.67000	ug/l	2000	Zr	
Nb	93	72	2	0.46309	0.92618	ug/l	100	Nb	
Mo	95	72	3	19.62801	39.25602	ug/l	1000	Mo	
Ru	101	72	2	-0.00478	-0.00956	ug/l	200	Ru	
Rh	103	72	2	-0.00507	-0.01014	ug/l	200	Rh	
Pd	105	72	2	0.02525	0.05051	ug/l	20	Pd	
Ag	107	115	3	0.53574	1.07148	ug/l	400	Ag	
Cd	111	115	3	0.04629	0.09259	ug/l	2000	Cd	
Sn	118	115	3	7.56318	15.12637	ug/l	2000	Sn	
Sb	121	115	3	9.69820	19.39640	ug/l	1000	Sb	
Te	125	165	2	0.91383	1.82767	ug/l	200	Te	
Cs	133	165	2	2.45487	4.90975	ug/l	2000	Cs	
Ba	137	165	3	237.94182	475.88365	ug/l	5000	Ba	
La	139	165	2	25.79172	51.58343	ug/l	200	La	
Ce	140	165	2	53.10679	106.21358	ug/l	200	Ce	
Pr	141	165	2	5.88329	11.76657	ug/l	200	Pr	
Nd	146	165	2	23.72130	47.44260	ug/l	200	Nd	
Sm	147	165	3	4.11490	8.22981	ug/l	2000	Sm	
Hf	178	165	2	0.28240	0.56479	ug/l	200	Hf	
Ta	181	165	2	0.02528	0.05056	ug/l	200	Ta	
W	182	165	2	4.77289	9.54579	ug/l	2000	W	
Re	185	193	3	0.00147	0.00293	ug/l	200	Re	
Pt	195	193	2	0.00618	0.01237	ug/l	200	Pt	
Au	197	193	3	0.05569	0.11137	ug/l	2000	Au	
Tl	205	193	3	0.13322	0.26643	ug/l	400	Tl	
Pb	208	193	3	15.06817	30.13634	ug/l	5000	Pb	
Bi	209	193	2	2.59561	5.19122	ug/l	2000	Bi	
Th	232	193	3	19.44184	38.88368	ug/l	2000	Th	
U	238	193	3	6.84735	13.69471	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5444837	1.48	7411413	73.5	80	120	Li (IS)	FAILED
Sc (IS)	45	2	171071	1.80	143379	119.3	80	120	Sc (IS)	
Sc (IS)	45	3	3110352	1.02	2392712	130.0	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	368907	1.51	323154	114.2	80	120	Ge (IS)	
Ge (IS)	72	3	2321119	0.44	1861986	124.7	80	120	Ge (IS)	FAILED
In (IS)	115	3	14132007	0.53	12119833	116.6	80	120	In (IS)	
Ho (IS)	165	2	10347433	2.21	9598706	107.8	80	120	Ho (IS)	
Ho (IS)	165	3	16232196	0.38	13687738	118.6	80	120	Ho (IS)	
Ir (IS)	193	2	6467683	2.41	6085322	106.3	80	120	Ir (IS)	
Ir (IS)	193	3	7818897	1.69	6951639	112.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36526-B-8-A**
Data File Name	**069SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:22:35-06:00**
Type	**Sample**
VialNumber	**2406**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	12.43040	24.86079	ug/l	1000	Li	
Be	9	6	3	0.79366	1.58733	ug/l	1000	Be	
B	11	6	3	8.44355	16.88710	ug/l	2000	B	
Na	23	45	2	377.87346	755.74693	ug/l	50000	Na	
Mg	24	45	2	23657.35797	47314.71593	ug/l	50000	Mg	
Al	27	45	2	29507.21788	59014.43575	ug/l	100000	Al	
P	31	45	2	1969.29731	3938.59461	ug/l	100000	P	
K	39	45	2	2885.10557	5770.21115	ug/l	100000	K	
Ca	44	45	3	19348.00312	38696.00624	ug/l	100000	Ca	
Ti	47	45	3	1365.91769	2731.83538	ug/l	2000	Ti	
V	51	45	2	66.47833	132.95667	ug/l	2000	V	
Cr	52	45	2	26.58077	53.16153	ug/l	2000	Cr	
Mn	55	72	2	174.93389	349.86778	ug/l	5000	Mn	
Fe	57	72	2	52101.12718	104202.25437	ug/l	100000	Fe	
Co	59	72	2	20.77532	41.55063	ug/l	2000	Co	
Ni	60	72	2	33.29053	66.58107	ug/l	2000	Ni	
Cu	63	72	2	4118.92749	8237.85498	ug/l	2000	Cu	FAILED
Zn	66	72	2	35.64824	71.29647	ug/l	5000	Zn	
As	75	72	2	36.41565	72.83131	ug/l	2000	As	
Se	78	72	2	22.07932	44.15864	ug/l	1000	Se	
Sr	88	72	3	365.47971	730.95942	ug/l	2000	Sr	
Y	89	72	2	9.45539	18.91078	ug/l	200	Y	
Zr	90	72	2	5.05047	10.10094	ug/l	2000	Zr	
Nb	93	72	2	0.37295	0.74591	ug/l	100	Nb	
Mo	95	72	3	16.32285	32.64571	ug/l	1000	Mo	
Ru	101	72	2	-0.00486	-0.00971	ug/l	200	Ru	
Rh	103	72	2	-0.00370	-0.00739	ug/l	200	Rh	
Pd	105	72	2	0.03061	0.06123	ug/l	20	Pd	
Ag	107	115	3	0.46381	0.92763	ug/l	400	Ag	
Cd	111	115	3	0.04819	0.09638	ug/l	2000	Cd	
Sn	118	115	3	7.51954	15.03907	ug/l	2000	Sn	
Sb	121	115	3	8.24740	16.49479	ug/l	1000	Sb	
Te	125	165	2	1.09396	2.18792	ug/l	200	Te	
Cs	133	165	2	2.40095	4.80190	ug/l	2000	Cs	
Ba	137	165	3	232.62678	465.25357	ug/l	5000	Ba	
La	139	165	2	29.75793	59.51586	ug/l	200	La	
Ce	140	165	2	61.60210	123.20420	ug/l	200	Ce	
Pr	141	165	2	6.82268	13.64535	ug/l	200	Pr	
Nd	146	165	2	27.24308	54.48616	ug/l	200	Nd	
Sm	147	165	3	4.75163	9.50326	ug/l	2000	Sm	
Hf	178	165	2	0.23667	0.47333	ug/l	200	Hf	
Ta	181	165	2	0.00978	0.01955	ug/l	200	Ta	
W	182	165	2	4.85208	9.70417	ug/l	2000	W	
Re	185	193	3	0.01082	0.02165	ug/l	200	Re	
Pt	195	193	2	0.00837	0.01674	ug/l	200	Pt	
Au	197	193	3	0.13513	0.27025	ug/l	2000	Au	
Tl	205	193	3	0.14334	0.28668	ug/l	400	Tl	
Pb	208	193	3	16.25947	32.51894	ug/l	5000	Pb	
Bi	209	193	2	3.02458	6.04916	ug/l	2000	Bi	
Th	232	193	3	21.96896	43.93791	ug/l	2000	Th	
U	238	193	3	7.00369	14.00737	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5421812	0.83	7411413	73.2	80	120	Li (IS)	FAILED
Sc (IS)	45	2	169730	0.84	143379	118.4	80	120	Sc (IS)	
Sc (IS)	45	3	3174002	0.47	2392712	132.7	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	375502	0.80	323154	116.2	80	120	Ge (IS)	
Ge (IS)	72	3	2366586	0.70	1861986	127.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	14179860	0.51	12119833	117.0	80	120	In (IS)	
Ho (IS)	165	2	10382710	1.11	9598706	108.2	80	120	Ho (IS)	
Ho (IS)	165	3	16459994	0.44	13687738	120.3	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6429131	0.22	6085322	105.6	80	120	Ir (IS)	
Ir (IS)	193	3	7765179	1.66	6951639	111.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-9-A**
Data File Name	**070SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:29:17-06:00**
Type	**Sample**
VialNumber	**2407**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	15.17643	30.35286	ug/l	1000	Li	
Be	9	6	3	1.05362	2.10724	ug/l	1000	Be	
B	11	6	3	5.38340	10.76680	ug/l	2000	B	
Na	23	45	2	515.46470	1030.92940	ug/l	50000	Na	
Mg	24	45	2	24415.27669	48830.55337	ug/l	50000	Mg	
Al	27	45	2	24276.19533	48552.39066	ug/l	100000	Al	
P	31	45	2	3151.47142	6302.94285	ug/l	100000	P	
K	39	45	2	6914.01577	13828.03154	ug/l	100000	K	
Ca	44	45	3	14111.87347	28223.74695	ug/l	100000	Ca	
Ti	47	45	3	1435.21517	2870.43035	ug/l	2000	Ti	
V	51	45	2	87.22959	174.45919	ug/l	2000	V	
Cr	52	45	2	34.97109	69.94219	ug/l	2000	Cr	
Mn	55	72	2	335.42355	670.84710	ug/l	5000	Mn	
Fe	57	72	2	86363.72238	172727.44477	ug/l	100000	Fe	
Co	59	72	2	30.97866	61.95732	ug/l	2000	Co	
Ni	60	72	2	44.58067	89.16135	ug/l	2000	Ni	
Cu	63	72	2	3493.61906	6987.23811	ug/l	2000	Cu	FAILED
Zn	66	72	2	76.71377	153.42755	ug/l	5000	Zn	
As	75	72	2	12.48014	24.96028	ug/l	2000	As	
Se	78	72	2	9.34949	18.69899	ug/l	1000	Se	
Sr	88	72	3	195.21205	390.42410	ug/l	2000	Sr	
Y	89	72	2	16.97078	33.94155	ug/l	200	Y	
Zr	90	72	2	5.51427	11.02854	ug/l	2000	Zr	
Nb	93	72	2	0.37831	0.75662	ug/l	100	Nb	
Mo	95	72	3	11.18165	22.36329	ug/l	1000	Mo	
Ru	101	72	2	-0.00540	-0.01080	ug/l	200	Ru	
Rh	103	72	2	-0.00562	-0.01125	ug/l	200	Rh	
Pd	105	72	2	0.02167	0.04334	ug/l	20	Pd	
Ag	107	115	3	0.35608	0.71215	ug/l	400	Ag	
Cd	111	115	3	0.07285	0.14570	ug/l	2000	Cd	
Sn	118	115	3	8.18700	16.37400	ug/l	2000	Sn	
Sb	121	115	3	0.84460	1.68921	ug/l	1000	Sb	
Te	125	165	2	1.01297	2.02593	ug/l	200	Te	
Cs	133	165	2	2.73569	5.47138	ug/l	2000	Cs	
Ba	137	165	3	218.42046	436.84091	ug/l	5000	Ba	
La	139	165	2	44.78582	89.57164	ug/l	200	La	
Ce	140	165	2	95.60258	191.20517	ug/l	200	Ce	
Pr	141	165	2	10.69768	21.39536	ug/l	200	Pr	
Nd	146	165	2	43.27648	86.55296	ug/l	200	Nd	
Sm	147	165	3	7.80455	15.60911	ug/l	2000	Sm	
Hf	178	165	2	0.25278	0.50556	ug/l	200	Hf	
Ta	181	165	2	0.01880	0.03759	ug/l	200	Ta	
W	182	165	2	1.66904	3.33808	ug/l	2000	W	
Re	185	193	3	0.11622	0.23245	ug/l	200	Re	
Pt	195	193	2	0.00744	0.01489	ug/l	200	Pt	
Au	197	193	3	-0.00768	-0.01535	ug/l	2000	Au	
Tl	205	193	3	0.27693	0.55387	ug/l	400	Tl	
Pb	208	193	3	8.08413	16.16827	ug/l	5000	Pb	
Bi	209	193	2	1.95356	3.90713	ug/l	2000	Bi	
Th	232	193	3	35.57636	71.15273	ug/l	2000	Th	
U	238	193	3	10.25068	20.50136	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5375506	1.03	7411413	72.5	80	120	Li (IS)	FAILED
Sc (IS)	45	2	170061	2.62	143379	118.6	80	120	Sc (IS)	
Sc (IS)	45	3	3165785	0.51	2392712	132.3	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	374819	1.28	323154	116.0	80	120	Ge (IS)	
Ge (IS)	72	3	2334175	0.70	1861986	125.4	80	120	Ge (IS)	FAILED
In (IS)	115	3	14186002	0.44	12119833	117.0	80	120	In (IS)	
Ho (IS)	165	2	10129349	1.16	9598706	105.5	80	120	Ho (IS)	
Ho (IS)	165	3	16189381	0.76	13687738	118.3	80	120	Ho (IS)	
Ir (IS)	193	2	6276581	0.33	6085322	103.1	80	120	Ir (IS)	
Ir (IS)	193	3	7709944	0.39	6951639	110.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-10-A**
Data File Name	**071SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:36:00-06:00**
Type	**Sample**
VialNumber	**2408**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	12.77174	25.54348	ug/l	1000	Li	
Be	9	6	3	0.88616	1.77231	ug/l	1000	Be	
B	11	6	3	6.88938	13.77875	ug/l	2000	B	
Na	23	45	2	429.30559	858.61117	ug/l	50000	Na	
Mg	24	45	2	23471.14162	46942.28324	ug/l	50000	Mg	
Al	27	45	2	26878.87835	53757.75671	ug/l	100000	Al	
P	31	45	2	1802.63509	3605.27019	ug/l	100000	P	
K	39	45	2	1864.51439	3729.02878	ug/l	100000	K	
Ca	44	45	3	16463.27162	32926.54323	ug/l	100000	Ca	
Ti	47	45	3	1431.29239	2862.58478	ug/l	2000	Ti	
V	51	45	2	69.59485	139.18970	ug/l	2000	V	
Cr	52	45	2	23.54990	47.09981	ug/l	2000	Cr	
Mn	55	72	2	145.11812	290.23624	ug/l	5000	Mn	
Fe	57	72	2	47739.56959	95479.13918	ug/l	100000	Fe	
Co	59	72	2	13.60541	27.21081	ug/l	2000	Co	
Ni	60	72	2	30.65446	61.30893	ug/l	2000	Ni	
Cu	63	72	2	8384.97307	16769.94615	ug/l	2000	Cu	FAILED
Zn	66	72	2	26.08270	52.16541	ug/l	5000	Zn	
As	75	72	2	47.23111	94.46222	ug/l	2000	As	
Se	78	72	2	20.58526	41.17052	ug/l	1000	Se	
Sr	88	72	3	452.99079	905.98159	ug/l	2000	Sr	
Y	89	72	2	7.09499	14.18998	ug/l	200	Y	
Zr	90	72	2	5.25095	10.50190	ug/l	2000	Zr	
Nb	93	72	2	0.43114	0.86228	ug/l	100	Nb	
Mo	95	72	3	13.84579	27.69157	ug/l	1000	Mo	
Ru	101	72	2	-0.00651	-0.01303	ug/l	200	Ru	
Rh	103	72	2	-0.00530	-0.01059	ug/l	200	Rh	
Pd	105	72	2	0.06103	0.12206	ug/l	20	Pd	
Ag	107	115	3	0.91798	1.83595	ug/l	400	Ag	
Cd	111	115	3	0.04178	0.08355	ug/l	2000	Cd	
Sn	118	115	3	12.53596	25.07191	ug/l	2000	Sn	
Sb	121	115	3	20.81301	41.62603	ug/l	1000	Sb	
Te	125	165	2	0.57420	1.14839	ug/l	200	Te	
Cs	133	165	2	1.97359	3.94717	ug/l	2000	Cs	
Ba	137	165	3	206.25883	412.51766	ug/l	5000	Ba	
La	139	165	2	24.73056	49.46112	ug/l	200	La	
Ce	140	165	2	50.14987	100.29975	ug/l	200	Ce	
Pr	141	165	2	5.80596	11.61193	ug/l	200	Pr	
Nd	146	165	2	23.48831	46.97661	ug/l	200	Nd	
Sm	147	165	3	3.89362	7.78723	ug/l	2000	Sm	
Hf	178	165	2	0.21450	0.42901	ug/l	200	Hf	
Ta	181	165	2	0.01574	0.03148	ug/l	200	Ta	
W	182	165	2	6.11654	12.23307	ug/l	2000	W	
Re	185	193	3	0.00039	0.00078	ug/l	200	Re	
Pt	195	193	2	0.00874	0.01748	ug/l	200	Pt	
Au	197	193	3	0.02396	0.04791	ug/l	2000	Au	
Tl	205	193	3	0.05852	0.11705	ug/l	400	Tl	
Pb	208	193	3	15.69262	31.38525	ug/l	5000	Pb	
Bi	209	193	2	1.35457	2.70914	ug/l	2000	Bi	
Th	232	193	3	24.34305	48.68611	ug/l	2000	Th	
U	238	193	3	3.86315	7.72629	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5368091	0.57	7411413	72.4	80	120	Li (IS)	FAILED
Sc (IS)	45	2	177386	0.77	143379	123.7	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3209059	0.25	2392712	134.1	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	379541	1.30	323154	117.4	80	120	Ge (IS)	
Ge (IS)	72	3	2397882	0.18	1861986	128.8	80	120	Ge (IS)	FAILED
In (IS)	115	3	14425276	0.46	12119833	119.0	80	120	In (IS)	
Ho (IS)	165	2	10271902	0.55	9598706	107.0	80	120	Ho (IS)	
Ho (IS)	165	3	16520272	0.90	13687738	120.7	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6473679	0.59	6085322	106.4	80	120	Ir (IS)	
Ir (IS)	193	3	7892048	1.68	6951639	113.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-11-A**
Data File Name	**072SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:42:46-06:00**
Type	**Sample**
VialNumber	**2409**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	11.32644	22.65288	ug/l	1000	Li	
Be	9	6	3	0.98922	1.97844	ug/l	1000	Be	
B	11	6	3	6.46438	12.92877	ug/l	2000	B	
Na	23	45	2	479.90808	959.81615	ug/l	50000	Na	
Mg	24	45	2	21709.96273	43419.92546	ug/l	50000	Mg	
Al	27	45	2	26439.60577	52879.21155	ug/l	100000	Al	
P	31	45	2	2247.16303	4494.32606	ug/l	100000	P	
K	39	45	2	1932.85717	3865.71434	ug/l	100000	K	
Ca	44	45	3	14936.69569	29873.39138	ug/l	100000	Ca	
Ti	47	45	3	1419.67247	2839.34495	ug/l	2000	Ti	
V	51	45	2	67.32572	134.65145	ug/l	2000	V	
Cr	52	45	2	30.31156	60.62311	ug/l	2000	Cr	
Mn	55	72	2	112.45698	224.91396	ug/l	5000	Mn	
Fe	57	72	2	50515.65940	101031.31880	ug/l	100000	Fe	
Co	59	72	2	13.36135	26.72270	ug/l	2000	Co	
Ni	60	72	2	27.03087	54.06174	ug/l	2000	Ni	
Cu	63	72	2	8003.78971	16007.57942	ug/l	2000	Cu	FAILED
Zn	66	72	2	22.65203	45.30406	ug/l	5000	Zn	
As	75	72	2	64.00614	128.01227	ug/l	2000	As	
Se	78	72	2	26.35829	52.71658	ug/l	1000	Se	
Sr	88	72	3	647.32314	1294.64629	ug/l	2000	Sr	
Y	89	72	2	6.44074	12.88148	ug/l	200	Y	
Zr	90	72	2	4.52847	9.05694	ug/l	2000	Zr	
Nb	93	72	2	0.41649	0.83297	ug/l	100	Nb	
Mo	95	72	3	12.68601	25.37201	ug/l	1000	Mo	
Ru	101	72	2	-0.00495	-0.00991	ug/l	200	Ru	
Rh	103	72	2	-0.00388	-0.00776	ug/l	200	Rh	
Pd	105	72	2	0.04505	0.09009	ug/l	20	Pd	
Ag	107	115	3	0.97224	1.94448	ug/l	400	Ag	
Cd	111	115	3	0.03977	0.07954	ug/l	2000	Cd	
Sn	118	115	3	8.14969	16.29937	ug/l	2000	Sn	
Sb	121	115	3	23.91327	47.82654	ug/l	1000	Sb	
Te	125	165	2	0.51316	1.02632	ug/l	200	Te	
Cs	133	165	2	1.88016	3.76031	ug/l	2000	Cs	
Ba	137	165	3	239.95799	479.91597	ug/l	5000	Ba	
La	139	165	2	28.84975	57.69949	ug/l	200	La	
Ce	140	165	2	57.95612	115.91224	ug/l	200	Ce	
Pr	141	165	2	6.23349	12.46697	ug/l	200	Pr	
Nd	146	165	2	24.17222	48.34445	ug/l	200	Nd	
Sm	147	165	3	3.89757	7.79515	ug/l	2000	Sm	
Hf	178	165	2	0.18179	0.36359	ug/l	200	Hf	
Ta	181	165	2	0.00230	0.00459	ug/l	200	Ta	
W	182	165	2	7.22340	14.44681	ug/l	2000	W	
Re	185	193	3	0.00316	0.00631	ug/l	200	Re	
Pt	195	193	2	0.00806	0.01612	ug/l	200	Pt	
Au	197	193	3	0.02462	0.04923	ug/l	2000	Au	
Tl	205	193	3	0.05344	0.10688	ug/l	400	Tl	
Pb	208	193	3	12.67691	25.35382	ug/l	5000	Pb	
Bi	209	193	2	0.76885	1.53771	ug/l	2000	Bi	
Th	232	193	3	16.14429	32.28857	ug/l	2000	Th	
U	238	193	3	4.70020	9.40040	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5290087	0.82	7411413	71.4	80	120	Li (IS)	FAILED
Sc (IS)	45	2	174060	1.57	143379	121.4	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3192981	0.97	2392712	133.4	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	383144	0.85	323154	118.6	80	120	Ge (IS)	
Ge (IS)	72	3	2392811	0.38	1861986	128.5	80	120	Ge (IS)	FAILED
In (IS)	115	3	14305431	0.27	12119833	118.0	80	120	In (IS)	
Ho (IS)	165	2	10298663	0.37	9598706	107.3	80	120	Ho (IS)	
Ho (IS)	165	3	16388415	1.19	13687738	119.7	80	120	Ho (IS)	
Ir (IS)	193	2	6444792	0.64	6085322	105.9	80	120	Ir (IS)	
Ir (IS)	193	3	7874983	0.06	6951639	113.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-11-A SD**
Data File Name	**073SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:49:30-06:00**
Type	**Sample**
VialNumber	**2410**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	2.92446	29.24458	ug/l	1000	Li	
Be	9	6	3	0.18384	1.83838	ug/l	1000	Be	
B	11	6	3	1.40172	14.01725	ug/l	2000	B	
Na	23	45	2	102.64972	1026.49718	ug/l	50000	Na	
Mg	24	45	2	4659.16517	46591.65174	ug/l	50000	Mg	
Al	27	45	2	5682.71325	56827.13249	ug/l	100000	Al	
P	31	45	2	475.08997	4750.89975	ug/l	100000	P	
K	39	45	2	386.84643	3868.46430	ug/l	100000	K	
Ca	44	45	3	3180.57992	31805.79923	ug/l	100000	Ca	
Ti	47	45	3	299.46988	2994.69875	ug/l	2000	Ti	
V	51	45	2	13.86095	138.60950	ug/l	2000	V	
Cr	52	45	2	4.22087	42.20872	ug/l	2000	Cr	
Mn	55	72	2	21.62687	216.26869	ug/l	5000	Mn	
Fe	57	72	2	9918.86448	99188.64485	ug/l	100000	Fe	
Co	59	72	2	2.61216	26.12161	ug/l	2000	Co	
Ni	60	72	2	5.40357	54.03570	ug/l	2000	Ni	
Cu	63	72	2	1629.41245	16294.12453	ug/l	2000	Cu	
Zn	66	72	2	5.09186	50.91861	ug/l	5000	Zn	
As	75	72	2	12.50502	125.05020	ug/l	2000	As	
Se	78	72	2	5.14411	51.44115	ug/l	1000	Se	
Sr	88	72	3	128.08664	1280.86641	ug/l	2000	Sr	
Y	89	72	2	1.25081	12.50807	ug/l	200	Y	
Zr	90	72	2	0.87340	8.73405	ug/l	2000	Zr	
Nb	93	72	2	0.00472	0.04718	ug/l	100	Nb	
Mo	95	72	3	2.41412	24.14119	ug/l	1000	Mo	
Ru	101	72	2	-0.00376	-0.03756	ug/l	200	Ru	
Rh	103	72	2	-0.00539	-0.05385	ug/l	200	Rh	
Pd	105	72	2	0.00023	0.00228	ug/l	20	Pd	
Ag	107	115	3	0.19221	1.92209	ug/l	400	Ag	
Cd	111	115	3	-0.00316	-0.03163	ug/l	2000	Cd	
Sn	118	115	3	1.51191	15.11909	ug/l	2000	Sn	
Sb	121	115	3	4.57613	45.76129	ug/l	1000	Sb	
Te	125	165	2	0.13133	1.31330	ug/l	200	Te	
Cs	133	165	2	0.36045	3.60447	ug/l	2000	Cs	
Ba	137	165	3	43.80803	438.08034	ug/l	5000	Ba	
La	139	165	2	5.11989	51.19894	ug/l	200	La	
Ce	140	165	2	10.39620	103.96203	ug/l	200	Ce	
Pr	141	165	2	1.24118	12.41179	ug/l	200	Pr	
Nd	146	165	2	4.73430	47.34298	ug/l	200	Nd	
Sm	147	165	3	0.75711	7.57113	ug/l	2000	Sm	
Hf	178	165	2	0.03227	0.32272	ug/l	200	Hf	
Ta	181	165	2	-0.02319	-0.23194	ug/l	200	Ta	
W	182	165	2	1.37089	13.70891	ug/l	2000	W	
Re	185	193	3	-0.00178	-0.01777	ug/l	200	Re	
Pt	195	193	2	0.00129	0.01286	ug/l	200	Pt	
Au	197	193	3	-0.03142	-0.31421	ug/l	2000	Au	
Tl	205	193	3	-0.02555	-0.25554	ug/l	400	Tl	
Pb	208	193	3	2.50824	25.08235	ug/l	5000	Pb	
Bi	209	193	2	0.13576	1.35756	ug/l	2000	Bi	
Th	232	193	3	2.73877	27.38766	ug/l	2000	Th	
U	238	193	3	0.92860	9.28604	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5584034	2.14	7411413	75.3	80	120	Li (IS)	FAILED
Sc (IS)	45	2	163470	0.43	143379	114.0	80	120	Sc (IS)	
Sc (IS)	45	3	3035832	1.12	2392712	126.9	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	382879	1.27	323154	118.5	80	120	Ge (IS)	
Ge (IS)	72	3	2440964	0.44	1861986	131.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	14931222	0.38	12119833	123.2	80	120	In (IS)	FAILED
Ho (IS)	165	2	10325220	0.62	9598706	107.6	80	120	Ho (IS)	
Ho (IS)	165	3	16584084	0.28	13687738	121.2	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6469418	0.70	6085322	106.3	80	120	Ir (IS)	
Ir (IS)	193	3	8089019	0.65	6951639	116.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-11-B DU**
Data File Name	**074SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:56:13-06:00**
Type	**Sample**
VialNumber	**2411**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	11.13087	22.26173	ug/l	1000	Li	
Be	9	6	3	1.02017	2.04035	ug/l	1000	Be	
B	11	6	3	6.23210	12.46419	ug/l	2000	B	
Na	23	45	2	388.52223	777.04446	ug/l	50000	Na	
Mg	24	45	2	21456.65690	42913.31379	ug/l	50000	Mg	
Al	27	45	2	26178.47497	52356.94993	ug/l	100000	Al	
P	31	45	2	1982.33592	3964.67184	ug/l	100000	P	
K	39	45	2	1868.92469	3737.84939	ug/l	100000	K	
Ca	44	45	3	13813.50324	27627.00648	ug/l	100000	Ca	
Ti	47	45	3	1252.26756	2504.53512	ug/l	2000	Ti	
V	51	45	2	67.92361	135.84723	ug/l	2000	V	
Cr	52	45	2	22.75794	45.51589	ug/l	2000	Cr	
Mn	55	72	2	105.66018	211.32036	ug/l	5000	Mn	
Fe	57	72	2	50490.81884	100981.63769	ug/l	100000	Fe	
Co	59	72	2	12.50272	25.00543	ug/l	2000	Co	
Ni	60	72	2	27.22960	54.45919	ug/l	2000	Ni	
Cu	63	72	2	7248.50639	14497.01278	ug/l	2000	Cu	FAILED
Zn	66	72	2	23.24537	46.49074	ug/l	5000	Zn	
As	75	72	2	73.61009	147.22018	ug/l	2000	As	
Se	78	72	2	22.89350	45.78700	ug/l	1000	Se	
Sr	88	72	3	481.16597	962.33194	ug/l	2000	Sr	
Y	89	72	2	6.52788	13.05575	ug/l	200	Y	
Zr	90	72	2	4.44738	8.89477	ug/l	2000	Zr	
Nb	93	72	2	0.23244	0.46489	ug/l	100	Nb	
Mo	95	72	3	13.00664	26.01327	ug/l	1000	Mo	
Ru	101	72	2	-0.00449	-0.00898	ug/l	200	Ru	
Rh	103	72	2	-0.00447	-0.00894	ug/l	200	Rh	
Pd	105	72	2	0.04208	0.08417	ug/l	20	Pd	
Ag	107	115	3	1.01532	2.03063	ug/l	400	Ag	
Cd	111	115	3	0.03910	0.07821	ug/l	2000	Cd	
Sn	118	115	3	7.87602	15.75205	ug/l	2000	Sn	
Sb	121	115	3	42.51136	85.02271	ug/l	1000	Sb	
Te	125	165	2	0.75472	1.50944	ug/l	200	Te	
Cs	133	165	2	1.79549	3.59098	ug/l	2000	Cs	
Ba	137	165	3	186.17580	372.35160	ug/l	5000	Ba	
La	139	165	2	26.04423	52.08847	ug/l	200	La	
Ce	140	165	2	52.83391	105.66782	ug/l	200	Ce	
Pr	141	165	2	5.85799	11.71599	ug/l	200	Pr	
Nd	146	165	2	23.44002	46.88004	ug/l	200	Nd	
Sm	147	165	3	3.73996	7.47991	ug/l	2000	Sm	
Hf	178	165	2	0.17971	0.35941	ug/l	200	Hf	
Ta	181	165	2	-0.01068	-0.02136	ug/l	200	Ta	
W	182	165	2	6.63411	13.26822	ug/l	2000	W	
Re	185	193	3	0.00058	0.00117	ug/l	200	Re	
Pt	195	193	2	0.00678	0.01356	ug/l	200	Pt	
Au	197	193	3	0.02033	0.04065	ug/l	2000	Au	
Tl	205	193	3	0.03513	0.07026	ug/l	400	Tl	
Pb	208	193	3	12.81546	25.63093	ug/l	5000	Pb	
Bi	209	193	2	1.26488	2.52977	ug/l	2000	Bi	
Th	232	193	3	17.82970	35.65941	ug/l	2000	Th	
U	238	193	3	4.97109	9.94217	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5364833	0.63	7411413	72.4	80	120	Li (IS)	FAILED
Sc (IS)	45	2	172234	0.64	143379	120.1	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3244369	0.75	2392712	135.6	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	377740	1.76	323154	116.9	80	120	Ge (IS)	
Ge (IS)	72	3	2381113	0.14	1861986	127.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	14330954	1.09	12119833	118.2	80	120	In (IS)	
Ho (IS)	165	2	10114730	0.90	9598706	105.4	80	120	Ho (IS)	
Ho (IS)	165	3	16399063	0.58	13687738	119.8	80	120	Ho (IS)	
Ir (IS)	193	2	6328813	0.62	6085322	104.0	80	120	Ir (IS)	
Ir (IS)	193	3	7831749	1.88	6951639	112.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-11-C MS**
Data File Name	**075SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:02:57-06:00**
Type	**Sample**
VialNumber	**2412**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	67.70477	135.40954	ug/l	1000	Li	
Be	9	6	3	57.55327	115.10653	ug/l	1000	Be	
B	11	6	3	117.88774	235.77549	ug/l	2000	B	
Na	23	45	2	4774.31648	9548.63296	ug/l	50000	Na	
Mg	24	45	2	33317.00527	66634.01055	ug/l	50000	Mg	
Al	27	45	2	43188.46817	86376.93634	ug/l	100000	Al	
P	31	45	2	2263.94822	4527.89644	ug/l	100000	P	
K	39	45	2	6081.10911	12162.21823	ug/l	100000	K	
Ca	44	45	3	21202.50322	42405.00643	ug/l	100000	Ca	
Ti	47	45	3	2883.85855	5767.71709	ug/l	2000	Ti	FAILED
V	51	45	2	531.46623	1062.93247	ug/l	2000	V	
Cr	52	45	2	463.35892	926.71784	ug/l	2000	Cr	
Mn	55	72	2	656.00171	1312.00343	ug/l	5000	Mn	
Fe	57	72	2	61205.59036	122411.18072	ug/l	100000	Fe	
Co	59	72	2	516.39006	1032.78012	ug/l	2000	Co	
Ni	60	72	2	573.51397	1147.02794	ug/l	2000	Ni	
Cu	63	72	2	8451.08578	16902.17156	ug/l	2000	Cu	FAILED
Zn	66	72	2	549.57843	1099.15687	ug/l	5000	Zn	
As	75	72	2	540.82681	1081.65362	ug/l	2000	As	
Se	78	72	2	254.31672	508.63345	ug/l	1000	Se	
Sr	88	72	3	1021.36909	2042.73819	ug/l	2000	Sr	
Y	89	72	2	9.59974	19.19948	ug/l	200	Y	
Zr	90	72	2	516.67101	1033.34202	ug/l	2000	Zr	
Nb	93	72	2	1.26017	2.52033	ug/l	100	Nb	
Mo	95	72	3	262.45763	524.91526	ug/l	1000	Mo	
Ru	101	72	2	-0.00470	-0.00940	ug/l	200	Ru	
Rh	103	72	2	0.01816	0.03633	ug/l	200	Rh	
Pd	105	72	2	0.08050	0.16101	ug/l	20	Pd	
Ag	107	115	3	95.76229	191.52458	ug/l	400	Ag	
Cd	111	115	3	496.35502	992.71004	ug/l	2000	Cd	
Sn	118	115	3	497.17768	994.35535	ug/l	2000	Sn	
Sb	121	115	3	195.48877	390.97754	ug/l	1000	Sb	
Te	125	165	2	0.53514	1.07028	ug/l	200	Te	
Cs	133	165	2	1.88630	3.77259	ug/l	2000	Cs	
Ba	137	165	3	709.38745	1418.77490	ug/l	5000	Ba	
La	139	165	2	32.18214	64.36428	ug/l	200	La	
Ce	140	165	2	64.31860	128.63719	ug/l	200	Ce	
Pr	141	165	2	7.14148	14.28296	ug/l	200	Pr	
Nd	146	165	2	28.63976	57.27953	ug/l	200	Nd	
Sm	147	165	3	500.44592	1000.89184	ug/l	2000	Sm	
Hf	178	165	2	0.52122	1.04245	ug/l	200	Hf	
Ta	181	165	2	0.11011	0.22021	ug/l	200	Ta	
W	182	165	2	419.95284	839.90568	ug/l	2000	W	
Re	185	193	3	0.00809	0.01619	ug/l	200	Re	
Pt	195	193	2	0.00891	0.01782	ug/l	200	Pt	
Au	197	193	3	0.02853	0.05706	ug/l	2000	Au	
Tl	205	193	3	100.91346	201.82692	ug/l	400	Tl	
Pb	208	193	3	504.35192	1008.70383	ug/l	5000	Pb	
Bi	209	193	2	475.86973	951.73945	ug/l	2000	Bi	
Th	232	193	3	509.99720	1019.99440	ug/l	2000	Th	
U	238	193	3	493.65001	987.30002	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5333904	1.03	7411413	72.0	80	120	Li (IS)	FAILED
Sc (IS)	45	2	186854	0.83	143379	130.3	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3366584	0.38	2392712	140.7	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	373760	1.61	323154	115.7	80	120	Ge (IS)	
Ge (IS)	72	3	2351666	0.99	1861986	126.3	80	120	Ge (IS)	FAILED
In (IS)	115	3	14104944	1.00	12119833	116.4	80	120	In (IS)	
Ho (IS)	165	2	10262808	0.50	9598706	106.9	80	120	Ho (IS)	
Ho (IS)	165	3	16530612	1.13	13687738	120.8	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6276273	1.54	6085322	103.1	80	120	Ir (IS)	
Ir (IS)	193	3	7788123	0.57	6951639	112.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-11-D MSD**
Data File Name	**076SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:09:47-06:00**
Type	**Sample**
VialNumber	**2501**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	64.38015	128.76030	ug/l	1000	Li	
Be	9	6	3	57.39157	114.78314	ug/l	1000	Be	
B	11	6	3	119.54094	239.08189	ug/l	2000	B	
Na	23	45	2	4910.86436	9821.72872	ug/l	50000	Na	
Mg	24	45	2	26648.39149	53296.78297	ug/l	50000	Mg	
Al	27	45	2	35442.98897	70885.97795	ug/l	100000	Al	
P	31	45	2	2483.58079	4967.16159	ug/l	100000	P	
K	39	45	2	5940.74402	11881.48803	ug/l	100000	K	
Ca	44	45	3	22469.25206	44938.50412	ug/l	100000	Ca	
Ti	47	45	3	2375.22299	4750.44597	ug/l	2000	Ti	FAILED
V	51	45	2	543.83250	1087.66501	ug/l	2000	V	
Cr	52	45	2	485.28314	970.56628	ug/l	2000	Cr	
Mn	55	72	2	622.19266	1244.38531	ug/l	5000	Mn	
Fe	57	72	2	59562.78645	119125.57291	ug/l	100000	Fe	
Co	59	72	2	516.16411	1032.32822	ug/l	2000	Co	
Ni	60	72	2	564.75883	1129.51765	ug/l	2000	Ni	
Cu	63	72	2	9136.31245	18272.62489	ug/l	2000	Cu	FAILED
Zn	66	72	2	546.40317	1092.80633	ug/l	5000	Zn	
As	75	72	2	541.12377	1082.24754	ug/l	2000	As	
Se	78	72	2	244.85793	489.71586	ug/l	1000	Se	
Sr	88	72	3	933.43793	1866.87586	ug/l	2000	Sr	
Y	89	72	2	7.91713	15.83425	ug/l	200	Y	
Zr	90	72	2	520.56003	1041.12007	ug/l	2000	Zr	
Nb	93	72	2	1.02999	2.05997	ug/l	100	Nb	
Mo	95	72	3	270.89685	541.79371	ug/l	1000	Mo	
Ru	101	72	2	-0.00536	-0.01072	ug/l	200	Ru	
Rh	103	72	2	0.01768	0.03535	ug/l	200	Rh	
Pd	105	72	2	0.06586	0.13171	ug/l	20	Pd	
Ag	107	115	3	95.15884	190.31767	ug/l	400	Ag	
Cd	111	115	3	491.38987	982.77973	ug/l	2000	Cd	
Sn	118	115	3	498.79403	997.58807	ug/l	2000	Sn	
Sb	121	115	3	209.53996	419.07992	ug/l	1000	Sb	
Te	125	165	2	0.55953	1.11906	ug/l	200	Te	
Cs	133	165	2	1.39043	2.78087	ug/l	2000	Cs	
Ba	137	165	3	632.22642	1264.45283	ug/l	5000	Ba	
La	139	165	2	34.52467	69.04934	ug/l	200	La	
Ce	140	165	2	67.07868	134.15737	ug/l	200	Ce	
Pr	141	165	2	7.16434	14.32868	ug/l	200	Pr	
Nd	146	165	2	28.05584	56.11168	ug/l	200	Nd	
Sm	147	165	3	509.06421	1018.12842	ug/l	2000	Sm	
Hf	178	165	2	0.39432	0.78864	ug/l	200	Hf	
Ta	181	165	2	0.17774	0.35548	ug/l	200	Ta	
W	182	165	2	444.71399	889.42799	ug/l	2000	W	
Re	185	193	3	0.00942	0.01885	ug/l	200	Re	
Pt	195	193	2	0.01115	0.02230	ug/l	200	Pt	
Au	197	193	3	0.01939	0.03878	ug/l	2000	Au	
Tl	205	193	3	101.98008	203.96016	ug/l	400	Tl	
Pb	208	193	3	500.38094	1000.76188	ug/l	5000	Pb	
Bi	209	193	2	474.53861	949.07723	ug/l	2000	Bi	
Th	232	193	3	530.33264	1060.66527	ug/l	2000	Th	
U	238	193	3	495.28771	990.57541	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5273948	1.09	7411413	71.2	80	120	Li (IS)	FAILED
Sc (IS)	45	2	174659	1.24	143379	121.8	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3214114	0.75	2392712	134.3	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	372647	1.57	323154	115.3	80	120	Ge (IS)	
Ge (IS)	72	3	2326835	0.53	1861986	125.0	80	120	Ge (IS)	FAILED
In (IS)	115	3	14208742	0.32	12119833	117.2	80	120	In (IS)	
Ho (IS)	165	2	10253055	1.18	9598706	106.8	80	120	Ho (IS)	
Ho (IS)	165	3	16416190	0.93	13687738	119.9	80	120	Ho (IS)	
Ir (IS)	193	2	6361956	1.81	6085322	104.5	80	120	Ir (IS)	
Ir (IS)	193	3	7821118	0.79	6951639	112.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36526-B-12-A**
Data File Name	**077SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:16:37-06:00**
Type	**Sample**
VialNumber	**2502**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	11.93651	23.87303	ug/l	1000	Li	
Be	9	6	3	0.75916	1.51831	ug/l	1000	Be	
B	11	6	3	5.03087	10.06175	ug/l	2000	B	
Na	23	45	2	288.25679	576.51359	ug/l	50000	Na	
Mg	24	45	2	19761.39650	39522.79300	ug/l	50000	Mg	
Al	27	45	2	18111.20719	36222.41437	ug/l	100000	Al	
P	31	45	2	3155.72224	6311.44447	ug/l	100000	P	
K	39	45	2	6365.97456	12731.94911	ug/l	100000	K	
Ca	44	45	3	11906.59061	23813.18121	ug/l	100000	Ca	
Ti	47	45	3	1280.41254	2560.82508	ug/l	2000	Ti	
V	51	45	2	71.03795	142.07589	ug/l	2000	V	
Cr	52	45	2	25.39988	50.79976	ug/l	2000	Cr	
Mn	55	72	2	302.53567	605.07135	ug/l	5000	Mn	
Fe	57	72	2	60435.98827	120871.97655	ug/l	100000	Fe	
Co	59	72	2	22.75659	45.51319	ug/l	2000	Co	
Ni	60	72	2	34.81302	69.62604	ug/l	2000	Ni	
Cu	63	72	2	6180.35986	12360.71972	ug/l	2000	Cu	FAILED
Zn	66	72	2	61.64184	123.28368	ug/l	5000	Zn	
As	75	72	2	9.83942	19.67885	ug/l	2000	As	
Se	78	72	2	9.30770	18.61539	ug/l	1000	Se	
Sr	88	72	3	104.88142	209.76284	ug/l	2000	Sr	
Y	89	72	2	14.68148	29.36297	ug/l	200	Y	
Zr	90	72	2	4.53848	9.07696	ug/l	2000	Zr	
Nb	93	72	2	0.38073	0.76146	ug/l	100	Nb	
Mo	95	72	3	9.88299	19.76599	ug/l	1000	Mo	
Ru	101	72	2	-0.00562	-0.01125	ug/l	200	Ru	
Rh	103	72	2	-0.00572	-0.01143	ug/l	200	Rh	
Pd	105	72	2	0.01510	0.03020	ug/l	20	Pd	
Ag	107	115	3	0.55825	1.11651	ug/l	400	Ag	
Cd	111	115	3	0.13366	0.26732	ug/l	2000	Cd	
Sn	118	115	3	7.71119	15.42238	ug/l	2000	Sn	
Sb	121	115	3	0.93095	1.86189	ug/l	1000	Sb	
Te	125	165	2	0.70927	1.41854	ug/l	200	Te	
Cs	133	165	2	2.38378	4.76757	ug/l	2000	Cs	
Ba	137	165	3	167.77912	335.55825	ug/l	5000	Ba	
La	139	165	2	31.08828	62.17656	ug/l	200	La	
Ce	140	165	2	67.80179	135.60359	ug/l	200	Ce	
Pr	141	165	2	7.92190	15.84380	ug/l	200	Pr	
Nd	146	165	2	33.24926	66.49851	ug/l	200	Nd	
Sm	147	165	3	6.21945	12.43890	ug/l	2000	Sm	
Hf	178	165	2	0.16382	0.32764	ug/l	200	Hf	
Ta	181	165	2	0.02761	0.05521	ug/l	200	Ta	
W	182	165	2	4.87952	9.75904	ug/l	2000	W	
Re	185	193	3	0.09442	0.18884	ug/l	200	Re	
Pt	195	193	2	0.00339	0.00677	ug/l	200	Pt	
Au	197	193	3	-0.02521	-0.05042	ug/l	2000	Au	
Tl	205	193	3	0.39672	0.79345	ug/l	400	Tl	
Pb	208	193	3	7.17759	14.35518	ug/l	5000	Pb	
Bi	209	193	2	2.11237	4.22474	ug/l	2000	Bi	
Th	232	193	3	37.77175	75.54351	ug/l	2000	Th	
U	238	193	3	7.31125	14.62250	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5558461	1.56	7411413	75.0	80	120	Li (IS)	FAILED
Sc (IS)	45	2	165018	0.90	143379	115.1	80	120	Sc (IS)	
Sc (IS)	45	3	3120309	0.57	2392712	130.4	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	372391	0.75	323154	115.2	80	120	Ge (IS)	
Ge (IS)	72	3	2371979	0.83	1861986	127.4	80	120	Ge (IS)	FAILED
In (IS)	115	3	14599374	0.20	12119833	120.5	80	120	In (IS)	FAILED
Ho (IS)	165	2	10306032	0.68	9598706	107.4	80	120	Ho (IS)	
Ho (IS)	165	3	16504671	0.42	13687738	120.6	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6418733	0.84	6085322	105.5	80	120	Ir (IS)	
Ir (IS)	193	3	7941946	0.69	6951639	114.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**078LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:23:23-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	5.89285	ug/l	5	117.9	80	120	Li	
Be	9	6	3	0.59640	ug/l	0.5	119.3	80	120	Be	
B	11	6	3	112.56360	ug/l	100	112.6	80	120	B	
Na	23	45	2	99.86290	ug/l	100	99.9	80	120	Na	
Mg	24	45	2	53.70909	ug/l	50	107.4	80	120	Mg	
Al	27	45	2	51.44402	ug/l	50	102.9	80	120	Al	
P	31	45	2	97.43487	ug/l	100	97.4	80	120	P	
K	39	45	2	98.92654	ug/l	100	98.9	80	120	K	
Ca	44	45	3	201.85575	ug/l	200	100.9	80	120	Ca	
Ti	47	45	3	5.45831	ug/l	5	109.2	80	120	Ti	
V	51	45	2	10.05869	ug/l	10	100.6	80	120	V	
Cr	52	45	2	10.22893	ug/l	10	102.3	80	120	Cr	
Mn	55	72	2	4.00624	ug/l	4	100.2	80	120	Mn	
Fe	57	72	2	61.84029	ug/l	50	123.7	80	120	Fe	FAILED
Co	59	72	2	2.05737	ug/l	2	102.9	80	120	Co	
Ni	60	72	2	5.55503	ug/l	5	111.1	80	120	Ni	
Cu	63	72	2	4.66728	ug/l	3	155.6	80	120	Cu	FAILED
Zn	66	72	2	21.11896	ug/l	20	105.6	80	120	Zn	
As	75	72	2	10.32053	ug/l	10	103.2	80	120	As	
Se	78	72	2	5.70746	ug/l	5	114.1	80	120	Se	
Sr	88	72	3	4.98747	ug/l	5	99.7	80	120	Sr	
Y	89	72	2	4.81570	ug/l	5	96.3	80	120	Y	
Zr	90	72	2	4.99026	ug/l	5	99.8	80	120	Zr	
Nb	93	72	2	18.57961	ug/l	25	74.3	80	120	Nb	FAILED
Mo	95	72	3	4.76347	ug/l	5	95.3	80	120	Mo	
Ru	101	72	2	10.22564	ug/l	10	102.3	80	120	Ru	
Rh	103	72	2	9.94792	ug/l	10	99.5	80	120	Rh	
Pd	105	72	2	0.55109	ug/l	0.5	110.2	80	120	Pd	
Ag	107	115	3	1.90794	ug/l	2	95.4	80	120	Ag	
Cd	111	115	3	0.52123	ug/l	0.5	104.2	80	120	Cd	
Sn	118	115	3	1.87595	ug/l	2	93.8	80	120	Sn	
Sb	121	115	3	4.67336	ug/l	5	93.5	80	120	Sb	
Te	125	165	2	9.68146	ug/l	10	96.8	80	120	Te	
Cs	133	165	2	0.92240	ug/l	1	92.2	80	120	Cs	
Ba	137	165	3	1.98947	ug/l	2	99.5	80	120	Ba	
La	139	165	2	1.89424	ug/l	2	94.7	80	120	La	
Ce	140	165	2	9.40784	ug/l	10	94.1	80	120	Ce	
Pr	141	165	2	1.88486	ug/l	2	94.2	80	120	Pr	
Nd	146	165	2	1.85521	ug/l	2	92.8	80	120	Nd	
Sm	147	165	3	9.63377	ug/l	10	96.3	80	120	Sm	
Hf	178	165	2	8.73578	ug/l	10	87.4	80	120	Hf	
Ta	181	165	2	7.12283	ug/l	10	71.2	80	120	Ta	FAILED
W	182	165	2	5.27066	ug/l	5	105.4	80	120	W	
Re	185	193	3	9.29068	ug/l	10	92.9	80	120	Re	
Pt	195	193	2	1.02217	ug/l	1	102.2	80	120	Pt	
Au	197	193	3	4.55332	ug/l	5	91.1	80	120	Au	
Tl	205	193	3	1.89624	ug/l	2	94.8	80	120	Tl	
Pb	208	193	3	2.80360	ug/l	3	93.5	80	120	Pb	
Bi	209	193	2	16.89611	ug/l	20	84.5	80	120	Bi	
Th	232	193	3	1.82549	ug/l	2	91.3	80	120	Th	
U	238	193	3	0.90346	ug/l	1	90.3	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5786188	0.54	7411413	78.1	80	120	Li (IS)	FAILED
Sc (IS)	45	2	159894	1.21	143379	111.5	80	120	Sc (IS)	
Sc (IS)	45	3	2922395	0.53	2392712	122.1	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	383859	1.94	323154	118.8	80	120	Ge (IS)	
Ge (IS)	72	3	2423970	1.40	1861986	130.2	80	120	Ge (IS)	FAILED
In (IS)	115	3	15282885	0.44	12119833	126.1	80	120	In (IS)	FAILED
Ho (IS)	165	2	10554230	1.10	9598706	110.0	80	120	Ho (IS)	
Ho (IS)	165	3	16775239	1.09	13687738	122.6	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6763045	0.32	6085322	111.1	80	120	Ir (IS)	
Ir (IS)	193	3	8248877	0.22	6951639	118.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**079_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:30:04-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	107.79768	ug/l	100	107.8	90	110	Li	
Be	9	6	3	120.06890	ug/l	100	120.1	90	110	Be	FAILED
B	11	6	3	240.95779	ug/l	200	120.5	90	110	B	FAILED
Na	23	45	2	2433.81639	ug/l	2500	97.4	90	110	Na	
Mg	24	45	2	2391.84236	ug/l	2500	95.7	90	110	Mg	
Al	27	45	2	2180.19340	ug/l	2500	87.2	90	110	Al	FAILED
P	31	45	2	2282.60503	ug/l	2500	91.3	90	110	P	
K	39	45	2	2464.93137	ug/l	2500	98.6	90	110	K	
Ca	44	45	3	2595.23428	ug/l	2500	103.8	90	110	Ca	
Ti	47	45	3	102.00084	ug/l	100	102.0	90	110	Ti	
V	51	45	2	99.40999	ug/l	100	99.4	90	110	V	
Cr	52	45	2	103.92888	ug/l	100	103.9	90	110	Cr	
Mn	55	72	2	90.80816	ug/l	100	90.8	90	110	Mn	
Fe	57	72	2	2320.86349	ug/l	2500	92.8	90	110	Fe	
Co	59	72	2	99.54629	ug/l	100	99.5	90	110	Co	
Ni	60	72	2	100.94126	ug/l	100	100.9	90	110	Ni	
Cu	63	72	2	101.38479	ug/l	100	101.4	90	110	Cu	
Zn	66	72	2	99.99320	ug/l	100	100.0	90	110	Zn	
As	75	72	2	100.33508	ug/l	100	100.3	90	110	As	
Se	78	72	2	48.47606	ug/l	50	97.0	90	110	Se	
Sr	88	72	3	102.19868	ug/l	100	102.2	90	110	Sr	
Y	89	72	2	99.68561	ug/l	100	99.7	90	110	Y	
Zr	90	72	2	100.45636	ug/l	100	100.5	90	110	Zr	
Nb	93	72	2	50.33383	ug/l	50	100.7	90	110	Nb	
Mo	95	72	3	46.36677	ug/l	50	92.7	90	110	Mo	
Ru	101	72	2	97.97304	ug/l	100	98.0	90	110	Ru	
Rh	103	72	2	103.82144	ug/l	100	103.8	90	110	Rh	
Pd	105	72	2	10.54453	ug/l	10	105.4	90	110	Pd	
Ag	107	115	3	18.28089	ug/l	20	91.4	90	110	Ag	
Cd	111	115	3	95.08413	ug/l	100	95.1	90	110	Cd	
Sn	118	115	3	101.34821	ug/l	100	101.3	90	110	Sn	
Sb	121	115	3	50.99101	ug/l	50	102.0	90	110	Sb	
Te	125	165	2	97.77688	ug/l	100	97.8	90	110	Te	
Cs	133	165	2	100.21075	ug/l	100	100.2	90	110	Cs	
Ba	137	165	3	100.91206	ug/l	100	100.9	90	110	Ba	
La	139	165	2	102.16260	ug/l	100	102.2	90	110	La	
Ce	140	165	2	102.58215	ug/l	100	102.6	90	110	Ce	
Pr	141	165	2	101.77511	ug/l	100	101.8	90	110	Pr	
Nd	146	165	2	94.29173	ug/l	100	94.3	90	110	Nd	
Sm	147	165	3	101.23176	ug/l	100	101.2	90	110	Sm	
Hf	178	165	2	100.04675	ug/l	100	100.0	90	110	Hf	
Ta	181	165	2	101.89865	ug/l	100	101.9	90	110	Ta	
W	182	165	2	104.26872	ug/l	100	104.3	90	110	W	
Re	185	193	3	101.97030	ug/l	100	102.0	90	110	Re	
Pt	195	193	2	10.37878	ug/l	10	103.8	90	110	Pt	
Au	197	193	3	99.51631	ug/l	100	99.5	90	110	Au	
Tl	205	193	3	20.46957	ug/l	20	102.3	90	110	Tl	
Pb	208	193	3	99.88968	ug/l	100	99.9	90	110	Pb	
Bi	209	193	2	97.56795	ug/l	100	97.6	90	110	Bi	
Th	232	193	3	97.31720	ug/l	100	97.3	90	110	Th	
U	238	193	3	97.22289	ug/l	100	97.2	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5572891	1.13	7411413	75.2	80	120	Li (IS)	FAILED
Sc (IS)	45	2	159344	2.09	143379	111.1	80	120	Sc (IS)	
Sc (IS)	45	3	2889397	1.22	2392712	120.8	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	394833	2.34	323154	122.2	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2427570	0.31	1861986	130.4	80	120	Ge (IS)	FAILED
In (IS)	115	3	14889605	0.54	12119833	122.9	80	120	In (IS)	FAILED
Ho (IS)	165	2	10380475	0.43	9598706	108.1	80	120	Ho (IS)	
Ho (IS)	165	3	16796243	1.06	13687738	122.7	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6667196	0.79	6085322	109.6	80	120	Ir (IS)	
Ir (IS)	193	3	8135230	0.28	6951639	117.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**080_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:36:59-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.70310	ug/l	1.388	Li	
Be	9	6	3	-0.00319	ug/l	0.7	Be	
B	11	6	3	2.94179	ug/l	20	B	
Na	23	45	2	0.88931	ug/l	30	Na	
Mg	24	45	2	0.48836	ug/l	11.18	Mg	
Al	27	45	2	0.41609	ug/l	25.8	Al	
P	31	45	2	0.17392	ug/l	16.46	P	
K	39	45	2	-0.78741	ug/l	83.2	K	
Ca	44	45	3	-5.87869	ug/l	136.2	Ca	
Ti	47	45	3	0.05633	ug/l	4.2	Ti	
V	51	45	2	-0.03839	ug/l	4.74	V	
Cr	52	45	2	-0.00355	ug/l	6.52	Cr	
Mn	55	72	2	0.02227	ug/l	0.49	Mn	
Fe	57	72	2	0.61963	ug/l	40.7	Fe	
Co	59	72	2	0.01661	ug/l	0.434	Co	
Ni	60	72	2	0.00210	ug/l	0.8	Ni	
Cu	63	72	2	-0.02161	ug/l	0.902	Cu	
Zn	66	72	2	0.07227	ug/l	16.58	Zn	
As	75	72	2	0.00594	ug/l	2.36	As	
Se	78	72	2	0.32618	ug/l	3.18	Se	
Sr	88	72	3	0.00154	ug/l	2	Sr	
Y	89	72	2	0.01150	ug/l	0.424	Y	
Zr	90	72	2	0.02598	ug/l	0.496	Zr	
Nb	93	72	2	0.28160	ug/l	4.62	Nb	
Mo	95	72	3	0.01950	ug/l	2	Mo	
Ru	101	72	2	0.01612	ug/l	2	Ru	
Rh	103	72	2	0.01349	ug/l	1.634	Rh	
Pd	105	72	2	-0.00417	ug/l	0.08	Pd	
Ag	107	115	3	0.00452	ug/l	1.54	Ag	
Cd	111	115	3	-0.00110	ug/l	0.4	Cd	
Sn	118	115	3	-0.00225	ug/l	2	Sn	
Sb	121	115	3	-0.01025	ug/l	3.34	Sb	
Te	125	165	2	0.06419	ug/l	1.072	Te	
Cs	133	165	2	0.01269	ug/l	0.106	Cs	
Ba	137	165	3	0.00993	ug/l	0.446	Ba	
La	139	165	2	0.01475	ug/l	0.102	La	
Ce	140	165	2	0.01454	ug/l	1.772	Ce	
Pr	141	165	2	0.01509	ug/l	0.084	Pr	
Nd	146	165	2	0.01599	ug/l	0.208	Nd	
Sm	147	165	3	0.00217	ug/l	0.652	Sm	
Hf	178	165	2	0.02621	ug/l	2.26	Hf	
Ta	181	165	2	0.02494	ug/l	1.46	Ta	
W	182	165	2	0.50539	ug/l	4	W	
Re	185	193	3	0.00335	ug/l	0.05	Re	
Pt	195	193	2	0.00277	ug/l	0.12	Pt	
Au	197	193	3	0.10074	ug/l	1	Au	
Tl	205	193	3	0.00358	ug/l	1.1	Tl	
Pb	208	193	3	0.02218	ug/l	0.346	Pb	
Bi	209	193	2	0.02134	ug/l	1.464	Bi	
Th	232	193	3	0.01835	ug/l	1.104	Th	
U	238	193	3	0.00375	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5716425	1.69	7411413	77.1	80	120	Li (IS)	FAILED
Sc (IS)	45	2	158777	0.35	143379	110.7	80	120	Sc (IS)	
Sc (IS)	45	3	2899819	0.53	2392712	121.2	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	376320	1.36	323154	116.5	80	120	Ge (IS)	
Ge (IS)	72	3	2384460	0.34	1861986	128.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	15193061	0.54	12119833	125.4	80	120	In (IS)	FAILED
Ho (IS)	165	2	10430763	0.61	9598706	108.7	80	120	Ho (IS)	
Ho (IS)	165	3	16710572	0.58	13687738	122.1	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6790620	0.92	6085322	111.6	80	120	Ir (IS)	
Ir (IS)	193	3	8302131	1.08	6951639	119.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-13-A**
Data File Name	**081SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:43:42-06:00**
Type	**Sample**
VialNumber	**2503**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	11.75261	23.50523	ug/l	1000	Li	
Be	9	6	3	0.94224	1.88448	ug/l	1000	Be	
B	11	6	3	5.84737	11.69474	ug/l	2000	B	
Na	23	45	2	394.93545	789.87090	ug/l	50000	Na	
Mg	24	45	2	20752.77252	41505.54504	ug/l	50000	Mg	
Al	27	45	2	19591.72213	39183.44426	ug/l	100000	Al	
P	31	45	2	2594.74532	5189.49064	ug/l	100000	P	
K	39	45	2	5162.20051	10324.40102	ug/l	100000	K	
Ca	44	45	3	19509.22007	39018.44015	ug/l	100000	Ca	
Ti	47	45	3	1303.92036	2607.84073	ug/l	2000	Ti	
V	51	45	2	61.95223	123.90446	ug/l	2000	V	
Cr	52	45	2	34.46298	68.92596	ug/l	2000	Cr	
Mn	55	72	2	295.95789	591.91578	ug/l	5000	Mn	
Fe	57	72	2	50726.07137	101452.14275	ug/l	100000	Fe	
Co	59	72	2	19.03636	38.07272	ug/l	2000	Co	
Ni	60	72	2	40.08239	80.16477	ug/l	2000	Ni	
Cu	63	72	2	4435.07532	8870.15064	ug/l	2000	Cu	FAILED
Zn	66	72	2	52.60824	105.21649	ug/l	5000	Zn	
As	75	72	2	6.11399	12.22798	ug/l	2000	As	
Se	78	72	2	7.21253	14.42506	ug/l	1000	Se	
Sr	88	72	3	189.14416	378.28832	ug/l	2000	Sr	
Y	89	72	2	14.78814	29.57628	ug/l	200	Y	
Zr	90	72	2	5.36016	10.72032	ug/l	2000	Zr	
Nb	93	72	2	0.58891	1.17782	ug/l	100	Nb	
Mo	95	72	3	9.04666	18.09333	ug/l	1000	Mo	
Ru	101	72	2	-0.00196	-0.00392	ug/l	200	Ru	
Rh	103	72	2	-0.00481	-0.00962	ug/l	200	Rh	
Pd	105	72	2	0.02147	0.04295	ug/l	20	Pd	
Ag	107	115	3	0.50599	1.01199	ug/l	400	Ag	
Cd	111	115	3	0.04577	0.09154	ug/l	2000	Cd	
Sn	118	115	3	7.37049	14.74099	ug/l	2000	Sn	
Sb	121	115	3	0.74162	1.48324	ug/l	1000	Sb	
Te	125	165	2	0.66156	1.32311	ug/l	200	Te	
Cs	133	165	2	2.42847	4.85694	ug/l	2000	Cs	
Ba	137	165	3	200.84992	401.69984	ug/l	5000	Ba	
La	139	165	2	32.63647	65.27295	ug/l	200	La	
Ce	140	165	2	69.91423	139.82846	ug/l	200	Ce	
Pr	141	165	2	8.02064	16.04127	ug/l	200	Pr	
Nd	146	165	2	32.89098	65.78196	ug/l	200	Nd	
Sm	147	165	3	6.32691	12.65382	ug/l	2000	Sm	
Hf	178	165	2	0.35331	0.70663	ug/l	200	Hf	
Ta	181	165	2	0.07199	0.14398	ug/l	200	Ta	
W	182	165	2	2.72092	5.44183	ug/l	2000	W	
Re	185	193	3	0.11794	0.23587	ug/l	200	Re	
Pt	195	193	2	0.00579	0.01157	ug/l	200	Pt	
Au	197	193	3	0.01682	0.03363	ug/l	2000	Au	
Tl	205	193	3	0.23162	0.46324	ug/l	400	Tl	
Pb	208	193	3	5.94852	11.89704	ug/l	5000	Pb	
Bi	209	193	2	1.59590	3.19180	ug/l	2000	Bi	
Th	232	193	3	35.50559	71.01118	ug/l	2000	Th	
U	238	193	3	8.92233	17.84466	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5429504	2.83	7411413	73.3	80	120	Li (IS)	FAILED
Sc (IS)	45	2	168248	0.33	143379	117.3	80	120	Sc (IS)	
Sc (IS)	45	3	3153243	2.17	2392712	131.8	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	374088	0.71	323154	115.8	80	120	Ge (IS)	
Ge (IS)	72	3	2400053	2.35	1861986	128.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	14470301	3.25	12119833	119.4	80	120	In (IS)	
Ho (IS)	165	2	10250520	0.37	9598706	106.8	80	120	Ho (IS)	
Ho (IS)	165	3	16495359	4.00	13687738	120.5	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6423861	0.54	6085322	105.6	80	120	Ir (IS)	
Ir (IS)	193	3	7883156	2.84	6951639	113.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-14-A**
Data File Name	**082SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:50:24-06:00**
Type	**Sample**
VialNumber	**2504**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	11.70250	23.40499	ug/l	1000	Li	
Be	9	6	3	1.05712	2.11423	ug/l	1000	Be	
B	11	6	3	6.37435	12.74870	ug/l	2000	B	
Na	23	45	2	541.39682	1082.79364	ug/l	50000	Na	
Mg	24	45	2	21186.98878	42373.97756	ug/l	50000	Mg	
Al	27	45	2	21342.51352	42685.02704	ug/l	100000	Al	
P	31	45	2	2908.75606	5817.51211	ug/l	100000	P	
K	39	45	2	5576.99987	11153.99974	ug/l	100000	K	
Ca	44	45	3	20117.31178	40234.62356	ug/l	100000	Ca	
Ti	47	45	3	1251.82460	2503.64919	ug/l	2000	Ti	
V	51	45	2	67.35263	134.70525	ug/l	2000	V	
Cr	52	45	2	32.63123	65.26246	ug/l	2000	Cr	
Mn	55	72	2	288.17354	576.34708	ug/l	5000	Mn	
Fe	57	72	2	64986.27215	129972.54430	ug/l	100000	Fe	
Co	59	72	2	24.70276	49.40552	ug/l	2000	Co	
Ni	60	72	2	40.26669	80.53338	ug/l	2000	Ni	
Cu	63	72	2	4622.01910	9244.03819	ug/l	2000	Cu	FAILED
Zn	66	72	2	49.81184	99.62368	ug/l	5000	Zn	
As	75	72	2	7.83326	15.66653	ug/l	2000	As	
Se	78	72	2	9.75954	19.51908	ug/l	1000	Se	
Sr	88	72	3	172.59844	345.19688	ug/l	2000	Sr	
Y	89	72	2	15.07294	30.14588	ug/l	200	Y	
Zr	90	72	2	5.67733	11.35466	ug/l	2000	Zr	
Nb	93	72	2	0.43042	0.86084	ug/l	100	Nb	
Mo	95	72	3	8.16725	16.33449	ug/l	1000	Mo	
Ru	101	72	2	-0.00488	-0.00975	ug/l	200	Ru	
Rh	103	72	2	-0.00336	-0.00673	ug/l	200	Rh	
Pd	105	72	2	0.01830	0.03660	ug/l	20	Pd	
Ag	107	115	3	0.56258	1.12517	ug/l	400	Ag	
Cd	111	115	3	0.05318	0.10636	ug/l	2000	Cd	
Sn	118	115	3	8.13520	16.27039	ug/l	2000	Sn	
Sb	121	115	3	0.85114	1.70229	ug/l	1000	Sb	
Te	125	165	2	1.10768	2.21535	ug/l	200	Te	
Cs	133	165	2	2.67386	5.34771	ug/l	2000	Cs	
Ba	137	165	3	200.86987	401.73973	ug/l	5000	Ba	
La	139	165	2	34.30720	68.61440	ug/l	200	La	
Ce	140	165	2	74.55538	149.11076	ug/l	200	Ce	
Pr	141	165	2	8.59565	17.19131	ug/l	200	Pr	
Nd	146	165	2	35.50347	71.00693	ug/l	200	Nd	
Sm	147	165	3	6.68610	13.37220	ug/l	2000	Sm	
Hf	178	165	2	0.25684	0.51368	ug/l	200	Hf	
Ta	181	165	2	0.12205	0.24410	ug/l	200	Ta	
W	182	165	2	1.45201	2.90402	ug/l	2000	W	
Re	185	193	3	0.12355	0.24711	ug/l	200	Re	
Pt	195	193	2	0.00903	0.01805	ug/l	200	Pt	
Au	197	193	3	0.01664	0.03327	ug/l	2000	Au	
Tl	205	193	3	0.22957	0.45913	ug/l	400	Tl	
Pb	208	193	3	6.74228	13.48457	ug/l	5000	Pb	
Bi	209	193	2	2.27036	4.54072	ug/l	2000	Bi	
Th	232	193	3	39.34770	78.69540	ug/l	2000	Th	
U	238	193	3	10.54738	21.09475	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5440864	0.34	7411413	73.4	80	120	Li (IS)	FAILED
Sc (IS)	45	2	172743	2.09	143379	120.5	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3220063	1.22	2392712	134.6	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	386649	2.46	323154	119.6	80	120	Ge (IS)	
Ge (IS)	72	3	2428165	0.45	1861986	130.4	80	120	Ge (IS)	FAILED
In (IS)	115	3	14789294	0.96	12119833	122.0	80	120	In (IS)	FAILED
Ho (IS)	165	2	10325392	3.08	9598706	107.6	80	120	Ho (IS)	
Ho (IS)	165	3	16812152	0.77	13687738	122.8	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6462661	2.63	6085322	106.2	80	120	Ir (IS)	
Ir (IS)	193	3	8063890	1.25	6951639	116.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-15-A**
Data File Name	**083SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:57:05-06:00**
Type	**Sample**
VialNumber	**2505**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	10.68613	21.37225	ug/l	1000	Li	
Be	9	6	3	1.22275	2.44550	ug/l	1000	Be	
B	11	6	3	9.04224	18.08449	ug/l	2000	B	
Na	23	45	2	401.44018	802.88037	ug/l	50000	Na	
Mg	24	45	2	18663.07405	37326.14810	ug/l	50000	Mg	
Al	27	45	2	25666.05717	51332.11435	ug/l	100000	Al	
P	31	45	2	1449.82152	2899.64303	ug/l	100000	P	
K	39	45	2	1589.36144	3178.72288	ug/l	100000	K	
Ca	44	45	3	16110.21875	32220.43750	ug/l	100000	Ca	
Ti	47	45	3	1208.89558	2417.79116	ug/l	2000	Ti	
V	51	45	2	57.05597	114.11195	ug/l	2000	V	
Cr	52	45	2	19.62313	39.24627	ug/l	2000	Cr	
Mn	55	72	2	197.07660	394.15320	ug/l	5000	Mn	
Fe	57	72	2	43002.17871	86004.35742	ug/l	100000	Fe	
Co	59	72	2	15.42927	30.85854	ug/l	2000	Co	
Ni	60	72	2	32.63941	65.27882	ug/l	2000	Ni	
Cu	63	72	2	3277.60738	6555.21476	ug/l	2000	Cu	FAILED
Zn	66	72	2	31.20907	62.41813	ug/l	5000	Zn	
As	75	72	2	27.11970	54.23941	ug/l	2000	As	
Se	78	72	2	18.19476	36.38953	ug/l	1000	Se	
Sr	88	72	3	279.46382	558.92764	ug/l	2000	Sr	
Y	89	72	2	8.34600	16.69201	ug/l	200	Y	
Zr	90	72	2	6.76682	13.53364	ug/l	2000	Zr	
Nb	93	72	2	0.31517	0.63035	ug/l	100	Nb	
Mo	95	72	3	16.11274	32.22547	ug/l	1000	Mo	
Ru	101	72	2	-0.00468	-0.00937	ug/l	200	Ru	
Rh	103	72	2	-0.00455	-0.00909	ug/l	200	Rh	
Pd	105	72	2	0.01568	0.03135	ug/l	20	Pd	
Ag	107	115	3	0.25347	0.50694	ug/l	400	Ag	
Cd	111	115	3	0.04533	0.09066	ug/l	2000	Cd	
Sn	118	115	3	8.74632	17.49264	ug/l	2000	Sn	
Sb	121	115	3	6.44771	12.89543	ug/l	1000	Sb	
Te	125	165	2	0.54720	1.09440	ug/l	200	Te	
Cs	133	165	2	2.11783	4.23567	ug/l	2000	Cs	
Ba	137	165	3	198.76893	397.53786	ug/l	5000	Ba	
La	139	165	2	17.06550	34.13101	ug/l	200	La	
Ce	140	165	2	36.71905	73.43810	ug/l	200	Ce	
Pr	141	165	2	4.16758	8.33516	ug/l	200	Pr	
Nd	146	165	2	17.26987	34.53973	ug/l	200	Nd	
Sm	147	165	3	3.19711	6.39421	ug/l	2000	Sm	
Hf	178	165	2	0.25069	0.50139	ug/l	200	Hf	
Ta	181	165	2	0.04816	0.09631	ug/l	200	Ta	
W	182	165	2	4.77497	9.54995	ug/l	2000	W	
Re	185	193	3	0.00053	0.00105	ug/l	200	Re	
Pt	195	193	2	0.00592	0.01184	ug/l	200	Pt	
Au	197	193	3	0.02022	0.04045	ug/l	2000	Au	
Tl	205	193	3	0.26819	0.53639	ug/l	400	Tl	
Pb	208	193	3	21.63568	43.27136	ug/l	5000	Pb	
Bi	209	193	2	1.32979	2.65957	ug/l	2000	Bi	
Th	232	193	3	9.29710	18.59420	ug/l	2000	Th	
U	238	193	3	6.86935	13.73871	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5372448	1.59	7411413	72.5	80	120	Li (IS)	FAILED
Sc (IS)	45	2	176685	1.15	143379	123.2	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3303954	0.62	2392712	138.1	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	382378	1.47	323154	118.3	80	120	Ge (IS)	
Ge (IS)	72	3	2418136	0.55	1861986	129.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	14745428	0.19	12119833	121.7	80	120	In (IS)	FAILED
Ho (IS)	165	2	10396475	0.29	9598706	108.3	80	120	Ho (IS)	
Ho (IS)	165	3	16797278	0.87	13687738	122.7	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6487348	1.41	6085322	106.6	80	120	Ir (IS)	
Ir (IS)	193	3	7984058	0.89	6951639	114.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-16-A**
Data File Name	**084SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:03:47-06:00**
Type	**Sample**
VialNumber	**2506**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	11.66035	23.32070	ug/l	1000	Li	
Be	9	6	3	0.97394	1.94788	ug/l	1000	Be	
B	11	6	3	6.01561	12.03121	ug/l	2000	B	
Na	23	45	2	269.08821	538.17641	ug/l	50000	Na	
Mg	24	45	2	20858.77112	41717.54224	ug/l	50000	Mg	
Al	27	45	2	25976.23703	51952.47407	ug/l	100000	Al	
P	31	45	2	2107.17504	4214.35008	ug/l	100000	P	
K	39	45	2	1385.73440	2771.46880	ug/l	100000	K	
Ca	44	45	3	19311.19926	38622.39852	ug/l	100000	Ca	
Ti	47	45	3	1180.20297	2360.40594	ug/l	2000	Ti	
V	51	45	2	55.02918	110.05835	ug/l	2000	V	
Cr	52	45	2	18.36575	36.73149	ug/l	2000	Cr	
Mn	55	72	2	157.00828	314.01656	ug/l	5000	Mn	
Fe	57	72	2	43122.53937	86245.07874	ug/l	100000	Fe	
Co	59	72	2	12.40875	24.81750	ug/l	2000	Co	
Ni	60	72	2	29.56447	59.12894	ug/l	2000	Ni	
Cu	63	72	2	3643.19100	7286.38199	ug/l	2000	Cu	FAILED
Zn	66	72	2	27.27703	54.55406	ug/l	5000	Zn	
As	75	72	2	28.07317	56.14634	ug/l	2000	As	
Se	78	72	2	24.61185	49.22371	ug/l	1000	Se	
Sr	88	72	3	239.75025	479.50050	ug/l	2000	Sr	
Y	89	72	2	7.51821	15.03641	ug/l	200	Y	
Zr	90	72	2	4.83208	9.66415	ug/l	2000	Zr	
Nb	93	72	2	0.28330	0.56659	ug/l	100	Nb	
Mo	95	72	3	19.17544	38.35089	ug/l	1000	Mo	
Ru	101	72	2	-0.00387	-0.00775	ug/l	200	Ru	
Rh	103	72	2	-0.00383	-0.00766	ug/l	200	Rh	
Pd	105	72	2	0.01627	0.03254	ug/l	20	Pd	
Ag	107	115	3	0.30555	0.61111	ug/l	400	Ag	
Cd	111	115	3	0.05954	0.11908	ug/l	2000	Cd	
Sn	118	115	3	7.70094	15.40187	ug/l	2000	Sn	
Sb	121	115	3	2.89947	5.79894	ug/l	1000	Sb	
Te	125	165	2	0.54478	1.08956	ug/l	200	Te	
Cs	133	165	2	2.07175	4.14351	ug/l	2000	Cs	
Ba	137	165	3	145.05233	290.10465	ug/l	5000	Ba	
La	139	165	2	16.92336	33.84671	ug/l	200	La	
Ce	140	165	2	38.11633	76.23267	ug/l	200	Ce	
Pr	141	165	2	4.39498	8.78995	ug/l	200	Pr	
Nd	146	165	2	18.48058	36.96116	ug/l	200	Nd	
Sm	147	165	3	3.30073	6.60146	ug/l	2000	Sm	
Hf	178	165	2	0.18610	0.37220	ug/l	200	Hf	
Ta	181	165	2	0.02749	0.05498	ug/l	200	Ta	
W	182	165	2	4.44992	8.89985	ug/l	2000	W	
Re	185	193	3	-0.00161	-0.00322	ug/l	200	Re	
Pt	195	193	2	0.00572	0.01144	ug/l	200	Pt	
Au	197	193	3	0.01021	0.02042	ug/l	2000	Au	
Tl	205	193	3	0.07933	0.15865	ug/l	400	Tl	
Pb	208	193	3	20.31882	40.63765	ug/l	5000	Pb	
Bi	209	193	2	1.75680	3.51359	ug/l	2000	Bi	
Th	232	193	3	14.85642	29.71284	ug/l	2000	Th	
U	238	193	3	4.52500	9.05000	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5339978	0.58	7411413	72.1	80	120	Li (IS)	FAILED
Sc (IS)	45	2	171655	0.53	143379	119.7	80	120	Sc (IS)	
Sc (IS)	45	3	3235206	0.19	2392712	135.2	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	381198	1.59	323154	118.0	80	120	Ge (IS)	
Ge (IS)	72	3	2424024	0.70	1861986	130.2	80	120	Ge (IS)	FAILED
In (IS)	115	3	14734898	1.31	12119833	121.6	80	120	In (IS)	FAILED
Ho (IS)	165	2	10368263	1.03	9598706	108.0	80	120	Ho (IS)	
Ho (IS)	165	3	16978017	0.23	13687738	124.0	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6449065	0.94	6085322	106.0	80	120	Ir (IS)	
Ir (IS)	193	3	8035244	0.88	6951639	115.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-17-A**
Data File Name	**085SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:10:31-06:00**
Type	**Sample**
VialNumber	**2507**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	13.63265	27.26530	ug/l	1000	Li	
Be	9	6	3	0.93483	1.86966	ug/l	1000	Be	
B	11	6	3	7.10278	14.20556	ug/l	2000	B	
Na	23	45	2	398.95253	797.90507	ug/l	50000	Na	
Mg	24	45	2	25440.48760	50880.97520	ug/l	50000	Mg	
Al	27	45	2	28389.08959	56778.17918	ug/l	100000	Al	
P	31	45	2	1811.01323	3622.02646	ug/l	100000	P	
K	39	45	2	1726.91536	3453.83072	ug/l	100000	K	
Ca	44	45	3	18959.70325	37919.40650	ug/l	100000	Ca	
Ti	47	45	3	1424.07372	2848.14743	ug/l	2000	Ti	
V	51	45	2	63.42949	126.85898	ug/l	2000	V	
Cr	52	45	2	22.79733	45.59466	ug/l	2000	Cr	
Mn	55	72	2	179.94270	359.88540	ug/l	5000	Mn	
Fe	57	72	2	43467.98122	86935.96243	ug/l	100000	Fe	
Co	59	72	2	17.10564	34.21127	ug/l	2000	Co	
Ni	60	72	2	35.72695	71.45389	ug/l	2000	Ni	
Cu	63	72	2	4524.23914	9048.47829	ug/l	2000	Cu	FAILED
Zn	66	72	2	39.31142	78.62283	ug/l	5000	Zn	
As	75	72	2	25.77994	51.55988	ug/l	2000	As	
Se	78	72	2	20.09325	40.18649	ug/l	1000	Se	
Sr	88	72	3	264.15250	528.30500	ug/l	2000	Sr	
Y	89	72	2	7.42198	14.84395	ug/l	200	Y	
Zr	90	72	2	5.00772	10.01544	ug/l	2000	Zr	
Nb	93	72	2	0.36554	0.73108	ug/l	100	Nb	
Mo	95	72	3	8.96056	17.92112	ug/l	1000	Mo	
Ru	101	72	2	-0.00366	-0.00733	ug/l	200	Ru	
Rh	103	72	2	-0.00412	-0.00825	ug/l	200	Rh	
Pd	105	72	2	0.01551	0.03103	ug/l	20	Pd	
Ag	107	115	3	0.28486	0.56971	ug/l	400	Ag	
Cd	111	115	3	0.05461	0.10921	ug/l	2000	Cd	
Sn	118	115	3	7.85860	15.71720	ug/l	2000	Sn	
Sb	121	115	3	6.75643	13.51286	ug/l	1000	Sb	
Te	125	165	2	0.61733	1.23465	ug/l	200	Te	
Cs	133	165	2	2.05090	4.10179	ug/l	2000	Cs	
Ba	137	165	3	165.29437	330.58875	ug/l	5000	Ba	
La	139	165	2	19.00795	38.01590	ug/l	200	La	
Ce	140	165	2	42.56530	85.13059	ug/l	200	Ce	
Pr	141	165	2	4.87195	9.74391	ug/l	200	Pr	
Nd	146	165	2	20.07490	40.14980	ug/l	200	Nd	
Sm	147	165	3	3.55544	7.11088	ug/l	2000	Sm	
Hf	178	165	2	0.21498	0.42995	ug/l	200	Hf	
Ta	181	165	2	0.02037	0.04073	ug/l	200	Ta	
W	182	165	2	4.09762	8.19523	ug/l	2000	W	
Re	185	193	3	-0.00012	-0.00023	ug/l	200	Re	
Pt	195	193	2	0.00663	0.01325	ug/l	200	Pt	
Au	197	193	3	-0.00227	-0.00454	ug/l	2000	Au	
Tl	205	193	3	0.08608	0.17217	ug/l	400	Tl	
Pb	208	193	3	16.85001	33.70001	ug/l	5000	Pb	
Bi	209	193	2	1.59067	3.18133	ug/l	2000	Bi	
Th	232	193	3	14.86800	29.73601	ug/l	2000	Th	
U	238	193	3	3.85961	7.71921	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5188037	5.25	7411413	70.0	80	120	Li (IS)	FAILED
Sc (IS)	45	2	172727	2.73	143379	120.5	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3207491	7.84	2392712	134.1	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	379892	1.67	323154	117.6	80	120	Ge (IS)	
Ge (IS)	72	3	2395077	6.90	1861986	128.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	14428676	9.33	12119833	119.1	80	120	In (IS)	
Ho (IS)	165	2	10079904	3.32	9598706	105.0	80	120	Ho (IS)	
Ho (IS)	165	3	16375917	8.41	13687738	119.6	80	120	Ho (IS)	
Ir (IS)	193	2	6266532	3.51	6085322	103.0	80	120	Ir (IS)	
Ir (IS)	193	3	7755660	8.18	6951639	111.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36526-B-18-A**
Data File Name	**086SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:17:15-06:00**
Type	**Sample**
VialNumber	**2508**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	18.55987	37.11973	ug/l	1000	Li	
Be	9	6	3	1.31966	2.63931	ug/l	1000	Be	
B	11	6	3	8.54439	17.08878	ug/l	2000	B	
Na	23	45	2	538.85701	1077.71401	ug/l	50000	Na	
Mg	24	45	2	29236.88359	58473.76718	ug/l	50000	Mg	
Al	27	45	2	29491.58441	58983.16882	ug/l	100000	Al	
P	31	45	2	3585.66065	7171.32130	ug/l	100000	P	
K	39	45	2	7919.84244	15839.68488	ug/l	100000	K	
Ca	44	45	3	20925.79304	41851.58608	ug/l	100000	Ca	
Ti	47	45	3	1757.81540	3515.63079	ug/l	2000	Ti	
V	51	45	2	105.79836	211.59672	ug/l	2000	V	
Cr	52	45	2	40.66123	81.32247	ug/l	2000	Cr	
Mn	55	72	2	427.56016	855.12032	ug/l	5000	Mn	
Fe	57	72	2	93165.17393	186330.34786	ug/l	100000	Fe	
Co	59	72	2	35.13851	70.27701	ug/l	2000	Co	
Ni	60	72	2	50.16202	100.32404	ug/l	2000	Ni	
Cu	63	72	2	4637.09618	9274.19236	ug/l	2000	Cu	FAILED
Zn	66	72	2	93.27905	186.55811	ug/l	5000	Zn	
As	75	72	2	15.57861	31.15722	ug/l	2000	As	
Se	78	72	2	14.00737	28.01474	ug/l	1000	Se	
Sr	88	72	3	192.87117	385.74235	ug/l	2000	Sr	
Y	89	72	2	22.45689	44.91377	ug/l	200	Y	
Zr	90	72	2	7.61661	15.23321	ug/l	2000	Zr	
Nb	93	72	2	0.39395	0.78791	ug/l	100	Nb	
Mo	95	72	3	10.70068	21.40135	ug/l	1000	Mo	
Ru	101	72	2	-0.00429	-0.00859	ug/l	200	Ru	
Rh	103	72	2	-0.00665	-0.01330	ug/l	200	Rh	
Pd	105	72	2	0.03545	0.07089	ug/l	20	Pd	
Ag	107	115	3	0.54713	1.09426	ug/l	400	Ag	
Cd	111	115	3	0.09026	0.18051	ug/l	2000	Cd	
Sn	118	115	3	8.97984	17.95967	ug/l	2000	Sn	
Sb	121	115	3	0.71673	1.43346	ug/l	1000	Sb	
Te	125	165	2	1.55173	3.10346	ug/l	200	Te	
Cs	133	165	2	3.65931	7.31862	ug/l	2000	Cs	
Ba	137	165	3	272.85555	545.71109	ug/l	5000	Ba	
La	139	165	2	65.00411	130.00821	ug/l	200	La	
Ce	140	165	2	139.33453	278.66907	ug/l	200	Ce	
Pr	141	165	2	15.86859	31.73717	ug/l	200	Pr	
Nd	146	165	2	65.02774	130.05547	ug/l	200	Nd	
Sm	147	165	3	12.32349	24.64697	ug/l	2000	Sm	
Hf	178	165	2	0.27086	0.54173	ug/l	200	Hf	
Ta	181	165	2	0.04763	0.09526	ug/l	200	Ta	
W	182	165	2	4.97117	9.94234	ug/l	2000	W	
Re	185	193	3	0.08082	0.16164	ug/l	200	Re	
Pt	195	193	2	0.00666	0.01333	ug/l	200	Pt	
Au	197	193	3	-0.01216	-0.02432	ug/l	2000	Au	
Tl	205	193	3	0.34500	0.69000	ug/l	400	Tl	
Pb	208	193	3	9.53953	19.07907	ug/l	5000	Pb	
Bi	209	193	2	3.17570	6.35140	ug/l	2000	Bi	
Th	232	193	3	55.84224	111.68447	ug/l	2000	Th	
U	238	193	3	11.69939	23.39877	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5356116	0.13	7411413	72.3	80	120	Li (IS)	FAILED
Sc (IS)	45	2	181593	5.53	143379	126.7	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3355488	0.47	2392712	140.2	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	398609	3.80	323154	123.3	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2448814	0.29	1861986	131.5	80	120	Ge (IS)	FAILED
In (IS)	115	3	14835074	0.78	12119833	122.4	80	120	In (IS)	FAILED
Ho (IS)	165	2	10699771	6.25	9598706	111.5	80	120	Ho (IS)	
Ho (IS)	165	3	16889673	0.83	13687738	123.4	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6652154	4.32	6085322	109.3	80	120	Ir (IS)	
Ir (IS)	193	3	7985447	0.65	6951639	114.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-19-A**
Data File Name	**087SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:23:58-06:00**
Type	**Sample**
VialNumber	**2509**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	18.90549	37.81098	ug/l	1000	Li	
Be	9	6	3	1.41392	2.82784	ug/l	1000	Be	
B	11	6	3	20.71354	41.42708	ug/l	2000	B	
Na	23	45	2	1522.58864	3045.17728	ug/l	50000	Na	
Mg	24	45	2	26380.68576	52761.37153	ug/l	50000	Mg	
Al	27	45	2	33829.35340	67658.70680	ug/l	100000	Al	
P	31	45	2	1810.00149	3620.00298	ug/l	100000	P	
K	39	45	2	6252.97977	12505.95955	ug/l	100000	K	
Ca	44	45	3	17344.72030	34689.44061	ug/l	100000	Ca	
Ti	47	45	3	1204.53307	2409.06614	ug/l	2000	Ti	
V	51	45	2	115.35844	230.71689	ug/l	2000	V	
Cr	52	45	2	27.45552	54.91104	ug/l	2000	Cr	
Mn	55	72	2	372.28572	744.57144	ug/l	5000	Mn	
Fe	57	72	2	88082.14370	176164.28740	ug/l	100000	Fe	
Co	59	72	2	22.84609	45.69217	ug/l	2000	Co	
Ni	60	72	2	39.53594	79.07188	ug/l	2000	Ni	
Cu	63	72	2	11880.49971	23760.99941	ug/l	2000	Cu	FAILED
Zn	66	72	2	108.39792	216.79584	ug/l	5000	Zn	
As	75	72	2	42.28484	84.56969	ug/l	2000	As	
Se	78	72	2	17.46233	34.92466	ug/l	1000	Se	
Sr	88	72	3	258.17853	516.35706	ug/l	2000	Sr	
Y	89	72	2	19.44722	38.89444	ug/l	200	Y	
Zr	90	72	2	5.90475	11.80951	ug/l	2000	Zr	
Nb	93	72	2	0.27180	0.54360	ug/l	100	Nb	
Mo	95	72	3	19.21051	38.42101	ug/l	1000	Mo	
Ru	101	72	2	-0.00766	-0.01532	ug/l	200	Ru	
Rh	103	72	2	-0.00389	-0.00779	ug/l	200	Rh	
Pd	105	72	2	0.03077	0.06154	ug/l	20	Pd	
Ag	107	115	3	0.36176	0.72352	ug/l	400	Ag	
Cd	111	115	3	0.20832	0.41665	ug/l	2000	Cd	
Sn	118	115	3	9.18730	18.37459	ug/l	2000	Sn	
Sb	121	115	3	1.95210	3.90420	ug/l	1000	Sb	
Te	125	165	2	1.50001	3.00002	ug/l	200	Te	
Cs	133	165	2	4.02699	8.05399	ug/l	2000	Cs	
Ba	137	165	3	282.84351	565.68703	ug/l	5000	Ba	
La	139	165	2	50.71875	101.43751	ug/l	200	La	
Ce	140	165	2	104.51695	209.03389	ug/l	200	Ce	
Pr	141	165	2	12.25176	24.50352	ug/l	200	Pr	
Nd	146	165	2	52.39733	104.79466	ug/l	200	Nd	
Sm	147	165	3	9.59925	19.19850	ug/l	2000	Sm	
Hf	178	165	2	0.19249	0.38499	ug/l	200	Hf	
Ta	181	165	2	0.02996	0.05991	ug/l	200	Ta	
W	182	165	2	2.35142	4.70283	ug/l	2000	W	
Re	185	193	3	0.08304	0.16608	ug/l	200	Re	
Pt	195	193	2	0.00808	0.01616	ug/l	200	Pt	
Au	197	193	3	0.02624	0.05248	ug/l	2000	Au	
Tl	205	193	3	0.83745	1.67491	ug/l	400	Tl	
Pb	208	193	3	16.71397	33.42793	ug/l	5000	Pb	
Bi	209	193	2	4.29189	8.58378	ug/l	2000	Bi	
Th	232	193	3	26.73808	53.47616	ug/l	2000	Th	
U	238	193	3	16.46351	32.92701	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5347402	0.28	7411413	72.2	80	120	Li (IS)	FAILED
Sc (IS)	45	2	177706	1.01	143379	123.9	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3306006	0.62	2392712	138.2	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	386534	1.10	323154	119.6	80	120	Ge (IS)	
Ge (IS)	72	3	2416717	0.66	1861986	129.8	80	120	Ge (IS)	FAILED
In (IS)	115	3	14693940	0.61	12119833	121.2	80	120	In (IS)	FAILED
Ho (IS)	165	2	10350525	2.62	9598706	107.8	80	120	Ho (IS)	
Ho (IS)	165	3	16542307	1.03	13687738	120.9	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6368934	0.27	6085322	104.7	80	120	Ir (IS)	
Ir (IS)	193	3	7851543	0.87	6951639	112.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**088LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:30:46-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	5.93261	ug/l	5	118.7	80	120	Li	
Be	9	6	3	0.60688	ug/l	0.5	121.4	80	120	Be	FAILED
B	11	6	3	115.25807	ug/l	100	115.3	80	120	B	
Na	23	45	2	98.66496	ug/l	100	98.7	80	120	Na	
Mg	24	45	2	50.64705	ug/l	50	101.3	80	120	Mg	
Al	27	45	2	51.32446	ug/l	50	102.6	80	120	Al	
P	31	45	2	89.29134	ug/l	100	89.3	80	120	P	
K	39	45	2	95.62961	ug/l	100	95.6	80	120	K	
Ca	44	45	3	197.88993	ug/l	200	98.9	80	120	Ca	
Ti	47	45	3	5.27866	ug/l	5	105.6	80	120	Ti	
V	51	45	2	10.18924	ug/l	10	101.9	80	120	V	
Cr	52	45	2	10.21243	ug/l	10	102.1	80	120	Cr	
Mn	55	72	2	3.91565	ug/l	4	97.9	80	120	Mn	
Fe	57	72	2	57.05810	ug/l	50	114.1	80	120	Fe	
Co	59	72	2	2.07934	ug/l	2	104.0	80	120	Co	
Ni	60	72	2	5.55651	ug/l	5	111.1	80	120	Ni	
Cu	63	72	2	4.21916	ug/l	3	140.6	80	120	Cu	FAILED
Zn	66	72	2	20.95072	ug/l	20	104.8	80	120	Zn	
As	75	72	2	10.36105	ug/l	10	103.6	80	120	As	
Se	78	72	2	4.74484	ug/l	5	94.9	80	120	Se	
Sr	88	72	3	5.01596	ug/l	5	100.3	80	120	Sr	
Y	89	72	2	4.78813	ug/l	5	95.8	80	120	Y	
Zr	90	72	2	4.92090	ug/l	5	98.4	80	120	Zr	
Nb	93	72	2	18.03565	ug/l	25	72.1	80	120	Nb	FAILED
Mo	95	72	3	4.72608	ug/l	5	94.5	80	120	Mo	
Ru	101	72	2	10.17825	ug/l	10	101.8	80	120	Ru	
Rh	103	72	2	9.93018	ug/l	10	99.3	80	120	Rh	
Pd	105	72	2	0.55966	ug/l	0.5	111.9	80	120	Pd	
Ag	107	115	3	1.91521	ug/l	2	95.8	80	120	Ag	
Cd	111	115	3	0.51476	ug/l	0.5	103.0	80	120	Cd	
Sn	118	115	3	1.81915	ug/l	2	91.0	80	120	Sn	
Sb	121	115	3	4.59399	ug/l	5	91.9	80	120	Sb	
Te	125	165	2	9.43843	ug/l	10	94.4	80	120	Te	
Cs	133	165	2	0.90371	ug/l	1	90.4	80	120	Cs	
Ba	137	165	3	1.96337	ug/l	2	98.2	80	120	Ba	
La	139	165	2	1.90836	ug/l	2	95.4	80	120	La	
Ce	140	165	2	9.48316	ug/l	10	94.8	80	120	Ce	
Pr	141	165	2	1.88155	ug/l	2	94.1	80	120	Pr	
Nd	146	165	2	1.92539	ug/l	2	96.3	80	120	Nd	
Sm	147	165	3	9.63292	ug/l	10	96.3	80	120	Sm	
Hf	178	165	2	8.75175	ug/l	10	87.5	80	120	Hf	
Ta	181	165	2	7.08876	ug/l	10	70.9	80	120	Ta	FAILED
W	182	165	2	4.71391	ug/l	5	94.3	80	120	W	
Re	185	193	3	9.25183	ug/l	10	92.5	80	120	Re	
Pt	195	193	2	1.02247	ug/l	1	102.2	80	120	Pt	
Au	197	193	3	4.53231	ug/l	5	90.6	80	120	Au	
Tl	205	193	3	1.80883	ug/l	2	90.4	80	120	Tl	
Pb	208	193	3	2.70527	ug/l	3	90.2	80	120	Pb	
Bi	209	193	2	16.75628	ug/l	20	83.8	80	120	Bi	
Th	232	193	3	1.75871	ug/l	2	87.9	80	120	Th	
U	238	193	3	0.88301	ug/l	1	88.3	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5537013	0.65	7411413	74.7	80	120	Li (IS)	FAILED
Sc (IS)	45	2	164535	2.01	143379	114.8	80	120	Sc (IS)	
Sc (IS)	45	3	3005338	0.29	2392712	125.6	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	395367	0.93	323154	122.3	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2440278	0.83	1861986	131.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	15383076	0.82	12119833	126.9	80	120	In (IS)	FAILED
Ho (IS)	165	2	10668754	0.78	9598706	111.1	80	120	Ho (IS)	
Ho (IS)	165	3	16904150	2.12	13687738	123.5	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6894896	0.51	6085322	113.3	80	120	Ir (IS)	
Ir (IS)	193	3	8259341	0.47	6951639	118.8	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**089_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:37:29-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	107.95015	ug/l	100	108.0	90	110	Li	
Be	9	6	3	120.55562	ug/l	100	120.6	90	110	Be	FAILED
B	11	6	3	239.67569	ug/l	200	119.8	90	110	B	FAILED
Na	23	45	2	2427.40252	ug/l	2500	97.1	90	110	Na	
Mg	24	45	2	2383.02868	ug/l	2500	95.3	90	110	Mg	
Al	27	45	2	2174.53707	ug/l	2500	87.0	90	110	Al	FAILED
P	31	45	2	2330.91098	ug/l	2500	93.2	90	110	P	
K	39	45	2	2465.46466	ug/l	2500	98.6	90	110	K	
Ca	44	45	3	2547.72796	ug/l	2500	101.9	90	110	Ca	
Ti	47	45	3	100.81117	ug/l	100	100.8	90	110	Ti	
V	51	45	2	99.76268	ug/l	100	99.8	90	110	V	
Cr	52	45	2	103.73693	ug/l	100	103.7	90	110	Cr	
Mn	55	72	2	90.99771	ug/l	100	91.0	90	110	Mn	
Fe	57	72	2	2326.95569	ug/l	2500	93.1	90	110	Fe	
Co	59	72	2	100.03563	ug/l	100	100.0	90	110	Co	
Ni	60	72	2	101.35509	ug/l	100	101.4	90	110	Ni	
Cu	63	72	2	101.65948	ug/l	100	101.7	90	110	Cu	
Zn	66	72	2	99.74226	ug/l	100	99.7	90	110	Zn	
As	75	72	2	100.58439	ug/l	100	100.6	90	110	As	
Se	78	72	2	49.90947	ug/l	50	99.8	90	110	Se	
Sr	88	72	3	102.21083	ug/l	100	102.2	90	110	Sr	
Y	89	72	2	99.37480	ug/l	100	99.4	90	110	Y	
Zr	90	72	2	100.50046	ug/l	100	100.5	90	110	Zr	
Nb	93	72	2	50.11288	ug/l	50	100.2	90	110	Nb	
Mo	95	72	3	46.04375	ug/l	50	92.1	90	110	Mo	
Ru	101	72	2	97.11088	ug/l	100	97.1	90	110	Ru	
Rh	103	72	2	102.69001	ug/l	100	102.7	90	110	Rh	
Pd	105	72	2	10.55274	ug/l	10	105.5	90	110	Pd	
Ag	107	115	3	18.39720	ug/l	20	92.0	90	110	Ag	
Cd	111	115	3	94.71765	ug/l	100	94.7	90	110	Cd	
Sn	118	115	3	102.31001	ug/l	100	102.3	90	110	Sn	
Sb	121	115	3	51.39533	ug/l	50	102.8	90	110	Sb	
Te	125	165	2	97.49646	ug/l	100	97.5	90	110	Te	
Cs	133	165	2	100.13499	ug/l	100	100.1	90	110	Cs	
Ba	137	165	3	102.19112	ug/l	100	102.2	90	110	Ba	
La	139	165	2	103.73071	ug/l	100	103.7	90	110	La	
Ce	140	165	2	103.70101	ug/l	100	103.7	90	110	Ce	
Pr	141	165	2	101.25991	ug/l	100	101.3	90	110	Pr	
Nd	146	165	2	93.27254	ug/l	100	93.3	90	110	Nd	
Sm	147	165	3	101.98468	ug/l	100	102.0	90	110	Sm	
Hf	178	165	2	99.23211	ug/l	100	99.2	90	110	Hf	
Ta	181	165	2	100.91957	ug/l	100	100.9	90	110	Ta	
W	182	165	2	103.81477	ug/l	100	103.8	90	110	W	
Re	185	193	3	101.49936	ug/l	100	101.5	90	110	Re	
Pt	195	193	2	10.26365	ug/l	10	102.6	90	110	Pt	
Au	197	193	3	99.15364	ug/l	100	99.2	90	110	Au	
Tl	205	193	3	20.58523	ug/l	20	102.9	90	110	Tl	
Pb	208	193	3	99.82334	ug/l	100	99.8	90	110	Pb	
Bi	209	193	2	95.35514	ug/l	100	95.4	90	110	Bi	
Th	232	193	3	96.37182	ug/l	100	96.4	90	110	Th	
U	238	193	3	95.67851	ug/l	100	95.7	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5528683	0.97	7411413	74.6	80	120	Li (IS)	FAILED
Sc (IS)	45	2	163947	1.56	143379	114.3	80	120	Sc (IS)	
Sc (IS)	45	3	2978609	0.25	2392712	124.5	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	406471	0.91	323154	125.8	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2482411	0.61	1861986	133.3	80	120	Ge (IS)	FAILED
In (IS)	115	3	15030986	1.43	12119833	124.0	80	120	In (IS)	FAILED
Ho (IS)	165	2	10579900	0.75	9598706	110.2	80	120	Ho (IS)	
Ho (IS)	165	3	16848324	0.40	13687738	123.1	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6789579	0.75	6085322	111.6	80	120	Ir (IS)	
Ir (IS)	193	3	8188338	0.70	6951639	117.8	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**090_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:44:16-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.73212	ug/l	1.388	Li	
Be	9	6	3	0.01109	ug/l	0.7	Be	
B	11	6	3	3.13180	ug/l	20	B	
Na	23	45	2	0.73286	ug/l	30	Na	
Mg	24	45	2	1.10348	ug/l	11.18	Mg	
Al	27	45	2	0.85333	ug/l	25.8	Al	
P	31	45	2	1.07577	ug/l	16.46	P	
K	39	45	2	-1.17019	ug/l	83.2	K	
Ca	44	45	3	-5.98144	ug/l	136.2	Ca	
Ti	47	45	3	0.06597	ug/l	4.2	Ti	
V	51	45	2	0.00563	ug/l	4.74	V	
Cr	52	45	2	0.00299	ug/l	6.52	Cr	
Mn	55	72	2	0.04741	ug/l	0.49	Mn	
Fe	57	72	2	1.42459	ug/l	40.7	Fe	
Co	59	72	2	0.03024	ug/l	0.434	Co	
Ni	60	72	2	0.01434	ug/l	0.8	Ni	
Cu	63	72	2	-0.02603	ug/l	0.902	Cu	
Zn	66	72	2	0.08360	ug/l	16.58	Zn	
As	75	72	2	-0.01063	ug/l	2.36	As	
Se	78	72	2	0.34543	ug/l	3.18	Se	
Sr	88	72	3	0.01254	ug/l	2	Sr	
Y	89	72	2	0.02840	ug/l	0.424	Y	
Zr	90	72	2	0.02520	ug/l	0.496	Zr	
Nb	93	72	2	0.27963	ug/l	4.62	Nb	
Mo	95	72	3	-0.02373	ug/l	2	Mo	
Ru	101	72	2	0.03164	ug/l	2	Ru	
Rh	103	72	2	0.03114	ug/l	1.634	Rh	
Pd	105	72	2	-0.00323	ug/l	0.08	Pd	
Ag	107	115	3	0.00328	ug/l	1.54	Ag	
Cd	111	115	3	0.00670	ug/l	0.4	Cd	
Sn	118	115	3	-0.01438	ug/l	2	Sn	
Sb	121	115	3	-0.01517	ug/l	3.34	Sb	
Te	125	165	2	0.11029	ug/l	1.072	Te	
Cs	133	165	2	0.02519	ug/l	0.106	Cs	
Ba	137	165	3	0.02606	ug/l	0.446	Ba	
La	139	165	2	0.02931	ug/l	0.102	La	
Ce	140	165	2	0.03021	ug/l	1.772	Ce	
Pr	141	165	2	0.02986	ug/l	0.084	Pr	
Nd	146	165	2	0.03012	ug/l	0.208	Nd	
Sm	147	165	3	0.01488	ug/l	0.652	Sm	
Hf	178	165	2	0.04013	ug/l	2.26	Hf	
Ta	181	165	2	0.03530	ug/l	1.46	Ta	
W	182	165	2	0.33408	ug/l	4	W	
Re	185	193	3	0.00903	ug/l	0.05	Re	
Pt	195	193	2	0.00345	ug/l	0.12	Pt	
Au	197	193	3	0.12793	ug/l	1	Au	
Tl	205	193	3	-0.01213	ug/l	1.1	Tl	
Pb	208	193	3	0.00350	ug/l	0.346	Pb	
Bi	209	193	2	0.01657	ug/l	1.464	Bi	
Th	232	193	3	0.02471	ug/l	1.104	Th	
U	238	193	3	0.01350	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5609410	2.33	7411413	75.7	80	120	Li (IS)	FAILED
Sc (IS)	45	2	163139	0.50	143379	113.8	80	120	Sc (IS)	
Sc (IS)	45	3	2944903	0.85	2392712	123.1	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	384199	0.35	323154	118.9	80	120	Ge (IS)	
Ge (IS)	72	3	2399787	0.57	1861986	128.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	15120816	0.78	12119833	124.8	80	120	In (IS)	FAILED
Ho (IS)	165	2	10466878	0.45	9598706	109.0	80	120	Ho (IS)	
Ho (IS)	165	3	16694513	0.87	13687738	122.0	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6871129	0.37	6085322	112.9	80	120	Ir (IS)	
Ir (IS)	193	3	8251199	1.63	6951639	118.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Blank Sample

Sample Name	**RINSE**
Data File Name	**091BLNK.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:51:00-06:00**
Type	**6-Blank**
VialNumber	**1**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	QC Flag
Li	7	6	3	0.89	ug/l	5	
Be	9	6	3	0.16	ug/l	0.5	
B	11	6	3	2.92	ug/l	50	
Na	23	45	2	54.24	ug/l	50	FAILED
Mg	24	45	2	29.98	ug/l	50	
Al	27	45	2	26.87	ug/l	30	
P	31	45	2	9.80	ug/l	50	
K	39	45	2	12.77	ug/l	100	
Ca	44	45	3	62.72	ug/l	100	
Ti	47	45	3	1.11	ug/l	5	
V	51	45	2	0.62	ug/l	10	
Cr	52	45	2	0.49	ug/l	10	
Mn	55	72	2	0.86	ug/l	2	
Fe	57	72	2	36.95	ug/l	50	
Co	59	72	2	0.28	ug/l	2	
Ni	60	72	2	0.38	ug/l	5	
Cu	63	72	2	2.51	ug/l	1	FAILED
Zn	66	72	2	1.20	ug/l	10	
As	75	72	2	0.34	ug/l	10	
Se	78	72	2	0.52	ug/l	5	
Sr	88	72	3	1.50	ug/l	5	
Y	89	72	2	0.10	ug/l	5	
Zr	90	72	2	0.32	ug/l	5	
Nb	93	72	2	0.35	ug/l	25	
Mo	95	72	3	1.45	ug/l	5	
Ru	101	72	2	0.09	ug/l	10	
Rh	103	72	2	0.08	ug/l	10	
Pd	105	72	2	0.01	ug/l	0.5	
Ag	107	115	3	0.07	ug/l	2	
Cd	111	115	3	0.27	ug/l	0.5	
Sn	118	115	3	0.64	ug/l	2	
Sb	121	115	3	0.13	ug/l	5	
Te	125	165	2	0.16	ug/l	10	
Cs	133	165	2	0.07	ug/l	0.1	
Ba	137	165	3	0.79	ug/l	2	
La	139	165	2	0.12	ug/l	2	
Ce	140	165	2	0.18	ug/l	10	
Pr	141	165	2	0.09	ug/l	2	
Nd	146	165	2	0.12	ug/l	2	
Sm	147	165	3	0.29	ug/l	10	
Hf	178	165	2	0.15	ug/l	10	
Ta	181	165	2	0.24	ug/l	10	
W	182	165	2	1.06	ug/l	5	
Re	185	193	3	0.09	ug/l	10	
Pt	195	193	2	0.01	ug/l	1	
Au	197	193	3	0.20	ug/l	5	
Tl	205	193	3	0.12	ug/l	2	
Pb	208	193	3	0.37	ug/l	3	
Bi	209	193	2	0.26	ug/l	20	
Th	232	193	3	0.36	ug/l	2	
U	238	193	3	0.27	ug/l	1	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	QC Flag
Li (IS)	6	3	4971696	1.23	7411413	67.1	80	120	FAILED
Sc (IS)	45	2	147436	0.27	143379	102.8	80	120	
Sc (IS)	45	3	2797831	0.30	2392712	116.9	80	120	
Ge (IS)	72	2	381234	0.28	323154	118.0	80	120	
Ge (IS)	72	3	2447708	0.84	1861986	131.5	80	120	FAILED
In (IS)	115	3	14717549	1.32	12119833	121.4	80	120	FAILED
Ho (IS)	165	2	10105704	0.30	9598706	105.3	80	120	
Ho (IS)	165	3	17023739	0.92	13687738	124.4	80	120	FAILED
Ir (IS)	193	2	6603617	0.68	6085322	108.5	80	120	
Ir (IS)	193	3	8225781	0.61	6951639	118.3	80	120	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Calibration Blank Report

Sample Name	**ICIS 1843378**
Data File Name	**092CALB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:57:45-06:00**
Type	**CalBlk**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**

QC Analyte Table

Element	m/z	ISTD	Tune Step	CPS	%RSD
Li	7	6	3	322233	1.44
Be	9	6	3	74	5.17
B	11	6	3	12882	4.26
Na	23	45	2	15929	2.49
Mg	24	45	2	520	22.12
Al	27	45	2	350	14.09
P	31	45	2	77	42.82
K	39	45	2	34206	0.88
Ca	44	45	3	24056	1.49
Ti	47	45	3	502	3.86
V	51	45	2	1391	7.45
Cr	52	45	2	1087	4.52
Mn	55	72	2	386	20.43
Fe	57	72	2	598	2.75
Co	59	72	2	538	2.50
Ni	60	72	2	123	5.41
Cu	63	72	2	6599	3.93
Zn	66	72	2	637	4.19
As	75	72	2	131	8.93
Se	78	72	2	82	13.03
Sr	88	72	3	1633	10.69
Y	89	72	2	203	7.51
Zr	90	72	2	292	15.49
Nb	93	72	2	4007	6.00
Mo	95	72	3	1355	1.58
Ru	101	72	2	113	2.94
Rh	103	72	2	811	9.37
Pd	105	72	2	19	50.96
Ag	107	115	3	548	3.35
Cd	111	115	3	72	2.69
Sn	118	115	3	3262	4.67
Sb	121	115	3	696	2.26
Te	125	165	2	7	132.33
Cs	133	165	2	310	3.23
Ba	137	165	3	474	13.00
La	139	165	2	318	8.92
Ce	140	165	2	397	14.14
Pr	141	165	2	360	18.79
Nd	146	165	2	48	56.40
Sm	147	165	3	119	38.17
Hf	178	165	2	230	7.25
Ta	181	165	2	14079	1.45
W	182	165	2	3834	8.74
Re	185	193	3	234	7.16
Pt	195	193	2	262	14.73
Au	197	193	3	1219	6.30
Tl	205	193	3	993	7.85
(Pb)	206	193	3	2064	5.01
(Pb)	207	193	3	2368	6.24
Pb	208	193	3	9076	3.14
Bi	209	193	2	3898	2.57
Th	232	193	3	1291	1.22
U	238	193	3	507	5.62

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD
Li (IS)	6	3	5676390	1.01
Sc (IS)	45	2	157398	0.45
Sc (IS)	45	3	2954313	1.65
Ge (IS)	72	2	379042	0.99
Ge (IS)	72	3	2413999	1.16
In (IS)	115	3	15281059	1.67
Ho (IS)	165	2	10495856	1.03
Ho (IS)	165	3	16807844	1.81
Ir (IS)	193	2	6895257	0.40
Ir (IS)	193	3	8354862	1.44

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Calibration Standard Report

Sample Name	**IC 1847444**
Data File Name	**093CALS.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:04:30-06:00**
Type	**CalStd**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**

QC Analyte Table

Element	m/z	ISTD	Tune Step	CPS	%RSD
Li	7	6	3	500697	1.19
Be	9	6	3	5711	2.54
B	11	6	3	755931	1.76
Na	23	45	2	169142	0.58
Mg	24	45	2	41452	1.64
Al	27	45	2	17999	0.82
P	31	45	2	2334	7.17
K	39	45	2	119860	1.41
Ca	44	45	3	334128	0.92
Ti	47	45	3	22587	0.61
V	51	45	2	93249	0.94
Cr	52	45	2	112670	0.24
Mn	55	72	2	28412	1.39
Fe	57	72	2	12665	1.33
Co	59	72	2	34721	1.77
Ni	60	72	2	22930	1.08
Cu	63	72	2	42621	1.66
Zn	66	72	2	46367	2.31
As	75	72	2	16207	2.04
Se	78	72	2	629	9.03
Sr	88	72	3	396021	0.33
Y	89	72	2	100188	1.14
Zr	90	72	2	76504	1.07
Nb	93	72	2	562537	2.57
Mo	95	72	3	76239	0.86
Ru	101	72	2	84896	1.77
Rh	103	72	2	478817	1.17
Pd	105	72	2	4791	7.54
Ag	107	115	3	76321	0.60
Cd	111	115	3	4320	3.01
Sn	118	115	3	47178	1.40
Sb	121	115	3	143076	1.03
Te	125	165	2	2629	2.18
Cs	133	165	2	20878	2.05
Ba	137	165	3	22538	1.65
La	139	165	2	87008	0.31
Ce	140	165	2	492644	0.13
Pr	141	165	2	103976	0.95
Nd	146	165	2	19330	2.62
Sm	147	165	3	166826	1.46
Hf	178	165	2	192306	0.57
Ta	181	165	2	645793	2.29
W	182	165	2	100822	1.43
Re	185	193	3	346515	0.83
Pt	195	193	2	13641	2.52
Au	197	193	3	131672	1.20
Tl	205	193	3	112176	1.86
(Pb)	206	193	3	60090	1.18
(Pb)	207	193	3	53564	1.39
Pb	208	193	3	241490	0.84
Bi	209	193	2	936211	0.71
Th	232	193	3	173767	0.68
U	238	193	3	84849	1.07

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	QC Flag
Li (IS)	6	3	5813170	0.54	5676390	102.4	80	120	
Sc (IS)	45	2	172543	10.98	157398	109.6	80	120	
Sc (IS)	45	3	2946969	0.72	2954313	99.8	80	120	
Ge (IS)	72	2	405218	7.84	379042	106.9	80	120	
Ge (IS)	72	3	2435204	1.41	2413999	100.9	80	120	
In (IS)	115	3	15252868	0.59	15281059	99.8	80	120	
Ho (IS)	165	2	11216208	10.82	10495856	106.9	80	120	
Ho (IS)	165	3	16850692	0.17	16807844	100.3	80	120	
Ir (IS)	193	2	7294649	8.73	6895257	105.8	80	120	
Ir (IS)	193	3	8356917	0.60	8354862	100.0	80	120	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Calibration Standard Report

Sample Name	**IC 1847445**
Data File Name	**094CALS.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:11:13-06:00**
Type	**CalStd**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**

QC Analyte Table

Element	m/z	ISTD	Tune Step	CPS	%RSD
Li	7	6	3	3700506	1.36
Be	9	6	3	1050317	0.11
B	11	6	3	1532544	0.63
Na	23	45	2	3881616	0.60
Mg	24	45	2	2007933	0.51
Al	27	45	2	821768	0.77
P	31	45	2	58773	0.82
K	39	45	2	2224220	0.27
Ca	44	45	3	3952746	0.55
Ti	47	45	3	440969	0.04
V	51	45	2	911176	1.18
Cr	52	45	2	1153686	0.74
Mn	55	72	2	672564	0.36
Fe	57	72	2	592030	1.80
Co	59	72	2	1744553	1.11
Ni	60	72	2	423702	1.20
Cu	63	72	2	1220821	0.29
Zn	66	72	2	228409	1.12
As	75	72	2	162638	1.07
Se	78	72	2	6245	6.22
Sr	88	72	3	8188416	0.51
Y	89	72	2	2178979	0.95
Zr	90	72	2	1653825	1.75
Nb	93	72	2	1628231	1.66
Mo	95	72	3	731389	0.45
Ru	101	72	2	860167	0.49
Rh	103	72	2	5242287	0.55
Pd	105	72	2	97795	0.61
Ag	107	115	3	714991	0.99
Cd	111	115	3	771292	0.68
Sn	118	115	3	2336079	1.41
Sb	121	115	3	1516708	0.75
Te	125	165	2	28819	1.71
Cs	133	165	2	2272865	0.85
Ba	137	165	3	1163585	0.37
La	139	165	2	4775107	0.75
Ce	140	165	2	5488447	0.42
Pr	141	165	2	5660980	0.35
Nd	146	165	2	963497	1.67
Sm	147	165	3	1771762	0.71
Hf	178	165	2	2164833	0.90
Ta	181	165	2	8712042	0.86
W	182	165	2	2183132	1.33
Re	185	193	3	3757233	1.34
Pt	195	193	2	134544	1.56
Au	197	193	3	2862513	0.34
Tl	205	193	3	1208469	1.12
(Pb)	206	193	3	2085456	0.35
(Pb)	207	193	3	1836852	1.55
Pb	208	193	3	8321762	0.56
Bi	209	193	2	5354705	0.13
Th	232	193	3	9593360	0.81
U	238	193	3	9097498	0.43

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	QC Flag
Li (IS)	6	3	5614341	0.72	5676390	98.9	80	120	
Sc (IS)	45	2	160748	1.00	157398	102.1	80	120	
Sc (IS)	45	3	2940992	1.20	2954313	99.5	80	120	
Ge (IS)	72	2	404657	0.93	379042	106.8	80	120	
Ge (IS)	72	3	2443826	1.40	2413999	101.2	80	120	
In (IS)	115	3	14915128	0.53	15281059	97.6	80	120	
Ho (IS)	165	2	10515255	0.60	10495856	100.2	80	120	
Ho (IS)	165	3	16904568	1.31	16807844	100.6	80	120	
Ir (IS)	193	2	6812385	0.67	6895257	98.8	80	120	
Ir (IS)	193	3	8179386	0.79	8354862	97.9	80	120	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Calibration Standard Report

Sample Name	**IC 1847446**
Data File Name	**095CALS.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:17:54-06:00**
Type	**CalStd**
VialNumber	**1103**
Dilution	**1**
Comment	
Operator	**LP 7700**

QC Analyte Table

Element	m/z	ISTD	Tune Step	CPS	%RSD
Li	7	6	3	7022389	0.95
Be	9	6	3	2070038	0.54
B	11	6	3	3051831	0.49
Na	23	45	2	7698108	1.45
Mg	24	45	2	3965895	1.64
Al	27	45	2	1680916	0.85
P	31	45	2	116060	1.27
K	39	45	2	4333088	0.16
Ca	44	45	3	7639998	0.34
Ti	47	45	3	861981	0.18
V	51	45	2	1918074	1.50
Cr	52	45	2	2313693	1.74
Mn	55	72	2	1442674	1.23
Fe	57	72	2	1231048	1.59
Co	59	72	2	3458141	1.08
Ni	60	72	2	833152	0.58
Cu	63	72	2	2404998	0.97
Zn	66	72	2	449294	0.60
As	75	72	2	318124	0.67
Se	78	72	2	12144	2.23
Sr	88	72	3	16207987	0.41
Y	89	72	2	4251827	0.71
Zr	90	72	2	3239438	0.16
Nb	93	72	2	3221006	0.70
Mo	95	72	3	1561255	0.87
Ru	101	72	2	1803908	0.35
Rh	103	72	2	10310336	0.57
Pd	105	72	2	190732	0.84
Ag	107	115	3	1583631	0.47
Cd	111	115	3	1657850	0.59
Sn	118	115	3	4657820	1.27
Sb	121	115	3	3007002	0.40
Te	125	165	2	56255	1.78
Cs	133	165	2	4501546	0.43
Ba	137	165	3	2417499	0.72
La	139	165	2	9535937	0.48
Ce	140	165	2	10882823	0.74
Pr	141	165	2	11272132	0.26
Nd	146	165	2	2111832	0.02
Sm	147	165	3	3567605	0.40
Hf	178	165	2	4383358	1.16
Ta	181	165	2	17516049	1.13
W	182	165	2	4364608	0.82
Re	185	193	3	7486781	0.29
Pt	195	193	2	269589	1.20
Au	197	193	3	5678348	0.47
Tl	205	193	3	2466449	1.09
(Pb)	206	193	3	4222693	0.70
(Pb)	207	193	3	3671448	0.85
Pb	208	193	3	16815077	0.54
Bi	209	193	2	10651325	0.37
Th	232	193	3	19475614	0.30
U	238	193	3	18302290	1.81

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	QC Flag
Li (IS)	6	3	5575210	0.14	5676390	98.2	80	120	
Sc (IS)	45	2	160282	1.45	157398	101.8	80	120	
Sc (IS)	45	3	2883790	0.51	2954313	97.6	80	120	
Ge (IS)	72	2	406193	1.00	379042	107.2	80	120	
Ge (IS)	72	3	2433839	0.50	2413999	100.8	80	120	
In (IS)	115	3	14613897	0.73	15281059	95.6	80	120	
Ho (IS)	165	2	10580541	0.12	10495856	100.8	80	120	
Ho (IS)	165	3	16911748	0.52	16807844	100.6	80	120	
Ir (IS)	193	2	6751654	0.65	6895257	97.9	80	120	
Ir (IS)	193	3	8196649	0.95	8354862	98.1	80	120	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Initial Calibration Verification (ICV) - US EPA Method 6020

Sample Name	**ICV 1848645**
Data File Name	**096_ICV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:24:38-06:00**
Type	**ICV**
VialNumber	**1104**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	102.29589	ug/l	100	102.3	90	110	Li	
Be	9	6	3	102.45242	ug/l	100	102.5	90	110	Be	
B	11	6	3	205.01698	ug/l	200	102.5	90	110	B	
Na	23	45	2	997.06210	ug/l	1000	99.7	90	110	Na	
Mg	24	45	2	983.58758	ug/l	1000	98.4	90	110	Mg	
Al	27	45	2	977.88981	ug/l	1000	97.8	90	110	Al	
P	31	45	2	993.16646	ug/l	1000	99.3	90	110	P	
K	39	45	2	968.22086	ug/l	1000	96.8	90	110	K	
Ca	44	45	3	1040.31304	ug/l	1000	104.0	90	110	Ca	
Ti	47	45	3	100.81849	ug/l	100	100.8	90	110	Ti	
V	51	45	2	94.91147	ug/l	100	94.9	90	110	V	
Cr	52	45	2	100.35998	ug/l	100	100.4	90	110	Cr	
Mn	55	72	2	96.48975	ug/l	100	96.5	90	110	Mn	
Fe	57	72	2	957.53892	ug/l	1000	95.8	90	110	Fe	
Co	59	72	2	102.40955	ug/l	100	102.4	90	110	Co	
Ni	60	72	2	105.15195	ug/l	100	105.2	90	110	Ni	
Cu	63	72	2	103.81127	ug/l	100	103.8	90	110	Cu	
Zn	66	72	2	103.76854	ug/l	100	103.8	90	110	Zn	
As	75	72	2	103.78980	ug/l	100	103.8	90	110	As	
Se	78	72	2	52.25163	ug/l	50	104.5	90	110	Se	
Sr	88	72	3	103.83604	ug/l	100	103.8	90	110	Sr	
Y	89	72	2	104.69566	ug/l	100	104.7	90	110	Y	
Zr	90	72	2	101.47374	ug/l	100	101.5	90	110	Zr	
Nb	93	72	2	44.49799	ug/l	50	89.0	90	110	Nb	FAILED
Mo	95	72	3	48.58419	ug/l	50	97.2	90	110	Mo	
Ru	101	72	2	96.30879	ug/l	100	96.3	90	110	Ru	
Rh	103	72	2	107.68100	ug/l	100	107.7	90	110	Rh	
Pd	105	72	2	10.59291	ug/l	10	105.9	90	110	Pd	
Ag	107	115	3	18.06559	ug/l	20	90.3	90	110	Ag	
Cd	111	115	3	95.81690	ug/l	100	95.8	90	110	Cd	
Sn	118	115	3	98.43218	ug/l	100	98.4	90	110	Sn	
Sb	121	115	3	50.11525	ug/l	50	100.2	90	110	Sb	
Te	125	165	2	100.30985	ug/l	100	100.3	90	110	Te	
Cs	133	165	2	102.38887	ug/l	100	102.4	90	110	Cs	
Ba	137	165	3	98.23739	ug/l	100	98.2	90	110	Ba	
La	139	165	2	100.24295	ug/l	100	100.2	90	110	La	
Ce	140	165	2	102.46479	ug/l	100	102.5	90	110	Ce	
Pr	141	165	2	101.25191	ug/l	100	101.3	90	110	Pr	
Nd	146	165	2	96.32261	ug/l	100	96.3	90	110	Nd	
Sm	147	165	3	102.40765	ug/l	100	102.4	90	110	Sm	
Hf	178	165	2	100.98819	ug/l	100	101.0	90	110	Hf	
Ta	181	165	2	65.28835	ug/l	100	65.3	90	110	Ta	FAILED
W	182	165	2	98.38060	ug/l	100	98.4	90	110	W	
Re	185	193	3	103.41517	ug/l	100	103.4	90	110	Re	
Pt	195	193	2	10.06664	ug/l	10	100.7	90	110	Pt	
Au	197	193	3	102.49384	ug/l	100	102.5	90	110	Au	
Tl	205	193	3	20.47048	ug/l	20	102.4	90	110	Tl	
Pb	208	193	3	100.91370	ug/l	100	100.9	90	110	Pb	
Bi	209	193	2	102.88696	ug/l	100	102.9	90	110	Bi	
Th	232	193	3	99.53569	ug/l	100	99.5	90	110	Th	
U	238	193	3	100.89634	ug/l	100	100.9	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5614601	1.44	5676390	98.9	80	120	Li (IS)	
Sc (IS)	45	2	157292	1.61	157398	99.9	80	120	Sc (IS)	
Sc (IS)	45	3	2877054	0.34	2954313	97.4	80	120	Sc (IS)	
Ge (IS)	72	2	399700	0.29	379042	105.4	80	120	Ge (IS)	
Ge (IS)	72	3	2384847	0.79	2413999	98.8	80	120	Ge (IS)	
In (IS)	115	3	14914451	0.52	15281059	97.6	80	120	In (IS)	
Ho (IS)	165	2	10472144	0.42	10495856	99.8	80	120	Ho (IS)	
Ho (IS)	165	3	16788797	0.75	16807844	99.9	80	120	Ho (IS)	
Ir (IS)	193	2	6866029	0.72	6895257	99.6	80	120	Ir (IS)	
Ir (IS)	193	3	8302727	1.29	8354862	99.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Initial Calibration Blank (ICB) - US EPA Method 6020

Sample Name	**ICB 1843378**
Data File Name	**097_ICB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:31:23-06:00**
Type	**ICB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	-0.02642	ug/l	1.388	Li	
Be	9	6	3	0.02372	ug/l	0.7	Be	
B	11	6	3	3.87347	ug/l	20	B	
Na	23	45	2	0.18111	ug/l	30	Na	
Mg	24	45	2	0.32163	ug/l	11.18	Mg	
Al	27	45	2	0.41890	ug/l	25.8	Al	
P	31	45	2	0.49889	ug/l	16.46	P	
K	39	45	2	-0.14328	ug/l	83.2	K	
Ca	44	45	3	0.78352	ug/l	136.2	Ca	
Ti	47	45	3	0.01873	ug/l	4.2	Ti	
V	51	45	2	0.03440	ug/l	4.74	V	
Cr	52	45	2	0.03892	ug/l	6.52	Cr	
Mn	55	72	2	0.04938	ug/l	0.49	Mn	
Fe	57	72	2	0.61228	ug/l	40.7	Fe	
Co	59	72	2	0.04435	ug/l	0.434	Co	
Ni	60	72	2	0.04554	ug/l	0.8	Ni	
Cu	63	72	2	-0.14568	ug/l	0.902	Cu	
Zn	66	72	2	0.07352	ug/l	16.58	Zn	
As	75	72	2	0.06658	ug/l	2.36	As	
Se	78	72	2	0.03765	ug/l	3.18	Se	
Sr	88	72	3	0.01569	ug/l	2	Sr	
Y	89	72	2	0.04416	ug/l	0.424	Y	
Zr	90	72	2	0.04105	ug/l	0.496	Zr	
Nb	93	72	2	0.54242	ug/l	4.62	Nb	
Mo	95	72	3	0.04881	ug/l	2	Mo	
Ru	101	72	2	0.04053	ug/l	2	Ru	
Rh	103	72	2	0.04624	ug/l	1.634	Rh	
Pd	105	72	2	0.00970	ug/l	0.08	Pd	
Ag	107	115	3	0.00136	ug/l	1.54	Ag	
Cd	111	115	3	0.02226	ug/l	0.4	Cd	
Sn	118	115	3	0.04415	ug/l	2	Sn	
Sb	121	115	3	0.02358	ug/l	3.34	Sb	
Te	125	165	2	0.07510	ug/l	1.072	Te	
Cs	133	165	2	0.03635	ug/l	0.106	Cs	
Ba	137	165	3	0.01329	ug/l	0.446	Ba	
La	139	165	2	0.03760	ug/l	0.102	La	
Ce	140	165	2	0.03953	ug/l	1.772	Ce	
Pr	141	165	2	0.03795	ug/l	0.084	Pr	
Nd	146	165	2	0.04112	ug/l	0.208	Nd	
Sm	147	165	3	0.01160	ug/l	0.652	Sm	
Hf	178	165	2	0.05002	ug/l	2.26	Hf	
Ta	181	165	2	0.08135	ug/l	1.46	Ta	
W	182	165	2	0.49454	ug/l	4	W	
Re	185	193	3	0.00994	ug/l	0.05	Re	
Pt	195	193	2	0.00053	ug/l	0.12	Pt	
Au	197	193	3	0.22716	ug/l	1	Au	
Tl	205	193	3	0.03867	ug/l	1.1	Tl	
Pb	208	193	3	0.01094	ug/l	0.346	Pb	
Bi	209	193	2	0.08338	ug/l	1.464	Bi	
Th	232	193	3	0.04316	ug/l	1.104	Th	
U	238	193	3	0.01572	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5690474	0.03	5676390	100.2	80	120	Li (IS)	
Sc (IS)	45	2	157045	0.86	157398	99.8	80	120	Sc (IS)	
Sc (IS)	45	3	2841950	0.69	2954313	96.2	80	120	Sc (IS)	
Ge (IS)	72	2	374726	0.70	379042	98.9	80	120	Ge (IS)	
Ge (IS)	72	3	2354929	1.08	2413999	97.6	80	120	Ge (IS)	
In (IS)	115	3	15042107	0.32	15281059	98.4	80	120	In (IS)	
Ho (IS)	165	2	10488066	0.51	10495856	99.9	80	120	Ho (IS)	
Ho (IS)	165	3	16751140	2.00	16807844	99.7	80	120	Ho (IS)	
Ir (IS)	193	2	6933824	0.85	6895257	100.6	80	120	Ir (IS)	
Ir (IS)	193	3	8282895	1.13	8354862	99.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CRI 1847444**
Data File Name	**098LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:38:08-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	4.80427	ug/l	5	96.1	80	120	Li	
Be	9	6	3	0.53481	ug/l	0.5	107.0	80	120	Be	
B	11	6	3	95.48671	ug/l	100	95.5	80	120	B	
Na	23	45	2	101.81340	ug/l	100	101.8	80	120	Na	
Mg	24	45	2	51.69900	ug/l	50	103.4	80	120	Mg	
Al	27	45	2	54.46154	ug/l	50	108.9	80	120	Al	
P	31	45	2	97.81192	ug/l	100	97.8	80	120	P	
K	39	45	2	99.52687	ug/l	100	99.5	80	120	K	
Ca	44	45	3	198.47936	ug/l	200	99.2	80	120	Ca	
Ti	47	45	3	5.06971	ug/l	5	101.4	80	120	Ti	
V	51	45	2	9.75804	ug/l	10	97.6	80	120	V	
Cr	52	45	2	9.78369	ug/l	10	97.8	80	120	Cr	
Mn	55	72	2	4.12211	ug/l	4	103.1	80	120	Mn	
Fe	57	72	2	53.11752	ug/l	50	106.2	80	120	Fe	
Co	59	72	2	2.10720	ug/l	2	105.4	80	120	Co	
Ni	60	72	2	5.61225	ug/l	5	112.2	80	120	Ni	
Cu	63	72	2	3.03424	ug/l	3	101.1	80	120	Cu	
Zn	66	72	2	21.55064	ug/l	20	107.8	80	120	Zn	
As	75	72	2	10.72101	ug/l	10	107.2	80	120	As	
Se	78	72	2	5.43485	ug/l	5	108.7	80	120	Se	
Sr	88	72	3	4.90466	ug/l	5	98.1	80	120	Sr	
Y	89	72	2	4.89442	ug/l	5	97.9	80	120	Y	
Zr	90	72	2	5.08824	ug/l	5	101.8	80	120	Zr	
Nb	93	72	2	19.37618	ug/l	25	77.5	80	120	Nb	FAILED
Mo	95	72	3	4.80706	ug/l	5	96.1	80	120	Mo	
Ru	101	72	2	10.07943	ug/l	10	100.8	80	120	Ru	
Rh	103	72	2	9.83862	ug/l	10	98.4	80	120	Rh	
Pd	105	72	2	0.54995	ug/l	0.5	110.0	80	120	Pd	
Ag	107	115	3	1.90250	ug/l	2	95.1	80	120	Ag	
Cd	111	115	3	0.52580	ug/l	0.5	105.2	80	120	Cd	
Sn	118	115	3	1.83975	ug/l	2	92.0	80	120	Sn	
Sb	121	115	3	4.56004	ug/l	5	91.2	80	120	Sb	
Te	125	165	2	9.98059	ug/l	10	99.8	80	120	Te	
Cs	133	165	2	0.96380	ug/l	1	96.4	80	120	Cs	
Ba	137	165	3	1.86896	ug/l	2	93.4	80	120	Ba	
La	139	165	2	1.89161	ug/l	2	94.6	80	120	La	
Ce	140	165	2	9.33244	ug/l	10	93.3	80	120	Ce	
Pr	141	165	2	1.90672	ug/l	2	95.3	80	120	Pr	
Nd	146	165	2	1.91472	ug/l	2	95.7	80	120	Nd	
Sm	147	165	3	9.45686	ug/l	10	94.6	80	120	Sm	
Hf	178	165	2	9.20072	ug/l	10	92.0	80	120	Hf	
Ta	181	165	2	7.47400	ug/l	10	74.7	80	120	Ta	FAILED
W	182	165	2	4.74966	ug/l	5	95.0	80	120	W	
Re	185	193	3	9.19729	ug/l	10	92.0	80	120	Re	
Pt	195	193	2	0.98399	ug/l	1	98.4	80	120	Pt	
Au	197	193	3	4.62412	ug/l	5	92.5	80	120	Au	
Tl	205	193	3	1.81758	ug/l	2	90.9	80	120	Tl	
Pb	208	193	3	2.76143	ug/l	3	92.0	80	120	Pb	
Bi	209	193	2	18.20605	ug/l	20	91.0	80	120	Bi	
Th	232	193	3	1.83893	ug/l	2	91.9	80	120	Th	
U	238	193	3	0.93014	ug/l	1	93.0	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5820225	1.27	5676390	102.5	80	120	Li (IS)	
Sc (IS)	45	2	159386	12.09	157398	101.3	80	120	Sc (IS)	
Sc (IS)	45	3	2928287	1.25	2954313	99.1	80	120	Sc (IS)	
Ge (IS)	72	2	383726	8.23	379042	101.2	80	120	Ge (IS)	
Ge (IS)	72	3	2412332	1.49	2413999	99.9	80	120	Ge (IS)	
In (IS)	115	3	15186894	0.92	15281059	99.4	80	120	In (IS)	
Ho (IS)	165	2	10466980	11.37	10495856	99.7	80	120	Ho (IS)	
Ho (IS)	165	3	16877694	0.24	16807844	100.4	80	120	Ho (IS)	
Ir (IS)	193	2	6862362	10.69	6895257	99.5	80	120	Ir (IS)	
Ir (IS)	193	3	8354707	0.63	8354862	100.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Interference Check Sample A (ICS-A) - US EPA Method 6020

Sample Name	**ICSA 1845716**
Data File Name	**099ICSA.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:44:50-06:00**
Type	**ICSA**
VialNumber	**1105**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.25831	ug/l	1.388	Li	
Be	9	6	3	0.00401	ug/l	0.7	Be	
B	11	6	3	2.66825	ug/l	20	B	
Na	23	45	2	102960.14045	ug/l	120000	Na	
Mg	24	45	2	102041.11074	ug/l	120000	Mg	
Al	27	45	2	104487.24597	ug/l	120000	Al	
P	31	45	2	111001.91085	ug/l	120000	P	
K	39	45	2	101248.97878	ug/l	120000	K	
Ca	44	45	3	97238.74733	ug/l	120000	Ca	
Ti	47	45	3	2119.47609	ug/l	2400	Ti	
V	51	45	2	0.24725	ug/l	4.74	V	
Cr	52	45	2	1.30184	ug/l	6.52	Cr	
Mn	55	72	2	3.24165	ug/l	0.49	Mn	FAILED
Fe	57	72	2	111073.61622	ug/l	120000	Fe	
Co	59	72	2	0.32756	ug/l	0.434	Co	
Ni	60	72	2	1.62381	ug/l	0.8	Ni	FAILED
Cu	63	72	2	1.03276	ug/l	0.902	Cu	FAILED
Zn	66	72	2	4.11549	ug/l	16.58	Zn	
As	75	72	2	0.11104	ug/l	2.36	As	
Se	78	72	2	0.26986	ug/l	3.18	Se	
Sr	88	72	3	1.03890	ug/l	2	Sr	
Y	89	72	2	0.05364	ug/l	0.424	Y	
Zr	90	72	2	2.37797	ug/l	0.496	Zr	FAILED
Nb	93	72	2	0.53780	ug/l	4.62	Nb	
Mo	95	72	3	2143.97310	ug/l	2400	Mo	
Ru	101	72	2	-0.00334	ug/l	2	Ru	
Rh	103	72	2	-0.00268	ug/l	1.634	Rh	
Pd	105	72	2	0.00611	ug/l	0.08	Pd	
Ag	107	115	3	0.10644	ug/l	1.54	Ag	
Cd	111	115	3	0.15816	ug/l	0.4	Cd	
Sn	118	115	3	0.13052	ug/l	2	Sn	
Sb	121	115	3	0.03034	ug/l	3.34	Sb	
Te	125	165	2	0.00886	ug/l	1.072	Te	
Cs	133	165	2	0.03852	ug/l	0.106	Cs	
Ba	137	165	3	0.53031	ug/l	0.446	Ba	FAILED
La	139	165	2	0.00669	ug/l	0.102	La	
Ce	140	165	2	0.55272	ug/l	1.772	Ce	
Pr	141	165	2	-0.00069	ug/l	0.084	Pr	
Nd	146	165	2	0.01117	ug/l	0.208	Nd	
Sm	147	165	3	0.00531	ug/l	0.652	Sm	
Hf	178	165	2	0.14120	ug/l	2.26	Hf	
Ta	181	165	2	0.17954	ug/l	1.46	Ta	
W	182	165	2	0.50150	ug/l	4	W	
Re	185	193	3	0.02289	ug/l	0.05	Re	
Pt	195	193	2	0.01741	ug/l	0.12	Pt	
Au	197	193	3	0.02912	ug/l	1	Au	
Tl	205	193	3	0.00628	ug/l	1.1	Tl	
Pb	208	193	3	0.11765	ug/l	0.346	Pb	
Bi	209	193	2	0.19604	ug/l	1.464	Bi	
Th	232	193	3	0.06693	ug/l	1.104	Th	
U	238	193	3	0.01248	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5670929	1.07	5676390	99.9	80	120	Li (IS)	
Sc (IS)	45	2	155768	0.49	157398	99.0	80	120	Sc (IS)	
Sc (IS)	45	3	2824305	1.30	2954313	95.6	80	120	Sc (IS)	
Ge (IS)	72	2	354804	0.56	379042	93.6	80	120	Ge (IS)	
Ge (IS)	72	3	2222970	1.18	2413999	92.1	80	120	Ge (IS)	
In (IS)	115	3	13470406	1.76	15281059	88.2	80	120	In (IS)	
Ho (IS)	165	2	10103022	0.87	10495856	96.3	80	120	Ho (IS)	
Ho (IS)	165	3	15731925	0.71	16807844	93.6	80	120	Ho (IS)	
Ir (IS)	193	2	6021730	0.41	6895257	87.3	80	120	Ir (IS)	
Ir (IS)	193	3	7297367	1.15	8354862	87.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Interference Check Sample AB (ICS-AB) - US EPA Method 6020

Sample Name	**ICSAB 1845717**
Data File Name	**100ICSB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:51:40-06:00**
Type	**ICSAB**
VialNumber	**1106**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	51.50707	ug/l	50	103.0	80	120	Li	
Be	9	6	3	48.98440	ug/l	50	98.0	80	120	Be	
B	11	6	3	95.50822	ug/l	100	95.5	80	120	B	
Na	23	45	2	100623.28936	ug/l	100000	100.6	80	120	Na	
Mg	24	45	2	101195.92083	ug/l	100000	101.2	80	120	Mg	
Al	27	45	2	104529.13501	ug/l	100000	104.5	80	120	Al	
P	31	45	2	109182.55384	ug/l	100000	109.2	80	120	P	
K	39	45	2	100896.18178	ug/l	100000	100.9	80	120	K	
Ca	44	45	3	98893.24185	ug/l	100000	98.9	80	120	Ca	
Ti	47	45	3	2200.94173	ug/l	2100	104.8	80	120	Ti	
V	51	45	2	48.96120	ug/l	50	97.9	80	120	V	
Cr	52	45	2	48.24922	ug/l	50	96.5	80	120	Cr	
Mn	55	72	2	52.19250	ug/l	50	104.4	80	120	Mn	
Fe	57	72	2	105569.49902	ug/l	100000	105.6	80	120	Fe	
Co	59	72	2	47.99263	ug/l	50	96.0	80	120	Co	
Ni	60	72	2	52.02443	ug/l	50	104.0	80	120	Ni	
Cu	63	72	2	46.83502	ug/l	50	93.7	80	120	Cu	
Zn	66	72	2	54.19955	ug/l	50	108.4	80	120	Zn	
As	75	72	2	54.13902	ug/l	50	108.3	80	120	As	
Se	78	72	2	27.75177	ug/l	25	111.0	80	120	Se	
Sr	88	72	3	55.16470	ug/l	50	110.3	80	120	Sr	
Y	89	72	2	52.05758	ug/l	50	104.1	80	120	Y	
Zr	90	72	2	35.92490	ug/l	50	71.8	80	120	Zr	FAILED
Nb	93	72	2	24.13644	ug/l	25	96.5	80	120	Nb	
Mo	95	72	3	2167.65465	ug/l	2050	105.7	80	120	Mo	
Ru	101	72	2	47.10782	ug/l	50	94.2	80	120	Ru	
Rh	103	72	2	48.65386	ug/l	50	97.3	80	120	Rh	
Pd	105	72	2	4.80928	ug/l	5	96.2	80	120	Pd	
Ag	107	115	3	9.42126	ug/l	10	94.2	80	120	Ag	
Cd	111	115	3	47.10707	ug/l	50	94.2	80	120	Cd	
Sn	118	115	3	52.60184	ug/l	50	105.2	80	120	Sn	
Sb	121	115	3	24.32127	ug/l	25	97.3	80	120	Sb	
Te	125	165	2	47.25464	ug/l	50	94.5	80	120	Te	
Cs	133	165	2	50.08802	ug/l	50	100.2	80	120	Cs	
Ba	137	165	3	48.04131	ug/l	50	96.1	80	120	Ba	
La	139	165	2	51.10069	ug/l	50	102.2	80	120	La	
Ce	140	165	2	51.67608	ug/l	50	103.4	80	120	Ce	
Pr	141	165	2	51.21555	ug/l	50	102.4	80	120	Pr	
Nd	146	165	2	47.64639	ug/l	50	95.3	80	120	Nd	
Sm	147	165	3	49.36323	ug/l	50	98.7	80	120	Sm	
Hf	178	165	2	33.13876	ug/l	50	66.3	80	120	Hf	FAILED
Ta	181	165	2	50.40294	ug/l	50	100.8	80	120	Ta	
W	182	165	2	47.21718	ug/l	50	94.4	80	120	W	
Re	185	193	3	53.97204	ug/l	50	107.9	80	120	Re	
Pt	195	193	2	5.07156	ug/l	5	101.4	80	120	Pt	
Au	197	193	3	51.76839	ug/l	50	103.5	80	120	Au	
Tl	205	193	3	9.42137	ug/l	10	94.2	80	120	Tl	
Pb	208	193	3	49.85005	ug/l	50	99.7	80	120	Pb	
Bi	209	193	2	50.74352	ug/l	50	101.5	80	120	Bi	
Th	232	193	3	54.19679	ug/l	50	108.4	80	120	Th	
U	238	193	3	54.39566	ug/l	50	108.8	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5666333	1.72	5676390	99.8	80	120	Li (IS)	
Sc (IS)	45	2	162098	9.68	157398	103.0	80	120	Sc (IS)	
Sc (IS)	45	3	2857015	1.20	2954313	96.7	80	120	Sc (IS)	
Ge (IS)	72	2	379234	7.07	379042	100.1	80	120	Ge (IS)	
Ge (IS)	72	3	2250318	0.43	2413999	93.2	80	120	Ge (IS)	
In (IS)	115	3	13450609	0.60	15281059	88.0	80	120	In (IS)	
Ho (IS)	165	2	9991688	10.26	10495856	95.2	80	120	Ho (IS)	
Ho (IS)	165	3	15654540	1.08	16807844	93.1	80	120	Ho (IS)	
Ir (IS)	193	2	5978091	9.41	6895257	86.7	80	120	Ir (IS)	
Ir (IS)	193	3	7174124	0.96	8354862	85.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**101_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:58:28-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	96.76605	ug/l	100	96.8	90	110	Li	
Be	9	6	3	97.59362	ug/l	100	97.6	90	110	Be	
B	11	6	3	192.76699	ug/l	200	96.4	90	110	B	
Na	23	45	2	2516.57908	ug/l	2500	100.7	90	110	Na	
Mg	24	45	2	2545.75286	ug/l	2500	101.8	90	110	Mg	
Al	27	45	2	2441.05812	ug/l	2500	97.6	90	110	Al	
P	31	45	2	2499.01282	ug/l	2500	100.0	90	110	P	
K	39	45	2	2514.39039	ug/l	2500	100.6	90	110	K	
Ca	44	45	3	2509.48417	ug/l	2500	100.4	90	110	Ca	
Ti	47	45	3	100.36204	ug/l	100	100.4	90	110	Ti	
V	51	45	2	94.87224	ug/l	100	94.9	90	110	V	
Cr	52	45	2	98.89697	ug/l	100	98.9	90	110	Cr	
Mn	55	72	2	96.28544	ug/l	100	96.3	90	110	Mn	
Fe	57	72	2	2431.61628	ug/l	2500	97.3	90	110	Fe	
Co	59	72	2	101.66690	ug/l	100	101.7	90	110	Co	
Ni	60	72	2	102.76301	ug/l	100	102.8	90	110	Ni	
Cu	63	72	2	101.26176	ug/l	100	101.3	90	110	Cu	
Zn	66	72	2	101.57857	ug/l	100	101.6	90	110	Zn	
As	75	72	2	102.12371	ug/l	100	102.1	90	110	As	
Se	78	72	2	51.92496	ug/l	50	103.8	90	110	Se	
Sr	88	72	3	101.09354	ug/l	100	101.1	90	110	Sr	
Y	89	72	2	102.90932	ug/l	100	102.9	90	110	Y	
Zr	90	72	2	103.16890	ug/l	100	103.2	90	110	Zr	
Nb	93	72	2	52.32904	ug/l	50	104.7	90	110	Nb	
Mo	95	72	3	48.56807	ug/l	50	97.1	90	110	Mo	
Ru	101	72	2	97.33291	ug/l	100	97.3	90	110	Ru	
Rh	103	72	2	103.44231	ug/l	100	103.4	90	110	Rh	
Pd	105	72	2	10.42657	ug/l	10	104.3	90	110	Pd	
Ag	107	115	3	18.19609	ug/l	20	91.0	90	110	Ag	
Cd	111	115	3	92.96788	ug/l	100	93.0	90	110	Cd	
Sn	118	115	3	99.60023	ug/l	100	99.6	90	110	Sn	
Sb	121	115	3	49.48240	ug/l	50	99.0	90	110	Sb	
Te	125	165	2	99.81272	ug/l	100	99.8	90	110	Te	
Cs	133	165	2	100.13616	ug/l	100	100.1	90	110	Cs	
Ba	137	165	3	97.52769	ug/l	100	97.5	90	110	Ba	
La	139	165	2	100.06729	ug/l	100	100.1	90	110	La	
Ce	140	165	2	100.84006	ug/l	100	100.8	90	110	Ce	
Pr	141	165	2	100.15244	ug/l	100	100.2	90	110	Pr	
Nd	146	165	2	95.85461	ug/l	100	95.9	90	110	Nd	
Sm	147	165	3	101.03671	ug/l	100	101.0	90	110	Sm	
Hf	178	165	2	99.78149	ug/l	100	99.8	90	110	Hf	
Ta	181	165	2	101.59401	ug/l	100	101.6	90	110	Ta	
W	182	165	2	101.22738	ug/l	100	101.2	90	110	W	
Re	185	193	3	98.68354	ug/l	100	98.7	90	110	Re	
Pt	195	193	2	9.99408	ug/l	10	99.9	90	110	Pt	
Au	197	193	3	98.40738	ug/l	100	98.4	90	110	Au	
Tl	205	193	3	19.52346	ug/l	20	97.6	90	110	Tl	
Pb	208	193	3	99.33406	ug/l	100	99.3	90	110	Pb	
Bi	209	193	2	99.60533	ug/l	100	99.6	90	110	Bi	
Th	232	193	3	97.38747	ug/l	100	97.4	90	110	Th	
U	238	193	3	98.53477	ug/l	100	98.5	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5764626	1.32	5676390	101.6	80	120	Li (IS)	
Sc (IS)	45	2	159363	0.38	157398	101.2	80	120	Sc (IS)	
Sc (IS)	45	3	2923620	1.21	2954313	99.0	80	120	Sc (IS)	
Ge (IS)	72	2	398883	1.18	379042	105.2	80	120	Ge (IS)	
Ge (IS)	72	3	2425629	1.59	2413999	100.5	80	120	Ge (IS)	
In (IS)	115	3	15077295	1.29	15281059	98.7	80	120	In (IS)	
Ho (IS)	165	2	10669710	0.68	10495856	101.7	80	120	Ho (IS)	
Ho (IS)	165	3	17085903	1.97	16807844	101.7	80	120	Ho (IS)	
Ir (IS)	193	2	6953273	0.40	6895257	100.8	80	120	Ir (IS)	
Ir (IS)	193	3	8436735	1.72	8354862	101.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**102_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:05:14-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.01527	ug/l	1.388	Li	
Be	9	6	3	0.01165	ug/l	0.7	Be	
B	11	6	3	3.19668	ug/l	20	B	
Na	23	45	2	4.74627	ug/l	30	Na	
Mg	24	45	2	2.38311	ug/l	11.18	Mg	
Al	27	45	2	2.32859	ug/l	25.8	Al	
P	31	45	2	4.57343	ug/l	16.46	P	
K	39	45	2	0.93241	ug/l	83.2	K	
Ca	44	45	3	0.76755	ug/l	136.2	Ca	
Ti	47	45	3	0.18205	ug/l	4.2	Ti	
V	51	45	2	0.04079	ug/l	4.74	V	
Cr	52	45	2	0.02650	ug/l	6.52	Cr	
Mn	55	72	2	0.05227	ug/l	0.49	Mn	
Fe	57	72	2	2.68867	ug/l	40.7	Fe	
Co	59	72	2	0.03153	ug/l	0.434	Co	
Ni	60	72	2	0.03308	ug/l	0.8	Ni	
Cu	63	72	2	-0.17417	ug/l	0.902	Cu	
Zn	66	72	2	0.05208	ug/l	16.58	Zn	
As	75	72	2	0.03395	ug/l	2.36	As	
Se	78	72	2	-0.00243	ug/l	3.18	Se	
Sr	88	72	3	0.01208	ug/l	2	Sr	
Y	89	72	2	0.03366	ug/l	0.424	Y	
Zr	90	72	2	0.04569	ug/l	0.496	Zr	
Nb	93	72	2	0.41040	ug/l	4.62	Nb	
Mo	95	72	3	0.53270	ug/l	2	Mo	
Ru	101	72	2	0.03227	ug/l	2	Ru	
Rh	103	72	2	0.03261	ug/l	1.634	Rh	
Pd	105	72	2	0.00904	ug/l	0.08	Pd	
Ag	107	115	3	0.00083	ug/l	1.54	Ag	
Cd	111	115	3	0.01088	ug/l	0.4	Cd	
Sn	118	115	3	0.02079	ug/l	2	Sn	
Sb	121	115	3	0.01981	ug/l	3.34	Sb	
Te	125	165	2	0.03840	ug/l	1.072	Te	
Cs	133	165	2	0.02862	ug/l	0.106	Cs	
Ba	137	165	3	0.00824	ug/l	0.446	Ba	
La	139	165	2	0.02738	ug/l	0.102	La	
Ce	140	165	2	0.02983	ug/l	1.772	Ce	
Pr	141	165	2	0.02979	ug/l	0.084	Pr	
Nd	146	165	2	0.03330	ug/l	0.208	Nd	
Sm	147	165	3	0.00749	ug/l	0.652	Sm	
Hf	178	165	2	0.05253	ug/l	2.26	Hf	
Ta	181	165	2	0.06891	ug/l	1.46	Ta	
W	182	165	2	0.33981	ug/l	4	W	
Re	185	193	3	0.00472	ug/l	0.05	Re	
Pt	195	193	2	0.00241	ug/l	0.12	Pt	
Au	197	193	3	0.17918	ug/l	1	Au	
Tl	205	193	3	0.03508	ug/l	1.1	Tl	
Pb	208	193	3	-0.00182	ug/l	0.346	Pb	
Bi	209	193	2	0.06071	ug/l	1.464	Bi	
Th	232	193	3	0.03484	ug/l	1.104	Th	
U	238	193	3	0.01062	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5659365	0.50	5676390	99.7	80	120	Li (IS)	
Sc (IS)	45	2	156725	1.35	157398	99.6	80	120	Sc (IS)	
Sc (IS)	45	3	2879755	0.20	2954313	97.5	80	120	Sc (IS)	
Ge (IS)	72	2	375310	0.51	379042	99.0	80	120	Ge (IS)	
Ge (IS)	72	3	2380660	0.49	2413999	98.6	80	120	Ge (IS)	
In (IS)	115	3	15241996	0.26	15281059	99.7	80	120	In (IS)	
Ho (IS)	165	2	10649764	0.82	10495856	101.5	80	120	Ho (IS)	
Ho (IS)	165	3	16949393	0.98	16807844	100.8	80	120	Ho (IS)	
Ir (IS)	193	2	6951253	0.38	6895257	100.8	80	120	Ir (IS)	
Ir (IS)	193	3	8488808	0.46	8354862	101.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**MB 160-453190/1-A**
Data File Name	**103SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:11:59-06:00**
Type	**Sample**
VialNumber	**3101**
Dilution	**2**
Comment	**453190**
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.02829	0.05659	ug/l	1000	Li	
Be	9	6	3	0.00012	0.00025	ug/l	1000	Be	
B	11	6	3	1.96918	3.93836	ug/l	2000	B	
Na	23	45	2	5.50306	11.00613	ug/l	50000	Na	
Mg	24	45	2	1.34195	2.68390	ug/l	50000	Mg	
Al	27	45	2	11.04073	22.08146	ug/l	100000	Al	
P	31	45	2	8.37639	16.75277	ug/l	100000	P	
K	39	45	2	-0.35577	-0.71154	ug/l	100000	K	
Ca	44	45	3	16.01425	32.02850	ug/l	100000	Ca	
Ti	47	45	3	0.27769	0.55537	ug/l	2000	Ti	
V	51	45	2	0.10681	0.21361	ug/l	2000	V	
Cr	52	45	2	0.06824	0.13649	ug/l	2000	Cr	
Mn	55	72	2	0.08125	0.16249	ug/l	5000	Mn	
Fe	57	72	2	2.17551	4.35103	ug/l	100000	Fe	
Co	59	72	2	-0.00581	-0.01162	ug/l	2000	Co	
Ni	60	72	2	0.01700	0.03400	ug/l	2000	Ni	
Cu	63	72	2	0.12027	0.24054	ug/l	2000	Cu	
Zn	66	72	2	0.65222	1.30444	ug/l	5000	Zn	
As	75	72	2	0.01377	0.02754	ug/l	2000	As	
Se	78	72	2	0.13674	0.27348	ug/l	1000	Se	
Sr	88	72	3	0.03902	0.07805	ug/l	2000	Sr	
Y	89	72	2	-0.00693	-0.01386	ug/l	200	Y	
Zr	90	72	2	0.02965	0.05929	ug/l	2000	Zr	
Nb	93	72	2	0.22492	0.44984	ug/l	100	Nb	
Mo	95	72	3	0.32152	0.64304	ug/l	1000	Mo	
Ru	101	72	2	-0.00712	-0.01424	ug/l	200	Ru	
Rh	103	72	2	-0.00688	-0.01376	ug/l	200	Rh	
Pd	105	72	2	0.00429	0.00857	ug/l	20	Pd	
Ag	107	115	3	0.00219	0.00437	ug/l	400	Ag	
Cd	111	115	3	0.00003	0.00006	ug/l	2000	Cd	
Sn	118	115	3	0.10121	0.20242	ug/l	2000	Sn	
Sb	121	115	3	0.00578	0.01156	ug/l	1000	Sb	
Te	125	165	2	-0.00818	-0.01636	ug/l	200	Te	
Cs	133	165	2	-0.00139	-0.00278	ug/l	2000	Cs	
Ba	137	165	3	0.04046	0.08091	ug/l	5000	Ba	
La	139	165	2	-0.00443	-0.00887	ug/l	200	La	
Ce	140	165	2	-0.00264	-0.00529	ug/l	200	Ce	
Pr	141	165	2	-0.00550	-0.01100	ug/l	200	Pr	
Nd	146	165	2	-0.00204	-0.00408	ug/l	200	Nd	
Sm	147	165	3	-0.00516	-0.01032	ug/l	2000	Sm	
Hf	178	165	2	0.03736	0.07471	ug/l	200	Hf	
Ta	181	165	2	0.07605	0.15209	ug/l	200	Ta	
W	182	165	2	0.25646	0.51292	ug/l	2000	W	
Re	185	193	3	-0.00425	-0.00850	ug/l	200	Re	
Pt	195	193	2	0.00005	0.00010	ug/l	200	Pt	
Au	197	193	3	0.02993	0.05986	ug/l	2000	Au	
Tl	205	193	3	0.00564	0.01128	ug/l	400	Tl	
Pb	208	193	3	0.02635	0.05271	ug/l	5000	Pb	
Bi	209	193	2	0.04104	0.08208	ug/l	2000	Bi	
Th	232	193	3	0.03774	0.07548	ug/l	2000	Th	
U	238	193	3	-0.00276	-0.00551	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5412167	1.77	5676390	95.3	80	120	Li (IS)	
Sc (IS)	45	2	150892	0.34	157398	95.9	80	120	Sc (IS)	
Sc (IS)	45	3	2831411	0.92	2954313	95.8	80	120	Sc (IS)	
Ge (IS)	72	2	375027	0.46	379042	98.9	80	120	Ge (IS)	
Ge (IS)	72	3	2384342	1.68	2413999	98.8	80	120	Ge (IS)	
In (IS)	115	3	14936803	1.10	15281059	97.7	80	120	In (IS)	
Ho (IS)	165	2	10495527	0.92	10495856	100.0	80	120	Ho (IS)	
Ho (IS)	165	3	16985489	1.06	16807844	101.1	80	120	Ho (IS)	
Ir (IS)	193	2	6847853	0.89	6895257	99.3	80	120	Ir (IS)	
Ir (IS)	193	3	8257200	0.53	8354862	98.8	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCS 160-453190/2-A**
Data File Name	**104SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:18:41-06:00**
Type	**Sample**
VialNumber	**3102**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	47.27711	94.55421	ug/l	1000	Li	
Be	9	6	3	44.68651	89.37303	ug/l	1000	Be	
B	11	6	3	90.83644	181.67287	ug/l	2000	B	
Na	23	45	2	5045.78793	10091.57586	ug/l	50000	Na	
Mg	24	45	2	5095.69853	10191.39705	ug/l	50000	Mg	
Al	27	45	2	5109.41608	10218.83217	ug/l	100000	Al	
P	31	45	2	473.70965	947.41929	ug/l	100000	P	
K	39	45	2	4798.67067	9597.34135	ug/l	100000	K	
Ca	44	45	3	4904.24900	9808.49800	ug/l	100000	Ca	
Ti	47	45	3	490.92690	981.85379	ug/l	2000	Ti	
V	51	45	2	469.92930	939.85860	ug/l	2000	V	
Cr	52	45	2	473.98236	947.96473	ug/l	2000	Cr	
Mn	55	72	2	511.55778	1023.11556	ug/l	5000	Mn	
Fe	57	72	2	5131.47814	10262.95628	ug/l	100000	Fe	
Co	59	72	2	507.44937	1014.89874	ug/l	2000	Co	
Ni	60	72	2	553.91905	1107.83809	ug/l	2000	Ni	
Cu	63	72	2	508.87652	1017.75305	ug/l	2000	Cu	
Zn	66	72	2	480.29257	960.58514	ug/l	5000	Zn	
As	75	72	2	477.30684	954.61368	ug/l	2000	As	
Se	78	72	2	234.54873	469.09746	ug/l	1000	Se	
Sr	88	72	3	496.97153	993.94307	ug/l	2000	Sr	
Y	89	72	2	-0.00103	-0.00207	ug/l	200	Y	
Zr	90	72	2	515.04788	1030.09576	ug/l	2000	Zr	
Nb	93	72	2	1.25854	2.51708	ug/l	100	Nb	
Mo	95	72	3	252.13338	504.26676	ug/l	1000	Mo	
Ru	101	72	2	-0.00694	-0.01389	ug/l	200	Ru	
Rh	103	72	2	0.01611	0.03222	ug/l	200	Rh	
Pd	105	72	2	0.03132	0.06265	ug/l	20	Pd	
Ag	107	115	3	94.55189	189.10378	ug/l	400	Ag	
Cd	111	115	3	478.60033	957.20066	ug/l	2000	Cd	
Sn	118	115	3	472.90886	945.81771	ug/l	2000	Sn	
Sb	121	115	3	240.17222	480.34444	ug/l	1000	Sb	
Te	125	165	2	0.05631	0.11263	ug/l	200	Te	
Cs	133	165	2	-0.00158	-0.00315	ug/l	2000	Cs	
Ba	137	165	3	462.31696	924.63392	ug/l	5000	Ba	
La	139	165	2	0.69799	1.39599	ug/l	200	La	
Ce	140	165	2	0.01505	0.03010	ug/l	200	Ce	
Pr	141	165	2	-0.00209	-0.00418	ug/l	200	Pr	
Nd	146	165	2	0.00598	0.01196	ug/l	200	Nd	
Sm	147	165	3	487.33566	974.67131	ug/l	2000	Sm	
Hf	178	165	2	0.45549	0.91098	ug/l	200	Hf	
Ta	181	165	2	0.71437	1.42873	ug/l	200	Ta	
W	182	165	2	487.76605	975.53210	ug/l	2000	W	
Re	185	193	3	0.00511	0.01021	ug/l	200	Re	
Pt	195	193	2	0.02526	0.05052	ug/l	200	Pt	
Au	197	193	3	0.01770	0.03540	ug/l	2000	Au	
Tl	205	193	3	96.34670	192.69340	ug/l	400	Tl	
Pb	208	193	3	488.16894	976.33788	ug/l	5000	Pb	
Bi	209	193	2	486.49111	972.98223	ug/l	2000	Bi	
Th	232	193	3	489.70334	979.40668	ug/l	2000	Th	
U	238	193	3	498.82674	997.65348	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5412424	0.49	5676390	95.3	80	120	Li (IS)	
Sc (IS)	45	2	150236	1.12	157398	95.4	80	120	Sc (IS)	
Sc (IS)	45	3	2782547	0.83	2954313	94.2	80	120	Sc (IS)	
Ge (IS)	72	2	357327	0.55	379042	94.3	80	120	Ge (IS)	
Ge (IS)	72	3	2303565	0.70	2413999	95.4	80	120	Ge (IS)	
In (IS)	115	3	14461653	0.96	15281059	94.6	80	120	In (IS)	
Ho (IS)	165	2	10353548	0.26	10495856	98.6	80	120	Ho (IS)	
Ho (IS)	165	3	16988361	0.95	16807844	101.1	80	120	Ho (IS)	
Ir (IS)	193	2	6501366	1.08	6895257	94.3	80	120	Ir (IS)	
Ir (IS)	193	3	8301959	0.16	8354862	99.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36587-D-2-A**
Data File Name	**105SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:25:24-06:00**
Type	**Sample**
VialNumber	**3103**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.12569	0.25137	ug/l	1000	Li	
Be	9	6	3	0.00172	0.00344	ug/l	1000	Be	
B	11	6	3	9.71688	19.43377	ug/l	2000	B	
Na	23	45	2	27981.43215	55962.86430	ug/l	50000	Na	
Mg	24	45	2	2240.76420	4481.52840	ug/l	50000	Mg	
Al	27	45	2	5.94574	11.89148	ug/l	100000	Al	
P	31	45	2	14.55558	29.11116	ug/l	100000	P	
K	39	45	2	1052.54004	2105.08008	ug/l	100000	K	
Ca	44	45	3	8849.95770	17699.91540	ug/l	100000	Ca	
Ti	47	45	3	0.33623	0.67247	ug/l	2000	Ti	
V	51	45	2	0.20887	0.41775	ug/l	2000	V	
Cr	52	45	2	1.18784	2.37568	ug/l	2000	Cr	
Mn	55	72	2	0.88037	1.76073	ug/l	5000	Mn	
Fe	57	72	2	13.81978	27.63955	ug/l	100000	Fe	
Co	59	72	2	0.03447	0.06895	ug/l	2000	Co	
Ni	60	72	2	0.22303	0.44605	ug/l	2000	Ni	
Cu	63	72	2	12.69539	25.39077	ug/l	2000	Cu	
Zn	66	72	2	9.82967	19.65934	ug/l	5000	Zn	
As	75	72	2	0.21025	0.42050	ug/l	2000	As	
Se	78	72	2	0.34242	0.68485	ug/l	1000	Se	
Sr	88	72	3	49.44569	98.89137	ug/l	2000	Sr	
Y	89	72	2	0.10703	0.21407	ug/l	200	Y	
Zr	90	72	2	0.59361	1.18721	ug/l	2000	Zr	
Nb	93	72	2	-0.03410	-0.06820	ug/l	100	Nb	
Mo	95	72	3	0.35782	0.71563	ug/l	1000	Mo	
Ru	101	72	2	-0.00591	-0.01183	ug/l	200	Ru	
Rh	103	72	2	-0.00652	-0.01305	ug/l	200	Rh	
Pd	105	72	2	0.00672	0.01344	ug/l	20	Pd	
Ag	107	115	3	0.01712	0.03425	ug/l	400	Ag	
Cd	111	115	3	0.04581	0.09161	ug/l	2000	Cd	
Sn	118	115	3	0.31083	0.62166	ug/l	2000	Sn	
Sb	121	115	3	0.05663	0.11326	ug/l	1000	Sb	
Te	125	165	2	-0.01181	-0.02363	ug/l	200	Te	
Cs	133	165	2	-0.00163	-0.00326	ug/l	2000	Cs	
Ba	137	165	3	17.33448	34.66896	ug/l	5000	Ba	
La	139	165	2	0.00867	0.01733	ug/l	200	La	
Ce	140	165	2	-0.00398	-0.00795	ug/l	200	Ce	
Pr	141	165	2	-0.00269	-0.00538	ug/l	200	Pr	
Nd	146	165	2	0.01539	0.03078	ug/l	200	Nd	
Sm	147	165	3	0.01961	0.03922	ug/l	2000	Sm	
Hf	178	165	2	0.00730	0.01460	ug/l	200	Hf	
Ta	181	165	2	0.02819	0.05639	ug/l	200	Ta	
W	182	165	2	0.88710	1.77419	ug/l	2000	W	
Re	185	193	3	-0.00428	-0.00857	ug/l	200	Re	
Pt	195	193	2	0.01665	0.03330	ug/l	200	Pt	
Au	197	193	3	-0.00327	-0.00655	ug/l	2000	Au	
Tl	205	193	3	0.14340	0.28680	ug/l	400	Tl	
Pb	208	193	3	0.68726	1.37451	ug/l	5000	Pb	
Bi	209	193	2	0.09597	0.19194	ug/l	2000	Bi	
Th	232	193	3	0.11796	0.23592	ug/l	2000	Th	
U	238	193	3	0.02254	0.04509	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5370422	2.58	5676390	94.6	80	120	Li (IS)	
Sc (IS)	45	2	144165	0.21	157398	91.6	80	120	Sc (IS)	
Sc (IS)	45	3	2726775	2.58	2954313	92.3	80	120	Sc (IS)	
Ge (IS)	72	2	361910	0.38	379042	95.5	80	120	Ge (IS)	
Ge (IS)	72	3	2309654	2.55	2413999	95.7	80	120	Ge (IS)	
In (IS)	115	3	14417738	2.37	15281059	94.4	80	120	In (IS)	
Ho (IS)	165	2	10232655	0.55	10495856	97.5	80	120	Ho (IS)	
Ho (IS)	165	3	16460331	3.20	16807844	97.9	80	120	Ho (IS)	
Ir (IS)	193	2	6651845	0.15	6895257	96.5	80	120	Ir (IS)	
Ir (IS)	193	3	8020432	3.23	8354862	96.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36587-D-2-A SD**
Data File Name	**106SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:32:06-06:00**
Type	**Sample**
VialNumber	**3104**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.00938	0.09376	ug/l	1000	Li	
Be	9	6	3	-0.00161	-0.01612	ug/l	1000	Be	
B	11	6	3	2.25697	22.56973	ug/l	2000	B	
Na	23	45	2	5393.63901	53936.39010	ug/l	50000	Na	
Mg	24	45	2	417.29089	4172.90888	ug/l	50000	Mg	
Al	27	45	2	3.11719	31.17187	ug/l	100000	Al	
P	31	45	2	3.88531	38.85307	ug/l	100000	P	
K	39	45	2	207.11543	2071.15428	ug/l	100000	K	
Ca	44	45	3	1707.27646	17072.76460	ug/l	100000	Ca	
Ti	47	45	3	0.10046	1.00456	ug/l	2000	Ti	
V	51	45	2	0.06484	0.64837	ug/l	2000	V	
Cr	52	45	2	0.23287	2.32865	ug/l	2000	Cr	
Mn	55	72	2	0.18762	1.87620	ug/l	5000	Mn	
Fe	57	72	2	3.55700	35.57004	ug/l	100000	Fe	
Co	59	72	2	0.01128	0.11278	ug/l	2000	Co	
Ni	60	72	2	0.05141	0.51415	ug/l	2000	Ni	
Cu	63	72	2	2.33670	23.36700	ug/l	2000	Cu	
Zn	66	72	2	2.44180	24.41800	ug/l	5000	Zn	
As	75	72	2	0.02153	0.21529	ug/l	2000	As	
Se	78	72	2	0.16788	1.67884	ug/l	1000	Se	
Sr	88	72	3	8.71472	87.14723	ug/l	2000	Sr	
Y	89	72	2	0.01795	0.17952	ug/l	200	Y	
Zr	90	72	2	0.12562	1.25619	ug/l	2000	Zr	
Nb	93	72	2	-0.05214	-0.52137	ug/l	100	Nb	
Mo	95	72	3	0.21342	2.13424	ug/l	1000	Mo	
Ru	101	72	2	-0.00644	-0.06436	ug/l	200	Ru	
Rh	103	72	2	-0.00679	-0.06791	ug/l	200	Rh	
Pd	105	72	2	0.00178	0.01780	ug/l	20	Pd	
Ag	107	115	3	0.00088	0.00881	ug/l	400	Ag	
Cd	111	115	3	0.01135	0.11349	ug/l	2000	Cd	
Sn	118	115	3	0.07968	0.79676	ug/l	2000	Sn	
Sb	121	115	3	0.01492	0.14924	ug/l	1000	Sb	
Te	125	165	2	-0.02396	-0.23963	ug/l	200	Te	
Cs	133	165	2	-0.00318	-0.03179	ug/l	2000	Cs	
Ba	137	165	3	3.33914	33.39136	ug/l	5000	Ba	
La	139	165	2	-0.00216	-0.02161	ug/l	200	La	
Ce	140	165	2	-0.00443	-0.04429	ug/l	200	Ce	
Pr	141	165	2	-0.00489	-0.04886	ug/l	200	Pr	
Nd	146	165	2	0.00045	0.00452	ug/l	200	Nd	
Sm	147	165	3	0.00117	0.01175	ug/l	2000	Sm	
Hf	178	165	2	-0.00296	-0.02960	ug/l	200	Hf	
Ta	181	165	2	-0.00052	-0.00523	ug/l	200	Ta	
W	182	165	2	0.19554	1.95541	ug/l	2000	W	
Re	185	193	3	-0.00531	-0.05311	ug/l	200	Re	
Pt	195	193	2	0.00271	0.02708	ug/l	200	Pt	
Au	197	193	3	-0.01107	-0.11074	ug/l	2000	Au	
Tl	205	193	3	0.03875	0.38754	ug/l	400	Tl	
Pb	208	193	3	0.13870	1.38696	ug/l	5000	Pb	
Bi	209	193	2	0.03146	0.31456	ug/l	2000	Bi	
Th	232	193	3	0.02803	0.28034	ug/l	2000	Th	
U	238	193	3	0.00199	0.01993	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5705365	0.37	5676390	100.5	80	120	Li (IS)	
Sc (IS)	45	2	151187	0.73	157398	96.1	80	120	Sc (IS)	
Sc (IS)	45	3	2829091	0.34	2954313	95.8	80	120	Sc (IS)	
Ge (IS)	72	2	374271	0.18	379042	98.7	80	120	Ge (IS)	
Ge (IS)	72	3	2383960	0.61	2413999	98.8	80	120	Ge (IS)	
In (IS)	115	3	15017458	0.82	15281059	98.3	80	120	In (IS)	
Ho (IS)	165	2	10497495	1.27	10495856	100.0	80	120	Ho (IS)	
Ho (IS)	165	3	16872294	0.18	16807844	100.4	80	120	Ho (IS)	
Ir (IS)	193	2	6796251	1.45	6895257	98.6	80	120	Ir (IS)	
Ir (IS)	193	3	8250804	0.64	8354862	98.8	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36587-D-2-B MS**
Data File Name	**107SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:38:49-06:00**
Type	**Sample**
VialNumber	**3105**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	48.22806	96.45611	ug/l	1000	Li	
Be	9	6	3	45.63891	91.27782	ug/l	1000	Be	
B	11	6	3	98.61961	197.23921	ug/l	2000	B	
Na	23	45	2	32144.39655	64288.79310	ug/l	50000	Na	
Mg	24	45	2	7283.17905	14566.35810	ug/l	50000	Mg	
Al	27	45	2	5163.77589	10327.55178	ug/l	100000	Al	
P	31	45	2	491.56865	983.13731	ug/l	100000	P	
K	39	45	2	5908.89459	11817.78919	ug/l	100000	K	
Ca	44	45	3	13333.91108	26667.82215	ug/l	100000	Ca	
Ti	47	45	3	496.38822	992.77643	ug/l	2000	Ti	
V	51	45	2	479.47666	958.95333	ug/l	2000	V	
Cr	52	45	2	481.98257	963.96514	ug/l	2000	Cr	
Mn	55	72	2	509.83393	1019.66785	ug/l	5000	Mn	
Fe	57	72	2	5132.23729	10264.47458	ug/l	100000	Fe	
Co	59	72	2	504.00007	1008.00014	ug/l	2000	Co	
Ni	60	72	2	549.29853	1098.59705	ug/l	2000	Ni	
Cu	63	72	2	517.92329	1035.84658	ug/l	2000	Cu	
Zn	66	72	2	510.96881	1021.93762	ug/l	5000	Zn	
As	75	72	2	490.81288	981.62575	ug/l	2000	As	
Se	78	72	2	237.40533	474.81065	ug/l	1000	Se	
Sr	88	72	3	552.11962	1104.23924	ug/l	2000	Sr	
Y	89	72	2	0.11047	0.22095	ug/l	200	Y	
Zr	90	72	2	516.02865	1032.05730	ug/l	2000	Zr	
Nb	93	72	2	0.45365	0.90730	ug/l	100	Nb	
Mo	95	72	3	256.19987	512.39973	ug/l	1000	Mo	
Ru	101	72	2	-0.00640	-0.01281	ug/l	200	Ru	
Rh	103	72	2	0.01902	0.03804	ug/l	200	Rh	
Pd	105	72	2	0.02964	0.05928	ug/l	20	Pd	
Ag	107	115	3	94.05406	188.10811	ug/l	400	Ag	
Cd	111	115	3	483.66055	967.32109	ug/l	2000	Cd	
Sn	118	115	3	478.77381	957.54762	ug/l	2000	Sn	
Sb	121	115	3	245.64585	491.29171	ug/l	1000	Sb	
Te	125	165	2	0.11184	0.22368	ug/l	200	Te	
Cs	133	165	2	0.00100	0.00200	ug/l	2000	Cs	
Ba	137	165	3	486.26358	972.52716	ug/l	5000	Ba	
La	139	165	2	0.72912	1.45823	ug/l	200	La	
Ce	140	165	2	0.01445	0.02890	ug/l	200	Ce	
Pr	141	165	2	0.00304	0.00609	ug/l	200	Pr	
Nd	146	165	2	0.02282	0.04564	ug/l	200	Nd	
Sm	147	165	3	491.87687	983.75374	ug/l	2000	Sm	
Hf	178	165	2	0.13808	0.27615	ug/l	200	Hf	
Ta	181	165	2	0.49354	0.98709	ug/l	200	Ta	
W	182	165	2	501.57907	1003.15813	ug/l	2000	W	
Re	185	193	3	0.00521	0.01042	ug/l	200	Re	
Pt	195	193	2	0.00354	0.00709	ug/l	200	Pt	
Au	197	193	3	-0.00251	-0.00502	ug/l	2000	Au	
Tl	205	193	3	97.00446	194.00893	ug/l	400	Tl	
Pb	208	193	3	495.91078	991.82155	ug/l	5000	Pb	
Bi	209	193	2	486.66595	973.33189	ug/l	2000	Bi	
Th	232	193	3	501.75157	1003.50315	ug/l	2000	Th	
U	238	193	3	512.29255	1024.58509	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5345221	2.15	5676390	94.2	80	120	Li (IS)	
Sc (IS)	45	2	146412	0.98	157398	93.0	80	120	Sc (IS)	
Sc (IS)	45	3	2735144	0.83	2954313	92.6	80	120	Sc (IS)	
Ge (IS)	72	2	351161	1.20	379042	92.6	80	120	Ge (IS)	
Ge (IS)	72	3	2255693	0.88	2413999	93.4	80	120	Ge (IS)	
In (IS)	115	3	14058266	0.92	15281059	92.0	80	120	In (IS)	
Ho (IS)	165	2	10105615	0.61	10495856	96.3	80	120	Ho (IS)	
Ho (IS)	165	3	16559896	0.58	16807844	98.5	80	120	Ho (IS)	
Ir (IS)	193	2	6333719	0.27	6895257	91.9	80	120	Ir (IS)	
Ir (IS)	193	3	7970356	0.32	8354862	95.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36587-D-2-C MSD**
Data File Name	**108SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:45:31-06:00**
Type	**Sample**
VialNumber	**3106**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	46.92239	93.84478	ug/l	1000	Li	
Be	9	6	3	44.67897	89.35794	ug/l	1000	Be	
B	11	6	3	98.68053	197.36106	ug/l	2000	B	
Na	23	45	2	33246.25455	66492.50910	ug/l	50000	Na	
Mg	24	45	2	7431.94526	14863.89052	ug/l	50000	Mg	
Al	27	45	2	5245.69096	10491.38193	ug/l	100000	Al	
P	31	45	2	509.72266	1019.44532	ug/l	100000	P	
K	39	45	2	6062.08058	12124.16116	ug/l	100000	K	
Ca	44	45	3	13407.01999	26814.03998	ug/l	100000	Ca	
Ti	47	45	3	496.90339	993.80678	ug/l	2000	Ti	
V	51	45	2	494.97323	989.94645	ug/l	2000	V	
Cr	52	45	2	495.28936	990.57872	ug/l	2000	Cr	
Mn	55	72	2	525.07189	1050.14378	ug/l	5000	Mn	
Fe	57	72	2	5283.75882	10567.51764	ug/l	100000	Fe	
Co	59	72	2	520.57811	1041.15623	ug/l	2000	Co	
Ni	60	72	2	559.98508	1119.97016	ug/l	2000	Ni	
Cu	63	72	2	531.96625	1063.93249	ug/l	2000	Cu	
Zn	66	72	2	523.62428	1047.24856	ug/l	5000	Zn	
As	75	72	2	501.28268	1002.56536	ug/l	2000	As	
Se	78	72	2	244.90496	489.80991	ug/l	1000	Se	
Sr	88	72	3	545.19579	1090.39157	ug/l	2000	Sr	
Y	89	72	2	0.11271	0.22541	ug/l	200	Y	
Zr	90	72	2	530.26499	1060.52998	ug/l	2000	Zr	
Nb	93	72	2	0.27187	0.54374	ug/l	100	Nb	
Mo	95	72	3	251.69439	503.38878	ug/l	1000	Mo	
Ru	101	72	2	-0.00970	-0.01940	ug/l	200	Ru	
Rh	103	72	2	0.01658	0.03315	ug/l	200	Rh	
Pd	105	72	2	0.03645	0.07290	ug/l	20	Pd	
Ag	107	115	3	94.40316	188.80631	ug/l	400	Ag	
Cd	111	115	3	487.69512	975.39024	ug/l	2000	Cd	
Sn	118	115	3	482.69151	965.38302	ug/l	2000	Sn	
Sb	121	115	3	244.68013	489.36027	ug/l	1000	Sb	
Te	125	165	2	0.08495	0.16990	ug/l	200	Te	
Cs	133	165	2	-0.00074	-0.00148	ug/l	2000	Cs	
Ba	137	165	3	492.23891	984.47782	ug/l	5000	Ba	
La	139	165	2	0.75271	1.50542	ug/l	200	La	
Ce	140	165	2	0.01558	0.03117	ug/l	200	Ce	
Pr	141	165	2	0.00238	0.00475	ug/l	200	Pr	
Nd	146	165	2	0.02011	0.04022	ug/l	200	Nd	
Sm	147	165	3	497.13615	994.27229	ug/l	2000	Sm	
Hf	178	165	2	0.08125	0.16249	ug/l	200	Hf	
Ta	181	165	2	0.46017	0.92034	ug/l	200	Ta	
W	182	165	2	516.85074	1033.70149	ug/l	2000	W	
Re	185	193	3	0.00476	0.00951	ug/l	200	Re	
Pt	195	193	2	0.00575	0.01149	ug/l	200	Pt	
Au	197	193	3	-0.01020	-0.02039	ug/l	2000	Au	
Tl	205	193	3	97.12057	194.24115	ug/l	400	Tl	
Pb	208	193	3	490.17076	980.34152	ug/l	5000	Pb	
Bi	209	193	2	500.05393	1000.10786	ug/l	2000	Bi	
Th	232	193	3	498.95577	997.91154	ug/l	2000	Th	
U	238	193	3	509.69675	1019.39351	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5517741	0.91	5676390	97.2	80	120	Li (IS)	
Sc (IS)	45	2	146324	4.35	157398	93.0	80	120	Sc (IS)	
Sc (IS)	45	3	2777787	0.67	2954313	94.0	80	120	Sc (IS)	
Ge (IS)	72	2	348628	3.08	379042	92.0	80	120	Ge (IS)	
Ge (IS)	72	3	2303456	0.51	2413999	95.4	80	120	Ge (IS)	
In (IS)	115	3	14192759	0.48	15281059	92.9	80	120	In (IS)	
Ho (IS)	165	2	9971115	4.95	10495856	95.0	80	120	Ho (IS)	
Ho (IS)	165	3	16570265	0.71	16807844	98.6	80	120	Ho (IS)	
Ir (IS)	193	2	6280129	3.47	6895257	91.1	80	120	Ir (IS)	
Ir (IS)	193	3	8102416	0.62	8354862	97.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**MB 160-452612/1-A**
Data File Name	**109SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:52:13-06:00**
Type	**Sample**
VialNumber	**3107**
Dilution	**2**
Comment	**452612**
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	-0.18175	-0.36349	ug/l	1000	Li	
Be	9	6	3	0.00314	0.00628	ug/l	1000	Be	
B	11	6	3	1.68107	3.36215	ug/l	2000	B	
Na	23	45	2	6.08249	12.16498	ug/l	50000	Na	
Mg	24	45	2	1.91979	3.83958	ug/l	50000	Mg	
Al	27	45	2	15.78739	31.57477	ug/l	100000	Al	
P	31	45	2	11.53691	23.07382	ug/l	100000	P	
K	39	45	2	6.81237	13.62475	ug/l	100000	K	
Ca	44	45	3	12.61993	25.23985	ug/l	100000	Ca	
Ti	47	45	3	0.40221	0.80442	ug/l	2000	Ti	
V	51	45	2	0.05446	0.10891	ug/l	2000	V	
Cr	52	45	2	0.17547	0.35095	ug/l	2000	Cr	
Mn	55	72	2	0.20134	0.40267	ug/l	5000	Mn	
Fe	57	72	2	9.02568	18.05136	ug/l	100000	Fe	
Co	59	72	2	0.03140	0.06279	ug/l	2000	Co	
Ni	60	72	2	0.13401	0.26802	ug/l	2000	Ni	
Cu	63	72	2	0.35604	0.71207	ug/l	2000	Cu	
Zn	66	72	2	0.61034	1.22068	ug/l	5000	Zn	
As	75	72	2	0.14916	0.29832	ug/l	2000	As	
Se	78	72	2	0.11817	0.23634	ug/l	1000	Se	
Sr	88	72	3	0.06896	0.13793	ug/l	2000	Sr	
Y	89	72	2	-0.00650	-0.01300	ug/l	200	Y	
Zr	90	72	2	0.03945	0.07890	ug/l	2000	Zr	
Nb	93	72	2	-0.07663	-0.15326	ug/l	100	Nb	
Mo	95	72	3	0.27262	0.54524	ug/l	1000	Mo	
Ru	101	72	2	-0.00847	-0.01694	ug/l	200	Ru	
Rh	103	72	2	-0.00613	-0.01225	ug/l	200	Rh	
Pd	105	72	2	0.00149	0.00297	ug/l	20	Pd	
Ag	107	115	3	0.00891	0.01782	ug/l	400	Ag	
Cd	111	115	3	0.04203	0.08405	ug/l	2000	Cd	
Sn	118	115	3	7.48036	14.96071	ug/l	2000	Sn	
Sb	121	115	3	0.04070	0.08140	ug/l	1000	Sb	
Te	125	165	2	-0.00804	-0.01609	ug/l	200	Te	
Cs	133	165	2	-0.00379	-0.00758	ug/l	2000	Cs	
Ba	137	165	3	0.13079	0.26157	ug/l	5000	Ba	
La	139	165	2	-0.00327	-0.00655	ug/l	200	La	
Ce	140	165	2	0.00289	0.00578	ug/l	200	Ce	
Pr	141	165	2	-0.00522	-0.01044	ug/l	200	Pr	
Nd	146	165	2	-0.00062	-0.00124	ug/l	200	Nd	
Sm	147	165	3	0.00432	0.00863	ug/l	2000	Sm	
Hf	178	165	2	-0.00613	-0.01226	ug/l	200	Hf	
Ta	181	165	2	0.01263	0.02526	ug/l	200	Ta	
W	182	165	2	1.01772	2.03544	ug/l	2000	W	
Re	185	193	3	-0.00546	-0.01093	ug/l	200	Re	
Pt	195	193	2	0.00174	0.00347	ug/l	200	Pt	
Au	197	193	3	-0.02279	-0.04558	ug/l	2000	Au	
Tl	205	193	3	0.19726	0.39452	ug/l	400	Tl	
Pb	208	193	3	0.06734	0.13468	ug/l	5000	Pb	
Bi	209	193	2	0.11062	0.22123	ug/l	2000	Bi	
Th	232	193	3	0.11425	0.22849	ug/l	2000	Th	
U	238	193	3	0.03577	0.07155	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5689923	0.62	5676390	100.2	80	120	Li (IS)	
Sc (IS)	45	2	148730	0.61	157398	94.5	80	120	Sc (IS)	
Sc (IS)	45	3	2741500	0.45	2954313	92.8	80	120	Sc (IS)	
Ge (IS)	72	2	365700	0.45	379042	96.5	80	120	Ge (IS)	
Ge (IS)	72	3	2336241	0.82	2413999	96.8	80	120	Ge (IS)	
In (IS)	115	3	14689362	1.15	15281059	96.1	80	120	In (IS)	
Ho (IS)	165	2	10461723	0.24	10495856	99.7	80	120	Ho (IS)	
Ho (IS)	165	3	16853913	1.01	16807844	100.3	80	120	Ho (IS)	
Ir (IS)	193	2	6855893	0.80	6895257	99.4	80	120	Ir (IS)	
Ir (IS)	193	3	8316536	0.43	8354862	99.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**LCS 160-452612/2-A**
Data File Name	**110SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:58:55-06:00**
Type	**Sample**
VialNumber	**3108**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	47.52831	95.05663	ug/l	1000	Li	
Be	9	6	3	44.51330	89.02661	ug/l	1000	Be	
B	11	6	3	89.17088	178.34176	ug/l	2000	B	
Na	23	45	2	5118.34537	10236.69074	ug/l	50000	Na	
Mg	24	45	2	5206.63920	10413.27841	ug/l	50000	Mg	
Al	27	45	2	5244.53859	10489.07717	ug/l	100000	Al	
P	31	45	2	495.14040	990.28079	ug/l	100000	P	
K	39	45	2	4948.55147	9897.10295	ug/l	100000	K	
Ca	44	45	3	5067.88726	10135.77452	ug/l	100000	Ca	
Ti	47	45	3	502.97031	1005.94063	ug/l	2000	Ti	
V	51	45	2	486.84211	973.68422	ug/l	2000	V	
Cr	52	45	2	492.05032	984.10064	ug/l	2000	Cr	
Mn	55	72	2	523.32128	1046.64256	ug/l	5000	Mn	
Fe	57	72	2	5257.98324	10515.96649	ug/l	100000	Fe	
Co	59	72	2	522.30607	1044.61214	ug/l	2000	Co	
Ni	60	72	2	560.27372	1120.54745	ug/l	2000	Ni	
Cu	63	72	2	515.99121	1031.98241	ug/l	2000	Cu	
Zn	66	72	2	490.75189	981.50378	ug/l	5000	Zn	
As	75	72	2	491.16665	982.33331	ug/l	2000	As	
Se	78	72	2	247.44579	494.89159	ug/l	1000	Se	
Sr	88	72	3	504.92410	1009.84819	ug/l	2000	Sr	
Y	89	72	2	0.00041	0.00082	ug/l	200	Y	
Zr	90	72	2	523.98423	1047.96845	ug/l	2000	Zr	
Nb	93	72	2	0.15552	0.31104	ug/l	100	Nb	
Mo	95	72	3	251.00073	502.00146	ug/l	1000	Mo	
Ru	101	72	2	-0.00670	-0.01340	ug/l	200	Ru	
Rh	103	72	2	0.01582	0.03164	ug/l	200	Rh	
Pd	105	72	2	0.03315	0.06629	ug/l	20	Pd	
Ag	107	115	3	94.54164	189.08328	ug/l	400	Ag	
Cd	111	115	3	487.15285	974.30570	ug/l	2000	Cd	
Sn	118	115	3	492.43701	984.87402	ug/l	2000	Sn	
Sb	121	115	3	243.03054	486.06107	ug/l	1000	Sb	
Te	125	165	2	0.06519	0.13038	ug/l	200	Te	
Cs	133	165	2	-0.00221	-0.00441	ug/l	2000	Cs	
Ba	137	165	3	470.37254	940.74508	ug/l	5000	Ba	
La	139	165	2	0.72199	1.44397	ug/l	200	La	
Ce	140	165	2	0.01473	0.02945	ug/l	200	Ce	
Pr	141	165	2	-0.00115	-0.00230	ug/l	200	Pr	
Nd	146	165	2	0.00477	0.00954	ug/l	200	Nd	
Sm	147	165	3	493.19524	986.39049	ug/l	2000	Sm	
Hf	178	165	2	0.05434	0.10868	ug/l	200	Hf	
Ta	181	165	2	0.33909	0.67818	ug/l	200	Ta	
W	182	165	2	494.06307	988.12614	ug/l	2000	W	
Re	185	193	3	0.00450	0.00899	ug/l	200	Re	
Pt	195	193	2	0.00340	0.00681	ug/l	200	Pt	
Au	197	193	3	-0.01885	-0.03770	ug/l	2000	Au	
Tl	205	193	3	99.13150	198.26300	ug/l	400	Tl	
Pb	208	193	3	500.88149	1001.76298	ug/l	5000	Pb	
Bi	209	193	2	500.70511	1001.41022	ug/l	2000	Bi	
Th	232	193	3	504.53962	1009.07924	ug/l	2000	Th	
U	238	193	3	514.04620	1028.09241	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5549396	0.68	5676390	97.8	80	120	Li (IS)	
Sc (IS)	45	2	146941	1.36	157398	93.4	80	120	Sc (IS)	
Sc (IS)	45	3	2717765	0.54	2954313	92.0	80	120	Sc (IS)	
Ge (IS)	72	2	352209	0.46	379042	92.9	80	120	Ge (IS)	
Ge (IS)	72	3	2288576	0.84	2413999	94.8	80	120	Ge (IS)	
In (IS)	115	3	14460343	1.02	15281059	94.6	80	120	In (IS)	
Ho (IS)	165	2	10241907	0.65	10495856	97.6	80	120	Ho (IS)	
Ho (IS)	165	3	16781197	1.06	16807844	99.8	80	120	Ho (IS)	
Ir (IS)	193	2	6494034	0.43	6895257	94.2	80	120	Ir (IS)	
Ir (IS)	193	3	8153910	1.46	8354862	97.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCSSRM 160-452612/3-A**
Data File Name	**111SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:05:39-06:00**
Type	**Sample**
VialNumber	**3109**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	6.46746	64.67462	ug/l	1000	Li	
Be	9	6	3	102.74864	1027.48638	ug/l	1000	Be	
B	11	6	3	82.09984	820.99842	ug/l	2000	B	
Na	23	45	2	221.11616	2211.16162	ug/l	50000	Na	
Mg	24	45	2	2576.33820	25763.38197	ug/l	50000	Mg	
Al	27	45	2	8258.44522	82584.45222	ug/l	100000	Al	
P	31	45	2	627.89547	6278.95466	ug/l	100000	P	
K	39	45	2	2080.93003	20809.30034	ug/l	100000	K	
Ca	44	45	3	4951.91079	49519.10787	ug/l	100000	Ca	
Ti	47	45	3	434.56511	4345.65106	ug/l	2000	Ti	
V	51	45	2	58.06494	580.64937	ug/l	2000	V	
Cr	52	45	2	150.18756	1501.87561	ug/l	2000	Cr	
Mn	55	72	2	260.56134	2605.61335	ug/l	5000	Mn	
Fe	57	72	2	15665.52269	156655.22695	ug/l	100000	Fe	
Co	59	72	2	53.18639	531.86394	ug/l	2000	Co	
Ni	60	72	2	111.73404	1117.34038	ug/l	2000	Ni	
Cu	63	72	2	200.93777	2009.37765	ug/l	2000	Cu	
Zn	66	72	2	232.33707	2323.37066	ug/l	5000	Zn	
As	75	72	2	186.92008	1869.20079	ug/l	2000	As	
Se	78	72	2	225.38868	2253.88680	ug/l	1000	Se	
Sr	88	72	3	122.28094	1222.80944	ug/l	2000	Sr	
Y	89	72	2	9.23822	92.38220	ug/l	200	Y	
Zr	90	72	2	5.91121	59.11206	ug/l	2000	Zr	
Nb	93	72	2	0.75088	7.50875	ug/l	100	Nb	
Mo	95	72	3	130.23509	1302.35092	ug/l	1000	Mo	
Ru	101	72	2	-0.00828	-0.08281	ug/l	200	Ru	
Rh	103	72	2	0.00087	0.00871	ug/l	200	Rh	
Pd	105	72	2	0.01938	0.19380	ug/l	20	Pd	
Ag	107	115	3	48.97104	489.71044	ug/l	400	Ag	
Cd	111	115	3	233.48266	2334.82658	ug/l	2000	Cd	
Sn	118	115	3	123.57418	1235.74184	ug/l	2000	Sn	
Sb	121	115	3	61.25473	612.54731	ug/l	1000	Sb	
Te	125	165	2	0.03242	0.32425	ug/l	200	Te	
Cs	133	165	2	1.06938	10.69382	ug/l	2000	Cs	
Ba	137	165	3	271.56524	2715.65236	ug/l	5000	Ba	
La	139	165	2	28.59401	285.94009	ug/l	200	La	
Ce	140	165	2	62.98582	629.85818	ug/l	200	Ce	
Pr	141	165	2	6.91439	69.14391	ug/l	200	Pr	
Nd	146	165	2	26.48217	264.82173	ug/l	200	Nd	
Sm	147	165	3	4.57898	45.78979	ug/l	2000	Sm	
Hf	178	165	2	0.13966	1.39660	ug/l	200	Hf	
Ta	181	165	2	0.00474	0.04736	ug/l	200	Ta	
W	182	165	2	1.20632	12.06325	ug/l	2000	W	
Re	185	193	3	-0.00427	-0.04274	ug/l	200	Re	
Pt	195	193	2	-0.00050	-0.00497	ug/l	200	Pt	
Au	197	193	3	-0.01936	-0.19360	ug/l	2000	Au	
Tl	205	193	3	178.86662	1788.66620	ug/l	400	Tl	
Pb	208	193	3	136.78296	1367.82962	ug/l	5000	Pb	
Bi	209	193	2	0.66061	6.60608	ug/l	2000	Bi	
Th	232	193	3	13.68458	136.84575	ug/l	2000	Th	
U	238	193	3	108.72156	1087.21565	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5569183	1.05	5676390	98.1	80	120	Li (IS)	
Sc (IS)	45	2	148755	1.74	157398	94.5	80	120	Sc (IS)	
Sc (IS)	45	3	2860098	0.65	2954313	96.8	80	120	Sc (IS)	
Ge (IS)	72	2	352177	1.32	379042	92.9	80	120	Ge (IS)	
Ge (IS)	72	3	2254815	1.02	2413999	93.4	80	120	Ge (IS)	
In (IS)	115	3	14337295	1.22	15281059	93.8	80	120	In (IS)	
Ho (IS)	165	2	10304921	0.71	10495856	98.2	80	120	Ho (IS)	
Ho (IS)	165	3	16730024	0.97	16807844	99.5	80	120	Ho (IS)	
Ir (IS)	193	2	6712983	0.90	6895257	97.4	80	120	Ir (IS)	
Ir (IS)	193	3	8230293	0.19	8354862	98.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-20-A**
Data File Name	**112SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:12:22-06:00**
Type	**Sample**
VialNumber	**3110**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	16.05028	32.10056	ug/l	1000	Li	
Be	9	6	3	0.80267	1.60535	ug/l	1000	Be	
B	11	6	3	6.03777	12.07553	ug/l	2000	B	
Na	23	45	2	423.34445	846.68890	ug/l	50000	Na	
Mg	24	45	2	31281.57379	62563.14758	ug/l	50000	Mg	
Al	27	45	2	32765.59031	65531.18062	ug/l	100000	Al	
P	31	45	2	1999.96619	3999.93237	ug/l	100000	P	
K	39	45	2	7062.65133	14125.30266	ug/l	100000	K	
Ca	44	45	3	15179.05743	30358.11486	ug/l	100000	Ca	
Ti	47	45	3	1734.42278	3468.84556	ug/l	2000	Ti	
V	51	45	2	99.49213	198.98427	ug/l	2000	V	
Cr	52	45	2	19.71161	39.42323	ug/l	2000	Cr	
Mn	55	72	2	339.01067	678.02134	ug/l	5000	Mn	
Fe	57	72	2	77198.47467	154396.94934	ug/l	100000	Fe	
Co	59	72	2	21.30721	42.61441	ug/l	2000	Co	
Ni	60	72	2	45.58763	91.17526	ug/l	2000	Ni	
Cu	63	72	2	7842.34221	15684.68443	ug/l	2000	Cu	FAILED
Zn	66	72	2	109.11332	218.22663	ug/l	5000	Zn	
As	75	72	2	36.76138	73.52276	ug/l	2000	As	
Se	78	72	2	20.27069	40.54139	ug/l	1000	Se	
Sr	88	72	3	303.15441	606.30882	ug/l	2000	Sr	
Y	89	72	2	16.80182	33.60364	ug/l	200	Y	
Zr	90	72	2	4.92571	9.85142	ug/l	2000	Zr	
Nb	93	72	2	0.20112	0.40225	ug/l	100	Nb	
Mo	95	72	3	24.35815	48.71631	ug/l	1000	Mo	
Ru	101	72	2	-0.00632	-0.01264	ug/l	200	Ru	
Rh	103	72	2	-0.00696	-0.01393	ug/l	200	Rh	
Pd	105	72	2	0.03824	0.07649	ug/l	20	Pd	
Ag	107	115	3	0.47427	0.94854	ug/l	400	Ag	
Cd	111	115	3	0.16793	0.33585	ug/l	2000	Cd	
Sn	118	115	3	8.34880	16.69761	ug/l	2000	Sn	
Sb	121	115	3	1.76427	3.52854	ug/l	1000	Sb	
Te	125	165	2	0.92995	1.85989	ug/l	200	Te	
Cs	133	165	2	3.97378	7.94757	ug/l	2000	Cs	
Ba	137	165	3	328.47907	656.95815	ug/l	5000	Ba	
La	139	165	2	56.24549	112.49098	ug/l	200	La	
Ce	140	165	2	122.15855	244.31709	ug/l	200	Ce	
Pr	141	165	2	13.98667	27.97333	ug/l	200	Pr	
Nd	146	165	2	54.53926	109.07853	ug/l	200	Nd	
Sm	147	165	3	9.04959	18.09918	ug/l	2000	Sm	
Hf	178	165	2	0.14607	0.29213	ug/l	200	Hf	
Ta	181	165	2	0.03397	0.06795	ug/l	200	Ta	
W	182	165	2	3.20938	6.41876	ug/l	2000	W	
Re	185	193	3	0.02940	0.05881	ug/l	200	Re	
Pt	195	193	2	0.00585	0.01169	ug/l	200	Pt	
Au	197	193	3	0.03978	0.07955	ug/l	2000	Au	
Tl	205	193	3	0.99878	1.99755	ug/l	400	Tl	
Pb	208	193	3	17.98192	35.96383	ug/l	5000	Pb	
Bi	209	193	2	3.94069	7.88138	ug/l	2000	Bi	
Th	232	193	3	26.59401	53.18803	ug/l	2000	Th	
U	238	193	3	7.35303	14.70606	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5441005	5.65	5676390	95.9	80	120	Li (IS)	
Sc (IS)	45	2	168896	0.20	157398	107.3	80	120	Sc (IS)	
Sc (IS)	45	3	3212726	6.43	2954313	108.7	80	120	Sc (IS)	
Ge (IS)	72	2	368350	0.92	379042	97.2	80	120	Ge (IS)	
Ge (IS)	72	3	2319802	5.28	2413999	96.1	80	120	Ge (IS)	
In (IS)	115	3	14178155	7.55	15281059	92.8	80	120	In (IS)	
Ho (IS)	165	2	10324117	0.23	10495856	98.4	80	120	Ho (IS)	
Ho (IS)	165	3	16747755	7.36	16807844	99.6	80	120	Ho (IS)	
Ir (IS)	193	2	6486552	0.47	6895257	94.1	80	120	Ir (IS)	
Ir (IS)	193	3	7909684	7.15	8354862	94.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**113LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:19:07-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	4.79648	ug/l	5	95.9	80	120	Li	
Be	9	6	3	0.52633	ug/l	0.5	105.3	80	120	Be	
B	11	6	3	92.47312	ug/l	100	92.5	80	120	B	
Na	23	45	2	100.65142	ug/l	100	100.7	80	120	Na	
Mg	24	45	2	52.89622	ug/l	50	105.8	80	120	Mg	
Al	27	45	2	54.98604	ug/l	50	110.0	80	120	Al	
P	31	45	2	98.24837	ug/l	100	98.2	80	120	P	
K	39	45	2	97.59365	ug/l	100	97.6	80	120	K	
Ca	44	45	3	201.09829	ug/l	200	100.5	80	120	Ca	
Ti	47	45	3	5.28391	ug/l	5	105.7	80	120	Ti	
V	51	45	2	9.78358	ug/l	10	97.8	80	120	V	
Cr	52	45	2	9.75089	ug/l	10	97.5	80	120	Cr	
Mn	55	72	2	4.16647	ug/l	4	104.2	80	120	Mn	
Fe	57	72	2	56.17037	ug/l	50	112.3	80	120	Fe	
Co	59	72	2	2.13131	ug/l	2	106.6	80	120	Co	
Ni	60	72	2	5.68855	ug/l	5	113.8	80	120	Ni	
Cu	63	72	2	3.55964	ug/l	3	118.7	80	120	Cu	
Zn	66	72	2	21.99529	ug/l	20	110.0	80	120	Zn	
As	75	72	2	10.46685	ug/l	10	104.7	80	120	As	
Se	78	72	2	5.03344	ug/l	5	100.7	80	120	Se	
Sr	88	72	3	4.97974	ug/l	5	99.6	80	120	Sr	
Y	89	72	2	4.98741	ug/l	5	99.7	80	120	Y	
Zr	90	72	2	5.05033	ug/l	5	101.0	80	120	Zr	
Nb	93	72	2	18.94330	ug/l	25	75.8	80	120	Nb	FAILED
Mo	95	72	3	4.99629	ug/l	5	99.9	80	120	Mo	
Ru	101	72	2	10.31861	ug/l	10	103.2	80	120	Ru	
Rh	103	72	2	9.96673	ug/l	10	99.7	80	120	Rh	
Pd	105	72	2	0.55865	ug/l	0.5	111.7	80	120	Pd	
Ag	107	115	3	1.90118	ug/l	2	95.1	80	120	Ag	
Cd	111	115	3	0.52776	ug/l	0.5	105.6	80	120	Cd	
Sn	118	115	3	1.93557	ug/l	2	96.8	80	120	Sn	
Sb	121	115	3	4.61460	ug/l	5	92.3	80	120	Sb	
Te	125	165	2	9.42346	ug/l	10	94.2	80	120	Te	
Cs	133	165	2	0.95438	ug/l	1	95.4	80	120	Cs	
Ba	137	165	3	1.88455	ug/l	2	94.2	80	120	Ba	
La	139	165	2	1.86228	ug/l	2	93.1	80	120	La	
Ce	140	165	2	9.31356	ug/l	10	93.1	80	120	Ce	
Pr	141	165	2	1.89148	ug/l	2	94.6	80	120	Pr	
Nd	146	165	2	1.90690	ug/l	2	95.3	80	120	Nd	
Sm	147	165	3	9.52638	ug/l	10	95.3	80	120	Sm	
Hf	178	165	2	8.86352	ug/l	10	88.6	80	120	Hf	
Ta	181	165	2	7.41130	ug/l	10	74.1	80	120	Ta	FAILED
W	182	165	2	4.73491	ug/l	5	94.7	80	120	W	
Re	185	193	3	9.16156	ug/l	10	91.6	80	120	Re	
Pt	195	193	2	1.00627	ug/l	1	100.6	80	120	Pt	
Au	197	193	3	4.56001	ug/l	5	91.2	80	120	Au	
Tl	205	193	3	1.92807	ug/l	2	96.4	80	120	Tl	
Pb	208	193	3	2.84182	ug/l	3	94.7	80	120	Pb	
Bi	209	193	2	17.56806	ug/l	20	87.8	80	120	Bi	
Th	232	193	3	1.87472	ug/l	2	93.7	80	120	Th	
U	238	193	3	0.94406	ug/l	1	94.4	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5708733	0.40	5676390	100.6	80	120	Li (IS)	
Sc (IS)	45	2	155751	0.78	157398	99.0	80	120	Sc (IS)	
Sc (IS)	45	3	2835082	0.45	2954313	96.0	80	120	Sc (IS)	
Ge (IS)	72	2	376899	0.34	379042	99.4	80	120	Ge (IS)	
Ge (IS)	72	3	2353729	1.23	2413999	97.5	80	120	Ge (IS)	
In (IS)	115	3	14855700	0.45	15281059	97.2	80	120	In (IS)	
Ho (IS)	165	2	10518781	0.34	10495856	100.2	80	120	Ho (IS)	
Ho (IS)	165	3	16732672	0.64	16807844	99.6	80	120	Ho (IS)	
Ir (IS)	193	2	6904458	0.98	6895257	100.1	80	120	Ir (IS)	
Ir (IS)	193	3	8240046	0.61	8354862	98.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**114_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:25:49-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	97.55037	ug/l	100	97.6	90	110	Li	
Be	9	6	3	96.46417	ug/l	100	96.5	90	110	Be	
B	11	6	3	193.02431	ug/l	200	96.5	90	110	B	
Na	23	45	2	2507.43206	ug/l	2500	100.3	90	110	Na	
Mg	24	45	2	2541.59723	ug/l	2500	101.7	90	110	Mg	
Al	27	45	2	2465.49363	ug/l	2500	98.6	90	110	Al	
P	31	45	2	2515.07685	ug/l	2500	100.6	90	110	P	
K	39	45	2	2502.55211	ug/l	2500	100.1	90	110	K	
Ca	44	45	3	2526.86755	ug/l	2500	101.1	90	110	Ca	
Ti	47	45	3	101.09811	ug/l	100	101.1	90	110	Ti	
V	51	45	2	96.74799	ug/l	100	96.7	90	110	V	
Cr	52	45	2	100.17477	ug/l	100	100.2	90	110	Cr	
Mn	55	72	2	96.21438	ug/l	100	96.2	90	110	Mn	
Fe	57	72	2	2461.11235	ug/l	2500	98.4	90	110	Fe	
Co	59	72	2	102.32907	ug/l	100	102.3	90	110	Co	
Ni	60	72	2	103.00725	ug/l	100	103.0	90	110	Ni	
Cu	63	72	2	102.02355	ug/l	100	102.0	90	110	Cu	
Zn	66	72	2	102.75361	ug/l	100	102.8	90	110	Zn	
As	75	72	2	103.16416	ug/l	100	103.2	90	110	As	
Se	78	72	2	52.30686	ug/l	50	104.6	90	110	Se	
Sr	88	72	3	103.02808	ug/l	100	103.0	90	110	Sr	
Y	89	72	2	104.06324	ug/l	100	104.1	90	110	Y	
Zr	90	72	2	103.56954	ug/l	100	103.6	90	110	Zr	
Nb	93	72	2	53.06635	ug/l	50	106.1	90	110	Nb	
Mo	95	72	3	48.54371	ug/l	50	97.1	90	110	Mo	
Ru	101	72	2	98.87277	ug/l	100	98.9	90	110	Ru	
Rh	103	72	2	103.99312	ug/l	100	104.0	90	110	Rh	
Pd	105	72	2	10.60763	ug/l	10	106.1	90	110	Pd	
Ag	107	115	3	18.10093	ug/l	20	90.5	90	110	Ag	
Cd	111	115	3	93.34842	ug/l	100	93.3	90	110	Cd	
Sn	118	115	3	99.97217	ug/l	100	100.0	90	110	Sn	
Sb	121	115	3	50.67749	ug/l	50	101.4	90	110	Sb	
Te	125	165	2	99.11284	ug/l	100	99.1	90	110	Te	
Cs	133	165	2	99.14349	ug/l	100	99.1	90	110	Cs	
Ba	137	165	3	97.94512	ug/l	100	97.9	90	110	Ba	
La	139	165	2	99.00696	ug/l	100	99.0	90	110	La	
Ce	140	165	2	99.29695	ug/l	100	99.3	90	110	Ce	
Pr	141	165	2	99.42803	ug/l	100	99.4	90	110	Pr	
Nd	146	165	2	92.04301	ug/l	100	92.0	90	110	Nd	
Sm	147	165	3	101.38944	ug/l	100	101.4	90	110	Sm	
Hf	178	165	2	99.90752	ug/l	100	99.9	90	110	Hf	
Ta	181	165	2	101.88733	ug/l	100	101.9	90	110	Ta	
W	182	165	2	101.08825	ug/l	100	101.1	90	110	W	
Re	185	193	3	98.97476	ug/l	100	99.0	90	110	Re	
Pt	195	193	2	9.96175	ug/l	10	99.6	90	110	Pt	
Au	197	193	3	98.96516	ug/l	100	99.0	90	110	Au	
Tl	205	193	3	19.78953	ug/l	20	98.9	90	110	Tl	
Pb	208	193	3	100.15307	ug/l	100	100.2	90	110	Pb	
Bi	209	193	2	100.63455	ug/l	100	100.6	90	110	Bi	
Th	232	193	3	98.68919	ug/l	100	98.7	90	110	Th	
U	238	193	3	99.51417	ug/l	100	99.5	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5657225	0.58	5676390	99.7	80	120	Li (IS)	
Sc (IS)	45	2	152798	1.17	157398	97.1	80	120	Sc (IS)	
Sc (IS)	45	3	2826599	0.25	2954313	95.7	80	120	Sc (IS)	
Ge (IS)	72	2	384601	1.29	379042	101.5	80	120	Ge (IS)	
Ge (IS)	72	3	2355233	0.86	2413999	97.6	80	120	Ge (IS)	
In (IS)	115	3	14641647	1.29	15281059	95.8	80	120	In (IS)	
Ho (IS)	165	2	10511486	0.57	10495856	100.1	80	120	Ho (IS)	
Ho (IS)	165	3	16657200	0.95	16807844	99.1	80	120	Ho (IS)	
Ir (IS)	193	2	6837603	0.38	6895257	99.2	80	120	Ir (IS)	
Ir (IS)	193	3	8267939	1.15	8354862	99.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**115_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:32:34-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	-0.13353	ug/l	1.388	Li	
Be	9	6	3	0.00995	ug/l	0.7	Be	
B	11	6	3	2.67756	ug/l	20	B	
Na	23	45	2	0.95943	ug/l	30	Na	
Mg	24	45	2	0.47975	ug/l	11.18	Mg	
Al	27	45	2	0.44645	ug/l	25.8	Al	
P	31	45	2	0.28752	ug/l	16.46	P	
K	39	45	2	0.21923	ug/l	83.2	K	
Ca	44	45	3	-0.32604	ug/l	136.2	Ca	
Ti	47	45	3	0.01824	ug/l	4.2	Ti	
V	51	45	2	0.03093	ug/l	4.74	V	
Cr	52	45	2	0.01113	ug/l	6.52	Cr	
Mn	55	72	2	0.02278	ug/l	0.49	Mn	
Fe	57	72	2	0.75500	ug/l	40.7	Fe	
Co	59	72	2	0.02471	ug/l	0.434	Co	
Ni	60	72	2	0.02664	ug/l	0.8	Ni	
Cu	63	72	2	-0.19495	ug/l	0.902	Cu	
Zn	66	72	2	0.07604	ug/l	16.58	Zn	
As	75	72	2	0.05839	ug/l	2.36	As	
Se	78	72	2	-0.07478	ug/l	3.18	Se	
Sr	88	72	3	0.00557	ug/l	2	Sr	
Y	89	72	2	0.02116	ug/l	0.424	Y	
Zr	90	72	2	0.02277	ug/l	0.496	Zr	
Nb	93	72	2	0.28550	ug/l	4.62	Nb	
Mo	95	72	3	0.11657	ug/l	2	Mo	
Ru	101	72	2	0.01244	ug/l	2	Ru	
Rh	103	72	2	0.02117	ug/l	1.634	Rh	
Pd	105	72	2	0.00446	ug/l	0.08	Pd	
Ag	107	115	3	0.00069	ug/l	1.54	Ag	
Cd	111	115	3	0.01400	ug/l	0.4	Cd	
Sn	118	115	3	0.05224	ug/l	2	Sn	
Sb	121	115	3	0.02226	ug/l	3.34	Sb	
Te	125	165	2	0.02743	ug/l	1.072	Te	
Cs	133	165	2	0.01354	ug/l	0.106	Cs	
Ba	137	165	3	0.00784	ug/l	0.446	Ba	
La	139	165	2	0.01719	ug/l	0.102	La	
Ce	140	165	2	0.01648	ug/l	1.772	Ce	
Pr	141	165	2	0.01647	ug/l	0.084	Pr	
Nd	146	165	2	0.01834	ug/l	0.208	Nd	
Sm	147	165	3	0.00309	ug/l	0.652	Sm	
Hf	178	165	2	0.02967	ug/l	2.26	Hf	
Ta	181	165	2	0.03471	ug/l	1.46	Ta	
W	182	165	2	0.37522	ug/l	4	W	
Re	185	193	3	0.00198	ug/l	0.05	Re	
Pt	195	193	2	-0.00001	ug/l	0.12	Pt	
Au	197	193	3	0.13115	ug/l	1	Au	
Tl	205	193	3	0.06147	ug/l	1.1	Tl	
Pb	208	193	3	0.02134	ug/l	0.346	Pb	
Bi	209	193	2	0.05865	ug/l	1.464	Bi	
Th	232	193	3	0.03031	ug/l	1.104	Th	
U	238	193	3	0.00595	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5759465	0.35	5676390	101.5	80	120	Li (IS)	
Sc (IS)	45	2	153615	0.88	157398	97.6	80	120	Sc (IS)	
Sc (IS)	45	3	2841463	0.20	2954313	96.2	80	120	Sc (IS)	
Ge (IS)	72	2	364871	0.35	379042	96.3	80	120	Ge (IS)	
Ge (IS)	72	3	2318167	0.43	2413999	96.0	80	120	Ge (IS)	
In (IS)	115	3	14950314	0.76	15281059	97.8	80	120	In (IS)	
Ho (IS)	165	2	10498663	0.55	10495856	100.0	80	120	Ho (IS)	
Ho (IS)	165	3	16688993	1.12	16807844	99.3	80	120	Ho (IS)	
Ir (IS)	193	2	6925876	0.57	6895257	100.4	80	120	Ir (IS)	
Ir (IS)	193	3	8355508	0.55	8354862	100.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-20-A SD**
Data File Name	**116SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:39:18-06:00**
Type	**Sample**
VialNumber	**3111**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	2.99616	29.96163	ug/l	1000	Li	
Be	9	6	3	0.15319	1.53192	ug/l	1000	Be	
B	11	6	3	2.17884	21.78839	ug/l	2000	B	
Na	23	45	2	90.22389	902.23885	ug/l	50000	Na	
Mg	24	45	2	6721.57908	67215.79083	ug/l	50000	Mg	
Al	27	45	2	7121.25746	71212.57463	ug/l	100000	Al	
P	31	45	2	431.65051	4316.50507	ug/l	100000	P	
K	39	45	2	1526.85695	15268.56948	ug/l	100000	K	
Ca	44	45	3	3295.64906	32956.49059	ug/l	100000	Ca	
Ti	47	45	3	374.43352	3744.33522	ug/l	2000	Ti	
V	51	45	2	21.01552	210.15521	ug/l	2000	V	
Cr	52	45	2	4.22506	42.25061	ug/l	2000	Cr	
Mn	55	72	2	62.61914	626.19142	ug/l	5000	Mn	
Fe	57	72	2	15277.27768	152772.77683	ug/l	100000	Fe	
Co	59	72	2	4.16319	41.63186	ug/l	2000	Co	
Ni	60	72	2	9.06767	90.67670	ug/l	2000	Ni	
Cu	63	72	2	1598.43972	15984.39720	ug/l	2000	Cu	
Zn	66	72	2	22.53254	225.32538	ug/l	5000	Zn	
As	75	72	2	7.25884	72.58844	ug/l	2000	As	
Se	78	72	2	3.78197	37.81969	ug/l	1000	Se	
Sr	88	72	3	58.91555	589.15550	ug/l	2000	Sr	
Y	89	72	2	3.24906	32.49061	ug/l	200	Y	
Zr	90	72	2	1.00801	10.08008	ug/l	2000	Zr	
Nb	93	72	2	0.14740	1.47404	ug/l	100	Nb	
Mo	95	72	3	4.68207	46.82073	ug/l	1000	Mo	
Ru	101	72	2	-0.00344	-0.03441	ug/l	200	Ru	
Rh	103	72	2	-0.00071	-0.00709	ug/l	200	Rh	
Pd	105	72	2	0.00936	0.09364	ug/l	20	Pd	
Ag	107	115	3	0.08792	0.87922	ug/l	400	Ag	
Cd	111	115	3	0.02937	0.29367	ug/l	2000	Cd	
Sn	118	115	3	1.56851	15.68506	ug/l	2000	Sn	
Sb	121	115	3	0.33683	3.36831	ug/l	1000	Sb	
Te	125	165	2	0.22987	2.29867	ug/l	200	Te	
Cs	133	165	2	0.78026	7.80259	ug/l	2000	Cs	
Ba	137	165	3	59.22416	592.24165	ug/l	5000	Ba	
La	139	165	2	9.98428	99.84280	ug/l	200	La	
Ce	140	165	2	23.77531	237.75315	ug/l	200	Ce	
Pr	141	165	2	2.68967	26.89671	ug/l	200	Pr	
Nd	146	165	2	10.38392	103.83916	ug/l	200	Nd	
Sm	147	165	3	1.74221	17.42211	ug/l	2000	Sm	
Hf	178	165	2	0.10844	1.08435	ug/l	200	Hf	
Ta	181	165	2	0.02268	0.22682	ug/l	200	Ta	
W	182	165	2	0.62793	6.27930	ug/l	2000	W	
Re	185	193	3	0.00290	0.02903	ug/l	200	Re	
Pt	195	193	2	-0.00029	-0.00290	ug/l	200	Pt	
Au	197	193	3	0.03265	0.32653	ug/l	2000	Au	
Tl	205	193	3	0.15723	1.57229	ug/l	400	Tl	
Pb	208	193	3	3.42017	34.20174	ug/l	5000	Pb	
Bi	209	193	2	0.78033	7.80334	ug/l	2000	Bi	
Th	232	193	3	4.45080	44.50799	ug/l	2000	Th	
U	238	193	3	1.36821	13.68210	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5684131	0.58	5676390	100.1	80	120	Li (IS)	
Sc (IS)	45	2	156924	0.73	157398	99.7	80	120	Sc (IS)	
Sc (IS)	45	3	2904733	0.25	2954313	98.3	80	120	Sc (IS)	
Ge (IS)	72	2	373157	0.97	379042	98.4	80	120	Ge (IS)	
Ge (IS)	72	3	2345512	0.18	2413999	97.2	80	120	Ge (IS)	
In (IS)	115	3	14647889	1.68	15281059	95.9	80	120	In (IS)	
Ho (IS)	165	2	10475656	0.49	10495856	99.8	80	120	Ho (IS)	
Ho (IS)	165	3	16717682	0.83	16807844	99.5	80	120	Ho (IS)	
Ir (IS)	193	2	6680567	0.82	6895257	96.9	80	120	Ir (IS)	
Ir (IS)	193	3	8154871	0.78	8354862	97.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-20-B MS**
Data File Name	**117SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:46:03-06:00**
Type	**Sample**
VialNumber	**3112**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	61.39674	122.79348	ug/l	1000	Li	
Be	9	6	3	45.23917	90.47834	ug/l	1000	Be	
B	11	6	3	89.50586	179.01173	ug/l	2000	B	
Na	23	45	2	4782.14715	9564.29430	ug/l	50000	Na	
Mg	24	45	2	30617.84882	61235.69764	ug/l	50000	Mg	
Al	27	45	2	42127.39815	84254.79631	ug/l	100000	Al	
P	31	45	2	2955.33297	5910.66594	ug/l	100000	P	
K	39	45	2	9674.19467	19348.38934	ug/l	100000	K	
Ca	44	45	3	17233.66036	34467.32071	ug/l	100000	Ca	
Ti	47	45	3	1869.11549	3738.23099	ug/l	2000	Ti	
V	51	45	2	521.40522	1042.81044	ug/l	2000	V	
Cr	52	45	2	452.46759	904.93518	ug/l	2000	Cr	
Mn	55	72	2	831.86262	1663.72523	ug/l	5000	Mn	
Fe	57	72	2	96484.08403	192968.16807	ug/l	100000	Fe	
Co	59	72	2	527.79799	1055.59597	ug/l	2000	Co	
Ni	60	72	2	591.16680	1182.33360	ug/l	2000	Ni	
Cu	63	72	2	8886.88317	17773.76635	ug/l	2000	Cu	FAILED
Zn	66	72	2	655.98849	1311.97698	ug/l	5000	Zn	
As	75	72	2	534.29638	1068.59275	ug/l	2000	As	
Se	78	72	2	257.94650	515.89300	ug/l	1000	Se	
Sr	88	72	3	737.39849	1474.79697	ug/l	2000	Sr	
Y	89	72	2	15.65942	31.31884	ug/l	200	Y	
Zr	90	72	2	516.90393	1033.80786	ug/l	2000	Zr	
Nb	93	72	2	0.93644	1.87287	ug/l	100	Nb	
Mo	95	72	3	297.54797	595.09595	ug/l	1000	Mo	
Ru	101	72	2	-0.00866	-0.01732	ug/l	200	Ru	
Rh	103	72	2	0.01731	0.03462	ug/l	200	Rh	
Pd	105	72	2	0.06566	0.13131	ug/l	20	Pd	
Ag	107	115	3	92.87780	185.75560	ug/l	400	Ag	
Cd	111	115	3	479.43112	958.86223	ug/l	2000	Cd	
Sn	118	115	3	461.95824	923.91649	ug/l	2000	Sn	
Sb	121	115	3	163.90986	327.81972	ug/l	1000	Sb	
Te	125	165	2	1.36191	2.72381	ug/l	200	Te	
Cs	133	165	2	3.67472	7.34944	ug/l	2000	Cs	
Ba	137	165	3	723.24618	1446.49237	ug/l	5000	Ba	
La	139	165	2	55.22931	110.45862	ug/l	200	La	
Ce	140	165	2	117.21469	234.42938	ug/l	200	Ce	
Pr	141	165	2	13.32768	26.65537	ug/l	200	Pr	
Nd	146	165	2	51.65984	103.31968	ug/l	200	Nd	
Sm	147	165	3	500.04103	1000.08206	ug/l	2000	Sm	
Hf	178	165	2	0.52289	1.04577	ug/l	200	Hf	
Ta	181	165	2	0.31111	0.62223	ug/l	200	Ta	
W	182	165	2	411.64688	823.29376	ug/l	2000	W	
Re	185	193	3	0.02946	0.05892	ug/l	200	Re	
Pt	195	193	2	0.00411	0.00823	ug/l	200	Pt	
Au	197	193	3	0.05493	0.10985	ug/l	2000	Au	
Tl	205	193	3	97.39056	194.78112	ug/l	400	Tl	
Pb	208	193	3	503.55885	1007.11771	ug/l	5000	Pb	
Bi	209	193	2	493.68119	987.36239	ug/l	2000	Bi	
Th	232	193	3	519.99767	1039.99535	ug/l	2000	Th	
U	238	193	3	506.58825	1013.17649	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5487997	0.12	5676390	96.7	80	120	Li (IS)	
Sc (IS)	45	2	173566	1.06	157398	110.3	80	120	Sc (IS)	
Sc (IS)	45	3	3217324	1.23	2954313	108.9	80	120	Sc (IS)	
Ge (IS)	72	2	358901	0.45	379042	94.7	80	120	Ge (IS)	
Ge (IS)	72	3	2287914	0.51	2413999	94.8	80	120	Ge (IS)	
In (IS)	115	3	14171129	0.40	15281059	92.7	80	120	In (IS)	
Ho (IS)	165	2	10195080	0.68	10495856	97.1	80	120	Ho (IS)	
Ho (IS)	165	3	16593147	0.96	16807844	98.7	80	120	Ho (IS)	
Ir (IS)	193	2	6326853	1.03	6895257	91.8	80	120	Ir (IS)	
Ir (IS)	193	3	7948731	0.15	8354862	95.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-20-C MSD**
Data File Name	**118SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:52:47-06:00**
Type	**Sample**
VialNumber	**3201**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	67.85858	135.71715	ug/l	1000	Li	
Be	9	6	3	46.66515	93.33029	ug/l	1000	Be	
B	11	6	3	93.73457	187.46913	ug/l	2000	B	
Na	23	45	2	4681.55867	9363.11735	ug/l	50000	Na	
Mg	24	45	2	37138.95073	74277.90145	ug/l	50000	Mg	
Al	27	45	2	48078.60178	96157.20355	ug/l	100000	Al	
P	31	45	2	2960.92416	5921.84832	ug/l	100000	P	
K	39	45	2	12058.33657	24116.67314	ug/l	100000	K	
Ca	44	45	3	21276.82587	42553.65175	ug/l	100000	Ca	
Ti	47	45	3	2620.47218	5240.94435	ug/l	2000	Ti	FAILED
V	51	45	2	530.80669	1061.61338	ug/l	2000	V	
Cr	52	45	2	433.26609	866.53217	ug/l	2000	Cr	
Mn	55	72	2	888.14281	1776.28562	ug/l	5000	Mn	
Fe	57	72	2	108522.51610	217045.03219	ug/l	100000	Fe	FAILED
Co	59	72	2	533.85158	1067.70317	ug/l	2000	Co	
Ni	60	72	2	600.02128	1200.04257	ug/l	2000	Ni	
Cu	63	72	2	9912.28118	19824.56236	ug/l	2000	Cu	FAILED
Zn	66	72	2	665.21684	1330.43368	ug/l	5000	Zn	
As	75	72	2	531.47665	1062.95330	ug/l	2000	As	
Se	78	72	2	264.49386	528.98771	ug/l	1000	Se	
Sr	88	72	3	870.65792	1741.31584	ug/l	2000	Sr	
Y	89	72	2	20.74820	41.49640	ug/l	200	Y	
Zr	90	72	2	523.66120	1047.32240	ug/l	2000	Zr	
Nb	93	72	2	0.87952	1.75904	ug/l	100	Nb	
Mo	95	72	3	305.81568	611.63136	ug/l	1000	Mo	
Ru	101	72	2	-0.00830	-0.01661	ug/l	200	Ru	
Rh	103	72	2	0.01727	0.03455	ug/l	200	Rh	
Pd	105	72	2	0.08488	0.16976	ug/l	20	Pd	
Ag	107	115	3	95.27392	190.54784	ug/l	400	Ag	
Cd	111	115	3	487.17750	974.35500	ug/l	2000	Cd	
Sn	118	115	3	473.84506	947.69013	ug/l	2000	Sn	
Sb	121	115	3	156.95067	313.90133	ug/l	1000	Sb	
Te	125	165	2	2.13528	4.27056	ug/l	200	Te	
Cs	133	165	2	4.90464	9.80928	ug/l	2000	Cs	
Ba	137	165	3	857.88121	1715.76243	ug/l	5000	Ba	
La	139	165	2	73.54255	147.08510	ug/l	200	La	
Ce	140	165	2	153.20038	306.40076	ug/l	200	Ce	
Pr	141	165	2	18.64140	37.28280	ug/l	200	Pr	
Nd	146	165	2	67.06825	134.13651	ug/l	200	Nd	
Sm	147	165	3	506.94292	1013.88585	ug/l	2000	Sm	
Hf	178	165	2	0.40158	0.80316	ug/l	200	Hf	
Ta	181	165	2	0.42245	0.84489	ug/l	200	Ta	
W	182	165	2	406.54123	813.08246	ug/l	2000	W	
Re	185	193	3	0.12462	0.24923	ug/l	200	Re	
Pt	195	193	2	0.00279	0.00558	ug/l	200	Pt	
Au	197	193	3	0.09430	0.18859	ug/l	2000	Au	
Tl	205	193	3	100.19231	200.38462	ug/l	400	Tl	
Pb	208	193	3	516.86378	1033.72757	ug/l	5000	Pb	
Bi	209	193	2	505.85881	1011.71763	ug/l	2000	Bi	
Th	232	193	3	542.40174	1084.80348	ug/l	2000	Th	
U	238	193	3	522.38391	1044.76782	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5367040	0.10	5676390	94.6	80	120	Li (IS)	
Sc (IS)	45	2	182460	0.89	157398	115.9	80	120	Sc (IS)	
Sc (IS)	45	3	3333481	0.76	2954313	112.8	80	120	Sc (IS)	
Ge (IS)	72	2	363356	0.37	379042	95.9	80	120	Ge (IS)	
Ge (IS)	72	3	2264122	0.03	2413999	93.8	80	120	Ge (IS)	
In (IS)	115	3	13837421	1.53	15281059	90.6	80	120	In (IS)	
Ho (IS)	165	2	10219824	0.08	10495856	97.4	80	120	Ho (IS)	
Ho (IS)	165	3	16371898	0.61	16807844	97.4	80	120	Ho (IS)	
Ir (IS)	193	2	6353061	0.83	6895257	92.1	80	120	Ir (IS)	
Ir (IS)	193	3	7725081	0.69	8354862	92.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-21-A**
Data File Name	**119SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:59:35-06:00**
Type	**Sample**
VialNumber	**3202**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	9.95437	19.90875	ug/l	1000	Li	
Be	9	6	3	0.61835	1.23669	ug/l	1000	Be	
B	11	6	3	6.88613	13.77227	ug/l	2000	B	
Na	23	45	2	291.78439	583.56878	ug/l	50000	Na	
Mg	24	45	2	21914.99583	43829.99167	ug/l	50000	Mg	
Al	27	45	2	26368.89084	52737.78168	ug/l	100000	Al	
P	31	45	2	1347.26018	2694.52037	ug/l	100000	P	
K	39	45	2	4355.52490	8711.04980	ug/l	100000	K	
Ca	44	45	3	10482.11442	20964.22884	ug/l	100000	Ca	
Ti	47	45	3	646.33370	1292.66739	ug/l	2000	Ti	
V	51	45	2	75.05660	150.11319	ug/l	2000	V	
Cr	52	45	2	27.39467	54.78934	ug/l	2000	Cr	
Mn	55	72	2	287.01073	574.02146	ug/l	5000	Mn	
Fe	57	72	2	69999.91523	139999.83045	ug/l	100000	Fe	
Co	59	72	2	15.79021	31.58041	ug/l	2000	Co	
Ni	60	72	2	33.45316	66.90632	ug/l	2000	Ni	
Cu	63	72	2	5464.28165	10928.56329	ug/l	2000	Cu	FAILED
Zn	66	72	2	77.77001	155.54001	ug/l	5000	Zn	
As	75	72	2	30.80649	61.61298	ug/l	2000	As	
Se	78	72	2	12.14632	24.29264	ug/l	1000	Se	
Sr	88	72	3	179.68406	359.36812	ug/l	2000	Sr	
Y	89	72	2	15.09123	30.18245	ug/l	200	Y	
Zr	90	72	2	4.15377	8.30754	ug/l	2000	Zr	
Nb	93	72	2	0.21112	0.42223	ug/l	100	Nb	
Mo	95	72	3	16.87521	33.75042	ug/l	1000	Mo	
Ru	101	72	2	-0.00900	-0.01800	ug/l	200	Ru	
Rh	103	72	2	-0.00591	-0.01181	ug/l	200	Rh	
Pd	105	72	2	0.02664	0.05328	ug/l	20	Pd	
Ag	107	115	3	0.30475	0.60949	ug/l	400	Ag	
Cd	111	115	3	0.13196	0.26392	ug/l	2000	Cd	
Sn	118	115	3	7.78397	15.56794	ug/l	2000	Sn	
Sb	121	115	3	1.73936	3.47872	ug/l	1000	Sb	
Te	125	165	2	0.72236	1.44472	ug/l	200	Te	
Cs	133	165	2	4.02996	8.05991	ug/l	2000	Cs	
Ba	137	165	3	203.22310	406.44621	ug/l	5000	Ba	
La	139	165	2	51.89673	103.79345	ug/l	200	La	
Ce	140	165	2	111.12195	222.24389	ug/l	200	Ce	
Pr	141	165	2	12.70388	25.40777	ug/l	200	Pr	
Nd	146	165	2	50.04156	100.08313	ug/l	200	Nd	
Sm	147	165	3	8.62481	17.24961	ug/l	2000	Sm	
Hf	178	165	2	0.12724	0.25448	ug/l	200	Hf	
Ta	181	165	2	0.14007	0.28015	ug/l	200	Ta	
W	182	165	2	3.82514	7.65027	ug/l	2000	W	
Re	185	193	3	0.00429	0.00857	ug/l	200	Re	
Pt	195	193	2	0.00380	0.00761	ug/l	200	Pt	
Au	197	193	3	0.02524	0.05047	ug/l	2000	Au	
Tl	205	193	3	0.78922	1.57843	ug/l	400	Tl	
Pb	208	193	3	13.28198	26.56396	ug/l	5000	Pb	
Bi	209	193	2	2.77749	5.55499	ug/l	2000	Bi	
Th	232	193	3	24.40573	48.81146	ug/l	2000	Th	
U	238	193	3	8.68958	17.37915	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5538171	1.13	5676390	97.6	80	120	Li (IS)	
Sc (IS)	45	2	166537	3.57	157398	105.8	80	120	Sc (IS)	
Sc (IS)	45	3	3047189	0.22	2954313	103.1	80	120	Sc (IS)	
Ge (IS)	72	2	375199	2.05	379042	99.0	80	120	Ge (IS)	
Ge (IS)	72	3	2319426	0.27	2413999	96.1	80	120	Ge (IS)	
In (IS)	115	3	14263877	1.46	15281059	93.3	80	120	In (IS)	
Ho (IS)	165	2	10564967	3.00	10495856	100.7	80	120	Ho (IS)	
Ho (IS)	165	3	16526942	1.28	16807844	98.3	80	120	Ho (IS)	
Ir (IS)	193	2	6649612	2.01	6895257	96.4	80	120	Ir (IS)	
Ir (IS)	193	3	7951408	1.02	8354862	95.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-22-A**
Data File Name	**120SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T05:06:17-06:00**
Type	**Sample**
VialNumber	**3203**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	10.88207	21.76414	ug/l	1000	Li	
Be	9	6	3	1.10474	2.20948	ug/l	1000	Be	
B	11	6	3	3.95760	7.91521	ug/l	2000	B	
Na	23	45	2	379.15939	758.31877	ug/l	50000	Na	
Mg	24	45	2	23724.34948	47448.69897	ug/l	50000	Mg	
Al	27	45	2	24983.07556	49966.15111	ug/l	100000	Al	
P	31	45	2	2704.83950	5409.67900	ug/l	100000	P	
K	39	45	2	6764.19960	13528.39920	ug/l	100000	K	
Ca	44	45	3	22069.88689	44139.77378	ug/l	100000	Ca	
Ti	47	45	3	1636.02340	3272.04679	ug/l	2000	Ti	
V	51	45	2	63.81381	127.62761	ug/l	2000	V	
Cr	52	45	2	20.82061	41.64123	ug/l	2000	Cr	
Mn	55	72	2	262.80460	525.60920	ug/l	5000	Mn	
Fe	57	72	2	48451.45164	96902.90328	ug/l	100000	Fe	
Co	59	72	2	47.73298	95.46597	ug/l	2000	Co	
Ni	60	72	2	68.04793	136.09586	ug/l	2000	Ni	
Cu	63	72	2	18538.51841	37077.03682	ug/l	2000	Cu	FAILED
Zn	66	72	2	94.24432	188.48864	ug/l	5000	Zn	
As	75	72	2	6.34410	12.68821	ug/l	2000	As	
Se	78	72	2	6.50816	13.01632	ug/l	1000	Se	
Sr	88	72	3	159.60292	319.20584	ug/l	2000	Sr	
Y	89	72	2	19.70553	39.41107	ug/l	200	Y	
Zr	90	72	2	6.59088	13.18176	ug/l	2000	Zr	
Nb	93	72	2	0.63632	1.27264	ug/l	100	Nb	
Mo	95	72	3	6.84042	13.68084	ug/l	1000	Mo	
Ru	101	72	2	-0.00788	-0.01576	ug/l	200	Ru	
Rh	103	72	2	-0.00496	-0.00993	ug/l	200	Rh	
Pd	105	72	2	0.03502	0.07004	ug/l	20	Pd	
Ag	107	115	3	0.37692	0.75384	ug/l	400	Ag	
Cd	111	115	3	0.16376	0.32753	ug/l	2000	Cd	
Sn	118	115	3	7.85279	15.70558	ug/l	2000	Sn	
Sb	121	115	3	0.75908	1.51816	ug/l	1000	Sb	
Te	125	165	2	0.66223	1.32447	ug/l	200	Te	
Cs	133	165	2	2.77244	5.54487	ug/l	2000	Cs	
Ba	137	165	3	165.78303	331.56605	ug/l	5000	Ba	
La	139	165	2	23.56873	47.13745	ug/l	200	La	
Ce	140	165	2	53.09950	106.19901	ug/l	200	Ce	
Pr	141	165	2	6.40471	12.80942	ug/l	200	Pr	
Nd	146	165	2	28.18088	56.36176	ug/l	200	Nd	
Sm	147	165	3	6.01661	12.03322	ug/l	2000	Sm	
Hf	178	165	2	0.24235	0.48470	ug/l	200	Hf	
Ta	181	165	2	0.10454	0.20907	ug/l	200	Ta	
W	182	165	2	2.01602	4.03204	ug/l	2000	W	
Re	185	193	3	0.03745	0.07489	ug/l	200	Re	
Pt	195	193	2	0.00495	0.00990	ug/l	200	Pt	
Au	197	193	3	0.25582	0.51164	ug/l	2000	Au	
Tl	205	193	3	0.33594	0.67188	ug/l	400	Tl	
Pb	208	193	3	6.57197	13.14393	ug/l	5000	Pb	
Bi	209	193	2	1.83677	3.67354	ug/l	2000	Bi	
Th	232	193	3	35.22454	70.44908	ug/l	2000	Th	
U	238	193	3	22.26457	44.52913	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5353257	0.43	5676390	94.3	80	120	Li (IS)	
Sc (IS)	45	2	165038	0.18	157398	104.9	80	120	Sc (IS)	
Sc (IS)	45	3	3084248	0.90	2954313	104.4	80	120	Sc (IS)	
Ge (IS)	72	2	372487	0.57	379042	98.3	80	120	Ge (IS)	
Ge (IS)	72	3	2321006	0.80	2413999	96.1	80	120	Ge (IS)	
In (IS)	115	3	14365433	0.75	15281059	94.0	80	120	In (IS)	
Ho (IS)	165	2	10479494	0.61	10495856	99.8	80	120	Ho (IS)	
Ho (IS)	165	3	16721131	0.46	16807844	99.5	80	120	Ho (IS)	
Ir (IS)	193	2	6573402	1.10	6895257	95.3	80	120	Ir (IS)	
Ir (IS)	193	3	7983560	1.30	8354862	95.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-130833-A-1-G**
Data File Name	**121SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T05:13:05-06:00**
Type	**Sample**
VialNumber	**3204**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	66.05179	132.10358	ug/l	1000	Li	
Be	9	6	3	0.43412	0.86825	ug/l	1000	Be	
B	11	6	3	130.06396	260.12793	ug/l	2000	B	
Na	23	45	2	10937.75602	21875.51203	ug/l	50000	Na	
Mg	24	45	2	35273.98528	70547.97056	ug/l	50000	Mg	
Al	27	45	2	140629.39806	281258.79611	ug/l	100000	Al	FAILED
P	31	45	2	189.12847	378.25694	ug/l	100000	P	
K	39	45	2	1525.42727	3050.85454	ug/l	100000	K	
Ca	44	45	3	587515.98780	1175031.97560	ug/l	100000	Ca	FAILED
Ti	47	45	3	165.18585	330.37170	ug/l	2000	Ti	
V	51	45	2	34.63067	69.26135	ug/l	2000	V	
Cr	52	45	2	11932.90189	23865.80378	ug/l	2000	Cr	FAILED
Mn	55	72	2	1630.49189	3260.98378	ug/l	5000	Mn	
Fe	57	72	2	78942.74460	157885.48920	ug/l	100000	Fe	
Co	59	72	2	64.80917	129.61834	ug/l	2000	Co	
Ni	60	72	2	116.82494	233.64988	ug/l	2000	Ni	
Cu	63	72	2	67.38492	134.76984	ug/l	2000	Cu	
Zn	66	72	2	19.20496	38.40991	ug/l	5000	Zn	
As	75	72	2	3.79901	7.59803	ug/l	2000	As	
Se	78	72	2	2.14404	4.28809	ug/l	1000	Se	
Sr	88	72	3	1155.15084	2310.30168	ug/l	2000	Sr	
Y	89	72	2	86.29010	172.58021	ug/l	200	Y	
Zr	90	72	2	528.14842	1056.29683	ug/l	2000	Zr	
Nb	93	72	2	1.81500	3.63000	ug/l	100	Nb	
Mo	95	72	3	25.71445	51.42890	ug/l	1000	Mo	
Ru	101	72	2	0.00556	0.01112	ug/l	200	Ru	
Rh	103	72	2	0.01081	0.02163	ug/l	200	Rh	
Pd	105	72	2	0.15405	0.30810	ug/l	20	Pd	
Ag	107	115	3	0.77407	1.54815	ug/l	400	Ag	
Cd	111	115	3	0.41473	0.82946	ug/l	2000	Cd	
Sn	118	115	3	14.61887	29.23773	ug/l	2000	Sn	
Sb	121	115	3	3.32335	6.64670	ug/l	1000	Sb	
Te	125	165	2	0.10731	0.21461	ug/l	200	Te	
Cs	133	165	2	0.12570	0.25140	ug/l	2000	Cs	
Ba	137	165	3	219.88074	439.76147	ug/l	5000	Ba	
La	139	165	2	74.62816	149.25631	ug/l	200	La	
Ce	140	165	2	29.98710	59.97420	ug/l	200	Ce	
Pr	141	165	2	2.34746	4.69492	ug/l	200	Pr	
Nd	146	165	2	8.57172	17.14345	ug/l	200	Nd	
Sm	147	165	3	2.19459	4.38917	ug/l	2000	Sm	
Hf	178	165	2	10.75083	21.50166	ug/l	200	Hf	
Ta	181	165	2	0.17276	0.34553	ug/l	200	Ta	
W	182	165	2	4.49815	8.99631	ug/l	2000	W	
Re	185	193	3	0.00654	0.01308	ug/l	200	Re	
Pt	195	193	2	0.03502	0.07003	ug/l	200	Pt	
Au	197	193	3	-0.00972	-0.01944	ug/l	2000	Au	
Tl	205	193	3	0.08241	0.16482	ug/l	400	Tl	
Pb	208	193	3	367.21862	734.43724	ug/l	5000	Pb	
Bi	209	193	2	0.24776	0.49552	ug/l	2000	Bi	
Th	232	193	3	16.05506	32.11013	ug/l	2000	Th	
U	238	193	3	8.47401	16.94802	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	4612214	3.01	5676390	81.3	80	120	Li (IS)	
Sc (IS)	45	2	158343	0.93	157398	100.6	80	120	Sc (IS)	
Sc (IS)	45	3	2911323	6.10	2954313	98.5	80	120	Sc (IS)	
Ge (IS)	72	2	324718	1.76	379042	85.7	80	120	Ge (IS)	
Ge (IS)	72	3	2087305	3.67	2413999	86.5	80	120	Ge (IS)	
In (IS)	115	3	13399055	5.39	15281059	87.7	80	120	In (IS)	
Ho (IS)	165	2	9187583	1.17	10495856	87.5	80	120	Ho (IS)	
Ho (IS)	165	3	15595562	6.09	16807844	92.8	80	120	Ho (IS)	
Ir (IS)	193	2	5633132	0.13	6895257	81.7	80	120	Ir (IS)	
Ir (IS)	193	3	7373739	3.84	8354862	88.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-130833-A-2-F**
Data File Name	**122SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T05:19:54-06:00**
Type	**Sample**
VialNumber	**3205**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	10.19335	101.93352	ug/l	1000	Li	
Be	9	6	3	0.53023	5.30226	ug/l	1000	Be	
B	11	6	3	9.62412	96.24119	ug/l	2000	B	
Na	23	45	2	858.69667	8586.96670	ug/l	50000	Na	
Mg	24	45	2	3378.09442	33780.94421	ug/l	50000	Mg	
Al	27	45	2	65542.42063	655424.20632	ug/l	100000	Al	
P	31	45	2	330.32645	3303.26447	ug/l	100000	P	
K	39	45	2	2989.39569	29893.95687	ug/l	100000	K	
Ca	44	45	3	7404.50060	74045.00600	ug/l	100000	Ca	
Ti	47	45	3	492.91420	4929.14199	ug/l	2000	Ti	
V	51	45	2	26.71244	267.12437	ug/l	2000	V	
Cr	52	45	2	19.96948	199.69480	ug/l	2000	Cr	
Mn	55	72	2	380.03800	3800.38002	ug/l	5000	Mn	
Fe	57	72	2	18004.69728	180046.97277	ug/l	100000	Fe	
Co	59	72	2	5.09801	50.98008	ug/l	2000	Co	
Ni	60	72	2	15.59584	155.95836	ug/l	2000	Ni	
Cu	63	72	2	107.26077	1072.60767	ug/l	2000	Cu	
Zn	66	72	2	424.03956	4240.39559	ug/l	5000	Zn	
As	75	72	2	10.81628	108.16276	ug/l	2000	As	
Se	78	72	2	0.97060	9.70603	ug/l	1000	Se	
Sr	88	72	3	164.72278	1647.22781	ug/l	2000	Sr	
Y	89	72	2	4.54676	45.46758	ug/l	200	Y	
Zr	90	72	2	9.23597	92.35966	ug/l	2000	Zr	
Nb	93	72	2	2.87920	28.79200	ug/l	100	Nb	
Mo	95	72	3	6.49322	64.93216	ug/l	1000	Mo	
Ru	101	72	2	-0.00539	-0.05391	ug/l	200	Ru	
Rh	103	72	2	-0.00025	-0.00246	ug/l	200	Rh	
Pd	105	72	2	0.01461	0.14607	ug/l	20	Pd	
Ag	107	115	3	0.36329	3.63287	ug/l	400	Ag	
Cd	111	115	3	0.42158	4.21579	ug/l	2000	Cd	
Sn	118	115	3	62.90950	629.09500	ug/l	2000	Sn	
Sb	121	115	3	0.65803	6.58030	ug/l	1000	Sb	
Te	125	165	2	0.05516	0.55157	ug/l	200	Te	
Cs	133	165	2	2.48630	24.86298	ug/l	2000	Cs	
Ba	137	165	3	222.55587	2225.55873	ug/l	5000	Ba	
La	139	165	2	8.92804	89.28043	ug/l	200	La	
Ce	140	165	2	17.75203	177.52025	ug/l	200	Ce	
Pr	141	165	2	2.16257	21.62568	ug/l	200	Pr	
Nd	146	165	2	8.31880	83.18799	ug/l	200	Nd	
Sm	147	165	3	1.48319	14.83190	ug/l	2000	Sm	
Hf	178	165	2	0.25378	2.53784	ug/l	200	Hf	
Ta	181	165	2	0.32579	3.25793	ug/l	200	Ta	
W	182	165	2	1.19186	11.91864	ug/l	2000	W	
Re	185	193	3	-0.00388	-0.03876	ug/l	200	Re	
Pt	195	193	2	0.00320	0.03200	ug/l	200	Pt	
Au	197	193	3	-0.01967	-0.19668	ug/l	2000	Au	
Tl	205	193	3	0.18527	1.85273	ug/l	400	Tl	
Pb	208	193	3	121.34052	1213.40520	ug/l	5000	Pb	
Bi	209	193	2	0.19799	1.97986	ug/l	2000	Bi	
Th	232	193	3	2.63204	26.32044	ug/l	2000	Th	
U	238	193	3	5201.04672	52010.46722	ug/l	2000	U	FAILED

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5451475	1.06	5676390	96.0	80	120	Li (IS)	
Sc (IS)	45	2	155387	0.47	157398	98.7	80	120	Sc (IS)	
Sc (IS)	45	3	2965338	0.32	2954313	100.4	80	120	Sc (IS)	
Ge (IS)	72	2	357449	0.23	379042	94.3	80	120	Ge (IS)	
Ge (IS)	72	3	2267927	1.16	2413999	93.9	80	120	Ge (IS)	
In (IS)	115	3	14636800	1.26	15281059	95.8	80	120	In (IS)	
Ho (IS)	165	2	10502452	0.16	10495856	100.1	80	120	Ho (IS)	
Ho (IS)	165	3	16767811	1.76	16807844	99.8	80	120	Ho (IS)	
Ir (IS)	193	2	6756312	0.42	6895257	98.0	80	120	Ir (IS)	
Ir (IS)	193	3	8286556	0.78	8354862	99.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**MB 160-452936/1-A**
Data File Name	**123SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T05:26:36-06:00**
Type	**Sample**
VialNumber	**3206**
Dilution	**2**
Comment	**452936**
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.04658	0.09317	ug/l	1000	Li	
Be	9	6	3	-0.00389	-0.00777	ug/l	1000	Be	
B	11	6	3	1.31091	2.62182	ug/l	2000	B	
Na	23	45	2	5.19968	10.39935	ug/l	50000	Na	
Mg	24	45	2	1.27466	2.54933	ug/l	50000	Mg	
Al	27	45	2	5.85337	11.70674	ug/l	100000	Al	
P	31	45	2	7.07454	14.14907	ug/l	100000	P	
K	39	45	2	-1.41934	-2.83867	ug/l	100000	K	
Ca	44	45	3	17.83296	35.66592	ug/l	100000	Ca	
Ti	47	45	3	0.26856	0.53711	ug/l	2000	Ti	
V	51	45	2	0.07006	0.14013	ug/l	2000	V	
Cr	52	45	2	0.08466	0.16933	ug/l	2000	Cr	
Mn	55	72	2	0.15634	0.31268	ug/l	5000	Mn	
Fe	57	72	2	2.24657	4.49313	ug/l	100000	Fe	
Co	59	72	2	-0.00410	-0.00820	ug/l	2000	Co	
Ni	60	72	2	0.06814	0.13628	ug/l	2000	Ni	
Cu	63	72	2	0.32573	0.65147	ug/l	2000	Cu	
Zn	66	72	2	0.97561	1.95121	ug/l	5000	Zn	
As	75	72	2	0.02791	0.05583	ug/l	2000	As	
Se	78	72	2	-0.05094	-0.10188	ug/l	1000	Se	
Sr	88	72	3	0.04074	0.08148	ug/l	2000	Sr	
Y	89	72	2	-0.00468	-0.00935	ug/l	200	Y	
Zr	90	72	2	0.02385	0.04770	ug/l	2000	Zr	
Nb	93	72	2	-0.09097	-0.18195	ug/l	100	Nb	
Mo	95	72	3	0.05776	0.11552	ug/l	1000	Mo	
Ru	101	72	2	-0.00872	-0.01745	ug/l	200	Ru	
Rh	103	72	2	-0.00702	-0.01404	ug/l	200	Rh	
Pd	105	72	2	0.00151	0.00301	ug/l	20	Pd	
Ag	107	115	3	0.00865	0.01729	ug/l	400	Ag	
Cd	111	115	3	0.00193	0.00385	ug/l	2000	Cd	
Sn	118	115	3	0.19089	0.38177	ug/l	2000	Sn	
Sb	121	115	3	0.01318	0.02635	ug/l	1000	Sb	
Te	125	165	2	-0.01600	-0.03200	ug/l	200	Te	
Cs	133	165	2	-0.00483	-0.00966	ug/l	2000	Cs	
Ba	137	165	3	0.05904	0.11808	ug/l	5000	Ba	
La	139	165	2	-0.00494	-0.00989	ug/l	200	La	
Ce	140	165	2	-0.00452	-0.00904	ug/l	200	Ce	
Pr	141	165	2	-0.00552	-0.01104	ug/l	200	Pr	
Nd	146	165	2	-0.00365	-0.00730	ug/l	200	Nd	
Sm	147	165	3	-0.00528	-0.01055	ug/l	2000	Sm	
Hf	178	165	2	-0.00669	-0.01338	ug/l	200	Hf	
Ta	181	165	2	0.02050	0.04100	ug/l	200	Ta	
W	182	165	2	0.45711	0.91422	ug/l	2000	W	
Re	185	193	3	-0.00529	-0.01058	ug/l	200	Re	
Pt	195	193	2	0.00271	0.00542	ug/l	200	Pt	
Au	197	193	3	-0.02479	-0.04958	ug/l	2000	Au	
Tl	205	193	3	0.01815	0.03630	ug/l	400	Tl	
Pb	208	193	3	0.14034	0.28067	ug/l	5000	Pb	
Bi	209	193	2	0.04509	0.09018	ug/l	2000	Bi	
Th	232	193	3	0.01429	0.02859	ug/l	2000	Th	
U	238	193	3	0.03868	0.07735	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5278188	0.38	5676390	93.0	80	120	Li (IS)	
Sc (IS)	45	2	146901	0.92	157398	93.3	80	120	Sc (IS)	
Sc (IS)	45	3	2802520	1.52	2954313	94.9	80	120	Sc (IS)	
Ge (IS)	72	2	363531	0.32	379042	95.9	80	120	Ge (IS)	
Ge (IS)	72	3	2356484	0.55	2413999	97.6	80	120	Ge (IS)	
In (IS)	115	3	15089762	1.04	15281059	98.7	80	120	In (IS)	
Ho (IS)	165	2	10455805	0.29	10495856	99.6	80	120	Ho (IS)	
Ho (IS)	165	3	16973384	0.94	16807844	101.0	80	120	Ho (IS)	
Ir (IS)	193	2	6906071	0.60	6895257	100.2	80	120	Ir (IS)	
Ir (IS)	193	3	8350142	0.39	8354862	99.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCS 160-452936/2-A**
Data File Name	**124SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T05:33:19-06:00**
Type	**Sample**
VialNumber	**3207**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	48.51035	97.02070	ug/l	1000	Li	
Be	9	6	3	46.11281	92.22562	ug/l	1000	Be	
B	11	6	3	91.82289	183.64578	ug/l	2000	B	
Na	23	45	2	5075.29755	10150.59509	ug/l	50000	Na	
Mg	24	45	2	5026.38338	10052.76676	ug/l	50000	Mg	
Al	27	45	2	4888.84250	9777.68501	ug/l	100000	Al	
P	31	45	2	462.64817	925.29634	ug/l	100000	P	
K	39	45	2	4778.66891	9557.33783	ug/l	100000	K	
Ca	44	45	3	5076.85776	10153.71552	ug/l	100000	Ca	
Ti	47	45	3	502.77891	1005.55783	ug/l	2000	Ti	
V	51	45	2	477.84105	955.68209	ug/l	2000	V	
Cr	52	45	2	481.75560	963.51120	ug/l	2000	Cr	
Mn	55	72	2	510.77463	1021.54926	ug/l	5000	Mn	
Fe	57	72	2	5201.40692	10402.81384	ug/l	100000	Fe	
Co	59	72	2	513.85897	1027.71795	ug/l	2000	Co	
Ni	60	72	2	557.99458	1115.98916	ug/l	2000	Ni	
Cu	63	72	2	517.31925	1034.63849	ug/l	2000	Cu	
Zn	66	72	2	489.98673	979.97345	ug/l	5000	Zn	
As	75	72	2	489.51133	979.02267	ug/l	2000	As	
Se	78	72	2	239.14865	478.29730	ug/l	1000	Se	
Sr	88	72	3	511.57242	1023.14484	ug/l	2000	Sr	
Y	89	72	2	48.27706	96.55411	ug/l	200	Y	
Zr	90	72	2	515.96883	1031.93766	ug/l	2000	Zr	
Nb	93	72	2	24.79384	49.58767	ug/l	100	Nb	
Mo	95	72	3	253.32167	506.64334	ug/l	1000	Mo	
Ru	101	72	2	49.90246	99.80493	ug/l	200	Ru	
Rh	103	72	2	54.82422	109.64844	ug/l	200	Rh	
Pd	105	72	2	4.06381	8.12763	ug/l	20	Pd	
Ag	107	115	3	95.84624	191.69248	ug/l	400	Ag	
Cd	111	115	3	488.53269	977.06538	ug/l	2000	Cd	
Sn	118	115	3	488.36998	976.73996	ug/l	2000	Sn	
Sb	121	115	3	243.21299	486.42598	ug/l	1000	Sb	
Te	125	165	2	43.56840	87.13680	ug/l	200	Te	
Cs	133	165	2	44.01998	88.03996	ug/l	2000	Cs	
Ba	137	165	3	473.53504	947.07008	ug/l	5000	Ba	
La	139	165	2	49.81874	99.63747	ug/l	200	La	
Ce	140	165	2	48.56149	97.12298	ug/l	200	Ce	
Pr	141	165	2	48.95469	97.90938	ug/l	200	Pr	
Nd	146	165	2	45.38237	90.76474	ug/l	200	Nd	
Sm	147	165	3	495.02324	990.04649	ug/l	2000	Sm	
Hf	178	165	2	46.65248	93.30496	ug/l	200	Hf	
Ta	181	165	2	46.18292	92.36585	ug/l	200	Ta	
W	182	165	2	505.15828	1010.31655	ug/l	2000	W	
Re	185	193	3	50.47453	100.94905	ug/l	200	Re	
Pt	195	193	2	4.95646	9.91292	ug/l	200	Pt	
Au	197	193	3	7.34404	14.68809	ug/l	2000	Au	
Tl	205	193	3	99.75830	199.51659	ug/l	400	Tl	
Pb	208	193	3	506.39847	1012.79693	ug/l	5000	Pb	
Bi	209	193	2	498.24087	996.48175	ug/l	2000	Bi	
Th	232	193	3	506.14909	1012.29818	ug/l	2000	Th	
U	238	193	3	519.49343	1038.98687	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5206909	0.27	5676390	91.7	80	120	Li (IS)	
Sc (IS)	45	2	146166	1.63	157398	92.9	80	120	Sc (IS)	
Sc (IS)	45	3	2731309	0.61	2954313	92.5	80	120	Sc (IS)	
Ge (IS)	72	2	355380	1.03	379042	93.8	80	120	Ge (IS)	
Ge (IS)	72	3	2311566	0.20	2413999	95.8	80	120	Ge (IS)	
In (IS)	115	3	14544617	0.26	15281059	95.2	80	120	In (IS)	
Ho (IS)	165	2	10345183	0.19	10495856	98.6	80	120	Ho (IS)	
Ho (IS)	165	3	17056842	0.92	16807844	101.5	80	120	Ho (IS)	
Ir (IS)	193	2	6681732	0.37	6895257	96.9	80	120	Ir (IS)	
Ir (IS)	193	3	8268476	0.98	8354862	99.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**460-196683-D-2-A**
Data File Name	**125SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T05:40:03-06:00**
Type	**Sample**
VialNumber	**3208**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.86054	1.72107	ug/l	1000	Li	
Be	9	6	3	0.00186	0.00372	ug/l	1000	Be	
B	11	6	3	54.57419	109.14838	ug/l	2000	B	
Na	23	45	2	78488.52290	156977.04581	ug/l	50000	Na	FAILED
Mg	24	45	2	18322.66757	36645.33513	ug/l	50000	Mg	
Al	27	45	2	129.66954	259.33908	ug/l	100000	Al	
P	31	45	2	2697.12540	5394.25080	ug/l	100000	P	
K	39	45	2	6489.97302	12979.94604	ug/l	100000	K	
Ca	44	45	3	50801.34616	101602.69232	ug/l	100000	Ca	
Ti	47	45	3	6.70942	13.41883	ug/l	2000	Ti	
V	51	45	2	1.48863	2.97726	ug/l	2000	V	
Cr	52	45	2	1.89146	3.78292	ug/l	2000	Cr	
Mn	55	72	2	34.86436	69.72872	ug/l	5000	Mn	
Fe	57	72	2	568.55675	1137.11349	ug/l	100000	Fe	
Co	59	72	2	0.23454	0.46908	ug/l	2000	Co	
Ni	60	72	2	2.18113	4.36227	ug/l	2000	Ni	
Cu	63	72	2	139.17363	278.34725	ug/l	2000	Cu	
Zn	66	72	2	65.95675	131.91349	ug/l	5000	Zn	
As	75	72	2	0.63524	1.27048	ug/l	2000	As	
Se	78	72	2	0.38837	0.77675	ug/l	1000	Se	
Sr	88	72	3	161.21595	322.43190	ug/l	2000	Sr	
Y	89	72	2	0.09765	0.19529	ug/l	200	Y	
Zr	90	72	2	0.41925	0.83849	ug/l	2000	Zr	
Nb	93	72	2	0.20710	0.41421	ug/l	100	Nb	
Mo	95	72	3	1.06150	2.12300	ug/l	1000	Mo	
Ru	101	72	2	-0.00573	-0.01146	ug/l	200	Ru	
Rh	103	72	2	-0.00589	-0.01177	ug/l	200	Rh	
Pd	105	72	2	0.00737	0.01474	ug/l	20	Pd	
Ag	107	115	3	0.37020	0.74041	ug/l	400	Ag	
Cd	111	115	3	0.29238	0.58475	ug/l	2000	Cd	
Sn	118	115	3	2.61578	5.23156	ug/l	2000	Sn	
Sb	121	115	3	0.19986	0.39972	ug/l	1000	Sb	
Te	125	165	2	0.01275	0.02551	ug/l	200	Te	
Cs	133	165	2	0.01455	0.02909	ug/l	2000	Cs	
Ba	137	165	3	19.97601	39.95201	ug/l	5000	Ba	
La	139	165	2	0.08468	0.16937	ug/l	200	La	
Ce	140	165	2	0.16662	0.33325	ug/l	200	Ce	
Pr	141	165	2	0.01400	0.02800	ug/l	200	Pr	
Nd	146	165	2	0.07030	0.14059	ug/l	200	Nd	
Sm	147	165	3	0.01676	0.03353	ug/l	2000	Sm	
Hf	178	165	2	0.00821	0.01642	ug/l	200	Hf	
Ta	181	165	2	0.21656	0.43313	ug/l	200	Ta	
W	182	165	2	1.08297	2.16594	ug/l	2000	W	
Re	185	193	3	-0.00219	-0.00439	ug/l	200	Re	
Pt	195	193	2	0.00563	0.01125	ug/l	200	Pt	
Au	197	193	3	0.00522	0.01044	ug/l	2000	Au	
Tl	205	193	3	0.14584	0.29168	ug/l	400	Tl	
Pb	208	193	3	2.33845	4.67691	ug/l	5000	Pb	
Bi	209	193	2	1.33750	2.67500	ug/l	2000	Bi	
Th	232	193	3	0.09538	0.19075	ug/l	2000	Th	
U	238	193	3	1.04180	2.08361	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5362521	0.08	5676390	94.5	80	120	Li (IS)	
Sc (IS)	45	2	142742	0.33	157398	90.7	80	120	Sc (IS)	
Sc (IS)	45	3	2738616	1.01	2954313	92.7	80	120	Sc (IS)	
Ge (IS)	72	2	347327	1.01	379042	91.6	80	120	Ge (IS)	
Ge (IS)	72	3	2235149	0.55	2413999	92.6	80	120	Ge (IS)	
In (IS)	115	3	14042103	0.49	15281059	91.9	80	120	In (IS)	
Ho (IS)	165	2	10197912	0.22	10495856	97.2	80	120	Ho (IS)	
Ho (IS)	165	3	16299560	1.17	16807844	97.0	80	120	Ho (IS)	
Ir (IS)	193	2	6478371	0.21	6895257	94.0	80	120	Ir (IS)	
Ir (IS)	193	3	7892344	0.45	8354862	94.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**126LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T05:46:52-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	4.46306	ug/l	5	89.3	80	120	Li	
Be	9	6	3	0.50101	ug/l	0.5	100.2	80	120	Be	
B	11	6	3	88.91928	ug/l	100	88.9	80	120	B	
Na	23	45	2	106.44070	ug/l	100	106.4	80	120	Na	
Mg	24	45	2	53.25065	ug/l	50	106.5	80	120	Mg	
Al	27	45	2	53.27048	ug/l	50	106.5	80	120	Al	
P	31	45	2	97.85644	ug/l	100	97.9	80	120	P	
K	39	45	2	97.22006	ug/l	100	97.2	80	120	K	
Ca	44	45	3	202.65703	ug/l	200	101.3	80	120	Ca	
Ti	47	45	3	5.11803	ug/l	5	102.4	80	120	Ti	
V	51	45	2	9.83863	ug/l	10	98.4	80	120	V	
Cr	52	45	2	9.83391	ug/l	10	98.3	80	120	Cr	
Mn	55	72	2	4.25329	ug/l	4	106.3	80	120	Mn	
Fe	57	72	2	53.79566	ug/l	50	107.6	80	120	Fe	
Co	59	72	2	2.13138	ug/l	2	106.6	80	120	Co	
Ni	60	72	2	5.69617	ug/l	5	113.9	80	120	Ni	
Cu	63	72	2	3.15462	ug/l	3	105.2	80	120	Cu	
Zn	66	72	2	21.77147	ug/l	20	108.9	80	120	Zn	
As	75	72	2	10.73439	ug/l	10	107.3	80	120	As	
Se	78	72	2	4.74916	ug/l	5	95.0	80	120	Se	
Sr	88	72	3	5.11678	ug/l	5	102.3	80	120	Sr	
Y	89	72	2	5.03577	ug/l	5	100.7	80	120	Y	
Zr	90	72	2	4.99730	ug/l	5	99.9	80	120	Zr	
Nb	93	72	2	16.98099	ug/l	25	67.9	80	120	Nb	FAILED
Mo	95	72	3	5.04293	ug/l	5	100.9	80	120	Mo	
Ru	101	72	2	10.41502	ug/l	10	104.2	80	120	Ru	
Rh	103	72	2	10.09806	ug/l	10	101.0	80	120	Rh	
Pd	105	72	2	0.56937	ug/l	0.5	113.9	80	120	Pd	
Ag	107	115	3	1.88538	ug/l	2	94.3	80	120	Ag	
Cd	111	115	3	0.53015	ug/l	0.5	106.0	80	120	Cd	
Sn	118	115	3	1.89472	ug/l	2	94.7	80	120	Sn	
Sb	121	115	3	4.61905	ug/l	5	92.4	80	120	Sb	
Te	125	165	2	9.41488	ug/l	10	94.1	80	120	Te	
Cs	133	165	2	0.92252	ug/l	1	92.3	80	120	Cs	
Ba	137	165	3	1.89084	ug/l	2	94.5	80	120	Ba	
La	139	165	2	1.85965	ug/l	2	93.0	80	120	La	
Ce	140	165	2	9.19909	ug/l	10	92.0	80	120	Ce	
Pr	141	165	2	1.87192	ug/l	2	93.6	80	120	Pr	
Nd	146	165	2	1.90309	ug/l	2	95.2	80	120	Nd	
Sm	147	165	3	9.56733	ug/l	10	95.7	80	120	Sm	
Hf	178	165	2	8.56344	ug/l	10	85.6	80	120	Hf	
Ta	181	165	2	5.77480	ug/l	10	57.7	80	120	Ta	FAILED
W	182	165	2	4.78354	ug/l	5	95.7	80	120	W	
Re	185	193	3	9.17910	ug/l	10	91.8	80	120	Re	
Pt	195	193	2	1.01393	ug/l	1	101.4	80	120	Pt	
Au	197	193	3	4.56394	ug/l	5	91.3	80	120	Au	
Tl	205	193	3	1.87333	ug/l	2	93.7	80	120	Tl	
Pb	208	193	3	2.85541	ug/l	3	95.2	80	120	Pb	
Bi	209	193	2	17.67995	ug/l	20	88.4	80	120	Bi	
Th	232	193	3	1.85621	ug/l	2	92.8	80	120	Th	
U	238	193	3	0.96119	ug/l	1	96.1	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5861045	0.26	5676390	103.3	80	120	Li (IS)	
Sc (IS)	45	2	151220	0.11	157398	96.1	80	120	Sc (IS)	
Sc (IS)	45	3	2792638	0.53	2954313	94.5	80	120	Sc (IS)	
Ge (IS)	72	2	365958	0.30	379042	96.5	80	120	Ge (IS)	
Ge (IS)	72	3	2314869	1.07	2413999	95.9	80	120	Ge (IS)	
In (IS)	115	3	14923581	0.38	15281059	97.7	80	120	In (IS)	
Ho (IS)	165	2	10466579	0.21	10495856	99.7	80	120	Ho (IS)	
Ho (IS)	165	3	16736476	0.80	16807844	99.6	80	120	Ho (IS)	
Ir (IS)	193	2	6845074	0.06	6895257	99.3	80	120	Ir (IS)	
Ir (IS)	193	3	8308577	1.12	8354862	99.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**127_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T05:53:35-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	95.03836	ug/l	100	95.0	90	110	Li	
Be	9	6	3	92.99015	ug/l	100	93.0	90	110	Be	
B	11	6	3	186.60409	ug/l	200	93.3	90	110	B	
Na	23	45	2	2499.46744	ug/l	2500	100.0	90	110	Na	
Mg	24	45	2	2535.83538	ug/l	2500	101.4	90	110	Mg	
Al	27	45	2	2423.78213	ug/l	2500	97.0	90	110	Al	
P	31	45	2	2440.73575	ug/l	2500	97.6	90	110	P	
K	39	45	2	2482.51928	ug/l	2500	99.3	90	110	K	
Ca	44	45	3	2546.24021	ug/l	2500	101.8	90	110	Ca	
Ti	47	45	3	101.02464	ug/l	100	101.0	90	110	Ti	
V	51	45	2	96.31602	ug/l	100	96.3	90	110	V	
Cr	52	45	2	100.03470	ug/l	100	100.0	90	110	Cr	
Mn	55	72	2	97.72151	ug/l	100	97.7	90	110	Mn	
Fe	57	72	2	2471.21145	ug/l	2500	98.8	90	110	Fe	
Co	59	72	2	103.29988	ug/l	100	103.3	90	110	Co	
Ni	60	72	2	104.65405	ug/l	100	104.7	90	110	Ni	
Cu	63	72	2	102.89319	ug/l	100	102.9	90	110	Cu	
Zn	66	72	2	103.81623	ug/l	100	103.8	90	110	Zn	
As	75	72	2	103.09784	ug/l	100	103.1	90	110	As	
Se	78	72	2	51.02634	ug/l	50	102.1	90	110	Se	
Sr	88	72	3	104.81854	ug/l	100	104.8	90	110	Sr	
Y	89	72	2	105.41892	ug/l	100	105.4	90	110	Y	
Zr	90	72	2	104.54288	ug/l	100	104.5	90	110	Zr	
Nb	93	72	2	52.69734	ug/l	50	105.4	90	110	Nb	
Mo	95	72	3	49.25896	ug/l	50	98.5	90	110	Mo	
Ru	101	72	2	100.91171	ug/l	100	100.9	90	110	Ru	
Rh	103	72	2	106.68476	ug/l	100	106.7	90	110	Rh	
Pd	105	72	2	10.88166	ug/l	10	108.8	90	110	Pd	
Ag	107	115	3	18.03660	ug/l	20	90.2	90	110	Ag	
Cd	111	115	3	93.27718	ug/l	100	93.3	90	110	Cd	
Sn	118	115	3	99.86754	ug/l	100	99.9	90	110	Sn	
Sb	121	115	3	49.93065	ug/l	50	99.9	90	110	Sb	
Te	125	165	2	98.37951	ug/l	100	98.4	90	110	Te	
Cs	133	165	2	96.37846	ug/l	100	96.4	90	110	Cs	
Ba	137	165	3	98.75116	ug/l	100	98.8	90	110	Ba	
La	139	165	2	97.68443	ug/l	100	97.7	90	110	La	
Ce	140	165	2	99.01822	ug/l	100	99.0	90	110	Ce	
Pr	141	165	2	98.04069	ug/l	100	98.0	90	110	Pr	
Nd	146	165	2	91.53388	ug/l	100	91.5	90	110	Nd	
Sm	147	165	3	101.95278	ug/l	100	102.0	90	110	Sm	
Hf	178	165	2	100.92277	ug/l	100	100.9	90	110	Hf	
Ta	181	165	2	102.67972	ug/l	100	102.7	90	110	Ta	
W	182	165	2	102.06217	ug/l	100	102.1	90	110	W	
Re	185	193	3	99.39920	ug/l	100	99.4	90	110	Re	
Pt	195	193	2	9.91471	ug/l	10	99.1	90	110	Pt	
Au	197	193	3	99.09417	ug/l	100	99.1	90	110	Au	
Tl	205	193	3	19.86027	ug/l	20	99.3	90	110	Tl	
Pb	208	193	3	101.04539	ug/l	100	101.0	90	110	Pb	
Bi	209	193	2	99.11942	ug/l	100	99.1	90	110	Bi	
Th	232	193	3	99.17349	ug/l	100	99.2	90	110	Th	
U	238	193	3	99.38899	ug/l	100	99.4	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5529268	1.20	5676390	97.4	80	120	Li (IS)	
Sc (IS)	45	2	145718	0.76	157398	92.6	80	120	Sc (IS)	
Sc (IS)	45	3	2714258	1.16	2954313	91.9	80	120	Sc (IS)	
Ge (IS)	72	2	365522	0.81	379042	96.4	80	120	Ge (IS)	
Ge (IS)	72	3	2276263	0.52	2413999	94.3	80	120	Ge (IS)	
In (IS)	115	3	14627023	0.48	15281059	95.7	80	120	In (IS)	
Ho (IS)	165	2	10417284	0.11	10495856	99.3	80	120	Ho (IS)	
Ho (IS)	165	3	16653675	0.38	16807844	99.1	80	120	Ho (IS)	
Ir (IS)	193	2	6902501	0.80	6895257	100.1	80	120	Ir (IS)	
Ir (IS)	193	3	8315910	1.59	8354862	99.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**128_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:00:20-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	-0.28936	ug/l	1.388	Li	
Be	9	6	3	0.01105	ug/l	0.7	Be	
B	11	6	3	3.36409	ug/l	20	B	
Na	23	45	2	1.87415	ug/l	30	Na	
Mg	24	45	2	0.53859	ug/l	11.18	Mg	
Al	27	45	2	0.66652	ug/l	25.8	Al	
P	31	45	2	0.20326	ug/l	16.46	P	
K	39	45	2	-0.09773	ug/l	83.2	K	
Ca	44	45	3	0.65664	ug/l	136.2	Ca	
Ti	47	45	3	0.01438	ug/l	4.2	Ti	
V	51	45	2	0.01590	ug/l	4.74	V	
Cr	52	45	2	0.01939	ug/l	6.52	Cr	
Mn	55	72	2	0.03168	ug/l	0.49	Mn	
Fe	57	72	2	0.49271	ug/l	40.7	Fe	
Co	59	72	2	0.03145	ug/l	0.434	Co	
Ni	60	72	2	0.03496	ug/l	0.8	Ni	
Cu	63	72	2	-0.18410	ug/l	0.902	Cu	
Zn	66	72	2	0.08032	ug/l	16.58	Zn	
As	75	72	2	0.04889	ug/l	2.36	As	
Se	78	72	2	-0.08235	ug/l	3.18	Se	
Sr	88	72	3	0.01256	ug/l	2	Sr	
Y	89	72	2	0.01815	ug/l	0.424	Y	
Zr	90	72	2	0.02831	ug/l	0.496	Zr	
Nb	93	72	2	0.36321	ug/l	4.62	Nb	
Mo	95	72	3	0.08186	ug/l	2	Mo	
Ru	101	72	2	0.02052	ug/l	2	Ru	
Rh	103	72	2	0.02200	ug/l	1.634	Rh	
Pd	105	72	2	0.00646	ug/l	0.08	Pd	
Ag	107	115	3	0.00116	ug/l	1.54	Ag	
Cd	111	115	3	0.01732	ug/l	0.4	Cd	
Sn	118	115	3	0.05095	ug/l	2	Sn	
Sb	121	115	3	0.03154	ug/l	3.34	Sb	
Te	125	165	2	0.06032	ug/l	1.072	Te	
Cs	133	165	2	0.02284	ug/l	0.106	Cs	
Ba	137	165	3	0.01153	ug/l	0.446	Ba	
La	139	165	2	0.01753	ug/l	0.102	La	
Ce	140	165	2	0.01825	ug/l	1.772	Ce	
Pr	141	165	2	0.01671	ug/l	0.084	Pr	
Nd	146	165	2	0.02090	ug/l	0.208	Nd	
Sm	147	165	3	0.00673	ug/l	0.652	Sm	
Hf	178	165	2	0.04662	ug/l	2.26	Hf	
Ta	181	165	2	0.05642	ug/l	1.46	Ta	
W	182	165	2	0.39891	ug/l	4	W	
Re	185	193	3	0.00453	ug/l	0.05	Re	
Pt	195	193	2	0.00058	ug/l	0.12	Pt	
Au	197	193	3	0.15141	ug/l	1	Au	
Tl	205	193	3	0.05015	ug/l	1.1	Tl	
Pb	208	193	3	0.02974	ug/l	0.346	Pb	
Bi	209	193	2	0.06170	ug/l	1.464	Bi	
Th	232	193	3	0.04909	ug/l	1.104	Th	
U	238	193	3	0.01169	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5640300	1.19	5676390	99.4	80	120	Li (IS)	
Sc (IS)	45	2	146642	0.87	157398	93.2	80	120	Sc (IS)	
Sc (IS)	45	3	2752123	0.56	2954313	93.2	80	120	Sc (IS)	
Ge (IS)	72	2	351524	2.02	379042	92.7	80	120	Ge (IS)	
Ge (IS)	72	3	2244858	0.20	2413999	93.0	80	120	Ge (IS)	
In (IS)	115	3	14745291	1.41	15281059	96.5	80	120	In (IS)	
Ho (IS)	165	2	10358836	3.01	10495856	98.7	80	120	Ho (IS)	
Ho (IS)	165	3	16738812	0.79	16807844	99.6	80	120	Ho (IS)	
Ir (IS)	193	2	6888510	2.36	6895257	99.9	80	120	Ir (IS)	
Ir (IS)	193	3	8365480	0.54	8354862	100.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**460-196683-D-2-A SD**
Data File Name	**129SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:07:05-06:00**
Type	**Sample**
VialNumber	**3209**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.06202	0.62023	ug/l	1000	Li	
Be	9	6	3	0.00297	0.02970	ug/l	1000	Be	
B	11	6	3	11.91577	119.15772	ug/l	2000	B	
Na	23	45	2	15567.26427	155672.64265	ug/l	50000	Na	
Mg	24	45	2	3652.96693	36529.66934	ug/l	50000	Mg	
Al	27	45	2	36.70316	367.03156	ug/l	100000	Al	
P	31	45	2	532.94958	5329.49582	ug/l	100000	P	
K	39	45	2	1232.39024	12323.90243	ug/l	100000	K	
Ca	44	45	3	10107.93645	101079.36455	ug/l	100000	Ca	
Ti	47	45	3	1.34188	13.41881	ug/l	2000	Ti	
V	51	45	2	0.25988	2.59882	ug/l	2000	V	
Cr	52	45	2	0.37968	3.79680	ug/l	2000	Cr	
Mn	55	72	2	6.79450	67.94500	ug/l	5000	Mn	
Fe	57	72	2	111.59924	1115.99240	ug/l	100000	Fe	
Co	59	72	2	0.04406	0.44064	ug/l	2000	Co	
Ni	60	72	2	0.45417	4.54167	ug/l	2000	Ni	
Cu	63	72	2	25.44455	254.44551	ug/l	2000	Cu	
Zn	66	72	2	14.21149	142.11485	ug/l	5000	Zn	
As	75	72	2	0.09398	0.93982	ug/l	2000	As	
Se	78	72	2	-0.07029	-0.70291	ug/l	1000	Se	
Sr	88	72	3	31.26561	312.65614	ug/l	2000	Sr	
Y	89	72	2	0.02024	0.20237	ug/l	200	Y	
Zr	90	72	2	0.12914	1.29142	ug/l	2000	Zr	
Nb	93	72	2	0.14124	1.41242	ug/l	100	Nb	
Mo	95	72	3	0.23542	2.35422	ug/l	1000	Mo	
Ru	101	72	2	-0.00682	-0.06819	ug/l	200	Ru	
Rh	103	72	2	-0.00367	-0.03668	ug/l	200	Rh	
Pd	105	72	2	0.00230	0.02302	ug/l	20	Pd	
Ag	107	115	3	0.06836	0.68362	ug/l	400	Ag	
Cd	111	115	3	0.05237	0.52365	ug/l	2000	Cd	
Sn	118	115	3	0.52001	5.20008	ug/l	2000	Sn	
Sb	121	115	3	0.05457	0.54568	ug/l	1000	Sb	
Te	125	165	2	0.00054	0.00539	ug/l	200	Te	
Cs	133	165	2	0.00330	0.03301	ug/l	2000	Cs	
Ba	137	165	3	3.90447	39.04465	ug/l	5000	Ba	
La	139	165	2	0.01421	0.14213	ug/l	200	La	
Ce	140	165	2	0.02934	0.29344	ug/l	200	Ce	
Pr	141	165	2	0.00080	0.00803	ug/l	200	Pr	
Nd	146	165	2	0.01803	0.18026	ug/l	200	Nd	
Sm	147	165	3	0.00001	0.00009	ug/l	2000	Sm	
Hf	178	165	2	0.07052	0.70518	ug/l	200	Hf	
Ta	181	165	2	0.04715	0.47146	ug/l	200	Ta	
W	182	165	2	0.18978	1.89779	ug/l	2000	W	
Re	185	193	3	-0.00271	-0.02713	ug/l	200	Re	
Pt	195	193	2	0.00104	0.01043	ug/l	200	Pt	
Au	197	193	3	0.02597	0.25971	ug/l	2000	Au	
Tl	205	193	3	0.02189	0.21889	ug/l	400	Tl	
Pb	208	193	3	0.46007	4.60068	ug/l	5000	Pb	
Bi	209	193	2	0.26719	2.67195	ug/l	2000	Bi	
Th	232	193	3	0.01799	0.17989	ug/l	2000	Th	
U	238	193	3	0.19564	1.95642	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5544299	0.41	5676390	97.7	80	120	Li (IS)	
Sc (IS)	45	2	141325	1.00	157398	89.8	80	120	Sc (IS)	
Sc (IS)	45	3	2670337	0.99	2954313	90.4	80	120	Sc (IS)	
Ge (IS)	72	2	350994	0.26	379042	92.6	80	120	Ge (IS)	
Ge (IS)	72	3	2265446	0.93	2413999	93.8	80	120	Ge (IS)	
In (IS)	115	3	14395487	1.01	15281059	94.2	80	120	In (IS)	
Ho (IS)	165	2	10236595	0.81	10495856	97.5	80	120	Ho (IS)	
Ho (IS)	165	3	16502409	0.81	16807844	98.2	80	120	Ho (IS)	
Ir (IS)	193	2	6703535	0.44	6895257	97.2	80	120	Ir (IS)	
Ir (IS)	193	3	8235274	0.46	8354862	98.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**460-196683-D-2-B MS**
Data File Name	**130SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:13:49-06:00**
Type	**Sample**
VialNumber	**3210**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	49.12590	98.25179	ug/l	1000	Li	
Be	9	6	3	46.43386	92.86772	ug/l	1000	Be	
B	11	6	3	152.93241	305.86481	ug/l	2000	B	
Na	23	45	2	79798.23931	159596.47862	ug/l	50000	Na	FAILED
Mg	24	45	2	22659.68893	45319.37785	ug/l	50000	Mg	
Al	27	45	2	5162.98695	10325.97391	ug/l	100000	Al	
P	31	45	2	2779.79598	5559.59197	ug/l	100000	P	
K	39	45	2	11028.17574	22056.35149	ug/l	100000	K	
Ca	44	45	3	54657.54585	109315.09171	ug/l	100000	Ca	
Ti	47	45	3	495.96006	991.92013	ug/l	2000	Ti	
V	51	45	2	497.43114	994.86229	ug/l	2000	V	
Cr	52	45	2	492.77694	985.55389	ug/l	2000	Cr	
Mn	55	72	2	555.26114	1110.52227	ug/l	5000	Mn	
Fe	57	72	2	5879.90895	11759.81790	ug/l	100000	Fe	
Co	59	72	2	515.03173	1030.06345	ug/l	2000	Co	
Ni	60	72	2	549.56548	1099.13097	ug/l	2000	Ni	
Cu	63	72	2	640.07944	1280.15889	ug/l	2000	Cu	
Zn	66	72	2	605.17331	1210.34661	ug/l	5000	Zn	
As	75	72	2	511.13622	1022.27243	ug/l	2000	As	
Se	78	72	2	244.89423	489.78846	ug/l	1000	Se	
Sr	88	72	3	681.79046	1363.58093	ug/l	2000	Sr	
Y	89	72	2	48.74674	97.49348	ug/l	200	Y	
Zr	90	72	2	375.91878	751.83755	ug/l	2000	Zr	
Nb	93	72	2	17.10289	34.20577	ug/l	100	Nb	
Mo	95	72	3	260.20355	520.40711	ug/l	1000	Mo	
Ru	101	72	2	49.00919	98.01837	ug/l	200	Ru	
Rh	103	72	2	52.72271	105.44543	ug/l	200	Rh	
Pd	105	72	2	4.92117	9.84234	ug/l	20	Pd	
Ag	107	115	3	95.11520	190.23041	ug/l	400	Ag	
Cd	111	115	3	491.69194	983.38388	ug/l	2000	Cd	
Sn	118	115	3	462.19888	924.39775	ug/l	2000	Sn	
Sb	121	115	3	249.75763	499.51526	ug/l	1000	Sb	
Te	125	165	2	42.05356	84.10712	ug/l	200	Te	
Cs	133	165	2	41.97733	83.95466	ug/l	2000	Cs	
Ba	137	165	3	500.57515	1001.15030	ug/l	5000	Ba	
La	139	165	2	48.84090	97.68179	ug/l	200	La	
Ce	140	165	2	48.15936	96.31872	ug/l	200	Ce	
Pr	141	165	2	47.98950	95.97900	ug/l	200	Pr	
Nd	146	165	2	44.73042	89.46085	ug/l	200	Nd	
Sm	147	165	3	506.34684	1012.69368	ug/l	2000	Sm	
Hf	178	165	2	17.96597	35.93193	ug/l	200	Hf	
Ta	181	165	2	4.47095	8.94190	ug/l	200	Ta	
W	182	165	2	506.80221	1013.60442	ug/l	2000	W	
Re	185	193	3	50.81685	101.63371	ug/l	200	Re	
Pt	195	193	2	4.82556	9.65112	ug/l	200	Pt	
Au	197	193	3	25.43918	50.87837	ug/l	2000	Au	
Tl	205	193	3	98.48197	196.96394	ug/l	400	Tl	
Pb	208	193	3	496.92946	993.85891	ug/l	5000	Pb	
Bi	209	193	2	490.65069	981.30138	ug/l	2000	Bi	
Th	232	193	3	381.23505	762.47009	ug/l	2000	Th	
U	238	193	3	528.73822	1057.47643	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5168376	0.87	5676390	91.1	80	120	Li (IS)	
Sc (IS)	45	2	140455	0.91	157398	89.2	80	120	Sc (IS)	
Sc (IS)	45	3	2640456	1.26	2954313	89.4	80	120	Sc (IS)	
Ge (IS)	72	2	338395	1.23	379042	89.3	80	120	Ge (IS)	
Ge (IS)	72	3	2149361	1.60	2413999	89.0	80	120	Ge (IS)	
In (IS)	115	3	13385618	0.33	15281059	87.6	80	120	In (IS)	
Ho (IS)	165	2	9896043	0.59	10495856	94.3	80	120	Ho (IS)	
Ho (IS)	165	3	15930796	0.72	16807844	94.8	80	120	Ho (IS)	
Ir (IS)	193	2	6303079	1.64	6895257	91.4	80	120	Ir (IS)	
Ir (IS)	193	3	7713881	1.10	8354862	92.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**460-196683-D-2-C MSD**
Data File Name	**131SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:20:39-06:00**
Type	**Sample**
VialNumber	**3211**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	48.12611	96.25223	ug/l	1000	Li	
Be	9	6	3	45.99051	91.98102	ug/l	1000	Be	
B	11	6	3	151.52474	303.04948	ug/l	2000	B	
Na	23	45	2	80668.81659	161337.63318	ug/l	50000	Na	FAILED
Mg	24	45	2	22663.90942	45327.81884	ug/l	50000	Mg	
Al	27	45	2	5184.44263	10368.88526	ug/l	100000	Al	
P	31	45	2	2830.94785	5661.89571	ug/l	100000	P	
K	39	45	2	11029.63137	22059.26274	ug/l	100000	K	
Ca	44	45	3	53949.13363	107898.26726	ug/l	100000	Ca	
Ti	47	45	3	491.60030	983.20059	ug/l	2000	Ti	
V	51	45	2	495.42318	990.84637	ug/l	2000	V	
Cr	52	45	2	492.39224	984.78448	ug/l	2000	Cr	
Mn	55	72	2	549.95109	1099.90219	ug/l	5000	Mn	
Fe	57	72	2	5673.62722	11347.25445	ug/l	100000	Fe	
Co	59	72	2	507.98199	1015.96398	ug/l	2000	Co	
Ni	60	72	2	542.58965	1085.17930	ug/l	2000	Ni	
Cu	63	72	2	634.07519	1268.15037	ug/l	2000	Cu	
Zn	66	72	2	594.89051	1189.78102	ug/l	5000	Zn	
As	75	72	2	504.69894	1009.39789	ug/l	2000	As	
Se	78	72	2	244.96686	489.93373	ug/l	1000	Se	
Sr	88	72	3	681.74269	1363.48538	ug/l	2000	Sr	
Y	89	72	2	48.06979	96.13958	ug/l	200	Y	
Zr	90	72	2	369.31743	738.63486	ug/l	2000	Zr	
Nb	93	72	2	16.50768	33.01536	ug/l	100	Nb	
Mo	95	72	3	259.97399	519.94798	ug/l	1000	Mo	
Ru	101	72	2	48.25758	96.51516	ug/l	200	Ru	
Rh	103	72	2	51.90803	103.81606	ug/l	200	Rh	
Pd	105	72	2	4.89451	9.78903	ug/l	20	Pd	
Ag	107	115	3	93.18206	186.36411	ug/l	400	Ag	
Cd	111	115	3	488.51559	977.03117	ug/l	2000	Cd	
Sn	118	115	3	451.62859	903.25718	ug/l	2000	Sn	
Sb	121	115	3	248.31304	496.62607	ug/l	1000	Sb	
Te	125	165	2	42.16767	84.33534	ug/l	200	Te	
Cs	133	165	2	41.53165	83.06330	ug/l	2000	Cs	
Ba	137	165	3	497.40250	994.80501	ug/l	5000	Ba	
La	139	165	2	48.47250	96.94501	ug/l	200	La	
Ce	140	165	2	47.73834	95.47668	ug/l	200	Ce	
Pr	141	165	2	48.08674	96.17347	ug/l	200	Pr	
Nd	146	165	2	44.60633	89.21266	ug/l	200	Nd	
Sm	147	165	3	499.97156	999.94312	ug/l	2000	Sm	
Hf	178	165	2	17.51515	35.03029	ug/l	200	Hf	
Ta	181	165	2	4.29946	8.59892	ug/l	200	Ta	
W	182	165	2	501.11506	1002.23012	ug/l	2000	W	
Re	185	193	3	50.78285	101.56569	ug/l	200	Re	
Pt	195	193	2	4.70086	9.40173	ug/l	200	Pt	
Au	197	193	3	26.33102	52.66203	ug/l	2000	Au	
Tl	205	193	3	99.27108	198.54216	ug/l	400	Tl	
Pb	208	193	3	499.05258	998.10515	ug/l	5000	Pb	
Bi	209	193	2	479.62091	959.24182	ug/l	2000	Bi	
Th	232	193	3	376.93342	753.86684	ug/l	2000	Th	
U	238	193	3	522.99244	1045.98488	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5254566	0.75	5676390	92.6	80	120	Li (IS)	
Sc (IS)	45	2	141208	0.66	157398	89.7	80	120	Sc (IS)	
Sc (IS)	45	3	2660845	0.57	2954313	90.1	80	120	Sc (IS)	
Ge (IS)	72	2	342449	1.32	379042	90.3	80	120	Ge (IS)	
Ge (IS)	72	3	2147742	0.92	2413999	89.0	80	120	Ge (IS)	
In (IS)	115	3	13503074	0.36	15281059	88.4	80	120	In (IS)	
Ho (IS)	165	2	9952864	0.79	10495856	94.8	80	120	Ho (IS)	
Ho (IS)	165	3	16025583	0.58	16807844	95.3	80	120	Ho (IS)	
Ir (IS)	193	2	6370419	0.44	6895257	92.4	80	120	Ir (IS)	
Ir (IS)	193	3	7664660	1.07	8354862	91.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**460-196683-D-2-A PDS**
Data File Name	**132SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:27:28-06:00**
Type	**Sample**
VialNumber	**3212**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.70398	1.40796	ug/l	1000	Li	
Be	9	6	3	0.00924	0.01847	ug/l	1000	Be	
B	11	6	3	54.68413	109.36825	ug/l	2000	B	
Na	23	45	2	77358.53013	154717.06025	ug/l	50000	Na	FAILED
Mg	24	45	2	18148.02143	36296.04287	ug/l	50000	Mg	
Al	27	45	2	128.39076	256.78152	ug/l	100000	Al	
P	31	45	2	2667.48668	5334.97335	ug/l	100000	P	
K	39	45	2	6414.83395	12829.66790	ug/l	100000	K	
Ca	44	45	3	50103.95485	100207.90970	ug/l	100000	Ca	
Ti	47	45	3	6.67909	13.35817	ug/l	2000	Ti	
V	51	45	2	1.42394	2.84788	ug/l	2000	V	
Cr	52	45	2	1.86047	3.72093	ug/l	2000	Cr	
Mn	55	72	2	34.59482	69.18963	ug/l	5000	Mn	
Fe	57	72	2	554.29529	1108.59059	ug/l	100000	Fe	
Co	59	72	2	0.24168	0.48335	ug/l	2000	Co	
Ni	60	72	2	2.07440	4.14880	ug/l	2000	Ni	
Cu	63	72	2	137.80409	275.60819	ug/l	2000	Cu	
Zn	66	72	2	65.46129	130.92259	ug/l	5000	Zn	
As	75	72	2	0.64093	1.28185	ug/l	2000	As	
Se	78	72	2	0.40581	0.81161	ug/l	1000	Se	
Sr	88	72	3	162.50473	325.00946	ug/l	2000	Sr	
Y	89	72	2	0.12712	0.25424	ug/l	200	Y	
Zr	90	72	2	0.53749	1.07497	ug/l	2000	Zr	
Nb	93	72	2	210.49566	420.99133	ug/l	100	Nb	FAILED
Mo	95	72	3	1.04926	2.09851	ug/l	1000	Mo	
Ru	101	72	2	-0.00746	-0.01492	ug/l	200	Ru	
Rh	103	72	2	-0.00520	-0.01040	ug/l	200	Rh	
Pd	105	72	2	0.00804	0.01607	ug/l	20	Pd	
Ag	107	115	3	0.36068	0.72137	ug/l	400	Ag	
Cd	111	115	3	0.30356	0.60713	ug/l	2000	Cd	
Sn	118	115	3	2.56434	5.12868	ug/l	2000	Sn	
Sb	121	115	3	0.22695	0.45390	ug/l	1000	Sb	
Te	125	165	2	88.23059	176.46118	ug/l	200	Te	
Cs	133	165	2	0.02087	0.04174	ug/l	2000	Cs	
Ba	137	165	3	19.79282	39.58564	ug/l	5000	Ba	
La	139	165	2	0.08303	0.16606	ug/l	200	La	
Ce	140	165	2	0.16593	0.33186	ug/l	200	Ce	
Pr	141	165	2	0.01497	0.02993	ug/l	200	Pr	
Nd	146	165	2	0.07092	0.14184	ug/l	200	Nd	
Sm	147	165	3	0.02610	0.05219	ug/l	2000	Sm	
Hf	178	165	2	70.22563	140.45126	ug/l	200	Hf	
Ta	181	165	2	66.33540	132.67080	ug/l	200	Ta	
W	182	165	2	1.00138	2.00276	ug/l	2000	W	
Re	185	193	3	-0.00066	-0.00131	ug/l	200	Re	
Pt	195	193	2	0.18758	0.37515	ug/l	200	Pt	
Au	197	193	3	0.93487	1.86975	ug/l	2000	Au	
Tl	205	193	3	0.21049	0.42098	ug/l	400	Tl	
Pb	208	193	3	2.29198	4.58396	ug/l	5000	Pb	
Bi	209	193	2	1.29406	2.58813	ug/l	2000	Bi	
Th	232	193	3	0.23648	0.47295	ug/l	2000	Th	
U	238	193	3	1.04261	2.08522	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5353037	0.58	5676390	94.3	80	120	Li (IS)	
Sc (IS)	45	2	139597	0.89	157398	88.7	80	120	Sc (IS)	
Sc (IS)	45	3	2638387	0.94	2954313	89.3	80	120	Sc (IS)	
Ge (IS)	72	2	337897	0.88	379042	89.1	80	120	Ge (IS)	
Ge (IS)	72	3	2142614	0.09	2413999	88.8	80	120	Ge (IS)	
In (IS)	115	3	13668047	0.37	15281059	89.4	80	120	In (IS)	
Ho (IS)	165	2	10009522	0.65	10495856	95.4	80	120	Ho (IS)	
Ho (IS)	165	3	15889486	0.92	16807844	94.5	80	120	Ho (IS)	
Ir (IS)	193	2	6392652	0.59	6895257	92.7	80	120	Ir (IS)	
Ir (IS)	193	3	7768247	0.64	8354862	93.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**MB 160-453489/1-A**
Data File Name	**133SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:34:18-06:00**
Type	**Sample**
VialNumber	**3301**
Dilution	**2**
Comment	**453489**
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	-0.11216	-0.22432	ug/l	1000	Li	
Be	9	6	3	-0.00043	-0.00086	ug/l	1000	Be	
B	11	6	3	2.40680	4.81359	ug/l	2000	B	
Na	23	45	2	9.90713	19.81426	ug/l	50000	Na	
Mg	24	45	2	1.23292	2.46585	ug/l	50000	Mg	
Al	27	45	2	2.40932	4.81864	ug/l	100000	Al	
P	31	45	2	6.94163	13.88326	ug/l	100000	P	
K	39	45	2	0.28006	0.56013	ug/l	100000	K	
Ca	44	45	3	9.87707	19.75413	ug/l	100000	Ca	
Ti	47	45	3	0.16662	0.33325	ug/l	2000	Ti	
V	51	45	2	0.06586	0.13173	ug/l	2000	V	
Cr	52	45	2	0.03964	0.07929	ug/l	2000	Cr	
Mn	55	72	2	0.03808	0.07616	ug/l	5000	Mn	
Fe	57	72	2	0.04316	0.08631	ug/l	100000	Fe	
Co	59	72	2	0.01110	0.02221	ug/l	2000	Co	
Ni	60	72	2	0.10819	0.21638	ug/l	2000	Ni	
Cu	63	72	2	-0.12849	-0.25698	ug/l	2000	Cu	
Zn	66	72	2	0.31164	0.62328	ug/l	5000	Zn	
As	75	72	2	0.03857	0.07713	ug/l	2000	As	
Se	78	72	2	0.14751	0.29503	ug/l	1000	Se	
Sr	88	72	3	0.04930	0.09860	ug/l	2000	Sr	
Y	89	72	2	-0.00774	-0.01548	ug/l	200	Y	
Zr	90	72	2	0.00826	0.01652	ug/l	2000	Zr	
Nb	93	72	2	0.29459	0.58919	ug/l	100	Nb	
Mo	95	72	3	0.05782	0.11565	ug/l	1000	Mo	
Ru	101	72	2	-0.00786	-0.01571	ug/l	200	Ru	
Rh	103	72	2	-0.00621	-0.01241	ug/l	200	Rh	
Pd	105	72	2	-0.00038	-0.00077	ug/l	20	Pd	
Ag	107	115	3	0.00529	0.01058	ug/l	400	Ag	
Cd	111	115	3	0.00437	0.00873	ug/l	2000	Cd	
Sn	118	115	3	0.13210	0.26420	ug/l	2000	Sn	
Sb	121	115	3	0.04178	0.08356	ug/l	1000	Sb	
Te	125	165	2	0.00415	0.00831	ug/l	200	Te	
Cs	133	165	2	-0.00389	-0.00778	ug/l	2000	Cs	
Ba	137	165	3	0.02755	0.05509	ug/l	5000	Ba	
La	139	165	2	-0.00611	-0.01223	ug/l	200	La	
Ce	140	165	2	-0.00560	-0.01119	ug/l	200	Ce	
Pr	141	165	2	-0.00617	-0.01235	ug/l	200	Pr	
Nd	146	165	2	-0.00386	-0.00772	ug/l	200	Nd	
Sm	147	165	3	-0.00515	-0.01030	ug/l	2000	Sm	
Hf	178	165	2	0.09599	0.19198	ug/l	200	Hf	
Ta	181	165	2	0.04656	0.09313	ug/l	200	Ta	
W	182	165	2	0.38185	0.76369	ug/l	2000	W	
Re	185	193	3	-0.00530	-0.01059	ug/l	200	Re	
Pt	195	193	2	0.00381	0.00762	ug/l	200	Pt	
Au	197	193	3	-0.00518	-0.01035	ug/l	2000	Au	
Tl	205	193	3	0.08767	0.17534	ug/l	400	Tl	
Pb	208	193	3	0.05037	0.10073	ug/l	5000	Pb	
Bi	209	193	2	0.06550	0.13099	ug/l	2000	Bi	
Th	232	193	3	0.06477	0.12954	ug/l	2000	Th	
U	238	193	3	-0.00065	-0.00131	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5599232	1.03	5676390	98.6	80	120	Li (IS)	
Sc (IS)	45	2	144339	0.43	157398	91.7	80	120	Sc (IS)	
Sc (IS)	45	3	2659004	1.66	2954313	90.0	80	120	Sc (IS)	
Ge (IS)	72	2	352872	0.62	379042	93.1	80	120	Ge (IS)	
Ge (IS)	72	3	2263945	1.48	2413999	93.8	80	120	Ge (IS)	
In (IS)	115	3	14427654	2.73	15281059	94.4	80	120	In (IS)	
Ho (IS)	165	2	10354788	0.32	10495856	98.7	80	120	Ho (IS)	
Ho (IS)	165	3	16321189	1.59	16807844	97.1	80	120	Ho (IS)	
Ir (IS)	193	2	6747632	0.81	6895257	97.9	80	120	Ir (IS)	
Ir (IS)	193	3	8142051	2.63	8354862	97.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCS 160-453489/2-A**
Data File Name	**134SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:41:00-06:00**
Type	**Sample**
VialNumber	**3302**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	45.84975	91.69950	ug/l	1000	Li	
Be	9	6	3	42.19632	84.39264	ug/l	1000	Be	
B	11	6	3	86.21953	172.43907	ug/l	2000	B	
Na	23	45	2	4936.13058	9872.26116	ug/l	50000	Na	
Mg	24	45	2	4985.46694	9970.93388	ug/l	50000	Mg	
Al	27	45	2	4920.68751	9841.37501	ug/l	100000	Al	
P	31	45	2	453.97649	907.95298	ug/l	100000	P	
K	39	45	2	4647.02771	9294.05543	ug/l	100000	K	
Ca	44	45	3	4863.19859	9726.39717	ug/l	100000	Ca	
Ti	47	45	3	493.49336	986.98672	ug/l	2000	Ti	
V	51	45	2	463.04514	926.09028	ug/l	2000	V	
Cr	52	45	2	466.74054	933.48109	ug/l	2000	Cr	
Mn	55	72	2	505.84679	1011.69358	ug/l	5000	Mn	
Fe	57	72	2	4868.74509	9737.49019	ug/l	100000	Fe	
Co	59	72	2	505.30998	1010.61996	ug/l	2000	Co	
Ni	60	72	2	545.40004	1090.80009	ug/l	2000	Ni	
Cu	63	72	2	503.57742	1007.15485	ug/l	2000	Cu	
Zn	66	72	2	477.79801	955.59603	ug/l	5000	Zn	
As	75	72	2	478.94958	957.89917	ug/l	2000	As	
Se	78	72	2	235.18689	470.37379	ug/l	1000	Se	
Sr	88	72	3	496.86933	993.73866	ug/l	2000	Sr	
Y	89	72	2	0.00310	0.00621	ug/l	200	Y	
Zr	90	72	2	522.34747	1044.69493	ug/l	2000	Zr	
Nb	93	72	2	0.56218	1.12436	ug/l	100	Nb	
Mo	95	72	3	251.19281	502.38562	ug/l	1000	Mo	
Ru	101	72	2	-0.00753	-0.01506	ug/l	200	Ru	
Rh	103	72	2	0.01481	0.02963	ug/l	200	Rh	
Pd	105	72	2	0.03115	0.06230	ug/l	20	Pd	
Ag	107	115	3	91.70423	183.40846	ug/l	400	Ag	
Cd	111	115	3	468.64441	937.28883	ug/l	2000	Cd	
Sn	118	115	3	473.68166	947.36333	ug/l	2000	Sn	
Sb	121	115	3	237.74128	475.48257	ug/l	1000	Sb	
Te	125	165	2	0.07895	0.15790	ug/l	200	Te	
Cs	133	165	2	-0.00053	-0.00107	ug/l	2000	Cs	
Ba	137	165	3	455.02764	910.05528	ug/l	5000	Ba	
La	139	165	2	0.69084	1.38169	ug/l	200	La	
Ce	140	165	2	0.01588	0.03175	ug/l	200	Ce	
Pr	141	165	2	-0.00256	-0.00511	ug/l	200	Pr	
Nd	146	165	2	0.00625	0.01251	ug/l	200	Nd	
Sm	147	165	3	479.29458	958.58916	ug/l	2000	Sm	
Hf	178	165	2	0.24412	0.48823	ug/l	200	Hf	
Ta	181	165	2	0.47885	0.95771	ug/l	200	Ta	
W	182	165	2	488.88275	977.76551	ug/l	2000	W	
Re	185	193	3	0.00445	0.00889	ug/l	200	Re	
Pt	195	193	2	0.00361	0.00723	ug/l	200	Pt	
Au	197	193	3	-0.01151	-0.02303	ug/l	2000	Au	
Tl	205	193	3	96.63119	193.26239	ug/l	400	Tl	
Pb	208	193	3	485.45527	970.91054	ug/l	5000	Pb	
Bi	209	193	2	489.58854	979.17708	ug/l	2000	Bi	
Th	232	193	3	487.22478	974.44956	ug/l	2000	Th	
U	238	193	3	498.88438	997.76876	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5283716	0.47	5676390	93.1	80	120	Li (IS)	
Sc (IS)	45	2	141420	0.84	157398	89.8	80	120	Sc (IS)	
Sc (IS)	45	3	2629639	0.26	2954313	89.0	80	120	Sc (IS)	
Ge (IS)	72	2	335035	1.65	379042	88.4	80	120	Ge (IS)	
Ge (IS)	72	3	2209306	1.30	2413999	91.5	80	120	Ge (IS)	
In (IS)	115	3	14079302	0.47	15281059	92.1	80	120	In (IS)	
Ho (IS)	165	2	10094582	0.41	10495856	96.2	80	120	Ho (IS)	
Ho (IS)	165	3	16489585	1.62	16807844	98.1	80	120	Ho (IS)	
Ir (IS)	193	2	6435557	1.42	6895257	93.3	80	120	Ir (IS)	
Ir (IS)	193	3	8036909	1.17	8354862	96.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131403-B-1-A**
Data File Name	**135SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:47:44-06:00**
Type	**Sample**
VialNumber	**3303**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	32.76346	65.52691	ug/l	1000	Li	
Be	9	6	3	0.03648	0.07295	ug/l	1000	Be	
B	11	6	3	60.19643	120.39287	ug/l	2000	B	
Na	23	45	2	17272.50694	34545.01388	ug/l	50000	Na	
Mg	24	45	2	91814.11699	183628.23398	ug/l	50000	Mg	FAILED
Al	27	45	2	38.09932	76.19864	ug/l	100000	Al	
P	31	45	2	8792.09878	17584.19756	ug/l	100000	P	
K	39	45	2	111716.38239	223432.76478	ug/l	100000	K	FAILED
Ca	44	45	3	298451.05187	596902.10374	ug/l	100000	Ca	FAILED
Ti	47	45	3	51.55729	103.11458	ug/l	2000	Ti	
V	51	45	2	26.03252	52.06504	ug/l	2000	V	
Cr	52	45	2	6.67318	13.34636	ug/l	2000	Cr	
Mn	55	72	2	1060.83195	2121.66390	ug/l	5000	Mn	
Fe	57	72	2	2489.84447	4979.68894	ug/l	100000	Fe	
Co	59	72	2	6.35508	12.71016	ug/l	2000	Co	
Ni	60	72	2	18.86111	37.72221	ug/l	2000	Ni	
Cu	63	72	2	24.29089	48.58178	ug/l	2000	Cu	
Zn	66	72	2	12.53876	25.07751	ug/l	5000	Zn	
As	75	72	2	109.14734	218.29468	ug/l	2000	As	
Se	78	72	2	2.28265	4.56529	ug/l	1000	Se	
Sr	88	72	3	2460.92194	4921.84389	ug/l	2000	Sr	FAILED
Y	89	72	2	0.58011	1.16022	ug/l	200	Y	
Zr	90	72	2	1.38441	2.76881	ug/l	2000	Zr	
Nb	93	72	2	0.91433	1.82866	ug/l	100	Nb	
Mo	95	72	3	5.14669	10.29338	ug/l	1000	Mo	
Ru	101	72	2	-0.00848	-0.01697	ug/l	200	Ru	
Rh	103	72	2	-0.00484	-0.00967	ug/l	200	Rh	
Pd	105	72	2	0.10628	0.21257	ug/l	20	Pd	
Ag	107	115	3	0.03187	0.06374	ug/l	400	Ag	
Cd	111	115	3	0.14485	0.28970	ug/l	2000	Cd	
Sn	118	115	3	1.60969	3.21937	ug/l	2000	Sn	
Sb	121	115	3	1.07656	2.15312	ug/l	1000	Sb	
Te	125	165	2	0.09695	0.19391	ug/l	200	Te	
Cs	133	165	2	3.35287	6.70575	ug/l	2000	Cs	
Ba	137	165	3	480.68525	961.37049	ug/l	5000	Ba	
La	139	165	2	0.57872	1.15744	ug/l	200	La	
Ce	140	165	2	1.67473	3.34947	ug/l	200	Ce	
Pr	141	165	2	0.12449	0.24898	ug/l	200	Pr	
Nd	146	165	2	0.52803	1.05607	ug/l	200	Nd	
Sm	147	165	3	0.10790	0.21580	ug/l	2000	Sm	
Hf	178	165	2	0.04317	0.08634	ug/l	200	Hf	
Ta	181	165	2	0.12738	0.25477	ug/l	200	Ta	
W	182	165	2	1.30831	2.61661	ug/l	2000	W	
Re	185	193	3	-0.00258	-0.00516	ug/l	200	Re	
Pt	195	193	2	0.00214	0.00428	ug/l	200	Pt	
Au	197	193	3	-0.00722	-0.01444	ug/l	2000	Au	
Tl	205	193	3	0.35422	0.70843	ug/l	400	Tl	
Pb	208	193	3	0.80107	1.60214	ug/l	5000	Pb	
Bi	209	193	2	0.11811	0.23622	ug/l	2000	Bi	
Th	232	193	3	0.34116	0.68233	ug/l	2000	Th	
U	238	193	3	0.29536	0.59073	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5194291	1.07	5676390	91.5	80	120	Li (IS)	
Sc (IS)	45	2	142404	0.36	157398	90.5	80	120	Sc (IS)	
Sc (IS)	45	3	2762487	0.87	2954313	93.5	80	120	Sc (IS)	
Ge (IS)	72	2	326758	0.77	379042	86.2	80	120	Ge (IS)	
Ge (IS)	72	3	2116801	0.75	2413999	87.7	80	120	Ge (IS)	
In (IS)	115	3	13032595	1.11	15281059	85.3	80	120	In (IS)	
Ho (IS)	165	2	9605862	1.44	10495856	91.5	80	120	Ho (IS)	
Ho (IS)	165	3	15419990	0.43	16807844	91.7	80	120	Ho (IS)	
Ir (IS)	193	2	5976107	1.47	6895257	86.7	80	120	Ir (IS)	
Ir (IS)	193	3	7375575	0.33	8354862	88.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131403-B-2-A**
Data File Name	**136SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:54:26-06:00**
Type	**Sample**
VialNumber	**3304**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	38.40417	76.80834	ug/l	1000	Li	
Be	9	6	3	0.02163	0.04326	ug/l	1000	Be	
B	11	6	3	12.45282	24.90564	ug/l	2000	B	
Na	23	45	2	17628.77114	35257.54228	ug/l	50000	Na	
Mg	24	45	2	81995.53945	163991.07890	ug/l	50000	Mg	FAILED
Al	27	45	2	16.18388	32.36776	ug/l	100000	Al	
P	31	45	2	7499.93830	14999.87660	ug/l	100000	P	
K	39	45	2	76920.62849	153841.25698	ug/l	100000	K	
Ca	44	45	3	297307.48445	594614.96891	ug/l	100000	Ca	FAILED
Ti	47	45	3	20.64773	41.29546	ug/l	2000	Ti	
V	51	45	2	12.10573	24.21145	ug/l	2000	V	
Cr	52	45	2	4.46394	8.92789	ug/l	2000	Cr	
Mn	55	72	2	1512.44079	3024.88158	ug/l	5000	Mn	
Fe	57	72	2	2085.30849	4170.61697	ug/l	100000	Fe	
Co	59	72	2	5.85668	11.71336	ug/l	2000	Co	
Ni	60	72	2	21.14129	42.28257	ug/l	2000	Ni	
Cu	63	72	2	13.50194	27.00388	ug/l	2000	Cu	
Zn	66	72	2	6.50081	13.00162	ug/l	5000	Zn	
As	75	72	2	143.10324	286.20648	ug/l	2000	As	
Se	78	72	2	1.38370	2.76739	ug/l	1000	Se	
Sr	88	72	3	2399.60198	4799.20396	ug/l	2000	Sr	FAILED
Y	89	72	2	0.43236	0.86472	ug/l	200	Y	
Zr	90	72	2	0.87527	1.75054	ug/l	2000	Zr	
Nb	93	72	2	0.28665	0.57329	ug/l	100	Nb	
Mo	95	72	3	6.39368	12.78737	ug/l	1000	Mo	
Ru	101	72	2	-0.00814	-0.01627	ug/l	200	Ru	
Rh	103	72	2	-0.00521	-0.01042	ug/l	200	Rh	
Pd	105	72	2	0.10992	0.21984	ug/l	20	Pd	
Ag	107	115	3	0.01906	0.03812	ug/l	400	Ag	
Cd	111	115	3	0.06306	0.12611	ug/l	2000	Cd	
Sn	118	115	3	0.44624	0.89247	ug/l	2000	Sn	
Sb	121	115	3	0.79257	1.58515	ug/l	1000	Sb	
Te	125	165	2	0.05838	0.11676	ug/l	200	Te	
Cs	133	165	2	2.73071	5.46141	ug/l	2000	Cs	
Ba	137	165	3	372.23593	744.47187	ug/l	5000	Ba	
La	139	165	2	0.50962	1.01925	ug/l	200	La	
Ce	140	165	2	1.98717	3.97434	ug/l	200	Ce	
Pr	141	165	2	0.09997	0.19994	ug/l	200	Pr	
Nd	146	165	2	0.40302	0.80605	ug/l	200	Nd	
Sm	147	165	3	0.07850	0.15701	ug/l	2000	Sm	
Hf	178	165	2	0.04026	0.08052	ug/l	200	Hf	
Ta	181	165	2	0.06820	0.13641	ug/l	200	Ta	
W	182	165	2	0.95390	1.90779	ug/l	2000	W	
Re	185	193	3	-0.00350	-0.00700	ug/l	200	Re	
Pt	195	193	2	0.00250	0.00499	ug/l	200	Pt	
Au	197	193	3	-0.01550	-0.03099	ug/l	2000	Au	
Tl	205	193	3	0.11275	0.22551	ug/l	400	Tl	
Pb	208	193	3	0.58092	1.16183	ug/l	5000	Pb	
Bi	209	193	2	0.08090	0.16181	ug/l	2000	Bi	
Th	232	193	3	0.13714	0.27427	ug/l	2000	Th	
U	238	193	3	0.18904	0.37809	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5297271	0.64	5676390	93.3	80	120	Li (IS)	
Sc (IS)	45	2	140899	1.07	157398	89.5	80	120	Sc (IS)	
Sc (IS)	45	3	2739309	1.05	2954313	92.7	80	120	Sc (IS)	
Ge (IS)	72	2	324704	0.52	379042	85.7	80	120	Ge (IS)	
Ge (IS)	72	3	2074570	0.84	2413999	85.9	80	120	Ge (IS)	
In (IS)	115	3	13007709	0.28	15281059	85.1	80	120	In (IS)	
Ho (IS)	165	2	9575859	1.48	10495856	91.2	80	120	Ho (IS)	
Ho (IS)	165	3	15466656	1.11	16807844	92.0	80	120	Ho (IS)	
Ir (IS)	193	2	5993354	0.41	6895257	86.9	80	120	Ir (IS)	
Ir (IS)	193	3	7394338	1.00	8354862	88.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131403-B-2-A SD**
Data File Name	**137SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:01:10-06:00**
Type	**Sample**
VialNumber	**3305**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	7.05099	70.50994	ug/l	1000	Li	
Be	9	6	3	0.00261	0.02610	ug/l	1000	Be	
B	11	6	3	2.70980	27.09799	ug/l	2000	B	
Na	23	45	2	3454.82944	34548.29441	ug/l	50000	Na	
Mg	24	45	2	16401.01627	164010.16267	ug/l	50000	Mg	
Al	27	45	2	6.86686	68.66861	ug/l	100000	Al	
P	31	45	2	1485.73244	14857.32444	ug/l	100000	P	
K	39	45	2	15068.96419	150689.64188	ug/l	100000	K	
Ca	44	45	3	61142.04801	611420.48008	ug/l	100000	Ca	
Ti	47	45	3	4.18013	41.80128	ug/l	2000	Ti	
V	51	45	2	2.38990	23.89898	ug/l	2000	V	
Cr	52	45	2	0.88213	8.82127	ug/l	2000	Cr	
Mn	55	72	2	291.76433	2917.64335	ug/l	5000	Mn	
Fe	57	72	2	400.95471	4009.54714	ug/l	100000	Fe	
Co	59	72	2	1.14002	11.40019	ug/l	2000	Co	
Ni	60	72	2	4.32974	43.29742	ug/l	2000	Ni	
Cu	63	72	2	2.53593	25.35930	ug/l	2000	Cu	
Zn	66	72	2	1.81999	18.19990	ug/l	5000	Zn	
As	75	72	2	27.07928	270.79283	ug/l	2000	As	
Se	78	72	2	0.17005	1.70049	ug/l	1000	Se	
Sr	88	72	3	461.58535	4615.85352	ug/l	2000	Sr	
Y	89	72	2	0.07650	0.76503	ug/l	200	Y	
Zr	90	72	2	0.17972	1.79721	ug/l	2000	Zr	
Nb	93	72	2	-0.01013	-0.10126	ug/l	100	Nb	
Mo	95	72	3	1.25374	12.53741	ug/l	1000	Mo	
Ru	101	72	2	-0.00841	-0.08411	ug/l	200	Ru	
Rh	103	72	2	-0.00604	-0.06040	ug/l	200	Rh	
Pd	105	72	2	0.02284	0.22838	ug/l	20	Pd	
Ag	107	115	3	0.00225	0.02249	ug/l	400	Ag	
Cd	111	115	3	0.01611	0.16111	ug/l	2000	Cd	
Sn	118	115	3	0.11441	1.14409	ug/l	2000	Sn	
Sb	121	115	3	0.18234	1.82340	ug/l	1000	Sb	
Te	125	165	2	0.00503	0.05029	ug/l	200	Te	
Cs	133	165	2	0.50977	5.09766	ug/l	2000	Cs	
Ba	137	165	3	67.38922	673.89216	ug/l	5000	Ba	
La	139	165	2	0.09246	0.92465	ug/l	200	La	
Ce	140	165	2	0.38298	3.82975	ug/l	200	Ce	
Pr	141	165	2	0.01439	0.14386	ug/l	200	Pr	
Nd	146	165	2	0.08152	0.81523	ug/l	200	Nd	
Sm	147	165	3	0.01485	0.14854	ug/l	2000	Sm	
Hf	178	165	2	0.02856	0.28558	ug/l	200	Hf	
Ta	181	165	2	0.00208	0.02082	ug/l	200	Ta	
W	182	165	2	0.21929	2.19287	ug/l	2000	W	
Re	185	193	3	-0.00472	-0.04715	ug/l	200	Re	
Pt	195	193	2	0.00016	0.00159	ug/l	200	Pt	
Au	197	193	3	-0.02104	-0.21041	ug/l	2000	Au	
Tl	205	193	3	0.05073	0.50734	ug/l	400	Tl	
Pb	208	193	3	0.12187	1.21871	ug/l	5000	Pb	
Bi	209	193	2	0.04883	0.48833	ug/l	2000	Bi	
Th	232	193	3	0.03815	0.38154	ug/l	2000	Th	
U	238	193	3	0.03630	0.36305	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5685365	0.69	5676390	100.2	80	120	Li (IS)	
Sc (IS)	45	2	139499	0.32	157398	88.6	80	120	Sc (IS)	
Sc (IS)	45	3	2641180	0.36	2954313	89.4	80	120	Sc (IS)	
Ge (IS)	72	2	331868	0.11	379042	87.6	80	120	Ge (IS)	
Ge (IS)	72	3	2153985	0.87	2413999	89.2	80	120	Ge (IS)	
In (IS)	115	3	13770714	0.46	15281059	90.1	80	120	In (IS)	
Ho (IS)	165	2	9998457	0.79	10495856	95.3	80	120	Ho (IS)	
Ho (IS)	165	3	15665240	0.74	16807844	93.2	80	120	Ho (IS)	
Ir (IS)	193	2	6433210	0.88	6895257	93.3	80	120	Ir (IS)	
Ir (IS)	193	3	7715139	0.99	8354862	92.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131403-B-2-B MS**
Data File Name	**138SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:07:53-06:00**
Type	**Sample**
VialNumber	**3306**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	84.45184	168.90369	ug/l	1000	Li	
Be	9	6	3	42.79970	85.59940	ug/l	1000	Be	
B	11	6	3	93.73042	187.46084	ug/l	2000	B	
Na	23	45	2	22173.48350	44346.96700	ug/l	50000	Na	
Mg	24	45	2	86304.90852	172609.81704	ug/l	50000	Mg	FAILED
Al	27	45	2	5157.61326	10315.22652	ug/l	100000	Al	
P	31	45	2	7811.65829	15623.31657	ug/l	100000	P	
K	39	45	2	79379.79550	158759.59100	ug/l	100000	K	
Ca	44	45	3	301805.87237	603611.74473	ug/l	100000	Ca	FAILED
Ti	47	45	3	453.21028	906.42056	ug/l	2000	Ti	
V	51	45	2	485.42643	970.85285	ug/l	2000	V	
Cr	52	45	2	469.69204	939.38408	ug/l	2000	Cr	
Mn	55	72	2	2002.33282	4004.66564	ug/l	5000	Mn	
Fe	57	72	2	7514.63725	15029.27450	ug/l	100000	Fe	
Co	59	72	2	512.83425	1025.66850	ug/l	2000	Co	
Ni	60	72	2	557.50622	1115.01244	ug/l	2000	Ni	
Cu	63	72	2	507.93301	1015.86602	ug/l	2000	Cu	
Zn	66	72	2	477.60542	955.21084	ug/l	5000	Zn	
As	75	72	2	652.26690	1304.53381	ug/l	2000	As	
Se	78	72	2	254.47549	508.95098	ug/l	1000	Se	
Sr	88	72	3	2962.77308	5925.54616	ug/l	2000	Sr	FAILED
Y	89	72	2	0.43409	0.86818	ug/l	200	Y	
Zr	90	72	2	404.26357	808.52713	ug/l	2000	Zr	
Nb	93	72	2	0.39521	0.79042	ug/l	100	Nb	
Mo	95	72	3	279.48400	558.96801	ug/l	1000	Mo	
Ru	101	72	2	-0.00727	-0.01454	ug/l	200	Ru	
Rh	103	72	2	0.01803	0.03606	ug/l	200	Rh	
Pd	105	72	2	0.14737	0.29475	ug/l	20	Pd	
Ag	107	115	3	89.49007	178.98015	ug/l	400	Ag	
Cd	111	115	3	468.36182	936.72364	ug/l	2000	Cd	
Sn	118	115	3	444.14687	888.29373	ug/l	2000	Sn	
Sb	121	115	3	244.22549	488.45097	ug/l	1000	Sb	
Te	125	165	2	0.20680	0.41360	ug/l	200	Te	
Cs	133	165	2	2.66532	5.33065	ug/l	2000	Cs	
Ba	137	165	3	832.42525	1664.85050	ug/l	5000	Ba	
La	139	165	2	1.21877	2.43754	ug/l	200	La	
Ce	140	165	2	1.99755	3.99511	ug/l	200	Ce	
Pr	141	165	2	0.10296	0.20592	ug/l	200	Pr	
Nd	146	165	2	0.42356	0.84712	ug/l	200	Nd	
Sm	147	165	3	493.14827	986.29654	ug/l	2000	Sm	
Hf	178	165	2	0.10275	0.20550	ug/l	200	Hf	
Ta	181	165	2	0.31147	0.62295	ug/l	200	Ta	
W	182	165	2	495.29459	990.58918	ug/l	2000	W	
Re	185	193	3	0.00540	0.01080	ug/l	200	Re	
Pt	195	193	2	-0.00016	-0.00032	ug/l	200	Pt	
Au	197	193	3	-0.01540	-0.03079	ug/l	2000	Au	
Tl	205	193	3	95.87216	191.74431	ug/l	400	Tl	
Pb	208	193	3	479.43186	958.86372	ug/l	5000	Pb	
Bi	209	193	2	484.83050	969.66100	ug/l	2000	Bi	
Th	232	193	3	428.82281	857.64563	ug/l	2000	Th	
U	238	193	3	514.73180	1029.46361	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5222494	0.76	5676390	92.0	80	120	Li (IS)	
Sc (IS)	45	2	138497	1.90	157398	88.0	80	120	Sc (IS)	
Sc (IS)	45	3	2591824	1.52	2954313	87.7	80	120	Sc (IS)	
Ge (IS)	72	2	311317	0.82	379042	82.1	80	120	Ge (IS)	
Ge (IS)	72	3	1946777	0.90	2413999	80.6	80	120	Ge (IS)	
In (IS)	115	3	12577172	0.18	15281059	82.3	80	120	In (IS)	
Ho (IS)	165	2	9357859	0.82	10495856	89.2	80	120	Ho (IS)	
Ho (IS)	165	3	14975053	0.86	16807844	89.1	80	120	Ho (IS)	
Ir (IS)	193	2	5687374	1.50	6895257	82.5	80	120	Ir (IS)	
Ir (IS)	193	3	7101543	0.39	8354862	85.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**139LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:14:37-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	4.36626	ug/l	5	87.3	80	120	Li	
Be	9	6	3	0.47880	ug/l	0.5	95.8	80	120	Be	
B	11	6	3	82.55983	ug/l	100	82.6	80	120	B	
Na	23	45	2	109.22166	ug/l	100	109.2	80	120	Na	
Mg	24	45	2	58.44776	ug/l	50	116.9	80	120	Mg	
Al	27	45	2	55.06713	ug/l	50	110.1	80	120	Al	
P	31	45	2	98.70212	ug/l	100	98.7	80	120	P	
K	39	45	2	105.16487	ug/l	100	105.2	80	120	K	
Ca	44	45	3	213.12912	ug/l	200	106.6	80	120	Ca	
Ti	47	45	3	5.16046	ug/l	5	103.2	80	120	Ti	
V	51	45	2	9.70268	ug/l	10	97.0	80	120	V	
Cr	52	45	2	9.75542	ug/l	10	97.6	80	120	Cr	
Mn	55	72	2	4.52024	ug/l	4	113.0	80	120	Mn	
Fe	57	72	2	54.13024	ug/l	50	108.3	80	120	Fe	
Co	59	72	2	2.13260	ug/l	2	106.6	80	120	Co	
Ni	60	72	2	5.56605	ug/l	5	111.3	80	120	Ni	
Cu	63	72	2	3.11987	ug/l	3	104.0	80	120	Cu	
Zn	66	72	2	21.80734	ug/l	20	109.0	80	120	Zn	
As	75	72	2	10.72581	ug/l	10	107.3	80	120	As	
Se	78	72	2	5.54367	ug/l	5	110.9	80	120	Se	
Sr	88	72	3	5.26961	ug/l	5	105.4	80	120	Sr	
Y	89	72	2	5.11443	ug/l	5	102.3	80	120	Y	
Zr	90	72	2	5.22065	ug/l	5	104.4	80	120	Zr	
Nb	93	72	2	16.68655	ug/l	25	66.7	80	120	Nb	FAILED
Mo	95	72	3	5.11774	ug/l	5	102.4	80	120	Mo	
Ru	101	72	2	10.56084	ug/l	10	105.6	80	120	Ru	
Rh	103	72	2	10.19264	ug/l	10	101.9	80	120	Rh	
Pd	105	72	2	0.58321	ug/l	0.5	116.6	80	120	Pd	
Ag	107	115	3	1.87339	ug/l	2	93.7	80	120	Ag	
Cd	111	115	3	0.57337	ug/l	0.5	114.7	80	120	Cd	
Sn	118	115	3	1.90617	ug/l	2	95.3	80	120	Sn	
Sb	121	115	3	4.72088	ug/l	5	94.4	80	120	Sb	
Te	125	165	2	9.32288	ug/l	10	93.2	80	120	Te	
Cs	133	165	2	0.92309	ug/l	1	92.3	80	120	Cs	
Ba	137	165	3	1.94703	ug/l	2	97.4	80	120	Ba	
La	139	165	2	1.82193	ug/l	2	91.1	80	120	La	
Ce	140	165	2	9.03224	ug/l	10	90.3	80	120	Ce	
Pr	141	165	2	1.86108	ug/l	2	93.1	80	120	Pr	
Nd	146	165	2	1.88656	ug/l	2	94.3	80	120	Nd	
Sm	147	165	3	9.55308	ug/l	10	95.5	80	120	Sm	
Hf	178	165	2	8.43563	ug/l	10	84.4	80	120	Hf	
Ta	181	165	2	5.06115	ug/l	10	50.6	80	120	Ta	FAILED
W	182	165	2	5.13520	ug/l	5	102.7	80	120	W	
Re	185	193	3	9.13933	ug/l	10	91.4	80	120	Re	
Pt	195	193	2	0.98641	ug/l	1	98.6	80	120	Pt	
Au	197	193	3	4.59042	ug/l	5	91.8	80	120	Au	
Tl	205	193	3	2.00009	ug/l	2	100.0	80	120	Tl	
Pb	208	193	3	2.86697	ug/l	3	95.6	80	120	Pb	
Bi	209	193	2	18.82299	ug/l	20	94.1	80	120	Bi	
Th	232	193	3	2.14969	ug/l	2	107.5	80	120	Th	
U	238	193	3	0.97801	ug/l	1	97.8	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5783588	1.15	5676390	101.9	80	120	Li (IS)	
Sc (IS)	45	2	139457	1.13	157398	88.6	80	120	Sc (IS)	
Sc (IS)	45	3	2580241	0.70	2954313	87.3	80	120	Sc (IS)	
Ge (IS)	72	2	338941	0.82	379042	89.4	80	120	Ge (IS)	
Ge (IS)	72	3	2116624	0.47	2413999	87.7	80	120	Ge (IS)	
In (IS)	115	3	13935156	0.27	15281059	91.2	80	120	In (IS)	
Ho (IS)	165	2	10112394	0.75	10495856	96.3	80	120	Ho (IS)	
Ho (IS)	165	3	15744438	0.17	16807844	93.7	80	120	Ho (IS)	
Ir (IS)	193	2	6559796	0.83	6895257	95.1	80	120	Ir (IS)	
Ir (IS)	193	3	7816355	1.04	8354862	93.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**140_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:21:19-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	93.81788	ug/l	100	93.8	90	110	Li	
Be	9	6	3	89.71657	ug/l	100	89.7	90	110	Be	FAILED
B	11	6	3	175.54447	ug/l	200	87.8	90	110	B	FAILED
Na	23	45	2	2483.17823	ug/l	2500	99.3	90	110	Na	
Mg	24	45	2	2530.89843	ug/l	2500	101.2	90	110	Mg	
Al	27	45	2	2462.61472	ug/l	2500	98.5	90	110	Al	
P	31	45	2	2451.09940	ug/l	2500	98.0	90	110	P	
K	39	45	2	2465.41342	ug/l	2500	98.6	90	110	K	
Ca	44	45	3	2543.01051	ug/l	2500	101.7	90	110	Ca	
Ti	47	45	3	101.09076	ug/l	100	101.1	90	110	Ti	
V	51	45	2	95.03926	ug/l	100	95.0	90	110	V	
Cr	52	45	2	93.97101	ug/l	100	94.0	90	110	Cr	
Mn	55	72	2	98.53297	ug/l	100	98.5	90	110	Mn	
Fe	57	72	2	2480.08707	ug/l	2500	99.2	90	110	Fe	
Co	59	72	2	103.55594	ug/l	100	103.6	90	110	Co	
Ni	60	72	2	103.99927	ug/l	100	104.0	90	110	Ni	
Cu	63	72	2	95.59802	ug/l	100	95.6	90	110	Cu	
Zn	66	72	2	104.59952	ug/l	100	104.6	90	110	Zn	
As	75	72	2	103.96110	ug/l	100	104.0	90	110	As	
Se	78	72	2	51.55558	ug/l	50	103.1	90	110	Se	
Sr	88	72	3	104.89044	ug/l	100	104.9	90	110	Sr	
Y	89	72	2	106.96637	ug/l	100	107.0	90	110	Y	
Zr	90	72	2	106.59754	ug/l	100	106.6	90	110	Zr	
Nb	93	72	2	53.66817	ug/l	50	107.3	90	110	Nb	
Mo	95	72	3	49.92230	ug/l	50	99.8	90	110	Mo	
Ru	101	72	2	102.66010	ug/l	100	102.7	90	110	Ru	
Rh	103	72	2	109.05934	ug/l	100	109.1	90	110	Rh	
Pd	105	72	2	11.02004	ug/l	10	110.2	90	110	Pd	FAILED
Ag	107	115	3	18.06467	ug/l	20	90.3	90	110	Ag	
Cd	111	115	3	94.12579	ug/l	100	94.1	90	110	Cd	
Sn	118	115	3	100.35921	ug/l	100	100.4	90	110	Sn	
Sb	121	115	3	50.13862	ug/l	50	100.3	90	110	Sb	
Te	125	165	2	95.80344	ug/l	100	95.8	90	110	Te	
Cs	133	165	2	97.47410	ug/l	100	97.5	90	110	Cs	
Ba	137	165	3	97.86331	ug/l	100	97.9	90	110	Ba	
La	139	165	2	97.98341	ug/l	100	98.0	90	110	La	
Ce	140	165	2	98.88969	ug/l	100	98.9	90	110	Ce	
Pr	141	165	2	98.86481	ug/l	100	98.9	90	110	Pr	
Nd	146	165	2	91.94339	ug/l	100	91.9	90	110	Nd	
Sm	147	165	3	101.21742	ug/l	100	101.2	90	110	Sm	
Hf	178	165	2	100.54645	ug/l	100	100.5	90	110	Hf	
Ta	181	165	2	101.78059	ug/l	100	101.8	90	110	Ta	
W	182	165	2	102.24819	ug/l	100	102.2	90	110	W	
Re	185	193	3	99.72123	ug/l	100	99.7	90	110	Re	
Pt	195	193	2	10.05457	ug/l	10	100.5	90	110	Pt	
Au	197	193	3	100.23219	ug/l	100	100.2	90	110	Au	
Tl	205	193	3	19.98664	ug/l	20	99.9	90	110	Tl	
Pb	208	193	3	101.47121	ug/l	100	101.5	90	110	Pb	
Bi	209	193	2	101.93162	ug/l	100	101.9	90	110	Bi	
Th	232	193	3	100.85785	ug/l	100	100.9	90	110	Th	
U	238	193	3	102.14529	ug/l	100	102.1	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5459884	0.41	5676390	96.2	80	120	Li (IS)	
Sc (IS)	45	2	135660	1.02	157398	86.2	80	120	Sc (IS)	
Sc (IS)	45	3	2535043	0.98	2954313	85.8	80	120	Sc (IS)	
Ge (IS)	72	2	337182	0.24	379042	89.0	80	120	Ge (IS)	
Ge (IS)	72	3	2115134	0.11	2413999	87.6	80	120	Ge (IS)	
In (IS)	115	3	13821089	0.46	15281059	90.4	80	120	In (IS)	
Ho (IS)	165	2	9972449	0.28	10495856	95.0	80	120	Ho (IS)	
Ho (IS)	165	3	15743838	1.43	16807844	93.7	80	120	Ho (IS)	
Ir (IS)	193	2	6502393	1.17	6895257	94.3	80	120	Ir (IS)	
Ir (IS)	193	3	7851272	0.68	8354862	94.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**141_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:28:06-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	-0.33970	ug/l	1.388	Li	
Be	9	6	3	0.01049	ug/l	0.7	Be	
B	11	6	3	2.82765	ug/l	20	B	
Na	23	45	2	5.96925	ug/l	30	Na	
Mg	24	45	2	0.38494	ug/l	11.18	Mg	
Al	27	45	2	0.19238	ug/l	25.8	Al	
P	31	45	2	0.95960	ug/l	16.46	P	
K	39	45	2	1.10381	ug/l	83.2	K	
Ca	44	45	3	-0.48525	ug/l	136.2	Ca	
Ti	47	45	3	0.01340	ug/l	4.2	Ti	
V	51	45	2	-0.00114	ug/l	4.74	V	
Cr	52	45	2	0.00932	ug/l	6.52	Cr	
Mn	55	72	2	0.09877	ug/l	0.49	Mn	
Fe	57	72	2	0.30463	ug/l	40.7	Fe	
Co	59	72	2	0.01971	ug/l	0.434	Co	
Ni	60	72	2	0.02186	ug/l	0.8	Ni	
Cu	63	72	2	-0.25556	ug/l	0.902	Cu	
Zn	66	72	2	0.05670	ug/l	16.58	Zn	
As	75	72	2	0.04491	ug/l	2.36	As	
Se	78	72	2	-0.18957	ug/l	3.18	Se	
Sr	88	72	3	0.02842	ug/l	2	Sr	
Y	89	72	2	0.00682	ug/l	0.424	Y	
Zr	90	72	2	0.04432	ug/l	0.496	Zr	
Nb	93	72	2	0.34153	ug/l	4.62	Nb	
Mo	95	72	3	0.09772	ug/l	2	Mo	
Ru	101	72	2	0.00305	ug/l	2	Ru	
Rh	103	72	2	0.00740	ug/l	1.634	Rh	
Pd	105	72	2	0.00555	ug/l	0.08	Pd	
Ag	107	115	3	0.00400	ug/l	1.54	Ag	
Cd	111	115	3	0.01609	ug/l	0.4	Cd	
Sn	118	115	3	0.04697	ug/l	2	Sn	
Sb	121	115	3	0.05832	ug/l	3.34	Sb	
Te	125	165	2	0.08116	ug/l	1.072	Te	
Cs	133	165	2	0.01389	ug/l	0.106	Cs	
Ba	137	165	3	0.01075	ug/l	0.446	Ba	
La	139	165	2	0.00549	ug/l	0.102	La	
Ce	140	165	2	0.00479	ug/l	1.772	Ce	
Pr	141	165	2	0.00580	ug/l	0.084	Pr	
Nd	146	165	2	0.00728	ug/l	0.208	Nd	
Sm	147	165	3	0.00545	ug/l	0.652	Sm	
Hf	178	165	2	0.05454	ug/l	2.26	Hf	
Ta	181	165	2	0.00059	ug/l	1.46	Ta	
W	182	165	2	0.41272	ug/l	4	W	
Re	185	193	3	0.00255	ug/l	0.05	Re	
Pt	195	193	2	0.00092	ug/l	0.12	Pt	
Au	197	193	3	0.16046	ug/l	1	Au	
Tl	205	193	3	0.07134	ug/l	1.1	Tl	
Pb	208	193	3	0.02390	ug/l	0.346	Pb	
Bi	209	193	2	0.06123	ug/l	1.464	Bi	
Th	232	193	3	0.06488	ug/l	1.104	Th	
U	238	193	3	0.00808	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5616795	0.76	5676390	99.0	80	120	Li (IS)	
Sc (IS)	45	2	134939	0.45	157398	85.7	80	120	Sc (IS)	
Sc (IS)	45	3	2536954	0.31	2954313	85.9	80	120	Sc (IS)	
Ge (IS)	72	2	325031	0.67	379042	85.8	80	120	Ge (IS)	
Ge (IS)	72	3	2071643	0.74	2413999	85.8	80	120	Ge (IS)	
In (IS)	115	3	13853241	0.59	15281059	90.7	80	120	In (IS)	
Ho (IS)	165	2	9893338	1.08	10495856	94.3	80	120	Ho (IS)	
Ho (IS)	165	3	15542011	0.16	16807844	92.5	80	120	Ho (IS)	
Ir (IS)	193	2	6577180	0.58	6895257	95.4	80	120	Ir (IS)	
Ir (IS)	193	3	7893826	0.66	8354862	94.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131403-B-2-C MSD**
Data File Name	**142SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:34:49-06:00**
Type	**Sample**
VialNumber	**3307**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	84.17658	168.35315	ug/l	1000	Li	
Be	9	6	3	42.93218	85.86435	ug/l	1000	Be	
B	11	6	3	94.31586	188.63172	ug/l	2000	B	
Na	23	45	2	22274.04823	44548.09647	ug/l	50000	Na	
Mg	24	45	2	88013.81495	176027.62990	ug/l	50000	Mg	FAILED
Al	27	45	2	5185.30318	10370.60636	ug/l	100000	Al	
P	31	45	2	7867.30576	15734.61153	ug/l	100000	P	
K	39	45	2	80302.60675	160605.21351	ug/l	100000	K	
Ca	44	45	3	309529.58929	619059.17857	ug/l	100000	Ca	FAILED
Ti	47	45	3	445.97942	891.95884	ug/l	2000	Ti	
V	51	45	2	494.98190	989.96381	ug/l	2000	V	
Cr	52	45	2	476.39011	952.78023	ug/l	2000	Cr	
Mn	55	72	2	2024.60756	4049.21511	ug/l	5000	Mn	
Fe	57	72	2	7539.43999	15078.87999	ug/l	100000	Fe	
Co	59	72	2	518.96626	1037.93251	ug/l	2000	Co	
Ni	60	72	2	559.83994	1119.67989	ug/l	2000	Ni	
Cu	63	72	2	510.72752	1021.45504	ug/l	2000	Cu	
Zn	66	72	2	477.27976	954.55951	ug/l	5000	Zn	
As	75	72	2	652.85012	1305.70024	ug/l	2000	As	
Se	78	72	2	258.10939	516.21878	ug/l	1000	Se	
Sr	88	72	3	2989.85240	5979.70479	ug/l	2000	Sr	FAILED
Y	89	72	2	0.44747	0.89495	ug/l	200	Y	
Zr	90	72	2	407.97616	815.95233	ug/l	2000	Zr	
Nb	93	72	2	1.28624	2.57247	ug/l	100	Nb	
Mo	95	72	3	273.85410	547.70821	ug/l	1000	Mo	
Ru	101	72	2	-0.00574	-0.01148	ug/l	200	Ru	
Rh	103	72	2	0.01872	0.03744	ug/l	200	Rh	
Pd	105	72	2	0.15886	0.31773	ug/l	20	Pd	
Ag	107	115	3	90.10983	180.21967	ug/l	400	Ag	
Cd	111	115	3	468.09397	936.18795	ug/l	2000	Cd	
Sn	118	115	3	457.29236	914.58473	ug/l	2000	Sn	
Sb	121	115	3	235.51692	471.03385	ug/l	1000	Sb	
Te	125	165	2	0.12017	0.24034	ug/l	200	Te	
Cs	133	165	2	2.73981	5.47961	ug/l	2000	Cs	
Ba	137	165	3	836.72910	1673.45820	ug/l	5000	Ba	
La	139	165	2	1.22177	2.44353	ug/l	200	La	
Ce	140	165	2	2.02755	4.05510	ug/l	200	Ce	
Pr	141	165	2	0.10494	0.20987	ug/l	200	Pr	
Nd	146	165	2	0.40875	0.81750	ug/l	200	Nd	
Sm	147	165	3	490.59069	981.18138	ug/l	2000	Sm	
Hf	178	165	2	0.51060	1.02119	ug/l	200	Hf	
Ta	181	165	2	0.36622	0.73245	ug/l	200	Ta	
W	182	165	2	494.56128	989.12256	ug/l	2000	W	
Re	185	193	3	0.00730	0.01460	ug/l	200	Re	
Pt	195	193	2	0.00316	0.00631	ug/l	200	Pt	
Au	197	193	3	0.03116	0.06232	ug/l	2000	Au	
Tl	205	193	3	96.65352	193.30705	ug/l	400	Tl	
Pb	208	193	3	480.17151	960.34302	ug/l	5000	Pb	
Bi	209	193	2	486.07202	972.14404	ug/l	2000	Bi	
Th	232	193	3	436.43438	872.86877	ug/l	2000	Th	
U	238	193	3	516.77654	1033.55309	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5087300	1.84	5676390	89.6	80	120	Li (IS)	
Sc (IS)	45	2	133064	0.66	157398	84.5	80	120	Sc (IS)	
Sc (IS)	45	3	2510602	1.83	2954313	85.0	80	120	Sc (IS)	
Ge (IS)	72	2	302803	0.39	379042	79.9	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	1921809	2.11	2413999	79.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	12384408	2.49	15281059	81.0	80	120	In (IS)	
Ho (IS)	165	2	9194772	1.40	10495856	87.6	80	120	Ho (IS)	
Ho (IS)	165	3	14807204	2.55	16807844	88.1	80	120	Ho (IS)	
Ir (IS)	193	2	5616850	0.47	6895257	81.5	80	120	Ir (IS)	
Ir (IS)	193	3	7037573	2.70	8354862	84.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131403-B-2-D MS**
Data File Name	**143SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:41:33-06:00**
Type	**Sample**
VialNumber	**3308**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	38.28086	76.56171	ug/l	1000	Li	
Be	9	6	3	0.02355	0.04711	ug/l	1000	Be	
B	11	6	3	13.04895	26.09789	ug/l	2000	B	
Na	23	45	2	17379.58511	34759.17021	ug/l	50000	Na	
Mg	24	45	2	81357.07766	162714.15531	ug/l	50000	Mg	FAILED
Al	27	45	2	15.68345	31.36689	ug/l	100000	Al	
P	31	45	2	7476.71866	14953.43732	ug/l	100000	P	
K	39	45	2	76876.84141	153753.68283	ug/l	100000	K	
Ca	44	45	3	304497.57237	608995.14473	ug/l	100000	Ca	FAILED
Ti	47	45	3	21.13828	42.27656	ug/l	2000	Ti	
V	51	45	2	12.17186	24.34371	ug/l	2000	V	
Cr	52	45	2	4.53232	9.06463	ug/l	2000	Cr	
Mn	55	72	2	1508.44589	3016.89178	ug/l	5000	Mn	
Fe	57	72	2	2073.83031	4147.66062	ug/l	100000	Fe	
Co	59	72	2	5.84129	11.68258	ug/l	2000	Co	
Ni	60	72	2	21.16189	42.32377	ug/l	2000	Ni	
Cu	63	72	2	13.53264	27.06528	ug/l	2000	Cu	
Zn	66	72	2	6.52995	13.05990	ug/l	5000	Zn	
As	75	72	2	164.62131	329.24262	ug/l	2000	As	
Se	78	72	2	6.32570	12.65140	ug/l	1000	Se	
Sr	88	72	3	2459.69808	4919.39616	ug/l	2000	Sr	FAILED
Y	89	72	2	0.43793	0.87586	ug/l	200	Y	
Zr	90	72	2	1.03488	2.06975	ug/l	2000	Zr	
Nb	93	72	2	0.34479	0.68958	ug/l	100	Nb	
Mo	95	72	3	6.79152	13.58305	ug/l	1000	Mo	
Ru	101	72	2	-0.00960	-0.01919	ug/l	200	Ru	
Rh	103	72	2	-0.00394	-0.00788	ug/l	200	Rh	
Pd	105	72	2	0.10914	0.21828	ug/l	20	Pd	
Ag	107	115	3	0.02427	0.04855	ug/l	400	Ag	
Cd	111	115	3	2.26107	4.52214	ug/l	2000	Cd	
Sn	118	115	3	0.46760	0.93519	ug/l	2000	Sn	
Sb	121	115	3	50.40612	100.81225	ug/l	1000	Sb	
Te	125	165	2	0.05292	0.10584	ug/l	200	Te	
Cs	133	165	2	2.74503	5.49006	ug/l	2000	Cs	
Ba	137	165	3	379.63040	759.26079	ug/l	5000	Ba	
La	139	165	2	0.50832	1.01663	ug/l	200	La	
Ce	140	165	2	1.99700	3.99400	ug/l	200	Ce	
Pr	141	165	2	0.10022	0.20044	ug/l	200	Pr	
Nd	146	165	2	0.42317	0.84634	ug/l	200	Nd	
Sm	147	165	3	0.09248	0.18496	ug/l	2000	Sm	
Hf	178	165	2	0.04454	0.08909	ug/l	200	Hf	
Ta	181	165	2	0.05867	0.11735	ug/l	200	Ta	
W	182	165	2	1.31531	2.63061	ug/l	2000	W	
Re	185	193	3	-0.00277	-0.00553	ug/l	200	Re	
Pt	195	193	2	0.00076	0.00152	ug/l	200	Pt	
Au	197	193	3	0.00217	0.00433	ug/l	2000	Au	
Tl	205	193	3	25.19169	50.38338	ug/l	400	Tl	
Pb	208	193	3	9.44843	18.89686	ug/l	5000	Pb	
Bi	209	193	2	0.11587	0.23174	ug/l	2000	Bi	
Th	232	193	3	0.39128	0.78256	ug/l	2000	Th	
U	238	193	3	0.21619	0.43238	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5077067	0.25	5676390	89.4	80	120	Li (IS)	
Sc (IS)	45	2	130947	0.35	157398	83.2	80	120	Sc (IS)	
Sc (IS)	45	3	2523050	0.35	2954313	85.4	80	120	Sc (IS)	
Ge (IS)	72	2	304137	0.49	379042	80.2	80	120	Ge (IS)	
Ge (IS)	72	3	1923411	1.48	2413999	79.7	80	120	Ge (IS)	FAILED
In (IS)	115	3	12395844	1.01	15281059	81.1	80	120	In (IS)	
Ho (IS)	165	2	9190456	0.92	10495856	87.6	80	120	Ho (IS)	
Ho (IS)	165	3	14473717	0.55	16807844	86.1	80	120	Ho (IS)	
Ir (IS)	193	2	5756309	0.54	6895257	83.5	80	120	Ir (IS)	
Ir (IS)	193	3	6924569	0.22	8354862	82.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131403-B-2-E MSD**
Data File Name	**144SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:48:18-06:00**
Type	**Sample**
VialNumber	**3309**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	38.46635	76.93271	ug/l	1000	Li	
Be	9	6	3	0.02050	0.04099	ug/l	1000	Be	
B	11	6	3	12.05787	24.11575	ug/l	2000	B	
Na	23	45	2	17338.40135	34676.80270	ug/l	50000	Na	
Mg	24	45	2	82140.31695	164280.63391	ug/l	50000	Mg	FAILED
Al	27	45	2	17.76838	35.53677	ug/l	100000	Al	
P	31	45	2	7594.47128	15188.94257	ug/l	100000	P	
K	39	45	2	78114.11777	156228.23555	ug/l	100000	K	
Ca	44	45	3	304625.19627	609250.39254	ug/l	100000	Ca	FAILED
Ti	47	45	3	21.02400	42.04800	ug/l	2000	Ti	
V	51	45	2	12.32366	24.64733	ug/l	2000	V	
Cr	52	45	2	4.47262	8.94524	ug/l	2000	Cr	
Mn	55	72	2	1525.32115	3050.64229	ug/l	5000	Mn	
Fe	57	72	2	2092.34836	4184.69673	ug/l	100000	Fe	
Co	59	72	2	5.83684	11.67367	ug/l	2000	Co	
Ni	60	72	2	21.22554	42.45107	ug/l	2000	Ni	
Cu	63	72	2	34.27604	68.55208	ug/l	2000	Cu	
Zn	66	72	2	18.66384	37.32767	ug/l	5000	Zn	
As	75	72	2	165.68051	331.36102	ug/l	2000	As	
Se	78	72	2	6.83847	13.67693	ug/l	1000	Se	
Sr	88	72	3	2488.12419	4976.24838	ug/l	2000	Sr	FAILED
Y	89	72	2	0.42729	0.85457	ug/l	200	Y	
Zr	90	72	2	0.78069	1.56137	ug/l	2000	Zr	
Nb	93	72	2	0.30319	0.60637	ug/l	100	Nb	
Mo	95	72	3	6.76219	13.52439	ug/l	1000	Mo	
Ru	101	72	2	-0.00790	-0.01581	ug/l	200	Ru	
Rh	103	72	2	-0.00416	-0.00831	ug/l	200	Rh	
Pd	105	72	2	0.10889	0.21778	ug/l	20	Pd	
Ag	107	115	3	0.01145	0.02290	ug/l	400	Ag	
Cd	111	115	3	2.21395	4.42789	ug/l	2000	Cd	
Sn	118	115	3	0.48720	0.97440	ug/l	2000	Sn	
Sb	121	115	3	49.91170	99.82340	ug/l	1000	Sb	
Te	125	165	2	0.05711	0.11422	ug/l	200	Te	
Cs	133	165	2	2.72061	5.44122	ug/l	2000	Cs	
Ba	137	165	3	385.07418	770.14836	ug/l	5000	Ba	
La	139	165	2	0.50506	1.01012	ug/l	200	La	
Ce	140	165	2	2.03018	4.06035	ug/l	200	Ce	
Pr	141	165	2	0.10207	0.20413	ug/l	200	Pr	
Nd	146	165	2	0.40734	0.81468	ug/l	200	Nd	
Sm	147	165	3	0.07619	0.15238	ug/l	2000	Sm	
Hf	178	165	2	0.04007	0.08014	ug/l	200	Hf	
Ta	181	165	2	0.04401	0.08802	ug/l	200	Ta	
W	182	165	2	0.87265	1.74530	ug/l	2000	W	
Re	185	193	3	-0.00312	-0.00625	ug/l	200	Re	
Pt	195	193	2	0.00293	0.00586	ug/l	200	Pt	
Au	197	193	3	-0.00779	-0.01559	ug/l	2000	Au	
Tl	205	193	3	24.90980	49.81960	ug/l	400	Tl	
Pb	208	193	3	12.22260	24.44520	ug/l	5000	Pb	
Bi	209	193	2	0.07540	0.15080	ug/l	2000	Bi	
Th	232	193	3	0.17020	0.34039	ug/l	2000	Th	
U	238	193	3	0.19387	0.38775	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	4921465	0.74	5676390	86.7	80	120	Li (IS)	
Sc (IS)	45	2	129862	0.43	157398	82.5	80	120	Sc (IS)	
Sc (IS)	45	3	2475955	0.96	2954313	83.8	80	120	Sc (IS)	
Ge (IS)	72	2	301806	0.43	379042	79.6	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	1872690	0.05	2413999	77.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	12213409	0.78	15281059	79.9	80	120	In (IS)	FAILED
Ho (IS)	165	2	9225855	0.23	10495856	87.9	80	120	Ho (IS)	
Ho (IS)	165	3	14109796	0.64	16807844	83.9	80	120	Ho (IS)	
Ir (IS)	193	2	5623438	0.64	6895257	81.6	80	120	Ir (IS)	
Ir (IS)	193	3	6786743	0.65	8354862	81.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131403-B-2-A PDS**
Data File Name	**145SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:55:03-06:00**
Type	**Sample**
VialNumber	**3310**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	83.39954	166.79909	ug/l	1000	Li	
Be	9	6	3	4.28287	8.56574	ug/l	1000	Be	
B	11	6	3	867.87065	1735.74131	ug/l	2000	B	
Na	23	45	2	17418.11652	34836.23304	ug/l	50000	Na	
Mg	24	45	2	78191.50748	156383.01497	ug/l	50000	Mg	FAILED
Al	27	45	2	495.79193	991.58387	ug/l	100000	Al	
P	31	45	2	8146.75155	16293.50310	ug/l	100000	P	
K	39	45	2	75280.16811	150560.33621	ug/l	100000	K	
Ca	44	45	3	301613.31496	603226.62992	ug/l	100000	Ca	FAILED
Ti	47	45	3	67.66144	135.32288	ug/l	2000	Ti	
V	51	45	2	104.42457	208.84913	ug/l	2000	V	
Cr	52	45	2	94.66629	189.33257	ug/l	2000	Cr	
Mn	55	72	2	1499.01550	2998.03100	ug/l	5000	Mn	
Fe	57	72	2	2517.83910	5035.67820	ug/l	100000	Fe	
Co	59	72	2	24.55009	49.10019	ug/l	2000	Co	
Ni	60	72	2	70.77886	141.55772	ug/l	2000	Ni	
Cu	63	72	2	42.99222	85.98444	ug/l	2000	Cu	
Zn	66	72	2	206.17617	412.35234	ug/l	5000	Zn	
As	75	72	2	243.54964	487.09928	ug/l	2000	As	
Se	78	72	2	51.80247	103.60493	ug/l	1000	Se	
Sr	88	72	3	2483.81806	4967.63611	ug/l	2000	Sr	FAILED
Y	89	72	2	0.43103	0.86206	ug/l	200	Y	
Zr	90	72	2	51.48546	102.97092	ug/l	2000	Zr	
Nb	93	72	2	0.51551	1.03102	ug/l	100	Nb	
Mo	95	72	3	58.26426	116.52852	ug/l	1000	Mo	
Ru	101	72	2	-0.00672	-0.01344	ug/l	200	Ru	
Rh	103	72	2	-0.00225	-0.00450	ug/l	200	Rh	
Pd	105	72	2	0.11400	0.22800	ug/l	20	Pd	
Ag	107	115	3	16.91500	33.82999	ug/l	400	Ag	
Cd	111	115	3	4.50044	9.00089	ug/l	2000	Cd	
Sn	118	115	3	18.86798	37.73597	ug/l	2000	Sn	
Sb	121	115	3	50.15882	100.31764	ug/l	1000	Sb	
Te	125	165	2	0.06003	0.12007	ug/l	200	Te	
Cs	133	165	2	2.70742	5.41483	ug/l	2000	Cs	
Ba	137	165	3	397.22447	794.44894	ug/l	5000	Ba	
La	139	165	2	0.52756	1.05512	ug/l	200	La	
Ce	140	165	2	1.98458	3.96916	ug/l	200	Ce	
Pr	141	165	2	0.10015	0.20029	ug/l	200	Pr	
Nd	146	165	2	0.40806	0.81611	ug/l	200	Nd	
Sm	147	165	3	100.57989	201.15977	ug/l	2000	Sm	
Hf	178	165	2	0.15496	0.30993	ug/l	200	Hf	
Ta	181	165	2	0.31928	0.63857	ug/l	200	Ta	
W	182	165	2	46.43256	92.86511	ug/l	2000	W	
Re	185	193	3	-0.00116	-0.00232	ug/l	200	Re	
Pt	195	193	2	0.00039	0.00078	ug/l	200	Pt	
Au	197	193	3	-0.00557	-0.01114	ug/l	2000	Au	
Tl	205	193	3	17.82222	35.64445	ug/l	400	Tl	
Pb	208	193	3	27.61701	55.23402	ug/l	5000	Pb	
Bi	209	193	2	0.07043	0.14086	ug/l	2000	Bi	
Th	232	193	3	20.42500	40.85001	ug/l	2000	Th	
U	238	193	3	9.40764	18.81528	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	4698661	0.24	5676390	82.8	80	120	Li (IS)	
Sc (IS)	45	2	127220	0.57	157398	80.8	80	120	Sc (IS)	
Sc (IS)	45	3	2346800	0.64	2954313	79.4	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	294395	1.40	379042	77.7	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	1789438	0.59	2413999	74.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	11604522	1.20	15281059	75.9	80	120	In (IS)	FAILED
Ho (IS)	165	2	8937915	0.92	10495856	85.2	80	120	Ho (IS)	
Ho (IS)	165	3	13653008	0.43	16807844	81.2	80	120	Ho (IS)	
Ir (IS)	193	2	5525569	0.39	6895257	80.1	80	120	Ir (IS)	
Ir (IS)	193	3	6592501	1.07	8354862	78.9	80	120	Ir (IS)	FAILED

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**146LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T08:01:47-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	4.22829	ug/l	5	84.6	80	120	Li	
Be	9	6	3	0.46120	ug/l	0.5	92.2	80	120	Be	
B	11	6	3	88.89697	ug/l	100	88.9	80	120	B	
Na	23	45	2	112.88726	ug/l	100	112.9	80	120	Na	
Mg	24	45	2	55.65334	ug/l	50	111.3	80	120	Mg	
Al	27	45	2	54.73386	ug/l	50	109.5	80	120	Al	
P	31	45	2	99.52357	ug/l	100	99.5	80	120	P	
K	39	45	2	105.35746	ug/l	100	105.4	80	120	K	
Ca	44	45	3	209.51914	ug/l	200	104.8	80	120	Ca	
Ti	47	45	3	5.12636	ug/l	5	102.5	80	120	Ti	
V	51	45	2	9.62695	ug/l	10	96.3	80	120	V	
Cr	52	45	2	9.66167	ug/l	10	96.6	80	120	Cr	
Mn	55	72	2	4.48599	ug/l	4	112.1	80	120	Mn	
Fe	57	72	2	53.75851	ug/l	50	107.5	80	120	Fe	
Co	59	72	2	2.10841	ug/l	2	105.4	80	120	Co	
Ni	60	72	2	5.68090	ug/l	5	113.6	80	120	Ni	
Cu	63	72	2	3.07515	ug/l	3	102.5	80	120	Cu	
Zn	66	72	2	21.85201	ug/l	20	109.3	80	120	Zn	
As	75	72	2	10.85244	ug/l	10	108.5	80	120	As	
Se	78	72	2	5.10828	ug/l	5	102.2	80	120	Se	
Sr	88	72	3	5.34054	ug/l	5	106.8	80	120	Sr	
Y	89	72	2	5.20801	ug/l	5	104.2	80	120	Y	
Zr	90	72	2	4.94161	ug/l	5	98.8	80	120	Zr	
Nb	93	72	2	17.30254	ug/l	25	69.2	80	120	Nb	FAILED
Mo	95	72	3	5.19068	ug/l	5	103.8	80	120	Mo	
Ru	101	72	2	10.73921	ug/l	10	107.4	80	120	Ru	
Rh	103	72	2	10.39378	ug/l	10	103.9	80	120	Rh	
Pd	105	72	2	0.59705	ug/l	0.5	119.4	80	120	Pd	
Ag	107	115	3	1.90675	ug/l	2	95.3	80	120	Ag	
Cd	111	115	3	0.51254	ug/l	0.5	102.5	80	120	Cd	
Sn	118	115	3	1.87610	ug/l	2	93.8	80	120	Sn	
Sb	121	115	3	4.67634	ug/l	5	93.5	80	120	Sb	
Te	125	165	2	8.92120	ug/l	10	89.2	80	120	Te	
Cs	133	165	2	0.94641	ug/l	1	94.6	80	120	Cs	
Ba	137	165	3	1.97679	ug/l	2	98.8	80	120	Ba	
La	139	165	2	1.86972	ug/l	2	93.5	80	120	La	
Ce	140	165	2	9.12265	ug/l	10	91.2	80	120	Ce	
Pr	141	165	2	1.87995	ug/l	2	94.0	80	120	Pr	
Nd	146	165	2	1.90531	ug/l	2	95.3	80	120	Nd	
Sm	147	165	3	9.85448	ug/l	10	98.5	80	120	Sm	
Hf	178	165	2	8.44052	ug/l	10	84.4	80	120	Hf	
Ta	181	165	2	5.09495	ug/l	10	50.9	80	120	Ta	FAILED
W	182	165	2	4.59252	ug/l	5	91.9	80	120	W	
Re	185	193	3	9.14629	ug/l	10	91.5	80	120	Re	
Pt	195	193	2	1.00002	ug/l	1	100.0	80	120	Pt	
Au	197	193	3	4.57950	ug/l	5	91.6	80	120	Au	
Tl	205	193	3	1.92488	ug/l	2	96.2	80	120	Tl	
Pb	208	193	3	2.86948	ug/l	3	95.6	80	120	Pb	
Bi	209	193	2	18.29927	ug/l	20	91.5	80	120	Bi	
Th	232	193	3	1.84193	ug/l	2	92.1	80	120	Th	
U	238	193	3	0.96078	ug/l	1	96.1	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5272085	1.35	5676390	92.9	80	120	Li (IS)	
Sc (IS)	45	2	128384	0.89	157398	81.6	80	120	Sc (IS)	
Sc (IS)	45	3	2344372	0.50	2954313	79.4	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	311449	0.46	379042	82.2	80	120	Ge (IS)	
Ge (IS)	72	3	1920701	1.46	2413999	79.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	12871429	0.55	15281059	84.2	80	120	In (IS)	
Ho (IS)	165	2	9509698	0.37	10495856	90.6	80	120	Ho (IS)	
Ho (IS)	165	3	14269547	0.88	16807844	84.9	80	120	Ho (IS)	
Ir (IS)	193	2	6149836	0.69	6895257	89.2	80	120	Ir (IS)	
Ir (IS)	193	3	7179354	1.36	8354862	85.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**147_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T08:08:31-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	94.19956	ug/l	100	94.2	90	110	Li	
Be	9	6	3	86.66785	ug/l	100	86.7	90	110	Be	FAILED
B	11	6	3	178.63545	ug/l	200	89.3	90	110	B	FAILED
Na	23	45	2	2474.09070	ug/l	2500	99.0	90	110	Na	
Mg	24	45	2	2518.50867	ug/l	2500	100.7	90	110	Mg	
Al	27	45	2	2468.53444	ug/l	2500	98.7	90	110	Al	
P	31	45	2	2483.07505	ug/l	2500	99.3	90	110	P	
K	39	45	2	2512.35750	ug/l	2500	100.5	90	110	K	
Ca	44	45	3	2560.26780	ug/l	2500	102.4	90	110	Ca	
Ti	47	45	3	101.43559	ug/l	100	101.4	90	110	Ti	
V	51	45	2	96.08041	ug/l	100	96.1	90	110	V	
Cr	52	45	2	95.13582	ug/l	100	95.1	90	110	Cr	
Mn	55	72	2	97.64761	ug/l	100	97.6	90	110	Mn	
Fe	57	72	2	2441.67591	ug/l	2500	97.7	90	110	Fe	
Co	59	72	2	101.28761	ug/l	100	101.3	90	110	Co	
Ni	60	72	2	102.66701	ug/l	100	102.7	90	110	Ni	
Cu	63	72	2	94.15404	ug/l	100	94.2	90	110	Cu	
Zn	66	72	2	103.72691	ug/l	100	103.7	90	110	Zn	
As	75	72	2	104.20721	ug/l	100	104.2	90	110	As	
Se	78	72	2	52.79442	ug/l	50	105.6	90	110	Se	
Sr	88	72	3	107.65842	ug/l	100	107.7	90	110	Sr	
Y	89	72	2	107.96139	ug/l	100	108.0	90	110	Y	
Zr	90	72	2	106.51708	ug/l	100	106.5	90	110	Zr	
Nb	93	72	2	53.58889	ug/l	50	107.2	90	110	Nb	
Mo	95	72	3	50.69722	ug/l	50	101.4	90	110	Mo	
Ru	101	72	2	102.50915	ug/l	100	102.5	90	110	Ru	
Rh	103	72	2	107.98708	ug/l	100	108.0	90	110	Rh	
Pd	105	72	2	11.04347	ug/l	10	110.4	90	110	Pd	FAILED
Ag	107	115	3	17.99833	ug/l	20	90.0	90	110	Ag	FAILED
Cd	111	115	3	93.81272	ug/l	100	93.8	90	110	Cd	
Sn	118	115	3	99.04486	ug/l	100	99.0	90	110	Sn	
Sb	121	115	3	50.02309	ug/l	50	100.0	90	110	Sb	
Te	125	165	2	94.43363	ug/l	100	94.4	90	110	Te	
Cs	133	165	2	96.63240	ug/l	100	96.6	90	110	Cs	
Ba	137	165	3	93.59290	ug/l	100	93.6	90	110	Ba	
La	139	165	2	97.77997	ug/l	100	97.8	90	110	La	
Ce	140	165	2	98.71551	ug/l	100	98.7	90	110	Ce	
Pr	141	165	2	98.40341	ug/l	100	98.4	90	110	Pr	
Nd	146	165	2	92.50717	ug/l	100	92.5	90	110	Nd	
Sm	147	165	3	102.79022	ug/l	100	102.8	90	110	Sm	
Hf	178	165	2	99.78963	ug/l	100	99.8	90	110	Hf	
Ta	181	165	2	99.79828	ug/l	100	99.8	90	110	Ta	
W	182	165	2	98.91683	ug/l	100	98.9	90	110	W	
Re	185	193	3	99.11504	ug/l	100	99.1	90	110	Re	
Pt	195	193	2	9.99317	ug/l	10	99.9	90	110	Pt	
Au	197	193	3	100.56222	ug/l	100	100.6	90	110	Au	
Tl	205	193	3	18.25899	ug/l	20	91.3	90	110	Tl	
Pb	208	193	3	101.24619	ug/l	100	101.2	90	110	Pb	
Bi	209	193	2	104.90762	ug/l	100	104.9	90	110	Bi	
Th	232	193	3	100.81413	ug/l	100	100.8	90	110	Th	
U	238	193	3	102.10415	ug/l	100	102.1	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	4945197	0.32	5676390	87.1	80	120	Li (IS)	
Sc (IS)	45	2	123680	0.53	157398	78.6	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	2295370	0.56	2954313	77.7	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	313566	0.45	379042	82.7	80	120	Ge (IS)	
Ge (IS)	72	3	1921676	0.75	2413999	79.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	12730739	1.29	15281059	83.3	80	120	In (IS)	
Ho (IS)	165	2	9451697	0.47	10495856	90.1	80	120	Ho (IS)	
Ho (IS)	165	3	14376052	1.38	16807844	85.5	80	120	Ho (IS)	
Ir (IS)	193	2	6000589	0.70	6895257	87.0	80	120	Ir (IS)	
Ir (IS)	193	3	7199445	1.08	8354862	86.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**148_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T08:15:16-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	-0.46091	ug/l	1.388	Li	
Be	9	6	3	0.00618	ug/l	0.7	Be	
B	11	6	3	6.02107	ug/l	20	B	
Na	23	45	2	9.80561	ug/l	30	Na	
Mg	24	45	2	0.66373	ug/l	11.18	Mg	
Al	27	45	2	0.24205	ug/l	25.8	Al	
P	31	45	2	0.77757	ug/l	16.46	P	
K	39	45	2	1.46563	ug/l	83.2	K	
Ca	44	45	3	-0.23447	ug/l	136.2	Ca	
Ti	47	45	3	0.01321	ug/l	4.2	Ti	
V	51	45	2	-0.00324	ug/l	4.74	V	
Cr	52	45	2	0.00133	ug/l	6.52	Cr	
Mn	55	72	2	0.12426	ug/l	0.49	Mn	
Fe	57	72	2	0.15821	ug/l	40.7	Fe	
Co	59	72	2	0.01016	ug/l	0.434	Co	
Ni	60	72	2	0.01861	ug/l	0.8	Ni	
Cu	63	72	2	-0.26359	ug/l	0.902	Cu	
Zn	66	72	2	0.06617	ug/l	16.58	Zn	
As	75	72	2	0.06410	ug/l	2.36	As	
Se	78	72	2	0.14021	ug/l	3.18	Se	
Sr	88	72	3	0.04167	ug/l	2	Sr	
Y	89	72	2	0.00686	ug/l	0.424	Y	
Zr	90	72	2	0.04178	ug/l	0.496	Zr	
Nb	93	72	2	0.30366	ug/l	4.62	Nb	
Mo	95	72	3	0.07748	ug/l	2	Mo	
Ru	101	72	2	0.00685	ug/l	2	Ru	
Rh	103	72	2	0.00746	ug/l	1.634	Rh	
Pd	105	72	2	0.00405	ug/l	0.08	Pd	
Ag	107	115	3	0.00059	ug/l	1.54	Ag	
Cd	111	115	3	0.01634	ug/l	0.4	Cd	
Sn	118	115	3	0.02629	ug/l	2	Sn	
Sb	121	115	3	0.05310	ug/l	3.34	Sb	
Te	125	165	2	0.02898	ug/l	1.072	Te	
Cs	133	165	2	0.01394	ug/l	0.106	Cs	
Ba	137	165	3	0.01437	ug/l	0.446	Ba	
La	139	165	2	0.00583	ug/l	0.102	La	
Ce	140	165	2	0.00689	ug/l	1.772	Ce	
Pr	141	165	2	0.00578	ug/l	0.084	Pr	
Nd	146	165	2	0.00920	ug/l	0.208	Nd	
Sm	147	165	3	0.00678	ug/l	0.652	Sm	
Hf	178	165	2	0.05331	ug/l	2.26	Hf	
Ta	181	165	2	-0.00501	ug/l	1.46	Ta	
W	182	165	2	0.27554	ug/l	4	W	
Re	185	193	3	0.00362	ug/l	0.05	Re	
Pt	195	193	2	0.00206	ug/l	0.12	Pt	
Au	197	193	3	0.15107	ug/l	1	Au	
Tl	205	193	3	0.05399	ug/l	1.1	Tl	
Pb	208	193	3	0.01304	ug/l	0.346	Pb	
Bi	209	193	2	0.04643	ug/l	1.464	Bi	
Th	232	193	3	0.05597	ug/l	1.104	Th	
U	238	193	3	0.00975	ug/l	0.462	U	

QC ISTD Table

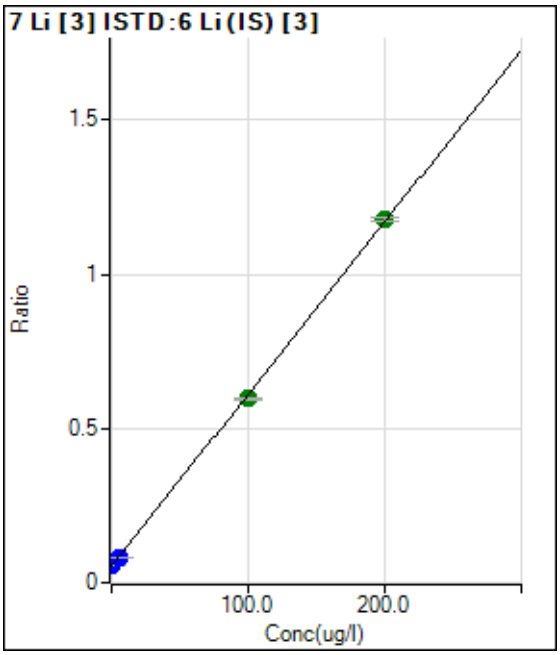
Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5147125	0.28	5676390	90.7	80	120	Li (IS)	
Sc (IS)	45	2	125898	1.50	157398	80.0	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	2324517	1.37	2954313	78.7	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	304721	1.56	379042	80.4	80	120	Ge (IS)	
Ge (IS)	72	3	1889475	0.17	2413999	78.3	80	120	Ge (IS)	FAILED
In (IS)	115	3	13012572	0.90	15281059	85.2	80	120	In (IS)	
Ho (IS)	165	2	9425883	0.45	10495856	89.8	80	120	Ho (IS)	
Ho (IS)	165	3	14472874	0.41	16807844	86.1	80	120	Ho (IS)	
Ir (IS)	193	2	6093520	0.48	6895257	88.4	80	120	Ir (IS)	
Ir (IS)	193	3	7209756	1.97	8354862	86.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Calibration for 004CALS.D

Batch Folder:	C:¥ICPMH¥1¥DATA¥121019B2.B¥
Analysis File:	121019B2.batch.xml
DA Date-Time:	12/10/2019 4:20:25 PM
Calibration Title:	
Calibration Method:	External Calibration
VIS Interpolation Fit:	
Tune Step:	#1 he.u
	#2 nogas.u

Level	Standard Data File	Sample Name	Acq. Date-Time
1	003CALB.D	ICIS 1843378	12/10/2019 3:57:44 PM
2	004CALS.D	IC 1847444	12/10/2019 4:04:31 PM
3	005CALS.D	IC 1847445	12/10/2019 4:11:12 PM
4	006CALS.D	IC 1847446	12/10/2019 4:17:57 PM
5			
6			
7			



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	396592.32	0.0535	P	1.8
2	☐	5.000	4.833	594877.18	0.0805	P	0.5
3	☐	100.000	97.350	4415161.81	0.5964	A	0.9
4	☐	200.000	201.329	8633037.86	1.1762	A	1.1
5	☐						
6	☐						
7	☐						

y = 0.0056 * x + 0.0535

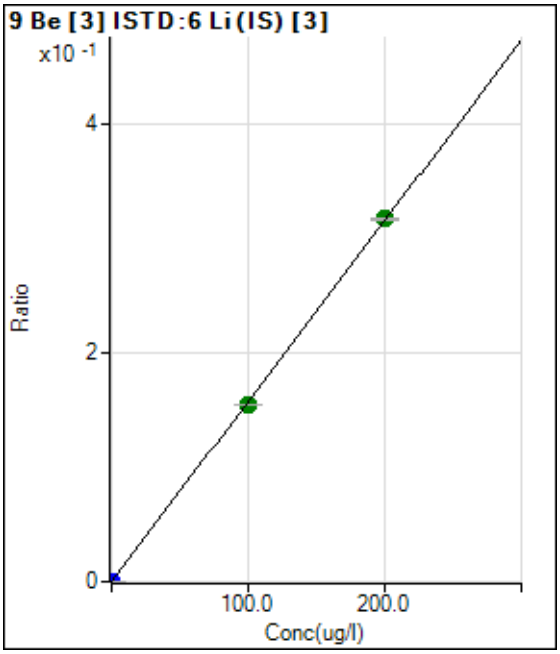
R = 0.9999

DL = 0.5083

BEC = 9.597

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	225.57	0.0000	P	1.9
2	☐	0.500	0.471	5715.56	0.0008	P	2.7
3	☐	100.000	97.908	1143216.97	0.1544	A	0.3
4	☐	200.000	201.046	2327189.91	0.3170	A	0.6
5	☐						
6	☐						
7	☐						

y = 0.0016 * x + 3.0434E-005

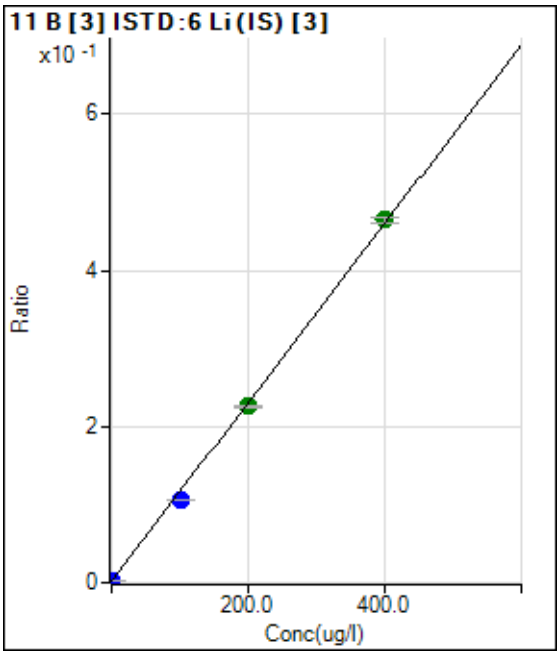
R = 0.9999

DL = 0.001095

BEC = 0.0193

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	12858.31	0.0017	P	5.7
2	☐	100.000	91.489	786949.18	0.1064	P	1.1
3	☐	200.000	195.458	1669035.95	0.2254	A	0.9
4	☐	400.000	404.399	3409942.03	0.4646	A	1.3
5	☐						
6	☐						
7	☐						

y = 0.0011 * x + 0.0017

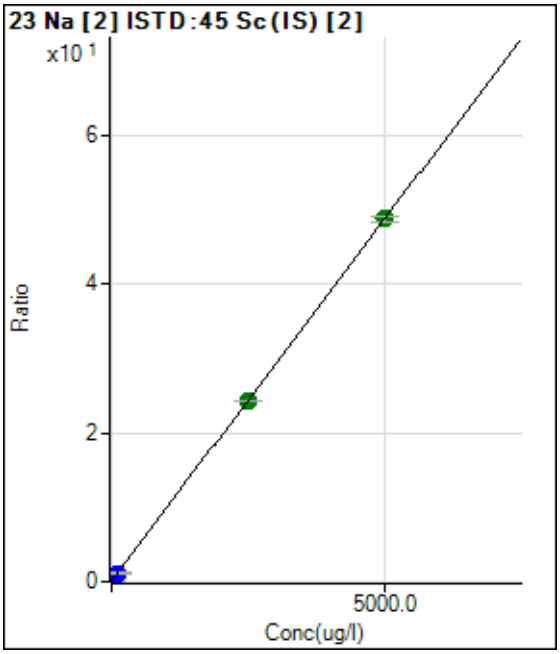
R = 0.9996

DL = 0.2602

BEC = 1.516

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	13850.15	0.0966	P	2.1
2	☐	100.000	108.689	155362.68	1.1544	P	11.7
3	☐	2500.000	2485.802	3623334.91	24.2889	A	0.2
4	☐	5000.000	5006.925	7433004.89	48.8249	A	1.3
5	☐						
6	☐						
7	☐						

y = 0.0097 * x + 0.0966

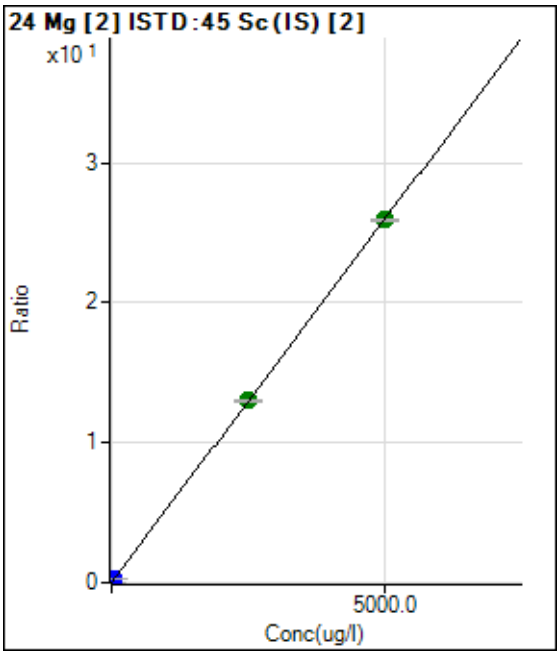
R = 1.0000

DL = 0.64

BEC = 9.925

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	322.24	0.0022	P	8.3
2	☐	50.000	55.054	38699.65	0.2877	P	12.2
3	☐	2500.000	2505.079	1937594.33	12.9888	A	0.3
4	☐	5000.000	4997.410	3944452.65	25.9092	A	0.8
5	☐						
6	☐						
7	☐						

y = 0.0052 * x + 0.0022

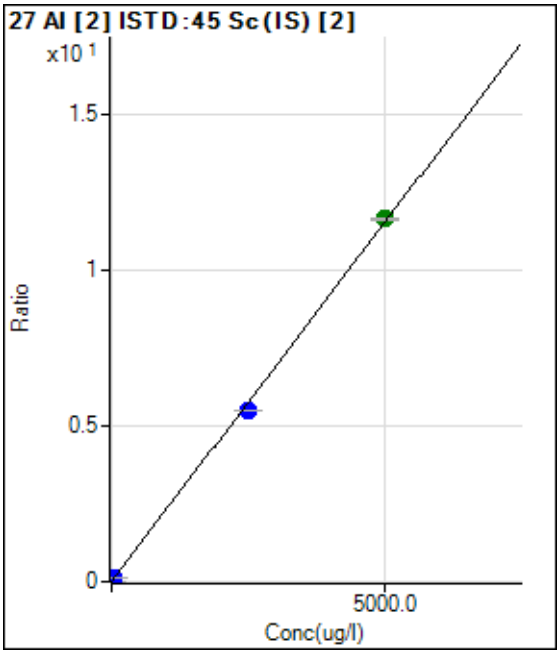
R = 1.0000

DL = 0.1075

BEC = 0.4336

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	273.35	0.0019	P	13.4
2	☐	50.000	55.537	17461.19	0.1297	P	11.3
3	☐	2500.000	2391.533	821198.82	5.5049	P	0.2
4	☐	5000.000	5054.178	1770875.58	11.6317	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0023 * x + 0.0019

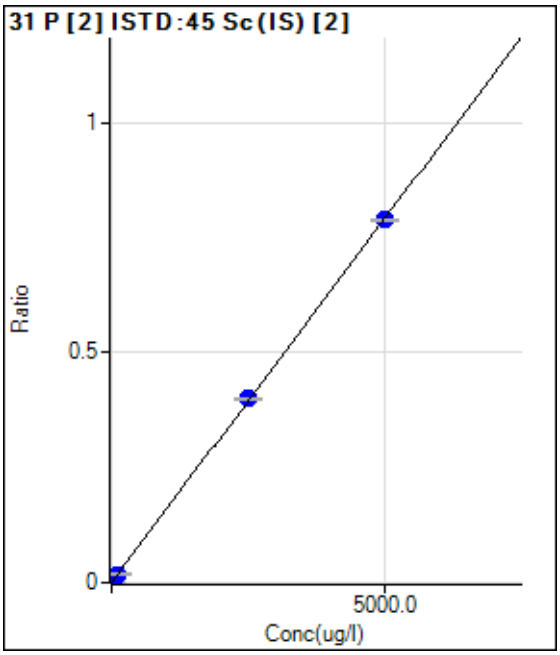
R = 0.9996

DL = 0.3325

BEC = 0.8282

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	72.22	0.0005	P	42.4
2	☐	100.000	110.830	2428.04	0.0180	P	9.4
3	☐	2500.000	2524.736	59526.83	0.3991	P	1.9
4	☐	5000.000	4987.415	119943.84	0.7878	P	0.6
5	☐						
6	☐						
7	☐						

y = 1.5787E-004 * x + 5.0436E-004

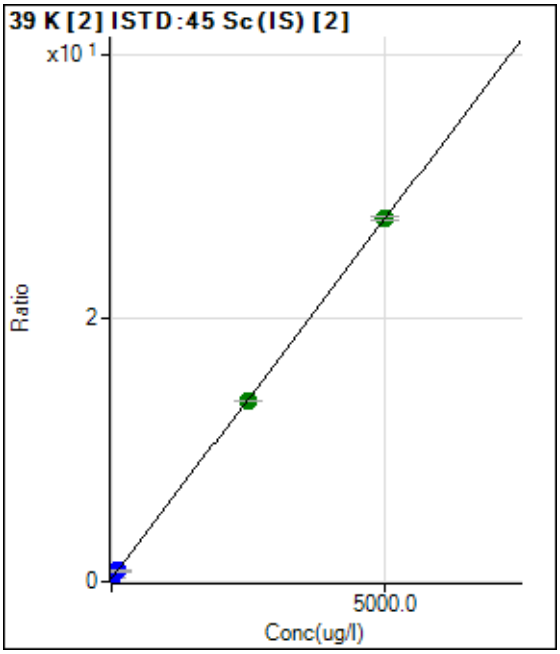
R = 1.0000

DL = 4.059

BEC = 3.195

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	31720.89	0.2212	P	1.1
2	☐	100.000	106.673	108062.48	0.8022	P	10.4
3	☐	2500.000	2484.344	2051268.48	13.7506	A	0.2
4	☐	5000.000	5007.695	4185422.89	27.4925	A	1.1
5	☐						
6	☐						
7	☐						

y = 0.0054 * x + 0.2212

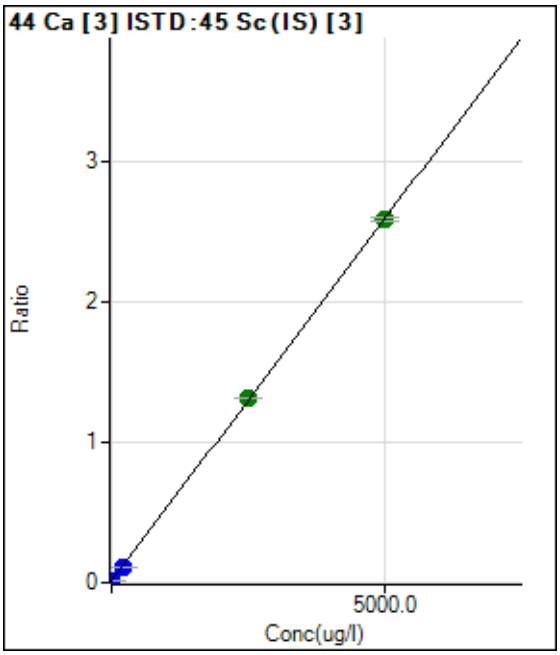
R = 1.0000

DL = 1.323

BEC = 40.63

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	27539.65	0.0115	P	1.5
2	☐	200.000	193.772	265868.65	0.1116	P	0.6
3	☐	2500.000	2520.140	3220002.14	1.3134	A	0.3
4	☐	5000.000	4990.179	6437026.99	2.5893	A	1.1
5	☐						
6	☐						
7	☐						

y = 5.1658E−004 * x + 0.0115

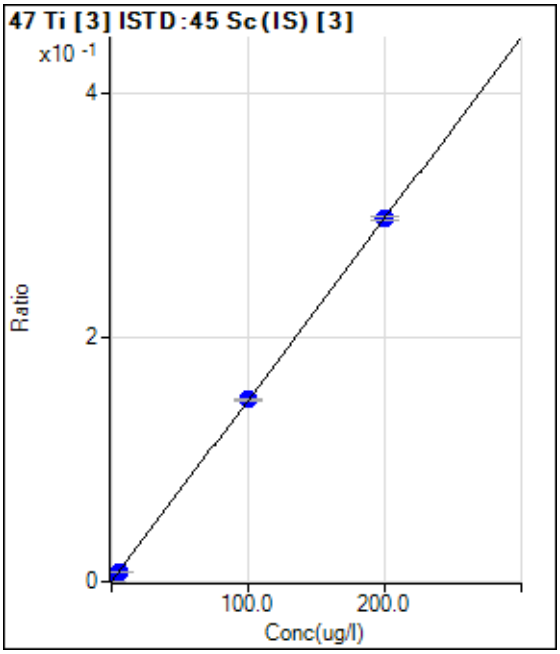
R = 1.0000

DL = 0.9903

BEC = 22.28

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	338.01	0.0001	P	2.9
2	☐	5.000	4.962	17877.77	0.0075	P	1.5
3	☐	100.000	100.245	365093.75	0.1489	P	0.5
4	☐	200.000	199.879	737813.61	0.2968	P	1.0
5	☐						
6	☐						
7	☐						

y = 0.0015 * x + 1.4124E−004

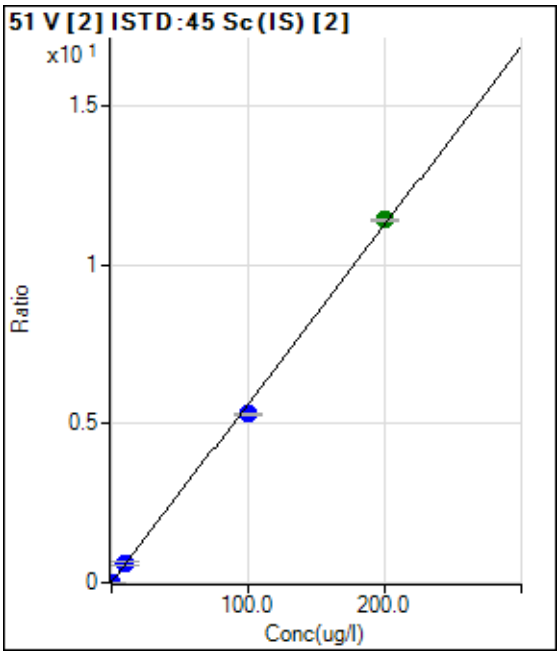
R = 1.0000

DL = 0.008184

BEC = 0.09517

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1573.48	0.0110	P	5.5
2	☐	10.000	10.411	80158.00	0.5962	P	13.2
3	☐	100.000	94.107	790818.74	5.3009	P	1.6
4	☐	200.000	202.926	1738302.53	11.4179	A	0.7
5	☐						
6	☐						
7	☐						

y = 0.0562 * x + 0.0110

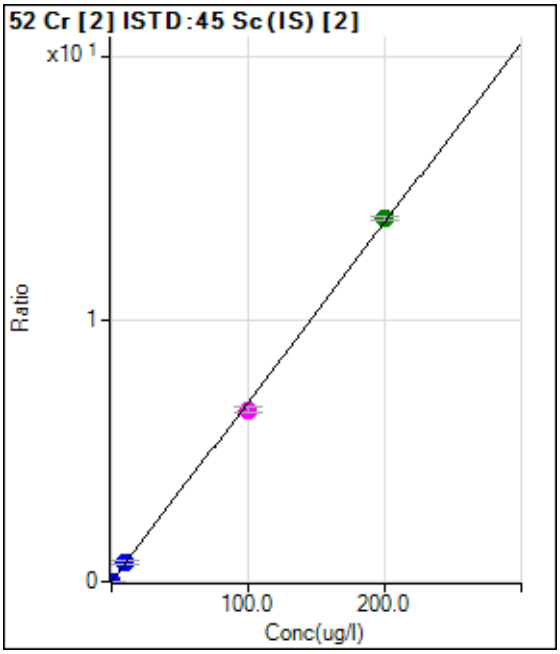
R = 0.9992

DL = 0.03245

BEC = 0.1953

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1104.53	0.0077	P	6.7
2	☐	10.000	10.562	98111.07	0.7296	P	12.9
3	☐	100.000	95.719	977245.04	6.5499	M	3.0
4	☐	200.000	202.113	2104224.13	13.8218	A	1.0
5	☐						
6	☐						
7	☐						

y = 0.0683 * x + 0.0077

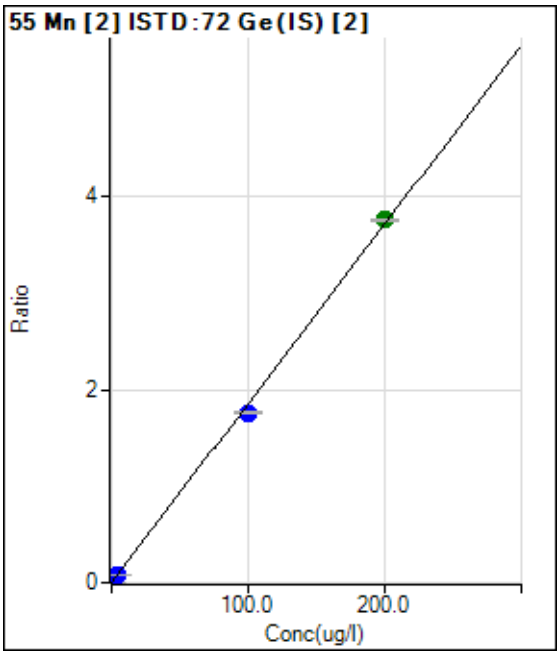
R = 0.9996

DL = 0.02258

BEC = 0.1127

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	270.01	0.0008	P	5.0
2	☐	4.000	4.262	24841.42	0.0800	P	11.7
3	☐	100.000	94.947	610331.37	1.7636	P	1.7
4	☐	200.000	202.521	1356067.60	3.7608	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0186 * x + 8.3514E-004

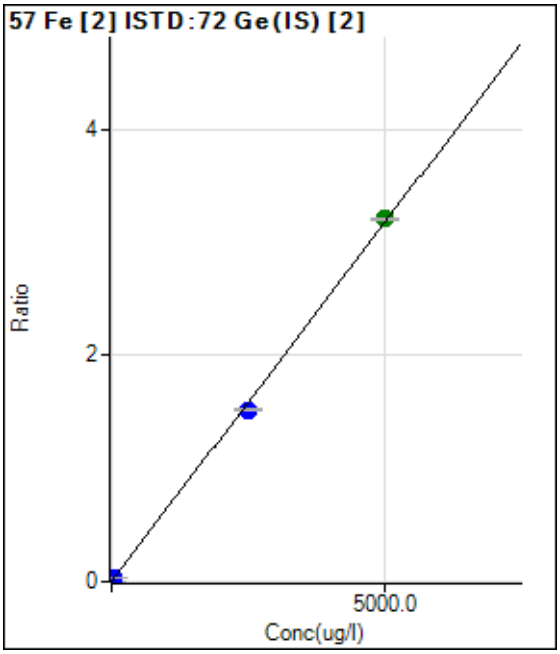
R = 0.9995

DL = 0.006715

BEC = 0.04498

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	465.59	0.0014	P	8.9
2	☐	50.000	53.578	11003.83	0.0354	P	10.5
3	☐	2500.000	2388.048	524495.75	1.5155	P	1.4
4	☐	5000.000	5055.940	1156356.80	3.2070	A	0.5
5	☐						
6	☐						
7	☐						

y = 6.3401E-004 * x + 0.0014

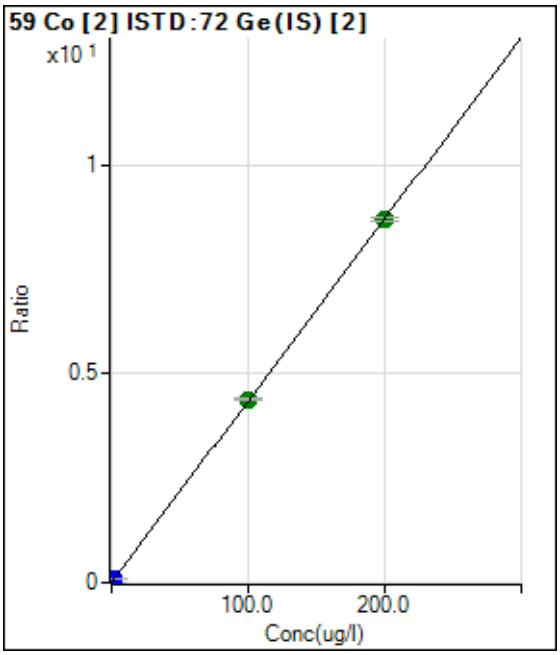
R = 0.9996

DL = 0.604

BEC = 2.271

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	443.36	0.0014	P	7.4
2	☐	2.000	2.164	29702.28	0.0956	P	10.2
3	☐	100.000	100.797	1518765.64	4.3884	A	1.3
4	☐	200.000	199.600	3132835.61	8.6887	A	1.2
5	☐						
6	☐						
7	☐						

y = 0.0435 * x + 0.0014

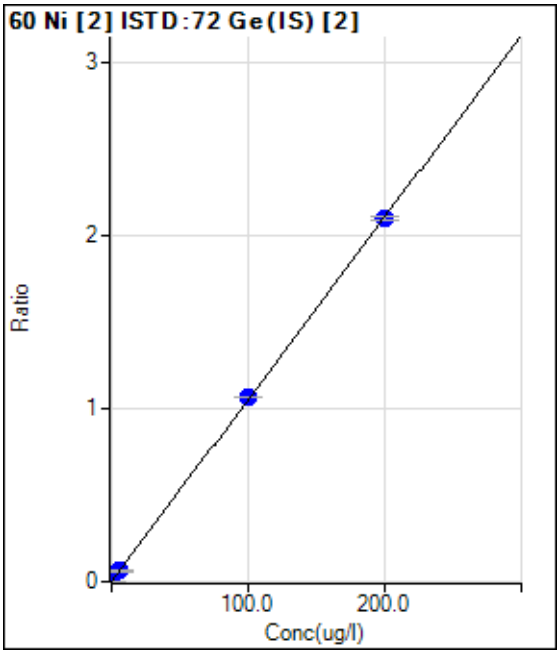
R = 1.0000

DL = 0.007019

BEC = 0.0315

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	150.01	0.0005	P	22.3
2	☐	5.000	5.858	19308.95	0.0621	P	10.0
3	☐	100.000	101.570	370160.82	1.0694	P	0.2
4	☐	200.000	199.193	756040.88	2.0968	P	1.2
5	☐						
6	☐						
7	☐						

y = 0.0105 * x + 4.6515E-004

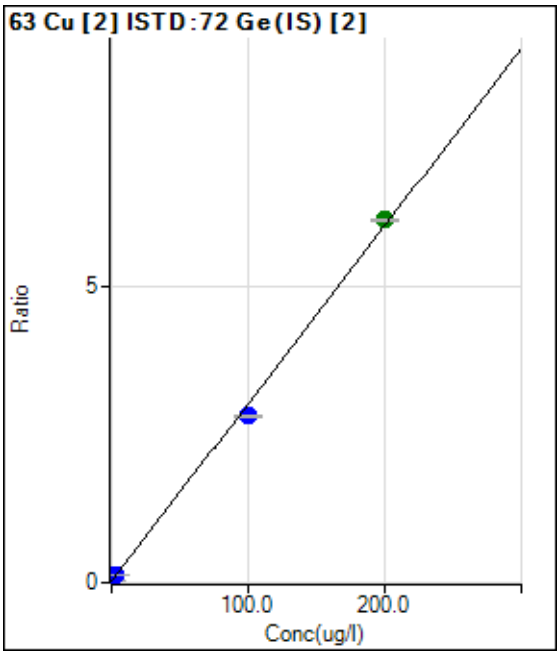
R = 1.0000

DL = 0.02953

BEC = 0.0442

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	7527.47	0.0233	P	2.5
2	☐	3.000	3.362	38643.07	0.1244	P	11.2
3	☐	100.000	92.974	975903.38	2.8194	P	1.1
4	☐	200.000	203.508	2215284.24	6.1437	A	0.8
5	☐						
6	☐						
7	☐						

y = 0.0301 * x + 0.0233

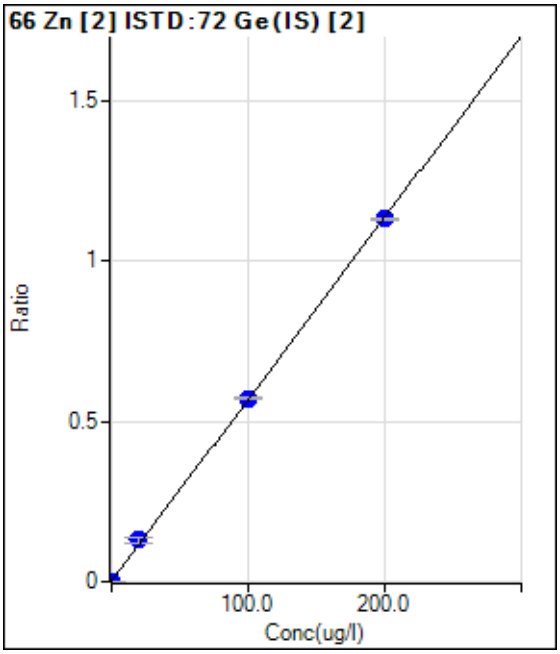
R = 0.9990

DL = 0.05798

BEC = 0.7746

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	541.14	0.0017	P	10.9
2	☐	20.000	22.573	40291.27	0.1297	P	11.0
3	☐	100.000	100.755	198370.36	0.5731	P	0.5
4	☐	200.000	199.365	408302.02	1.1323	P	0.2
5	☐						
6	☐						
7	☐						

y = 0.0057 * x + 0.0017

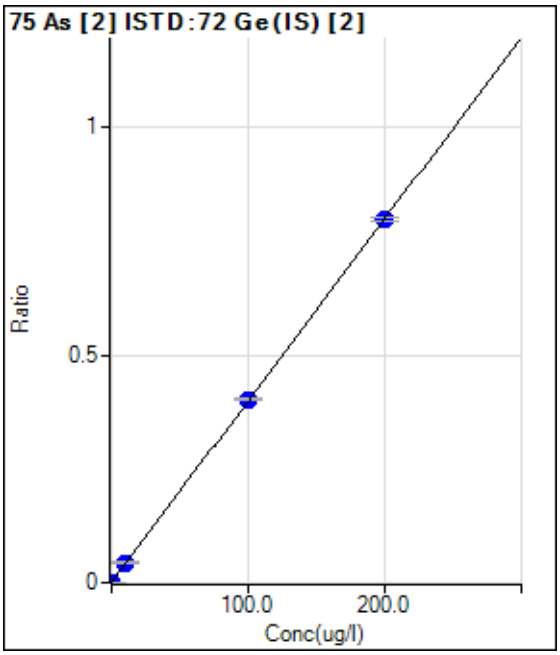
R = 0.9999

DL = 0.09649

BEC = 0.2949

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	175.57	0.0005	P	9.3
2	☐	10.000	10.892	13682.50	0.0440	P	10.8
3	☐	100.000	100.686	139361.70	0.4026	P	0.7
4	☐	200.000	199.613	287601.99	0.7976	P	1.0
5	☐						
6	☐						
7	☐						

y = 0.0040 * x + 5.4284E-004

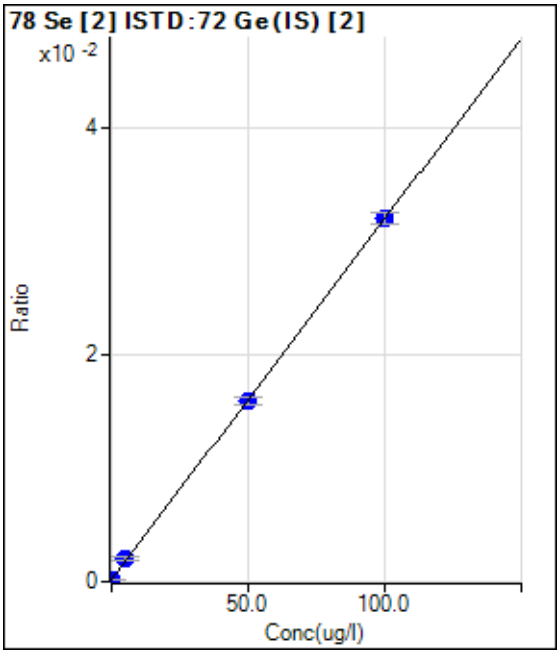
R = 1.0000

DL = 0.03782

BEC = 0.1359

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	46.67	0.0001	P	20.3
2	☐	5.000	5.820	616.71	0.0020	P	20.3
3	☐	50.000	49.634	5505.55	0.0159	P	3.6
4	☐	100.000	100.142	11520.90	0.0320	P	3.0
5	☐						
6	☐						
7	☐						

y = 3.1762E-004 * x + 1.4474E-004

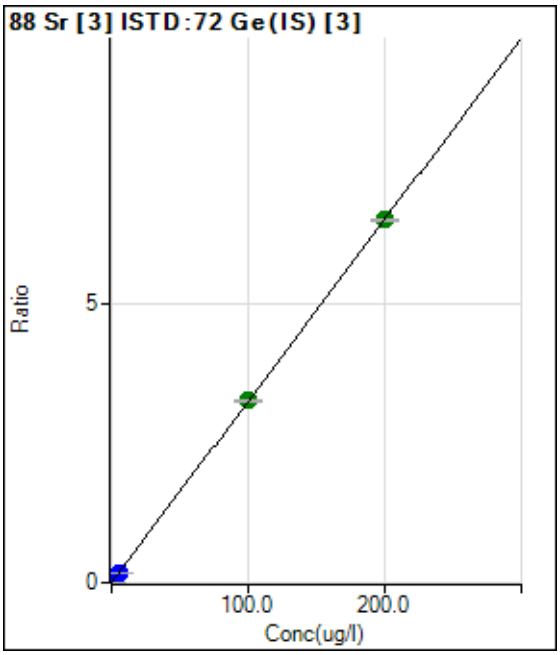
R = 0.9999

DL = 0.2769

BEC = 0.4557

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1397.90	0.0008	P	7.2
2	☐	5.000	4.820	293531.13	0.1578	P	0.6
3	☐	100.000	100.148	6313171.99	3.2651	A	0.6
4	☐	200.000	199.931	12915888.42	6.5175	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0326 * x + 7.5063E-004

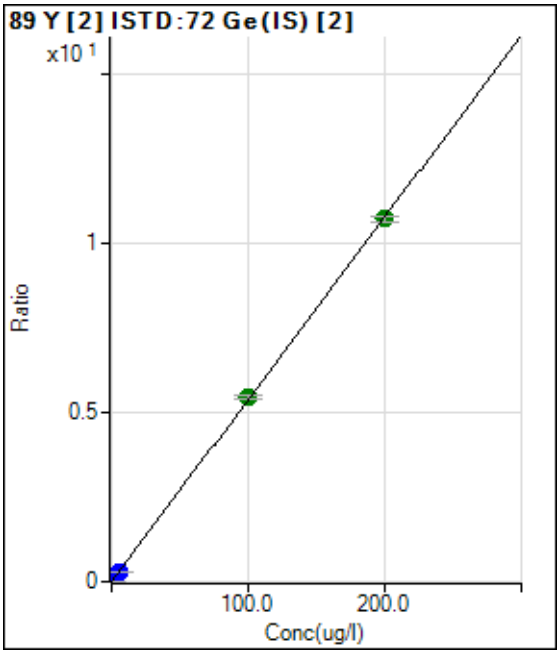
R = 1.0000

DL = 0.004944

BEC = 0.02303

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	144.45	0.0004	P	27.3
2	☐	5.000	5.104	85499.37	0.2752	P	11.3
3	☐	100.000	101.605	1893235.44	5.4708	A	2.0
4	☐	200.000	199.195	3867029.73	10.7250	A	1.5
5	☐						
6	☐						
7	☐						

y = 0.0538 * x + 4.4645E-004

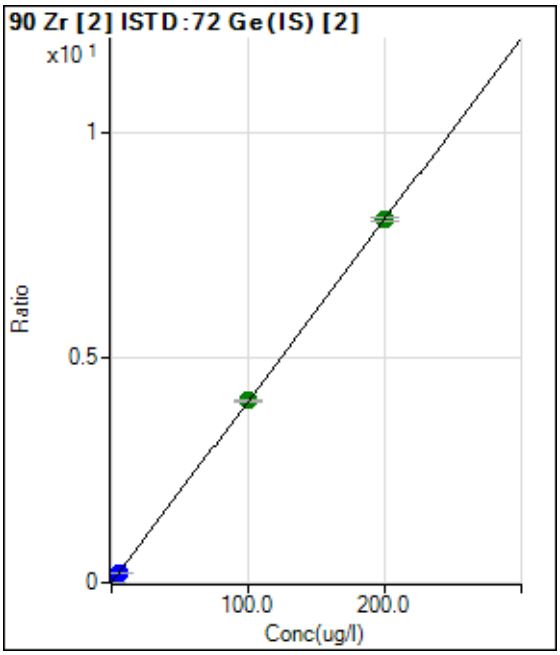
R = 0.9999

DL = 0.006792

BEC = 0.008292

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	221.12	0.0007	P	8.5
2	☐	5.000	5.093	64077.84	0.2061	P	10.0
3	☐	100.000	100.251	1399687.37	4.0444	A	1.5
4	☐	200.000	199.872	2907152.49	8.0626	A	0.9
5	☐						
6	☐						
7	☐						

y = 0.0403 * x + 6.8406E-004

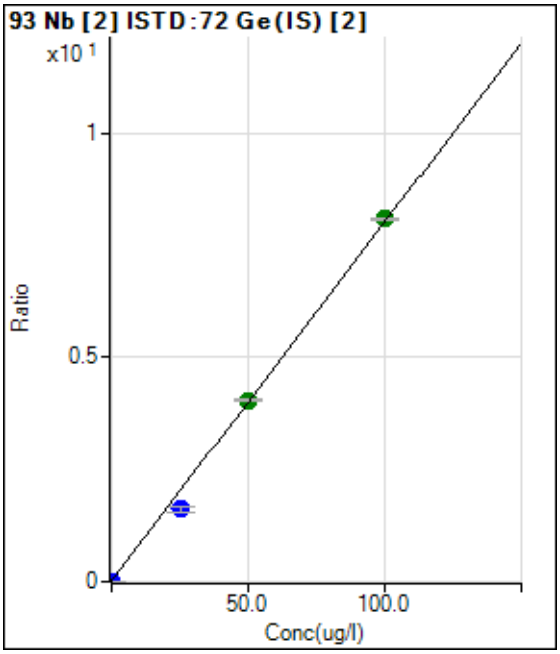
R = 1.0000

DL = 0.004309

BEC = 0.01696

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4297.39	0.0133	P	9.0
2	☐	25.000	20.043	502532.33	1.6155	P	9.0
3	☐	50.000	50.466	1400798.04	4.0476	A	1.4
4	☐	100.000	101.006	2916345.76	8.0878	A	0.3
5	☐						
6	☐						
7	☐						

y = 0.0799 * x + 0.0133

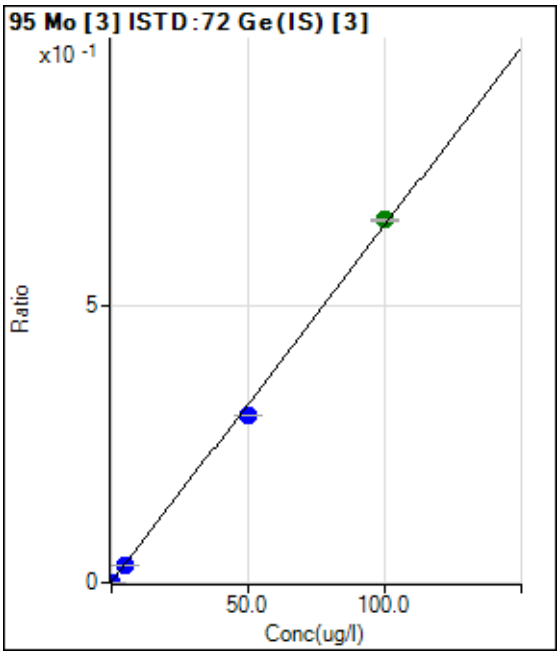
R = 0.9984

DL = 0.04484

BEC = 0.1665

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1811.29	0.0010	P	7.0
2	☐	5.000	4.729	58507.60	0.0315	P	1.8
3	☐	50.000	46.802	585341.41	0.3027	P	0.2
4	☐	100.000	101.613	1300194.86	0.6561	A	0.6
5	☐						
6	☐						
7	☐						

y = 0.0064 * x + 9.7280E-004

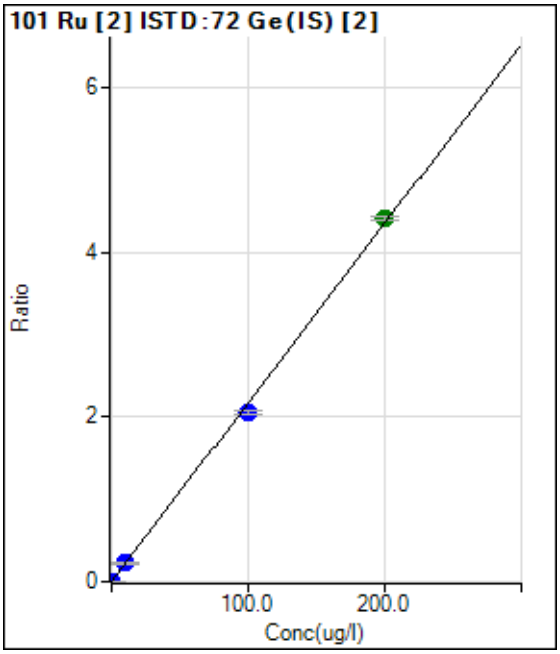
R = 0.9992

DL = 0.03168

BEC = 0.1509

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	71.11	0.0002	P	27.6
2	☐	10.000	10.550	71335.22	0.2294	P	9.6
3	☐	100.000	94.539	710872.61	2.0541	P	1.5
4	☐	200.000	202.703	1587943.33	4.4039	A	1.0
5	☐						
6	☐						
7	☐						

y = 0.0217 * x + 2.2081E-004

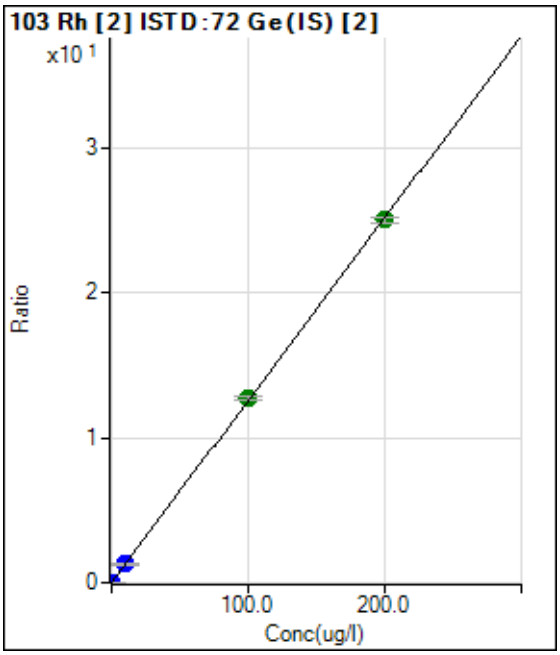
R = 0.9993

DL = 0.008406

BEC = 0.01016

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	650.04	0.0020	P	2.5
2	☐	10.000	10.303	402607.56	1.2954	P	10.3
3	☐	100.000	101.740	4420506.25	12.7740	A	2.1
4	☐	200.000	199.115	9013546.05	24.9982	A	1.3
5	☐						
6	☐						
7	☐						

y = 0.1255 * x + 0.0020

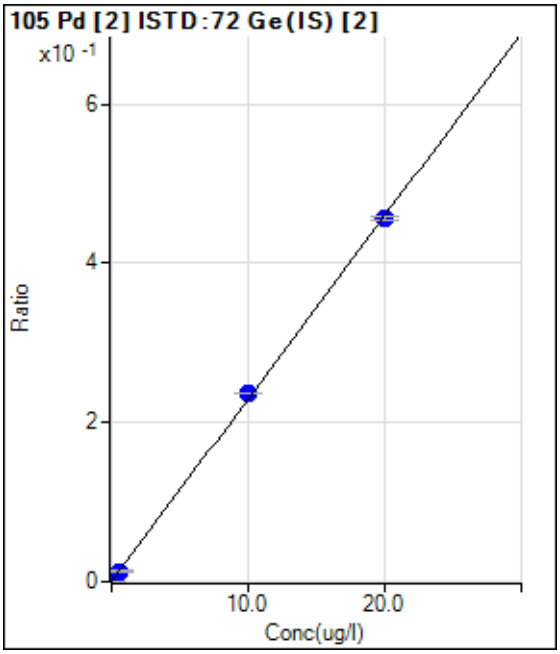
R = 0.9999

DL = 0.001222

BEC = 0.01602

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	91.12	0.0003	P	23.1
2	☐	0.500	0.559	4078.42	0.0131	P	10.3
3	☐	10.000	10.297	81921.72	0.2367	P	0.6
4	☐	20.000	19.850	164413.35	0.4560	P	1.1
5	☐						
6	☐						
7	☐						

y = 0.0230 * x + 2.8256E-004

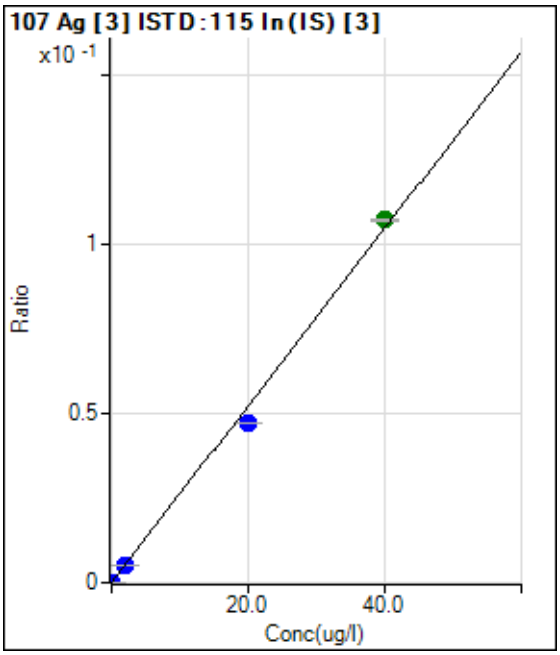
R = 0.9998

DL = 0.008538

BEC = 0.01231

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	373.35	0.0000	P	18.0
2	☐	2.000	1.854	58697.31	0.0049	P	1.5
3	☐	20.000	18.020	571583.81	0.0471	P	0.3
4	☐	40.000	40.997	1303962.22	0.1072	A	0.7
5	☐						
6	☐						
7	☐						

y = 0.0026 * x + 3.0826E-005

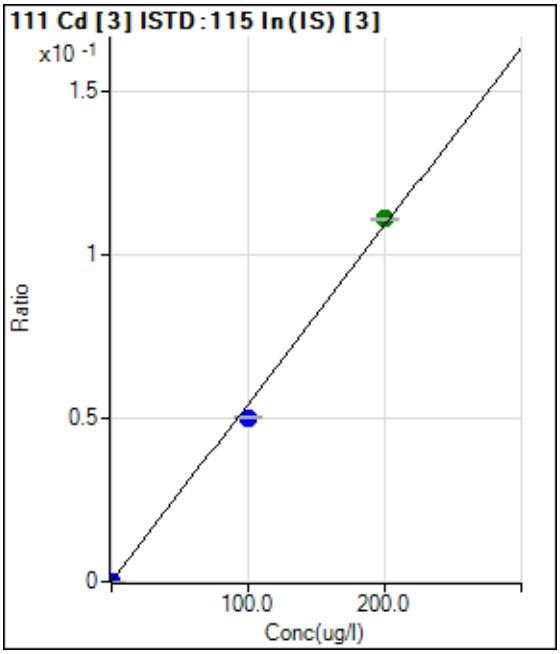
R = 0.9980

DL = 0.006362

BEC = 0.01179

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	113.96	0.0000	P	20.8
2	☐	0.500	0.486	3300.23	0.0003	P	4.0
3	☐	100.000	92.231	609038.76	0.0502	P	1.1
4	☐	200.000	203.884	1350375.09	0.1110	A	0.5
5	☐						
6	☐						
7	☐						

y = 5.4451E-004 * x + 9.4044E-006

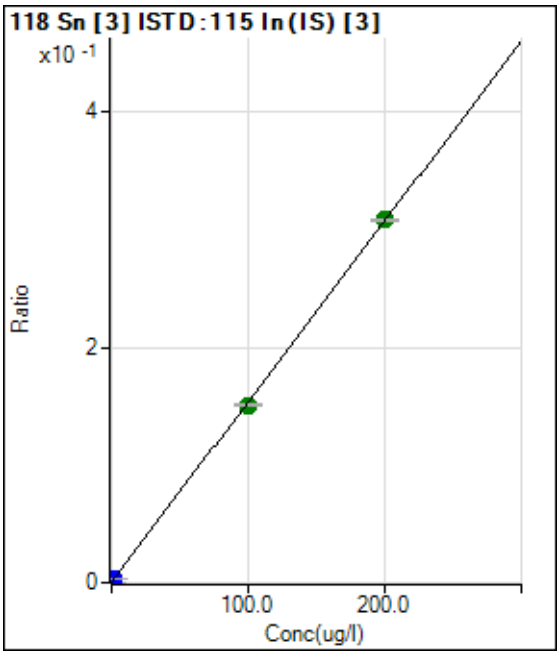
R = 0.9988

DL = 0.01079

BEC = 0.01727

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3214.89	0.0003	P	0.6
2	☐	2.000	1.738	35294.46	0.0029	P	0.2
3	☐	100.000	98.305	1832502.21	0.1511	A	0.7
4	☐	200.000	200.850	3752225.50	0.3085	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0015 * x + 2.6526E-004

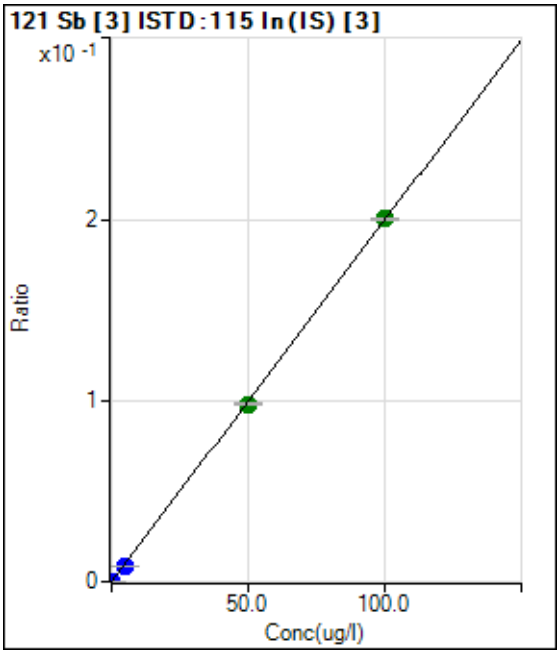
R = 0.9999

DL = 0.003265

BEC = 0.1728

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1366.78	0.0001	P	5.5
2	☐	5.000	4.414	107196.88	0.0089	P	1.5
3	☐	50.000	49.123	1188326.27	0.0980	A	1.4
4	☐	100.000	100.468	2436479.70	0.2003	A	0.9
5	☐						
6	☐						
7	☐						

y = 0.0020 * x + 1.1277E-004

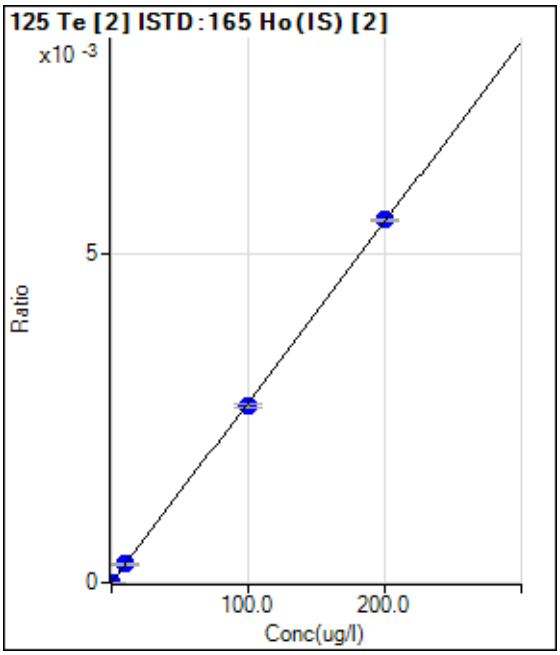
R = 0.9999

DL = 0.009301

BEC = 0.05659

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	5.56	0.0000	P	91.6
2	☐	10.000	10.255	2536.97	0.0003	P	8.0
3	☐	100.000	97.739	25618.05	0.0027	P	2.6
4	☐	200.000	201.118	53516.02	0.0055	P	0.9
5	☐						
6	☐						
7	☐						

y = 2.7456E-005 * x + 5.8109E-007

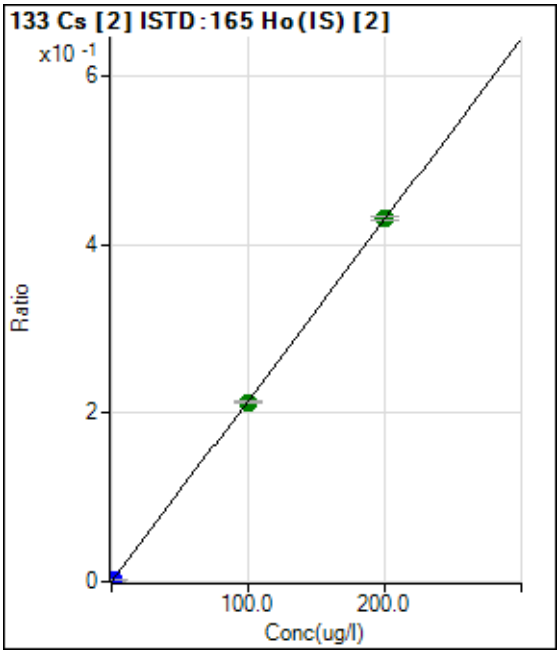
R = 0.9999

DL = 0.05819

BEC = 0.02116

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	276.68	0.0000	P	5.7
2	☐	1.000	0.932	18219.48	0.0020	P	9.3
3	☐	100.000	98.998	2027849.31	0.2125	A	1.0
4	☐	200.000	200.501	4169345.67	0.4303	A	1.1
5	☐						
6	☐						
7	☐						

y = 0.0021 * x + 2.8829E-005

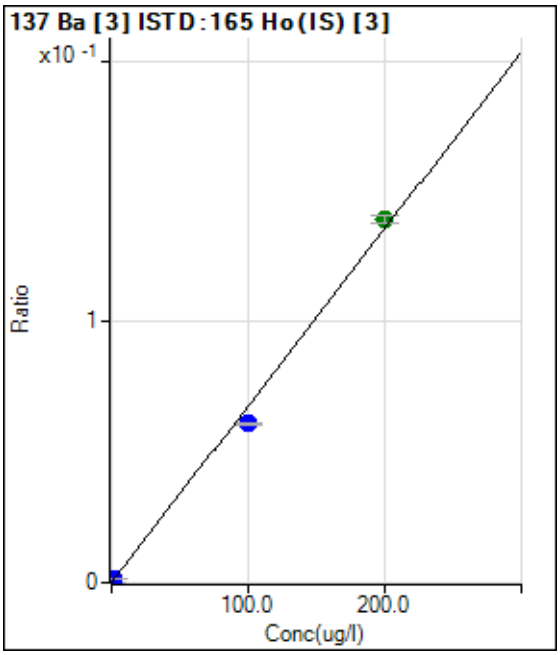
R = 1.0000

DL = 0.002286

BEC = 0.01344

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	360.02	0.0000	P	11.4
2	☐	2.000	1.782	16801.35	0.0012	P	0.8
3	☐	100.000	89.704	835159.29	0.0609	P	0.8
4	☐	200.000	205.150	1957441.57	0.1392	A	2.0
5	☐						
6	☐						
7	☐						

y = 6.7840E-004 * x + 2.6300E-005

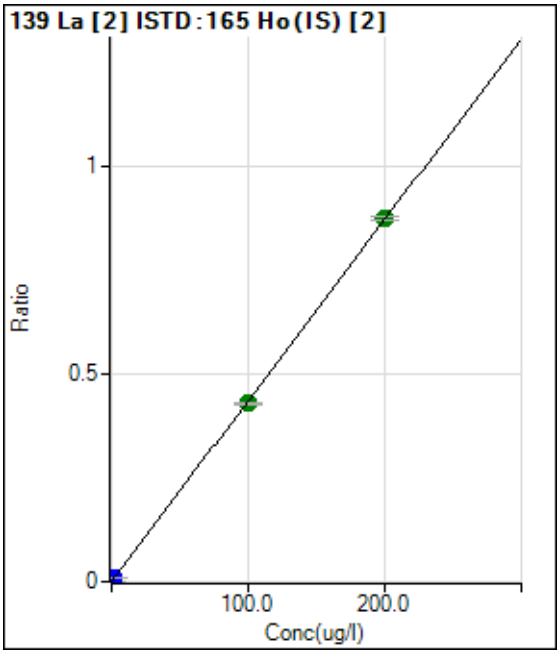
R = 0.9979

DL = 0.01331

BEC = 0.03877

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	218.90	0.0000	P	7.2
2	☐	2.000	1.900	74537.26	0.0083	P	10.7
3	☐	100.000	98.781	4110615.53	0.4307	A	0.9
4	☐	200.000	200.611	8474805.64	0.8746	A	1.0
5	☐						
6	☐						
7	☐						

y = 0.0044 * x + 2.2802E-005

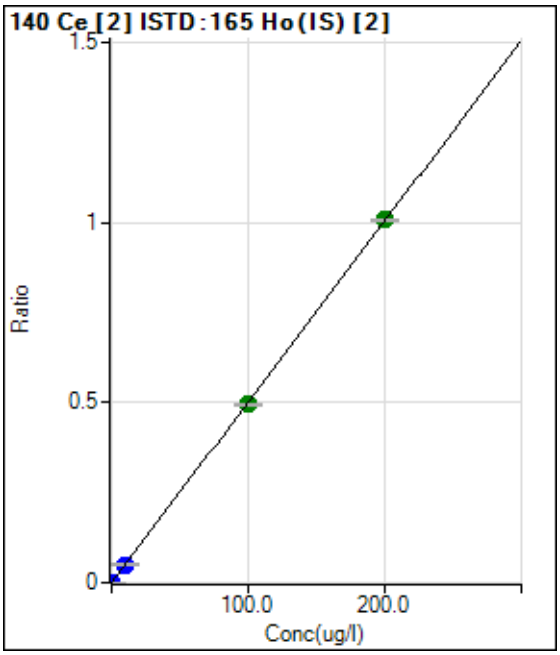
R = 1.0000

DL = 0.001125

BEC = 0.00523

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	258.90	0.0000	P	14.7
2	☐	10.000	9.626	433180.43	0.0483	P	11.2
3	☐	100.000	98.514	4713930.42	0.4939	A	0.5
4	☐	200.000	200.762	9752219.09	1.0064	A	0.6
5	☐						
6	☐						
7	☐						

y = 0.0050 * x + 2.6977E-005

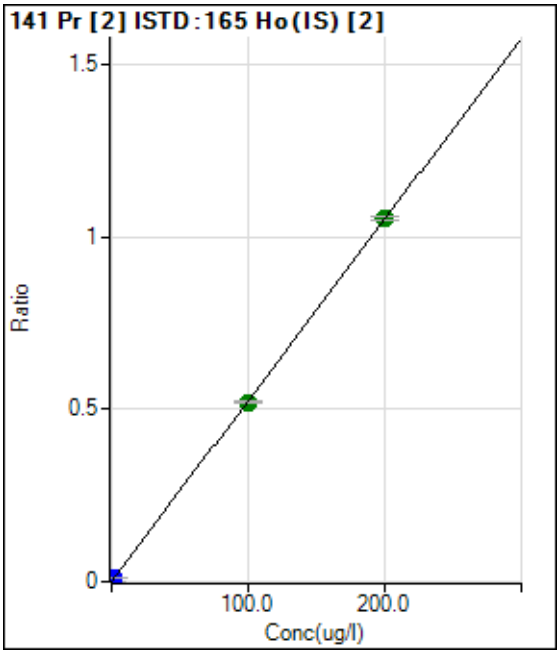
R = 1.0000

DL = 0.002369

BEC = 0.005382

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	196.67	0.0000	P	17.8
2	☐	2.000	1.955	92447.21	0.0103	P	10.7
3	☐	100.000	99.277	4982557.35	0.5220	A	0.3
4	☐	200.000	200.362	10208640.54	1.0535	A	0.9
5	☐						
6	☐						
7	☐						

y = 0.0053 * x + 2.0485E-005

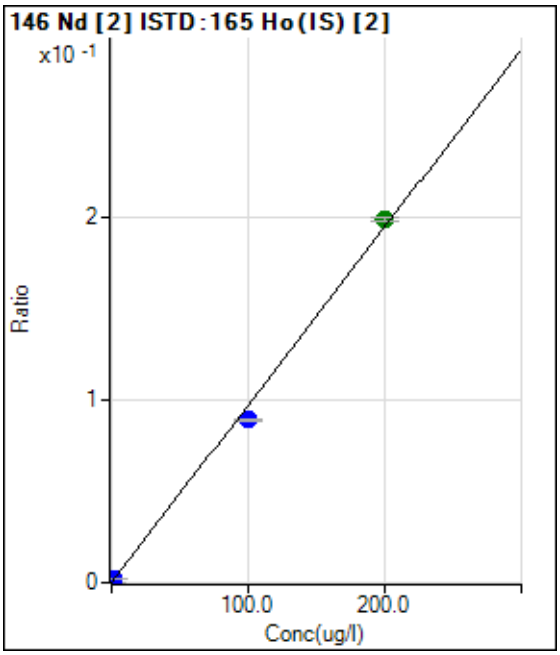
R = 1.0000

DL = 0.002081

BEC = 0.003896

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	30.00	0.0000	P	11.2
2	☐	2.000	1.916	16740.29	0.0019	P	8.4
3	☐	100.000	91.629	848836.59	0.0889	P	0.8
4	☐	200.000	204.186	1920310.06	0.1982	A	1.0
5	☐						
6	☐						
7	☐						

y = 9.7052E-004 * x + 3.1255E-006

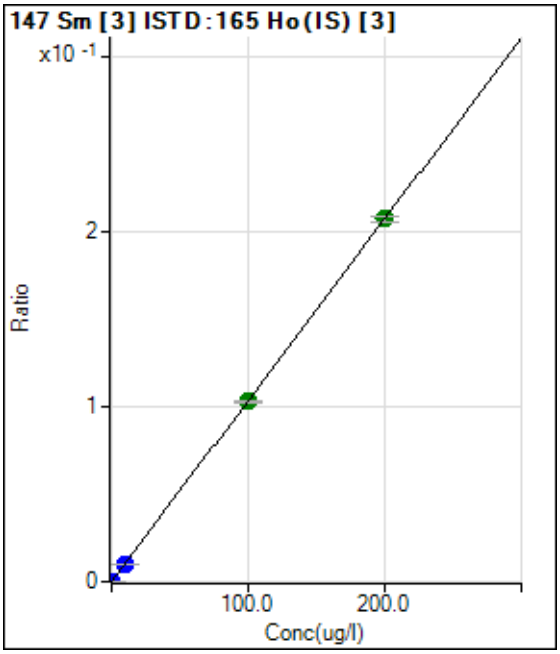
R = 0.9986

DL = 0.001077

BEC = 0.00322

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	82.22	0.0000	P	4.5
2	☐	10.000	9.147	128984.58	0.0095	P	1.8
3	☐	100.000	99.653	1416464.75	0.1033	A	1.1
4	☐	200.000	200.216	2917402.07	0.2075	A	1.8
5	☐						
6	☐						
7	☐						

y = 0.0010 * x + 6.0069E-006

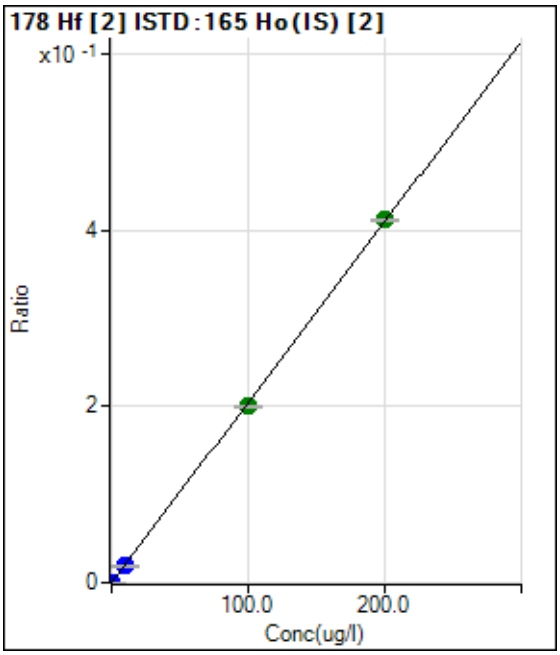
R = 1.0000

DL = 0.0007902

BEC = 0.005797

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	194.46	0.0000	P	1.7
2	☐	10.000	9.241	170084.89	0.0189	P	10.2
3	☐	100.000	97.608	1907988.11	0.1999	A	0.7
4	☐	200.000	201.234	3993388.17	0.4121	A	0.7
5	☐						
6	☐						
7	☐						

y = 0.0020 * x + 2.0258E-005

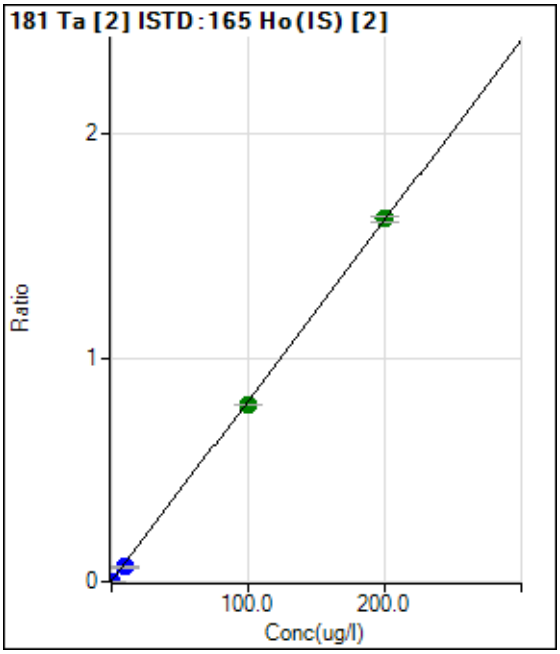
R = 0.9999

DL = 0.0005184

BEC = 0.009893

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	14381.53	0.0015	P	0.9
2	☐	10.000	7.965	589452.17	0.0657	P	10.8
3	☐	100.000	98.219	7568973.15	0.7930	A	0.4
4	☐	200.000	200.992	15709081.71	1.6212	A	1.3
5	☐						
6	☐						
7	☐						

y = 0.0081 * x + 0.0015

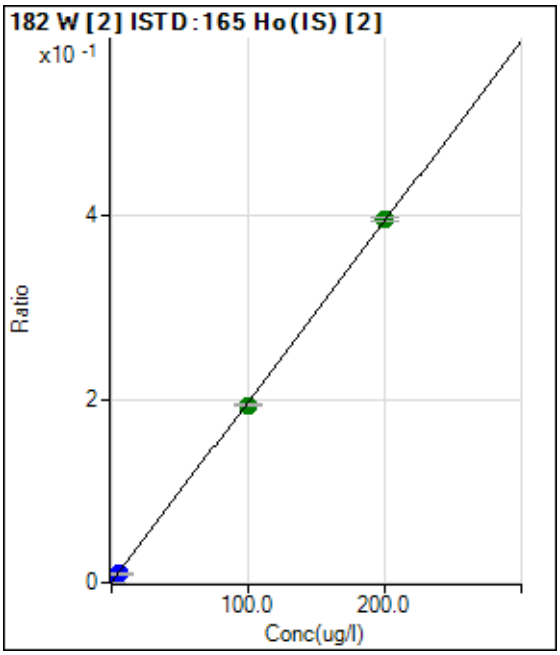
R = 0.9999

DL = 0.005225

BEC = 0.1859

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3279.37	0.0003	P	10.4
2	☐	5.000	4.706	86126.78	0.0096	P	10.6
3	☐	100.000	98.296	1848070.18	0.1936	A	1.1
4	☐	200.000	200.859	3830443.94	0.3953	A	1.2
5	☐						
6	☐						
7	☐						

y = 0.0020 * x + 3.4163E-004

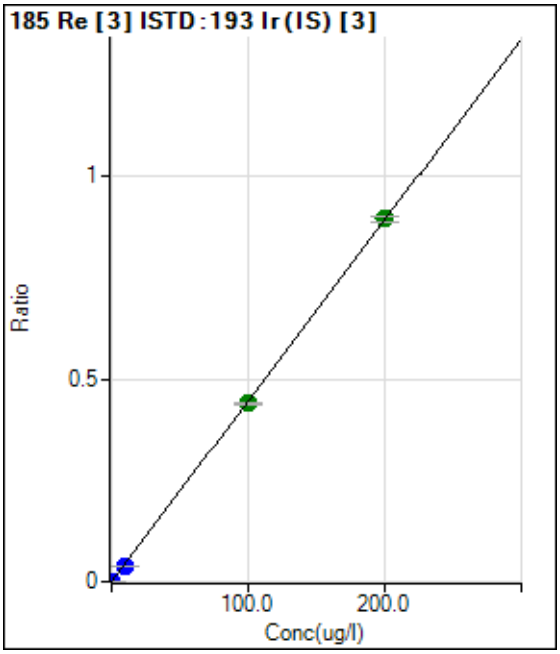
R = 0.9999

DL = 0.05414

BEC = 0.1737

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	126.67	0.0000	P	21.3
2	☐	10.000	8.775	268214.59	0.0391	P	0.3
3	☐	100.000	98.664	3034795.02	0.4400	A	0.9
4	☐	200.000	200.729	6248846.50	0.8952	A	1.2
5	☐						
6	☐						
7	☐						

y = 0.0045 * x + 1.8233E-005

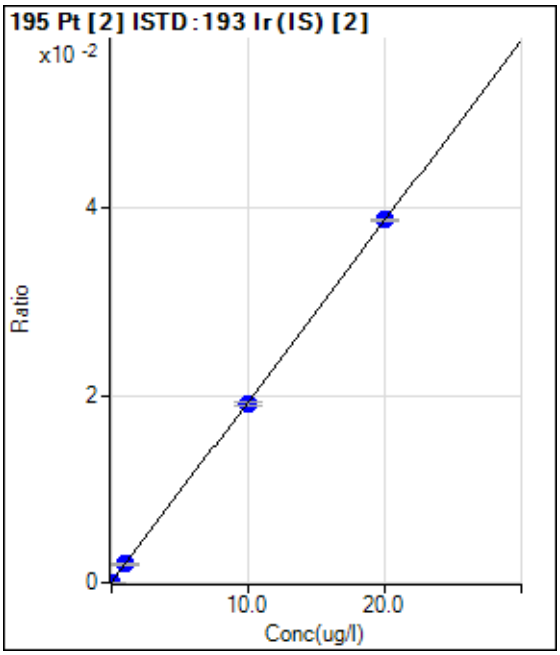
R = 1.0000

DL = 0.002613

BEC = 0.004089

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	204.45	0.0000	P	7.1
2	☐	1.000	1.041	11634.81	0.0020	P	9.8
3	☐	10.000	9.871	114024.33	0.0191	P	1.7
4	☐	20.000	20.062	230628.79	0.0388	P	0.8
5	☐						
6	☐						
7	☐						

y = 0.0019 * x + 3.3596E-005

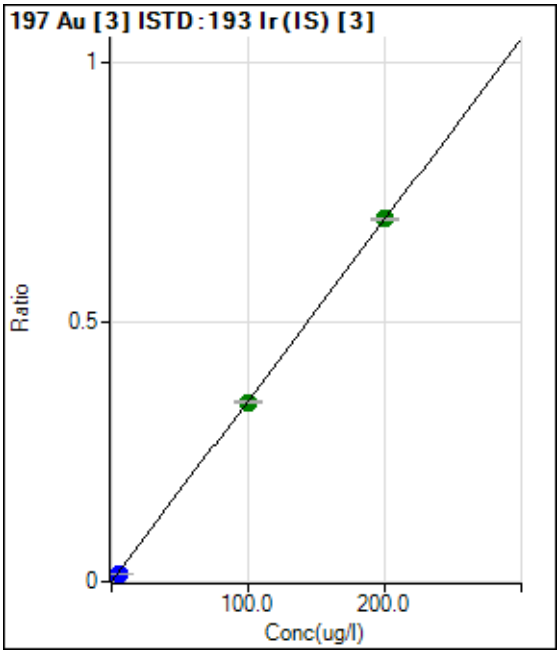
R = 1.0000

DL = 0.003721

BEC = 0.01739

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1386.79	0.0002	P	12.2
2	☐	5.000	4.437	107408.51	0.0157	P	0.3
3	☐	100.000	99.094	2385660.19	0.3459	A	1.2
4	☐	200.000	200.467	4883393.05	0.6995	A	0.3
5	☐						
6	☐						
7	☐						

y = 0.0035 * x + 1.9959E-004

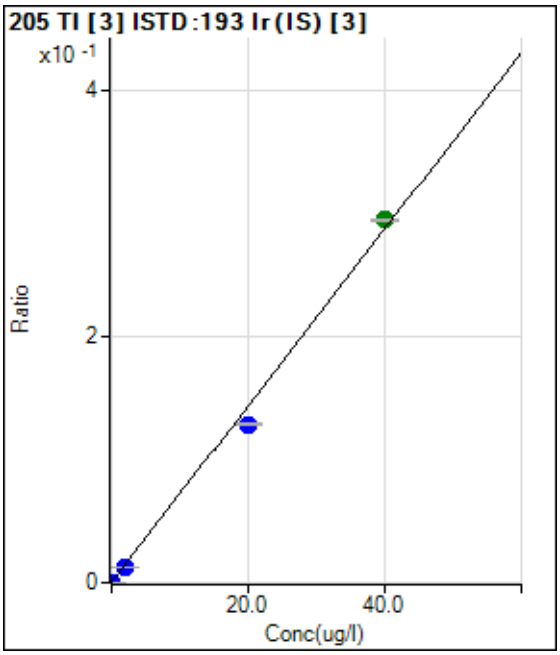
R = 1.0000

DL = 0.02097

BEC = 0.05721

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2913.73	0.0004	P	3.4
2	☐	2.000	1.778	90235.06	0.0132	P	1.1
3	☐	20.000	17.890	888078.68	0.1288	P	0.5
4	☐	40.000	41.066	2059496.50	0.2950	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0072 * x + 4.1922E-004

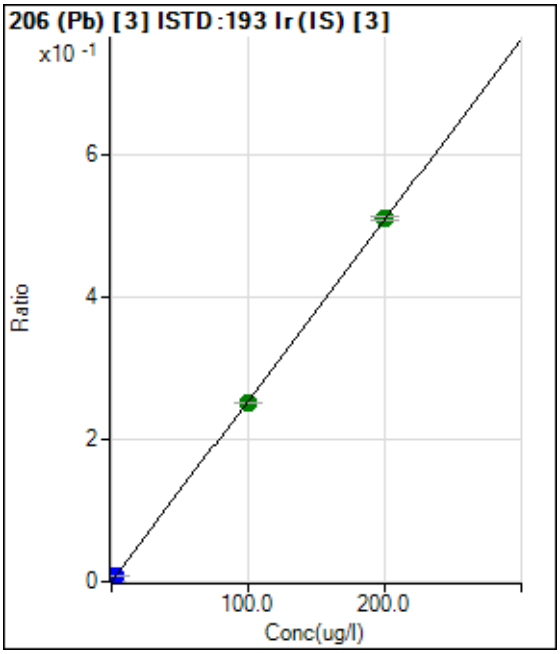
R = 0.9978

DL = 0.00598

BEC = 0.05844

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1959.10	0.0003	P	6.6
2	☐	3.000	2.637	47848.65	0.0070	P	1.3
3	☐	100.000	98.630	1731184.35	0.2510	A	0.4
4	☐	200.000	200.690	3563138.11	0.5104	A	1.2
5	☐						
6	☐						
7	☐						

y = 0.0025 * x + 2.8189E-004

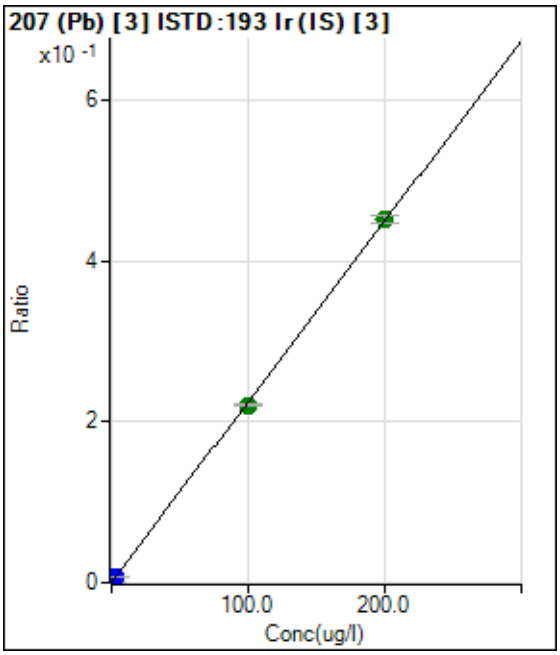
R = 1.0000

DL = 0.02197

BEC = 0.1109

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2159.14	0.0003	P	7.8
2	☐	3.000	2.652	42876.81	0.0063	P	1.5
3	☐	100.000	98.343	1523698.61	0.2209	A	0.8
4	☐	200.000	200.834	3147019.95	0.4508	A	2.0
5	☐						
6	☐						
7	☐						

y = 0.0022 * x + 3.1066E-004

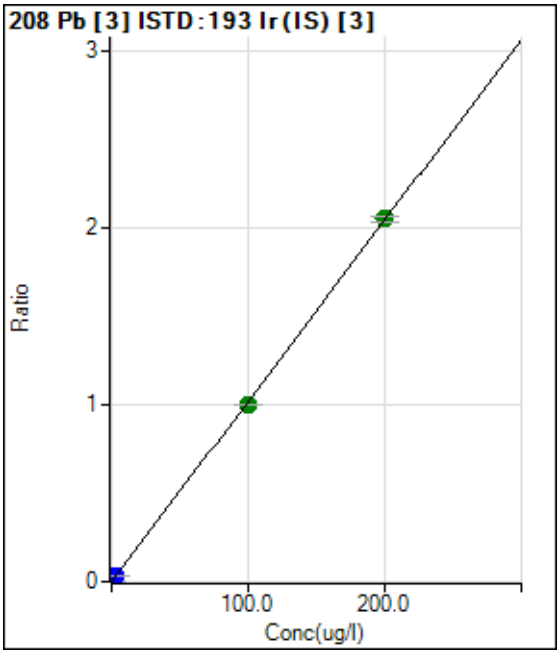
R = 0.9999

DL = 0.03225

BEC = 0.1385

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	8178.92	0.0012	P	4.0
2	☐	3.000	2.653	193637.15	0.0283	P	0.9
3	☐	100.000	98.032	6913069.53	1.0023	A	0.8
4	☐	200.000	200.989	14336497.46	2.0537	A	1.2
5	☐						
6	☐						
7	☐						

y = 0.0102 * x + 0.0012

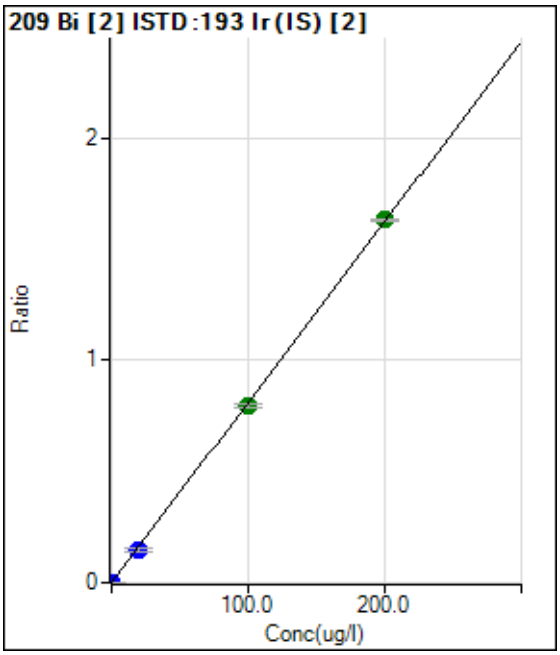
R = 0.9999

DL = 0.01395

BEC = 0.1152

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4753.13	0.0008	P	3.5
2	☐	20.000	18.117	840621.17	0.1476	P	8.6
3	☐	100.000	98.138	4751821.32	0.7961	A	1.4
4	☐	200.000	201.119	9695456.52	1.6306	A	0.2
5	☐						
6	☐						
7	☐						

y = 0.0081 * x + 7.8122E-004

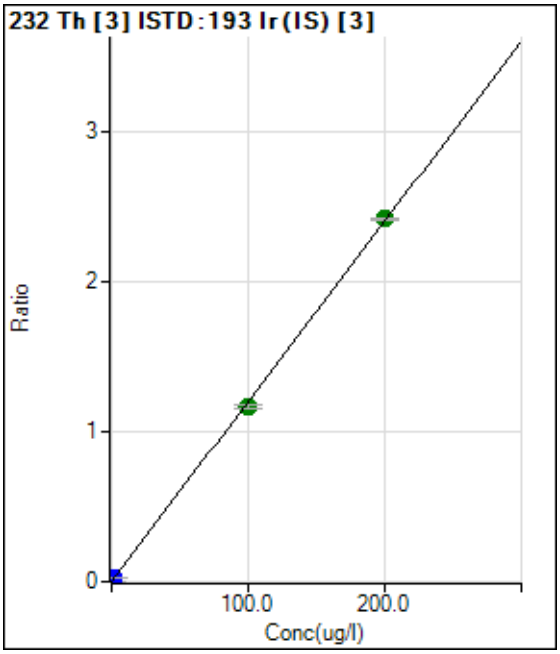
R = 0.9999

DL = 0.01026

BEC = 0.0964

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1601.26	0.0002	P	9.0
2	☐	2.000	1.726	143495.76	0.0209	P	0.7
3	☐	100.000	97.144	8041544.74	1.1659	A	1.2
4	☐	200.000	201.431	16875388.50	2.4173	A	0.7
5	☐						
6	☐						
7	☐						

y = 0.0120 * x + 2.3045E-004

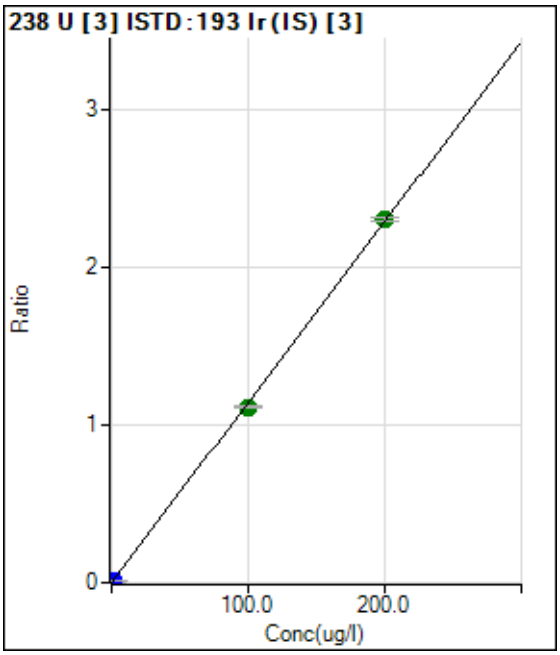
R = 0.9998

DL = 0.00518

BEC = 0.0192

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	473.36	0.0001	P	7.3
2	☐	1.000	0.883	69637.27	0.0102	P	1.8
3	☐	100.000	97.520	7692089.40	1.1153	A	0.8
4	☐	200.000	201.241	16064954.35	2.3014	A	1.1
5	☐						
6	☐						
7	☐						

y = 0.0114 * x + 6.8115E-005

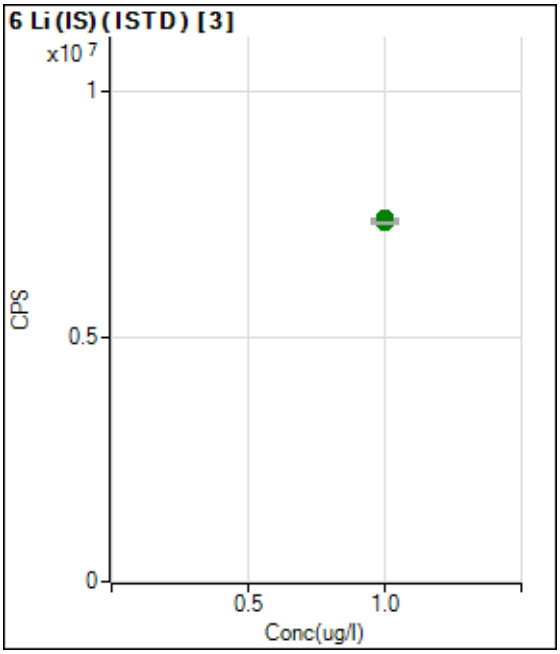
R = 0.9999

DL = 0.001312

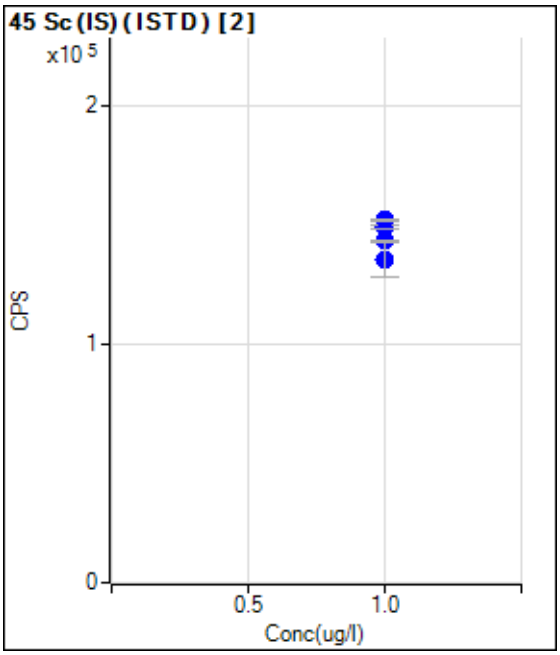
BEC = 0.005956

Weight: None

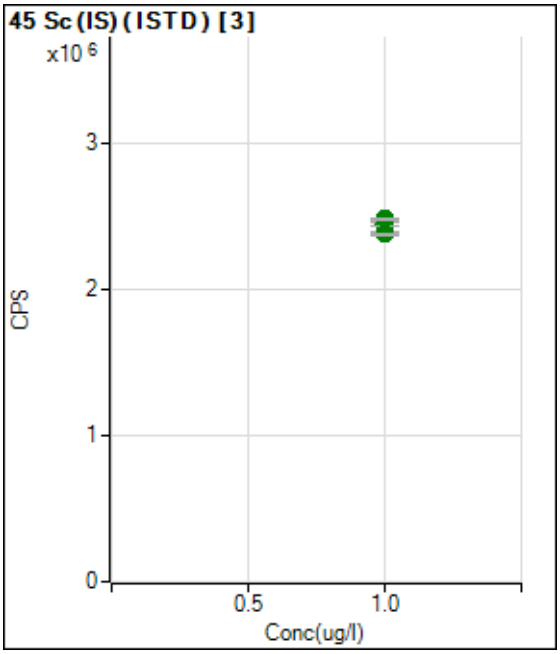
Min Conc: <None>



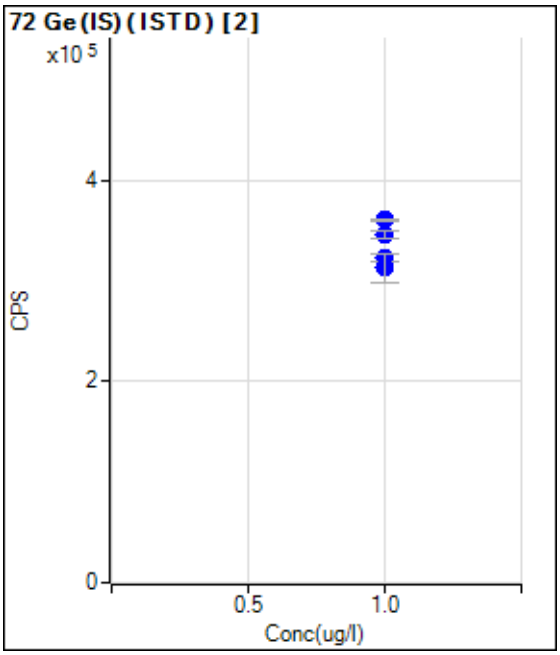
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		7411412.65		A	0.5
2	☐	1.000		7393428.22		A	0.7
3	☐	1.000		7403747.52		A	0.8
4	☐	1.000		7340345.91		A	0.6
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



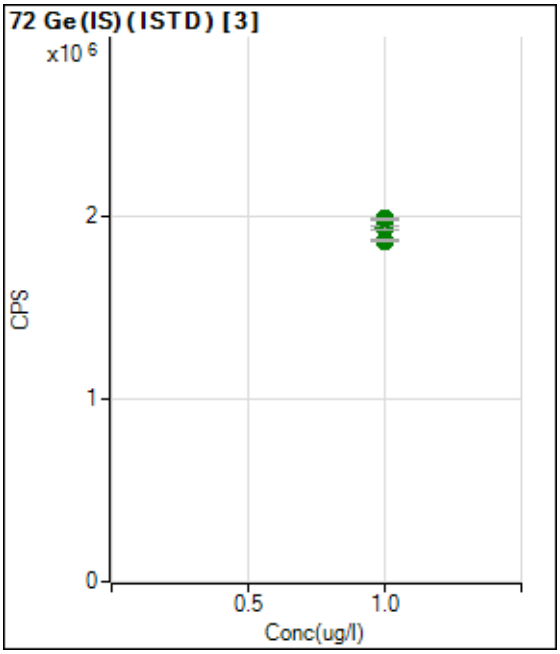
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		143379.26		P	0.5
2	☐	1.000		135712.57		P	10.6
3	☐	1.000		149177.03		P	0.8
4	☐	1.000		152248.37		P	0.9
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



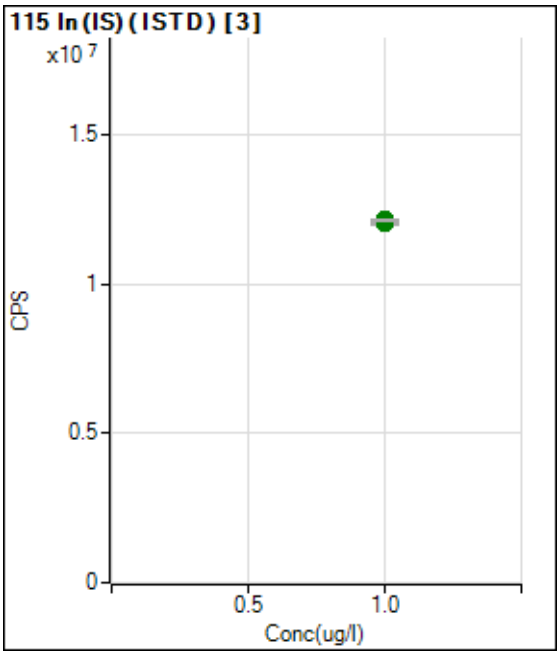
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2392711.74		A	0.8
2	☐	1.000		2382182.55		A	0.4
3	☐	1.000		2451691.80		A	0.6
4	☐	1.000		2486063.73		A	0.5
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



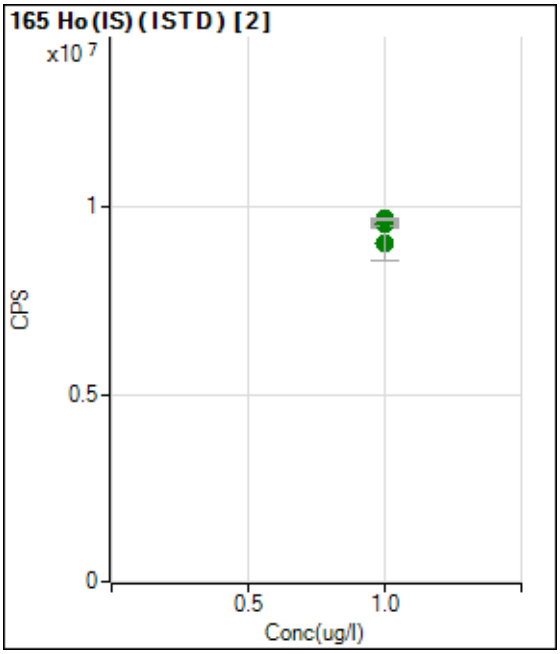
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		323154.34		P	1.9
2	☐	1.000		312750.41		P	9.1
3	☐	1.000		346141.86		P	1.9
4	☐	1.000		360583.52		P	0.6
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



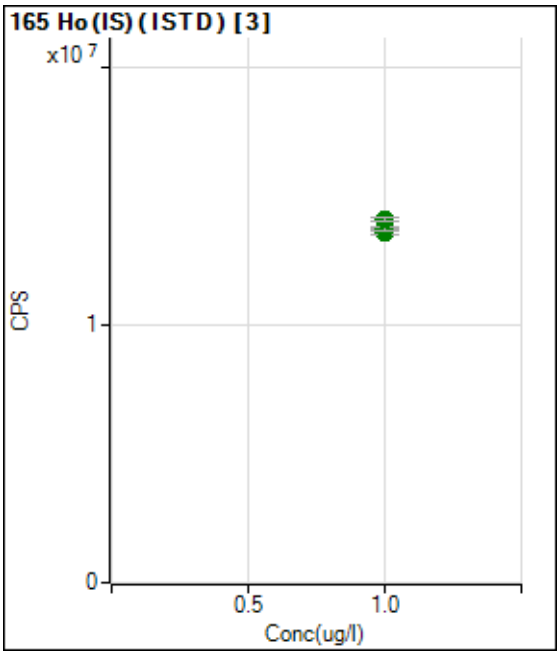
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1861985.86		A	0.4
2	☐	1.000		1859584.07		A	0.6
3	☐	1.000		1933598.29		A	0.7
4	☐	1.000		1981713.98		A	0.5
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



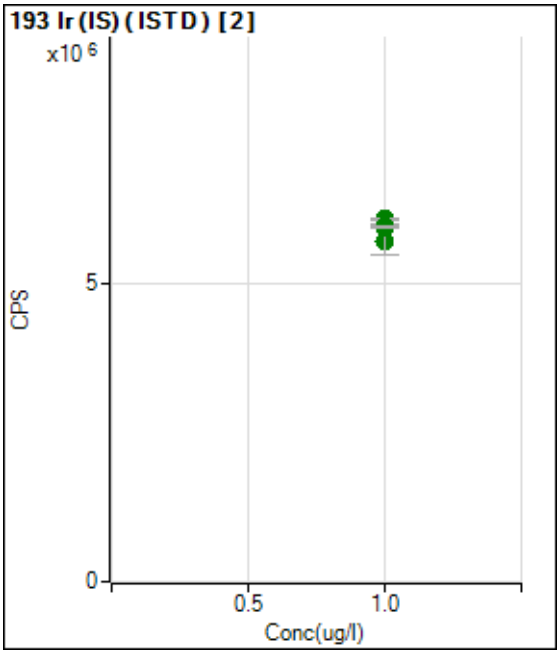
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		12119832.59		A	0.6
2	☐	1.000		12032588.34		A	0.3
3	☐	1.000		12125196.87		A	0.5
4	☐	1.000		12162441.44		A	0.4
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



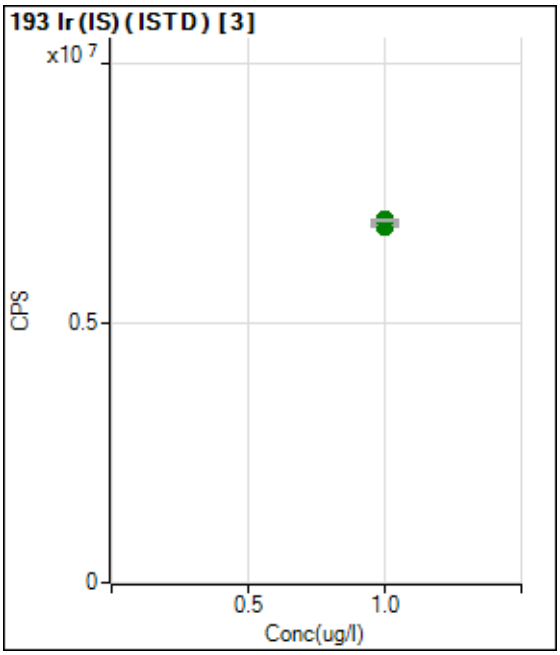
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		9598706.45		A	0.7
2	☐	1.000		9037315.28		A	9.7
3	☐	1.000		9545047.29		A	0.7
4	☐	1.000		9690579.71		A	0.7
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		13687737.85		A	0.5
2	☐	1.000		13600553.55		A	1.5
3	☐	1.000		13718005.21		A	1.1
4	☐	1.000		14064146.87		A	1.1
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		6085322.34		A	0.9
2	☐	1.000		5724753.53		A	9.0
3	☐	1.000		5969550.81		A	0.7
4	☐	1.000		5945959.84		A	0.5
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					

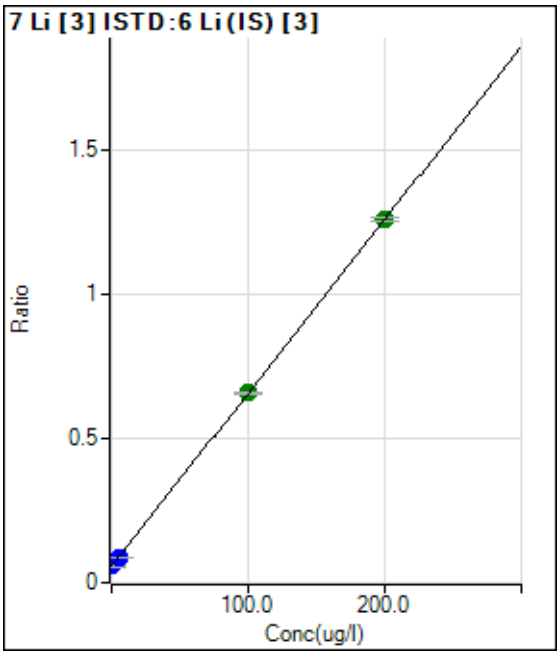


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		6951638.99		A	0.9
2	☐	1.000		6850876.64		A	0.6
3	☐	1.000		6897432.40		A	0.8
4	☐	1.000		6980866.91		A	0.5
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					

Calibration for 093CALS.D

Batch Folder:	C:¥ICPMH¥1¥DATA¥121019B2.B¥
Analysis File:	121019B2.batch.xml
DA Date-Time:	12/11/2019 2:20:28 AM
Calibration Title:	
Calibration Method:	External Calibration
VIS Interpolation Fit:	
Tune Step:	#1 he.u
	#2 nogas.u

Level	Standard Data File	Sample Name	Acq. Date-Time
1	092CALB.D	ICIS 1843378	12/11/2019 1:57:45 AM
2	093CALS.D	IC 1847444	12/11/2019 2:04:30 AM
3	094CALS.D	IC 1847445	12/11/2019 2:11:13 AM
4	095CALS.D	IC 1847446	12/11/2019 2:17:54 AM
5			
6			
7			



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	322233.44	0.0568	P	0.4
2	☐	5.000	4.882	500696.62	0.0861	P	1.6
3	☐	100.000	100.126	3700505.92	0.6591	A	1.1
4	☐	200.000	199.940	7022388.58	1.2596	A	1.1
5	☐						
6	☐						
7	☐						

y = 0.0060 * x + 0.0568

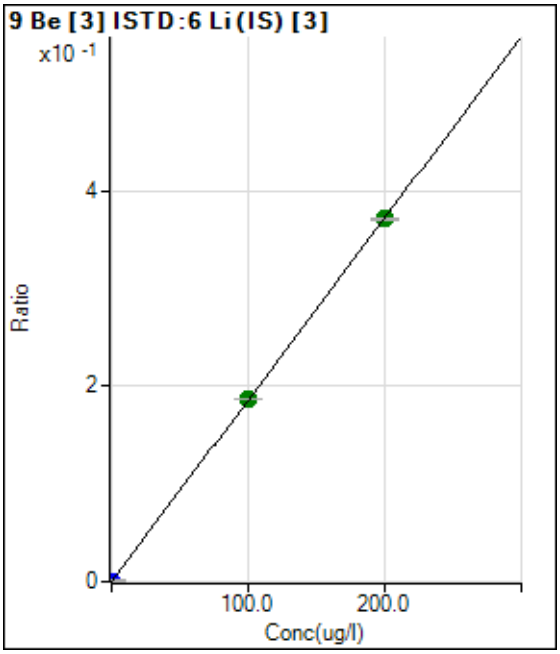
R = 1.0000

DL = 0.1271

BEC = 9.436

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	74.45	0.0000	P	6.1
2	☐	0.500	0.521	5711.15	0.0010	P	2.6
3	☐	100.000	100.616	1050316.57	0.1871	A	0.8
4	☐	200.000	199.692	2070037.97	0.3713	A	0.6
5	☐						
6	☐						
7	☐						

y = 0.0019 * x + 1.3121E-005

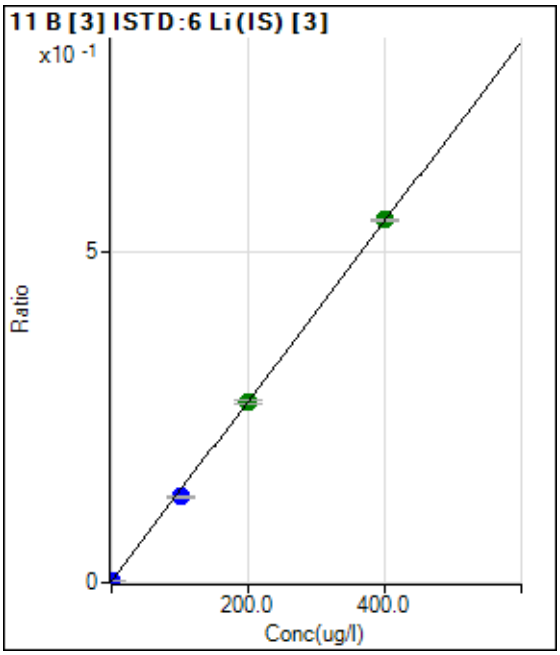
R = 1.0000

DL = 0.001299

BEC = 0.007057

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	12881.64	0.0023	P	3.3
2	☐	100.000	94.163	755930.85	0.1300	P	2.3
3	☐	200.000	199.497	1532543.83	0.2730	A	1.3
4	☐	400.000	401.711	3051830.58	0.5474	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0014 * x + 0.0023

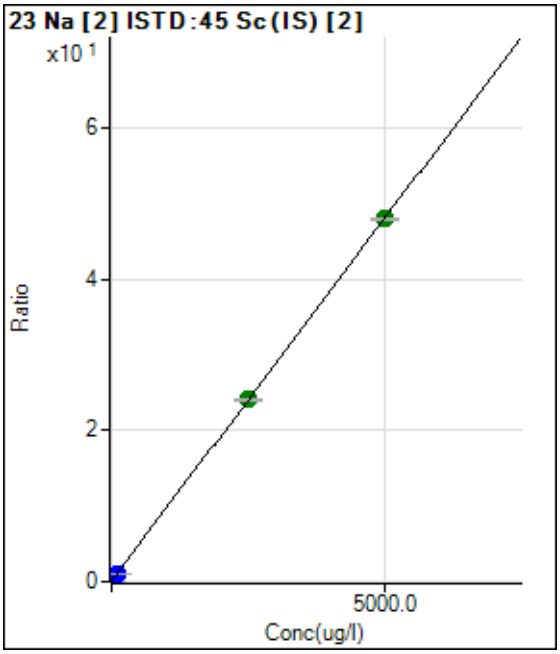
R = 0.9999

DL = 0.1637

BEC = 1.672

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	15928.67	0.1012	P	2.9
2	☐	100.000	92.463	169141.76	0.9881	P	10.8
3	☐	2500.000	2507.022	3881616.09	24.1485	A	1.0
4	☐	5000.000	4996.640	7698108.08	48.0289	A	0.5
5	☐						
6	☐						
7	☐						

y = 0.0096 * x + 0.1012

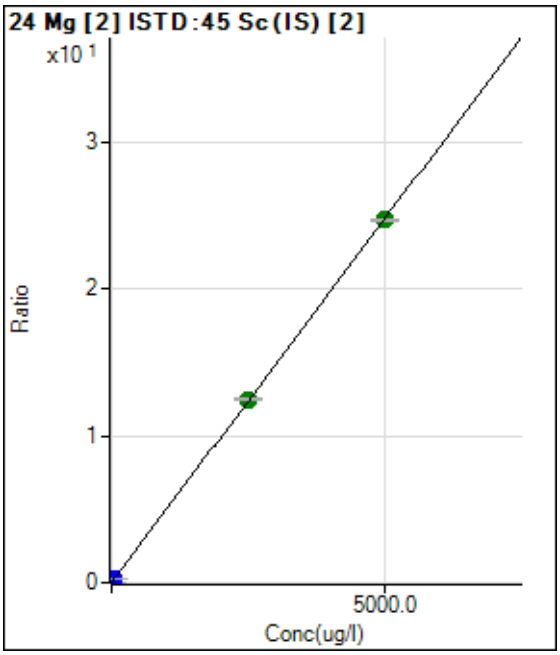
R = 1.0000

DL = 0.907

BEC = 10.55

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	520.03	0.0033	P	22.0
2	☐	50.000	48.203	41452.47	0.2423	P	11.5
3	☐	2500.000	2519.158	2007933.22	12.4918	A	0.8
4	☐	5000.000	4990.439	3965895.01	24.7429	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0050 * x + 0.0033

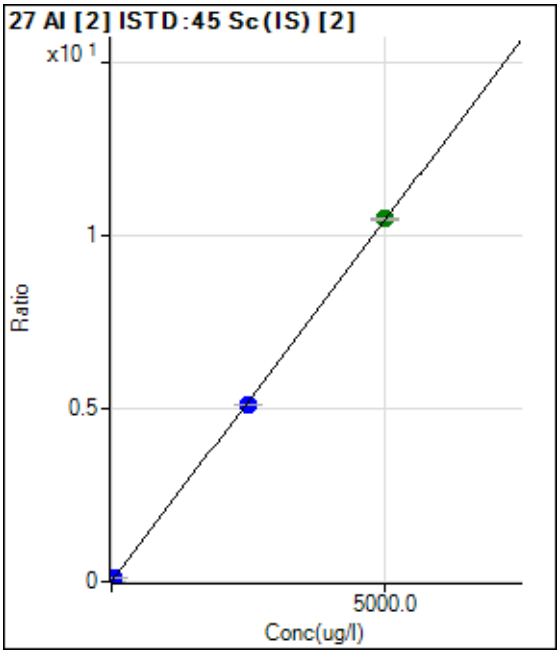
R = 1.0000

DL = 0.4393

BEC = 0.6663

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	350.02	0.0022	P	14.4
2	☐	50.000	49.319	17999.49	0.1051	P	10.6
3	☐	2500.000	2449.082	821768.18	5.1122	P	0.3
4	☐	5000.000	5025.466	1680916.16	10.4878	A	0.6
5	☐						
6	☐						
7	☐						

y = 0.0021 * x + 0.0022

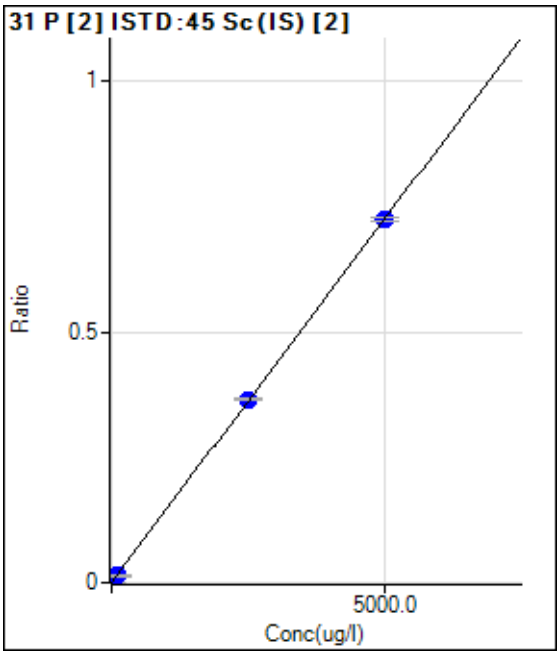
R = 0.9999

DL = 0.4614

BEC = 1.066

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	76.67	0.0005	P	42.7
2	☐	100.000	90.313	2333.59	0.0136	P	8.0
3	☐	2500.000	2518.509	58773.44	0.3657	P	1.4
4	☐	5000.000	4990.939	116059.75	0.7241	P	1.1
5	☐						
6	☐						
7	☐						

y = 1.4499E-004 * x + 4.8669E-004

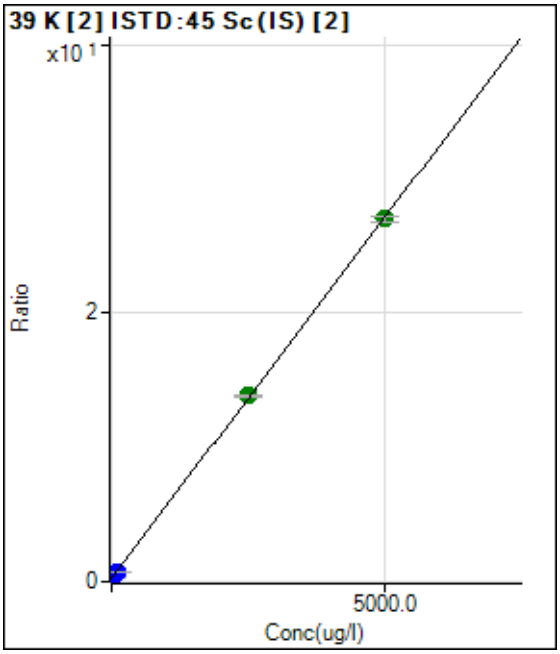
R = 1.0000

DL = 4.296

BEC = 3.357

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	34206.48	0.2173	P	0.5
2	☐	100.000	89.748	119860.47	0.7002	P	10.9
3	☐	2500.000	2531.293	2224220.25	13.8373	A	0.7
4	☐	5000.000	4984.558	4333088.48	27.0375	A	1.3
5	☐						
6	☐						
7	☐						

y = 0.0054 * x + 0.2173

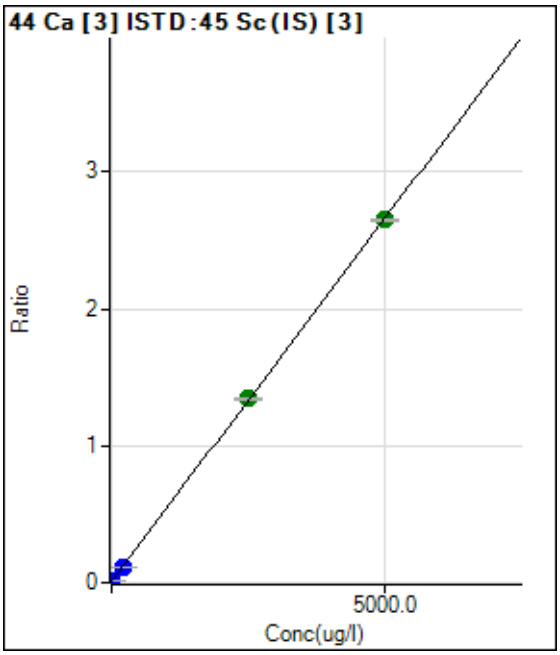
R = 1.0000

DL = 0.6094

BEC = 40.39

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	24055.72	0.0081	P	1.4
2	☐	200.000	198.761	334128.21	0.1134	P	0.2
3	☐	2500.000	2523.256	3952745.56	1.3441	A	0.9
4	☐	5000.000	4988.422	7639997.66	2.6493	A	0.3
5	☐						
6	☐						
7	☐						

y = 5.2946E−004 * x + 0.0081

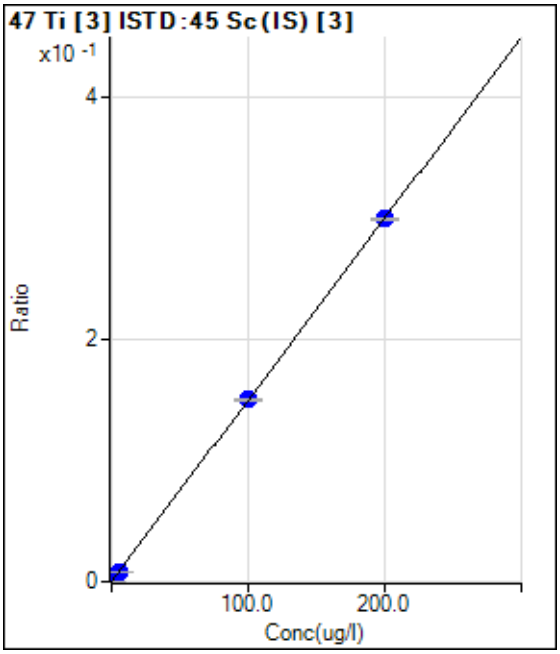
R = 1.0000

DL = 0.6489

BEC = 15.38

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	501.79	0.0002	P	2.2
2	☐	5.000	5.015	22587.02	0.0077	P	0.8
3	☐	100.000	100.220	440968.60	0.1500	P	1.2
4	☐	200.000	199.889	861981.14	0.2989	P	0.7
5	☐						
6	☐						
7	☐						

y = 0.0015 * x + 1.6981E−004

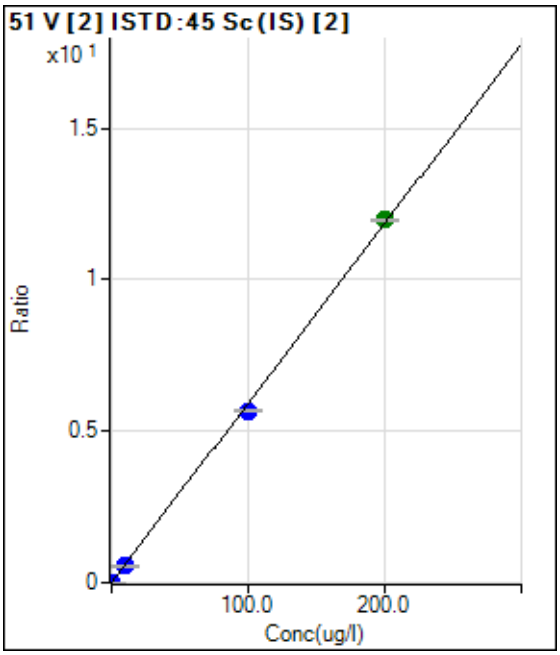
R = 1.0000

DL = 0.007593

BEC = 0.1136

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1391.23	0.0088	P	7.1
2	☐	10.000	9.062	93248.78	0.5447	P	10.8
3	☐	100.000	95.697	911176.04	5.6684	P	0.7
4	☐	200.000	202.198	1918074.00	11.9669	A	0.5
5	☐						
6	☐						
7	☐						

y = 0.0591 * x + 0.0088

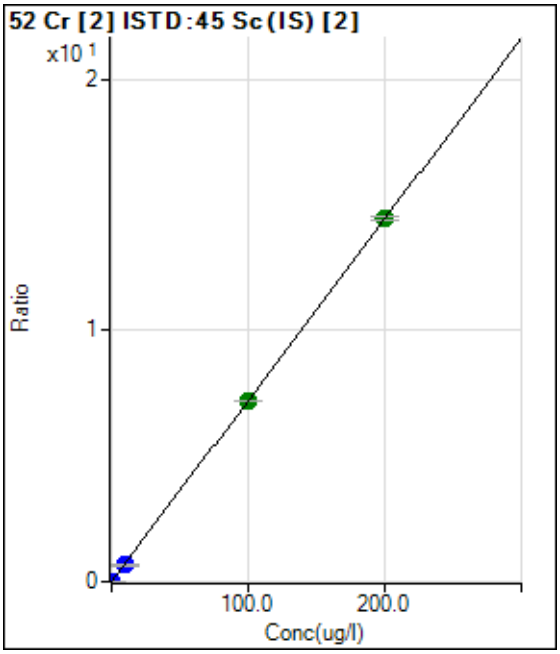
R = 0.9996

DL = 0.03188

BEC = 0.1494

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1086.75	0.0069	P	4.5
2	☐	10.000	9.036	112670.00	0.6579	P	10.2
3	☐	100.000	99.531	1153685.88	7.1771	A	0.5
4	☐	200.000	200.283	2313692.57	14.4354	A	1.2
5	☐						
6	☐						
7	☐						

y = 0.0720 * x + 0.0069

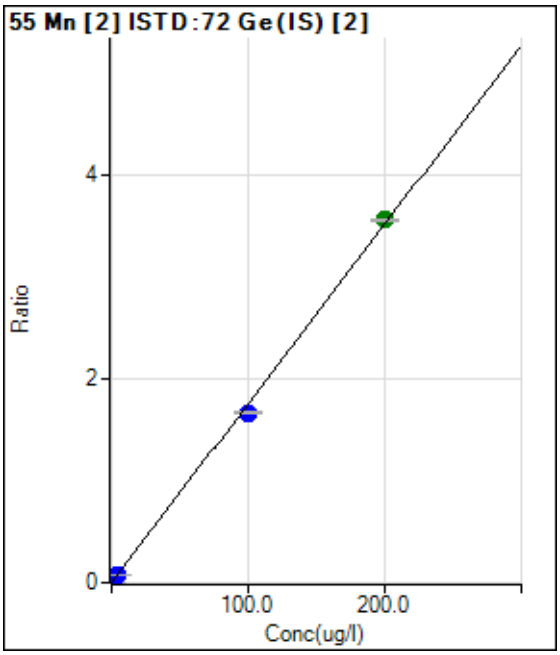
R = 1.0000

DL = 0.01299

BEC = 0.09584

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	385.58	0.0010	P	20.3
2	☐	4.000	3.961	28412.32	0.0704	P	8.8
3	☐	100.000	94.787	672563.98	1.6621	P	0.6
4	☐	200.000	202.607	1442674.49	3.5516	A	0.3
5	☐						
6	☐						
7	☐						

y = 0.0175 * x + 0.0010

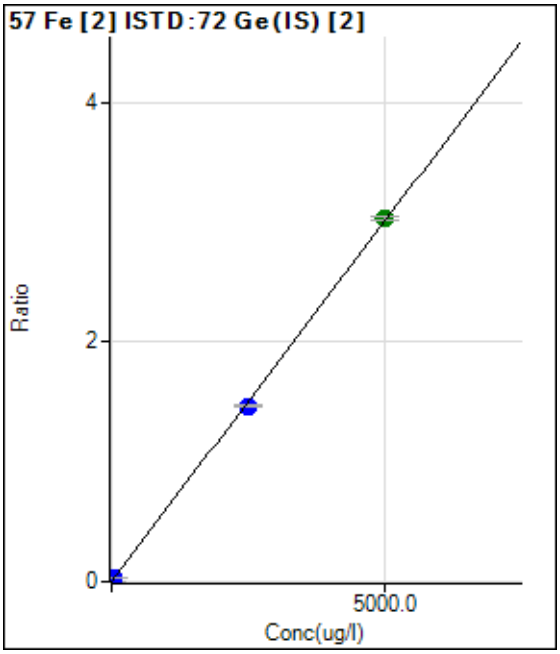
R = 0.9994

DL = 0.03532

BEC = 0.05804

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	597.82	0.0016	P	2.9
2	☐	50.000	49.504	12664.99	0.0314	P	6.2
3	☐	2500.000	2429.346	592029.57	1.4630	P	1.0
4	☐	5000.000	5035.332	1231048.01	3.0306	A	1.0
5	☐						
6	☐						
7	☐						

y = 6.0156E-004 * x + 0.0016

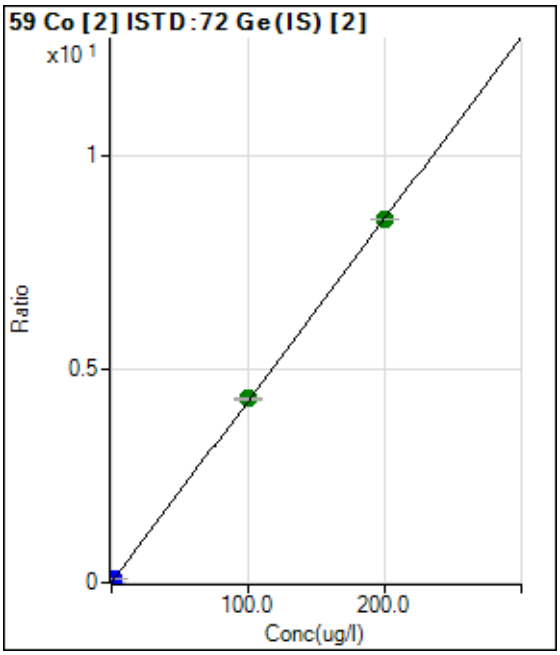
R = 0.9998

DL = 0.23

BEC = 2.622

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	537.81	0.0014	P	1.8
2	☐	2.000	1.984	34721.48	0.0861	P	8.3
3	☐	100.000	101.007	1744552.58	4.3112	A	0.5
4	☐	200.000	199.496	3458141.30	8.5135	A	0.1
5	☐						
6	☐						
7	☐						

y = 0.0427 * x + 0.0014

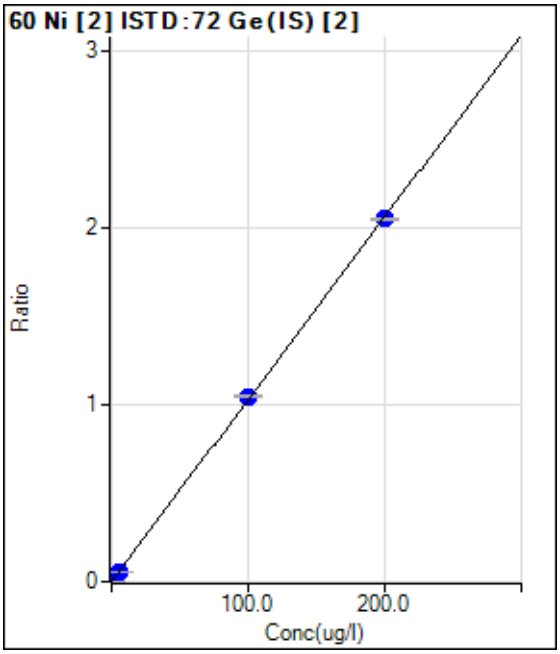
R = 1.0000

DL = 0.001772

BEC = 0.03325

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	123.34	0.0003	P	6.4
2	☐	5.000	5.488	22930.00	0.0568	P	8.5
3	☐	100.000	101.650	423702.32	1.0471	P	0.7
4	☐	200.000	199.163	833152.39	2.0512	P	0.6
5	☐						
6	☐						
7	☐						

y = 0.0103 * x + 3.2554E-004

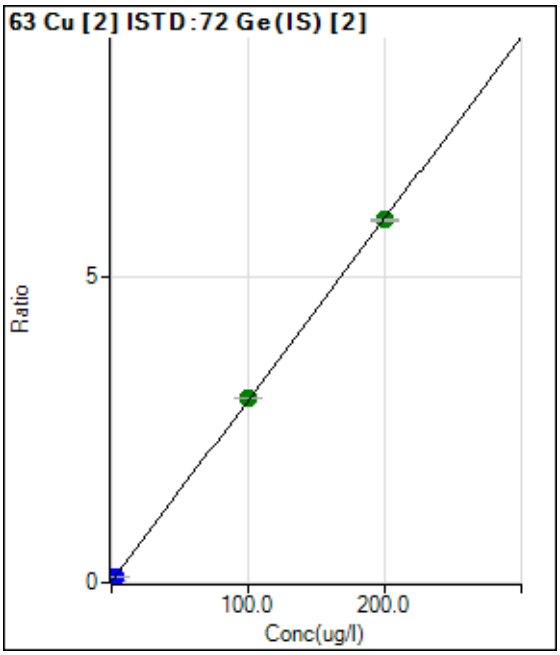
R = 0.9999

DL = 0.006064

BEC = 0.03161

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6599.29	0.0174	P	4.7
2	☐	3.000	2.976	42621.21	0.1056	P	7.0
3	☐	100.000	101.293	1220820.88	3.0171	A	0.7
4	☐	200.000	199.354	2404998.02	5.9210	A	0.8
5	☐						
6	☐						
7	☐						

y = 0.0296 * x + 0.0174

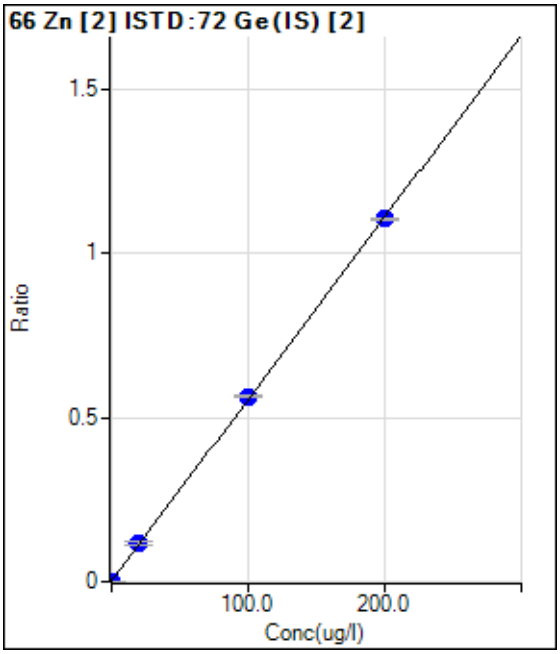
R = 1.0000

DL = 0.08213

BEC = 0.5881

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	636.71	0.0017	P	3.9
2	☐	20.000	20.434	46367.05	0.1150	P	9.3
3	☐	100.000	101.507	228408.95	0.5645	P	1.2
4	☐	200.000	199.203	449294.08	1.1061	P	0.4
5	☐						
6	☐						
7	☐						

y = 0.0055 * x + 0.0017

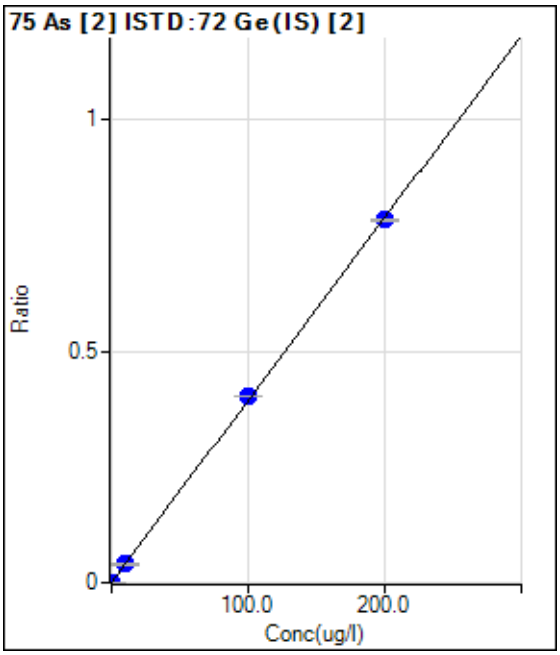
R = 1.0000

DL = 0.03509

BEC = 0.303

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	131.12	0.0003	P	8.0
2	☐	10.000	10.109	16206.95	0.0401	P	6.2
3	☐	100.000	102.059	162637.93	0.4019	P	0.3
4	☐	200.000	198.965	318124.44	0.7832	P	0.6
5	☐						
6	☐						
7	☐						

y = 0.0039 * x + 3.4575E-004

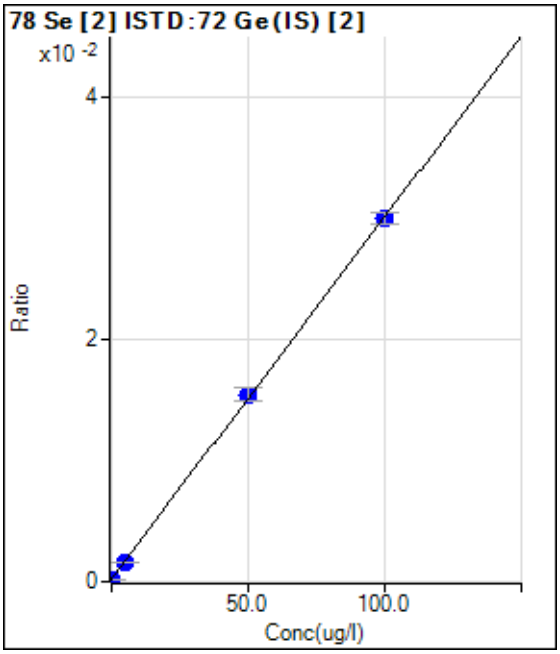
R = 0.9999

DL = 0.02097

BEC = 0.08787

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	82.22	0.0002	P	13.9
2	☐	5.000	4.476	628.93	0.0016	P	5.1
3	☐	50.000	51.027	6244.73	0.0154	P	7.1
4	☐	100.000	99.513	12143.61	0.0299	P	3.2
5	☐						
6	☐						
7	☐						

y = 2.9831E-004 * x + 2.1711E-004

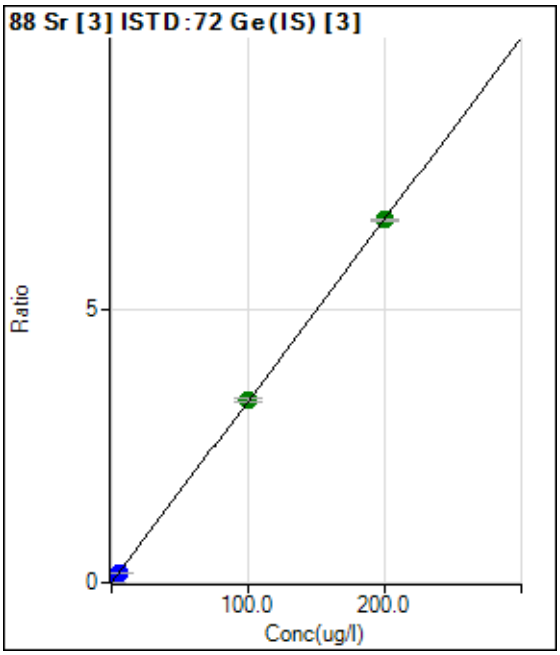
R = 0.9999

DL = 0.3029

BEC = 0.7278

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1633.48	0.0007	P	9.6
2	☐	5.000	4.859	396021.00	0.1626	P	1.7
3	☐	100.000	100.505	8188416.27	3.3511	A	1.6
4	☐	200.000	199.751	16207987.12	6.6596	A	0.7
5	☐						
6	☐						
7	☐						

y = 0.0333 * x + 6.7624E-004

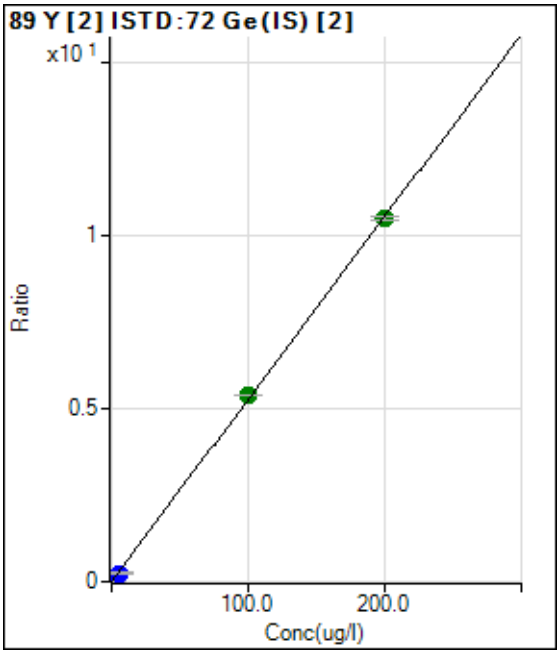
R = 1.0000

DL = 0.005852

BEC = 0.02029

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	203.35	0.0005	P	8.1
2	☐	5.000	4.706	100188.04	0.2482	P	7.8
3	☐	100.000	102.292	2178979.10	5.3849	A	0.8
4	☐	200.000	198.862	4251826.99	10.4680	A	1.0
5	☐						
6	☐						
7	☐						

y = 0.0526 * x + 5.3667E-004

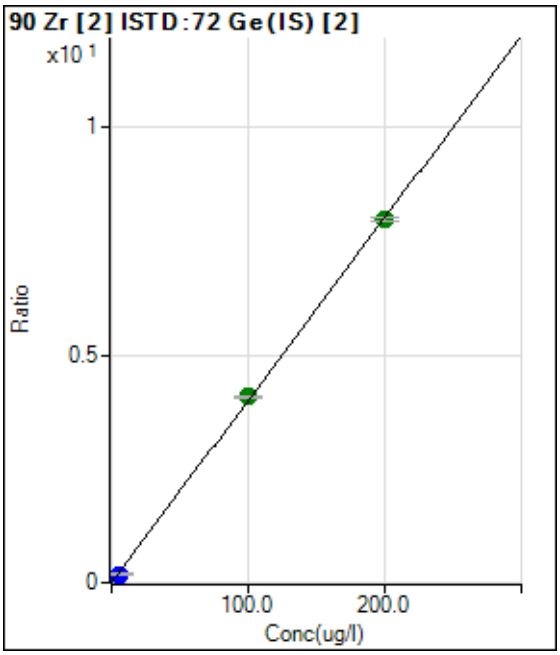
R = 0.9999

DL = 0.002473

BEC = 0.0102

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	292.24	0.0008	P	15.8
2	☐	5.000	4.713	76503.74	0.1896	P	8.4
3	☐	100.000	101.974	1653825.09	4.0869	A	1.4
4	☐	200.000	199.020	3239438.46	7.9757	A	1.0
5	☐						
6	☐						
7	☐						

y = 0.0401 * x + 7.7129E-004

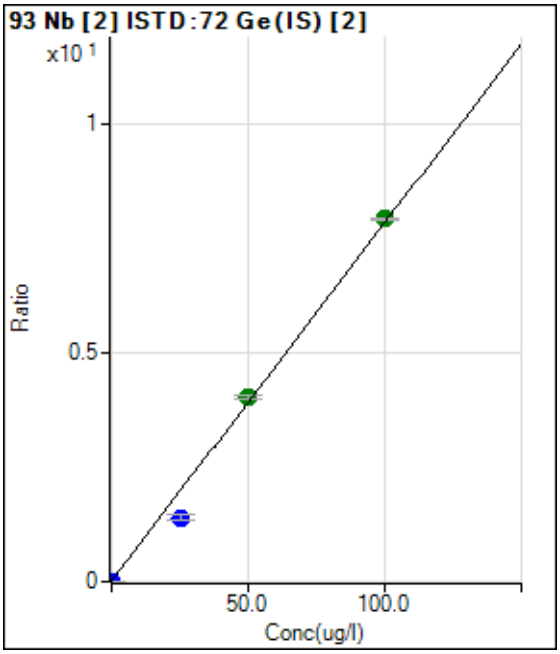
R = 0.9999

DL = 0.009097

BEC = 0.01925

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4007.36	0.0106	P	6.2
2	☐	25.000	17.694	562537.15	1.3954	P	9.8
3	☐	50.000	51.280	1628231.14	4.0240	A	1.9
4	☐	100.000	101.187	3221005.99	7.9299	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0783 * x + 0.0106

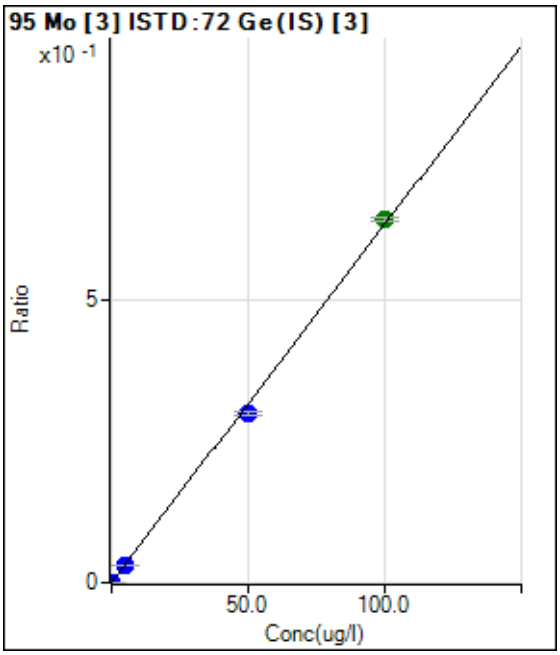
R = 0.9964

DL = 0.02532

BEC = 0.1351

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1354.55	0.0006	P	1.3
2	☐	5.000	4.864	76238.84	0.0313	P	1.6
3	☐	50.000	47.256	731388.67	0.2993	P	1.4
4	☐	100.000	101.379	1561255.37	0.6415	A	0.9
5	☐						
6	☐						
7	☐						

y = 0.0063 * x + 5.6113E-004

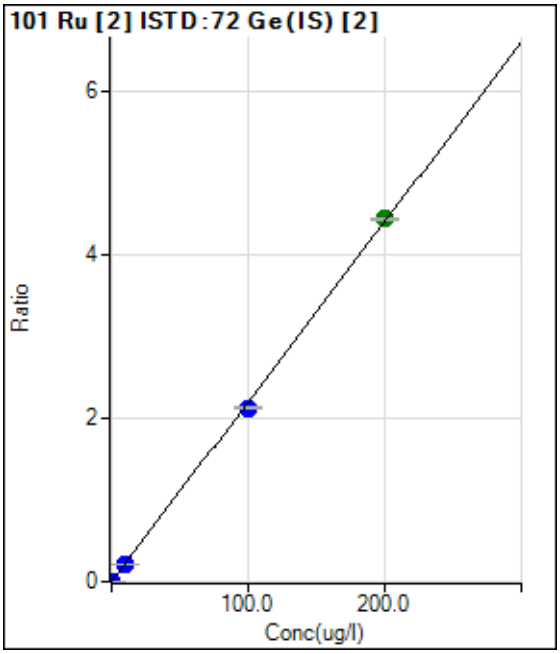
R = 0.9994

DL = 0.003483

BEC = 0.08876

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	113.34	0.0003	P	2.0
2	☐	10.000	9.533	84896.17	0.2101	P	5.8
3	☐	100.000	96.556	860166.51	2.1258	P	0.7
4	☐	200.000	201.745	1803908.19	4.4412	A	0.8
5	☐						
6	☐						
7	☐						

y = 0.0220 * x + 2.9898E-004

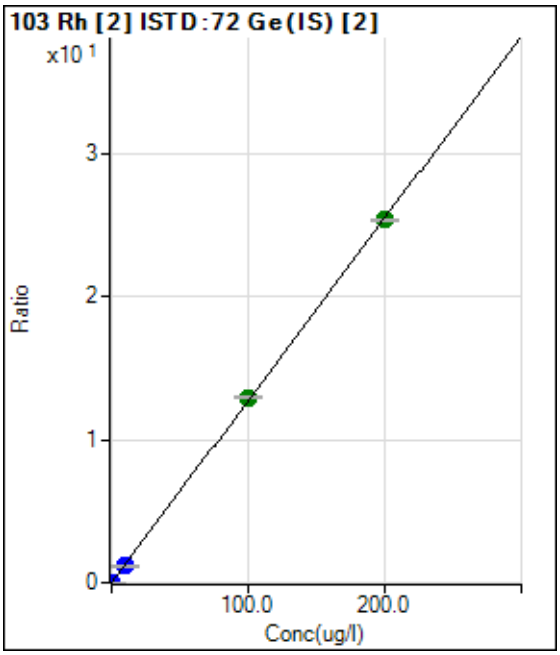
R = 0.9998

DL = 0.0007971

BEC = 0.01358

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	811.17	0.0021	P	8.6
2	☐	10.000	9.293	478816.82	1.1862	P	7.4
3	☐	100.000	101.661	5242286.83	12.9553	A	0.5
4	☐	200.000	199.205	10310335.61	25.3837	A	0.6
5	☐						
6	☐						
7	☐						

y = 0.1274 * x + 0.0021

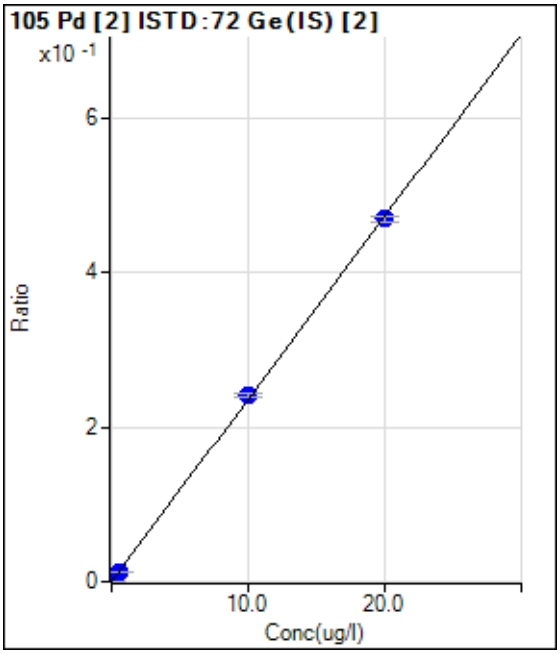
R = 0.9999

DL = 0.004308

BEC = 0.01679

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	18.89	0.0000	P	52.0
2	☐	0.500	0.499	4790.86	0.0118	P	0.5
3	☐	10.000	10.233	97795.32	0.2417	P	1.4
4	☐	20.000	19.884	190731.71	0.4696	P	1.6
5	☐						
6	☐						
7	☐						

y = 0.0236 * x + 4.9983E-005

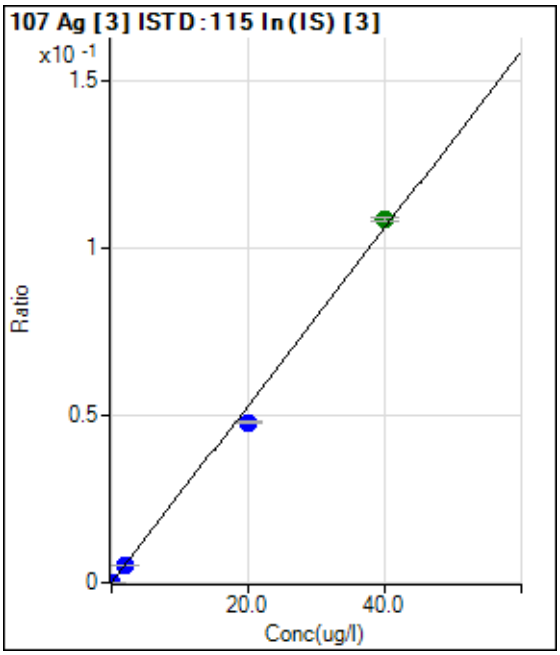
R = 0.9999

DL = 0.003299

BEC = 0.002117

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	547.81	0.0000	P	3.7
2	☐	2.000	1.878	76320.84	0.0050	P	1.2
3	☐	20.000	18.108	714991.22	0.0479	P	0.9
4	☐	40.000	40.952	1583630.72	0.1084	A	1.0
5	☐						
6	☐						
7	☐						

y = 0.0026 * x + 3.5855E-005

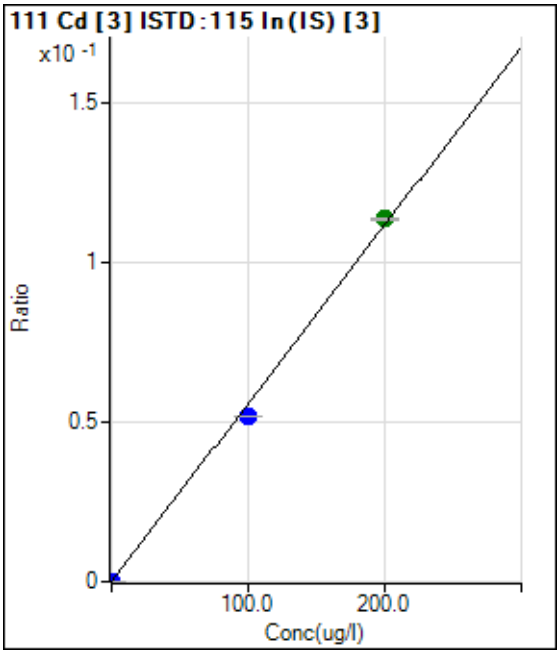
R = 0.9982

DL = 0.001486

BEC = 0.01355

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	71.86	0.0000	P	4.3
2	☐	0.500	0.500	4320.13	0.0003	P	2.4
3	☐	100.000	92.803	771291.53	0.0517	P	0.7
4	☐	200.000	203.598	1657850.49	0.1134	A	0.4
5	☐						
6	☐						
7	☐						

y = 5.5718E-004 * x + 4.7047E-006

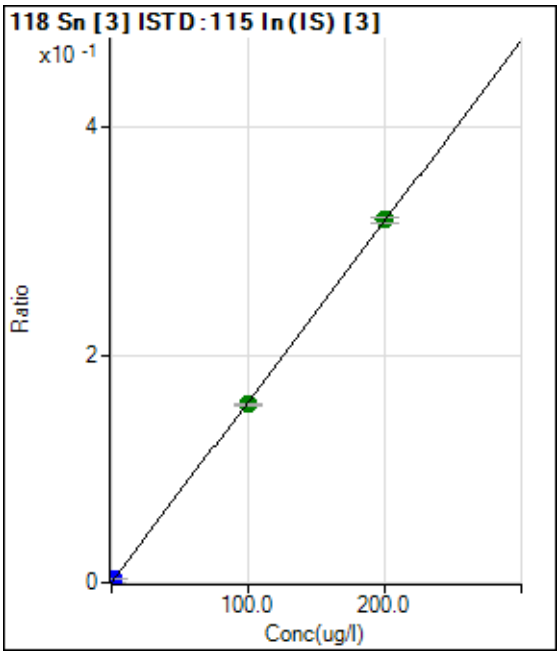
R = 0.9989

DL = 0.001079

BEC = 0.008444

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3261.56	0.0002	P	3.0
2	☐	2.000	1.815	47177.93	0.0031	P	1.9
3	☐	100.000	98.558	2336079.31	0.1566	A	0.9
4	☐	200.000	200.723	4657820.24	0.3187	A	1.8
5	☐						
6	☐						
7	☐						

y = 0.0016 * x + 2.1337E-004

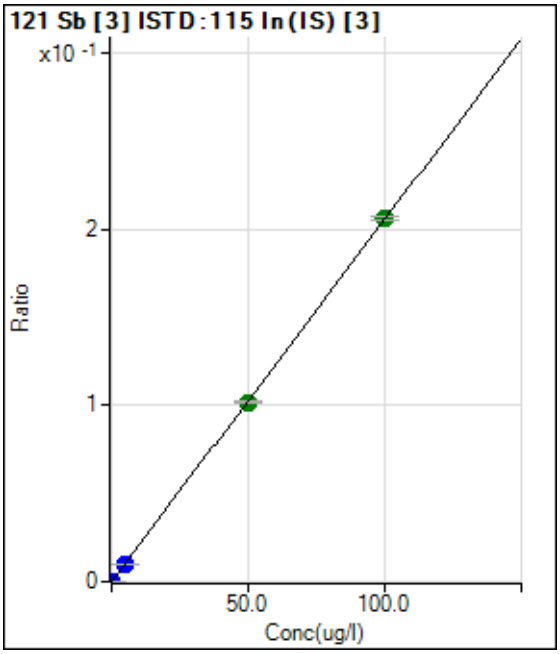
R = 1.0000

DL = 0.01211

BEC = 0.1345

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	695.60	0.0000	P	1.2
2	☐	5.000	4.549	143076.40	0.0094	P	0.6
3	☐	50.000	49.534	1516708.15	0.1017	A	0.7
4	☐	100.000	100.256	3007002.14	0.2058	A	1.0
5	☐						
6	☐						
7	☐						

y = 0.0021 * x + 4.5519E-005

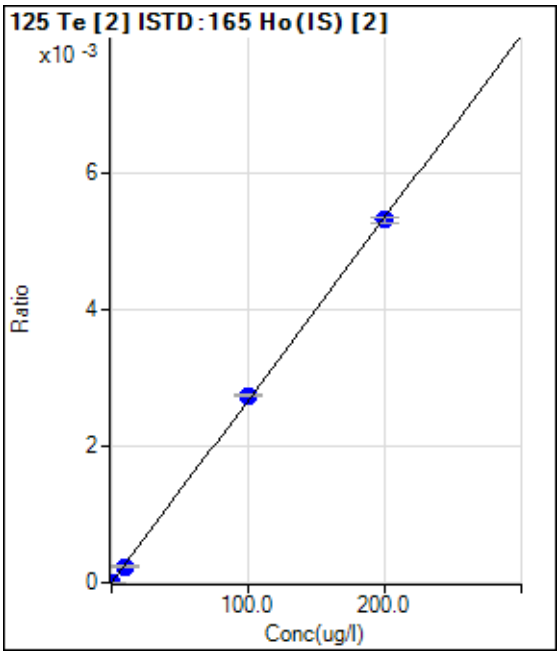
R = 1.0000

DL = 0.0008232

BEC = 0.02218

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6.67	0.0000	P	132.9
2	☐	10.000	8.795	2629.21	0.0002	P	8.2
3	☐	100.000	102.472	28818.89	0.0027	P	1.1
4	☐	200.000	198.824	56254.88	0.0053	P	1.8
5	☐						
6	☐						
7	☐						

y = 2.6738E-005 * x + 6.4073E-007

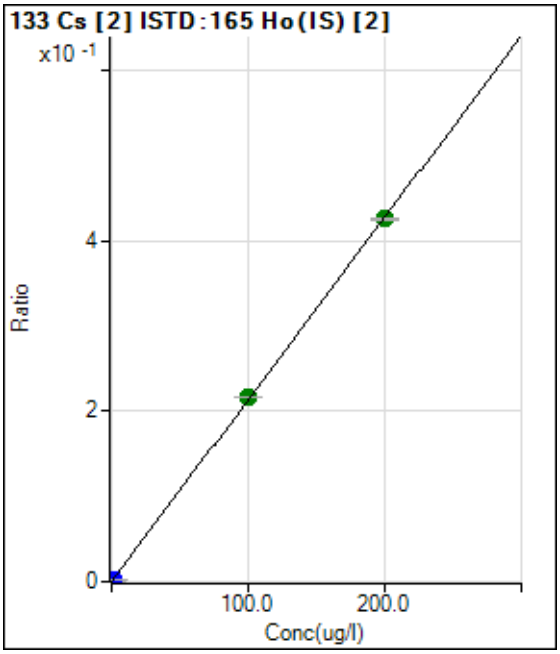
R = 0.9998

DL = 0.09556

BEC = 0.02396

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	310.02	0.0000	P	4.2
2	☐	1.000	0.865	20878.33	0.0019	P	10.6
3	☐	100.000	101.277	2272865.42	0.2161	A	0.5
4	☐	200.000	199.362	4501545.66	0.4255	A	0.3
5	☐						
6	☐						
7	☐						

y = 0.0021 * x + 2.9546E-005

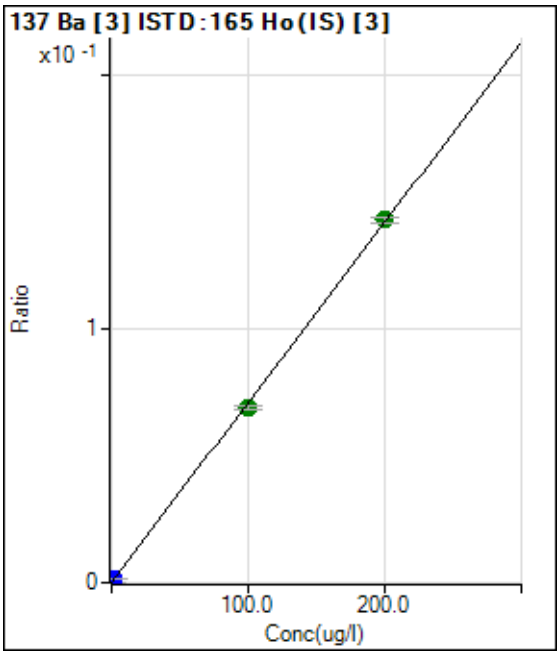
R = 1.0000

DL = 0.00175

BEC = 0.01385

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	474.48	0.0000	P	14.4
2	☐	2.000	1.846	22538.31	0.0013	P	1.5
3	☐	100.000	97.013	1163584.50	0.0688	A	1.6
4	☐	200.000	201.495	2417499.46	0.1430	A	1.2
5	☐						
6	☐						
7	☐						

y = 7.0933E-004 * x + 2.8271E-005

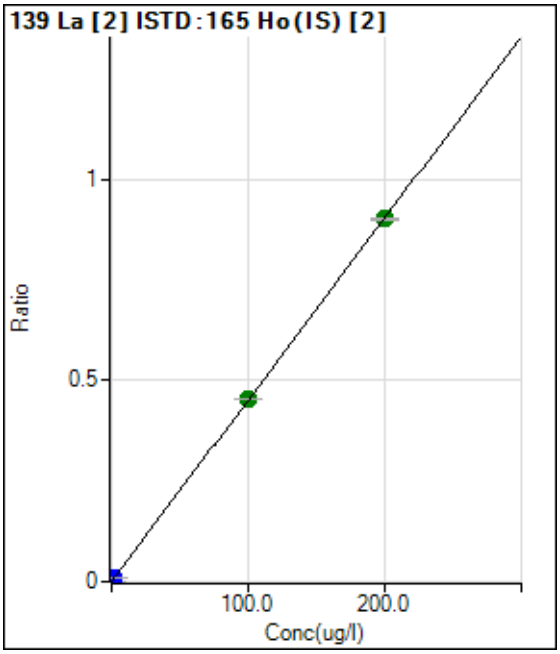
R = 0.9998

DL = 0.01719

BEC = 0.03986

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	317.80	0.0000	P	9.0
2	☐	2.000	1.725	87008.42	0.0078	P	10.3
3	☐	100.000	100.614	4775106.98	0.4541	A	0.2
4	☐	200.000	199.696	9535937.22	0.9013	A	0.5
5	☐						
6	☐						
7	☐						

y = 0.0045 * x + 3.0282E-005

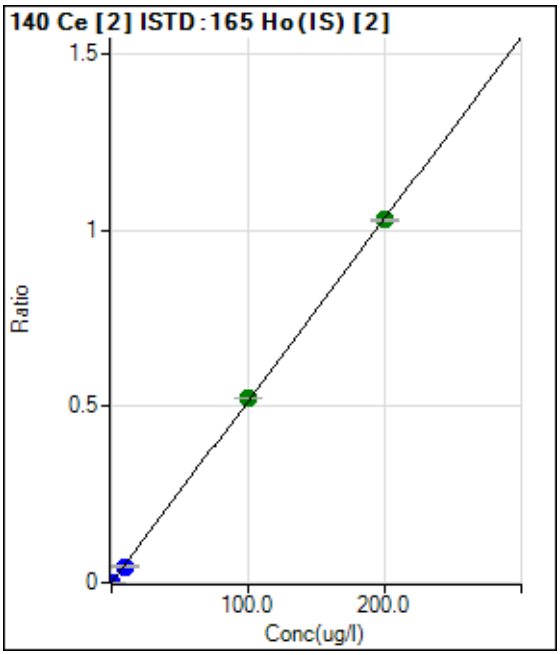
R = 1.0000

DL = 0.001818

BEC = 0.00671

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	396.69	0.0000	P	13.3
2	☐	10.000	8.573	492643.78	0.0442	P	10.1
3	☐	100.000	101.215	5488447.35	0.5220	A	0.4
4	☐	200.000	199.464	10882823.45	1.0286	A	0.9
5	☐						
6	☐						
7	☐						

y = 0.0052 * x + 3.7769E-005

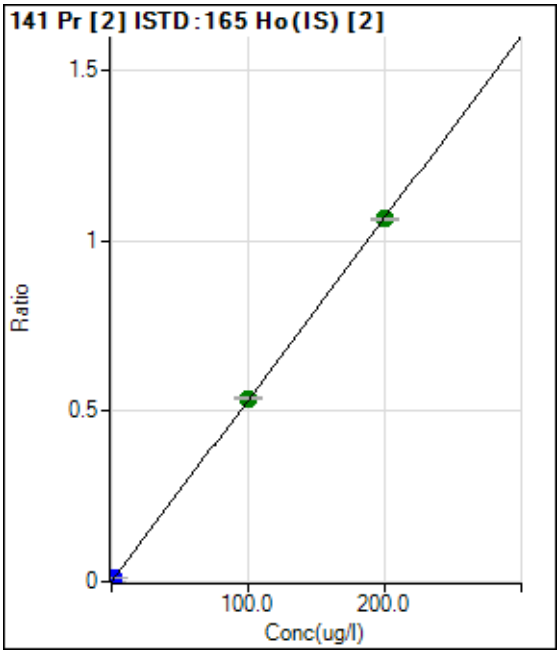
R = 0.9999

DL = 0.002933

BEC = 0.007325

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	360.02	0.0000	P	19.8
2	☐	2.000	1.744	103975.97	0.0093	P	10.9
3	☐	100.000	100.852	5660979.78	0.5384	A	0.8
4	☐	200.000	199.577	11272132.12	1.0654	A	0.2
5	☐						
6	☐						
7	☐						

y = 0.0053 * x + 3.4343E-005

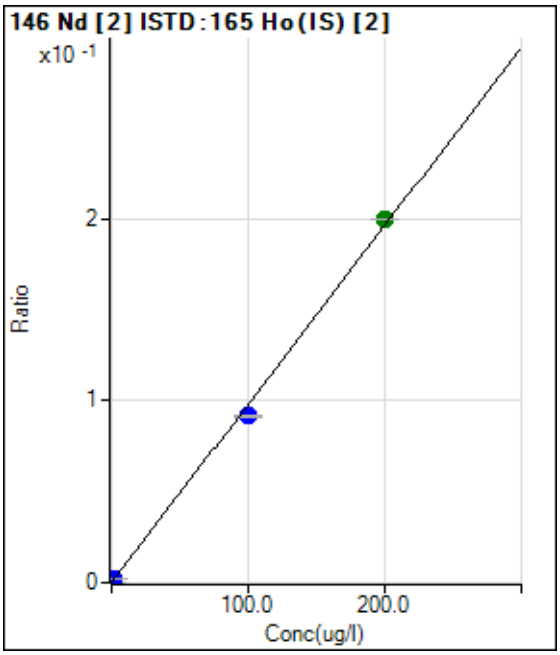
R = 1.0000

DL = 0.00382

BEC = 0.006434

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	47.78	0.0000	P	55.9
2	☐	2.000	1.762	19329.74	0.0017	P	8.6
3	☐	100.000	93.338	963497.22	0.0916	P	1.1
4	☐	200.000	203.333	2111831.81	0.1996	A	0.1
5	☐						
6	☐						
7	☐						

y = 9.8160E-004 * x + 4.5402E-006

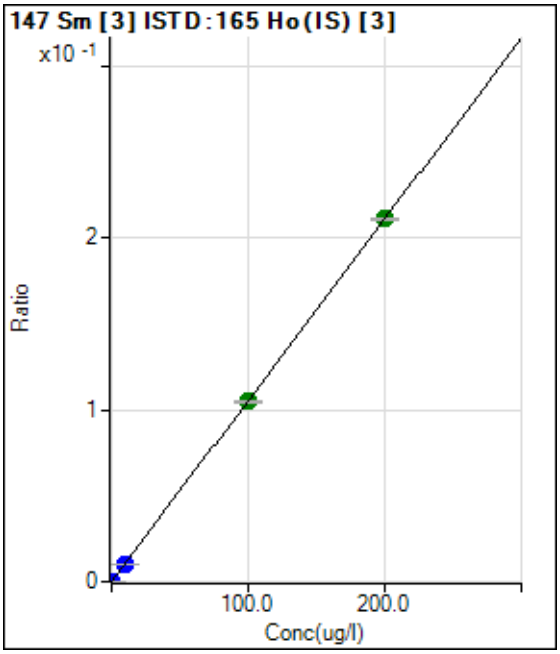
R = 0.9991

DL = 0.007764

BEC = 0.004625

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	118.90	0.0000	P	37.6
2	☐	10.000	9.393	166825.76	0.0099	P	1.5
3	☐	100.000	99.506	1771761.55	0.1048	A	0.8
4	☐	200.000	200.277	3567605.22	0.2110	A	0.6
5	☐						
6	☐						
7	☐						

y = 0.0011 * x + 7.0623E-006

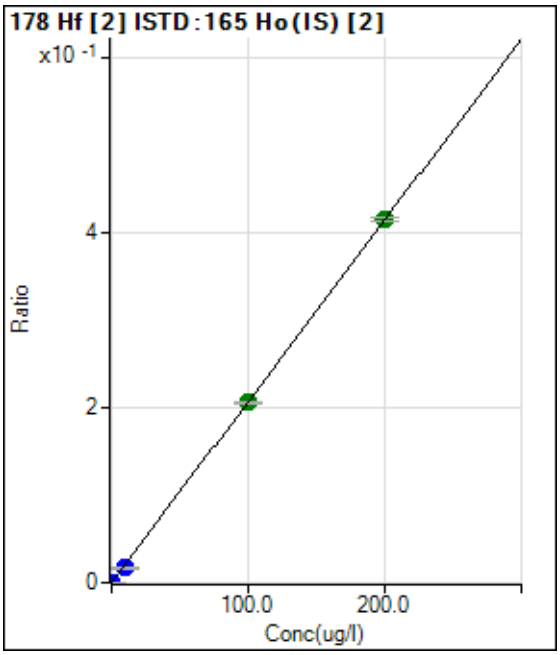
R = 1.0000

DL = 0.007569

BEC = 0.006705

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	230.01	0.0000	P	7.4
2	☐	10.000	8.338	192305.87	0.0173	P	9.7
3	☐	100.000	99.540	2164833.14	0.2059	A	1.0
4	☐	200.000	200.313	4383357.78	0.4143	A	1.2
5	☐						
6	☐						
7	☐						

y = 0.0021 * x + 2.1917E-005

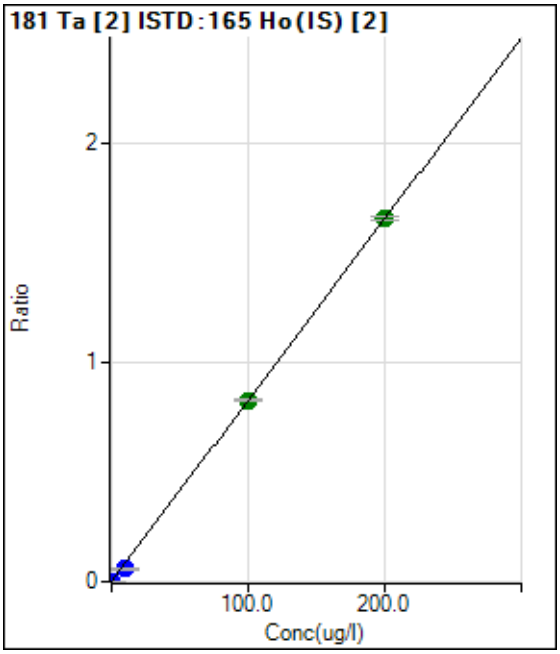
R = 1.0000

DL = 0.002358

BEC = 0.0106

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	14078.95	0.0013	P	2.1
2	☐	10.000	6.866	645793.41	0.0581	P	12.3
3	☐	100.000	100.072	8712041.53	0.8285	A	0.6
4	☐	200.000	200.121	17516048.91	1.6555	A	1.1
5	☐						
6	☐						
7	☐						

y = 0.0083 * x + 0.0013

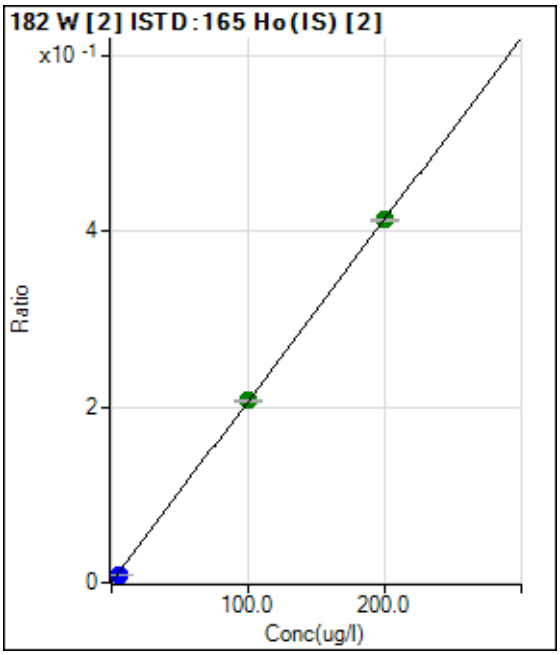
R = 0.9999

DL = 0.01003

BEC = 0.1623

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3833.95	0.0004	P	9.7
2	☐	5.000	4.208	100822.35	0.0090	P	8.9
3	☐	100.000	100.463	2183131.88	0.2076	A	1.1
4	☐	200.000	199.788	4364607.99	0.4125	A	0.8
5	☐						
6	☐						
7	☐						

y = 0.0021 * x + 3.6550E-004

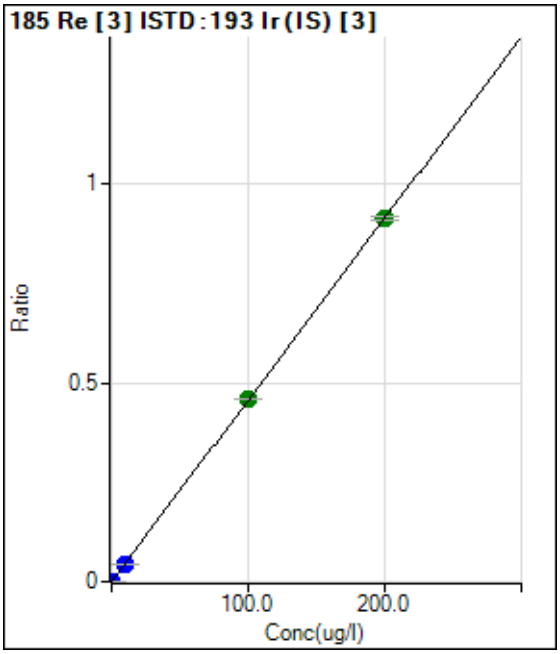
R = 1.0000

DL = 0.05162

BEC = 0.1772

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	234.46	0.0000	P	5.9
2	☐	10.000	9.064	346515.38	0.0415	P	0.3
3	☐	100.000	100.473	3757233.38	0.4593	A	0.6
4	☐	200.000	199.810	7486781.35	0.9135	A	1.1
5	☐						
6	☐						
7	☐						

y = 0.0046 * x + 2.8049E-005

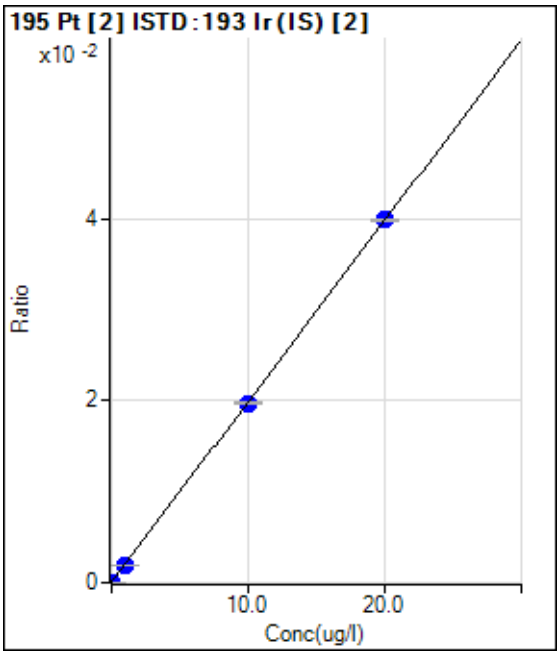
R = 1.0000

DL = 0.001088

BEC = 0.006136

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	262.24	0.0000	P	15.1
2	☐	1.000	0.925	13640.84	0.0019	P	7.9
3	☐	10.000	9.908	134543.52	0.0198	P	1.7
4	☐	20.000	20.050	269589.13	0.0399	P	0.6
5	☐						
6	☐						
7	☐						

y = 0.0020 * x + 3.8045E-005

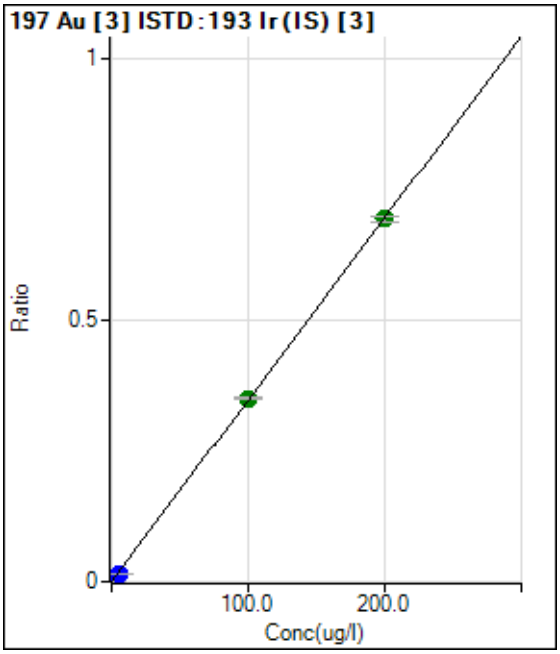
R = 1.0000

DL = 0.00867

BEC = 0.01912

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1218.99	0.0001	P	6.1
2	☐	5.000	4.498	131671.72	0.0158	P	0.7
3	☐	100.000	100.811	2862513.40	0.3500	A	0.6
4	☐	200.000	199.607	5678348.18	0.6928	A	1.3
5	☐						
6	☐						
7	☐						

y = 0.0035 * x + 1.4590E-004

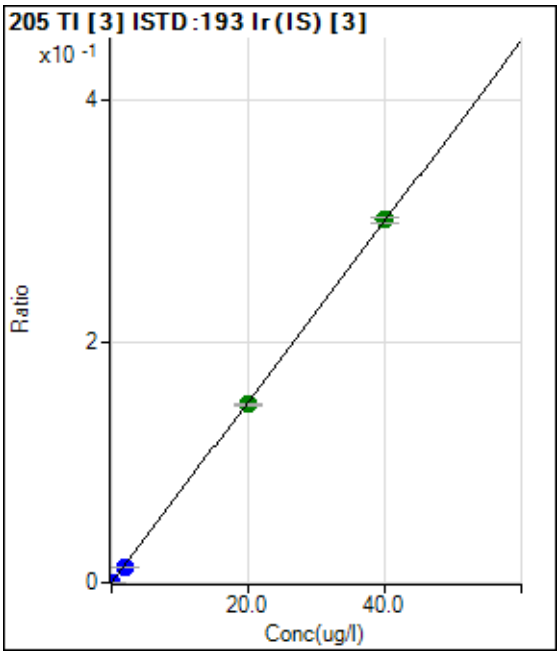
R = 1.0000

DL = 0.007655

BEC = 0.04204

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	993.40	0.0001	P	7.2
2	☐	2.000	1.776	112176.00	0.0134	P	1.4
3	☐	20.000	19.707	1208468.61	0.1477	A	0.4
4	☐	40.000	40.158	2466448.66	0.3009	A	1.9
5	☐						
6	☐						
7	☐						

y = 0.0075 * x + 1.1887E-004

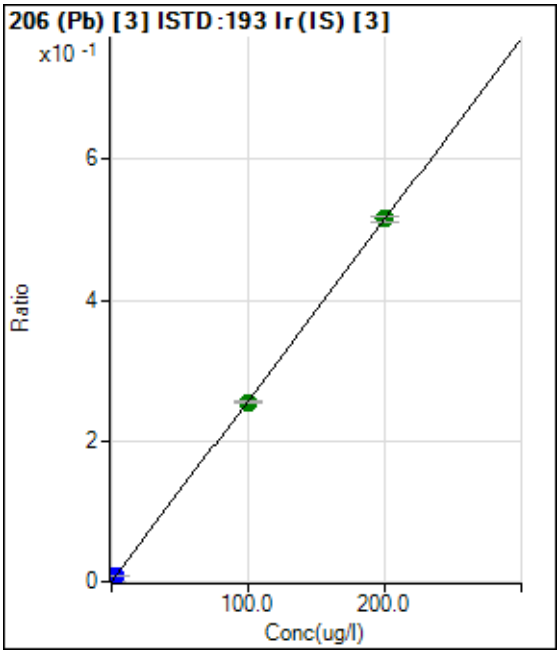
R = 1.0000

DL = 0.003428

BEC = 0.01587

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2063.56	0.0002	P	5.1
2	☐	3.000	2.703	60089.70	0.0072	P	1.5
3	☐	100.000	99.143	2085455.80	0.2550	A	1.0
4	☐	200.000	200.433	4222692.96	0.5152	A	1.6
5	☐						
6	☐						
7	☐						

y = 0.0026 * x + 2.4702E-004

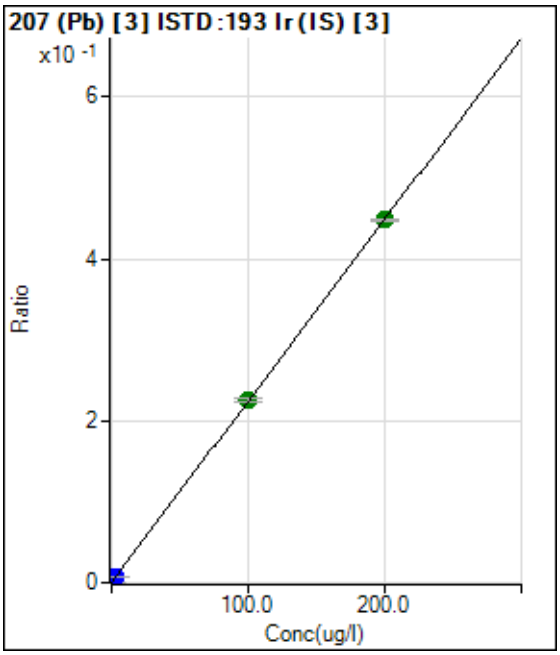
R = 1.0000

DL = 0.01483

BEC = 0.09614

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2368.06	0.0003	P	6.6
2	☐	3.000	2.736	53563.96	0.0064	P	1.3
3	☐	100.000	100.178	1836852.38	0.2246	A	2.3
4	☐	200.000	199.915	3671448.25	0.4479	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0022 * x + 2.8350E-004

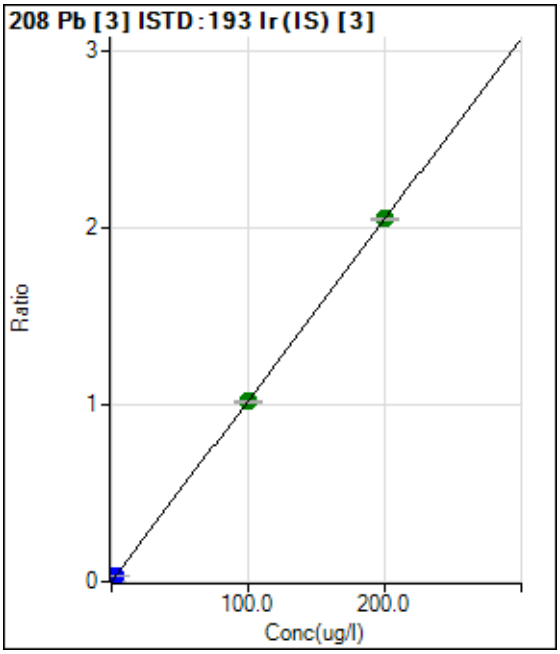
R = 1.0000

DL = 0.02503

BEC = 0.1266

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	9075.83	0.0011	P	3.5
2	☐	3.000	2.717	241489.61	0.0289	P	0.7
3	☐	100.000	99.312	8321762.12	1.0175	A	1.3
4	☐	200.000	200.348	16815076.56	2.0515	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0102 * x + 0.0011

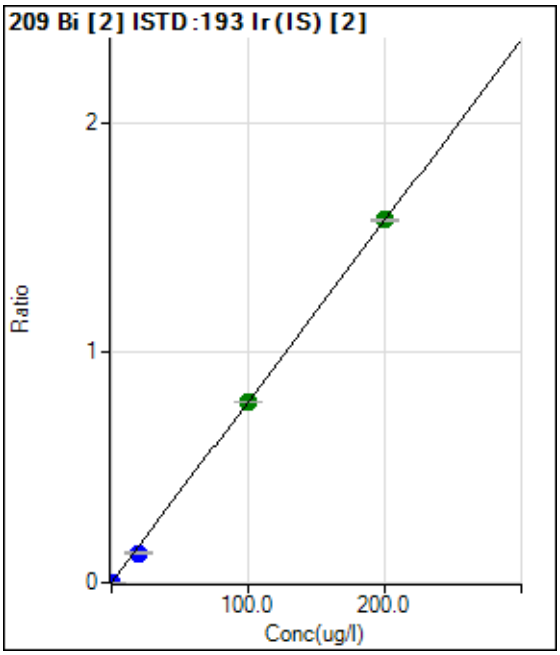
R = 1.0000

DL = 0.01101

BEC = 0.1062

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3898.43	0.0006	P	3.0
2	☐	20.000	16.318	936210.52	0.1289	P	8.1
3	☐	100.000	99.838	5354704.57	0.7860	A	0.6
4	☐	200.000	200.449	10651324.84	1.5776	A	0.3
5	☐						
6	☐						
7	☐						

y = 0.0079 * x + 5.6542E-004

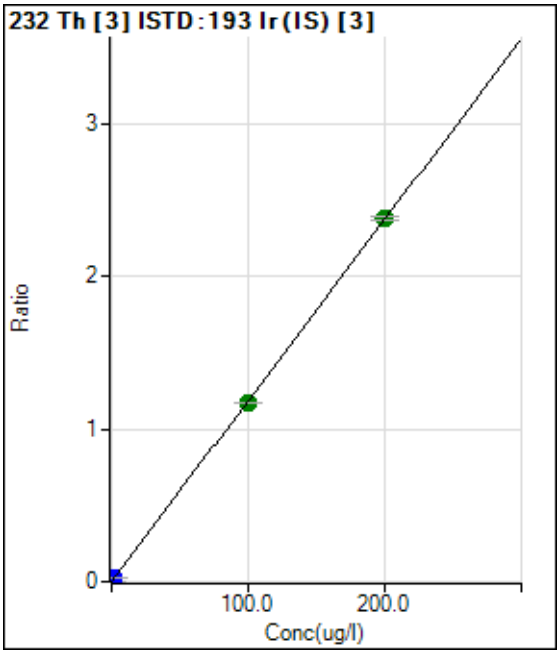
R = 0.9998

DL = 0.00642

BEC = 0.07187

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1291.22	0.0002	P	2.4
2	☐	2.000	1.742	173767.34	0.0208	P	0.3
3	☐	100.000	98.968	9593359.65	1.1729	A	0.7
4	☐	200.000	200.519	19475614.02	2.3762	A	1.2
5	☐						
6	☐						
7	☐						

y = 0.0118 * x + 1.5458E-004

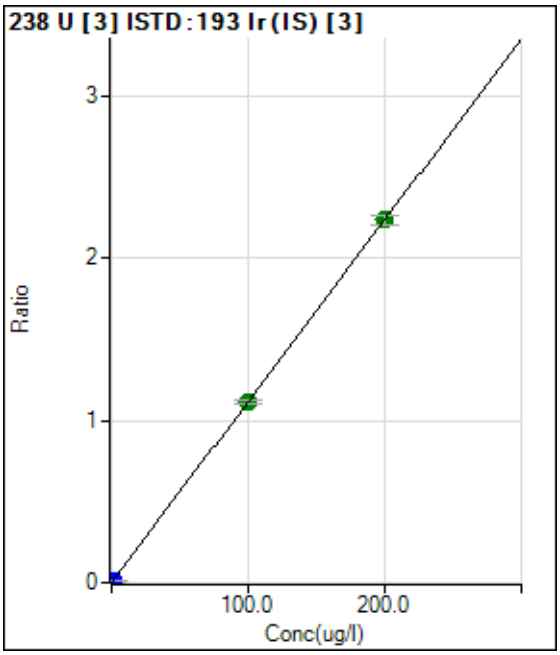
R = 1.0000

DL = 0.0009528

BEC = 0.01305

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	506.70	0.0001	P	4.6
2	☐	1.000	0.905	84848.88	0.0102	P	0.9
3	☐	100.000	99.688	9097497.71	1.1123	A	1.2
4	☐	200.000	200.157	18302289.59	2.2333	A	2.7
5	☐						
6	☐						
7	☐						

y = 0.0112 * x + 6.0629E-005

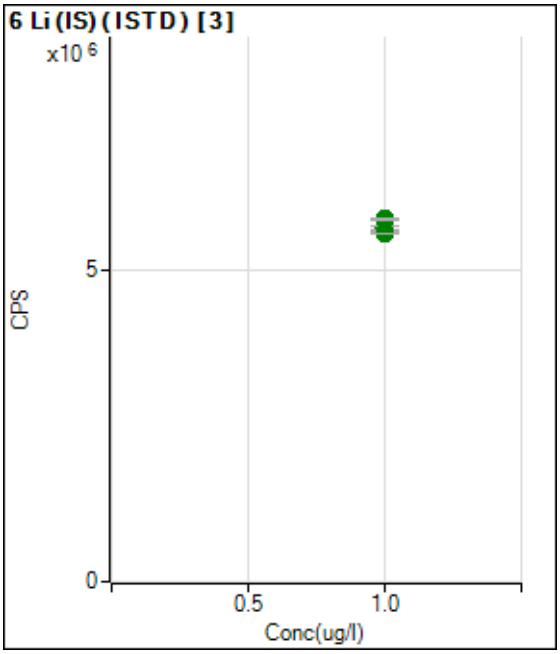
R = 1.0000

DL = 0.0007434

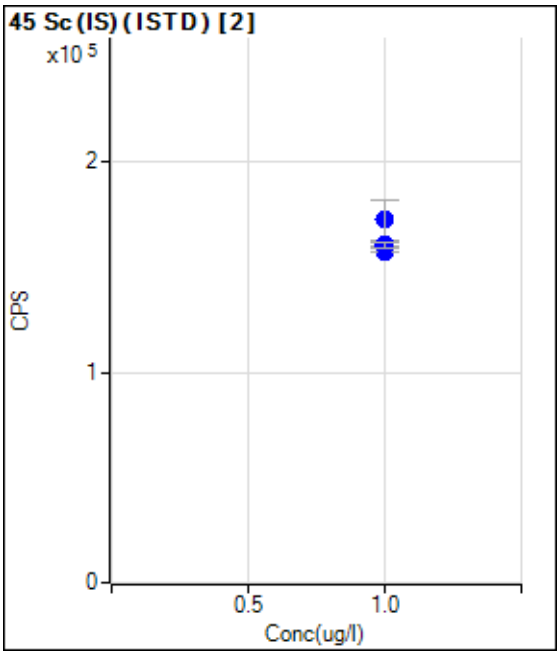
BEC = 0.005434

Weight: None

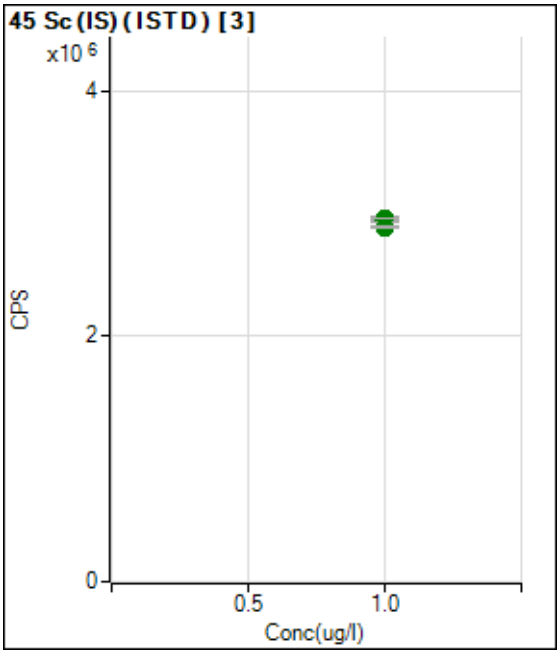
Min Conc: <None>



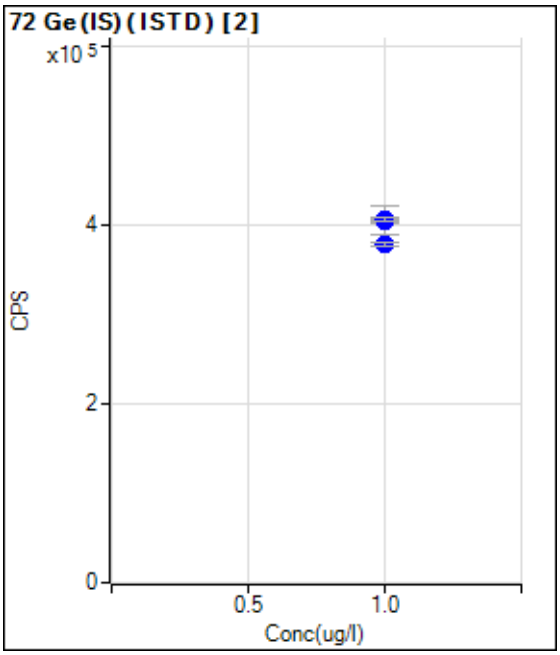
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		5676389.97		A	1.0
2	☐	1.000		5813169.60		A	0.5
3	☐	1.000		5614341.48		A	0.7
4	☐	1.000		5575209.60		A	0.1
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



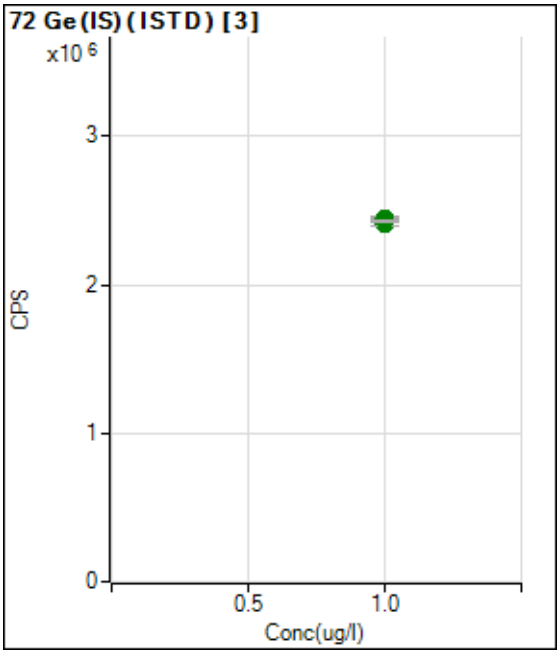
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		157398.15		P	0.4
2	☐	1.000		172542.60		P	11.0
3	☐	1.000		160748.30		P	1.0
4	☐	1.000		160282.06		P	1.4
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



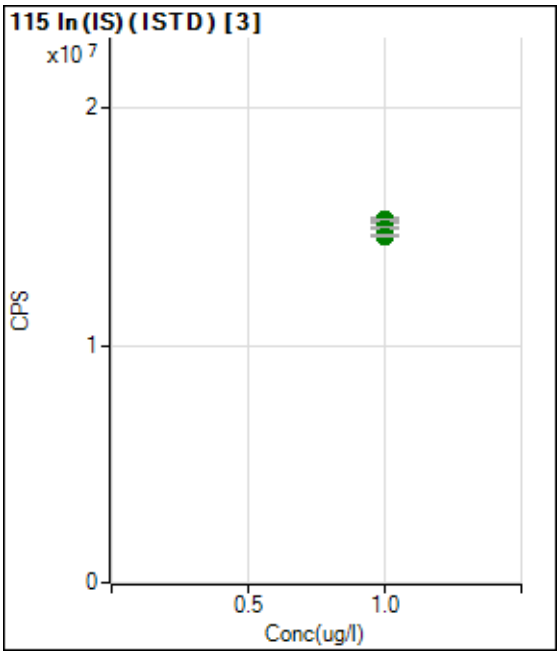
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2954313.22		A	1.6
2	☐	1.000		2946968.53		A	0.7
3	☐	1.000		2940991.59		A	1.2
4	☐	1.000		2883790.20		A	0.5
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



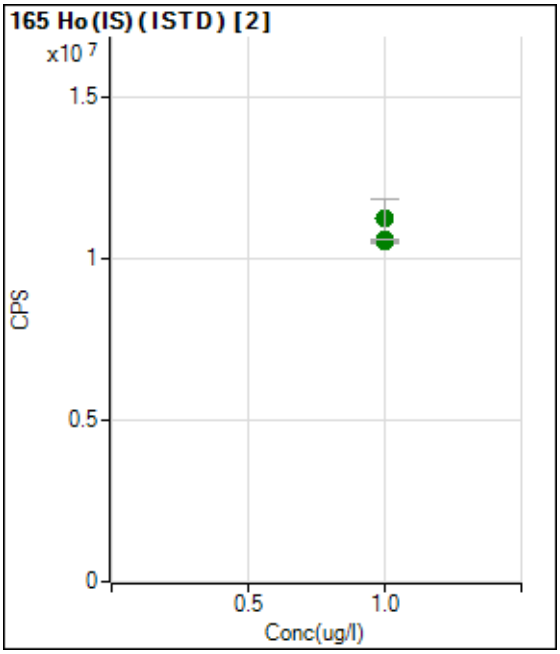
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		379042.11		P	1.0
2	☐	1.000		405217.92		P	7.8
3	☐	1.000		404656.81		P	0.9
4	☐	1.000		406193.09		P	1.0
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



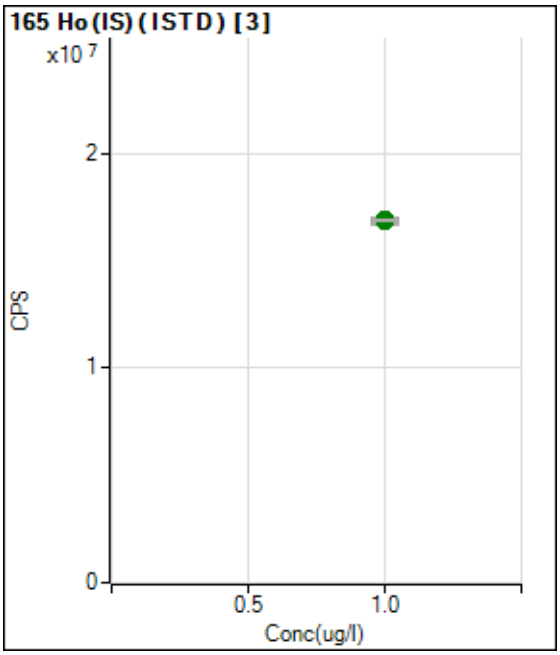
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2413999.20		A	1.2
2	☐	1.000		2435204.15		A	1.4
3	☐	1.000		2443825.75		A	1.4
4	☐	1.000		2433838.94		A	0.5
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



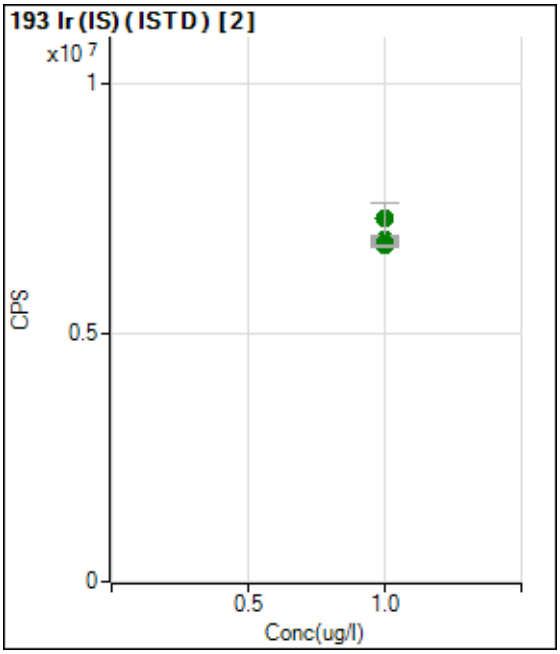
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		15281059.39		A	1.7
2	☐	1.000		15252868.45		A	0.6
3	☐	1.000		14915128.28		A	0.5
4	☐	1.000		14613896.96		A	0.7
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



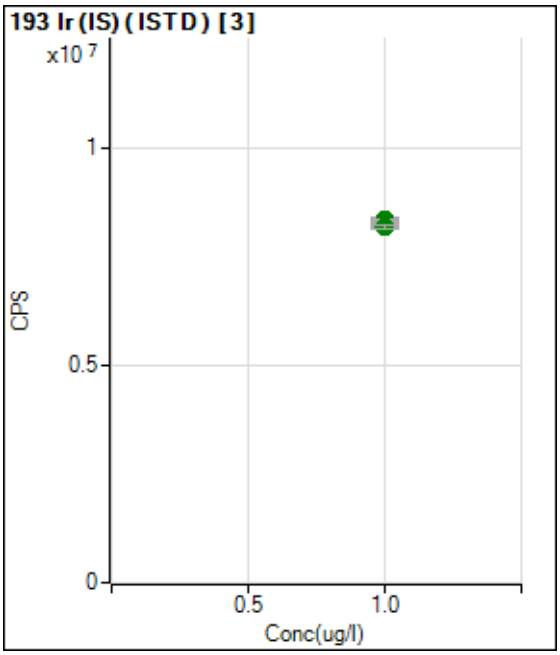
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		10495856.02		A	1.0
2	☐	1.000		11216208.17		A	10.8
3	☐	1.000		10515254.98		A	0.6
4	☐	1.000		10580541.02		A	0.1
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		16807843.50		A	1.8
2	☐	1.000		16850691.69		A	0.2
3	☐	1.000		16904567.80		A	1.3
4	☐	1.000		16911748.08		A	0.5
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		6895256.77		A	0.4
2	☐	1.000		7294648.50		A	8.7
3	☐	1.000		6812385.39		A	0.7
4	☐	1.000		6751654.34		A	0.7
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		8354861.89		A	1.4
2	☐	1.000		8356917.17		A	0.6
3	☐	1.000		8179385.57		A	0.8
4	☐	1.000		8196649.05		A	0.9
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					

121019B2-1

Tune Ste	Mass	Name	R	a	b (blank)	DL	BEC	Units
3	7	Li	0.999856	0.005576	0.053514361	0.508288	9.596989	ug/l
3	9	Be	0.99991	0.001577	3.04338E-05	0.001095	0.019301	ug/l
3	11	B	0.999628	0.001144	0.001735174	0.260219	1.516102	ug/l
2	23	Na	0.99999	0.009732	0.096592094	0.64002	9.925013	ug/l
2	24	Mg	0.999999	0.005184	0.002248025	0.107517	0.433641	ug/l
2	27	Al	0.999603	0.002301	0.001905725	0.332546	0.828206	ug/l
2	31	P	0.999981	0.000158	0.00050436	4.059198	3.194878	ug/l
2	39	K	0.99999	0.005446	0.2212426	1.322529	40.6258	ug/l
3	44	Ca	0.999984	0.000517	0.011510371	0.990327	22.28183	ug/l
3	47	Ti	0.999999	0.001484	0.000141244	0.008184	0.095169	ug/l
2	51	V	0.999239	0.056212	0.010976167	0.032447	0.195262	ug/l
2	52	Cr	0.999585	0.068348	0.007702699	0.022585	0.112698	ug/l
2	55	Mn	0.999458	0.018566	0.000835142	0.006715	0.044983	ug/l
2	57	Fe	0.999581	0.000634	0.001439931	0.604036	2.271141	ug/l
2	59	Co	0.999988	0.043524	0.001370899	0.007019	0.031498	ug/l
2	60	Ni	0.999951	0.010524	0.000465146	0.029531	0.044198	ug/l
2	63	Cu	0.998963	0.030074	0.023295569	0.057979	0.774598	ug/l
2	66	Zn	0.99992	0.005671	0.001672268	0.09649	0.294861	ug/l
2	75	As	0.999986	0.003993	0.000542836	0.037821	0.135947	ug/l
2	78	Se	0.999949	0.000318	0.000144741	0.276892	0.455709	ug/l
3	88	Sr	0.999999	0.032595	0.000750632	0.004944	0.023029	ug/l
2	89	Y	0.999946	0.053839	0.000446446	0.006792	0.008292	ug/l
2	90	Zr	0.999999	0.040336	0.000684063	0.004309	0.016959	ug/l
2	93	Nb	0.998401	0.079941	0.013309973	0.044841	0.166498	ug/l
3	95	Mo	0.999157	0.006447	0.000972804	0.03168	0.150884	ug/l
2	101	Ru	0.999336	0.021725	0.000220813	0.008406	0.010164	ug/l
2	103	Rh	0.999937	0.125536	0.002011521	0.001222	0.016023	ug/l
2	105	Pd	0.999822	0.022957	0.000282561	0.008538	0.012308	ug/l
3	107	Ag	0.998	0.002614	3.08255E-05	0.006362	0.011791	ug/l
3	111	Cd	0.998779	0.000545	9.40435E-06	0.010794	0.017271	ug/l
3	118	Sn	0.999943	0.001535	0.000265264	0.003265	0.172844	ug/l
3	121	Sb	0.999935	0.001993	0.000112773	0.009301	0.056588	ug/l
2	125	Te	0.999885	2.75E-05	5.8109E-07	0.058187	0.021164	ug/l
2	133	Cs	0.99998	0.002146	2.88295E-05	0.002286	0.013435	ug/l
3	137	Ba	0.997877	0.000678	2.63001E-05	0.01331	0.038768	ug/l
2	139	La	0.99997	0.004359	2.28015E-05	0.001125	0.00523	ug/l
2	140	Ce	0.999955	0.005013	2.69772E-05	0.002369	0.005382	ug/l
2	141	Pr	0.999989	0.005258	2.04851E-05	0.002081	0.003896	ug/l
2	146	Nd	0.998581	0.000971	3.12549E-06	0.001077	0.00322	ug/l
3	147	Sm	0.999992	0.001036	6.00688E-06	0.00079	0.005797	ug/l
2	178	Hf	0.999885	0.002048	2.02583E-05	0.000518	0.009893	ug/l
2	181	Ta	0.999916	0.008058	0.001498291	0.005225	0.185929	ug/l
2	182	W	0.999942	0.001966	0.000341631	0.054141	0.173739	ug/l
3	185	Re	0.999958	0.004459	1.82327E-05	0.002613	0.004089	ug/l
2	195	Pt	0.999958	0.001932	3.35956E-05	0.003721	0.017392	ug/l
3	197	Au	0.999984	0.003489	0.000199588	0.020965	0.057213	ug/l
3	205	Tl	0.997758	0.007174	0.000419224	0.00598	0.058439	ug/l
3	206	(Pb)	0.999964	0.002542	0.000281894	0.021972	0.110898	ug/l
3	207	(Pb)	0.999946	0.002243	0.000310663	0.032252	0.138491	ug/l
3	208	Pb	0.999924	0.010212	0.001176672	0.013952	0.115222	ug/l
2	209	Bi	0.999906	0.008104	0.000781216	0.010261	0.096403	ug/l
3	232	Th	0.999837	0.012	0.000230445	0.00518	0.019204	ug/l
3	238	U	0.999875	0.011436	6.81147E-05	0.001312	0.005956	ug/l
3	6	Li (IS)						ug/l
2	45	Sc (IS)						ug/l
3	45	Sc (IS)						ug/l
2	72	Ge (IS)						ug/l
3	72	Ge (IS)						ug/l
3	115	In (IS)						ug/l
2	165	Ho (IS)						ug/l
3	165	Ho (IS)						ug/l
2	193	Ir (IS)						ug/l
3	193	Ir (IS)						ug/l

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Metals Y Intercept

Analyst: LKP
Instrument: 7700
Calibration File: 121019B2
Matrix: Water
Units: PPB

Date: 12/11/2019

Element	MDL	3XMDL	Y-Intercept	Pass/Fail
LI	2.00	6.00	0.0535144	PASS
BE	0.20	0.60	3.043E-05	PASS
B	45.00	135.00	0.0017352	PASS
NA	20.00	60.00	0.0965921	PASS
MG	20.00	60.00	0.002248	PASS
AL	20.00	60.00	0.0019057	PASS
P	45.00	135.00	0.0005044	PASS
K	45.00	135.00	0.2212426	PASS
CA	45.00	135.00	0.0115104	PASS
TI	2.00	6.00	0.0001412	PASS
V	4.00	12.00	0.0109762	PASS
CR	4.00	12.00	0.0077027	PASS
MN	0.90	2.70	0.0008351	PASS
FE	20.00	60.00	0.0014399	PASS
CO	0.90	2.70	0.0013709	PASS
NI	2.00	6.00	0.0004651	PASS
CU	0.40	1.20	0.0232956	PASS
ZN	7.50	22.50	0.0016723	PASS
AS	4.00	12.00	0.0005428	PASS
SE	2.00	6.00	0.0001447	PASS
SR	2.00	6.00	0.0007506	PASS
Y	2.00	6.00	0.0004464	PASS
ZR	2.00	6.00	0.0006841	PASS
NB	10.00	30.00	0.01331	PASS
MO	2.00	6.00	0.0009728	PASS
RU	4.00	12.00	0.0002208	PASS
RH	4.00	12.00	0.0020115	PASS
PD	0.20	0.60	0.0002826	PASS
AG	0.90	2.70	3.083E-05	PASS
CD	0.20	0.60	9.404E-06	PASS
SN	1.20	3.60	0.0002653	PASS
SB	2.00	6.00	0.0001128	PASS
TE	7.50	22.50	5.811E-07	PASS
CS	0.20	0.60	2.883E-05	PASS
BA	0.90	2.70	2.63E-05	PASS
LA	0.90	2.70	2.28E-05	PASS
CE	4.00	12.00	2.698E-05	PASS
PR	0.90	2.70	2.049E-05	PASS
ND	0.90	2.70	3.125E-06	PASS
SM	4.00	12.00	6.007E-06	PASS
HF	4.00	12.00	2.026E-05	PASS
TA	4.00	12.00	0.0014983	PASS
W	2.00	6.00	0.0003416	PASS
RE	0.40	1.20	1.823E-05	PASS
PT	0.40	1.20	3.36E-05	PASS
AU	5.00	15.00	0.0001996	PASS
TL	0.90	2.70	0.0004192	PASS
(PB 206)	1.00	3.00	0.0002819	PASS
(PB 207)	1.00	3.00	0.0003107	PASS
PB	1.00	3.00	0.0011767	PASS
BI	7.50	22.50	0.0007812	PASS
TH	0.90	2.70	0.0002304	PASS
U	0.40	1.20	6.811E-05	PASS

Analyst:
Instrument: 7700
Calibration File: 121019B2
Matrix: Soil
Units: PPB

Element	MDL	3XMDL	Y-Intercept	Pass/Fail
LI	4.00	12.00	0.053514	PASS
BE	0.40	1.20	0.000030	PASS
B	45.00	135.00	0.001735	PASS
NA	75.00	225.00	0.096592	PASS
MG	25.00	75.00	0.002248	PASS
AL	20.00	60.00	0.001906	PASS
P	200.00	600.00	0.000504	PASS
K	40.00	120.00	0.221243	PASS
CA	100.00	300.00	0.011510	PASS
TI	2.40	7.20	0.000141	PASS
V	4.00	12.00	0.010976	PASS
CR	4.50	13.50	0.007703	PASS
MN	2.00	6.00	0.000835	PASS
FE	20.00	60.00	0.001440	PASS
CO	0.75	2.25	0.001371	PASS
NI	2.00	6.00	0.000465	PASS
CU	4.00	12.00	0.023296	PASS
ZN	20.00	60.00	0.001672	PASS
AS	4.00	12.00	0.000543	PASS
SE	3.20	9.60	0.000145	PASS
SR	2.40	7.20	0.000751	PASS
Y	4.00	12.00	0.000446	PASS
ZR	4.00	12.00	0.000684	PASS
NB	12.00	36.00	0.013310	PASS
MO	2.00	6.00	0.000973	PASS
RU	4.00	12.00	0.000221	PASS
RH	4.00	12.00	0.002012	PASS
PD	0.40	1.20	0.000283	PASS
AG	0.75	2.25	0.000031	PASS
CD	0.24	0.72	0.000009	PASS
SN	0.90	2.70	0.000265	PASS
SB	2.00	6.00	0.000113	PASS
TE	4.00	12.00	0.000001	PASS
CS	2.00	6.00	0.000029	PASS
BA	5.00	15.00	0.000026	PASS
LA	0.75	2.25	0.000023	PASS
CE	4.00	12.00	0.000027	PASS
PR	0.75	2.25	0.000020	PASS
ND	0.75	2.25	0.000003	PASS
SM	4.00	12.00	0.000006	PASS
HF	4.00	12.00	0.000020	PASS
TA	4.00	12.00	0.001498	PASS
W	10.00	30.00	0.000342	PASS
RE	4.00	12.00	0.000018	PASS
PT	0.40	1.20	0.000034	PASS
AU	2.00	6.00	0.000200	PASS
TL	2.00	6.00	0.000419	PASS
(PB 206)	1.25	3.75	0.000282	PASS
(PB 207)	1.25	3.75	0.000311	PASS
PB	1.25	3.75	0.001177	PASS
BI	7.50	22.50	0.000781	PASS
TH	0.90	2.70	0.000230	PASS
U	0.40	1.20	0.000068	PASS

121019B2-2

Tune Ste	Mass	Name	R	a	b (blank)	DL	BEC	Units
3	7	Li	0.999999	0.006016	0.05676572	0.127087	9.435928	ug/l
3	9	Be	0.999992	0.001859	1.31205E-05	0.001299	0.007057	ug/l
3	11	B	0.999863	0.001357	0.002268853	0.163721	1.671956	ug/l
2	23	Na	0.999997	0.009592	0.101207246	0.907037	10.55123	ug/l
2	24	Mg	0.999987	0.004957	0.003302944	0.439267	0.666267	ug/l
2	27	Al	0.999914	0.002086	0.002224605	0.461381	1.066191	ug/l
2	31	P	0.999985	0.000145	0.000486685	4.296118	3.356615	ug/l
2	39	K	0.999961	0.005381	0.217322182	0.609427	40.38953	ug/l
3	44	Ca	0.999981	0.000529	0.008143239	0.648923	15.38029	ug/l
3	47	Ti	0.999999	0.001495	0.00016981	0.007593	0.11362	ug/l
2	51	V	0.999628	0.05914	0.008837624	0.03188	0.149435	ug/l
2	52	Cr	0.999989	0.072041	0.006904482	0.012986	0.095842	ug/l
2	55	Mn	0.999438	0.017525	0.001017138	0.035317	0.05804	ug/l
2	57	Fe	0.999835	0.000602	0.001577283	0.230049	2.621984	ug/l
2	59	Co	0.999979	0.042668	0.001418758	0.001772	0.033251	ug/l
2	60	Ni	0.999946	0.010297	0.000325536	0.006064	0.031613	ug/l
2	63	Cu	0.999965	0.029613	0.017414716	0.082129	0.588067	ug/l
2	66	Zn	0.999951	0.005544	0.001679702	0.035088	0.302955	ug/l
2	75	As	0.999909	0.003935	0.000345747	0.020968	0.087872	ug/l
2	78	Se	0.99988	0.000298	0.000217105	0.302902	0.727789	ug/l
3	88	Sr	0.999994	0.033336	0.000676237	0.005852	0.020286	ug/l
2	89	Y	0.999882	0.052637	0.000536665	0.002473	0.010196	ug/l
2	90	Zr	0.999912	0.040071	0.00077129	0.009097	0.019248	ug/l
2	93	Nb	0.996428	0.078265	0.010573728	0.025324	0.135102	ug/l
3	95	Mo	0.99937	0.006322	0.000561134	0.003483	0.088758	ug/l
2	101	Ru	0.999756	0.022013	0.000298979	0.000797	0.013582	ug/l
2	103	Rh	0.999926	0.127415	0.002139003	0.004308	0.016788	ug/l
2	105	Pd	0.999884	0.023615	4.99826E-05	0.003299	0.002117	ug/l
3	107	Ag	0.998165	0.002645	3.58546E-05	0.001486	0.013554	ug/l
3	111	Cd	0.99895	0.000557	4.70473E-06	0.001079	0.008444	ug/l
3	118	Sn	0.999959	0.001587	0.000213368	0.012113	0.134452	ug/l
3	121	Sb	0.999979	0.002052	4.55192E-05	0.000823	0.022183	ug/l
2	125	Te	0.999829	2.67E-05	6.40735E-07	0.095561	0.023963	ug/l
2	133	Cs	0.999964	0.002134	2.95456E-05	0.00175	0.013846	ug/l
3	137	Ba	0.999819	0.000709	2.82708E-05	0.017189	0.039856	ug/l
2	139	La	0.99999	0.004513	3.02824E-05	0.001818	0.00671	ug/l
2	140	Ce	0.999933	0.005157	3.77694E-05	0.002933	0.007325	ug/l
2	141	Pr	0.999982	0.005338	3.43434E-05	0.00382	0.006434	ug/l
2	146	Nd	0.999105	0.000982	4.54023E-06	0.007764	0.004625	ug/l
3	147	Sm	0.999993	0.001053	7.06229E-06	0.007569	0.006705	ug/l
2	178	Hf	0.999972	0.002068	2.19174E-05	0.002358	0.010598	ug/l
2	181	Ta	0.999893	0.008266	0.001341526	0.010027	0.162299	ug/l
2	182	W	0.999986	0.002063	0.000365504	0.051624	0.177178	ug/l
3	185	Re	0.999982	0.004571	2.80486E-05	0.001088	0.006136	ug/l
2	195	Pt	0.999981	0.00199	3.80453E-05	0.00867	0.019122	ug/l
3	197	Au	0.99998	0.00347	0.000145901	0.007655	0.042044	ug/l
3	205	Tl	0.999953	0.007491	0.000118873	0.003428	0.015869	ug/l
3	206	(Pb)	0.999986	0.002569	0.000247021	0.014827	0.096142	ug/l
3	207	(Pb)	0.999998	0.002239	0.000283503	0.025029	0.126611	ug/l
3	208	Pb	0.999991	0.010234	0.001086449	0.011006	0.106158	ug/l
2	209	Bi	0.999844	0.007868	0.000565424	0.00642	0.071868	ug/l
3	232	Th	0.999979	0.01185	0.000154581	0.000953	0.013045	ug/l
3	238	U	0.999998	0.011157	6.06291E-05	0.000743	0.005434	ug/l
3	6	Li (IS)						ug/l
2	45	Sc (IS)						ug/l
3	45	Sc (IS)						ug/l
2	72	Ge (IS)						ug/l
3	72	Ge (IS)						ug/l
3	115	In (IS)						ug/l
2	165	Ho (IS)						ug/l
3	165	Ho (IS)						ug/l
2	193	Ir (IS)						ug/l
3	193	Ir (IS)						ug/l

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Metals Y Intercept

Analyst: LKP
Instrument: 7700
Calibration File: 121019B2
Matrix: Water
Units: PPB

Date: 12/11/2019

Element	MDL	3XMDL	Y-Intercept	Pass/Fail
LI	2.00	6.00	0.0567657	PASS
BE	0.20	0.60	1.312E-05	PASS
B	45.00	135.00	0.0022689	PASS
NA	20.00	60.00	0.1012072	PASS
MG	20.00	60.00	0.0033029	PASS
AL	20.00	60.00	0.0022246	PASS
P	45.00	135.00	0.0004867	PASS
K	45.00	135.00	0.2173222	PASS
CA	45.00	135.00	0.0081432	PASS
TI	2.00	6.00	0.0001698	PASS
V	4.00	12.00	0.0088376	PASS
CR	4.00	12.00	0.0069045	PASS
MN	0.90	2.70	0.0010171	PASS
FE	20.00	60.00	0.0015773	PASS
CO	0.90	2.70	0.0014188	PASS
NI	2.00	6.00	0.0003255	PASS
CU	0.40	1.20	0.0174147	PASS
ZN	7.50	22.50	0.0016797	PASS
AS	4.00	12.00	0.0003457	PASS
SE	2.00	6.00	0.0002171	PASS
SR	2.00	6.00	0.0006762	PASS
Y	2.00	6.00	0.0005367	PASS
ZR	2.00	6.00	0.0007713	PASS
NB	10.00	30.00	0.0105737	PASS
MO	2.00	6.00	0.0005611	PASS
RU	4.00	12.00	0.000299	PASS
RH	4.00	12.00	0.002139	PASS
PD	0.20	0.60	4.998E-05	PASS
AG	0.90	2.70	3.585E-05	PASS
CD	0.20	0.60	4.705E-06	PASS
SN	1.20	3.60	0.0002134	PASS
SB	2.00	6.00	4.552E-05	PASS
TE	7.50	22.50	6.407E-07	PASS
CS	0.20	0.60	2.955E-05	PASS
BA	0.90	2.70	2.827E-05	PASS
LA	0.90	2.70	3.028E-05	PASS
CE	4.00	12.00	3.777E-05	PASS
PR	0.90	2.70	3.434E-05	PASS
ND	0.90	2.70	4.54E-06	PASS
SM	4.00	12.00	7.062E-06	PASS
HF	4.00	12.00	2.192E-05	PASS
TA	4.00	12.00	0.0013415	PASS
W	2.00	6.00	0.0003655	PASS
RE	0.40	1.20	2.805E-05	PASS
PT	0.40	1.20	3.805E-05	PASS
AU	5.00	15.00	0.0001459	PASS
TL	0.90	2.70	0.0001189	PASS
(PB 206)	1.00	3.00	0.000247	PASS
(PB 207)	1.00	3.00	0.0002835	PASS
PB	1.00	3.00	0.0010864	PASS
BI	7.50	22.50	0.0005654	PASS
TH	0.90	2.70	0.0001546	PASS
U	0.40	1.20	6.063E-05	PASS

Analyst:
Instrument: 7700
Calibration File: 121019B2
Matrix: Soil
Units: PPB

Element	MDL	3XMDL	Y-Intercept	Pass/Fail
LI	4.00	12.00	0.056766	PASS
BE	0.40	1.20	0.000013	PASS
B	45.00	135.00	0.002269	PASS
NA	75.00	225.00	0.101207	PASS
MG	25.00	75.00	0.003303	PASS
AL	20.00	60.00	0.002225	PASS
P	200.00	600.00	0.000487	PASS
K	40.00	120.00	0.217322	PASS
CA	100.00	300.00	0.008143	PASS
TI	2.40	7.20	0.000170	PASS
V	4.00	12.00	0.008838	PASS
CR	4.50	13.50	0.006904	PASS
MN	2.00	6.00	0.001017	PASS
FE	20.00	60.00	0.001577	PASS
CO	0.75	2.25	0.001419	PASS
NI	2.00	6.00	0.000326	PASS
CU	4.00	12.00	0.017415	PASS
ZN	20.00	60.00	0.001680	PASS
AS	4.00	12.00	0.000346	PASS
SE	3.20	9.60	0.000217	PASS
SR	2.40	7.20	0.000676	PASS
Y	4.00	12.00	0.000537	PASS
ZR	4.00	12.00	0.000771	PASS
NB	12.00	36.00	0.010574	PASS
MO	2.00	6.00	0.000561	PASS
RU	4.00	12.00	0.000299	PASS
RH	4.00	12.00	0.002139	PASS
PD	0.40	1.20	0.000050	PASS
AG	0.75	2.25	0.000036	PASS
CD	0.24	0.72	0.000005	PASS
SN	0.90	2.70	0.000213	PASS
SB	2.00	6.00	0.000046	PASS
TE	4.00	12.00	0.000001	PASS
CS	2.00	6.00	0.000030	PASS
BA	5.00	15.00	0.000028	PASS
LA	0.75	2.25	0.000030	PASS
CE	4.00	12.00	0.000038	PASS
PR	0.75	2.25	0.000034	PASS
ND	0.75	2.25	0.000005	PASS
SM	4.00	12.00	0.000007	PASS
HF	4.00	12.00	0.000022	PASS
TA	4.00	12.00	0.001342	PASS
W	10.00	30.00	0.000366	PASS
RE	4.00	12.00	0.000028	PASS
PT	0.40	1.20	0.000038	PASS
AU	2.00	6.00	0.000146	PASS
TL	2.00	6.00	0.000119	PASS
(PB 206)	1.25	3.75	0.000247	PASS
(PB 207)	1.25	3.75	0.000284	PASS
PB	1.25	3.75	0.001086	PASS
BI	7.50	22.50	0.000565	PASS
TH	0.90	2.70	0.000155	PASS
U	0.40	1.20	0.000061	PASS

	Method	Type	Vial	Sample	Comment	Dil/Lvl	ISTD Conc
1		Keyword		Start of TUNE			
2		Keyword		TN_6020.U			
3		Keyword		1307			
4		Keyword		End of TUNE			
5		Keyword		Start of SMPL			
6	C:\ICPMH\1\METHODS\MET_2014.m	6-Blank	1	RINSE (4533933)		1.000	Level 1
7	C:\ICPMH\1\METHODS\MET_2014.m	CalBlk	4	ICIS 1843378		Level 1	Level 1
8	C:\ICPMH\1\METHODS\MET_2014.m	CalStd	1101	IC 1847444		Level 2	Level 1
9	C:\ICPMH\1\METHODS\MET_2014.m	CalStd	1102	IC 1847445		Level 3	Level 1
10	C:\ICPMH\1\METHODS\MET_2014.m	CalStd	1103	IC 1847446		Level 4	Level 1
11	C:\ICPMH\1\METHODS\MET_2014.m	ICV	1104	ICV 1848645		1.000	Level 1
12	C:\ICPMH\1\METHODS\MET_2014.m	ICB	4	ICB 1843378		1.000	Level 1
13	C:\ICPMH\1\METHODS\MET_2014.m	CRI	1101	CRI 1847444		1.000	Level 1
14	C:\ICPMH\1\METHODS\MET_2014.m	ICSA	1105	ICSA 1845716		1.000	Level 1
15	C:\ICPMH\1\METHODS\MET_2014.m	ICSAB	1106	ICSAB 1845717		1.000	Level 1
16	C:\ICPMH\1\METHODS\MET_2014.m	Sample	1301	LRC 1841695		1.000	Level 1
17	C:\ICPMH\1\METHODS\MET_2014.m	Sample	1302	LRC 1841696		1.000	Level 1
18	C:\ICPMH\1\METHODS\MET_2014.m	CCV	1102	CCV 1847445		1.000	Level 1
19	C:\ICPMH\1\METHODS\MET_2014.m	CCB	4	CCB 1843378		1.000	Level 1
20	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2101	LB 160-453305/1-C	453488	10.0 ~~2.000~~	Level 1
21	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2102	LCS 160-453488/2-A		10.0 ~~2.000~~	Level 1
22	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2103	160-36545-A-1-B	LKP 12/11/19	10.0 ~~2.000~~	Level 1
23	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2104	160-36545-A-1-B SD -U		10.00	Level 1
24	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2105	160-36545-A-1-C MS		10.0 ~~2.000~~	Level 1
25	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2106	160-36545-A-1-D MSD		2.000	Level 1
26	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2107	MB 160-452973/1-A	452973	2.000	Level 1
27	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2108	LCS 160-452973/2-A		2.000	Level 1
28	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2109	280-131342-E-2-A		2.000	Level 1
29	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2110	280-131342-E-3-A		2.000	Level 1
30	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2111	280-131342-E-3-A SD -A11		10.00	Level 1
31	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2112	280-131342-E-3-B MS		2.000	Level 1
32	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2201	280-131342-E-3-C MSD		2.000	Level 1
33	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2202	280-131342-E-4-A		2.000	Level 1

LKP 121101119 File:121019B2 Inst:7700 Tune:1848644 Is:1848675 DIA:1844732 Rinse:1843378

	Method	Type	Vial	Sample	Comment	Dil/Lvl	ISTD Conc
34	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2203	280-131342-E-5-A		2.000	Level 1
35	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2204	280-131342-E-6-A -All		2.000	Level 1
36	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2205	280-131342-E-7-A		2.000	Level 1
37	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2206	MB 160-452721/1-A	452721	2.000	Level 1
38	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2207	LCS 160-452721/2-A		2.000	Level 1
39	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2208	160-36400-A-7-B		2.000	Level 1
40	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2209	160-36400-A-8-B		2.000	Level 1
41	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2210	160-36400-A-10-B		2.000	Level 1
42	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2211	160-36400-A-11-B		2.000	Level 1
43	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2212	160-36419-A-12-D		2.000	Level 1
44	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2301	160-36419-A-12-D SD		10.00	Level 1
45	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2302	160-36419-A-12-E MS		2.000	Level 1
46	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2303	160-36419-A-12-F MSD - Be, Cd, Ni		2.000	Level 1
47	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2304	160-36419-A-12-D PDS		2.000	Level 1
48	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2305	160-36419-A-13-B		2.000	Level 1
49	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2306	160-36424-A-18-B		2.000	Level 1
50	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2307	160-36424-A-19-B		2.000	Level 1
51	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2308	MB 160-452611/1-A	452611	2.000	Level 1
52	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2309	LCS 160-452611/2-A		2.000	Level 1
53	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2310	LCSSRM 160-452611/3-A		2.000	Level 1
54	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2311	160-36526-B-1-A		2.000	Level 1
55	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2312	160-36526-B-2-A		2.000	Level 1
56	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2401	160-36526-B-3-A		2.000	Level 1
57	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2402	160-36526-B-4-A		2.000	Level 1
58	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2403	160-36526-B-5-A		2.000	Level 1
59	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2404	160-36526-B-6-A -Th, Li		2.000	Level 1
60	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2405	160-36526-B-7-A		2.000	Level 1
61	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2406	160-36526-B-8-A		2.000	Level 1
62	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2407	160-36526-B-9-A		2.000	Level 1
63	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2408	160-36526-B-10-A		2.000	Level 1
64	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2409	160-36526-B-11-A		2.000	Level 1
65	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2410	160-36526-B-11-A SD		10.00	Level 1
66	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2411	160-36526-B-11-B DU		2.000	Level 1

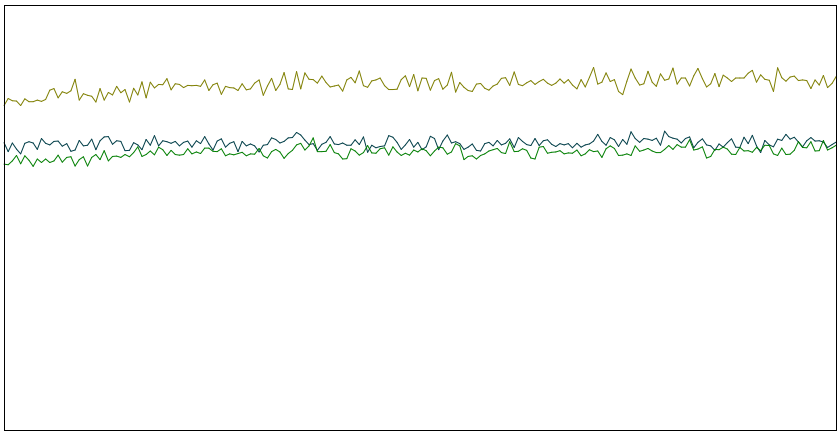
	Method	Type	Vial	Sample	Comment	Dil/Lvl	ISTD Conc
67	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2412	160-36526-B-11-C MS		2.000	Level 1
68	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2501	160-36526-B-11-D MSD		2.000	Level 1
69	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2502	160-36526-B-12-A		2.000	Level 1
70	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2503	160-36526-B-13-A		2.000	Level 1
71	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2504	160-36526-B-14-A		2.000	Level 1
72	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2505	160-36526-B-15-A		2.000	Level 1
73	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2506	160-36526-B-16-A -Th, Li		2.000	Level 1
74	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2507	160-36526-B-17-A		2.000	Level 1
75	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2508	160-36526-B-18-A		2.000	Level 1
76	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2509	160-36526-B-19-A		2.000	Level 1
77	C:\ICPMH\1\METHODS\MET_2014.m	CRI	1101	CCVL 1847444		1.000	Level 1
78	C:\ICPMH\1\METHODS\MET_2014.m	CCV	1102	CCV 1847445		1.000	Level 1
79	C:\ICPMH\1\METHODS\MET_2014.m	CCB	4	CCB 1843378		1.000	Level 1
80	C:\ICPMH\1\METHODS\MET_2014.m	6-Blank	1	RINSE		1.000	Level 1
81	C:\ICPMH\1\METHODS\MET_2014.m	CalBlk	4	ICIS 1843378		Level 1	Level 1
82	C:\ICPMH\1\METHODS\MET_2014.m	CalStd	1101	IC 1847444		Level 2	Level 1
83	C:\ICPMH\1\METHODS\MET_2014.m	CalStd	1102	IC 1847445		Level 3	Level 1
84	C:\ICPMH\1\METHODS\MET_2014.m	CalStd	1103	IC 1847446		Level 4	Level 1
85	C:\ICPMH\1\METHODS\MET_2014.m	ICV	1104	ICV 1848645		1.000	Level 1
86	C:\ICPMH\1\METHODS\MET_2014.m	ICB	4	ICB 1843378		1.000	Level 1
87	C:\ICPMH\1\METHODS\MET_2014.m	CRI	1101	CRI 1847444		1.000	Level 1
88	C:\ICPMH\1\METHODS\MET_2014.m	ICSA	1105	ICSA 1845716		1.000	Level 1
89	C:\ICPMH\1\METHODS\MET_2014.m	ICSAB	1106	ICSAB 1845717		1.000	Level 1
90	C:\ICPMH\1\METHODS\MET_2014.m	CCV	1102	CCV 1847445		1.000	Level 1
91	C:\ICPMH\1\METHODS\MET_2014.m	CCB	4	CCB 1843378		1.000	Level 1
92	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3101	MB 160-453190/1-A	453190	2.000	Level 1
93	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3102	LCS 160-453190/2-A		2.000	Level 1
94	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3103	160-36587-D-2-A		2.000	Level 1
95	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3104	160-36587-D-2-A SD		10.00	Level 1
96	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3105	160-36587-D-2-B MS		2.000	Level 1
97	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3106	160-36587-D-2-C MSD		2.000	Level 1
98	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3107	MB 160-452612/1-A	452612	2.000	Level 1
99	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3108	LCS 160-452612/2-A		2.000	Level 1

	Method	Type	Vial	Sample	Comment	Dil/Lvl	ISTD Conc
100	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3109	LCSSRM 160-452612/3-A		10.00	Level 1
101	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3110	160-36526-B-20-A		2.000	Level 1
102	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3111	160-36526-B-20-A SD		10.00	Level 1
103	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3112	160-36526-B-20-B MS		2.000	Level 1
104	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3201	160-36526-B-20-C MSD		2.000	Level 1
105	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3202	160-36526-B-21-A		2.000	Level 1
106	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3203	160-36526-B-22-A		2.000	Level 1
107	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3204	280-130833-A-1-G		2.000	Level 1
108	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3205	280-130833-A-2-F		10.00	Level 1
109	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3206	MB 160-452936/1-A	452936	2.000	Level 1
110	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3207	LCS 160-452936/2-A		2.000	Level 1
111	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3208	460-196683-D-2-A		2.000	Level 1
112	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3209	460-196683-D-2-A SD		10.00	Level 1
113	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3210	460-196683-D-2-B MS		2.000	Level 1
114	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3211	460-196683-D-2-C MSD		2.000	Level 1
115	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3212	460-196683-D-2-A PDS		2.000	Level 1
116	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3301	MB 160-453489/1-A	453489	2.000	Level 1
117	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3302	LCS 160-453489/2-A		2.000	Level 1
118	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3303	280-131403-B-1-A		2.000	Level 1
119	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3304	280-131403-B-2-A		2.000	Level 1
120	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3305	280-131403-B-2-A SD		10.00	Level 1
121	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3306	280-131403-B-2-B MS		2.000	Level 1
122	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3307	280-131403-B-2-C MSD		2.000	Level 1
123	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3308	280-131403-B-2-D MS		2.000	Level 1
124	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3309	280-131403-B-2-E MSD		2.000	Level 1
125	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3310	280-131403-B-2-A PDS		2.000	Level 1
126		Keyword		End of SMPL			
127		Keyword		Start of CCV			
128	C:\ICPMH\1\METHODS\MET_2014.m	CRI	1101	CCVL 1847444		1.000	Level 1
129	C:\ICPMH\1\METHODS\MET_2014.m	CCV	1102	CCV 1847445		1.000	Level 1
130	C:\ICPMH\1\METHODS\MET_2014.m	CCB	4	CCB 1843378		1.000	Level 1
131		Keyword		End of CCV			
132		Keyword		Start of TERM			

	Method	Type	Vial	Sample	Comment	Dil/Lvl	ISTD Conc
133		Keyword					
134		Keyword		End of TERM			
135		Keyword		End of Sequence			
136		Keyword		Start of CALIB			
137		Keyword		End of CALIB			
138		Keyword		Start of BLANK			
139		Keyword		End of BLANK			
140		Keyword		Start of ERRTERM			
141		Keyword		End of ERRTERM			

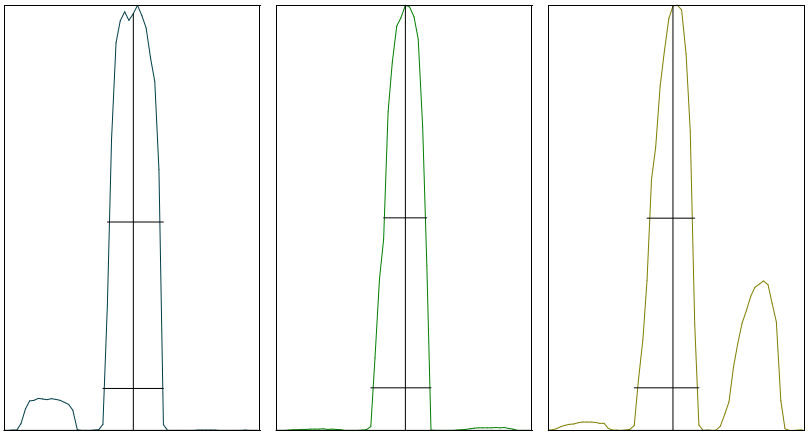
Tune Report

Tune File : autotune.u
Comment :



Integration Time:	0.1000 sec	
Sampling Period:	0.3100 sec	
n:	200	
Oxide:	156/140	0.535%
Doubly Charged:	70/140	1.171%

m/z	Range	Count	Mean	RSD%	Background
7	50,000	33942.0	33830.2	1.53	1.20
89	100,000	67141.0	65460.4	1.82	1.90
205	50,000	41673.0	40699.1	2.26	4.00



m/z:	7	89	205
Height:	33,807	66,519	40,303
Axis:	7.05	89.05	205.00
W-50%:	0.65	0.50	0.55
W-10%:	0.700	0.700	0.7500

Integration Time: 0.1000 sec
Acquisition Time: 22.7600 sec

Y axis : Linear

Tune Report

Tune File : autotune.u
Comment :

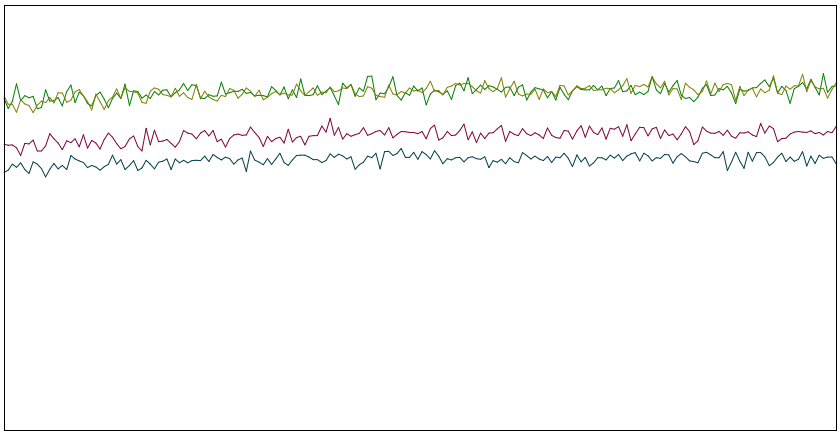
Tuning Parameters

===Plasma Condition===			===Ion Lenses===			===Q-Pole Parameters===		
RF Power	:	1550 W	Extract 1	:	0 V	AMU Gain	:	118
RF Matching	:	1.5 V	Extract 2	:	-120 V	AMU Offset	:	128
Smpl Depth	:	8 mm	Omega Bias	:	-90 V	Axis Gain	:	0.998
Torch-H	:	0.1 mm	Omega Lens	:	8 V	Axis Offset	:	0.11
Torch-V	:	0.1 mm	Cell Entrance	:	-30 V	QP Bias	:	-3 V
Carrier Gas	:	0.55 L/min	Cell Exit	:	-50 V			
Dilution Mode	:	ON	Deflect	:	12.2 V	===Detector Parameters===		
Dilution Gas	:	0.5 L/min	Plate Bias	:	-40 V	Discriminator	:	4.5 mV
Optional Gas	:	0 %	===Octopole Parameters===			Analog HV	:	1919 V
Nebulizer Pump	:	0.1 rps	OctP RF	:	190 V	Pulse HV	:	1104 V
Sample Pump	:	--- rps	OctP Bias	:	-8 V			
S/C Temp	:	2 degC						

===Reaction Cell===								
Reaction Mode	:	OFF						
H2 Gas	:	0 mL/min	He Gas	:	0 mL/min	Optional Gas	:	--- %

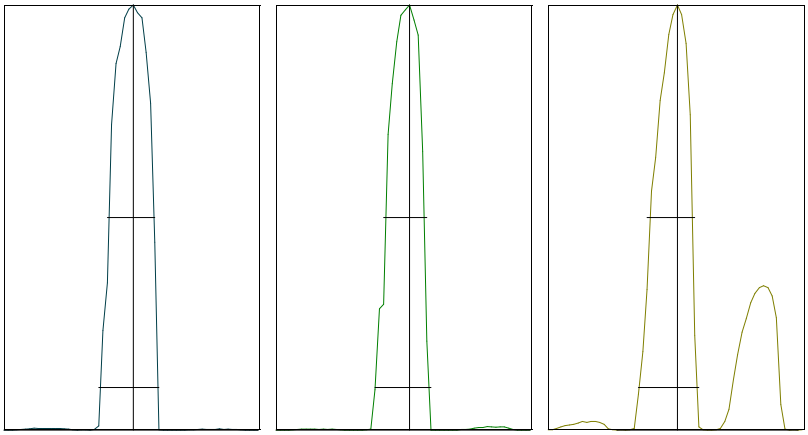
Tune Report

Tune File : he.u
Comment :



Integration Time:	0.1000 sec	
Sampling Period:	0.6200 sec	
n:	200	
Oxide:	156/140	0.247%
Doubly Charged:	70/140	1.286%

m/z	Range	Count	Mean	RSD%	Background
59	20,000	12555.0	12734.6	1.93	0.00
89	20,000	16212.0	15941.2	1.97	0.20
140	50,000	40899.0	39843.3	1.94	0.20
205	50,000	35802.0	34693.3	2.14	0.50
156/140	1	0.196%	0.233%	12.67	
70/140	2	1.374%	1.263%	6.41	



m/z:	59	89	205
Height:	13,037	16,439	35,819
Axis:	59.05	89.10	205.05
W-50%:	0.55	0.50	0.55
W-10%:	0.700	0.6500	0.700

Integration Time: 0.1000 sec
Acquisition Time: 22.5600 sec

Y axis : Linear

Tune Report

Tune File : he.u
Comment :

Tuning Parameters

===Plasma Condition===			===Ion Lenses===			===Q-Pole Parameters===		
RF Power	:	1550 W	Extract 1	:	0 V	AMU Gain	:	118
RF Matching	:	1.5 V	Extract 2	:	-120 V	AMU Offset	:	128
Smpl Depth	:	8 mm	Omega Bias	:	-80 V	Axis Gain	:	0.998
Torch-H	:	0.1 mm	Omega Lens	:	8.5 V	Axis Offset	:	0.11
Torch-V	:	0.1 mm	Cell Entrance	:	-40 V	QP Bias	:	-15 V
Carrier Gas	:	0.55 L/min	Cell Exit	:	-60 V			
Dilution Mode	:	ON	Deflect	:	-0.4 V	===Detector Parameters===		
Dilution Gas	:	0.5 L/min	Plate Bias	:	-60 V	Discriminator	:	4.5 mV
Optional Gas	:	0 %	===Octopole Parameters===			Analog HV	:	1919 V
Nebulizer Pump	:	0.1 rps	OctP RF	:	190 V	Pulse HV	:	1104 V
Sample Pump	:	--- rps	OctP Bias	:	-18 V			
S/C Temp	:	2 degC						

===Reaction Cell===								
Reaction Mode	:	ON						
H2 Gas	:	0 mL/min	He Gas	:	4.3 mL/min	Optional Gas	:	--- %

QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D
Date Acquired: 10 Dec 2019 03:42:44 pm
Operator: LP 7700
Misc Info:
Vial Number: 1307
Current Method: C:\ICPMH\1\METHODS\TN_6020.m

Minimum Response(CPS)

Element	Actual	Required	Flag

RSD (%)

Element	Actual	Required	Flag
6 Li	0.17	5.00	
59 Co	1.06	5.00	
115 In	0.63	5.00	
205 Tl	0.57	5.00	

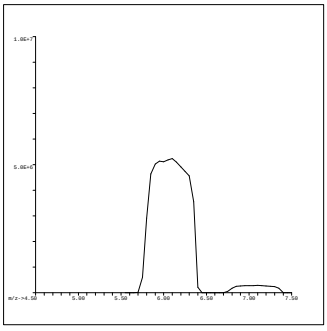
Ion Ratio

Element	Actual	Required	Flag

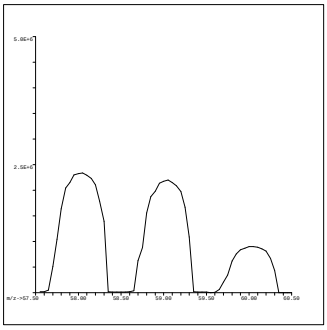
Maximum Bkg. Count(CPS)

Element	Actual	Required	Flag

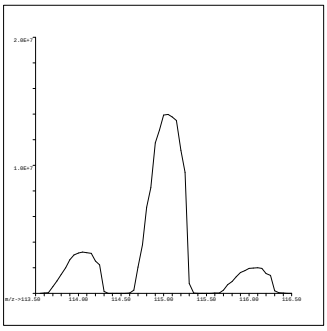
C:\ICPMH\1\DATA\121019B2.B\QCTUNE00.D



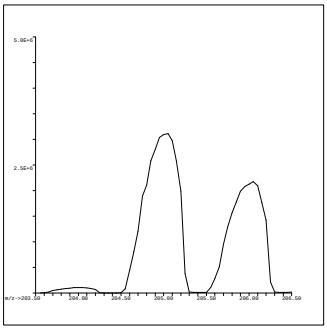
6 Li
Mass Calib.
Actual: 6.05
Required: 5.90-6.10
Flag:
Peak Width
Actual: 0.60
Required: 0.90
Flag:



59 Co
Mass Calib.
Actual: 59.05
Required: 58.90-59.10
Flag:
Peak Width
Actual: 0.60
Required: 0.90
Flag:



115 In
Mass Calib.
Actual: 115.05
Required: 114.90-115.10
Flag:
Peak Width
Actual: 0.60
Required: 0.90
Flag:



205 Tl
Mass Calib.
Actual: 205.00
Required: 204.90-205.10
Flag:
Peak Width
Actual: 0.65
Required: 0.90
Flag:

QC Tune Result:Pass

C:\ICPMH\1\DATA\121019B2.B\QCTUNE00.D

Replicated Data: Tune #1

Mass	Count(CPS)				
6	2877351.00	2862537.00	2853527.00	2829811.00	2840811.00
7	158721.09	156592.50	154929.91	155404.70	154440.41
8	36.00	31.50	35.00	41.50	28.00
58	1225560.00	1223748.00	1209847.00	1207828.00	1200629.00
59	1137512.00	1123184.00	1127595.00	1119311.00	1112796.00
60	457138.00	456799.41	458767.41	455067.59	454458.69
95	582518.19	581706.63	578256.50	574551.81	577642.19
111	605780.00	606448.19	606370.19	604968.88	608564.19
114	1422587.00	1415358.00	1418130.00	1412034.00	1406409.00
115	6134521.00	6097464.00	6103727.00	6128907.00	6099688.00
116	889908.81	884251.00	882771.31	885372.00	886322.88
118	834597.50	834124.81	834758.00	832982.31	829008.00
204	50164.42	50722.34	51239.73	52245.21	52375.13
205	1449399.00	1444889.00	1463075.00	1467627.00	1475043.00
206	1013061.00	1021512.00	1026749.00	1022823.00	1028747.00
207	911532.81	907450.31	912652.00	916670.63	914989.13
208	2188323.00	2179130.00	2193981.00	2195687.00	2166986.00

Blank Sample

Sample Name	**RINSE**
Data File Name	**002BLNK.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T15:50:57-06:00**
Type	**6-Blank**
VialNumber	**1**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	

TuneStep	TuneFile
2	he.u
3	nogas.u

Calibration Blank Report

Sample Name	**ICIS 1843378**
Data File Name	**003CALB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T15:57:44-06:00**
Type	**CalBlk**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**

QC Analyte Table

Element	m/z	ISTD	Tune Step	CPS	%RSD
Li	7	6	3	396592	1.25
Be	9	6	3	226	2.26
B	11	6	3	12858	5.37
Na	23	45	2	13850	2.58
Mg	24	45	2	322	7.83
Al	27	45	2	273	13.85
P	31	45	2	72	41.88
K	39	45	2	31721	0.86
Ca	44	45	3	27540	1.18
Ti	47	45	3	338	3.65
V	51	45	2	1573	5.06
Cr	52	45	2	1105	6.95
Mn	55	72	2	270	6.53
Fe	57	72	2	466	10.03
Co	59	72	2	443	9.15
Ni	60	72	2	150	21.20
Cu	63	72	2	7527	2.72
Zn	66	72	2	541	12.84
As	75	72	2	176	10.80
Se	78	72	2	47	18.90
Sr	88	72	3	1398	7.49
Y	89	72	2	144	27.72
Zr	90	72	2	221	9.09
Nb	93	72	2	4297	7.70
Mo	95	72	3	1811	6.95
Ru	101	72	2	71	25.81
Rh	103	72	2	650	3.20
Pd	105	72	2	91	22.06
Ag	107	115	3	373	17.38
Cd	111	115	3	114	20.79
Sn	118	115	3	3215	0.47
Sb	121	115	3	1367	5.51
Te	125	165	2	6	91.64
Cs	133	165	2	277	5.25
Ba	137	165	3	360	11.60
La	139	165	2	219	7.51
Ce	140	165	2	259	14.47
Pr	141	165	2	197	17.94
Nd	146	165	2	30	11.10
Sm	147	165	3	82	4.68
Hf	178	165	2	194	1.98
Ta	181	165	2	14382	1.01
W	182	165	2	3279	10.44
Re	185	193	3	127	20.89
Pt	195	193	2	204	7.35
Au	197	193	3	1387	11.61
Tl	205	193	3	2914	2.55
(Pb)	206	193	3	1959	6.01
(Pb)	207	193	3	2159	7.37
Pb	208	193	3	8179	3.72
Bi	209	193	2	4753	2.86
Th	232	193	3	1601	8.23
U	238	193	3	473	6.72

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD
Li (IS)	6	3	7411413	0.54
Sc (IS)	45	2	143379	0.48
Sc (IS)	45	3	2392712	0.82
Ge (IS)	72	2	323154	1.89
Ge (IS)	72	3	1861986	0.36
In (IS)	115	3	12119833	0.63
Ho (IS)	165	2	9598706	0.65
Ho (IS)	165	3	13687738	0.50
Ir (IS)	193	2	6085322	0.86
Ir (IS)	193	3	6951639	0.86

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Calibration Standard Report

Sample Name	**IC 1847444**
Data File Name	**004CALS.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:04:31-06:00**
Type	**CalStd**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**

QC Analyte Table

Element	m/z	ISTD	Tune Step	CPS	%RSD
Li	7	6	3	594877	0.26
Be	9	6	3	5716	2.68
B	11	6	3	786949	0.53
Na	23	45	2	155363	0.39
Mg	24	45	2	38700	0.88
Al	27	45	2	17461	0.85
P	31	45	2	2428	4.84
K	39	45	2	108062	0.89
Ca	44	45	3	265869	0.24
Ti	47	45	3	17878	1.06
V	51	45	2	80158	1.83
Cr	52	45	2	98111	1.62
Mn	55	72	2	24841	3.62
Fe	57	72	2	11004	1.35
Co	59	72	2	29702	0.96
Ni	60	72	2	19309	1.38
Cu	63	72	2	38643	1.82
Zn	66	72	2	40291	1.61
As	75	72	2	13683	1.17
Se	78	72	2	617	12.87
Sr	88	72	3	293531	0.95
Y	89	72	2	85499	1.86
Zr	90	72	2	64078	0.68
Nb	93	72	2	502532	1.33
Mo	95	72	3	58508	1.51
Ru	101	72	2	71335	0.23
Rh	103	72	2	402608	0.77
Pd	105	72	2	4078	2.10
Ag	107	115	3	58697	1.33
Cd	111	115	3	3300	3.77
Sn	118	115	3	35294	0.16
Sb	121	115	3	107197	1.22
Te	125	165	2	2537	2.57
Cs	133	165	2	18219	1.03
Ba	137	165	3	16801	1.85
La	139	165	2	74537	1.09
Ce	140	165	2	433180	1.14
Pr	141	165	2	92447	0.69
Nd	146	165	2	16740	1.74
Sm	147	165	3	128985	2.51
Hf	178	165	2	170085	1.42
Ta	181	165	2	589452	0.59
W	182	165	2	86127	0.44
Re	185	193	3	268215	0.90
Pt	195	193	2	11635	3.23
Au	197	193	3	107409	0.82
Tl	205	193	3	90235	1.24
(Pb)	206	193	3	47849	1.21
(Pb)	207	193	3	42877	0.95
Pb	208	193	3	193637	0.46
Bi	209	193	2	840621	0.93
Th	232	193	3	143496	1.32
U	238	193	3	69637	2.18

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	QC Flag
Li (IS)	6	3	7393428	0.73	7411413	99.8	80	120	
Sc (IS)	45	2	135713	10.63	143379	94.7	80	120	
Sc (IS)	45	3	2382183	0.44	2392712	99.6	80	120	
Ge (IS)	72	2	312750	9.07	323154	96.8	80	120	
Ge (IS)	72	3	1859584	0.55	1861986	99.9	80	120	
In (IS)	115	3	12032588	0.30	12119833	99.3	80	120	
Ho (IS)	165	2	9037315	9.66	9598706	94.2	80	120	
Ho (IS)	165	3	13600554	1.48	13687738	99.4	80	120	
Ir (IS)	193	2	5724754	8.97	6085322	94.1	80	120	
Ir (IS)	193	3	6850877	0.61	6951639	98.6	80	120	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Calibration Standard Report

Sample Name	**IC 1847445**
Data File Name	**005CALS.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:11:12-06:00**
Type	**CalStd**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**

QC Analyte Table

Element	m/z	ISTD	Tune Step	CPS	%RSD
Li	7	6	3	4415162	0.85
Be	9	6	3	1143217	0.42
B	11	6	3	1669036	0.83
Na	23	45	2	3623335	0.74
Mg	24	45	2	1937594	0.46
Al	27	45	2	821199	0.70
P	31	45	2	59527	1.17
K	39	45	2	2051268	0.67
Ca	44	45	3	3220002	0.87
Ti	47	45	3	365094	0.10
V	51	45	2	790819	2.14
Cr	52	45	2	977245	3.80
Mn	55	72	2	610331	0.27
Fe	57	72	2	524496	0.93
Co	59	72	2	1518766	0.60
Ni	60	72	2	370161	1.72
Cu	63	72	2	975903	2.05
Zn	66	72	2	198370	1.91
As	75	72	2	139362	2.56
Se	78	72	2	5506	3.09
Sr	88	72	3	6313172	0.25
Y	89	72	2	1893235	0.76
Zr	90	72	2	1399687	0.74
Nb	93	72	2	1400798	0.45
Mo	95	72	3	585341	0.77
Ru	101	72	2	710873	0.59
Rh	103	72	2	4420506	0.63
Pd	105	72	2	81922	2.23
Ag	107	115	3	571584	0.55
Cd	111	115	3	609039	0.80
Sn	118	115	3	1832502	0.74
Sb	121	115	3	1188326	0.82
Te	125	165	2	25618	2.09
Cs	133	165	2	2027849	0.56
Ba	137	165	3	835159	1.24
La	139	165	2	4110616	1.15
Ce	140	165	2	4713930	1.13
Pr	141	165	2	4982557	0.72
Nd	146	165	2	848837	0.93
Sm	147	165	3	1416465	0.55
Hf	178	165	2	1907988	0.09
Ta	181	165	2	7568973	0.41
W	182	165	2	1848070	0.47
Re	185	193	3	3034795	0.11
Pt	195	193	2	114024	1.55
Au	197	193	3	2385660	0.91
Tl	205	193	3	888079	1.02
(Pb)	206	193	3	1731184	0.72
(Pb)	207	193	3	1523699	0.68
Pb	208	193	3	6913070	0.13
Bi	209	193	2	4751821	0.71
Th	232	193	3	8041545	0.67
U	238	193	3	7692089	0.31

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	QC Flag
Li (IS)	6	3	7403748	0.76	7411413	99.9	80	120	
Sc (IS)	45	2	149177	0.76	143379	104.0	80	120	
Sc (IS)	45	3	2451692	0.61	2392712	102.5	80	120	
Ge (IS)	72	2	346142	1.86	323154	107.1	80	120	
Ge (IS)	72	3	1933598	0.67	1861986	103.8	80	120	
In (IS)	115	3	12125197	0.55	12119833	100.0	80	120	
Ho (IS)	165	2	9545047	0.74	9598706	99.4	80	120	
Ho (IS)	165	3	13718005	1.12	13687738	100.2	80	120	
Ir (IS)	193	2	5969551	0.65	6085322	98.1	80	120	
Ir (IS)	193	3	6897432	0.82	6951639	99.2	80	120	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Calibration Standard Report

Sample Name	**IC 1847446**
Data File Name	**006CALS.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:17:57-06:00**
Type	**CalStd**
VialNumber	**1103**
Dilution	**1**
Comment	
Operator	**LP 7700**

QC Analyte Table

Element	m/z	ISTD	Tune Step	CPS	%RSD
Li	7	6	3	8633038	0.57
Be	9	6	3	2327190	0.61
B	11	6	3	3409942	0.83
Na	23	45	2	7433005	0.57
Mg	24	45	2	3944453	0.11
Al	27	45	2	1770876	0.62
P	31	45	2	119944	0.27
K	39	45	2	4185423	0.31
Ca	44	45	3	6437027	0.58
Ti	47	45	3	737814	0.63
V	51	45	2	1738303	0.44
Cr	52	45	2	2104224	0.26
Mn	55	72	2	1356068	0.29
Fe	57	72	2	1156357	0.24
Co	59	72	2	3132836	0.61
Ni	60	72	2	756041	0.73
Cu	63	72	2	2215284	0.89
Zn	66	72	2	408302	0.38
As	75	72	2	287602	1.26
Se	78	72	2	11521	2.93
Sr	88	72	3	12915888	0.78
Y	89	72	2	3867030	0.84
Zr	90	72	2	2907152	0.36
Nb	93	72	2	2916346	0.71
Mo	95	72	3	1300195	0.37
Ru	101	72	2	1587943	0.71
Rh	103	72	2	9013546	0.88
Pd	105	72	2	164413	0.84
Ag	107	115	3	1303962	0.99
Cd	111	115	3	1350375	0.77
Sn	118	115	3	3752226	0.52
Sb	121	115	3	2436480	0.58
Te	125	165	2	53516	0.99
Cs	133	165	2	4169346	0.76
Ba	137	165	3	1957442	0.94
La	139	165	2	8474806	0.54
Ce	140	165	2	9752219	0.17
Pr	141	165	2	10208641	0.36
Nd	146	165	2	1920310	0.68
Sm	147	165	3	2917402	0.75
Hf	178	165	2	3993388	0.37
Ta	181	165	2	15709082	0.55
W	182	165	2	3830444	0.48
Re	185	193	3	6248847	0.85
Pt	195	193	2	230629	1.02
Au	197	193	3	4883393	0.74
Tl	205	193	3	2059496	0.76
(Pb)	206	193	3	3563138	1.11
(Pb)	207	193	3	3147020	1.76
Pb	208	193	3	14336497	1.08
Bi	209	193	2	9695457	0.67
Th	232	193	3	16875389	1.08
U	238	193	3	16064954	0.65

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	QC Flag
Li (IS)	6	3	7340346	0.57	7411413	99.0	80	120	
Sc (IS)	45	2	152248	0.87	143379	106.2	80	120	
Sc (IS)	45	3	2486064	0.53	2392712	103.9	80	120	
Ge (IS)	72	2	360584	0.61	323154	111.6	80	120	
Ge (IS)	72	3	1981714	0.48	1861986	106.4	80	120	
In (IS)	115	3	12162441	0.38	12119833	100.4	80	120	
Ho (IS)	165	2	9690580	0.75	9598706	101.0	80	120	
Ho (IS)	165	3	14064147	1.09	13687738	102.7	80	120	
Ir (IS)	193	2	5945960	0.48	6085322	97.7	80	120	
Ir (IS)	193	3	6980867	0.46	6951639	100.4	80	120	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Initial Calibration Verification (ICV) - US EPA Method 6020

Sample Name	**ICV 1848645**
Data File Name	**007_ICV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:24:37-06:00**
Type	**ICV**
VialNumber	**1104**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	100.71013	ug/l	100	100.7	90	110	Li	
Be	9	6	3	101.04806	ug/l	100	101.0	90	110	Be	
B	11	6	3	203.03760	ug/l	200	101.5	90	110	B	
Na	23	45	2	1007.96907	ug/l	1000	100.8	90	110	Na	
Mg	24	45	2	974.05586	ug/l	1000	97.4	90	110	Mg	
Al	27	45	2	957.07425	ug/l	1000	95.7	90	110	Al	
P	31	45	2	993.61976	ug/l	1000	99.4	90	110	P	
K	39	45	2	956.51629	ug/l	1000	95.7	90	110	K	
Ca	44	45	3	1052.94612	ug/l	1000	105.3	90	110	Ca	
Ti	47	45	3	101.51940	ug/l	100	101.5	90	110	Ti	
V	51	45	2	94.99006	ug/l	100	95.0	90	110	V	
Cr	52	45	2	100.96961	ug/l	100	101.0	90	110	Cr	
Mn	55	72	2	96.66307	ug/l	100	96.7	90	110	Mn	
Fe	57	72	2	941.25566	ug/l	1000	94.1	90	110	Fe	
Co	59	72	2	101.87137	ug/l	100	101.9	90	110	Co	
Ni	60	72	2	104.69704	ug/l	100	104.7	90	110	Ni	
Cu	63	72	2	104.41728	ug/l	100	104.4	90	110	Cu	
Zn	66	72	2	102.41889	ug/l	100	102.4	90	110	Zn	
As	75	72	2	102.54310	ug/l	100	102.5	90	110	As	
Se	78	72	2	51.42433	ug/l	50	102.8	90	110	Se	
Sr	88	72	3	101.87716	ug/l	100	101.9	90	110	Sr	
Y	89	72	2	103.43636	ug/l	100	103.4	90	110	Y	
Zr	90	72	2	100.21761	ug/l	100	100.2	90	110	Zr	
Nb	93	72	2	48.13657	ug/l	50	96.3	90	110	Nb	
Mo	95	72	3	47.26197	ug/l	50	94.5	90	110	Mo	
Ru	101	72	2	95.04727	ug/l	100	95.0	90	110	Ru	
Rh	103	72	2	106.60396	ug/l	100	106.6	90	110	Rh	
Pd	105	72	2	10.40961	ug/l	10	104.1	90	110	Pd	
Ag	107	115	3	18.19718	ug/l	20	91.0	90	110	Ag	
Cd	111	115	3	96.01377	ug/l	100	96.0	90	110	Cd	
Sn	118	115	3	97.93383	ug/l	100	97.9	90	110	Sn	
Sb	121	115	3	50.18458	ug/l	50	100.4	90	110	Sb	
Te	125	165	2	98.38613	ug/l	100	98.4	90	110	Te	
Cs	133	165	2	100.51795	ug/l	100	100.5	90	110	Cs	
Ba	137	165	3	90.06965	ug/l	100	90.1	90	110	Ba	
La	139	165	2	99.01681	ug/l	100	99.0	90	110	La	
Ce	140	165	2	101.26811	ug/l	100	101.3	90	110	Ce	
Pr	141	165	2	100.00982	ug/l	100	100.0	90	110	Pr	
Nd	146	165	2	94.75311	ug/l	100	94.8	90	110	Nd	
Sm	147	165	3	101.06637	ug/l	100	101.1	90	110	Sm	
Hf	178	165	2	99.24502	ug/l	100	99.2	90	110	Hf	
Ta	181	165	2	76.10582	ug/l	100	76.1	90	110	Ta	FAILED
W	182	165	2	97.47607	ug/l	100	97.5	90	110	W	
Re	185	193	3	103.00898	ug/l	100	103.0	90	110	Re	
Pt	195	193	2	10.13928	ug/l	10	101.4	90	110	Pt	
Au	197	193	3	103.83625	ug/l	100	103.8	90	110	Au	
Tl	205	193	3	19.07016	ug/l	20	95.4	90	110	Tl	
Pb	208	193	3	100.27707	ug/l	100	100.3	90	110	Pb	
Bi	209	193	2	101.89876	ug/l	100	101.9	90	110	Bi	
Th	232	193	3	99.72431	ug/l	100	99.7	90	110	Th	
U	238	193	3	100.77913	ug/l	100	100.8	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7426400	2.44	7411413	100.2	80	120	Li (IS)	
Sc (IS)	45	2	152727	2.11	143379	106.5	80	120	Sc (IS)	
Sc (IS)	45	3	2472843	2.60	2392712	103.3	80	120	Sc (IS)	
Ge (IS)	72	2	360096	0.52	323154	111.4	80	120	Ge (IS)	
Ge (IS)	72	3	1974843	1.55	1861986	106.1	80	120	Ge (IS)	
In (IS)	115	3	12385121	2.52	12119833	102.2	80	120	In (IS)	
Ho (IS)	165	2	9886953	0.87	9598706	103.0	80	120	Ho (IS)	
Ho (IS)	165	3	14049759	2.78	13687738	102.6	80	120	Ho (IS)	
Ir (IS)	193	2	6172014	0.23	6085322	101.4	80	120	Ir (IS)	
Ir (IS)	193	3	7035023	1.68	6951639	101.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Initial Calibration Blank (ICB) - US EPA Method 6020

Sample Name	**ICB 1843378**
Data File Name	**008_ICB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:31:25-06:00**
Type	**ICB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.13689	ug/l	1.388	Li	
Be	9	6	3	0.02042	ug/l	0.7	Be	
B	11	6	3	1.27176	ug/l	20	B	
Na	23	45	2	0.76900	ug/l	30	Na	
Mg	24	45	2	0.36962	ug/l	11.18	Mg	
Al	27	45	2	0.42382	ug/l	25.8	Al	
P	31	45	2	1.03887	ug/l	16.46	P	
K	39	45	2	1.83761	ug/l	83.2	K	
Ca	44	45	3	0.76279	ug/l	136.2	Ca	
Ti	47	45	3	0.03283	ug/l	4.2	Ti	
V	51	45	2	0.02159	ug/l	4.74	V	
Cr	52	45	2	0.02358	ug/l	6.52	Cr	
Mn	55	72	2	0.03528	ug/l	0.49	Mn	
Fe	57	72	2	0.25695	ug/l	40.7	Fe	
Co	59	72	2	0.03053	ug/l	0.434	Co	
Ni	60	72	2	0.01972	ug/l	0.8	Ni	
Cu	63	72	2	-0.04858	ug/l	0.902	Cu	
Zn	66	72	2	0.08271	ug/l	16.58	Zn	
As	75	72	2	0.03654	ug/l	2.36	As	
Se	78	72	2	0.16056	ug/l	3.18	Se	
Sr	88	72	3	0.01738	ug/l	2	Sr	
Y	89	72	2	0.03025	ug/l	0.424	Y	
Zr	90	72	2	0.02895	ug/l	0.496	Zr	
Nb	93	72	2	0.54319	ug/l	4.62	Nb	
Mo	95	72	3	0.01341	ug/l	2	Mo	
Ru	101	72	2	0.02693	ug/l	2	Ru	
Rh	103	72	2	0.03056	ug/l	1.634	Rh	
Pd	105	72	2	-0.00022	ug/l	0.08	Pd	
Ag	107	115	3	0.00470	ug/l	1.54	Ag	
Cd	111	115	3	0.02030	ug/l	0.4	Cd	
Sn	118	115	3	0.03724	ug/l	2	Sn	
Sb	121	115	3	-0.00266	ug/l	3.34	Sb	
Te	125	165	2	0.11535	ug/l	1.072	Te	
Cs	133	165	2	0.03226	ug/l	0.106	Cs	
Ba	137	165	3	0.01724	ug/l	0.446	Ba	
La	139	165	2	0.02485	ug/l	0.102	La	
Ce	140	165	2	0.02708	ug/l	1.772	Ce	
Pr	141	165	2	0.03017	ug/l	0.084	Pr	
Nd	146	165	2	0.03233	ug/l	0.208	Nd	
Sm	147	165	3	0.02425	ug/l	0.652	Sm	
Hf	178	165	2	0.04534	ug/l	2.26	Hf	
Ta	181	165	2	0.13660	ug/l	1.46	Ta	
W	182	165	2	0.49391	ug/l	4	W	
Re	185	193	3	0.01569	ug/l	0.05	Re	
Pt	195	193	2	0.00472	ug/l	0.12	Pt	
Au	197	193	3	0.22315	ug/l	1	Au	
Tl	205	193	3	-0.00687	ug/l	1.1	Tl	
Pb	208	193	3	0.00330	ug/l	0.346	Pb	
Bi	209	193	2	0.06385	ug/l	1.464	Bi	
Th	232	193	3	0.04382	ug/l	1.104	Th	
U	238	193	3	0.02059	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7611228	0.27	7411413	102.7	80	120	Li (IS)	
Sc (IS)	45	2	151485	0.79	143379	105.7	80	120	Sc (IS)	
Sc (IS)	45	3	2516775	0.79	2392712	105.2	80	120	Sc (IS)	
Ge (IS)	72	2	340569	0.80	323154	105.4	80	120	Ge (IS)	
Ge (IS)	72	3	1951877	1.18	1861986	104.8	80	120	Ge (IS)	
In (IS)	115	3	12683038	0.33	12119833	104.6	80	120	In (IS)	
Ho (IS)	165	2	9793975	0.84	9598706	102.0	80	120	Ho (IS)	
Ho (IS)	165	3	14178525	1.22	13687738	103.6	80	120	Ho (IS)	
Ir (IS)	193	2	6241977	0.50	6085322	102.6	80	120	Ir (IS)	
Ir (IS)	193	3	7167117	0.17	6951639	103.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CRI 1847444**
Data File Name	**009LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:38:09-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	5.05490	ug/l	5	101.1	80	120	Li	
Be	9	6	3	0.51520	ug/l	0.5	103.0	80	120	Be	
B	11	6	3	99.15587	ug/l	100	99.2	80	120	B	
Na	23	45	2	96.58371	ug/l	100	96.6	80	120	Na	
Mg	24	45	2	48.74643	ug/l	50	97.5	80	120	Mg	
Al	27	45	2	49.85786	ug/l	50	99.7	80	120	Al	
P	31	45	2	98.22347	ug/l	100	98.2	80	120	P	
K	39	45	2	93.63167	ug/l	100	93.6	80	120	K	
Ca	44	45	3	197.93684	ug/l	200	99.0	80	120	Ca	
Ti	47	45	3	5.06387	ug/l	5	101.3	80	120	Ti	
V	51	45	2	9.37223	ug/l	10	93.7	80	120	V	
Cr	52	45	2	9.53676	ug/l	10	95.4	80	120	Cr	
Mn	55	72	2	4.03302	ug/l	4	100.8	80	120	Mn	
Fe	57	72	2	50.84703	ug/l	50	101.7	80	120	Fe	
Co	59	72	2	2.01212	ug/l	2	100.6	80	120	Co	
Ni	60	72	2	5.50569	ug/l	5	110.1	80	120	Ni	
Cu	63	72	2	3.00883	ug/l	3	100.3	80	120	Cu	
Zn	66	72	2	21.29749	ug/l	20	106.5	80	120	Zn	
As	75	72	2	10.34379	ug/l	10	103.4	80	120	As	
Se	78	72	2	5.54668	ug/l	5	110.9	80	120	Se	
Sr	88	72	3	4.86244	ug/l	5	97.2	80	120	Sr	
Y	89	72	2	4.77823	ug/l	5	95.6	80	120	Y	
Zr	90	72	2	4.95328	ug/l	5	99.1	80	120	Zr	
Nb	93	72	2	19.13452	ug/l	25	76.5	80	120	Nb	FAILED
Mo	95	72	3	4.78380	ug/l	5	95.7	80	120	Mo	
Ru	101	72	2	9.84024	ug/l	10	98.4	80	120	Ru	
Rh	103	72	2	9.73090	ug/l	10	97.3	80	120	Rh	
Pd	105	72	2	0.52297	ug/l	0.5	104.6	80	120	Pd	
Ag	107	115	3	1.86284	ug/l	2	93.1	80	120	Ag	
Cd	111	115	3	0.47112	ug/l	0.5	94.2	80	120	Cd	
Sn	118	115	3	1.75241	ug/l	2	87.6	80	120	Sn	
Sb	121	115	3	4.43729	ug/l	5	88.7	80	120	Sb	
Te	125	165	2	9.52696	ug/l	10	95.3	80	120	Te	
Cs	133	165	2	0.89145	ug/l	1	89.1	80	120	Cs	
Ba	137	165	3	1.84576	ug/l	2	92.3	80	120	Ba	
La	139	165	2	1.76276	ug/l	2	88.1	80	120	La	
Ce	140	165	2	8.81636	ug/l	10	88.2	80	120	Ce	
Pr	141	165	2	1.79681	ug/l	2	89.8	80	120	Pr	
Nd	146	165	2	1.81002	ug/l	2	90.5	80	120	Nd	
Sm	147	165	3	9.16890	ug/l	10	91.7	80	120	Sm	
Hf	178	165	2	8.72604	ug/l	10	87.3	80	120	Hf	
Ta	181	165	2	7.47752	ug/l	10	74.8	80	120	Ta	FAILED
W	182	165	2	4.47703	ug/l	5	89.5	80	120	W	
Re	185	193	3	8.96158	ug/l	10	89.6	80	120	Re	
Pt	195	193	2	1.00616	ug/l	1	100.6	80	120	Pt	
Au	197	193	3	4.50747	ug/l	5	90.1	80	120	Au	
Tl	205	193	3	1.78293	ug/l	2	89.1	80	120	Tl	
Pb	208	193	3	2.65791	ug/l	3	88.6	80	120	Pb	
Bi	209	193	2	16.83177	ug/l	20	84.2	80	120	Bi	
Th	232	193	3	1.79102	ug/l	2	89.6	80	120	Th	
U	238	193	3	0.88113	ug/l	1	88.1	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7661066	0.29	7411413	103.4	80	120	Li (IS)	
Sc (IS)	45	2	158538	4.63	143379	110.6	80	120	Sc (IS)	
Sc (IS)	45	3	2536622	0.50	2392712	106.0	80	120	Sc (IS)	
Ge (IS)	72	2	351488	3.59	323154	108.8	80	120	Ge (IS)	
Ge (IS)	72	3	1968413	0.58	1861986	105.7	80	120	Ge (IS)	
In (IS)	115	3	12731067	0.29	12119833	105.0	80	120	In (IS)	
Ho (IS)	165	2	10107244	4.34	9598706	105.3	80	120	Ho (IS)	
Ho (IS)	165	3	14289938	0.39	13687738	104.4	80	120	Ho (IS)	
Ir (IS)	193	2	6297786	3.90	6085322	103.5	80	120	Ir (IS)	
Ir (IS)	193	3	7182298	0.69	6951639	103.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Interference Check Sample A (ICS-A) - US EPA Method 6020

Sample Name	**ICSA 1845716**
Data File Name	**010ICSA.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:44:52-06:00**
Type	**ICSA**
VialNumber	**1105**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.36790	ug/l	1.388	Li	
Be	9	6	3	-0.01161	ug/l	0.7	Be	
B	11	6	3	1.12622	ug/l	20	B	
Na	23	45	2	103314.82026	ug/l	120000	Na	
Mg	24	45	2	102981.56601	ug/l	120000	Mg	
Al	27	45	2	105485.85390	ug/l	120000	Al	
P	31	45	2	114066.49421	ug/l	120000	P	
K	39	45	2	102113.03880	ug/l	120000	K	
Ca	44	45	3	97768.10507	ug/l	120000	Ca	
Ti	47	45	3	2143.52448	ug/l	2400	Ti	
V	51	45	2	0.21506	ug/l	4.74	V	
Cr	52	45	2	1.32792	ug/l	6.52	Cr	
Mn	55	72	2	3.15511	ug/l	0.49	Mn	FAILED
Fe	57	72	2	111066.92032	ug/l	120000	Fe	
Co	59	72	2	0.31965	ug/l	0.434	Co	
Ni	60	72	2	1.56198	ug/l	0.8	Ni	FAILED
Cu	63	72	2	1.03640	ug/l	0.902	Cu	FAILED
Zn	66	72	2	4.10781	ug/l	16.58	Zn	
As	75	72	2	0.09877	ug/l	2.36	As	
Se	78	72	2	0.43954	ug/l	3.18	Se	
Sr	88	72	3	1.02072	ug/l	2	Sr	
Y	89	72	2	0.05990	ug/l	0.424	Y	
Zr	90	72	2	2.38433	ug/l	0.496	Zr	FAILED
Nb	93	72	2	0.51959	ug/l	4.62	Nb	
Mo	95	72	3	2136.46817	ug/l	2400	Mo	
Ru	101	72	2	-0.00015	ug/l	2	Ru	
Rh	103	72	2	-0.00414	ug/l	1.634	Rh	
Pd	105	72	2	-0.00222	ug/l	0.08	Pd	
Ag	107	115	3	0.11095	ug/l	1.54	Ag	
Cd	111	115	3	0.22469	ug/l	0.4	Cd	
Sn	118	115	3	0.09361	ug/l	2	Sn	
Sb	121	115	3	0.00215	ug/l	3.34	Sb	
Te	125	165	2	0.02279	ug/l	1.072	Te	
Cs	133	165	2	0.04405	ug/l	0.106	Cs	
Ba	137	165	3	0.54247	ug/l	0.446	Ba	FAILED
La	139	165	2	0.00694	ug/l	0.102	La	
Ce	140	165	2	0.55462	ug/l	1.772	Ce	
Pr	141	165	2	0.00160	ug/l	0.084	Pr	
Nd	146	165	2	0.01296	ug/l	0.208	Nd	
Sm	147	165	3	0.00248	ug/l	0.652	Sm	
Hf	178	165	2	0.14069	ug/l	2.26	Hf	
Ta	181	165	2	0.17101	ug/l	1.46	Ta	
W	182	165	2	0.51164	ug/l	4	W	
Re	185	193	3	0.02239	ug/l	0.05	Re	
Pt	195	193	2	0.01820	ug/l	0.12	Pt	
Au	197	193	3	0.01988	ug/l	1	Au	
Tl	205	193	3	-0.03290	ug/l	1.1	Tl	
Pb	208	193	3	0.09917	ug/l	0.346	Pb	
Bi	209	193	2	0.18369	ug/l	1.464	Bi	
Th	232	193	3	0.07051	ug/l	1.104	Th	
U	238	193	3	0.01299	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6871105	0.17	7411413	92.7	80	120	Li (IS)	
Sc (IS)	45	2	146268	0.92	143379	102.0	80	120	Sc (IS)	
Sc (IS)	45	3	2392024	0.78	2392712	100.0	80	120	Sc (IS)	
Ge (IS)	72	2	316248	1.28	323154	97.9	80	120	Ge (IS)	
Ge (IS)	72	3	1808972	0.93	1861986	97.2	80	120	Ge (IS)	
In (IS)	115	3	11002952	0.79	12119833	90.8	80	120	In (IS)	
Ho (IS)	165	2	9261139	1.18	9598706	96.5	80	120	Ho (IS)	
Ho (IS)	165	3	12961015	1.08	13687738	94.7	80	120	Ho (IS)	
Ir (IS)	193	2	5364762	1.50	6085322	88.2	80	120	Ir (IS)	
Ir (IS)	193	3	6107493	0.40	6951639	87.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Interference Check Sample AB (ICS-AB) - US EPA Method 6020

Sample Name	**ICSAB 1845717**
Data File Name	**011ICSB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:51:43-06:00**
Type	**ICSAB**
VialNumber	**1106**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	52.92866	ug/l	50	105.9	80	120	Li	
Be	9	6	3	52.23465	ug/l	50	104.5	80	120	Be	
B	11	6	3	100.26012	ug/l	100	100.3	80	120	B	
Na	23	45	2	100451.14621	ug/l	100000	100.5	80	120	Na	
Mg	24	45	2	100022.67117	ug/l	100000	100.0	80	120	Mg	
Al	27	45	2	103529.48637	ug/l	100000	103.5	80	120	Al	
P	31	45	2	111656.43067	ug/l	100000	111.7	80	120	P	
K	39	45	2	101173.82661	ug/l	100000	101.2	80	120	K	
Ca	44	45	3	97989.29571	ug/l	100000	98.0	80	120	Ca	
Ti	47	45	3	2215.02255	ug/l	2100	105.5	80	120	Ti	
V	51	45	2	49.96991	ug/l	50	99.9	80	120	V	
Cr	52	45	2	48.90385	ug/l	50	97.8	80	120	Cr	
Mn	55	72	2	51.89754	ug/l	50	103.8	80	120	Mn	
Fe	57	72	2	105839.15314	ug/l	100000	105.8	80	120	Fe	
Co	59	72	2	47.74169	ug/l	50	95.5	80	120	Co	
Ni	60	72	2	51.30923	ug/l	50	102.6	80	120	Ni	
Cu	63	72	2	46.97078	ug/l	50	93.9	80	120	Cu	
Zn	66	72	2	54.26846	ug/l	50	108.5	80	120	Zn	
As	75	72	2	54.18110	ug/l	50	108.4	80	120	As	
Se	78	72	2	25.80683	ug/l	25	103.2	80	120	Se	
Sr	88	72	3	53.73785	ug/l	50	107.5	80	120	Sr	
Y	89	72	2	50.47385	ug/l	50	100.9	80	120	Y	
Zr	90	72	2	38.34369	ug/l	50	76.7	80	120	Zr	FAILED
Nb	93	72	2	23.97395	ug/l	25	95.9	80	120	Nb	
Mo	95	72	3	2117.66622	ug/l	2050	103.3	80	120	Mo	
Ru	101	72	2	46.96589	ug/l	50	93.9	80	120	Ru	
Rh	103	72	2	49.36419	ug/l	50	98.7	80	120	Rh	
Pd	105	72	2	4.86078	ug/l	5	97.2	80	120	Pd	
Ag	107	115	3	9.33201	ug/l	10	93.3	80	120	Ag	
Cd	111	115	3	47.18618	ug/l	50	94.4	80	120	Cd	
Sn	118	115	3	47.81470	ug/l	50	95.6	80	120	Sn	
Sb	121	115	3	23.88316	ug/l	25	95.5	80	120	Sb	
Te	125	165	2	48.54781	ug/l	50	97.1	80	120	Te	
Cs	133	165	2	46.61380	ug/l	50	93.2	80	120	Cs	
Ba	137	165	3	48.57443	ug/l	50	97.1	80	120	Ba	
La	139	165	2	51.29571	ug/l	50	102.6	80	120	La	
Ce	140	165	2	51.75065	ug/l	50	103.5	80	120	Ce	
Pr	141	165	2	51.59752	ug/l	50	103.2	80	120	Pr	
Nd	146	165	2	46.97831	ug/l	50	94.0	80	120	Nd	
Sm	147	165	3	48.78959	ug/l	50	97.6	80	120	Sm	
Hf	178	165	2	34.63329	ug/l	50	69.3	80	120	Hf	FAILED
Ta	181	165	2	49.45937	ug/l	50	98.9	80	120	Ta	
W	182	165	2	45.83918	ug/l	50	91.7	80	120	W	
Re	185	193	3	53.27777	ug/l	50	106.6	80	120	Re	
Pt	195	193	2	5.08723	ug/l	5	101.7	80	120	Pt	
Au	197	193	3	51.95093	ug/l	50	103.9	80	120	Au	
Tl	205	193	3	9.52216	ug/l	10	95.2	80	120	Tl	
Pb	208	193	3	48.79765	ug/l	50	97.6	80	120	Pb	
Bi	209	193	2	50.33069	ug/l	50	100.7	80	120	Bi	
Th	232	193	3	52.85159	ug/l	50	105.7	80	120	Th	
U	238	193	3	53.37504	ug/l	50	106.8	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6858047	1.11	7411413	92.5	80	120	Li (IS)	
Sc (IS)	45	2	157726	0.68	143379	110.0	80	120	Sc (IS)	
Sc (IS)	45	3	2515399	0.71	2392712	105.1	80	120	Sc (IS)	
Ge (IS)	72	2	350561	0.78	323154	108.5	80	120	Ge (IS)	
Ge (IS)	72	3	1919140	0.49	1861986	103.1	80	120	Ge (IS)	
In (IS)	115	3	11520111	0.68	12119833	95.1	80	120	In (IS)	
Ho (IS)	165	2	9546797	0.48	9598706	99.5	80	120	Ho (IS)	
Ho (IS)	165	3	13291337	0.91	13687738	97.1	80	120	Ho (IS)	
Ir (IS)	193	2	5421390	0.29	6085322	89.1	80	120	Ir (IS)	
Ir (IS)	193	3	6226112	0.72	6951639	89.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LRC 1841695**
Data File Name	**012SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T16:58:34-06:00**
Type	**Sample**
VialNumber	**1301**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	1056.59829	1056.59829	ug/l	1000	Li	FAILED
Be	9	6	3	1039.33724	1039.33724	ug/l	1000	Be	FAILED
B	11	6	3	2074.27730	2074.27730	ug/l	2000	B	FAILED
Na	23	45	2	48871.96611	48871.96611	ug/l	50000	Na	
Mg	24	45	2	48461.82352	48461.82352	ug/l	50000	Mg	
Al	27	45	2	49677.15948	49677.15948	ug/l	100000	Al	
P	31	45	2	53906.98038	53906.98038	ug/l	100000	P	
K	39	45	2	47888.53326	47888.53326	ug/l	100000	K	
Ca	44	45	3	48519.92399	48519.92399	ug/l	100000	Ca	
Ti	47	45	3	2083.90333	2083.90333	ug/l	2000	Ti	FAILED
V	51	45	2	966.09788	966.09788	ug/l	2000	V	
Cr	52	45	2	935.29158	935.29158	ug/l	2000	Cr	
Mn	55	72	2	1091.18185	1091.18185	ug/l	5000	Mn	
Fe	57	72	2	54236.02539	54236.02539	ug/l	100000	Fe	
Co	59	72	2	1038.77521	1038.77521	ug/l	2000	Co	
Ni	60	72	2	1110.83299	1110.83299	ug/l	2000	Ni	
Cu	63	72	2	1009.62663	1009.62663	ug/l	2000	Cu	
Zn	66	72	2	1121.73834	1121.73834	ug/l	5000	Zn	
As	75	72	2	1167.25242	1167.25242	ug/l	2000	As	
Se	78	72	2	533.31831	533.31831	ug/l	1000	Se	
Sr	88	72	3	1034.38669	1034.38669	ug/l	2000	Sr	
Y	89	72	2	0.03974	0.03974	ug/l	200	Y	
Zr	90	72	2	1011.13083	1011.13083	ug/l	2000	Zr	
Nb	93	72	2	0.54351	0.54351	ug/l	100	Nb	
Mo	95	72	3	1577.88326	1577.88326	ug/l	1000	Mo	FAILED
Ru	101	72	2	0.00581	0.00581	ug/l	200	Ru	
Rh	103	72	2	0.04746	0.04746	ug/l	200	Rh	
Pd	105	72	2	0.05308	0.05308	ug/l	20	Pd	
Ag	107	115	3	165.16870	165.16870	ug/l	400	Ag	
Cd	111	115	3	992.73856	992.73856	ug/l	2000	Cd	
Sn	118	115	3	972.87118	972.87118	ug/l	2000	Sn	
Sb	121	115	3	506.91829	506.91829	ug/l	1000	Sb	
Te	125	165	2	0.13552	0.13552	ug/l	200	Te	
Cs	133	165	2	0.03064	0.03064	ug/l	2000	Cs	
Ba	137	165	3	980.37969	980.37969	ug/l	5000	Ba	
La	139	165	2	1.55245	1.55245	ug/l	200	La	
Ce	140	165	2	0.31804	0.31804	ug/l	200	Ce	
Pr	141	165	2	0.00924	0.00924	ug/l	200	Pr	
Nd	146	165	2	0.02771	0.02771	ug/l	200	Nd	
Sm	147	165	3	989.85527	989.85527	ug/l	2000	Sm	
Hf	178	165	2	0.22645	0.22645	ug/l	200	Hf	
Ta	181	165	2	0.29043	0.29043	ug/l	200	Ta	
W	182	165	2	949.80256	949.80256	ug/l	2000	W	
Re	185	193	3	0.02874	0.02874	ug/l	200	Re	
Pt	195	193	2	0.00967	0.00967	ug/l	200	Pt	
Au	197	193	3	0.06984	0.06984	ug/l	2000	Au	
Tl	205	193	3	206.06472	206.06472	ug/l	400	Tl	
Pb	208	193	3	984.32965	984.32965	ug/l	5000	Pb	
Bi	209	193	2	0.13176	0.13176	ug/l	2000	Bi	
Th	232	193	3	1025.88634	1025.88634	ug/l	2000	Th	
U	238	193	3	1017.23251	1017.23251	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6967016	1.03	7411413	94.0	80	120	Li (IS)	
Sc (IS)	45	2	174476	0.84	143379	121.7	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	2651588	3.64	2392712	110.8	80	120	Sc (IS)	
Ge (IS)	72	2	355368	0.29	323154	110.0	80	120	Ge (IS)	
Ge (IS)	72	3	2005428	1.78	1861986	107.7	80	120	Ge (IS)	
In (IS)	115	3	12418057	3.44	12119833	102.5	80	120	In (IS)	
Ho (IS)	165	2	10070556	0.77	9598706	104.9	80	120	Ho (IS)	
Ho (IS)	165	3	14589090	3.82	13687738	106.6	80	120	Ho (IS)	
Ir (IS)	193	2	5888553	0.30	6085322	96.8	80	120	Ir (IS)	
Ir (IS)	193	3	6853432	3.65	6951639	98.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LRC 1841696**
Data File Name	**013SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:05:16-06:00**
Type	**Sample**
VialNumber	**1302**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	2362.93628	2362.93628	ug/l	1000	Li	FAILED
Be	9	6	3	2305.69576	2305.69576	ug/l	1000	Be	FAILED
B	11	6	3	4641.54815	4641.54815	ug/l	2000	B	FAILED
Na	23	45	2	88950.18428	88950.18428	ug/l	50000	Na	FAILED
Mg	24	45	2	87440.36055	87440.36055	ug/l	50000	Mg	FAILED
Al	27	45	2	89994.75295	89994.75295	ug/l	100000	Al	
P	31	45	2	96728.39053	96728.39053	ug/l	100000	P	
K	39	45	2	87975.60529	87975.60529	ug/l	100000	K	
Ca	44	45	3	98937.81123	98937.81123	ug/l	100000	Ca	
Ti	47	45	3	4175.47968	4175.47968	ug/l	2000	Ti	FAILED
V	51	45	2	1760.42673	1760.42673	ug/l	2000	V	
Cr	52	45	2	1700.73166	1700.73166	ug/l	2000	Cr	
Mn	55	72	2	5251.13081	5251.13081	ug/l	5000	Mn	FAILED
Fe	57	72	2	104349.72278	104349.72278	ug/l	100000	Fe	FAILED
Co	59	72	2	1984.97298	1984.97298	ug/l	2000	Co	
Ni	60	72	2	2094.05432	2094.05432	ug/l	2000	Ni	FAILED
Cu	63	72	2	1882.67033	1882.67033	ug/l	2000	Cu	
Zn	66	72	2	5258.42742	5258.42742	ug/l	5000	Zn	FAILED
As	75	72	2	2256.41552	2256.41552	ug/l	2000	As	FAILED
Se	78	72	2	983.43387	983.43387	ug/l	1000	Se	
Sr	88	72	3	2062.44013	2062.44013	ug/l	2000	Sr	FAILED
Y	89	72	2	0.08344	0.08344	ug/l	200	Y	
Zr	90	72	2	2067.85671	2067.85671	ug/l	2000	Zr	FAILED
Nb	93	72	2	0.27957	0.27957	ug/l	100	Nb	
Mo	95	72	3	3105.46123	3105.46123	ug/l	1000	Mo	FAILED
Ru	101	72	2	0.00136	0.00136	ug/l	200	Ru	
Rh	103	72	2	0.21832	0.21832	ug/l	200	Rh	
Pd	105	72	2	0.10834	0.10834	ug/l	20	Pd	
Ag	107	115	3	297.72205	297.72205	ug/l	400	Ag	
Cd	111	115	3	1984.17547	1984.17547	ug/l	2000	Cd	
Sn	118	115	3	2005.81155	2005.81155	ug/l	2000	Sn	FAILED
Sb	121	115	3	1031.68364	1031.68364	ug/l	1000	Sb	FAILED
Te	125	165	2	0.13818	0.13818	ug/l	200	Te	
Cs	133	165	2	0.04790	0.04790	ug/l	2000	Cs	
Ba	137	165	3	5044.39563	5044.39563	ug/l	5000	Ba	FAILED
La	139	165	2	3.03293	3.03293	ug/l	200	La	
Ce	140	165	2	0.61710	0.61710	ug/l	200	Ce	
Pr	141	165	2	0.01897	0.01897	ug/l	200	Pr	
Nd	146	165	2	0.04652	0.04652	ug/l	200	Nd	
Sm	147	165	3	2036.28200	2036.28200	ug/l	2000	Sm	FAILED
Hf	178	165	2	0.20805	0.20805	ug/l	200	Hf	
Ta	181	165	2	0.30250	0.30250	ug/l	200	Ta	
W	182	165	2	1801.12091	1801.12091	ug/l	2000	W	
Re	185	193	3	0.05624	0.05624	ug/l	200	Re	
Pt	195	193	2	0.01804	0.01804	ug/l	200	Pt	
Au	197	193	3	0.01808	0.01808	ug/l	2000	Au	
Tl	205	193	3	415.57160	415.57160	ug/l	400	Tl	FAILED
Pb	208	193	3	5001.21325	5001.21325	ug/l	5000	Pb	FAILED
Bi	209	193	2	1974.22016	1974.22016	ug/l	2000	Bi	
Th	232	193	3	2095.02732	2095.02732	ug/l	2000	Th	FAILED
U	238	193	3	2038.09025	2038.09025	ug/l	2000	U	FAILED

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6467926	2.12	7411413	87.3	80	120	Li (IS)	
Sc (IS)	45	2	196106	0.83	143379	136.8	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	2778466	0.91	2392712	116.1	80	120	Sc (IS)	
Ge (IS)	72	2	377813	0.97	323154	116.9	80	120	Ge (IS)	
Ge (IS)	72	3	2090159	1.27	1861986	112.3	80	120	Ge (IS)	
In (IS)	115	3	12380824	0.94	12119833	102.2	80	120	In (IS)	
Ho (IS)	165	2	10148882	2.35	9598706	105.7	80	120	Ho (IS)	
Ho (IS)	165	3	14443441	0.98	13687738	105.5	80	120	Ho (IS)	
Ir (IS)	193	2	5766741	1.14	6085322	94.8	80	120	Ir (IS)	
Ir (IS)	193	3	6633721	2.01	6951639	95.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**014_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:12:08-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	100.62074	ug/l	100	100.6	90	110	Li	
Be	9	6	3	101.65446	ug/l	100	101.7	90	110	Be	
B	11	6	3	270.35458	ug/l	200	135.2	90	110	B	FAILED
Na	23	45	2	2544.20500	ug/l	2500	101.8	90	110	Na	
Mg	24	45	2	2542.15656	ug/l	2500	101.7	90	110	Mg	
Al	27	45	2	2405.06971	ug/l	2500	96.2	90	110	Al	
P	31	45	2	2559.84123	ug/l	2500	102.4	90	110	P	
K	39	45	2	2566.31351	ug/l	2500	102.7	90	110	K	
Ca	44	45	3	2566.11954	ug/l	2500	102.6	90	110	Ca	
Ti	47	45	3	102.23061	ug/l	100	102.2	90	110	Ti	
V	51	45	2	97.26836	ug/l	100	97.3	90	110	V	
Cr	52	45	2	103.11004	ug/l	100	103.1	90	110	Cr	
Mn	55	72	2	94.37132	ug/l	100	94.4	90	110	Mn	
Fe	57	72	2	2383.89679	ug/l	2500	95.4	90	110	Fe	
Co	59	72	2	101.65908	ug/l	100	101.7	90	110	Co	
Ni	60	72	2	100.93572	ug/l	100	100.9	90	110	Ni	
Cu	63	72	2	101.30504	ug/l	100	101.3	90	110	Cu	
Zn	66	72	2	101.61800	ug/l	100	101.6	90	110	Zn	
As	75	72	2	101.40619	ug/l	100	101.4	90	110	As	
Se	78	72	2	52.27755	ug/l	50	104.6	90	110	Se	
Sr	88	72	3	101.83574	ug/l	100	101.8	90	110	Sr	
Y	89	72	2	102.90676	ug/l	100	102.9	90	110	Y	
Zr	90	72	2	104.05774	ug/l	100	104.1	90	110	Zr	
Nb	93	72	2	50.72666	ug/l	50	101.5	90	110	Nb	
Mo	95	72	3	48.61099	ug/l	50	97.2	90	110	Mo	
Ru	101	72	2	94.29690	ug/l	100	94.3	90	110	Ru	
Rh	103	72	2	101.76703	ug/l	100	101.8	90	110	Rh	
Pd	105	72	2	10.15105	ug/l	10	101.5	90	110	Pd	
Ag	107	115	3	18.07542	ug/l	20	90.4	90	110	Ag	
Cd	111	115	3	93.46551	ug/l	100	93.5	90	110	Cd	
Sn	118	115	3	100.45664	ug/l	100	100.5	90	110	Sn	
Sb	121	115	3	50.20997	ug/l	50	100.4	90	110	Sb	
Te	125	165	2	100.91604	ug/l	100	100.9	90	110	Te	
Cs	133	165	2	103.06600	ug/l	100	103.1	90	110	Cs	
Ba	137	165	3	92.36333	ug/l	100	92.4	90	110	Ba	
La	139	165	2	102.31674	ug/l	100	102.3	90	110	La	
Ce	140	165	2	101.56320	ug/l	100	101.6	90	110	Ce	
Pr	141	165	2	101.16690	ug/l	100	101.2	90	110	Pr	
Nd	146	165	2	92.19631	ug/l	100	92.2	90	110	Nd	
Sm	147	165	3	101.69486	ug/l	100	101.7	90	110	Sm	
Hf	178	165	2	98.03008	ug/l	100	98.0	90	110	Hf	
Ta	181	165	2	98.45783	ug/l	100	98.5	90	110	Ta	
W	182	165	2	110.76858	ug/l	100	110.8	90	110	W	FAILED
Re	185	193	3	100.56976	ug/l	100	100.6	90	110	Re	
Pt	195	193	2	9.90281	ug/l	10	99.0	90	110	Pt	
Au	197	193	3	100.65504	ug/l	100	100.7	90	110	Au	
Tl	205	193	3	21.04192	ug/l	20	105.2	90	110	Tl	
Pb	208	193	3	100.48349	ug/l	100	100.5	90	110	Pb	
Bi	209	193	2	100.56921	ug/l	100	100.6	90	110	Bi	
Th	232	193	3	98.35265	ug/l	100	98.4	90	110	Th	
U	238	193	3	97.11945	ug/l	100	97.1	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7583811	1.33	7411413	102.3	80	120	Li (IS)	
Sc (IS)	45	2	164764	3.13	143379	114.9	80	120	Sc (IS)	
Sc (IS)	45	3	2723759	2.10	2392712	113.8	80	120	Sc (IS)	
Ge (IS)	72	2	392117	3.17	323154	121.3	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2172163	1.01	1861986	116.7	80	120	Ge (IS)	
In (IS)	115	3	13410940	2.00	12119833	110.7	80	120	In (IS)	
Ho (IS)	165	2	10480758	2.57	9598706	109.2	80	120	Ho (IS)	
Ho (IS)	165	3	14963684	2.17	13687738	109.3	80	120	Ho (IS)	
Ir (IS)	193	2	6442022	1.81	6085322	105.9	80	120	Ir (IS)	
Ir (IS)	193	3	7320281	1.14	6951639	105.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**015_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:18:52-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.53920	ug/l	1.388	Li	
Be	9	6	3	0.02100	ug/l	0.7	Be	
B	11	6	3	51.04497	ug/l	20	B	FAILED
Na	23	45	2	6.59469	ug/l	30	Na	
Mg	24	45	2	1.47649	ug/l	11.18	Mg	
Al	27	45	2	1.75472	ug/l	25.8	Al	
P	31	45	2	3.89677	ug/l	16.46	P	
K	39	45	2	2.48765	ug/l	83.2	K	
Ca	44	45	3	-0.07139	ug/l	136.2	Ca	
Ti	47	45	3	0.57779	ug/l	4.2	Ti	
V	51	45	2	0.09083	ug/l	4.74	V	
Cr	52	45	2	0.04450	ug/l	6.52	Cr	
Mn	55	72	2	0.11695	ug/l	0.49	Mn	
Fe	57	72	2	2.54430	ug/l	40.7	Fe	
Co	59	72	2	0.05213	ug/l	0.434	Co	
Ni	60	72	2	0.04474	ug/l	0.8	Ni	
Cu	63	72	2	-0.09973	ug/l	0.902	Cu	
Zn	66	72	2	0.90967	ug/l	16.58	Zn	
As	75	72	2	0.11582	ug/l	2.36	As	
Se	78	72	2	0.37902	ug/l	3.18	Se	
Sr	88	72	3	0.01716	ug/l	2	Sr	
Y	89	72	2	0.03192	ug/l	0.424	Y	
Zr	90	72	2	0.96186	ug/l	0.496	Zr	FAILED
Nb	93	72	2	0.33131	ug/l	4.62	Nb	
Mo	95	72	3	1.08982	ug/l	2	Mo	
Ru	101	72	2	0.03418	ug/l	2	Ru	
Rh	103	72	2	0.03310	ug/l	1.634	Rh	
Pd	105	72	2	-0.00457	ug/l	0.08	Pd	
Ag	107	115	3	0.01582	ug/l	1.54	Ag	
Cd	111	115	3	0.04520	ug/l	0.4	Cd	
Sn	118	115	3	0.47511	ug/l	2	Sn	
Sb	121	115	3	0.07130	ug/l	3.34	Sb	
Te	125	165	2	0.11660	ug/l	1.072	Te	
Cs	133	165	2	0.03318	ug/l	0.106	Cs	
Ba	137	165	3	0.03387	ug/l	0.446	Ba	
La	139	165	2	0.03179	ug/l	0.102	La	
Ce	140	165	2	0.03277	ug/l	1.772	Ce	
Pr	141	165	2	0.03112	ug/l	0.084	Pr	
Nd	146	165	2	0.03514	ug/l	0.208	Nd	
Sm	147	165	3	0.01657	ug/l	0.652	Sm	
Hf	178	165	2	0.07342	ug/l	2.26	Hf	
Ta	181	165	2	0.04594	ug/l	1.46	Ta	
W	182	165	2	3.27441	ug/l	4	W	
Re	185	193	3	0.00869	ug/l	0.05	Re	
Pt	195	193	2	0.00569	ug/l	0.12	Pt	
Au	197	193	3	0.15321	ug/l	1	Au	
Tl	205	193	3	0.14547	ug/l	1.1	Tl	
Pb	208	193	3	0.26974	ug/l	0.346	Pb	
Bi	209	193	2	0.22335	ug/l	1.464	Bi	
Th	232	193	3	0.13807	ug/l	1.104	Th	
U	238	193	3	0.02340	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7609057	0.84	7411413	102.7	80	120	Li (IS)	
Sc (IS)	45	2	163591	0.82	143379	114.1	80	120	Sc (IS)	
Sc (IS)	45	3	2766998	0.47	2392712	115.6	80	120	Sc (IS)	
Ge (IS)	72	2	369128	0.49	323154	114.2	80	120	Ge (IS)	
Ge (IS)	72	3	2167844	2.01	1861986	116.4	80	120	Ge (IS)	
In (IS)	115	3	13717766	1.01	12119833	113.2	80	120	In (IS)	
Ho (IS)	165	2	10299686	0.54	9598706	107.3	80	120	Ho (IS)	
Ho (IS)	165	3	15203523	0.50	13687738	111.1	80	120	Ho (IS)	
Ir (IS)	193	2	6433020	0.38	6085322	105.7	80	120	Ir (IS)	
Ir (IS)	193	3	7500458	0.79	6951639	107.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LB 160-453305/1-C**
Data File Name	**016SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:25:37-06:00**
Type	**Sample**
VialNumber	**2101**
Dilution	**2**
Comment	**453488**
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.73499	1.46997	ug/l	1000	Li	
Be	9	6	3	0.00611	0.01222	ug/l	1000	Be	
B	11	6	3	39.27917	78.55835	ug/l	2000	B	
Na	23	45	2	56566.22877	113132.45753	ug/l	50000	Na	FAILED
Mg	24	45	2	16.18744	32.37489	ug/l	50000	Mg	
Al	27	45	2	4.79844	9.59688	ug/l	100000	Al	
P	31	45	2	3.69079	7.38158	ug/l	100000	P	
K	39	45	2	17.79149	35.58298	ug/l	100000	K	
Ca	44	45	3	92.39848	184.79696	ug/l	100000	Ca	
Ti	47	45	3	0.51945	1.03891	ug/l	2000	Ti	
V	51	45	2	0.09087	0.18173	ug/l	2000	V	
Cr	52	45	2	0.11526	0.23051	ug/l	2000	Cr	
Mn	55	72	2	0.24840	0.49679	ug/l	5000	Mn	
Fe	57	72	2	1.84696	3.69392	ug/l	100000	Fe	
Co	59	72	2	0.00589	0.01178	ug/l	2000	Co	
Ni	60	72	2	0.00559	0.01118	ug/l	2000	Ni	
Cu	63	72	2	-0.14407	-0.28814	ug/l	2000	Cu	
Zn	66	72	2	1.36363	2.72725	ug/l	5000	Zn	
As	75	72	2	0.04617	0.09234	ug/l	2000	As	
Se	78	72	2	0.41377	0.82755	ug/l	1000	Se	
Sr	88	72	3	0.18409	0.36818	ug/l	2000	Sr	
Y	89	72	2	0.00389	0.00778	ug/l	200	Y	
Zr	90	72	2	0.77999	1.55998	ug/l	2000	Zr	
Nb	93	72	2	0.09226	0.18451	ug/l	100	Nb	
Mo	95	72	3	0.68518	1.37035	ug/l	1000	Mo	
Ru	101	72	2	-0.00156	-0.00312	ug/l	200	Ru	
Rh	103	72	2	-0.00486	-0.00971	ug/l	200	Rh	
Pd	105	72	2	-0.00747	-0.01494	ug/l	20	Pd	
Ag	107	115	3	0.01171	0.02341	ug/l	400	Ag	
Cd	111	115	3	0.00650	0.01301	ug/l	2000	Cd	
Sn	118	115	3	0.30047	0.60095	ug/l	2000	Sn	
Sb	121	115	3	0.02026	0.04052	ug/l	1000	Sb	
Te	125	165	2	0.03187	0.06373	ug/l	200	Te	
Cs	133	165	2	0.00156	0.00311	ug/l	2000	Cs	
Ba	137	165	3	0.21140	0.42280	ug/l	5000	Ba	
La	139	165	2	-0.00071	-0.00142	ug/l	200	La	
Ce	140	165	2	0.00047	0.00094	ug/l	200	Ce	
Pr	141	165	2	-0.00099	-0.00199	ug/l	200	Pr	
Nd	146	165	2	0.00347	0.00693	ug/l	200	Nd	
Sm	147	165	3	0.00289	0.00578	ug/l	2000	Sm	
Hf	178	165	2	0.03240	0.06479	ug/l	200	Hf	
Ta	181	165	2	0.01801	0.03602	ug/l	200	Ta	
W	182	165	2	2.61843	5.23687	ug/l	2000	W	
Re	185	193	3	-0.00011	-0.00022	ug/l	200	Re	
Pt	195	193	2	0.00197	0.00393	ug/l	200	Pt	
Au	197	193	3	0.01162	0.02325	ug/l	2000	Au	
Tl	205	193	3	0.03191	0.06381	ug/l	400	Tl	
Pb	208	193	3	0.17897	0.35794	ug/l	5000	Pb	
Bi	209	193	2	0.08282	0.16565	ug/l	2000	Bi	
Th	232	193	3	0.07911	0.15821	ug/l	2000	Th	
U	238	193	3	0.00657	0.01315	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7449859	6.58	7411413	100.5	80	120	Li (IS)	
Sc (IS)	45	2	158067	7.94	143379	110.2	80	120	Sc (IS)	
Sc (IS)	45	3	2734928	9.50	2392712	114.3	80	120	Sc (IS)	
Ge (IS)	72	2	357960	6.72	323154	110.8	80	120	Ge (IS)	
Ge (IS)	72	3	2091370	7.05	1861986	112.3	80	120	Ge (IS)	
In (IS)	115	3	13226863	9.81	12119833	109.1	80	120	In (IS)	
Ho (IS)	165	2	9923692	8.38	9598706	103.4	80	120	Ho (IS)	
Ho (IS)	165	3	14744652	9.19	13687738	107.7	80	120	Ho (IS)	
Ir (IS)	193	2	6145985	7.86	6085322	101.0	80	120	Ir (IS)	
Ir (IS)	193	3	7254687	10.37	6951639	104.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCS 160-453488/2-A**
Data File Name	**017SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:32:22-06:00**
Type	**Sample**
VialNumber	**2102**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	10.74286	21.48573	ug/l	1000	Li	
Be	9	6	3	9.81786	19.63572	ug/l	1000	Be	
B	11	6	3	40.32011	80.64021	ug/l	2000	B	
Na	23	45	2	52350.32112	104700.64224	ug/l	50000	Na	FAILED
Mg	24	45	2	965.07494	1930.14987	ug/l	50000	Mg	
Al	27	45	2	941.92015	1883.84030	ug/l	100000	Al	
P	31	45	2	95.08173	190.16346	ug/l	100000	P	
K	39	45	2	961.78622	1923.57243	ug/l	100000	K	
Ca	44	45	3	1107.92548	2215.85097	ug/l	100000	Ca	
Ti	47	45	3	96.62823	193.25647	ug/l	2000	Ti	
V	51	45	2	95.66941	191.33882	ug/l	2000	V	
Cr	52	45	2	100.84117	201.68234	ug/l	2000	Cr	
Mn	55	72	2	95.80961	191.61922	ug/l	5000	Mn	
Fe	57	72	2	963.08977	1926.17955	ug/l	100000	Fe	
Co	59	72	2	104.17209	208.34418	ug/l	2000	Co	
Ni	60	72	2	103.32925	206.65849	ug/l	2000	Ni	
Cu	63	72	2	106.54375	213.08750	ug/l	2000	Cu	
Zn	66	72	2	103.23436	206.46872	ug/l	5000	Zn	
As	75	72	2	102.37477	204.74953	ug/l	2000	As	
Se	78	72	2	50.53355	101.06711	ug/l	1000	Se	
Sr	88	72	3	99.81269	199.62537	ug/l	2000	Sr	
Y	89	72	2	0.00175	0.00350	ug/l	200	Y	
Zr	90	72	2	105.60612	211.21224	ug/l	2000	Zr	
Nb	93	72	2	0.27500	0.55000	ug/l	100	Nb	
Mo	95	72	3	46.18242	92.36483	ug/l	1000	Mo	
Ru	101	72	2	-0.00150	-0.00300	ug/l	200	Ru	
Rh	103	72	2	0.00020	0.00040	ug/l	200	Rh	
Pd	105	72	2	-0.00095	-0.00190	ug/l	20	Pd	
Ag	107	115	3	17.54015	35.08031	ug/l	400	Ag	
Cd	111	115	3	90.42894	180.85788	ug/l	2000	Cd	
Sn	118	115	3	95.90959	191.81918	ug/l	2000	Sn	
Sb	121	115	3	48.46962	96.93923	ug/l	1000	Sb	
Te	125	165	2	0.01114	0.02227	ug/l	200	Te	
Cs	133	165	2	0.00033	0.00067	ug/l	2000	Cs	
Ba	137	165	3	88.72857	177.45713	ug/l	5000	Ba	
La	139	165	2	0.14867	0.29734	ug/l	200	La	
Ce	140	165	2	0.00470	0.00941	ug/l	200	Ce	
Pr	141	165	2	-0.00081	-0.00163	ug/l	200	Pr	
Nd	146	165	2	0.00299	0.00598	ug/l	200	Nd	
Sm	147	165	3	98.69516	197.39032	ug/l	2000	Sm	
Hf	178	165	2	0.34063	0.68127	ug/l	200	Hf	
Ta	181	165	2	0.17013	0.34026	ug/l	200	Ta	
W	182	165	2	99.84327	199.68655	ug/l	2000	W	
Re	185	193	3	-0.00067	-0.00135	ug/l	200	Re	
Pt	195	193	2	0.00234	0.00468	ug/l	200	Pt	
Au	197	193	3	-0.01114	-0.02227	ug/l	2000	Au	
Tl	205	193	3	17.60194	35.20388	ug/l	400	Tl	
Pb	208	193	3	95.43336	190.86673	ug/l	5000	Pb	
Bi	209	193	2	97.64554	195.29109	ug/l	2000	Bi	
Th	232	193	3	94.62927	189.25854	ug/l	2000	Th	
U	238	193	3	95.42949	190.85897	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7492211	0.84	7411413	101.1	80	120	Li (IS)	
Sc (IS)	45	2	165989	7.32	143379	115.8	80	120	Sc (IS)	
Sc (IS)	45	3	2749933	0.48	2392712	114.9	80	120	Sc (IS)	
Ge (IS)	72	2	375767	5.61	323154	116.3	80	120	Ge (IS)	
Ge (IS)	72	3	2150028	1.73	1861986	115.5	80	120	Ge (IS)	
In (IS)	115	3	13377699	1.35	12119833	110.4	80	120	In (IS)	
Ho (IS)	165	2	10348488	8.31	9598706	107.8	80	120	Ho (IS)	
Ho (IS)	165	3	15129737	0.92	13687738	110.5	80	120	Ho (IS)	
Ir (IS)	193	2	6328083	7.16	6085322	104.0	80	120	Ir (IS)	
Ir (IS)	193	3	7375155	1.42	6951639	106.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36545-A-1-B**
Data File Name	**018SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:39:05-06:00**
Type	**Sample**
VialNumber	**2103**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	4.84956	9.69913	ug/l	1000	Li	
Be	9	6	3	0.00872	0.01744	ug/l	1000	Be	
B	11	6	3	70.25087	140.50175	ug/l	2000	B	
Na	23	45	2	50969.10583	101938.21167	ug/l	50000	Na	FAILED
Mg	24	45	2	1746.30959	3492.61917	ug/l	50000	Mg	
Al	27	45	2	293.82584	587.65168	ug/l	100000	Al	
P	31	45	2	9.02012	18.04024	ug/l	100000	P	
K	39	45	2	300.51653	601.03307	ug/l	100000	K	
Ca	44	45	3	10211.26721	20422.53442	ug/l	100000	Ca	
Ti	47	45	3	0.55600	1.11199	ug/l	2000	Ti	
V	51	45	2	0.01716	0.03433	ug/l	2000	V	
Cr	52	45	2	1.74075	3.48150	ug/l	2000	Cr	
Mn	55	72	2	183.36491	366.72982	ug/l	5000	Mn	
Fe	57	72	2	1466.56196	2933.12391	ug/l	100000	Fe	
Co	59	72	2	6.55741	13.11483	ug/l	2000	Co	
Ni	60	72	2	37.48309	74.96619	ug/l	2000	Ni	
Cu	63	72	2	18.57388	37.14775	ug/l	2000	Cu	
Zn	66	72	2	12818.43307	25636.86615	ug/l	5000	Zn	FAILED
As	75	72	2	0.07528	0.15056	ug/l	2000	As	
Se	78	72	2	0.42373	0.84746	ug/l	1000	Se	
Sr	88	72	3	35.14381	70.28763	ug/l	2000	Sr	
Y	89	72	2	0.25525	0.51049	ug/l	200	Y	
Zr	90	72	2	0.16367	0.32734	ug/l	2000	Zr	
Nb	93	72	2	-0.02932	-0.05864	ug/l	100	Nb	
Mo	95	72	3	0.48699	0.97398	ug/l	1000	Mo	
Ru	101	72	2	-0.00224	-0.00448	ug/l	200	Ru	
Rh	103	72	2	0.00011	0.00022	ug/l	200	Rh	
Pd	105	72	2	-0.00737	-0.01474	ug/l	20	Pd	
Ag	107	115	3	0.01081	0.02163	ug/l	400	Ag	
Cd	111	115	3	6.77427	13.54854	ug/l	2000	Cd	
Sn	118	115	3	0.22165	0.44331	ug/l	2000	Sn	
Sb	121	115	3	0.27101	0.54202	ug/l	1000	Sb	
Te	125	165	2	-0.00544	-0.01089	ug/l	200	Te	
Cs	133	165	2	0.00419	0.00838	ug/l	2000	Cs	
Ba	137	165	3	22.77134	45.54267	ug/l	5000	Ba	
La	139	165	2	0.24016	0.48032	ug/l	200	La	
Ce	140	165	2	0.36478	0.72956	ug/l	200	Ce	
Pr	141	165	2	0.11642	0.23284	ug/l	200	Pr	
Nd	146	165	2	1.07510	2.15020	ug/l	200	Nd	
Sm	147	165	3	0.15881	0.31762	ug/l	2000	Sm	
Hf	178	165	2	0.00126	0.00253	ug/l	200	Hf	
Ta	181	165	2	0.00015	0.00030	ug/l	200	Ta	
W	182	165	2	1.69469	3.38938	ug/l	2000	W	
Re	185	193	3	-0.00268	-0.00535	ug/l	200	Re	
Pt	195	193	2	0.00241	0.00482	ug/l	200	Pt	
Au	197	193	3	-0.02282	-0.04563	ug/l	2000	Au	
Tl	205	193	3	0.03637	0.07273	ug/l	400	Tl	
Pb	208	193	3	99.84260	199.68520	ug/l	5000	Pb	
Bi	209	193	2	0.03557	0.07114	ug/l	2000	Bi	
Th	232	193	3	0.08101	0.16202	ug/l	2000	Th	
U	238	193	3	0.04973	0.09946	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7390775	0.90	7411413	99.7	80	120	Li (IS)	
Sc (IS)	45	2	166669	2.41	143379	116.2	80	120	Sc (IS)	
Sc (IS)	45	3	2785261	0.38	2392712	116.4	80	120	Sc (IS)	
Ge (IS)	72	2	373990	1.15	323154	115.7	80	120	Ge (IS)	
Ge (IS)	72	3	2149986	0.46	1861986	115.5	80	120	Ge (IS)	
In (IS)	115	3	13539817	0.24	12119833	111.7	80	120	In (IS)	
Ho (IS)	165	2	10478834	2.43	9598706	109.2	80	120	Ho (IS)	
Ho (IS)	165	3	15246892	0.46	13687738	111.4	80	120	Ho (IS)	
Ir (IS)	193	2	6347044	2.19	6085322	104.3	80	120	Ir (IS)	
Ir (IS)	193	3	7400395	0.60	6951639	106.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36545-A-1-B SD**
Data File Name	**019SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:45:49-06:00**
Type	**Sample**
VialNumber	**2104**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	1.41361	14.13607	ug/l	1000	Li	
Be	9	6	3	-0.00440	-0.04397	ug/l	1000	Be	
B	11	6	3	18.58787	185.87871	ug/l	2000	B	
Na	23	45	2	10139.80114	101398.01142	ug/l	50000	Na	
Mg	24	45	2	327.69901	3276.99011	ug/l	50000	Mg	
Al	27	45	2	85.09173	850.91730	ug/l	100000	Al	
P	31	45	2	1.61247	16.12472	ug/l	100000	P	
K	39	45	2	60.58341	605.83409	ug/l	100000	K	
Ca	44	45	3	2125.22697	21252.26965	ug/l	100000	Ca	
Ti	47	45	3	0.19007	1.90069	ug/l	2000	Ti	
V	51	45	2	0.03598	0.35975	ug/l	2000	V	
Cr	52	45	2	0.34541	3.45410	ug/l	2000	Cr	
Mn	55	72	2	33.51190	335.11897	ug/l	5000	Mn	
Fe	57	72	2	296.58828	2965.88275	ug/l	100000	Fe	
Co	59	72	2	1.29203	12.92032	ug/l	2000	Co	
Ni	60	72	2	7.51745	75.17448	ug/l	2000	Ni	
Cu	63	72	2	3.76548	37.65482	ug/l	2000	Cu	
Zn	66	72	2	2586.80539	25868.05386	ug/l	5000	Zn	
As	75	72	2	-0.00334	-0.03336	ug/l	2000	As	
Se	78	72	2	0.34942	3.49419	ug/l	1000	Se	
Sr	88	72	3	6.55636	65.56359	ug/l	2000	Sr	
Y	89	72	2	0.04572	0.45718	ug/l	200	Y	
Zr	90	72	2	0.07660	0.76604	ug/l	2000	Zr	
Nb	93	72	2	-0.02452	-0.24519	ug/l	100	Nb	
Mo	95	72	3	0.33102	3.31017	ug/l	1000	Mo	
Ru	101	72	2	-0.00363	-0.03632	ug/l	200	Ru	
Rh	103	72	2	-0.00358	-0.03582	ug/l	200	Rh	
Pd	105	72	2	-0.00888	-0.08878	ug/l	20	Pd	
Ag	107	115	3	0.00540	0.05396	ug/l	400	Ag	
Cd	111	115	3	1.39825	13.98252	ug/l	2000	Cd	
Sn	118	115	3	0.07156	0.71556	ug/l	2000	Sn	
Sb	121	115	3	0.04362	0.43625	ug/l	1000	Sb	
Te	125	165	2	-0.00548	-0.05479	ug/l	200	Te	
Cs	133	165	2	-0.00279	-0.02787	ug/l	2000	Cs	
Ba	137	165	3	4.67697	46.76975	ug/l	5000	Ba	
La	139	165	2	0.04410	0.44096	ug/l	200	La	
Ce	140	165	2	0.06837	0.68366	ug/l	200	Ce	
Pr	141	165	2	0.01838	0.18384	ug/l	200	Pr	
Nd	146	165	2	0.20792	2.07922	ug/l	200	Nd	
Sm	147	165	3	0.02886	0.28856	ug/l	2000	Sm	
Hf	178	165	2	0.00027	0.00274	ug/l	200	Hf	
Ta	181	165	2	0.00381	0.03810	ug/l	200	Ta	
W	182	165	2	0.91614	9.16143	ug/l	2000	W	
Re	185	193	3	-0.00316	-0.03165	ug/l	200	Re	
Pt	195	193	2	0.00128	0.01278	ug/l	200	Pt	
Au	197	193	3	-0.02340	-0.23403	ug/l	2000	Au	
Tl	205	193	3	-0.00315	-0.03150	ug/l	400	Tl	
Pb	208	193	3	18.61558	186.15578	ug/l	5000	Pb	
Bi	209	193	2	0.02042	0.20420	ug/l	2000	Bi	
Th	232	193	3	0.01248	0.12484	ug/l	2000	Th	
U	238	193	3	0.00801	0.08006	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7360306	3.92	7411413	99.3	80	120	Li (IS)	
Sc (IS)	45	2	163861	1.25	143379	114.3	80	120	Sc (IS)	
Sc (IS)	45	3	2696852	6.10	2392712	112.7	80	120	Sc (IS)	
Ge (IS)	72	2	368594	1.79	323154	114.1	80	120	Ge (IS)	
Ge (IS)	72	3	2132506	4.27	1861986	114.5	80	120	Ge (IS)	
In (IS)	115	3	13344312	6.14	12119833	110.1	80	120	In (IS)	
Ho (IS)	165	2	10309130	0.70	9598706	107.4	80	120	Ho (IS)	
Ho (IS)	165	3	14765380	6.19	13687738	107.9	80	120	Ho (IS)	
Ir (IS)	193	2	6345093	1.27	6085322	104.3	80	120	Ir (IS)	
Ir (IS)	193	3	7297403	5.10	6951639	105.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36545-A-1-C MS**
Data File Name	**020SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:52:32-06:00**
Type	**Sample**
VialNumber	**2105**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	15.07052	30.14104	ug/l	1000	Li	
Be	9	6	3	10.01397	20.02794	ug/l	1000	Be	
B	11	6	3	90.16188	180.32375	ug/l	2000	B	
Na	23	45	2	53368.14885	106736.29770	ug/l	50000	Na	FAILED
Mg	24	45	2	2771.06725	5542.13451	ug/l	50000	Mg	
Al	27	45	2	1211.94652	2423.89305	ug/l	100000	Al	
P	31	45	2	106.30072	212.60144	ug/l	100000	P	
K	39	45	2	1306.73836	2613.47672	ug/l	100000	K	
Ca	44	45	3	11552.30661	23104.61321	ug/l	100000	Ca	
Ti	47	45	3	96.28713	192.57426	ug/l	2000	Ti	
V	51	45	2	95.50702	191.01403	ug/l	2000	V	
Cr	52	45	2	102.87627	205.75254	ug/l	2000	Cr	
Mn	55	72	2	284.98527	569.97054	ug/l	5000	Mn	
Fe	57	72	2	2424.94203	4849.88407	ug/l	100000	Fe	
Co	59	72	2	109.98109	219.96218	ug/l	2000	Co	
Ni	60	72	2	137.74462	275.48923	ug/l	2000	Ni	
Cu	63	72	2	124.13303	248.26605	ug/l	2000	Cu	
Zn	66	72	2	12916.97341	25833.94682	ug/l	5000	Zn	FAILED
As	75	72	2	100.81179	201.62358	ug/l	2000	As	
Se	78	72	2	48.83719	97.67438	ug/l	1000	Se	
Sr	88	72	3	132.84491	265.68983	ug/l	2000	Sr	
Y	89	72	2	0.26036	0.52071	ug/l	200	Y	
Zr	90	72	2	103.21040	206.42080	ug/l	2000	Zr	
Nb	93	72	2	0.09110	0.18219	ug/l	100	Nb	
Mo	95	72	3	45.66705	91.33410	ug/l	1000	Mo	
Ru	101	72	2	0.00022	0.00044	ug/l	200	Ru	
Rh	103	72	2	0.00491	0.00981	ug/l	200	Rh	
Pd	105	72	2	0.00126	0.00251	ug/l	20	Pd	
Ag	107	115	3	17.31866	34.63731	ug/l	400	Ag	
Cd	111	115	3	96.05098	192.10197	ug/l	2000	Cd	
Sn	118	115	3	95.39591	190.79183	ug/l	2000	Sn	
Sb	121	115	3	49.05674	98.11349	ug/l	1000	Sb	
Te	125	165	2	-0.00536	-0.01072	ug/l	200	Te	
Cs	133	165	2	0.00688	0.01376	ug/l	2000	Cs	
Ba	137	165	3	122.62796	245.25592	ug/l	5000	Ba	
La	139	165	2	0.39789	0.79578	ug/l	200	La	
Ce	140	165	2	0.38622	0.77244	ug/l	200	Ce	
Pr	141	165	2	0.11757	0.23513	ug/l	200	Pr	
Nd	146	165	2	1.06975	2.13950	ug/l	200	Nd	
Sm	147	165	3	98.37027	196.74055	ug/l	2000	Sm	
Hf	178	165	2	0.10224	0.20447	ug/l	200	Hf	
Ta	181	165	2	0.12875	0.25749	ug/l	200	Ta	
W	182	165	2	100.62442	201.24884	ug/l	2000	W	
Re	185	193	3	-0.00065	-0.00131	ug/l	200	Re	
Pt	195	193	2	0.00233	0.00465	ug/l	200	Pt	
Au	197	193	3	-0.03061	-0.06122	ug/l	2000	Au	
Tl	205	193	3	17.65145	35.30291	ug/l	400	Tl	
Pb	208	193	3	198.56270	397.12541	ug/l	5000	Pb	
Bi	209	193	2	94.30796	188.61593	ug/l	2000	Bi	
Th	232	193	3	95.35680	190.71360	ug/l	2000	Th	
U	238	193	3	97.25215	194.50430	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7415399	1.05	7411413	100.1	80	120	Li (IS)	
Sc (IS)	45	2	164014	1.41	143379	114.4	80	120	Sc (IS)	
Sc (IS)	45	3	2838168	0.51	2392712	118.6	80	120	Sc (IS)	
Ge (IS)	72	2	373767	2.06	323154	115.7	80	120	Ge (IS)	
Ge (IS)	72	3	2237656	1.21	1861986	120.2	80	120	Ge (IS)	FAILED
In (IS)	115	3	13684607	1.31	12119833	112.9	80	120	In (IS)	
Ho (IS)	165	2	10247759	1.51	9598706	106.8	80	120	Ho (IS)	
Ho (IS)	165	3	15433671	1.35	13687738	112.8	80	120	Ho (IS)	
Ir (IS)	193	2	6329922	2.86	6085322	104.0	80	120	Ir (IS)	
Ir (IS)	193	3	7458520	1.90	6951639	107.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36545-A-1-D MSD**
Data File Name	**021SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T17:59:14-06:00**
Type	**Sample**
VialNumber	**2106**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	14.98152	29.96304	ug/l	1000	Li	
Be	9	6	3	9.85653	19.71307	ug/l	1000	Be	
B	11	6	3	98.93003	197.86006	ug/l	2000	B	
Na	23	45	2	56704.89205	113409.78410	ug/l	50000	Na	FAILED
Mg	24	45	2	2912.49922	5824.99844	ug/l	50000	Mg	
Al	27	45	2	1324.00977	2648.01954	ug/l	100000	Al	
P	31	45	2	103.65101	207.30203	ug/l	100000	P	
K	39	45	2	1371.89007	2743.78014	ug/l	100000	K	
Ca	44	45	3	11867.81478	23735.62956	ug/l	100000	Ca	
Ti	47	45	3	97.39126	194.78252	ug/l	2000	Ti	
V	51	45	2	99.49454	198.98908	ug/l	2000	V	
Cr	52	45	2	107.40129	214.80258	ug/l	2000	Cr	
Mn	55	72	2	300.50856	601.01712	ug/l	5000	Mn	
Fe	57	72	2	2555.42952	5110.85903	ug/l	100000	Fe	
Co	59	72	2	114.35348	228.70697	ug/l	2000	Co	
Ni	60	72	2	145.15865	290.31729	ug/l	2000	Ni	
Cu	63	72	2	129.48938	258.97876	ug/l	2000	Cu	
Zn	66	72	2	13687.38053	27374.76106	ug/l	5000	Zn	FAILED
As	75	72	2	105.37291	210.74582	ug/l	2000	As	
Se	78	72	2	52.39554	104.79108	ug/l	1000	Se	
Sr	88	72	3	136.72754	273.45507	ug/l	2000	Sr	
Y	89	72	2	0.27837	0.55673	ug/l	200	Y	
Zr	90	72	2	107.35064	214.70129	ug/l	2000	Zr	
Nb	93	72	2	0.05033	0.10065	ug/l	100	Nb	
Mo	95	72	3	46.41772	92.83544	ug/l	1000	Mo	
Ru	101	72	2	0.00160	0.00319	ug/l	200	Ru	
Rh	103	72	2	0.00541	0.01083	ug/l	200	Rh	
Pd	105	72	2	0.00031	0.00061	ug/l	20	Pd	
Ag	107	115	3	17.28632	34.57264	ug/l	400	Ag	
Cd	111	115	3	97.26070	194.52140	ug/l	2000	Cd	
Sn	118	115	3	95.09089	190.18179	ug/l	2000	Sn	
Sb	121	115	3	49.01576	98.03152	ug/l	1000	Sb	
Te	125	165	2	0.03485	0.06969	ug/l	200	Te	
Cs	133	165	2	0.00659	0.01318	ug/l	2000	Cs	
Ba	137	165	3	122.46809	244.93619	ug/l	5000	Ba	
La	139	165	2	0.41829	0.83658	ug/l	200	La	
Ce	140	165	2	0.40711	0.81421	ug/l	200	Ce	
Pr	141	165	2	0.12794	0.25589	ug/l	200	Pr	
Nd	146	165	2	1.13899	2.27799	ug/l	200	Nd	
Sm	147	165	3	97.74909	195.49818	ug/l	2000	Sm	
Hf	178	165	2	0.11507	0.23014	ug/l	200	Hf	
Ta	181	165	2	0.12191	0.24383	ug/l	200	Ta	
W	182	165	2	104.34876	208.69753	ug/l	2000	W	
Re	185	193	3	-0.00068	-0.00137	ug/l	200	Re	
Pt	195	193	2	-0.00024	-0.00047	ug/l	200	Pt	
Au	197	193	3	-0.03337	-0.06674	ug/l	2000	Au	
Tl	205	193	3	17.71800	35.43600	ug/l	400	Tl	
Pb	208	193	3	201.70414	403.40829	ug/l	5000	Pb	
Bi	209	193	2	99.67651	199.35303	ug/l	2000	Bi	
Th	232	193	3	95.14232	190.28464	ug/l	2000	Th	
U	238	193	3	96.38900	192.77800	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7299130	0.58	7411413	98.5	80	120	Li (IS)	
Sc (IS)	45	2	160078	6.42	143379	111.6	80	120	Sc (IS)	
Sc (IS)	45	3	2750339	1.25	2392712	114.9	80	120	Sc (IS)	
Ge (IS)	72	2	365142	5.06	323154	113.0	80	120	Ge (IS)	
Ge (IS)	72	3	2161256	0.42	1861986	116.1	80	120	Ge (IS)	
In (IS)	115	3	13367891	0.67	12119833	110.3	80	120	In (IS)	
Ho (IS)	165	2	10003347	6.88	9598706	104.2	80	120	Ho (IS)	
Ho (IS)	165	3	15194308	0.72	13687738	111.0	80	120	Ho (IS)	
Ir (IS)	193	2	6102023	6.51	6085322	100.3	80	120	Ir (IS)	
Ir (IS)	193	3	7325099	0.91	6951639	105.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**MB 160-452973/1-A**
Data File Name	**022SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:06:01-06:00**
Type	**Sample**
VialNumber	**2107**
Dilution	**2**
Comment	**452973**
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.60232	1.20463	ug/l	1000	Li	
Be	9	6	3	-0.00965	-0.01931	ug/l	1000	Be	
B	11	6	3	5.30270	10.60540	ug/l	2000	B	
Na	23	45	2	12.08509	24.17018	ug/l	50000	Na	
Mg	24	45	2	1.26963	2.53926	ug/l	50000	Mg	
Al	27	45	2	57.82610	115.65219	ug/l	100000	Al	
P	31	45	2	8.86137	17.72273	ug/l	100000	P	
K	39	45	2	2.41910	4.83820	ug/l	100000	K	
Ca	44	45	3	13.72439	27.44878	ug/l	100000	Ca	
Ti	47	45	3	0.23897	0.47795	ug/l	2000	Ti	
V	51	45	2	0.09653	0.19306	ug/l	2000	V	
Cr	52	45	2	0.03345	0.06691	ug/l	2000	Cr	
Mn	55	72	2	0.11312	0.22623	ug/l	5000	Mn	
Fe	57	72	2	1.61327	3.22655	ug/l	100000	Fe	
Co	59	72	2	0.00001	0.00001	ug/l	2000	Co	
Ni	60	72	2	0.03232	0.06464	ug/l	2000	Ni	
Cu	63	72	2	0.31838	0.63676	ug/l	2000	Cu	
Zn	66	72	2	6.00260	12.00520	ug/l	5000	Zn	
As	75	72	2	0.05322	0.10645	ug/l	2000	As	
Se	78	72	2	0.07675	0.15350	ug/l	1000	Se	
Sr	88	72	3	0.02402	0.04803	ug/l	2000	Sr	
Y	89	72	2	-0.00385	-0.00770	ug/l	200	Y	
Zr	90	72	2	0.05393	0.10787	ug/l	2000	Zr	
Nb	93	72	2	-0.06514	-0.13027	ug/l	100	Nb	
Mo	95	72	3	0.23538	0.47076	ug/l	1000	Mo	
Ru	101	72	2	-0.00184	-0.00369	ug/l	200	Ru	
Rh	103	72	2	-0.00463	-0.00927	ug/l	200	Rh	
Pd	105	72	2	-0.00786	-0.01571	ug/l	20	Pd	
Ag	107	115	3	0.00836	0.01671	ug/l	400	Ag	
Cd	111	115	3	-0.00163	-0.00325	ug/l	2000	Cd	
Sn	118	115	3	0.19455	0.38910	ug/l	2000	Sn	
Sb	121	115	3	-0.00116	-0.00232	ug/l	1000	Sb	
Te	125	165	2	0.00567	0.01134	ug/l	200	Te	
Cs	133	165	2	-0.00362	-0.00724	ug/l	2000	Cs	
Ba	137	165	3	0.04948	0.09896	ug/l	5000	Ba	
La	139	165	2	-0.00309	-0.00618	ug/l	200	La	
Ce	140	165	2	-0.00276	-0.00553	ug/l	200	Ce	
Pr	141	165	2	-0.00251	-0.00502	ug/l	200	Pr	
Nd	146	165	2	-0.00126	-0.00251	ug/l	200	Nd	
Sm	147	165	3	-0.00350	-0.00699	ug/l	2000	Sm	
Hf	178	165	2	-0.00385	-0.00769	ug/l	200	Hf	
Ta	181	165	2	0.00178	0.00357	ug/l	200	Ta	
W	182	165	2	1.78510	3.57020	ug/l	2000	W	
Re	185	193	3	-0.00231	-0.00462	ug/l	200	Re	
Pt	195	193	2	0.00300	0.00599	ug/l	200	Pt	
Au	197	193	3	-0.03372	-0.06743	ug/l	2000	Au	
Tl	205	193	3	0.02988	0.05976	ug/l	400	Tl	
Pb	208	193	3	0.23695	0.47389	ug/l	5000	Pb	
Bi	209	193	2	0.04521	0.09042	ug/l	2000	Bi	
Th	232	193	3	0.09049	0.18098	ug/l	2000	Th	
U	238	193	3	-0.00014	-0.00028	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7372179	0.85	7411413	99.5	80	120	Li (IS)	
Sc (IS)	45	2	165227	0.70	143379	115.2	80	120	Sc (IS)	
Sc (IS)	45	3	2815182	0.15	2392712	117.7	80	120	Sc (IS)	
Ge (IS)	72	2	380792	0.49	323154	117.8	80	120	Ge (IS)	
Ge (IS)	72	3	2276530	1.25	1861986	122.3	80	120	Ge (IS)	FAILED
In (IS)	115	3	14049871	1.20	12119833	115.9	80	120	In (IS)	
Ho (IS)	165	2	10501864	0.77	9598706	109.4	80	120	Ho (IS)	
Ho (IS)	165	3	15890261	0.89	13687738	116.1	80	120	Ho (IS)	
Ir (IS)	193	2	6568056	1.49	6085322	107.9	80	120	Ir (IS)	
Ir (IS)	193	3	7832421	1.51	6951639	112.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCS 160-452973/2-A**
Data File Name	**023SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:12:45-06:00**
Type	**Sample**
VialNumber	**2108**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	50.02939	100.05878	ug/l	1000	Li	
Be	9	6	3	48.10450	96.20900	ug/l	1000	Be	
B	11	6	3	105.64347	211.28694	ug/l	2000	B	
Na	23	45	2	5073.02595	10146.05190	ug/l	50000	Na	
Mg	24	45	2	4943.02164	9886.04328	ug/l	50000	Mg	
Al	27	45	2	4832.21656	9664.43313	ug/l	100000	Al	
P	31	45	2	466.87164	933.74329	ug/l	100000	P	
K	39	45	2	4890.34804	9780.69609	ug/l	100000	K	
Ca	44	45	3	5119.32298	10238.64597	ug/l	100000	Ca	
Ti	47	45	3	504.24403	1008.48806	ug/l	2000	Ti	
V	51	45	2	481.50898	963.01796	ug/l	2000	V	
Cr	52	45	2	490.48606	980.97213	ug/l	2000	Cr	
Mn	55	72	2	515.72752	1031.45503	ug/l	5000	Mn	
Fe	57	72	2	5193.44703	10386.89406	ug/l	100000	Fe	
Co	59	72	2	527.09446	1054.18892	ug/l	2000	Co	
Ni	60	72	2	572.71830	1145.43660	ug/l	2000	Ni	
Cu	63	72	2	528.63022	1057.26045	ug/l	2000	Cu	
Zn	66	72	2	548.67021	1097.34042	ug/l	5000	Zn	
As	75	72	2	492.93985	985.87971	ug/l	2000	As	
Se	78	72	2	237.03525	474.07050	ug/l	1000	Se	
Sr	88	72	3	503.61417	1007.22835	ug/l	2000	Sr	
Y	89	72	2	0.00479	0.00958	ug/l	200	Y	
Zr	90	72	2	523.02992	1046.05985	ug/l	2000	Zr	
Nb	93	72	2	0.53934	1.07867	ug/l	100	Nb	
Mo	95	72	3	245.86470	491.72940	ug/l	1000	Mo	
Ru	101	72	2	-0.00376	-0.00751	ug/l	200	Ru	
Rh	103	72	2	0.01968	0.03936	ug/l	200	Rh	
Pd	105	72	2	0.02730	0.05460	ug/l	20	Pd	
Ag	107	115	3	96.94938	193.89875	ug/l	400	Ag	
Cd	111	115	3	490.42510	980.85020	ug/l	2000	Cd	
Sn	118	115	3	486.15151	972.30302	ug/l	2000	Sn	
Sb	121	115	3	245.20300	490.40601	ug/l	1000	Sb	
Te	125	165	2	0.05326	0.10653	ug/l	200	Te	
Cs	133	165	2	-0.00191	-0.00383	ug/l	2000	Cs	
Ba	137	165	3	481.75734	963.51469	ug/l	5000	Ba	
La	139	165	2	0.74997	1.49994	ug/l	200	La	
Ce	140	165	2	0.02250	0.04499	ug/l	200	Ce	
Pr	141	165	2	0.00142	0.00285	ug/l	200	Pr	
Nd	146	165	2	0.00784	0.01568	ug/l	200	Nd	
Sm	147	165	3	491.92456	983.84913	ug/l	2000	Sm	
Hf	178	165	2	0.25921	0.51842	ug/l	200	Hf	
Ta	181	165	2	0.64276	1.28551	ug/l	200	Ta	
W	182	165	2	506.44116	1012.88231	ug/l	2000	W	
Re	185	193	3	0.00848	0.01696	ug/l	200	Re	
Pt	195	193	2	0.00588	0.01177	ug/l	200	Pt	
Au	197	193	3	-0.02625	-0.05249	ug/l	2000	Au	
Tl	205	193	3	103.34679	206.69358	ug/l	400	Tl	
Pb	208	193	3	499.42581	998.85161	ug/l	5000	Pb	
Bi	209	193	2	485.85769	971.71538	ug/l	2000	Bi	
Th	232	193	3	495.17687	990.35374	ug/l	2000	Th	
U	238	193	3	497.29605	994.59209	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7207219	0.47	7411413	97.2	80	120	Li (IS)	
Sc (IS)	45	2	166809	0.94	143379	116.3	80	120	Sc (IS)	
Sc (IS)	45	3	2794574	0.22	2392712	116.8	80	120	Sc (IS)	
Ge (IS)	72	2	366428	0.71	323154	113.4	80	120	Ge (IS)	
Ge (IS)	72	3	2245777	0.70	1861986	120.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	13776305	0.82	12119833	113.7	80	120	In (IS)	
Ho (IS)	165	2	10336213	0.60	9598706	107.7	80	120	Ho (IS)	
Ho (IS)	165	3	15998045	0.88	13687738	116.9	80	120	Ho (IS)	
Ir (IS)	193	2	6353630	0.44	6085322	104.4	80	120	Ir (IS)	
Ir (IS)	193	3	7630785	0.45	6951639	109.8	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-2-A**
Data File Name	**024SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:19:27-06:00**
Type	**Sample**
VialNumber	**2109**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	34.37570	68.75140	ug/l	1000	Li	
Be	9	6	3	0.00001	0.00003	ug/l	1000	Be	
B	11	6	3	506.02985	1012.05969	ug/l	2000	B	
Na	23	45	2	80991.88191	161983.76383	ug/l	50000	Na	FAILED
Mg	24	45	2	19358.38530	38716.77060	ug/l	50000	Mg	
Al	27	45	2	9.57735	19.15470	ug/l	100000	Al	
P	31	45	2	997.94449	1995.88897	ug/l	100000	P	
K	39	45	2	5942.05317	11884.10634	ug/l	100000	K	
Ca	44	45	3	147507.68786	295015.37572	ug/l	100000	Ca	FAILED
Ti	47	45	3	1.51105	3.02211	ug/l	2000	Ti	
V	51	45	2	0.61685	1.23370	ug/l	2000	V	
Cr	52	45	2	0.19901	0.39802	ug/l	2000	Cr	
Mn	55	72	2	2563.92915	5127.85830	ug/l	5000	Mn	
Fe	57	72	2	47707.14213	95414.28425	ug/l	100000	Fe	
Co	59	72	2	5.68706	11.37411	ug/l	2000	Co	
Ni	60	72	2	9.74897	19.49794	ug/l	2000	Ni	
Cu	63	72	2	4.58612	9.17224	ug/l	2000	Cu	
Zn	66	72	2	5.26521	10.53042	ug/l	5000	Zn	
As	75	72	2	73.99269	147.98537	ug/l	2000	As	
Se	78	72	2	0.88497	1.76995	ug/l	1000	Se	
Sr	88	72	3	1464.36940	2928.73881	ug/l	2000	Sr	
Y	89	72	2	0.36210	0.72421	ug/l	200	Y	
Zr	90	72	2	0.41248	0.82496	ug/l	2000	Zr	
Nb	93	72	2	-0.06659	-0.13319	ug/l	100	Nb	
Mo	95	72	3	1.19326	2.38651	ug/l	1000	Mo	
Ru	101	72	2	0.00082	0.00165	ug/l	200	Ru	
Rh	103	72	2	-0.00402	-0.00803	ug/l	200	Rh	
Pd	105	72	2	0.06561	0.13123	ug/l	20	Pd	
Ag	107	115	3	0.02916	0.05832	ug/l	400	Ag	
Cd	111	115	3	0.10539	0.21077	ug/l	2000	Cd	
Sn	118	115	3	0.35884	0.71767	ug/l	2000	Sn	
Sb	121	115	3	0.24594	0.49188	ug/l	1000	Sb	
Te	125	165	2	0.04671	0.09343	ug/l	200	Te	
Cs	133	165	2	0.00096	0.00191	ug/l	2000	Cs	
Ba	137	165	3	810.80909	1621.61819	ug/l	5000	Ba	
La	139	165	2	0.09437	0.18873	ug/l	200	La	
Ce	140	165	2	0.18141	0.36281	ug/l	200	Ce	
Pr	141	165	2	0.01752	0.03505	ug/l	200	Pr	
Nd	146	165	2	0.08341	0.16682	ug/l	200	Nd	
Sm	147	165	3	0.04557	0.09114	ug/l	2000	Sm	
Hf	178	165	2	-0.00095	-0.00191	ug/l	200	Hf	
Ta	181	165	2	0.00333	0.00665	ug/l	200	Ta	
W	182	165	2	1.76853	3.53705	ug/l	2000	W	
Re	185	193	3	0.00256	0.00511	ug/l	200	Re	
Pt	195	193	2	0.00239	0.00478	ug/l	200	Pt	
Au	197	193	3	-0.03946	-0.07892	ug/l	2000	Au	
Tl	205	193	3	0.09809	0.19618	ug/l	400	Tl	
Pb	208	193	3	3.42729	6.85457	ug/l	5000	Pb	
Bi	209	193	2	0.11089	0.22179	ug/l	2000	Bi	
Th	232	193	3	0.21590	0.43180	ug/l	2000	Th	
U	238	193	3	0.53400	1.06801	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6641328	0.19	7411413	89.6	80	120	Li (IS)	
Sc (IS)	45	2	159988	4.96	143379	111.6	80	120	Sc (IS)	
Sc (IS)	45	3	2920783	1.04	2392712	122.1	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	359206	3.74	323154	111.2	80	120	Ge (IS)	
Ge (IS)	72	3	2224251	0.80	1861986	119.5	80	120	Ge (IS)	
In (IS)	115	3	13457718	1.26	12119833	111.0	80	120	In (IS)	
Ho (IS)	165	2	10127702	5.30	9598706	105.5	80	120	Ho (IS)	
Ho (IS)	165	3	15503991	1.18	13687738	113.3	80	120	Ho (IS)	
Ir (IS)	193	2	6124972	4.75	6085322	100.7	80	120	Ir (IS)	
Ir (IS)	193	3	7466895	1.04	6951639	107.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-3-A**
Data File Name	**025SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:26:16-06:00**
Type	**Sample**
VialNumber	**2110**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	20.27631	40.55263	ug/l	1000	Li	
Be	9	6	3	-0.00853	-0.01707	ug/l	1000	Be	
B	11	6	3	403.26632	806.53265	ug/l	2000	B	
Na	23	45	2	50521.90203	101043.80406	ug/l	50000	Na	FAILED
Mg	24	45	2	15725.19215	31450.38429	ug/l	50000	Mg	
Al	27	45	2	52.89729	105.79458	ug/l	100000	Al	
P	31	45	2	201.58581	403.17162	ug/l	100000	P	
K	39	45	2	3539.54971	7079.09941	ug/l	100000	K	
Ca	44	45	3	102772.52254	205545.04509	ug/l	100000	Ca	FAILED
Ti	47	45	3	1.66207	3.32414	ug/l	2000	Ti	
V	51	45	2	0.30923	0.61845	ug/l	2000	V	
Cr	52	45	2	7.98119	15.96239	ug/l	2000	Cr	
Mn	55	72	2	159.38616	318.77232	ug/l	5000	Mn	
Fe	57	72	2	3676.91099	7353.82198	ug/l	100000	Fe	
Co	59	72	2	0.15150	0.30299	ug/l	2000	Co	
Ni	60	72	2	5.07950	10.15901	ug/l	2000	Ni	
Cu	63	72	2	0.66070	1.32140	ug/l	2000	Cu	
Zn	66	72	2	9.35658	18.71315	ug/l	5000	Zn	
As	75	72	2	2.11287	4.22575	ug/l	2000	As	
Se	78	72	2	0.15764	0.31528	ug/l	1000	Se	
Sr	88	72	3	614.73024	1229.46047	ug/l	2000	Sr	
Y	89	72	2	0.02034	0.04069	ug/l	200	Y	
Zr	90	72	2	0.12622	0.25245	ug/l	2000	Zr	
Nb	93	72	2	-0.08083	-0.16166	ug/l	100	Nb	
Mo	95	72	3	26.75429	53.50859	ug/l	1000	Mo	
Ru	101	72	2	-0.00442	-0.00885	ug/l	200	Ru	
Rh	103	72	2	-0.00542	-0.01084	ug/l	200	Rh	
Pd	105	72	2	0.02931	0.05862	ug/l	20	Pd	
Ag	107	115	3	0.01066	0.02132	ug/l	400	Ag	
Cd	111	115	3	0.00813	0.01626	ug/l	2000	Cd	
Sn	118	115	3	0.18049	0.36098	ug/l	2000	Sn	
Sb	121	115	3	0.05210	0.10420	ug/l	1000	Sb	
Te	125	165	2	0.01674	0.03347	ug/l	200	Te	
Cs	133	165	2	0.02897	0.05794	ug/l	2000	Cs	
Ba	137	165	3	26.60870	53.21740	ug/l	5000	Ba	
La	139	165	2	0.04019	0.08038	ug/l	200	La	
Ce	140	165	2	0.08489	0.16977	ug/l	200	Ce	
Pr	141	165	2	0.00697	0.01394	ug/l	200	Pr	
Nd	146	165	2	0.03811	0.07623	ug/l	200	Nd	
Sm	147	165	3	0.00704	0.01408	ug/l	2000	Sm	
Hf	178	165	2	0.00049	0.00098	ug/l	200	Hf	
Ta	181	165	2	-0.00795	-0.01590	ug/l	200	Ta	
W	182	165	2	1.14491	2.28983	ug/l	2000	W	
Re	185	193	3	0.04412	0.08825	ug/l	200	Re	
Pt	195	193	2	0.00166	0.00333	ug/l	200	Pt	
Au	197	193	3	-0.04018	-0.08036	ug/l	2000	Au	
Tl	205	193	3	0.00860	0.01720	ug/l	400	Tl	
Pb	208	193	3	0.24087	0.48175	ug/l	5000	Pb	
Bi	209	193	2	0.04595	0.09190	ug/l	2000	Bi	
Th	232	193	3	0.08650	0.17299	ug/l	2000	Th	
U	238	193	3	0.07932	0.15864	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6936718	0.24	7411413	93.6	80	120	Li (IS)	
Sc (IS)	45	2	169834	1.74	143379	118.5	80	120	Sc (IS)	
Sc (IS)	45	3	2987384	0.98	2392712	124.9	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	382564	1.75	323154	118.4	80	120	Ge (IS)	
Ge (IS)	72	3	2345474	0.70	1861986	126.0	80	120	Ge (IS)	FAILED
In (IS)	115	3	14248061	0.99	12119833	117.6	80	120	In (IS)	
Ho (IS)	165	2	10648431	1.16	9598706	110.9	80	120	Ho (IS)	
Ho (IS)	165	3	16213034	0.34	13687738	118.4	80	120	Ho (IS)	
Ir (IS)	193	2	6430384	1.39	6085322	105.7	80	120	Ir (IS)	
Ir (IS)	193	3	7815842	0.74	6951639	112.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**026LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:33:02-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	5.62890	ug/l	5	112.6	80	120	Li	
Be	9	6	3	0.50193	ug/l	0.5	100.4	80	120	Be	
B	11	6	3	117.93531	ug/l	100	117.9	80	120	B	
Na	23	45	2	109.57099	ug/l	100	109.6	80	120	Na	
Mg	24	45	2	50.15557	ug/l	50	100.3	80	120	Mg	
Al	27	45	2	50.06708	ug/l	50	100.1	80	120	Al	
P	31	45	2	103.28785	ug/l	100	103.3	80	120	P	
K	39	45	2	99.11624	ug/l	100	99.1	80	120	K	
Ca	44	45	3	199.88967	ug/l	200	99.9	80	120	Ca	
Ti	47	45	3	5.09350	ug/l	5	101.9	80	120	Ti	
V	51	45	2	9.78370	ug/l	10	97.8	80	120	V	
Cr	52	45	2	9.79812	ug/l	10	98.0	80	120	Cr	
Mn	55	72	2	4.06241	ug/l	4	101.6	80	120	Mn	
Fe	57	72	2	51.11033	ug/l	50	102.2	80	120	Fe	
Co	59	72	2	2.03014	ug/l	2	101.5	80	120	Co	
Ni	60	72	2	5.59475	ug/l	5	111.9	80	120	Ni	
Cu	63	72	2	3.26531	ug/l	3	108.8	80	120	Cu	
Zn	66	72	2	21.87527	ug/l	20	109.4	80	120	Zn	
As	75	72	2	10.55572	ug/l	10	105.6	80	120	As	
Se	78	72	2	5.22567	ug/l	5	104.5	80	120	Se	
Sr	88	72	3	4.82202	ug/l	5	96.4	80	120	Sr	
Y	89	72	2	4.73994	ug/l	5	94.8	80	120	Y	
Zr	90	72	2	4.87838	ug/l	5	97.6	80	120	Zr	
Nb	93	72	2	18.39257	ug/l	25	73.6	80	120	Nb	FAILED
Mo	95	72	3	4.78116	ug/l	5	95.6	80	120	Mo	
Ru	101	72	2	9.86161	ug/l	10	98.6	80	120	Ru	
Rh	103	72	2	9.64741	ug/l	10	96.5	80	120	Rh	
Pd	105	72	2	0.53318	ug/l	0.5	106.6	80	120	Pd	
Ag	107	115	3	1.87497	ug/l	2	93.7	80	120	Ag	
Cd	111	115	3	0.47134	ug/l	0.5	94.3	80	120	Cd	
Sn	118	115	3	1.79660	ug/l	2	89.8	80	120	Sn	
Sb	121	115	3	4.52639	ug/l	5	90.5	80	120	Sb	
Te	125	165	2	9.67442	ug/l	10	96.7	80	120	Te	
Cs	133	165	2	0.92150	ug/l	1	92.1	80	120	Cs	
Ba	137	165	3	1.86685	ug/l	2	93.3	80	120	Ba	
La	139	165	2	1.86603	ug/l	2	93.3	80	120	La	
Ce	140	165	2	9.24556	ug/l	10	92.5	80	120	Ce	
Pr	141	165	2	1.86288	ug/l	2	93.1	80	120	Pr	
Nd	146	165	2	1.90511	ug/l	2	95.3	80	120	Nd	
Sm	147	165	3	9.27433	ug/l	10	92.7	80	120	Sm	
Hf	178	165	2	8.51404	ug/l	10	85.1	80	120	Hf	
Ta	181	165	2	7.28387	ug/l	10	72.8	80	120	Ta	FAILED
W	182	165	2	4.77791	ug/l	5	95.6	80	120	W	
Re	185	193	3	9.00931	ug/l	10	90.1	80	120	Re	
Pt	195	193	2	1.00770	ug/l	1	100.8	80	120	Pt	
Au	197	193	3	4.49139	ug/l	5	89.8	80	120	Au	
Tl	205	193	3	1.79780	ug/l	2	89.9	80	120	Tl	
Pb	208	193	3	2.78419	ug/l	3	92.8	80	120	Pb	
Bi	209	193	2	19.25963	ug/l	20	96.3	80	120	Bi	
Th	232	193	3	1.72178	ug/l	2	86.1	80	120	Th	
U	238	193	3	0.84856	ug/l	1	84.9	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7788602	0.45	7411413	105.1	80	120	Li (IS)	
Sc (IS)	45	2	182497	0.97	143379	127.3	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3083066	0.79	2392712	128.9	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	415715	0.67	323154	128.6	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2460409	1.28	1861986	132.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	15404734	0.35	12119833	127.1	80	120	In (IS)	FAILED
Ho (IS)	165	2	11283204	0.57	9598706	117.5	80	120	Ho (IS)	
Ho (IS)	165	3	17184927	1.40	13687738	125.5	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	7174729	0.20	6085322	117.9	80	120	Ir (IS)	
Ir (IS)	193	3	8442902	0.80	6951639	121.5	80	120	Ir (IS)	FAILED

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**027_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:39:43-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	102.12442	ug/l	100	102.1	90	110	Li	
Be	9	6	3	107.75470	ug/l	100	107.8	90	110	Be	
B	11	6	3	226.81858	ug/l	200	113.4	90	110	B	FAILED
Na	23	45	2	2536.81993	ug/l	2500	101.5	90	110	Na	
Mg	24	45	2	2489.52648	ug/l	2500	99.6	90	110	Mg	
Al	27	45	2	2333.99203	ug/l	2500	93.4	90	110	Al	
P	31	45	2	2427.24657	ug/l	2500	97.1	90	110	P	
K	39	45	2	2477.81509	ug/l	2500	99.1	90	110	K	
Ca	44	45	3	2557.37914	ug/l	2500	102.3	90	110	Ca	
Ti	47	45	3	101.05589	ug/l	100	101.1	90	110	Ti	
V	51	45	2	98.49477	ug/l	100	98.5	90	110	V	
Cr	52	45	2	101.48168	ug/l	100	101.5	90	110	Cr	
Mn	55	72	2	93.98965	ug/l	100	94.0	90	110	Mn	
Fe	57	72	2	2392.43382	ug/l	2500	95.7	90	110	Fe	
Co	59	72	2	101.90740	ug/l	100	101.9	90	110	Co	
Ni	60	72	2	101.69211	ug/l	100	101.7	90	110	Ni	
Cu	63	72	2	102.50325	ug/l	100	102.5	90	110	Cu	
Zn	66	72	2	100.80541	ug/l	100	100.8	90	110	Zn	
As	75	72	2	101.33614	ug/l	100	101.3	90	110	As	
Se	78	72	2	49.24608	ug/l	50	98.5	90	110	Se	
Sr	88	72	3	100.93831	ug/l	100	100.9	90	110	Sr	
Y	89	72	2	100.68852	ug/l	100	100.7	90	110	Y	
Zr	90	72	2	101.35833	ug/l	100	101.4	90	110	Zr	
Nb	93	72	2	50.69180	ug/l	50	101.4	90	110	Nb	
Mo	95	72	3	46.44635	ug/l	50	92.9	90	110	Mo	
Ru	101	72	2	95.87075	ug/l	100	95.9	90	110	Ru	
Rh	103	72	2	103.23224	ug/l	100	103.2	90	110	Rh	
Pd	105	72	2	10.46929	ug/l	10	104.7	90	110	Pd	
Ag	107	115	3	17.96520	ug/l	20	89.8	90	110	Ag	FAILED
Cd	111	115	3	92.73077	ug/l	100	92.7	90	110	Cd	
Sn	118	115	3	99.52655	ug/l	100	99.5	90	110	Sn	
Sb	121	115	3	49.75240	ug/l	50	99.5	90	110	Sb	
Te	125	165	2	99.56287	ug/l	100	99.6	90	110	Te	
Cs	133	165	2	99.82216	ug/l	100	99.8	90	110	Cs	
Ba	137	165	3	98.88833	ug/l	100	98.9	90	110	Ba	
La	139	165	2	101.48463	ug/l	100	101.5	90	110	La	
Ce	140	165	2	101.27025	ug/l	100	101.3	90	110	Ce	
Pr	141	165	2	100.84056	ug/l	100	100.8	90	110	Pr	
Nd	146	165	2	102.42491	ug/l	100	102.4	90	110	Nd	
Sm	147	165	3	99.55293	ug/l	100	99.6	90	110	Sm	
Hf	178	165	2	97.78182	ug/l	100	97.8	90	110	Hf	
Ta	181	165	2	99.63827	ug/l	100	99.6	90	110	Ta	
W	182	165	2	101.10767	ug/l	100	101.1	90	110	W	
Re	185	193	3	100.05539	ug/l	100	100.1	90	110	Re	
Pt	195	193	2	10.03307	ug/l	10	100.3	90	110	Pt	
Au	197	193	3	99.13766	ug/l	100	99.1	90	110	Au	
Tl	205	193	3	20.23304	ug/l	20	101.2	90	110	Tl	
Pb	208	193	3	98.16499	ug/l	100	98.2	90	110	Pb	
Bi	209	193	2	96.60272	ug/l	100	96.6	90	110	Bi	
Th	232	193	3	96.85058	ug/l	100	96.9	90	110	Th	
U	238	193	3	95.75137	ug/l	100	95.8	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7460268	0.90	7411413	100.7	80	120	Li (IS)	
Sc (IS)	45	2	176909	1.20	143379	123.4	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3048595	0.12	2392712	127.4	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	416690	0.32	323154	128.9	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2462341	1.02	1861986	132.2	80	120	Ge (IS)	FAILED
In (IS)	115	3	15312588	1.57	12119833	126.3	80	120	In (IS)	FAILED
Ho (IS)	165	2	11246935	0.17	9598706	117.2	80	120	Ho (IS)	
Ho (IS)	165	3	17205399	0.70	13687738	125.7	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	7148624	0.25	6085322	117.5	80	120	Ir (IS)	
Ir (IS)	193	3	8497620	0.56	6951639	122.2	80	120	Ir (IS)	FAILED

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**028_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:46:28-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.50588	ug/l	1.388	Li	
Be	9	6	3	-0.00028	ug/l	0.7	Be	
B	11	6	3	7.27523	ug/l	20	B	
Na	23	45	2	6.03286	ug/l	30	Na	
Mg	24	45	2	0.75799	ug/l	11.18	Mg	
Al	27	45	2	0.82935	ug/l	25.8	Al	
P	31	45	2	2.07902	ug/l	16.46	P	
K	39	45	2	3.21138	ug/l	83.2	K	
Ca	44	45	3	0.87485	ug/l	136.2	Ca	
Ti	47	45	3	0.04208	ug/l	4.2	Ti	
V	51	45	2	0.07111	ug/l	4.74	V	
Cr	52	45	2	0.01136	ug/l	6.52	Cr	
Mn	55	72	2	0.05876	ug/l	0.49	Mn	
Fe	57	72	2	1.09104	ug/l	40.7	Fe	
Co	59	72	2	0.02381	ug/l	0.434	Co	
Ni	60	72	2	0.02132	ug/l	0.8	Ni	
Cu	63	72	2	0.09173	ug/l	0.902	Cu	
Zn	66	72	2	0.49559	ug/l	16.58	Zn	
As	75	72	2	0.03213	ug/l	2.36	As	
Se	78	72	2	0.24218	ug/l	3.18	Se	
Sr	88	72	3	0.00585	ug/l	2	Sr	
Y	89	72	2	0.02709	ug/l	0.424	Y	
Zr	90	72	2	0.03348	ug/l	0.496	Zr	
Nb	93	72	2	0.27535	ug/l	4.62	Nb	
Mo	95	72	3	0.09659	ug/l	2	Mo	
Ru	101	72	2	0.02334	ug/l	2	Ru	
Rh	103	72	2	0.02414	ug/l	1.634	Rh	
Pd	105	72	2	-0.00429	ug/l	0.08	Pd	
Ag	107	115	3	0.00560	ug/l	1.54	Ag	
Cd	111	115	3	0.00179	ug/l	0.4	Cd	
Sn	118	115	3	0.01688	ug/l	2	Sn	
Sb	121	115	3	-0.00720	ug/l	3.34	Sb	
Te	125	165	2	0.06521	ug/l	1.072	Te	
Cs	133	165	2	0.02893	ug/l	0.106	Cs	
Ba	137	165	3	0.01582	ug/l	0.446	Ba	
La	139	165	2	0.02290	ug/l	0.102	La	
Ce	140	165	2	0.02597	ug/l	1.772	Ce	
Pr	141	165	2	0.02392	ug/l	0.084	Pr	
Nd	146	165	2	0.02306	ug/l	0.208	Nd	
Sm	147	165	3	0.00696	ug/l	0.652	Sm	
Hf	178	165	2	0.03384	ug/l	2.26	Hf	
Ta	181	165	2	0.03901	ug/l	1.46	Ta	
W	182	165	2	0.50652	ug/l	4	W	
Re	185	193	3	0.00465	ug/l	0.05	Re	
Pt	195	193	2	0.00598	ug/l	0.12	Pt	
Au	197	193	3	0.14193	ug/l	1	Au	
Tl	205	193	3	0.00277	ug/l	1.1	Tl	
Pb	208	193	3	0.07484	ug/l	0.346	Pb	
Bi	209	193	2	0.03846	ug/l	1.464	Bi	
Th	232	193	3	0.02762	ug/l	1.104	Th	
U	238	193	3	0.00762	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7405413	1.33	7411413	99.9	80	120	Li (IS)	
Sc (IS)	45	2	181516	0.17	143379	126.6	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3112448	1.17	2392712	130.1	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	410734	0.77	323154	127.1	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2507002	0.51	1861986	134.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	15533475	1.00	12119833	128.2	80	120	In (IS)	FAILED
Ho (IS)	165	2	11243736	0.32	9598706	117.1	80	120	Ho (IS)	
Ho (IS)	165	3	17074416	0.70	13687738	124.7	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	7114251	0.53	6085322	116.9	80	120	Ir (IS)	
Ir (IS)	193	3	8417939	0.46	6951639	121.1	80	120	Ir (IS)	FAILED

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-3-A SD**
Data File Name	**029SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:53:13-06:00**
Type	**Sample**
VialNumber	**2111**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	4.45922	44.59221	ug/l	1000	Li	
Be	9	6	3	-0.00814	-0.08141	ug/l	1000	Be	
B	11	6	3	75.80919	758.09187	ug/l	2000	B	
Na	23	45	2	10198.50384	101985.03842	ug/l	50000	Na	
Mg	24	45	2	3164.02776	31640.27761	ug/l	50000	Mg	
Al	27	45	2	15.67505	156.75047	ug/l	100000	Al	
P	31	45	2	39.94598	399.45982	ug/l	100000	P	
K	39	45	2	669.99889	6699.98886	ug/l	100000	K	
Ca	44	45	3	20954.44062	209544.40616	ug/l	100000	Ca	
Ti	47	45	3	0.42313	4.23135	ug/l	2000	Ti	
V	51	45	2	0.08327	0.83272	ug/l	2000	V	
Cr	52	45	2	1.62914	16.29143	ug/l	2000	Cr	
Mn	55	72	2	29.37977	293.79770	ug/l	5000	Mn	
Fe	57	72	2	731.89714	7318.97138	ug/l	100000	Fe	
Co	59	72	2	0.03019	0.30193	ug/l	2000	Co	
Ni	60	72	2	1.29895	12.98947	ug/l	2000	Ni	
Cu	63	72	2	0.03859	0.38588	ug/l	2000	Cu	
Zn	66	72	2	2.36755	23.67554	ug/l	5000	Zn	
As	75	72	2	0.36968	3.69680	ug/l	2000	As	
Se	78	72	2	0.41432	4.14319	ug/l	1000	Se	
Sr	88	72	3	123.38821	1233.88210	ug/l	2000	Sr	
Y	89	72	2	0.00627	0.06268	ug/l	200	Y	
Zr	90	72	2	0.03333	0.33328	ug/l	2000	Zr	
Nb	93	72	2	0.03976	0.39763	ug/l	100	Nb	
Mo	95	72	3	5.27215	52.72152	ug/l	1000	Mo	
Ru	101	72	2	0.00016	0.00162	ug/l	200	Ru	
Rh	103	72	2	-0.00124	-0.01237	ug/l	200	Rh	
Pd	105	72	2	-0.00100	-0.01004	ug/l	20	Pd	
Ag	107	115	3	0.00009	0.00087	ug/l	400	Ag	
Cd	111	115	3	-0.00713	-0.07126	ug/l	2000	Cd	
Sn	118	115	3	-0.00988	-0.09880	ug/l	2000	Sn	
Sb	121	115	3	-0.01197	-0.11973	ug/l	1000	Sb	
Te	125	165	2	0.02214	0.22138	ug/l	200	Te	
Cs	133	165	2	0.00554	0.05542	ug/l	2000	Cs	
Ba	137	165	3	5.31674	53.16737	ug/l	5000	Ba	
La	139	165	2	0.00888	0.08880	ug/l	200	La	
Ce	140	165	2	0.01704	0.17035	ug/l	200	Ce	
Pr	141	165	2	0.00201	0.02006	ug/l	200	Pr	
Nd	146	165	2	0.00867	0.08672	ug/l	200	Nd	
Sm	147	165	3	0.00030	0.00302	ug/l	2000	Sm	
Hf	178	165	2	0.01903	0.19030	ug/l	200	Hf	
Ta	181	165	2	0.00564	0.05638	ug/l	200	Ta	
W	182	165	2	0.33440	3.34400	ug/l	2000	W	
Re	185	193	3	0.00806	0.08058	ug/l	200	Re	
Pt	195	193	2	0.00131	0.01311	ug/l	200	Pt	
Au	197	193	3	0.00105	0.01052	ug/l	2000	Au	
Tl	205	193	3	-0.02905	-0.29049	ug/l	400	Tl	
Pb	208	193	3	0.08609	0.86090	ug/l	5000	Pb	
Bi	209	193	2	0.01420	0.14202	ug/l	2000	Bi	
Th	232	193	3	0.01447	0.14475	ug/l	2000	Th	
U	238	193	3	0.01381	0.13814	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	7261060	0.26	7411413	98.0	80	120	Li (IS)	
Sc (IS)	45	2	174847	1.52	143379	121.9	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3075569	0.60	2392712	128.5	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	402353	1.10	323154	124.5	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2471990	1.08	1861986	132.8	80	120	Ge (IS)	FAILED
In (IS)	115	3	15325409	1.25	12119833	126.4	80	120	In (IS)	FAILED
Ho (IS)	165	2	11174087	1.56	9598706	116.4	80	120	Ho (IS)	
Ho (IS)	165	3	17035131	1.42	13687738	124.5	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6871645	1.73	6085322	112.9	80	120	Ir (IS)	
Ir (IS)	193	3	8309747	0.79	6951639	119.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-3-B MS**
Data File Name	**030SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T18:59:57-06:00**
Type	**Sample**
VialNumber	**2112**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	71.80857	143.61715	ug/l	1000	Li	
Be	9	6	3	54.21664	108.43328	ug/l	1000	Be	
B	11	6	3	528.00860	1056.01721	ug/l	2000	B	
Na	23	45	2	54000.72730	108001.45460	ug/l	50000	Na	FAILED
Mg	24	45	2	19919.57734	39839.15469	ug/l	50000	Mg	
Al	27	45	2	4700.10504	9400.21007	ug/l	100000	Al	
P	31	45	2	659.17537	1318.35074	ug/l	100000	P	
K	39	45	2	8013.97640	16027.95280	ug/l	100000	K	
Ca	44	45	3	105248.36155	210496.72310	ug/l	100000	Ca	FAILED
Ti	47	45	3	489.64432	979.28865	ug/l	2000	Ti	
V	51	45	2	490.45213	980.90426	ug/l	2000	V	
Cr	52	45	2	497.66842	995.33683	ug/l	2000	Cr	
Mn	55	72	2	657.68038	1315.36077	ug/l	5000	Mn	
Fe	57	72	2	9032.67992	18065.35984	ug/l	100000	Fe	
Co	59	72	2	505.35482	1010.70964	ug/l	2000	Co	
Ni	60	72	2	547.28377	1094.56754	ug/l	2000	Ni	
Cu	63	72	2	496.90274	993.80549	ug/l	2000	Cu	
Zn	66	72	2	532.35594	1064.71188	ug/l	5000	Zn	
As	75	72	2	504.20636	1008.41273	ug/l	2000	As	
Se	78	72	2	238.67930	477.35860	ug/l	1000	Se	
Sr	88	72	3	1104.97383	2209.94766	ug/l	2000	Sr	
Y	89	72	2	0.02828	0.05656	ug/l	200	Y	
Zr	90	72	2	512.81352	1025.62704	ug/l	2000	Zr	
Nb	93	72	2	0.82859	1.65717	ug/l	100	Nb	
Mo	95	72	3	275.93983	551.87966	ug/l	1000	Mo	
Ru	101	72	2	-0.00466	-0.00932	ug/l	200	Ru	
Rh	103	72	2	0.01705	0.03409	ug/l	200	Rh	
Pd	105	72	2	0.05159	0.10318	ug/l	20	Pd	
Ag	107	115	3	93.23475	186.46949	ug/l	400	Ag	
Cd	111	115	3	487.66375	975.32750	ug/l	2000	Cd	
Sn	118	115	3	493.73128	987.46256	ug/l	2000	Sn	
Sb	121	115	3	248.68646	497.37292	ug/l	1000	Sb	
Te	125	165	2	0.08867	0.17735	ug/l	200	Te	
Cs	133	165	2	0.02868	0.05736	ug/l	2000	Cs	
Ba	137	165	3	497.90031	995.80062	ug/l	5000	Ba	
La	139	165	2	0.76237	1.52474	ug/l	200	La	
Ce	140	165	2	0.10553	0.21106	ug/l	200	Ce	
Pr	141	165	2	0.01041	0.02081	ug/l	200	Pr	
Nd	146	165	2	0.04361	0.08722	ug/l	200	Nd	
Sm	147	165	3	486.87740	973.75479	ug/l	2000	Sm	
Hf	178	165	2	0.34170	0.68340	ug/l	200	Hf	
Ta	181	165	2	0.56442	1.12884	ug/l	200	Ta	
W	182	165	2	509.66194	1019.32387	ug/l	2000	W	
Re	185	193	3	0.05416	0.10831	ug/l	200	Re	
Pt	195	193	2	0.00586	0.01172	ug/l	200	Pt	
Au	197	193	3	-0.00642	-0.01285	ug/l	2000	Au	
Tl	205	193	3	99.30458	198.60915	ug/l	400	Tl	
Pb	208	193	3	478.99578	957.99157	ug/l	5000	Pb	
Bi	209	193	2	469.75079	939.50158	ug/l	2000	Bi	
Th	232	193	3	487.04859	974.09718	ug/l	2000	Th	
U	238	193	3	499.49956	998.99913	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6397069	0.72	7411413	86.3	80	120	Li (IS)	
Sc (IS)	45	2	170141	1.09	143379	118.7	80	120	Sc (IS)	
Sc (IS)	45	3	3010990	1.97	2392712	125.8	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	381070	0.73	323154	117.9	80	120	Ge (IS)	
Ge (IS)	72	3	2349353	0.90	1861986	126.2	80	120	Ge (IS)	FAILED
In (IS)	115	3	14286280	1.16	12119833	117.9	80	120	In (IS)	
Ho (IS)	165	2	10682700	0.31	9598706	111.3	80	120	Ho (IS)	
Ho (IS)	165	3	17016287	1.53	13687738	124.3	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6555728	0.72	6085322	107.7	80	120	Ir (IS)	
Ir (IS)	193	3	8042965	1.00	6951639	115.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-3-C MSD**
Data File Name	**031SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T19:06:44-06:00**
Type	**Sample**
VialNumber	**2201**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	71.01919	142.03839	ug/l	1000	Li	
Be	9	6	3	53.24758	106.49517	ug/l	1000	Be	
B	11	6	3	530.50159	1061.00319	ug/l	2000	B	
Na	23	45	2	54358.01462	108716.02924	ug/l	50000	Na	FAILED
Mg	24	45	2	20006.42162	40012.84325	ug/l	50000	Mg	
Al	27	45	2	4671.98820	9343.97640	ug/l	100000	Al	
P	31	45	2	652.20942	1304.41885	ug/l	100000	P	
K	39	45	2	8114.68788	16229.37577	ug/l	100000	K	
Ca	44	45	3	104570.23844	209140.47688	ug/l	100000	Ca	FAILED
Ti	47	45	3	486.63774	973.27548	ug/l	2000	Ti	
V	51	45	2	493.93059	987.86118	ug/l	2000	V	
Cr	52	45	2	499.32832	998.65664	ug/l	2000	Cr	
Mn	55	72	2	655.42351	1310.84703	ug/l	5000	Mn	
Fe	57	72	2	8929.35823	17858.71646	ug/l	100000	Fe	
Co	59	72	2	506.20011	1012.40023	ug/l	2000	Co	
Ni	60	72	2	546.96759	1093.93519	ug/l	2000	Ni	
Cu	63	72	2	501.82914	1003.65829	ug/l	2000	Cu	
Zn	66	72	2	537.40299	1074.80597	ug/l	5000	Zn	
As	75	72	2	502.54140	1005.08281	ug/l	2000	As	
Se	78	72	2	238.30703	476.61406	ug/l	1000	Se	
Sr	88	72	3	1105.78777	2211.57554	ug/l	2000	Sr	
Y	89	72	2	0.02872	0.05743	ug/l	200	Y	
Zr	90	72	2	516.73103	1033.46207	ug/l	2000	Zr	
Nb	93	72	2	0.32910	0.65819	ug/l	100	Nb	
Mo	95	72	3	274.65960	549.31920	ug/l	1000	Mo	
Ru	101	72	2	-0.00558	-0.01115	ug/l	200	Ru	
Rh	103	72	2	0.01830	0.03661	ug/l	200	Rh	
Pd	105	72	2	0.05202	0.10403	ug/l	20	Pd	
Ag	107	115	3	92.28053	184.56105	ug/l	400	Ag	
Cd	111	115	3	484.58609	969.17219	ug/l	2000	Cd	
Sn	118	115	3	491.38664	982.77328	ug/l	2000	Sn	
Sb	121	115	3	245.14968	490.29936	ug/l	1000	Sb	
Te	125	165	2	0.08902	0.17804	ug/l	200	Te	
Cs	133	165	2	0.02767	0.05534	ug/l	2000	Cs	
Ba	137	165	3	498.39004	996.78009	ug/l	5000	Ba	
La	139	165	2	0.75710	1.51421	ug/l	200	La	
Ce	140	165	2	0.10141	0.20281	ug/l	200	Ce	
Pr	141	165	2	0.01056	0.02113	ug/l	200	Pr	
Nd	146	165	2	0.04140	0.08279	ug/l	200	Nd	
Sm	147	165	3	489.94203	979.88405	ug/l	2000	Sm	
Hf	178	165	2	0.12883	0.25766	ug/l	200	Hf	
Ta	181	165	2	0.43843	0.87685	ug/l	200	Ta	
W	182	165	2	509.76830	1019.53661	ug/l	2000	W	
Re	185	193	3	0.05415	0.10830	ug/l	200	Re	
Pt	195	193	2	0.00211	0.00422	ug/l	200	Pt	
Au	197	193	3	-0.01934	-0.03869	ug/l	2000	Au	
Tl	205	193	3	98.09231	196.18461	ug/l	400	Tl	
Pb	208	193	3	473.98515	947.97030	ug/l	5000	Pb	
Bi	209	193	2	463.80346	927.60691	ug/l	2000	Bi	
Th	232	193	3	483.44459	966.88918	ug/l	2000	Th	
U	238	193	3	489.00635	978.01271	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6301082	0.93	7411413	85.0	80	120	Li (IS)	
Sc (IS)	45	2	164615	0.77	143379	114.8	80	120	Sc (IS)	
Sc (IS)	45	3	2962095	0.91	2392712	123.8	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	368075	1.18	323154	113.9	80	120	Ge (IS)	
Ge (IS)	72	3	2326130	1.46	1861986	124.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	14260427	0.67	12119833	117.7	80	120	In (IS)	
Ho (IS)	165	2	10643878	0.73	9598706	110.9	80	120	Ho (IS)	
Ho (IS)	165	3	16841369	1.21	13687738	123.0	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6548643	0.40	6085322	107.6	80	120	Ir (IS)	
Ir (IS)	193	3	8142148	0.02	6951639	117.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-4-A**
Data File Name	**032SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T19:13:32-06:00**
Type	**Sample**
VialNumber	**2202**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	27.94357	55.88715	ug/l	1000	Li	
Be	9	6	3	0.00446	0.00892	ug/l	1000	Be	
B	11	6	3	242.07832	484.15663	ug/l	2000	B	
Na	23	45	2	61594.44138	123188.88276	ug/l	50000	Na	FAILED
Mg	24	45	2	14593.60157	29187.20313	ug/l	50000	Mg	
Al	27	45	2	11.61622	23.23243	ug/l	100000	Al	
P	31	45	2	16354.37470	32708.74940	ug/l	100000	P	
K	39	45	2	13247.74288	26495.48577	ug/l	100000	K	
Ca	44	45	3	92705.50866	185411.01733	ug/l	100000	Ca	
Ti	47	45	3	9.75885	19.51770	ug/l	2000	Ti	
V	51	45	2	1.36992	2.73983	ug/l	2000	V	
Cr	52	45	2	0.25388	0.50777	ug/l	2000	Cr	
Mn	55	72	2	1622.56940	3245.13880	ug/l	5000	Mn	
Fe	57	72	2	13971.29567	27942.59134	ug/l	100000	Fe	
Co	59	72	2	4.31713	8.63425	ug/l	2000	Co	
Ni	60	72	2	15.64559	31.29117	ug/l	2000	Ni	
Cu	63	72	2	3.60331	7.20661	ug/l	2000	Cu	
Zn	66	72	2	6.42210	12.84420	ug/l	5000	Zn	
As	75	72	2	46.13713	92.27427	ug/l	2000	As	
Se	78	72	2	1.60994	3.21989	ug/l	1000	Se	
Sr	88	72	3	333.40403	666.80806	ug/l	2000	Sr	
Y	89	72	2	0.03660	0.07320	ug/l	200	Y	
Zr	90	72	2	0.34619	0.69238	ug/l	2000	Zr	
Nb	93	72	2	-0.03754	-0.07507	ug/l	100	Nb	
Mo	95	72	3	0.64528	1.29055	ug/l	1000	Mo	
Ru	101	72	2	-0.00422	-0.00843	ug/l	200	Ru	
Rh	103	72	2	-0.00555	-0.01110	ug/l	200	Rh	
Pd	105	72	2	0.00935	0.01870	ug/l	20	Pd	
Ag	107	115	3	0.02124	0.04247	ug/l	400	Ag	
Cd	111	115	3	0.09195	0.18391	ug/l	2000	Cd	
Sn	118	115	3	0.32819	0.65638	ug/l	2000	Sn	
Sb	121	115	3	0.98787	1.97574	ug/l	1000	Sb	
Te	125	165	2	0.14492	0.28985	ug/l	200	Te	
Cs	133	165	2	0.00138	0.00275	ug/l	2000	Cs	
Ba	137	165	3	259.40412	518.80825	ug/l	5000	Ba	
La	139	165	2	0.01619	0.03237	ug/l	200	La	
Ce	140	165	2	0.02852	0.05705	ug/l	200	Ce	
Pr	141	165	2	-0.00065	-0.00130	ug/l	200	Pr	
Nd	146	165	2	0.01363	0.02727	ug/l	200	Nd	
Sm	147	165	3	0.02395	0.04790	ug/l	2000	Sm	
Hf	178	165	2	-0.00037	-0.00073	ug/l	200	Hf	
Ta	181	165	2	0.00670	0.01341	ug/l	200	Ta	
W	182	165	2	1.95528	3.91056	ug/l	2000	W	
Re	185	193	3	0.01064	0.02127	ug/l	200	Re	
Pt	195	193	2	0.00429	0.00857	ug/l	200	Pt	
Au	197	193	3	-0.03544	-0.07088	ug/l	2000	Au	
Tl	205	193	3	0.12062	0.24124	ug/l	400	Tl	
Pb	208	193	3	1.75164	3.50328	ug/l	5000	Pb	
Bi	209	193	2	0.13219	0.26438	ug/l	2000	Bi	
Th	232	193	3	0.16543	0.33086	ug/l	2000	Th	
U	238	193	3	0.05602	0.11204	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6446681	2.95	7411413	87.0	80	120	Li (IS)	
Sc (IS)	45	2	139760	4.50	143379	97.5	80	120	Sc (IS)	
Sc (IS)	45	3	2912387	3.12	2392712	121.7	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	326915	3.71	323154	101.2	80	120	Ge (IS)	
Ge (IS)	72	3	2270636	3.12	1861986	121.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	14223566	5.01	12119833	117.4	80	120	In (IS)	
Ho (IS)	165	2	9471790	4.60	9598706	98.7	80	120	Ho (IS)	
Ho (IS)	165	3	16575085	3.64	13687738	121.1	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	5926783	3.71	6085322	97.4	80	120	Ir (IS)	
Ir (IS)	193	3	7952722	3.63	6951639	114.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-5-A**
Data File Name	**033SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T19:20:15-06:00**
Type	**Sample**
VialNumber	**2203**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	26.62513	53.25025	ug/l	1000	Li	
Be	9	6	3	-0.00902	-0.01804	ug/l	1000	Be	
B	11	6	3	209.00478	418.00955	ug/l	2000	B	
Na	23	45	2	49970.40055	99940.80111	ug/l	50000	Na	
Mg	24	45	2	25451.51010	50903.02019	ug/l	50000	Mg	
Al	27	45	2	8.95469	17.90938	ug/l	100000	Al	
P	31	45	2	2243.46517	4486.93033	ug/l	100000	P	
K	39	45	2	5276.19668	10552.39335	ug/l	100000	K	
Ca	44	45	3	99761.76926	199523.53851	ug/l	100000	Ca	
Ti	47	45	3	2.18311	4.36622	ug/l	2000	Ti	
V	51	45	2	0.21489	0.42978	ug/l	2000	V	
Cr	52	45	2	0.07888	0.15775	ug/l	2000	Cr	
Mn	55	72	2	1547.67560	3095.35121	ug/l	5000	Mn	
Fe	57	72	2	26912.91810	53825.83620	ug/l	100000	Fe	
Co	59	72	2	0.49580	0.99161	ug/l	2000	Co	
Ni	60	72	2	0.92277	1.84554	ug/l	2000	Ni	
Cu	63	72	2	0.47084	0.94169	ug/l	2000	Cu	
Zn	66	72	2	2.24561	4.49121	ug/l	5000	Zn	
As	75	72	2	72.09873	144.19745	ug/l	2000	As	
Se	78	72	2	0.50544	1.01087	ug/l	1000	Se	
Sr	88	72	3	855.98269	1711.96538	ug/l	2000	Sr	
Y	89	72	2	0.05750	0.11500	ug/l	200	Y	
Zr	90	72	2	0.23901	0.47802	ug/l	2000	Zr	
Nb	93	72	2	-0.08800	-0.17601	ug/l	100	Nb	
Mo	95	72	3	0.30898	0.61796	ug/l	1000	Mo	
Ru	101	72	2	-0.00055	-0.00110	ug/l	200	Ru	
Rh	103	72	2	-0.00431	-0.00862	ug/l	200	Rh	
Pd	105	72	2	0.03107	0.06215	ug/l	20	Pd	
Ag	107	115	3	0.00901	0.01802	ug/l	400	Ag	
Cd	111	115	3	0.01522	0.03045	ug/l	2000	Cd	
Sn	118	115	3	0.16474	0.32947	ug/l	2000	Sn	
Sb	121	115	3	0.03802	0.07605	ug/l	1000	Sb	
Te	125	165	2	0.03455	0.06910	ug/l	200	Te	
Cs	133	165	2	-0.00184	-0.00367	ug/l	2000	Cs	
Ba	137	165	3	325.66575	651.33151	ug/l	5000	Ba	
La	139	165	2	0.00861	0.01722	ug/l	200	La	
Ce	140	165	2	0.02570	0.05141	ug/l	200	Ce	
Pr	141	165	2	-0.00043	-0.00086	ug/l	200	Pr	
Nd	146	165	2	0.01282	0.02563	ug/l	200	Nd	
Sm	147	165	3	0.00648	0.01295	ug/l	2000	Sm	
Hf	178	165	2	-0.00383	-0.00767	ug/l	200	Hf	
Ta	181	165	2	-0.01054	-0.02108	ug/l	200	Ta	
W	182	165	2	0.79818	1.59637	ug/l	2000	W	
Re	185	193	3	0.00472	0.00945	ug/l	200	Re	
Pt	195	193	2	0.00220	0.00440	ug/l	200	Pt	
Au	197	193	3	-0.03615	-0.07231	ug/l	2000	Au	
Tl	205	193	3	0.02544	0.05087	ug/l	400	Tl	
Pb	208	193	3	0.14549	0.29098	ug/l	5000	Pb	
Bi	209	193	2	0.03233	0.06466	ug/l	2000	Bi	
Th	232	193	3	0.06181	0.12363	ug/l	2000	Th	
U	238	193	3	0.03849	0.07698	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6234356	0.59	7411413	84.1	80	120	Li (IS)	
Sc (IS)	45	2	154803	3.63	143379	108.0	80	120	Sc (IS)	
Sc (IS)	45	3	2787097	1.60	2392712	116.5	80	120	Sc (IS)	
Ge (IS)	72	2	351994	3.01	323154	108.9	80	120	Ge (IS)	
Ge (IS)	72	3	2190578	0.13	1861986	117.6	80	120	Ge (IS)	
In (IS)	115	3	13467203	0.17	12119833	111.1	80	120	In (IS)	
Ho (IS)	165	2	10407938	4.99	9598706	108.4	80	120	Ho (IS)	
Ho (IS)	165	3	15738514	0.91	13687738	115.0	80	120	Ho (IS)	
Ir (IS)	193	2	6439697	4.15	6085322	105.8	80	120	Ir (IS)	
Ir (IS)	193	3	7697000	1.30	6951639	110.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-6-A**
Data File Name	**034SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T19:26:57-06:00**
Type	**Sample**
VialNumber	**2204**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	21.59949	43.19898	ug/l	1000	Li	
Be	9	6	3	-0.01510	-0.03019	ug/l	1000	Be	
B	11	6	3	99.10911	198.21823	ug/l	2000	B	
Na	23	45	2	64198.03460	128396.06920	ug/l	50000	Na	FAILED
Mg	24	45	2	8439.35302	16878.70604	ug/l	50000	Mg	
Al	27	45	2	6.31187	12.62375	ug/l	100000	Al	
P	31	45	2	57.21157	114.42313	ug/l	100000	P	
K	39	45	2	3678.66987	7357.33974	ug/l	100000	K	
Ca	44	45	3	56118.49877	112236.99755	ug/l	100000	Ca	
Ti	47	45	3	0.59316	1.18632	ug/l	2000	Ti	
V	51	45	2	0.19812	0.39625	ug/l	2000	V	
Cr	52	45	2	0.16636	0.33273	ug/l	2000	Cr	
Mn	55	72	2	119.47567	238.95134	ug/l	5000	Mn	
Fe	57	72	2	359.35453	718.70907	ug/l	100000	Fe	
Co	59	72	2	0.20793	0.41587	ug/l	2000	Co	
Ni	60	72	2	0.86649	1.73297	ug/l	2000	Ni	
Cu	63	72	2	0.42371	0.84742	ug/l	2000	Cu	
Zn	66	72	2	2.82878	5.65757	ug/l	5000	Zn	
As	75	72	2	3.13372	6.26744	ug/l	2000	As	
Se	78	72	2	0.26738	0.53477	ug/l	1000	Se	
Sr	88	72	3	344.00274	688.00548	ug/l	2000	Sr	
Y	89	72	2	0.01398	0.02795	ug/l	200	Y	
Zr	90	72	2	0.04213	0.08426	ug/l	2000	Zr	
Nb	93	72	2	-0.10242	-0.20484	ug/l	100	Nb	
Mo	95	72	3	22.99985	45.99970	ug/l	1000	Mo	
Ru	101	72	2	-0.00544	-0.01087	ug/l	200	Ru	
Rh	103	72	2	-0.00604	-0.01208	ug/l	200	Rh	
Pd	105	72	2	0.00427	0.00855	ug/l	20	Pd	
Ag	107	115	3	0.00591	0.01182	ug/l	400	Ag	
Cd	111	115	3	0.00586	0.01172	ug/l	2000	Cd	
Sn	118	115	3	0.15524	0.31049	ug/l	2000	Sn	
Sb	121	115	3	0.03699	0.07398	ug/l	1000	Sb	
Te	125	165	2	0.00987	0.01973	ug/l	200	Te	
Cs	133	165	2	-0.00147	-0.00295	ug/l	2000	Cs	
Ba	137	165	3	73.05397	146.10795	ug/l	5000	Ba	
La	139	165	2	0.00549	0.01099	ug/l	200	La	
Ce	140	165	2	0.01643	0.03287	ug/l	200	Ce	
Pr	141	165	2	-0.00128	-0.00257	ug/l	200	Pr	
Nd	146	165	2	0.00863	0.01727	ug/l	200	Nd	
Sm	147	165	3	-0.00148	-0.00296	ug/l	2000	Sm	
Hf	178	165	2	-0.00459	-0.00918	ug/l	200	Hf	
Ta	181	165	2	-0.00754	-0.01507	ug/l	200	Ta	
W	182	165	2	0.46505	0.93010	ug/l	2000	W	
Re	185	193	3	0.00891	0.01783	ug/l	200	Re	
Pt	195	193	2	0.00243	0.00487	ug/l	200	Pt	
Au	197	193	3	-0.03933	-0.07866	ug/l	2000	Au	
Tl	205	193	3	-0.00138	-0.00277	ug/l	400	Tl	
Pb	208	193	3	0.11266	0.22531	ug/l	5000	Pb	
Bi	209	193	2	0.01948	0.03895	ug/l	2000	Bi	
Th	232	193	3	0.02064	0.04128	ug/l	2000	Th	
U	238	193	3	1.59658	3.19317	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6362011	1.08	7411413	85.8	80	120	Li (IS)	
Sc (IS)	45	2	158483	0.67	143379	110.5	80	120	Sc (IS)	
Sc (IS)	45	3	2878979	1.19	2392712	120.3	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	367903	0.31	323154	113.8	80	120	Ge (IS)	
Ge (IS)	72	3	2299857	0.97	1861986	123.5	80	120	Ge (IS)	FAILED
In (IS)	115	3	14073467	0.39	12119833	116.1	80	120	In (IS)	
Ho (IS)	165	2	10433983	0.44	9598706	108.7	80	120	Ho (IS)	
Ho (IS)	165	3	16159042	0.69	13687738	118.1	80	120	Ho (IS)	
Ir (IS)	193	2	6385457	1.88	6085322	104.9	80	120	Ir (IS)	
Ir (IS)	193	3	7765528	1.16	6951639	111.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131342-E-7-A**
Data File Name	**035SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T19:33:46-06:00**
Type	**Sample**
VialNumber	**2205**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.59018	1.18037	ug/l	1000	Li	
Be	9	6	3	-0.01500	-0.03000	ug/l	1000	Be	
B	11	6	3	5.92822	11.85644	ug/l	2000	B	
Na	23	45	2	20.78891	41.57781	ug/l	50000	Na	
Mg	24	45	2	1.77592	3.55184	ug/l	50000	Mg	
Al	27	45	2	11.81972	23.63944	ug/l	100000	Al	
P	31	45	2	9.59338	19.18677	ug/l	100000	P	
K	39	45	2	7.77595	15.55191	ug/l	100000	K	
Ca	44	45	3	18.27747	36.55494	ug/l	100000	Ca	
Ti	47	45	3	0.19766	0.39532	ug/l	2000	Ti	
V	51	45	2	0.13786	0.27571	ug/l	2000	V	
Cr	52	45	2	0.06020	0.12040	ug/l	2000	Cr	
Mn	55	72	2	0.71632	1.43264	ug/l	5000	Mn	
Fe	57	72	2	5.06595	10.13189	ug/l	100000	Fe	
Co	59	72	2	-0.00257	-0.00514	ug/l	2000	Co	
Ni	60	72	2	0.03984	0.07967	ug/l	2000	Ni	
Cu	63	72	2	0.50503	1.01006	ug/l	2000	Cu	
Zn	66	72	2	1.15433	2.30866	ug/l	5000	Zn	
As	75	72	2	0.03947	0.07894	ug/l	2000	As	
Se	78	72	2	0.31027	0.62054	ug/l	1000	Se	
Sr	88	72	3	0.08478	0.16955	ug/l	2000	Sr	
Y	89	72	2	-0.00216	-0.00433	ug/l	200	Y	
Zr	90	72	2	0.00584	0.01169	ug/l	2000	Zr	
Nb	93	72	2	-0.11128	-0.22256	ug/l	100	Nb	
Mo	95	72	3	0.02531	0.05062	ug/l	1000	Mo	
Ru	101	72	2	-0.00483	-0.00967	ug/l	200	Ru	
Rh	103	72	2	-0.00527	-0.01053	ug/l	200	Rh	
Pd	105	72	2	-0.01102	-0.02203	ug/l	20	Pd	
Ag	107	115	3	0.00533	0.01066	ug/l	400	Ag	
Cd	111	115	3	-0.00436	-0.00871	ug/l	2000	Cd	
Sn	118	115	3	0.15844	0.31688	ug/l	2000	Sn	
Sb	121	115	3	-0.01618	-0.03236	ug/l	1000	Sb	
Te	125	165	2	-0.00584	-0.01167	ug/l	200	Te	
Cs	133	165	2	-0.00158	-0.00317	ug/l	2000	Cs	
Ba	137	165	3	0.11039	0.22079	ug/l	5000	Ba	
La	139	165	2	-0.00268	-0.00536	ug/l	200	La	
Ce	140	165	2	-0.00078	-0.00155	ug/l	200	Ce	
Pr	141	165	2	-0.00253	-0.00505	ug/l	200	Pr	
Nd	146	165	2	-0.00049	-0.00098	ug/l	200	Nd	
Sm	147	165	3	-0.00309	-0.00617	ug/l	2000	Sm	
Hf	178	165	2	-0.00602	-0.01205	ug/l	200	Hf	
Ta	181	165	2	-0.00482	-0.00964	ug/l	200	Ta	
W	182	165	2	0.41188	0.82376	ug/l	2000	W	
Re	185	193	3	-0.00251	-0.00503	ug/l	200	Re	
Pt	195	193	2	0.00366	0.00733	ug/l	200	Pt	
Au	197	193	3	-0.03793	-0.07586	ug/l	2000	Au	
Tl	205	193	3	-0.01917	-0.03835	ug/l	400	Tl	
Pb	208	193	3	0.10930	0.21859	ug/l	5000	Pb	
Bi	209	193	2	0.02101	0.04203	ug/l	2000	Bi	
Th	232	193	3	0.00440	0.00880	ug/l	2000	Th	
U	238	193	3	0.06032	0.12063	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6552353	0.07	7411413	88.4	80	120	Li (IS)	
Sc (IS)	45	2	159766	0.81	143379	111.4	80	120	Sc (IS)	
Sc (IS)	45	3	2891795	0.58	2392712	120.9	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	374354	0.59	323154	115.8	80	120	Ge (IS)	
Ge (IS)	72	3	2361717	0.89	1861986	126.8	80	120	Ge (IS)	FAILED
In (IS)	115	3	14738818	0.82	12119833	121.6	80	120	In (IS)	FAILED
Ho (IS)	165	2	10502095	1.03	9598706	109.4	80	120	Ho (IS)	
Ho (IS)	165	3	16587773	1.65	13687738	121.2	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6704406	2.41	6085322	110.2	80	120	Ir (IS)	
Ir (IS)	193	3	8241581	1.46	6951639	118.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**MB 160-452721/1-A**
Data File Name	**036SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T19:40:29-06:00**
Type	**Sample**
VialNumber	**2206**
Dilution	**2**
Comment	**452721**
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.51320	1.02641	ug/l	1000	Li	
Be	9	6	3	-0.01487	-0.02974	ug/l	1000	Be	
B	11	6	3	3.70266	7.40531	ug/l	2000	B	
Na	23	45	2	20.12390	40.24779	ug/l	50000	Na	
Mg	24	45	2	1.08469	2.16938	ug/l	50000	Mg	
Al	27	45	2	4.71429	9.42857	ug/l	100000	Al	
P	31	45	2	10.84513	21.69025	ug/l	100000	P	
K	39	45	2	3.83337	7.66674	ug/l	100000	K	
Ca	44	45	3	43.12881	86.25762	ug/l	100000	Ca	
Ti	47	45	3	0.16902	0.33804	ug/l	2000	Ti	
V	51	45	2	0.03840	0.07679	ug/l	2000	V	
Cr	52	45	2	0.06204	0.12409	ug/l	2000	Cr	
Mn	55	72	2	0.09131	0.18261	ug/l	5000	Mn	
Fe	57	72	2	1.33549	2.67097	ug/l	100000	Fe	
Co	59	72	2	-0.00173	-0.00345	ug/l	2000	Co	
Ni	60	72	2	0.00429	0.00859	ug/l	2000	Ni	
Cu	63	72	2	0.13633	0.27267	ug/l	2000	Cu	
Zn	66	72	2	1.69338	3.38675	ug/l	5000	Zn	
As	75	72	2	0.00554	0.01109	ug/l	2000	As	
Se	78	72	2	0.35574	0.71148	ug/l	1000	Se	
Sr	88	72	3	0.05034	0.10067	ug/l	2000	Sr	
Y	89	72	2	-0.00267	-0.00533	ug/l	200	Y	
Zr	90	72	2	-0.00029	-0.00058	ug/l	2000	Zr	
Nb	93	72	2	-0.11260	-0.22519	ug/l	100	Nb	
Mo	95	72	3	0.01214	0.02427	ug/l	1000	Mo	
Ru	101	72	2	-0.00566	-0.01131	ug/l	200	Ru	
Rh	103	72	2	-0.00557	-0.01115	ug/l	200	Rh	
Pd	105	72	2	-0.00883	-0.01765	ug/l	20	Pd	
Ag	107	115	3	0.00401	0.00802	ug/l	400	Ag	
Cd	111	115	3	-0.00280	-0.00561	ug/l	2000	Cd	
Sn	118	115	3	0.10521	0.21041	ug/l	2000	Sn	
Sb	121	115	3	-0.02110	-0.04221	ug/l	1000	Sb	
Te	125	165	2	-0.00568	-0.01136	ug/l	200	Te	
Cs	133	165	2	-0.00229	-0.00458	ug/l	2000	Cs	
Ba	137	165	3	0.02523	0.05046	ug/l	5000	Ba	
La	139	165	2	-0.00378	-0.00755	ug/l	200	La	
Ce	140	165	2	-0.00018	-0.00035	ug/l	200	Ce	
Pr	141	165	2	-0.00330	-0.00661	ug/l	200	Pr	
Nd	146	165	2	-0.00245	-0.00491	ug/l	200	Nd	
Sm	147	165	3	-0.00305	-0.00610	ug/l	2000	Sm	
Hf	178	165	2	-0.00649	-0.01297	ug/l	200	Hf	
Ta	181	165	2	-0.01186	-0.02371	ug/l	200	Ta	
W	182	165	2	0.46114	0.92229	ug/l	2000	W	
Re	185	193	3	-0.00292	-0.00584	ug/l	200	Re	
Pt	195	193	2	0.00398	0.00797	ug/l	200	Pt	
Au	197	193	3	-0.03927	-0.07855	ug/l	2000	Au	
Tl	205	193	3	-0.02837	-0.05673	ug/l	400	Tl	
Pb	208	193	3	0.08120	0.16240	ug/l	5000	Pb	
Bi	209	193	2	0.01569	0.03137	ug/l	2000	Bi	
Th	232	193	3	0.00499	0.00999	ug/l	2000	Th	
U	238	193	3	-0.00283	-0.00566	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6251361	4.50	7411413	84.3	80	120	Li (IS)	
Sc (IS)	45	2	154030	1.63	143379	107.4	80	120	Sc (IS)	
Sc (IS)	45	3	2754564	6.12	2392712	115.1	80	120	Sc (IS)	
Ge (IS)	72	2	361944	1.66	323154	112.0	80	120	Ge (IS)	
Ge (IS)	72	3	2266668	3.71	1861986	121.7	80	120	Ge (IS)	FAILED
In (IS)	115	3	14067558	6.36	12119833	116.1	80	120	In (IS)	
Ho (IS)	165	2	10323931	1.80	9598706	107.6	80	120	Ho (IS)	
Ho (IS)	165	3	16083073	6.04	13687738	117.5	80	120	Ho (IS)	
Ir (IS)	193	2	6668987	1.19	6085322	109.6	80	120	Ir (IS)	
Ir (IS)	193	3	8006125	6.90	6951639	115.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**LCS 160-452721/2-A**
Data File Name	**037SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T19:47:12-06:00**
Type	**Sample**
VialNumber	**2207**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	51.62695	103.25390	ug/l	1000	Li	
Be	9	6	3	51.79937	103.59875	ug/l	1000	Be	
B	11	6	3	109.57528	219.15056	ug/l	2000	B	
Na	23	45	2	5181.20191	10362.40382	ug/l	50000	Na	
Mg	24	45	2	5047.04813	10094.09626	ug/l	50000	Mg	
Al	27	45	2	4837.23533	9674.47065	ug/l	100000	Al	
P	31	45	2	463.32413	926.64825	ug/l	100000	P	
K	39	45	2	4869.17781	9738.35563	ug/l	100000	K	
Ca	44	45	3	5097.12144	10194.24288	ug/l	100000	Ca	
Ti	47	45	3	504.34539	1008.69079	ug/l	2000	Ti	
V	51	45	2	491.37116	982.74232	ug/l	2000	V	
Cr	52	45	2	502.49539	1004.99078	ug/l	2000	Cr	
Mn	55	72	2	500.40906	1000.81811	ug/l	5000	Mn	
Fe	57	72	2	5138.29471	10276.58942	ug/l	100000	Fe	
Co	59	72	2	517.64797	1035.29594	ug/l	2000	Co	
Ni	60	72	2	558.13963	1116.27926	ug/l	2000	Ni	
Cu	63	72	2	519.99108	1039.98216	ug/l	2000	Cu	
Zn	66	72	2	500.78774	1001.57548	ug/l	5000	Zn	
As	75	72	2	473.68499	947.36998	ug/l	2000	As	
Se	78	72	2	224.12001	448.24002	ug/l	1000	Se	
Sr	88	72	3	493.42315	986.84629	ug/l	2000	Sr	
Y	89	72	2	0.00007	0.00014	ug/l	200	Y	
Zr	90	72	2	511.23079	1022.46159	ug/l	2000	Zr	
Nb	93	72	2	0.18672	0.37344	ug/l	100	Nb	
Mo	95	72	3	242.28729	484.57459	ug/l	1000	Mo	
Ru	101	72	2	-0.00619	-0.01238	ug/l	200	Ru	
Rh	103	72	2	0.01746	0.03493	ug/l	200	Rh	
Pd	105	72	2	0.02633	0.05266	ug/l	20	Pd	
Ag	107	115	3	96.19011	192.38022	ug/l	400	Ag	
Cd	111	115	3	492.10949	984.21899	ug/l	2000	Cd	
Sn	118	115	3	485.97154	971.94308	ug/l	2000	Sn	
Sb	121	115	3	243.66632	487.33265	ug/l	1000	Sb	
Te	125	165	2	0.03644	0.07287	ug/l	200	Te	
Cs	133	165	2	-0.00262	-0.00525	ug/l	2000	Cs	
Ba	137	165	3	475.37419	950.74837	ug/l	5000	Ba	
La	139	165	2	0.71239	1.42478	ug/l	200	La	
Ce	140	165	2	0.01654	0.03307	ug/l	200	Ce	
Pr	141	165	2	0.00053	0.00105	ug/l	200	Pr	
Nd	146	165	2	0.00660	0.01320	ug/l	200	Nd	
Sm	147	165	3	491.19895	982.39791	ug/l	2000	Sm	
Hf	178	165	2	0.09351	0.18702	ug/l	200	Hf	
Ta	181	165	2	0.41355	0.82710	ug/l	200	Ta	
W	182	165	2	507.13747	1014.27493	ug/l	2000	W	
Re	185	193	3	0.00673	0.01347	ug/l	200	Re	
Pt	195	193	2	0.00582	0.01164	ug/l	200	Pt	
Au	197	193	3	-0.03617	-0.07234	ug/l	2000	Au	
Tl	205	193	3	100.77156	201.54311	ug/l	400	Tl	
Pb	208	193	3	490.82149	981.64297	ug/l	5000	Pb	
Bi	209	193	2	475.93176	951.86351	ug/l	2000	Bi	
Th	232	193	3	487.88031	975.76063	ug/l	2000	Th	
U	238	193	3	491.76817	983.53633	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6065710	1.05	7411413	81.8	80	120	Li (IS)	
Sc (IS)	45	2	151702	9.40	143379	105.8	80	120	Sc (IS)	
Sc (IS)	45	3	2698906	0.39	2392712	112.8	80	120	Sc (IS)	
Ge (IS)	72	2	347647	8.08	323154	107.6	80	120	Ge (IS)	
Ge (IS)	72	3	2262111	0.47	1861986	121.5	80	120	Ge (IS)	FAILED
In (IS)	115	3	13986912	0.42	12119833	115.4	80	120	In (IS)	
Ho (IS)	165	2	10334151	10.39	9598706	107.7	80	120	Ho (IS)	
Ho (IS)	165	3	16517652	0.87	13687738	120.7	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6459283	9.40	6085322	106.1	80	120	Ir (IS)	
Ir (IS)	193	3	8105532	1.78	6951639	116.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36400-A-7-B**
Data File Name	**038SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T19:53:55-06:00**
Type	**Sample**
VialNumber	**2208**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	3.28027	6.56055	ug/l	1000	Li	
Be	9	6	3	-0.00018	-0.00036	ug/l	1000	Be	
B	11	6	3	8.46457	16.92913	ug/l	2000	B	
Na	23	45	2	25522.96876	51045.93751	ug/l	50000	Na	
Mg	24	45	2	8524.55423	17049.10847	ug/l	50000	Mg	
Al	27	45	2	513.27756	1026.55513	ug/l	100000	Al	
P	31	45	2	31.64448	63.28896	ug/l	100000	P	
K	39	45	2	2753.55798	5507.11596	ug/l	100000	K	
Ca	44	45	3	24378.06075	48756.12151	ug/l	100000	Ca	
Ti	47	45	3	45.60191	91.20382	ug/l	2000	Ti	
V	51	45	2	9.65816	19.31631	ug/l	2000	V	
Cr	52	45	2	12.09271	24.18541	ug/l	2000	Cr	
Mn	55	72	2	21.75254	43.50508	ug/l	5000	Mn	
Fe	57	72	2	747.90691	1495.81381	ug/l	100000	Fe	
Co	59	72	2	0.28560	0.57120	ug/l	2000	Co	
Ni	60	72	2	1.59480	3.18961	ug/l	2000	Ni	
Cu	63	72	2	0.91876	1.83752	ug/l	2000	Cu	
Zn	66	72	2	15.78709	31.57417	ug/l	5000	Zn	
As	75	72	2	1.36505	2.73010	ug/l	2000	As	
Se	78	72	2	2.10035	4.20070	ug/l	1000	Se	
Sr	88	72	3	112.64864	225.29728	ug/l	2000	Sr	
Y	89	72	2	0.23183	0.46365	ug/l	200	Y	
Zr	90	72	2	0.65438	1.30877	ug/l	2000	Zr	
Nb	93	72	2	-0.05160	-0.10321	ug/l	100	Nb	
Mo	95	72	3	2.91509	5.83019	ug/l	1000	Mo	
Ru	101	72	2	-0.00650	-0.01300	ug/l	200	Ru	
Rh	103	72	2	-0.00702	-0.01404	ug/l	200	Rh	
Pd	105	72	2	-0.00218	-0.00436	ug/l	20	Pd	
Ag	107	115	3	0.01936	0.03872	ug/l	400	Ag	
Cd	111	115	3	0.03735	0.07470	ug/l	2000	Cd	
Sn	118	115	3	0.25504	0.51009	ug/l	2000	Sn	
Sb	121	115	3	0.07349	0.14698	ug/l	1000	Sb	
Te	125	165	2	-0.01324	-0.02649	ug/l	200	Te	
Cs	133	165	2	0.01429	0.02858	ug/l	2000	Cs	
Ba	137	165	3	31.92516	63.85033	ug/l	5000	Ba	
La	139	165	2	0.25988	0.51976	ug/l	200	La	
Ce	140	165	2	0.56725	1.13450	ug/l	200	Ce	
Pr	141	165	2	0.06398	0.12796	ug/l	200	Pr	
Nd	146	165	2	0.28517	0.57035	ug/l	200	Nd	
Sm	147	165	3	0.06794	0.13588	ug/l	2000	Sm	
Hf	178	165	2	0.01025	0.02050	ug/l	200	Hf	
Ta	181	165	2	-0.01173	-0.02346	ug/l	200	Ta	
W	182	165	2	1.12403	2.24806	ug/l	2000	W	
Re	185	193	3	0.00063	0.00127	ug/l	200	Re	
Pt	195	193	2	0.00410	0.00820	ug/l	200	Pt	
Au	197	193	3	-0.04214	-0.08428	ug/l	2000	Au	
Tl	205	193	3	0.11255	0.22511	ug/l	400	Tl	
Pb	208	193	3	0.45116	0.90232	ug/l	5000	Pb	
Bi	209	193	2	0.06327	0.12655	ug/l	2000	Bi	
Th	232	193	3	0.21951	0.43901	ug/l	2000	Th	
U	238	193	3	0.86201	1.72402	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5934054	0.46	7411413	80.1	80	120	Li (IS)	
Sc (IS)	45	2	147790	0.83	143379	103.1	80	120	Sc (IS)	
Sc (IS)	45	3	2790329	0.72	2392712	116.6	80	120	Sc (IS)	
Ge (IS)	72	2	348930	0.68	323154	108.0	80	120	Ge (IS)	
Ge (IS)	72	3	2263523	0.92	1861986	121.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	13905010	0.45	12119833	114.7	80	120	In (IS)	
Ho (IS)	165	2	10232236	0.50	9598706	106.6	80	120	Ho (IS)	
Ho (IS)	165	3	16290569	0.62	13687738	119.0	80	120	Ho (IS)	
Ir (IS)	193	2	6484187	1.16	6085322	106.6	80	120	Ir (IS)	
Ir (IS)	193	3	7862719	0.35	6951639	113.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**039LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:00:38-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	5.66261	ug/l	5	113.3	80	120	Li	
Be	9	6	3	0.55822	ug/l	0.5	111.6	80	120	Be	
B	11	6	3	108.14286	ug/l	100	108.1	80	120	B	
Na	23	45	2	110.42619	ug/l	100	110.4	80	120	Na	
Mg	24	45	2	50.49601	ug/l	50	101.0	80	120	Mg	
Al	27	45	2	48.57076	ug/l	50	97.1	80	120	Al	
P	31	45	2	96.91312	ug/l	100	96.9	80	120	P	
K	39	45	2	99.47624	ug/l	100	99.5	80	120	K	
Ca	44	45	3	200.17354	ug/l	200	100.1	80	120	Ca	
Ti	47	45	3	5.07502	ug/l	5	101.5	80	120	Ti	
V	51	45	2	9.88816	ug/l	10	98.9	80	120	V	
Cr	52	45	2	9.97997	ug/l	10	99.8	80	120	Cr	
Mn	55	72	2	4.06162	ug/l	4	101.5	80	120	Mn	
Fe	57	72	2	51.02305	ug/l	50	102.0	80	120	Fe	
Co	59	72	2	2.04577	ug/l	2	102.3	80	120	Co	
Ni	60	72	2	5.60148	ug/l	5	112.0	80	120	Ni	
Cu	63	72	2	3.01121	ug/l	3	100.4	80	120	Cu	
Zn	66	72	2	21.64181	ug/l	20	108.2	80	120	Zn	
As	75	72	2	10.37248	ug/l	10	103.7	80	120	As	
Se	78	72	2	5.14153	ug/l	5	102.8	80	120	Se	
Sr	88	72	3	4.86726	ug/l	5	97.3	80	120	Sr	
Y	89	72	2	4.81673	ug/l	5	96.3	80	120	Y	
Zr	90	72	2	5.00077	ug/l	5	100.0	80	120	Zr	
Nb	93	72	2	18.76494	ug/l	25	75.1	80	120	Nb	FAILED
Mo	95	72	3	4.64574	ug/l	5	92.9	80	120	Mo	
Ru	101	72	2	10.37522	ug/l	10	103.8	80	120	Ru	
Rh	103	72	2	10.02783	ug/l	10	100.3	80	120	Rh	
Pd	105	72	2	0.56340	ug/l	0.5	112.7	80	120	Pd	
Ag	107	115	3	1.86101	ug/l	2	93.1	80	120	Ag	
Cd	111	115	3	0.49972	ug/l	0.5	99.9	80	120	Cd	
Sn	118	115	3	1.85552	ug/l	2	92.8	80	120	Sn	
Sb	121	115	3	4.60644	ug/l	5	92.1	80	120	Sb	
Te	125	165	2	9.16440	ug/l	10	91.6	80	120	Te	
Cs	133	165	2	0.89131	ug/l	1	89.1	80	120	Cs	
Ba	137	165	3	1.88202	ug/l	2	94.1	80	120	Ba	
La	139	165	2	1.82193	ug/l	2	91.1	80	120	La	
Ce	140	165	2	9.07605	ug/l	10	90.8	80	120	Ce	
Pr	141	165	2	1.85499	ug/l	2	92.7	80	120	Pr	
Nd	146	165	2	1.86655	ug/l	2	93.3	80	120	Nd	
Sm	147	165	3	9.21247	ug/l	10	92.1	80	120	Sm	
Hf	178	165	2	8.64563	ug/l	10	86.5	80	120	Hf	
Ta	181	165	2	7.46754	ug/l	10	74.7	80	120	Ta	FAILED
W	182	165	2	4.85468	ug/l	5	97.1	80	120	W	
Re	185	193	3	9.12014	ug/l	10	91.2	80	120	Re	
Pt	195	193	2	1.01331	ug/l	1	101.3	80	120	Pt	
Au	197	193	3	4.43740	ug/l	5	88.7	80	120	Au	
Tl	205	193	3	1.84863	ug/l	2	92.4	80	120	Tl	
Pb	208	193	3	2.78571	ug/l	3	92.9	80	120	Pb	
Bi	209	193	2	17.58531	ug/l	20	87.9	80	120	Bi	
Th	232	193	3	1.77762	ug/l	2	88.9	80	120	Th	
U	238	193	3	0.88831	ug/l	1	88.8	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6460645	0.33	7411413	87.2	80	120	Li (IS)	
Sc (IS)	45	2	158522	1.07	143379	110.6	80	120	Sc (IS)	
Sc (IS)	45	3	2831749	0.49	2392712	118.3	80	120	Sc (IS)	
Ge (IS)	72	2	371410	0.93	323154	114.9	80	120	Ge (IS)	
Ge (IS)	72	3	2314201	0.17	1861986	124.3	80	120	Ge (IS)	FAILED
In (IS)	115	3	14698856	0.34	12119833	121.3	80	120	In (IS)	FAILED
Ho (IS)	165	2	10609600	0.68	9598706	110.5	80	120	Ho (IS)	
Ho (IS)	165	3	16633773	1.15	13687738	121.5	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6888235	0.63	6085322	113.2	80	120	Ir (IS)	
Ir (IS)	193	3	8230114	1.49	6951639	118.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**040_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:07:20-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	100.37465	ug/l	100	100.4	90	110	Li	
Be	9	6	3	106.89134	ug/l	100	106.9	90	110	Be	
B	11	6	3	221.70799	ug/l	200	110.9	90	110	B	FAILED
Na	23	45	2	2562.64833	ug/l	2500	102.5	90	110	Na	
Mg	24	45	2	2526.14240	ug/l	2500	101.0	90	110	Mg	
Al	27	45	2	2287.46514	ug/l	2500	91.5	90	110	Al	
P	31	45	2	2337.31642	ug/l	2500	93.5	90	110	P	
K	39	45	2	2483.22299	ug/l	2500	99.3	90	110	K	
Ca	44	45	3	2489.69711	ug/l	2500	99.6	90	110	Ca	
Ti	47	45	3	98.24519	ug/l	100	98.2	90	110	Ti	
V	51	45	2	99.05223	ug/l	100	99.1	90	110	V	
Cr	52	45	2	105.27667	ug/l	100	105.3	90	110	Cr	
Mn	55	72	2	92.04312	ug/l	100	92.0	90	110	Mn	
Fe	57	72	2	2367.54915	ug/l	2500	94.7	90	110	Fe	
Co	59	72	2	101.16543	ug/l	100	101.2	90	110	Co	
Ni	60	72	2	101.16918	ug/l	100	101.2	90	110	Ni	
Cu	63	72	2	99.97904	ug/l	100	100.0	90	110	Cu	
Zn	66	72	2	100.55063	ug/l	100	100.6	90	110	Zn	
As	75	72	2	98.89909	ug/l	100	98.9	90	110	As	
Se	78	72	2	49.79586	ug/l	50	99.6	90	110	Se	
Sr	88	72	3	99.87632	ug/l	100	99.9	90	110	Sr	
Y	89	72	2	101.63423	ug/l	100	101.6	90	110	Y	
Zr	90	72	2	101.63450	ug/l	100	101.6	90	110	Zr	
Nb	93	72	2	50.52013	ug/l	50	101.0	90	110	Nb	
Mo	95	72	3	45.06745	ug/l	50	90.1	90	110	Mo	
Ru	101	72	2	99.20031	ug/l	100	99.2	90	110	Ru	
Rh	103	72	2	105.08430	ug/l	100	105.1	90	110	Rh	
Pd	105	72	2	10.87492	ug/l	10	108.7	90	110	Pd	
Ag	107	115	3	17.47003	ug/l	20	87.4	90	110	Ag	FAILED
Cd	111	115	3	90.80761	ug/l	100	90.8	90	110	Cd	
Sn	118	115	3	97.87612	ug/l	100	97.9	90	110	Sn	
Sb	121	115	3	48.71739	ug/l	50	97.4	90	110	Sb	
Te	125	165	2	94.52892	ug/l	100	94.5	90	110	Te	
Cs	133	165	2	96.13717	ug/l	100	96.1	90	110	Cs	
Ba	137	165	3	92.44193	ug/l	100	92.4	90	110	Ba	
La	139	165	2	99.91483	ug/l	100	99.9	90	110	La	
Ce	140	165	2	100.05134	ug/l	100	100.1	90	110	Ce	
Pr	141	165	2	99.50283	ug/l	100	99.5	90	110	Pr	
Nd	146	165	2	91.43404	ug/l	100	91.4	90	110	Nd	
Sm	147	165	3	97.30777	ug/l	100	97.3	90	110	Sm	
Hf	178	165	2	101.02620	ug/l	100	101.0	90	110	Hf	
Ta	181	165	2	104.85005	ug/l	100	104.9	90	110	Ta	
W	182	165	2	105.59402	ug/l	100	105.6	90	110	W	
Re	185	193	3	96.67640	ug/l	100	96.7	90	110	Re	
Pt	195	193	2	10.06350	ug/l	10	100.6	90	110	Pt	
Au	197	193	3	94.30346	ug/l	100	94.3	90	110	Au	
Tl	205	193	3	19.46077	ug/l	20	97.3	90	110	Tl	
Pb	208	193	3	96.42757	ug/l	100	96.4	90	110	Pb	
Bi	209	193	2	94.96150	ug/l	100	95.0	90	110	Bi	
Th	232	193	3	93.77701	ug/l	100	93.8	90	110	Th	
U	238	193	3	94.11742	ug/l	100	94.1	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6455138	3.06	7411413	87.1	80	120	Li (IS)	
Sc (IS)	45	2	151719	1.15	143379	105.8	80	120	Sc (IS)	
Sc (IS)	45	3	2830590	6.12	2392712	118.3	80	120	Sc (IS)	
Ge (IS)	72	2	375046	1.07	323154	116.1	80	120	Ge (IS)	
Ge (IS)	72	3	2355860	3.64	1861986	126.5	80	120	Ge (IS)	FAILED
In (IS)	115	3	14816929	5.34	12119833	122.3	80	120	In (IS)	FAILED
Ho (IS)	165	2	10450882	0.57	9598706	108.9	80	120	Ho (IS)	
Ho (IS)	165	3	17103911	5.76	13687738	125.0	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6880816	0.75	6085322	113.1	80	120	Ir (IS)	
Ir (IS)	193	3	8585466	5.34	6951639	123.5	80	120	Ir (IS)	FAILED

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**041_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:14:05-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.43972	ug/l	1.388	Li	
Be	9	6	3	-0.00203	ug/l	0.7	Be	
B	11	6	3	3.15915	ug/l	20	B	
Na	23	45	2	7.50637	ug/l	30	Na	
Mg	24	45	2	0.45026	ug/l	11.18	Mg	
Al	27	45	2	0.48435	ug/l	25.8	Al	
P	31	45	2	1.23370	ug/l	16.46	P	
K	39	45	2	2.48780	ug/l	83.2	K	
Ca	44	45	3	-0.29288	ug/l	136.2	Ca	
Ti	47	45	3	0.02419	ug/l	4.2	Ti	
V	51	45	2	-0.02791	ug/l	4.74	V	
Cr	52	45	2	-0.00086	ug/l	6.52	Cr	
Mn	55	72	2	0.05045	ug/l	0.49	Mn	
Fe	57	72	2	0.71336	ug/l	40.7	Fe	
Co	59	72	2	0.02131	ug/l	0.434	Co	
Ni	60	72	2	0.00643	ug/l	0.8	Ni	
Cu	63	72	2	-0.15280	ug/l	0.902	Cu	
Zn	66	72	2	0.13179	ug/l	16.58	Zn	
As	75	72	2	-0.00382	ug/l	2.36	As	
Se	78	72	2	0.27370	ug/l	3.18	Se	
Sr	88	72	3	0.00941	ug/l	2	Sr	
Y	89	72	2	0.01474	ug/l	0.424	Y	
Zr	90	72	2	0.02346	ug/l	0.496	Zr	
Nb	93	72	2	0.23894	ug/l	4.62	Nb	
Mo	95	72	3	0.03367	ug/l	2	Mo	
Ru	101	72	2	0.01762	ug/l	2	Ru	
Rh	103	72	2	0.01806	ug/l	1.634	Rh	
Pd	105	72	2	-0.00488	ug/l	0.08	Pd	
Ag	107	115	3	0.00519	ug/l	1.54	Ag	
Cd	111	115	3	0.00447	ug/l	0.4	Cd	
Sn	118	115	3	0.02632	ug/l	2	Sn	
Sb	121	115	3	-0.00384	ug/l	3.34	Sb	
Te	125	165	2	0.03641	ug/l	1.072	Te	
Cs	133	165	2	0.01444	ug/l	0.106	Cs	
Ba	137	165	3	0.01594	ug/l	0.446	Ba	
La	139	165	2	0.01383	ug/l	0.102	La	
Ce	140	165	2	0.01604	ug/l	1.772	Ce	
Pr	141	165	2	0.01634	ug/l	0.084	Pr	
Nd	146	165	2	0.01857	ug/l	0.208	Nd	
Sm	147	165	3	0.00804	ug/l	0.652	Sm	
Hf	178	165	2	0.02847	ug/l	2.26	Hf	
Ta	181	165	2	0.01692	ug/l	1.46	Ta	
W	182	165	2	0.43121	ug/l	4	W	
Re	185	193	3	0.00669	ug/l	0.05	Re	
Pt	195	193	2	0.00389	ug/l	0.12	Pt	
Au	197	193	3	0.13506	ug/l	1	Au	
Tl	205	193	3	0.00749	ug/l	1.1	Tl	
Pb	208	193	3	0.05826	ug/l	0.346	Pb	
Bi	209	193	2	0.02836	ug/l	1.464	Bi	
Th	232	193	3	0.03039	ug/l	1.104	Th	
U	238	193	3	0.00837	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6446074	0.49	7411413	87.0	80	120	Li (IS)	
Sc (IS)	45	2	155680	0.42	143379	108.6	80	120	Sc (IS)	
Sc (IS)	45	3	2800297	0.69	2392712	117.0	80	120	Sc (IS)	
Ge (IS)	72	2	364569	0.68	323154	112.8	80	120	Ge (IS)	
Ge (IS)	72	3	2284019	0.73	1861986	122.7	80	120	Ge (IS)	FAILED
In (IS)	115	3	14575940	1.31	12119833	120.3	80	120	In (IS)	FAILED
Ho (IS)	165	2	10551449	0.63	9598706	109.9	80	120	Ho (IS)	
Ho (IS)	165	3	16500932	0.81	13687738	120.6	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6921374	0.51	6085322	113.7	80	120	Ir (IS)	
Ir (IS)	193	3	8371718	1.05	6951639	120.4	80	120	Ir (IS)	FAILED

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36400-A-8-B**
Data File Name	**042SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:20:48-06:00**
Type	**Sample**
VialNumber	**2209**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	3.09871	6.19742	ug/l	1000	Li	
Be	9	6	3	-0.01460	-0.02920	ug/l	1000	Be	
B	11	6	3	7.49674	14.99347	ug/l	2000	B	
Na	23	45	2	24767.40271	49534.80542	ug/l	50000	Na	
Mg	24	45	2	8201.74869	16403.49739	ug/l	50000	Mg	
Al	27	45	2	13.36830	26.73659	ug/l	100000	Al	
P	31	45	2	19.89019	39.78037	ug/l	100000	P	
K	39	45	2	2626.77587	5253.55174	ug/l	100000	K	
Ca	44	45	3	24675.59133	49351.18267	ug/l	100000	Ca	
Ti	47	45	3	0.74991	1.49981	ug/l	2000	Ti	
V	51	45	2	8.02363	16.04725	ug/l	2000	V	
Cr	52	45	2	9.99984	19.99968	ug/l	2000	Cr	
Mn	55	72	2	0.17759	0.35517	ug/l	5000	Mn	
Fe	57	72	2	8.42540	16.85079	ug/l	100000	Fe	
Co	59	72	2	0.05986	0.11972	ug/l	2000	Co	
Ni	60	72	2	0.12212	0.24425	ug/l	2000	Ni	
Cu	63	72	2	0.08843	0.17685	ug/l	2000	Cu	
Zn	66	72	2	2.13586	4.27172	ug/l	5000	Zn	
As	75	72	2	1.13111	2.26222	ug/l	2000	As	
Se	78	72	2	1.63710	3.27419	ug/l	1000	Se	
Sr	88	72	3	112.51496	225.02991	ug/l	2000	Sr	
Y	89	72	2	-0.00042	-0.00085	ug/l	200	Y	
Zr	90	72	2	0.08995	0.17991	ug/l	2000	Zr	
Nb	93	72	2	0.08305	0.16610	ug/l	100	Nb	
Mo	95	72	3	2.81235	5.62470	ug/l	1000	Mo	
Ru	101	72	2	-0.00426	-0.00852	ug/l	200	Ru	
Rh	103	72	2	-0.00504	-0.01009	ug/l	200	Rh	
Pd	105	72	2	-0.00147	-0.00294	ug/l	20	Pd	
Ag	107	115	3	0.00652	0.01304	ug/l	400	Ag	
Cd	111	115	3	-0.00238	-0.00475	ug/l	2000	Cd	
Sn	118	115	3	0.11652	0.23305	ug/l	2000	Sn	
Sb	121	115	3	0.06967	0.13935	ug/l	1000	Sb	
Te	125	165	2	0.03602	0.07204	ug/l	200	Te	
Cs	133	165	2	0.00257	0.00513	ug/l	2000	Cs	
Ba	137	165	3	27.40420	54.80841	ug/l	5000	Ba	
La	139	165	2	-0.00208	-0.00416	ug/l	200	La	
Ce	140	165	2	-0.00050	-0.00100	ug/l	200	Ce	
Pr	141	165	2	-0.00271	-0.00542	ug/l	200	Pr	
Nd	146	165	2	0.00029	0.00058	ug/l	200	Nd	
Sm	147	165	3	0.00024	0.00049	ug/l	2000	Sm	
Hf	178	165	2	0.09938	0.19877	ug/l	200	Hf	
Ta	181	165	2	0.02167	0.04334	ug/l	200	Ta	
W	182	165	2	0.42393	0.84786	ug/l	2000	W	
Re	185	193	3	0.00160	0.00320	ug/l	200	Re	
Pt	195	193	2	0.00325	0.00650	ug/l	200	Pt	
Au	197	193	3	-0.00215	-0.00429	ug/l	2000	Au	
Tl	205	193	3	-0.02458	-0.04917	ug/l	400	Tl	
Pb	208	193	3	0.06839	0.13678	ug/l	5000	Pb	
Bi	209	193	2	0.00822	0.01643	ug/l	2000	Bi	
Th	232	193	3	0.04273	0.08545	ug/l	2000	Th	
U	238	193	3	0.82339	1.64678	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5856834	2.53	7411413	79.0	80	120	Li (IS)	FAILED
Sc (IS)	45	2	148780	3.46	143379	103.8	80	120	Sc (IS)	
Sc (IS)	45	3	2721930	3.42	2392712	113.8	80	120	Sc (IS)	
Ge (IS)	72	2	352839	2.90	323154	109.2	80	120	Ge (IS)	
Ge (IS)	72	3	2231232	2.72	1861986	119.8	80	120	Ge (IS)	
In (IS)	115	3	13876789	4.17	12119833	114.5	80	120	In (IS)	
Ho (IS)	165	2	10459348	3.28	9598706	109.0	80	120	Ho (IS)	
Ho (IS)	165	3	16303237	3.60	13687738	119.1	80	120	Ho (IS)	
Ir (IS)	193	2	6630864	2.52	6085322	109.0	80	120	Ir (IS)	
Ir (IS)	193	3	7903203	4.44	6951639	113.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36400-A-10-B**
Data File Name	**043SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:27:32-06:00**
Type	**Sample**
VialNumber	**2210**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	2.70292	5.40584	ug/l	1000	Li	
Be	9	6	3	-0.01332	-0.02663	ug/l	1000	Be	
B	11	6	3	9.72065	19.44131	ug/l	2000	B	
Na	23	45	2	6778.26256	13556.52512	ug/l	50000	Na	
Mg	24	45	2	8734.47138	17468.94276	ug/l	50000	Mg	
Al	27	45	2	13.22924	26.45849	ug/l	100000	Al	
P	31	45	2	11.30681	22.61362	ug/l	100000	P	
K	39	45	2	2188.93752	4377.87503	ug/l	100000	K	
Ca	44	45	3	25868.44105	51736.88210	ug/l	100000	Ca	
Ti	47	45	3	0.77767	1.55533	ug/l	2000	Ti	
V	51	45	2	11.92005	23.84009	ug/l	2000	V	
Cr	52	45	2	4.87784	9.75567	ug/l	2000	Cr	
Mn	55	72	2	0.14911	0.29821	ug/l	5000	Mn	
Fe	57	72	2	4.90490	9.80979	ug/l	100000	Fe	
Co	59	72	2	0.03774	0.07548	ug/l	2000	Co	
Ni	60	72	2	0.48523	0.97046	ug/l	2000	Ni	
Cu	63	72	2	-0.05929	-0.11857	ug/l	2000	Cu	
Zn	66	72	2	5.37557	10.75113	ug/l	5000	Zn	
As	75	72	2	0.72537	1.45075	ug/l	2000	As	
Se	78	72	2	1.74418	3.48836	ug/l	1000	Se	
Sr	88	72	3	108.74345	217.48690	ug/l	2000	Sr	
Y	89	72	2	-0.00368	-0.00736	ug/l	200	Y	
Zr	90	72	2	0.02845	0.05690	ug/l	2000	Zr	
Nb	93	72	2	-0.01448	-0.02896	ug/l	100	Nb	
Mo	95	72	3	2.30044	4.60089	ug/l	1000	Mo	
Ru	101	72	2	-0.00402	-0.00804	ug/l	200	Ru	
Rh	103	72	2	-0.00490	-0.00980	ug/l	200	Rh	
Pd	105	72	2	-0.00191	-0.00382	ug/l	20	Pd	
Ag	107	115	3	0.00512	0.01025	ug/l	400	Ag	
Cd	111	115	3	-0.00303	-0.00606	ug/l	2000	Cd	
Sn	118	115	3	0.08967	0.17934	ug/l	2000	Sn	
Sb	121	115	3	0.03591	0.07182	ug/l	1000	Sb	
Te	125	165	2	0.00971	0.01942	ug/l	200	Te	
Cs	133	165	2	-0.00059	-0.00119	ug/l	2000	Cs	
Ba	137	165	3	21.21995	42.43989	ug/l	5000	Ba	
La	139	165	2	-0.00355	-0.00710	ug/l	200	La	
Ce	140	165	2	-0.00278	-0.00556	ug/l	200	Ce	
Pr	141	165	2	-0.00321	-0.00642	ug/l	200	Pr	
Nd	146	165	2	-0.00180	-0.00360	ug/l	200	Nd	
Sm	147	165	3	-0.00280	-0.00560	ug/l	2000	Sm	
Hf	178	165	2	0.02235	0.04470	ug/l	200	Hf	
Ta	181	165	2	-0.00492	-0.00985	ug/l	200	Ta	
W	182	165	2	0.33321	0.66643	ug/l	2000	W	
Re	185	193	3	0.00058	0.00116	ug/l	200	Re	
Pt	195	193	2	0.00208	0.00416	ug/l	200	Pt	
Au	197	193	3	-0.01541	-0.03081	ug/l	2000	Au	
Tl	205	193	3	-0.02791	-0.05581	ug/l	400	Tl	
Pb	208	193	3	0.05976	0.11952	ug/l	5000	Pb	
Bi	209	193	2	0.00981	0.01962	ug/l	2000	Bi	
Th	232	193	3	0.01480	0.02960	ug/l	2000	Th	
U	238	193	3	0.38199	0.76399	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5894742	0.86	7411413	79.5	80	120	Li (IS)	FAILED
Sc (IS)	45	2	150001	0.32	143379	104.6	80	120	Sc (IS)	
Sc (IS)	45	3	2851298	0.47	2392712	119.2	80	120	Sc (IS)	
Ge (IS)	72	2	357985	0.54	323154	110.8	80	120	Ge (IS)	
Ge (IS)	72	3	2325644	0.32	1861986	124.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	14496203	0.75	12119833	119.6	80	120	In (IS)	
Ho (IS)	165	2	10482424	0.27	9598706	109.2	80	120	Ho (IS)	
Ho (IS)	165	3	16816597	1.31	13687738	122.9	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6735104	0.13	6085322	110.7	80	120	Ir (IS)	
Ir (IS)	193	3	8180824	1.07	6951639	117.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36400-A-11-B**
Data File Name	**044SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:34:16-06:00**
Type	**Sample**
VialNumber	**2211**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	2.88430	5.76860	ug/l	1000	Li	
Be	9	6	3	-0.01577	-0.03153	ug/l	1000	Be	
B	11	6	3	8.48653	16.97307	ug/l	2000	B	
Na	23	45	2	6841.43728	13682.87456	ug/l	50000	Na	
Mg	24	45	2	8986.07795	17972.15591	ug/l	50000	Mg	
Al	27	45	2	9.94838	19.89676	ug/l	100000	Al	
P	31	45	2	13.38065	26.76129	ug/l	100000	P	
K	39	45	2	2229.84314	4459.68629	ug/l	100000	K	
Ca	44	45	3	26440.17043	52880.34086	ug/l	100000	Ca	
Ti	47	45	3	1.25006	2.50012	ug/l	2000	Ti	
V	51	45	2	12.30483	24.60966	ug/l	2000	V	
Cr	52	45	2	9.58767	19.17534	ug/l	2000	Cr	
Mn	55	72	2	1.04969	2.09937	ug/l	5000	Mn	
Fe	57	72	2	41.21493	82.42987	ug/l	100000	Fe	
Co	59	72	2	0.03205	0.06410	ug/l	2000	Co	
Ni	60	72	2	1.04314	2.08629	ug/l	2000	Ni	
Cu	63	72	2	-0.00198	-0.00396	ug/l	2000	Cu	
Zn	66	72	2	8.36581	16.73162	ug/l	5000	Zn	
As	75	72	2	0.75734	1.51468	ug/l	2000	As	
Se	78	72	2	2.30451	4.60903	ug/l	1000	Se	
Sr	88	72	3	113.43615	226.87231	ug/l	2000	Sr	
Y	89	72	2	0.00140	0.00280	ug/l	200	Y	
Zr	90	72	2	0.02690	0.05380	ug/l	2000	Zr	
Nb	93	72	2	-0.06083	-0.12166	ug/l	100	Nb	
Mo	95	72	3	2.47682	4.95364	ug/l	1000	Mo	
Ru	101	72	2	-0.00524	-0.01049	ug/l	200	Ru	
Rh	103	72	2	-0.00648	-0.01297	ug/l	200	Rh	
Pd	105	72	2	-0.00327	-0.00655	ug/l	20	Pd	
Ag	107	115	3	0.00628	0.01255	ug/l	400	Ag	
Cd	111	115	3	-0.00130	-0.00259	ug/l	2000	Cd	
Sn	118	115	3	0.08993	0.17986	ug/l	2000	Sn	
Sb	121	115	3	0.00395	0.00790	ug/l	1000	Sb	
Te	125	165	2	-0.01345	-0.02689	ug/l	200	Te	
Cs	133	165	2	-0.00050	-0.00101	ug/l	2000	Cs	
Ba	137	165	3	21.99743	43.99486	ug/l	5000	Ba	
La	139	165	2	0.00164	0.00329	ug/l	200	La	
Ce	140	165	2	0.00895	0.01790	ug/l	200	Ce	
Pr	141	165	2	-0.00216	-0.00431	ug/l	200	Pr	
Nd	146	165	2	0.00346	0.00691	ug/l	200	Nd	
Sm	147	165	3	-0.00118	-0.00236	ug/l	2000	Sm	
Hf	178	165	2	0.01140	0.02279	ug/l	200	Hf	
Ta	181	165	2	-0.01480	-0.02961	ug/l	200	Ta	
W	182	165	2	0.23291	0.46582	ug/l	2000	W	
Re	185	193	3	0.00117	0.00235	ug/l	200	Re	
Pt	195	193	2	0.00265	0.00530	ug/l	200	Pt	
Au	197	193	3	-0.03246	-0.06491	ug/l	2000	Au	
Tl	205	193	3	-0.03592	-0.07185	ug/l	400	Tl	
Pb	208	193	3	0.07407	0.14813	ug/l	5000	Pb	
Bi	209	193	2	0.00332	0.00664	ug/l	2000	Bi	
Th	232	193	3	0.00723	0.01445	ug/l	2000	Th	
U	238	193	3	0.39797	0.79594	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5753809	5.22	7411413	77.6	80	120	Li (IS)	FAILED
Sc (IS)	45	2	148257	0.61	143379	103.4	80	120	Sc (IS)	
Sc (IS)	45	3	2828323	6.92	2392712	118.2	80	120	Sc (IS)	
Ge (IS)	72	2	353583	0.23	323154	109.4	80	120	Ge (IS)	
Ge (IS)	72	3	2291733	5.35	1861986	123.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	14440242	6.04	12119833	119.1	80	120	In (IS)	
Ho (IS)	165	2	10452543	0.39	9598706	108.9	80	120	Ho (IS)	
Ho (IS)	165	3	16911042	8.09	13687738	123.5	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6745307	0.64	6085322	110.8	80	120	Ir (IS)	
Ir (IS)	193	3	8166913	7.44	6951639	117.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36419-A-12-D**
Data File Name	**045SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:41:01-06:00**
Type	**Sample**
VialNumber	**2212**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	3.29355	6.58710	ug/l	1000	Li	
Be	9	6	3	-0.01596	-0.03193	ug/l	1000	Be	
B	11	6	3	24.44423	48.88845	ug/l	2000	B	
Na	23	45	2	12210.88899	24421.77797	ug/l	50000	Na	
Mg	24	45	2	8029.72485	16059.44971	ug/l	50000	Mg	
Al	27	45	2	7.74818	15.49636	ug/l	100000	Al	
P	31	45	2	18.57519	37.15038	ug/l	100000	P	
K	39	45	2	3066.49140	6132.98279	ug/l	100000	K	
Ca	44	45	3	46473.95542	92947.91084	ug/l	100000	Ca	
Ti	47	45	3	0.52177	1.04354	ug/l	2000	Ti	
V	51	45	2	2.67981	5.35962	ug/l	2000	V	
Cr	52	45	2	0.74711	1.49423	ug/l	2000	Cr	
Mn	55	72	2	0.32039	0.64077	ug/l	5000	Mn	
Fe	57	72	2	6.70696	13.41393	ug/l	100000	Fe	
Co	59	72	2	0.09018	0.18036	ug/l	2000	Co	
Ni	60	72	2	1.17984	2.35967	ug/l	2000	Ni	
Cu	63	72	2	0.98196	1.96391	ug/l	2000	Cu	
Zn	66	72	2	14.70147	29.40294	ug/l	5000	Zn	
As	75	72	2	1.08486	2.16972	ug/l	2000	As	
Se	78	72	2	0.46688	0.93376	ug/l	1000	Se	
Sr	88	72	3	185.38910	370.77819	ug/l	2000	Sr	
Y	89	72	2	0.00382	0.00763	ug/l	200	Y	
Zr	90	72	2	0.01474	0.02949	ug/l	2000	Zr	
Nb	93	72	2	-0.07536	-0.15073	ug/l	100	Nb	
Mo	95	72	3	0.59202	1.18403	ug/l	1000	Mo	
Ru	101	72	2	-0.00471	-0.00942	ug/l	200	Ru	
Rh	103	72	2	-0.00564	-0.01128	ug/l	200	Rh	
Pd	105	72	2	-0.00253	-0.00505	ug/l	20	Pd	
Ag	107	115	3	0.02548	0.05096	ug/l	400	Ag	
Cd	111	115	3	0.00120	0.00239	ug/l	2000	Cd	
Sn	118	115	3	0.13031	0.26062	ug/l	2000	Sn	
Sb	121	115	3	0.05788	0.11576	ug/l	1000	Sb	
Te	125	165	2	-0.01352	-0.02703	ug/l	200	Te	
Cs	133	165	2	0.00136	0.00273	ug/l	2000	Cs	
Ba	137	165	3	31.59672	63.19344	ug/l	5000	Ba	
La	139	165	2	-0.00236	-0.00473	ug/l	200	La	
Ce	140	165	2	-0.00202	-0.00404	ug/l	200	Ce	
Pr	141	165	2	-0.00281	-0.00562	ug/l	200	Pr	
Nd	146	165	2	0.00049	0.00097	ug/l	200	Nd	
Sm	147	165	3	-0.00277	-0.00553	ug/l	2000	Sm	
Hf	178	165	2	0.00375	0.00750	ug/l	200	Hf	
Ta	181	165	2	-0.01130	-0.02260	ug/l	200	Ta	
W	182	165	2	0.25356	0.50713	ug/l	2000	W	
Re	185	193	3	-0.00096	-0.00191	ug/l	200	Re	
Pt	195	193	2	0.00617	0.01234	ug/l	200	Pt	
Au	197	193	3	-0.03686	-0.07373	ug/l	2000	Au	
Tl	205	193	3	-0.03827	-0.07655	ug/l	400	Tl	
Pb	208	193	3	0.06721	0.13441	ug/l	5000	Pb	
Bi	209	193	2	0.00177	0.00354	ug/l	2000	Bi	
Th	232	193	3	0.00281	0.00562	ug/l	2000	Th	
U	238	193	3	2.01541	4.03082	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5723322	0.87	7411413	77.2	80	120	Li (IS)	FAILED
Sc (IS)	45	2	148758	0.73	143379	103.8	80	120	Sc (IS)	
Sc (IS)	45	3	2835594	0.40	2392712	118.5	80	120	Sc (IS)	
Ge (IS)	72	2	356289	0.17	323154	110.3	80	120	Ge (IS)	
Ge (IS)	72	3	2302962	0.20	1861986	123.7	80	120	Ge (IS)	FAILED
In (IS)	115	3	14404233	0.21	12119833	118.8	80	120	In (IS)	
Ho (IS)	165	2	10495758	0.76	9598706	109.3	80	120	Ho (IS)	
Ho (IS)	165	3	16969932	0.77	13687738	124.0	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6714103	0.83	6085322	110.3	80	120	Ir (IS)	
Ir (IS)	193	3	8280711	0.57	6951639	119.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36419-A-12-D SD**
Data File Name	**046SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:47:43-06:00**
Type	**Sample**
VialNumber	**2301**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	1.02011	10.20112	ug/l	1000	Li	
Be	9	6	3	-0.01454	-0.14537	ug/l	1000	Be	
B	11	6	3	4.57793	45.77929	ug/l	2000	B	
Na	23	45	2	2420.88440	24208.84401	ug/l	50000	Na	
Mg	24	45	2	1597.84660	15978.46598	ug/l	50000	Mg	
Al	27	45	2	5.78910	57.89097	ug/l	100000	Al	
P	31	45	2	3.64756	36.47564	ug/l	100000	P	
K	39	45	2	582.06485	5820.64854	ug/l	100000	K	
Ca	44	45	3	9141.42049	91414.20486	ug/l	100000	Ca	
Ti	47	45	3	0.12844	1.28439	ug/l	2000	Ti	
V	51	45	2	0.54358	5.43579	ug/l	2000	V	
Cr	52	45	2	0.12878	1.28779	ug/l	2000	Cr	
Mn	55	72	2	0.08909	0.89090	ug/l	5000	Mn	
Fe	57	72	2	1.56698	15.66978	ug/l	100000	Fe	
Co	59	72	2	0.01545	0.15453	ug/l	2000	Co	
Ni	60	72	2	0.22995	2.29946	ug/l	2000	Ni	
Cu	63	72	2	-0.10880	-1.08803	ug/l	2000	Cu	
Zn	66	72	2	3.24642	32.46420	ug/l	5000	Zn	
As	75	72	2	0.18339	1.83390	ug/l	2000	As	
Se	78	72	2	0.33193	3.31929	ug/l	1000	Se	
Sr	88	72	3	36.16697	361.66973	ug/l	2000	Sr	
Y	89	72	2	-0.00217	-0.02166	ug/l	200	Y	
Zr	90	72	2	0.00201	0.02013	ug/l	2000	Zr	
Nb	93	72	2	-0.10710	-1.07098	ug/l	100	Nb	
Mo	95	72	3	0.06198	0.61984	ug/l	1000	Mo	
Ru	101	72	2	-0.00511	-0.05113	ug/l	200	Ru	
Rh	103	72	2	-0.00557	-0.05573	ug/l	200	Rh	
Pd	105	72	2	-0.00940	-0.09396	ug/l	20	Pd	
Ag	107	115	3	0.00420	0.04202	ug/l	400	Ag	
Cd	111	115	3	-0.01110	-0.11103	ug/l	2000	Cd	
Sn	118	115	3	-0.01873	-0.18728	ug/l	2000	Sn	
Sb	121	115	3	-0.01196	-0.11957	ug/l	1000	Sb	
Te	125	165	2	0.00535	0.05355	ug/l	200	Te	
Cs	133	165	2	-0.00492	-0.04920	ug/l	2000	Cs	
Ba	137	165	3	6.22605	62.26046	ug/l	5000	Ba	
La	139	165	2	-0.00308	-0.03081	ug/l	200	La	
Ce	140	165	2	-0.00283	-0.02831	ug/l	200	Ce	
Pr	141	165	2	-0.00312	-0.03123	ug/l	200	Pr	
Nd	146	165	2	-0.00043	-0.00431	ug/l	200	Nd	
Sm	147	165	3	-0.00304	-0.03039	ug/l	2000	Sm	
Hf	178	165	2	-0.00359	-0.03593	ug/l	200	Hf	
Ta	181	165	2	-0.02963	-0.29635	ug/l	200	Ta	
W	182	165	2	0.04464	0.44639	ug/l	2000	W	
Re	185	193	3	-0.00252	-0.02523	ug/l	200	Re	
Pt	195	193	2	0.00191	0.01914	ug/l	200	Pt	
Au	197	193	3	-0.03806	-0.38063	ug/l	2000	Au	
Tl	205	193	3	-0.04238	-0.42377	ug/l	400	Tl	
Pb	208	193	3	0.02235	0.22350	ug/l	5000	Pb	
Bi	209	193	2	-0.00538	-0.05377	ug/l	2000	Bi	
Th	232	193	3	-0.00843	-0.08425	ug/l	2000	Th	
U	238	193	3	0.38591	3.85908	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6359895	1.37	7411413	85.8	80	120	Li (IS)	
Sc (IS)	45	2	153176	0.46	143379	106.8	80	120	Sc (IS)	
Sc (IS)	45	3	2870235	4.50	2392712	120.0	80	120	Sc (IS)	
Ge (IS)	72	2	364298	0.79	323154	112.7	80	120	Ge (IS)	
Ge (IS)	72	3	2369889	3.25	1861986	127.3	80	120	Ge (IS)	FAILED
In (IS)	115	3	15049083	4.57	12119833	124.2	80	120	In (IS)	FAILED
Ho (IS)	165	2	10690102	0.71	9598706	111.4	80	120	Ho (IS)	
Ho (IS)	165	3	17125761	5.50	13687738	125.1	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6821980	0.60	6085322	112.1	80	120	Ir (IS)	
Ir (IS)	193	3	8459956	2.96	6951639	121.7	80	120	Ir (IS)	FAILED

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36419-A-12-E MS**
Data File Name	**047SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T20:54:27-06:00**
Type	**Sample**
VialNumber	**2302**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	53.91703	107.83407	ug/l	1000	Li	
Be	9	6	3	53.82135	107.64270	ug/l	1000	Be	
B	11	6	3	140.78710	281.57420	ug/l	2000	B	
Na	23	45	2	17690.24310	35380.48620	ug/l	50000	Na	
Mg	24	45	2	13228.28296	26456.56592	ug/l	50000	Mg	
Al	27	45	2	4961.64102	9923.28203	ug/l	100000	Al	
P	31	45	2	497.61847	995.23693	ug/l	100000	P	
K	39	45	2	8071.43645	16142.87291	ug/l	100000	K	
Ca	44	45	3	50069.81382	100139.62763	ug/l	100000	Ca	
Ti	47	45	3	492.80567	985.61135	ug/l	2000	Ti	
V	51	45	2	520.13432	1040.26865	ug/l	2000	V	
Cr	52	45	2	523.00124	1046.00249	ug/l	2000	Cr	
Mn	55	72	2	511.47364	1022.94728	ug/l	5000	Mn	
Fe	57	72	2	5212.79366	10425.58731	ug/l	100000	Fe	
Co	59	72	2	523.35159	1046.70318	ug/l	2000	Co	
Ni	60	72	2	562.51082	1125.02165	ug/l	2000	Ni	
Cu	63	72	2	522.87197	1045.74394	ug/l	2000	Cu	
Zn	66	72	2	554.43058	1108.86116	ug/l	5000	Zn	
As	75	72	2	506.72789	1013.45579	ug/l	2000	As	
Se	78	72	2	236.90264	473.80528	ug/l	1000	Se	
Sr	88	72	3	678.81303	1357.62605	ug/l	2000	Sr	
Y	89	72	2	0.00989	0.01977	ug/l	200	Y	
Zr	90	72	2	538.88181	1077.76362	ug/l	2000	Zr	
Nb	93	72	2	0.35503	0.71006	ug/l	100	Nb	
Mo	95	72	3	245.68413	491.36826	ug/l	1000	Mo	
Ru	101	72	2	-0.00467	-0.00933	ug/l	200	Ru	
Rh	103	72	2	0.01864	0.03729	ug/l	200	Rh	
Pd	105	72	2	0.03368	0.06737	ug/l	20	Pd	
Ag	107	115	3	93.92311	187.84622	ug/l	400	Ag	
Cd	111	115	3	484.07194	968.14389	ug/l	2000	Cd	
Sn	118	115	3	491.24025	982.48049	ug/l	2000	Sn	
Sb	121	115	3	246.73223	493.46446	ug/l	1000	Sb	
Te	125	165	2	0.08159	0.16318	ug/l	200	Te	
Cs	133	165	2	0.00276	0.00553	ug/l	2000	Cs	
Ba	137	165	3	512.01528	1024.03056	ug/l	5000	Ba	
La	139	165	2	0.74093	1.48187	ug/l	200	La	
Ce	140	165	2	0.01879	0.03758	ug/l	200	Ce	
Pr	141	165	2	0.00079	0.00158	ug/l	200	Pr	
Nd	146	165	2	0.00854	0.01707	ug/l	200	Nd	
Sm	147	165	3	493.72637	987.45273	ug/l	2000	Sm	
Hf	178	165	2	0.25160	0.50320	ug/l	200	Hf	
Ta	181	165	2	0.38062	0.76123	ug/l	200	Ta	
W	182	165	2	536.38288	1072.76576	ug/l	2000	W	
Re	185	193	3	0.00834	0.01668	ug/l	200	Re	
Pt	195	193	2	0.00401	0.00803	ug/l	200	Pt	
Au	197	193	3	-0.03433	-0.06867	ug/l	2000	Au	
Tl	205	193	3	99.90083	199.80166	ug/l	400	Tl	
Pb	208	193	3	486.30004	972.60008	ug/l	5000	Pb	
Bi	209	193	2	485.74221	971.48443	ug/l	2000	Bi	
Th	232	193	3	486.93895	973.87790	ug/l	2000	Th	
U	238	193	3	500.08664	1000.17328	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5698186	0.63	7411413	76.9	80	120	Li (IS)	FAILED
Sc (IS)	45	2	143814	4.04	143379	100.3	80	120	Sc (IS)	
Sc (IS)	45	3	2744886	0.65	2392712	114.7	80	120	Sc (IS)	
Ge (IS)	72	2	332565	4.11	323154	102.9	80	120	Ge (IS)	
Ge (IS)	72	3	2256867	1.14	1861986	121.2	80	120	Ge (IS)	FAILED
In (IS)	115	3	13958662	0.63	12119833	115.2	80	120	In (IS)	
Ho (IS)	165	2	9805269	4.13	9598706	102.2	80	120	Ho (IS)	
Ho (IS)	165	3	16568886	0.88	13687738	121.0	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6180597	4.15	6085322	101.6	80	120	Ir (IS)	
Ir (IS)	193	3	8021205	0.48	6951639	115.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36419-A-12-F MSD**
Data File Name	**048SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:01:09-06:00**
Type	**Sample**
VialNumber	**2303**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	54.94691	109.89382	ug/l	1000	Li	
Be	9	6	3	54.26920	108.53841	ug/l	1000	Be	
B	11	6	3	142.57175	285.14349	ug/l	2000	B	
Na	23	45	2	16644.13043	33288.26086	ug/l	50000	Na	
Mg	24	45	2	12386.69457	24773.38913	ug/l	50000	Mg	
Al	27	45	2	4604.10793	9208.21586	ug/l	100000	Al	
P	31	45	2	460.03025	920.06050	ug/l	100000	P	
K	39	45	2	7566.08733	15132.17466	ug/l	100000	K	
Ca	44	45	3	50174.49699	100348.99399	ug/l	100000	Ca	
Ti	47	45	3	491.52038	983.04076	ug/l	2000	Ti	
V	51	45	2	486.60080	973.20159	ug/l	2000	V	
Cr	52	45	2	489.70324	979.40648	ug/l	2000	Cr	
Mn	55	72	2	476.48374	952.96748	ug/l	5000	Mn	
Fe	57	72	2	4910.54629	9821.09258	ug/l	100000	Fe	
Co	59	72	2	493.21974	986.43948	ug/l	2000	Co	
Ni	60	72	2	527.99542	1055.99085	ug/l	2000	Ni	
Cu	63	72	2	488.52874	977.05749	ug/l	2000	Cu	
Zn	66	72	2	517.30163	1034.60327	ug/l	5000	Zn	
As	75	72	2	476.17010	952.34020	ug/l	2000	As	
Se	78	72	2	226.53196	453.06391	ug/l	1000	Se	
Sr	88	72	3	685.15781	1370.31563	ug/l	2000	Sr	
Y	89	72	2	0.00874	0.01747	ug/l	200	Y	
Zr	90	72	2	503.67243	1007.34486	ug/l	2000	Zr	
Nb	93	72	2	0.16833	0.33665	ug/l	100	Nb	
Mo	95	72	3	247.04419	494.08837	ug/l	1000	Mo	
Ru	101	72	2	-0.00327	-0.00655	ug/l	200	Ru	
Rh	103	72	2	0.01838	0.03676	ug/l	200	Rh	
Pd	105	72	2	0.03034	0.06068	ug/l	20	Pd	
Ag	107	115	3	94.12954	188.25909	ug/l	400	Ag	
Cd	111	115	3	491.74814	983.49628	ug/l	2000	Cd	
Sn	118	115	3	492.06968	984.13936	ug/l	2000	Sn	
Sb	121	115	3	248.81228	497.62456	ug/l	1000	Sb	
Te	125	165	2	0.06405	0.12810	ug/l	200	Te	
Cs	133	165	2	0.00088	0.00176	ug/l	2000	Cs	
Ba	137	165	3	514.82198	1029.64396	ug/l	5000	Ba	
La	139	165	2	0.69714	1.39428	ug/l	200	La	
Ce	140	165	2	0.01841	0.03681	ug/l	200	Ce	
Pr	141	165	2	0.00212	0.00425	ug/l	200	Pr	
Nd	146	165	2	0.01083	0.02166	ug/l	200	Nd	
Sm	147	165	3	489.05642	978.11285	ug/l	2000	Sm	
Hf	178	165	2	0.09574	0.19149	ug/l	200	Hf	
Ta	181	165	2	0.38337	0.76674	ug/l	200	Ta	
W	182	165	2	503.00020	1006.00041	ug/l	2000	W	
Re	185	193	3	0.01133	0.02266	ug/l	200	Re	
Pt	195	193	2	0.00396	0.00791	ug/l	200	Pt	
Au	197	193	3	-0.03323	-0.06645	ug/l	2000	Au	
Tl	205	193	3	100.64908	201.29816	ug/l	400	Tl	
Pb	208	193	3	484.92344	969.84688	ug/l	5000	Pb	
Bi	209	193	2	451.48158	902.96316	ug/l	2000	Bi	
Th	232	193	3	488.49710	976.99421	ug/l	2000	Th	
U	238	193	3	496.99416	993.98833	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5647482	1.00	7411413	76.2	80	120	Li (IS)	FAILED
Sc (IS)	45	2	152769	8.49	143379	106.5	80	120	Sc (IS)	
Sc (IS)	45	3	2765025	0.25	2392712	115.6	80	120	Sc (IS)	
Ge (IS)	72	2	351921	5.06	323154	108.9	80	120	Ge (IS)	
Ge (IS)	72	3	2237854	1.22	1861986	120.2	80	120	Ge (IS)	FAILED
In (IS)	115	3	13881948	0.35	12119833	114.5	80	120	In (IS)	
Ho (IS)	165	2	10434927	7.44	9598706	108.7	80	120	Ho (IS)	
Ho (IS)	165	3	16400680	0.68	13687738	119.8	80	120	Ho (IS)	
Ir (IS)	193	2	6587493	7.73	6085322	108.3	80	120	Ir (IS)	
Ir (IS)	193	3	8031833	0.42	6951639	115.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36419-A-12-D PDS**
Data File Name	**049SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:07:53-06:00**
Type	**Sample**
VialNumber	**2304**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	54.76366	109.52733	ug/l	1000	Li	
Be	9	6	3	5.52266	11.04532	ug/l	1000	Be	
B	11	6	3	1188.14899	2376.29798	ug/l	2000	B	
Na	23	45	2	12688.23527	25376.47054	ug/l	50000	Na	
Mg	24	45	2	8115.91332	16231.82664	ug/l	50000	Mg	
Al	27	45	2	441.11802	882.23604	ug/l	100000	Al	
P	31	45	2	943.89163	1887.78327	ug/l	100000	P	
K	39	45	2	3913.91702	7827.83404	ug/l	100000	K	
Ca	44	45	3	46681.43657	93362.87314	ug/l	100000	Ca	
Ti	47	45	3	47.85582	95.71163	ug/l	2000	Ti	
V	51	45	2	100.83433	201.66866	ug/l	2000	V	
Cr	52	45	2	104.27389	208.54778	ug/l	2000	Cr	
Mn	55	72	2	37.66718	75.33436	ug/l	5000	Mn	
Fe	57	72	2	480.85230	961.70460	ug/l	100000	Fe	
Co	59	72	2	19.27745	38.55489	ug/l	2000	Co	
Ni	60	72	2	52.01945	104.03891	ug/l	2000	Ni	
Cu	63	72	2	29.28861	58.57723	ug/l	2000	Cu	
Zn	66	72	2	212.12899	424.25798	ug/l	5000	Zn	
As	75	72	2	101.18049	202.36098	ug/l	2000	As	
Se	78	72	2	46.97172	93.94344	ug/l	1000	Se	
Sr	88	72	3	228.28945	456.57890	ug/l	2000	Sr	
Y	89	72	2	0.00393	0.00786	ug/l	200	Y	
Zr	90	72	2	47.80258	95.60515	ug/l	2000	Zr	
Nb	93	72	2	0.18170	0.36340	ug/l	100	Nb	
Mo	95	72	3	46.32616	92.65233	ug/l	1000	Mo	
Ru	101	72	2	-0.00534	-0.01069	ug/l	200	Ru	
Rh	103	72	2	-0.00354	-0.00708	ug/l	200	Rh	
Pd	105	72	2	0.00237	0.00474	ug/l	20	Pd	
Ag	107	115	3	17.77919	35.55837	ug/l	400	Ag	
Cd	111	115	3	4.58251	9.16502	ug/l	2000	Cd	
Sn	118	115	3	18.47682	36.95364	ug/l	2000	Sn	
Sb	121	115	3	49.65141	99.30282	ug/l	1000	Sb	
Te	125	165	2	0.00635	0.01270	ug/l	200	Te	
Cs	133	165	2	0.00179	0.00357	ug/l	2000	Cs	
Ba	137	165	3	48.82590	97.65181	ug/l	5000	Ba	
La	139	165	2	0.00596	0.01192	ug/l	200	La	
Ce	140	165	2	0.00565	0.01130	ug/l	200	Ce	
Pr	141	165	2	-0.00198	-0.00397	ug/l	200	Pr	
Nd	146	165	2	0.00214	0.00428	ug/l	200	Nd	
Sm	147	165	3	97.99964	195.99927	ug/l	2000	Sm	
Hf	178	165	2	0.07284	0.14567	ug/l	200	Hf	
Ta	181	165	2	0.41705	0.83410	ug/l	200	Ta	
W	182	165	2	51.84432	103.68864	ug/l	2000	W	
Re	185	193	3	0.00054	0.00108	ug/l	200	Re	
Pt	195	193	2	0.00368	0.00737	ug/l	200	Pt	
Au	197	193	3	-0.03568	-0.07135	ug/l	2000	Au	
Tl	205	193	3	20.85788	41.71576	ug/l	400	Tl	
Pb	208	193	3	28.36500	56.73000	ug/l	5000	Pb	
Bi	209	193	2	0.12903	0.25807	ug/l	2000	Bi	
Th	232	193	3	20.21069	40.42139	ug/l	2000	Th	
U	238	193	3	11.83676	23.67352	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5644392	1.30	7411413	76.2	80	120	Li (IS)	FAILED
Sc (IS)	45	2	145093	2.17	143379	101.2	80	120	Sc (IS)	
Sc (IS)	45	3	2741330	0.73	2392712	114.6	80	120	Sc (IS)	
Ge (IS)	72	2	349526	0.69	323154	108.2	80	120	Ge (IS)	
Ge (IS)	72	3	2232633	0.67	1861986	119.9	80	120	Ge (IS)	
In (IS)	115	3	13926772	0.96	12119833	114.9	80	120	In (IS)	
Ho (IS)	165	2	10271906	0.51	9598706	107.0	80	120	Ho (IS)	
Ho (IS)	165	3	16500963	1.83	13687738	120.6	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6579930	0.63	6085322	108.1	80	120	Ir (IS)	
Ir (IS)	193	3	7911727	0.28	6951639	113.8	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36419-A-13-B**
Data File Name	**050SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:14:38-06:00**
Type	**Sample**
VialNumber	**2305**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	3.23039	6.46079	ug/l	1000	Li	
Be	9	6	3	-0.01457	-0.02914	ug/l	1000	Be	
B	11	6	3	34.94070	69.88139	ug/l	2000	B	
Na	23	45	2	11978.33788	23956.67576	ug/l	50000	Na	
Mg	24	45	2	8000.84212	16001.68423	ug/l	50000	Mg	
Al	27	45	2	19.47304	38.94609	ug/l	100000	Al	
P	31	45	2	24.61827	49.23655	ug/l	100000	P	
K	39	45	2	3107.38906	6214.77812	ug/l	100000	K	
Ca	44	45	3	45624.85235	91249.70470	ug/l	100000	Ca	
Ti	47	45	3	1.47276	2.94551	ug/l	2000	Ti	
V	51	45	2	2.70910	5.41820	ug/l	2000	V	
Cr	52	45	2	1.23007	2.46014	ug/l	2000	Cr	
Mn	55	72	2	2.47165	4.94330	ug/l	5000	Mn	
Fe	57	72	2	63.69727	127.39453	ug/l	100000	Fe	
Co	59	72	2	0.08493	0.16985	ug/l	2000	Co	
Ni	60	72	2	1.63465	3.26930	ug/l	2000	Ni	
Cu	63	72	2	2.03309	4.06618	ug/l	2000	Cu	
Zn	66	72	2	18.24667	36.49335	ug/l	5000	Zn	
As	75	72	2	1.32181	2.64362	ug/l	2000	As	
Se	78	72	2	0.53053	1.06106	ug/l	1000	Se	
Sr	88	72	3	182.57284	365.14568	ug/l	2000	Sr	
Y	89	72	2	0.02865	0.05731	ug/l	200	Y	
Zr	90	72	2	0.06956	0.13912	ug/l	2000	Zr	
Nb	93	72	2	-0.12205	-0.24409	ug/l	100	Nb	
Mo	95	72	3	0.62623	1.25247	ug/l	1000	Mo	
Ru	101	72	2	-0.00680	-0.01359	ug/l	200	Ru	
Rh	103	72	2	-0.00586	-0.01173	ug/l	200	Rh	
Pd	105	72	2	0.00329	0.00658	ug/l	20	Pd	
Ag	107	115	3	0.04646	0.09292	ug/l	400	Ag	
Cd	111	115	3	0.02006	0.04013	ug/l	2000	Cd	
Sn	118	115	3	0.43093	0.86186	ug/l	2000	Sn	
Sb	121	115	3	0.07083	0.14167	ug/l	1000	Sb	
Te	125	165	2	0.01813	0.03625	ug/l	200	Te	
Cs	133	165	2	-0.00176	-0.00353	ug/l	2000	Cs	
Ba	137	165	3	32.03513	64.07027	ug/l	5000	Ba	
La	139	165	2	0.03225	0.06449	ug/l	200	La	
Ce	140	165	2	0.07970	0.15940	ug/l	200	Ce	
Pr	141	165	2	0.00613	0.01227	ug/l	200	Pr	
Nd	146	165	2	0.03340	0.06679	ug/l	200	Nd	
Sm	147	165	3	0.01337	0.02673	ug/l	2000	Sm	
Hf	178	165	2	-0.00398	-0.00796	ug/l	200	Hf	
Ta	181	165	2	-0.02104	-0.04208	ug/l	200	Ta	
W	182	165	2	0.58775	1.17551	ug/l	2000	W	
Re	185	193	3	-0.00134	-0.00269	ug/l	200	Re	
Pt	195	193	2	0.00415	0.00830	ug/l	200	Pt	
Au	197	193	3	-0.04373	-0.08746	ug/l	2000	Au	
Tl	205	193	3	0.06642	0.13285	ug/l	400	Tl	
Pb	208	193	3	0.45793	0.91587	ug/l	5000	Pb	
Bi	209	193	2	0.04657	0.09313	ug/l	2000	Bi	
Th	232	193	3	0.03689	0.07378	ug/l	2000	Th	
U	238	193	3	2.04196	4.08391	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5664455	1.22	7411413	76.4	80	120	Li (IS)	FAILED
Sc (IS)	45	2	142030	2.47	143379	99.1	80	120	Sc (IS)	
Sc (IS)	45	3	2779372	0.53	2392712	116.2	80	120	Sc (IS)	
Ge (IS)	72	2	347637	2.09	323154	107.6	80	120	Ge (IS)	
Ge (IS)	72	3	2286325	0.63	1861986	122.8	80	120	Ge (IS)	FAILED
In (IS)	115	3	14170022	0.16	12119833	116.9	80	120	In (IS)	
Ho (IS)	165	2	10194938	2.95	9598706	106.2	80	120	Ho (IS)	
Ho (IS)	165	3	16613580	0.85	13687738	121.4	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6519540	3.99	6085322	107.1	80	120	Ir (IS)	
Ir (IS)	193	3	8080476	0.34	6951639	116.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36424-A-18-B**
Data File Name	**051SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:21:21-06:00**
Type	**Sample**
VialNumber	**2306**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	7.79419	15.58837	ug/l	1000	Li	
Be	9	6	3	-0.01609	-0.03218	ug/l	1000	Be	
B	11	6	3	15.73612	31.47225	ug/l	2000	B	
Na	23	45	2	12109.73330	24219.46661	ug/l	50000	Na	
Mg	24	45	2	6219.58814	12439.17629	ug/l	50000	Mg	
Al	27	45	2	13.33093	26.66185	ug/l	100000	Al	
P	31	45	2	11.90956	23.81913	ug/l	100000	P	
K	39	45	2	3585.48476	7170.96953	ug/l	100000	K	
Ca	44	45	3	17313.93073	34627.86145	ug/l	100000	Ca	
Ti	47	45	3	0.70894	1.41788	ug/l	2000	Ti	
V	51	45	2	1.03461	2.06922	ug/l	2000	V	
Cr	52	45	2	0.48661	0.97322	ug/l	2000	Cr	
Mn	55	72	2	1.19205	2.38409	ug/l	5000	Mn	
Fe	57	72	2	13.17345	26.34690	ug/l	100000	Fe	
Co	59	72	2	0.01477	0.02955	ug/l	2000	Co	
Ni	60	72	2	3.04620	6.09241	ug/l	2000	Ni	
Cu	63	72	2	5.39112	10.78223	ug/l	2000	Cu	
Zn	66	72	2	4.58744	9.17487	ug/l	5000	Zn	
As	75	72	2	2.26742	4.53485	ug/l	2000	As	
Se	78	72	2	0.24763	0.49527	ug/l	1000	Se	
Sr	88	72	3	97.24057	194.48114	ug/l	2000	Sr	
Y	89	72	2	-0.00186	-0.00372	ug/l	200	Y	
Zr	90	72	2	0.00599	0.01198	ug/l	2000	Zr	
Nb	93	72	2	-0.13052	-0.26104	ug/l	100	Nb	
Mo	95	72	3	3.20632	6.41264	ug/l	1000	Mo	
Ru	101	72	2	-0.00704	-0.01407	ug/l	200	Ru	
Rh	103	72	2	-0.00645	-0.01291	ug/l	200	Rh	
Pd	105	72	2	-0.00483	-0.00967	ug/l	20	Pd	
Ag	107	115	3	0.00776	0.01552	ug/l	400	Ag	
Cd	111	115	3	0.01536	0.03072	ug/l	2000	Cd	
Sn	118	115	3	0.18370	0.36741	ug/l	2000	Sn	
Sb	121	115	3	0.02064	0.04128	ug/l	1000	Sb	
Te	125	165	2	-0.01717	-0.03433	ug/l	200	Te	
Cs	133	165	2	0.00677	0.01353	ug/l	2000	Cs	
Ba	137	165	3	17.03738	34.07476	ug/l	5000	Ba	
La	139	165	2	-0.00313	-0.00627	ug/l	200	La	
Ce	140	165	2	-0.00191	-0.00383	ug/l	200	Ce	
Pr	141	165	2	-0.00310	-0.00620	ug/l	200	Pr	
Nd	146	165	2	-0.00072	-0.00145	ug/l	200	Nd	
Sm	147	165	3	0.00019	0.00039	ug/l	2000	Sm	
Hf	178	165	2	-0.00602	-0.01205	ug/l	200	Hf	
Ta	181	165	2	-0.02780	-0.05560	ug/l	200	Ta	
W	182	165	2	0.36571	0.73142	ug/l	2000	W	
Re	185	193	3	0.00239	0.00479	ug/l	200	Re	
Pt	195	193	2	0.00144	0.00289	ug/l	200	Pt	
Au	197	193	3	-0.04378	-0.08757	ug/l	2000	Au	
Tl	205	193	3	0.00218	0.00435	ug/l	400	Tl	
Pb	208	193	3	0.22637	0.45275	ug/l	5000	Pb	
Bi	209	193	2	0.02956	0.05912	ug/l	2000	Bi	
Th	232	193	3	0.01091	0.02183	ug/l	2000	Th	
U	238	193	3	0.69978	1.39956	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5499809	1.25	7411413	74.2	80	120	Li (IS)	FAILED
Sc (IS)	45	2	141207	0.32	143379	98.5	80	120	Sc (IS)	
Sc (IS)	45	3	2769630	1.98	2392712	115.8	80	120	Sc (IS)	
Ge (IS)	72	2	343189	0.27	323154	106.2	80	120	Ge (IS)	
Ge (IS)	72	3	2269542	1.58	1861986	121.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	14267363	2.42	12119833	117.7	80	120	In (IS)	
Ho (IS)	165	2	10102602	0.35	9598706	105.2	80	120	Ho (IS)	
Ho (IS)	165	3	16409113	3.19	13687738	119.9	80	120	Ho (IS)	
Ir (IS)	193	2	6505067	0.71	6085322	106.9	80	120	Ir (IS)	
Ir (IS)	193	3	7928811	2.51	6951639	114.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**052LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:28:04-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	5.41854	ug/l	5	108.4	80	120	Li	
Be	9	6	3	0.55625	ug/l	0.5	111.2	80	120	Be	
B	11	6	3	112.34798	ug/l	100	112.3	80	120	B	
Na	23	45	2	109.80073	ug/l	100	109.8	80	120	Na	
Mg	24	45	2	50.65388	ug/l	50	101.3	80	120	Mg	
Al	27	45	2	48.69940	ug/l	50	97.4	80	120	Al	
P	31	45	2	93.13785	ug/l	100	93.1	80	120	P	
K	39	45	2	99.09036	ug/l	100	99.1	80	120	K	
Ca	44	45	3	201.23534	ug/l	200	100.6	80	120	Ca	
Ti	47	45	3	5.15645	ug/l	5	103.1	80	120	Ti	
V	51	45	2	9.91931	ug/l	10	99.2	80	120	V	
Cr	52	45	2	10.16357	ug/l	10	101.6	80	120	Cr	
Mn	55	72	2	4.03157	ug/l	4	100.8	80	120	Mn	
Fe	57	72	2	50.82666	ug/l	50	101.7	80	120	Fe	
Co	59	72	2	2.03560	ug/l	2	101.8	80	120	Co	
Ni	60	72	2	5.56530	ug/l	5	111.3	80	120	Ni	
Cu	63	72	2	2.85580	ug/l	3	95.2	80	120	Cu	
Zn	66	72	2	21.56996	ug/l	20	107.8	80	120	Zn	
As	75	72	2	10.23758	ug/l	10	102.4	80	120	As	
Se	78	72	2	4.98538	ug/l	5	99.7	80	120	Se	
Sr	88	72	3	4.95769	ug/l	5	99.2	80	120	Sr	
Y	89	72	2	4.83141	ug/l	5	96.6	80	120	Y	
Zr	90	72	2	4.75972	ug/l	5	95.2	80	120	Zr	
Nb	93	72	2	18.70583	ug/l	25	74.8	80	120	Nb	FAILED
Mo	95	72	3	4.61685	ug/l	5	92.3	80	120	Mo	
Ru	101	72	2	10.27219	ug/l	10	102.7	80	120	Ru	
Rh	103	72	2	10.06440	ug/l	10	100.6	80	120	Rh	
Pd	105	72	2	0.55451	ug/l	0.5	110.9	80	120	Pd	
Ag	107	115	3	1.85402	ug/l	2	92.7	80	120	Ag	
Cd	111	115	3	0.50020	ug/l	0.5	100.0	80	120	Cd	
Sn	118	115	3	1.84015	ug/l	2	92.0	80	120	Sn	
Sb	121	115	3	4.60988	ug/l	5	92.2	80	120	Sb	
Te	125	165	2	9.07999	ug/l	10	90.8	80	120	Te	
Cs	133	165	2	0.88430	ug/l	1	88.4	80	120	Cs	
Ba	137	165	3	1.89896	ug/l	2	94.9	80	120	Ba	
La	139	165	2	1.83714	ug/l	2	91.9	80	120	La	
Ce	140	165	2	9.22545	ug/l	10	92.3	80	120	Ce	
Pr	141	165	2	1.85559	ug/l	2	92.8	80	120	Pr	
Nd	146	165	2	1.84409	ug/l	2	92.2	80	120	Nd	
Sm	147	165	3	9.34210	ug/l	10	93.4	80	120	Sm	
Hf	178	165	2	8.70283	ug/l	10	87.0	80	120	Hf	
Ta	181	165	2	7.69009	ug/l	10	76.9	80	120	Ta	FAILED
W	182	165	2	4.78685	ug/l	5	95.7	80	120	W	
Re	185	193	3	8.98893	ug/l	10	89.9	80	120	Re	
Pt	195	193	2	0.97643	ug/l	1	97.6	80	120	Pt	
Au	197	193	3	4.33568	ug/l	5	86.7	80	120	Au	
Tl	205	193	3	1.80798	ug/l	2	90.4	80	120	Tl	
Pb	208	193	3	2.72118	ug/l	3	90.7	80	120	Pb	
Bi	209	193	2	16.35044	ug/l	20	81.8	80	120	Bi	
Th	232	193	3	1.67929	ug/l	2	84.0	80	120	Th	
U	238	193	3	0.87071	ug/l	1	87.1	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6285028	1.21	7411413	84.8	80	120	Li (IS)	
Sc (IS)	45	2	155824	0.67	143379	108.7	80	120	Sc (IS)	
Sc (IS)	45	3	2792947	0.43	2392712	116.7	80	120	Sc (IS)	
Ge (IS)	72	2	367745	0.71	323154	113.8	80	120	Ge (IS)	
Ge (IS)	72	3	2319481	0.08	1861986	124.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	14741492	0.52	12119833	121.6	80	120	In (IS)	FAILED
Ho (IS)	165	2	10480750	0.56	9598706	109.2	80	120	Ho (IS)	
Ho (IS)	165	3	16623272	0.46	13687738	121.4	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6988464	0.98	6085322	114.8	80	120	Ir (IS)	
Ir (IS)	193	3	8459056	0.75	6951639	121.7	80	120	Ir (IS)	FAILED

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**053_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:34:49-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	104.14203	ug/l	100	104.1	90	110	Li	
Be	9	6	3	111.89501	ug/l	100	111.9	90	110	Be	FAILED
B	11	6	3	229.23259	ug/l	200	114.6	90	110	B	FAILED
Na	23	45	2	2513.99434	ug/l	2500	100.6	90	110	Na	
Mg	24	45	2	2460.72088	ug/l	2500	98.4	90	110	Mg	
Al	27	45	2	2236.84384	ug/l	2500	89.5	90	110	Al	FAILED
P	31	45	2	2294.96218	ug/l	2500	91.8	90	110	P	
K	39	45	2	2431.56995	ug/l	2500	97.3	90	110	K	
Ca	44	45	3	2541.14431	ug/l	2500	101.6	90	110	Ca	
Ti	47	45	3	99.52144	ug/l	100	99.5	90	110	Ti	
V	51	45	2	98.15027	ug/l	100	98.2	90	110	V	
Cr	52	45	2	104.47126	ug/l	100	104.5	90	110	Cr	
Mn	55	72	2	90.73065	ug/l	100	90.7	90	110	Mn	
Fe	57	72	2	2325.91762	ug/l	2500	93.0	90	110	Fe	
Co	59	72	2	99.52800	ug/l	100	99.5	90	110	Co	
Ni	60	72	2	100.92126	ug/l	100	100.9	90	110	Ni	
Cu	63	72	2	97.71828	ug/l	100	97.7	90	110	Cu	
Zn	66	72	2	101.35443	ug/l	100	101.4	90	110	Zn	
As	75	72	2	98.88173	ug/l	100	98.9	90	110	As	
Se	78	72	2	48.64449	ug/l	50	97.3	90	110	Se	
Sr	88	72	3	102.18981	ug/l	100	102.2	90	110	Sr	
Y	89	72	2	100.58161	ug/l	100	100.6	90	110	Y	
Zr	90	72	2	100.84878	ug/l	100	100.8	90	110	Zr	
Nb	93	72	2	50.67116	ug/l	50	101.3	90	110	Nb	
Mo	95	72	3	46.30040	ug/l	50	92.6	90	110	Mo	
Ru	101	72	2	98.58468	ug/l	100	98.6	90	110	Ru	
Rh	103	72	2	104.82858	ug/l	100	104.8	90	110	Rh	
Pd	105	72	2	10.69816	ug/l	10	107.0	90	110	Pd	
Ag	107	115	3	18.01661	ug/l	20	90.1	90	110	Ag	
Cd	111	115	3	94.58844	ug/l	100	94.6	90	110	Cd	
Sn	118	115	3	100.96870	ug/l	100	101.0	90	110	Sn	
Sb	121	115	3	50.78951	ug/l	50	101.6	90	110	Sb	
Te	125	165	2	92.07623	ug/l	100	92.1	90	110	Te	
Cs	133	165	2	93.42294	ug/l	100	93.4	90	110	Cs	
Ba	137	165	3	93.04218	ug/l	100	93.0	90	110	Ba	
La	139	165	2	97.40485	ug/l	100	97.4	90	110	La	
Ce	140	165	2	98.43632	ug/l	100	98.4	90	110	Ce	
Pr	141	165	2	97.18102	ug/l	100	97.2	90	110	Pr	
Nd	146	165	2	89.94489	ug/l	100	89.9	90	110	Nd	FAILED
Sm	147	165	3	100.02890	ug/l	100	100.0	90	110	Sm	
Hf	178	165	2	98.00383	ug/l	100	98.0	90	110	Hf	
Ta	181	165	2	103.75296	ug/l	100	103.8	90	110	Ta	
W	182	165	2	104.06101	ug/l	100	104.1	90	110	W	
Re	185	193	3	100.47493	ug/l	100	100.5	90	110	Re	
Pt	195	193	2	10.08596	ug/l	10	100.9	90	110	Pt	
Au	197	193	3	97.95424	ug/l	100	98.0	90	110	Au	
Tl	205	193	3	20.44471	ug/l	20	102.2	90	110	Tl	
Pb	208	193	3	99.51173	ug/l	100	99.5	90	110	Pb	
Bi	209	193	2	95.61236	ug/l	100	95.6	90	110	Bi	
Th	232	193	3	97.62282	ug/l	100	97.6	90	110	Th	
U	238	193	3	97.32635	ug/l	100	97.3	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5861373	0.51	7411413	79.1	80	120	Li (IS)	FAILED
Sc (IS)	45	2	147948	0.57	143379	103.2	80	120	Sc (IS)	
Sc (IS)	45	3	2727080	0.36	2392712	114.0	80	120	Sc (IS)	
Ge (IS)	72	2	366653	1.38	323154	113.5	80	120	Ge (IS)	
Ge (IS)	72	3	2262555	1.13	1861986	121.5	80	120	Ge (IS)	FAILED
In (IS)	115	3	14080351	0.86	12119833	116.2	80	120	In (IS)	
Ho (IS)	165	2	10332634	0.67	9598706	107.6	80	120	Ho (IS)	
Ho (IS)	165	3	16315842	0.54	13687738	119.2	80	120	Ho (IS)	
Ir (IS)	193	2	6713436	0.77	6085322	110.3	80	120	Ir (IS)	
Ir (IS)	193	3	8081840	0.97	6951639	116.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**054_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:41:36-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.48346	ug/l	1.388	Li	
Be	9	6	3	0.01104	ug/l	0.7	Be	
B	11	6	3	4.16862	ug/l	20	B	
Na	23	45	2	7.13996	ug/l	30	Na	
Mg	24	45	2	0.78134	ug/l	11.18	Mg	
Al	27	45	2	0.60732	ug/l	25.8	Al	
P	31	45	2	2.19984	ug/l	16.46	P	
K	39	45	2	2.27081	ug/l	83.2	K	
Ca	44	45	3	0.20839	ug/l	136.2	Ca	
Ti	47	45	3	0.03798	ug/l	4.2	Ti	
V	51	45	2	-0.00825	ug/l	4.74	V	
Cr	52	45	2	0.01255	ug/l	6.52	Cr	
Mn	55	72	2	0.06215	ug/l	0.49	Mn	
Fe	57	72	2	0.80884	ug/l	40.7	Fe	
Co	59	72	2	0.04109	ug/l	0.434	Co	
Ni	60	72	2	0.02416	ug/l	0.8	Ni	
Cu	63	72	2	-0.24677	ug/l	0.902	Cu	
Zn	66	72	2	0.12413	ug/l	16.58	Zn	
As	75	72	2	0.02289	ug/l	2.36	As	
Se	78	72	2	0.11534	ug/l	3.18	Se	
Sr	88	72	3	0.02523	ug/l	2	Sr	
Y	89	72	2	0.02456	ug/l	0.424	Y	
Zr	90	72	2	0.02950	ug/l	0.496	Zr	
Nb	93	72	2	0.21354	ug/l	4.62	Nb	
Mo	95	72	3	0.00350	ug/l	2	Mo	
Ru	101	72	2	0.03261	ug/l	2	Ru	
Rh	103	72	2	0.03023	ug/l	1.634	Rh	
Pd	105	72	2	-0.00439	ug/l	0.08	Pd	
Ag	107	115	3	0.00530	ug/l	1.54	Ag	
Cd	111	115	3	0.01373	ug/l	0.4	Cd	
Sn	118	115	3	0.03038	ug/l	2	Sn	
Sb	121	115	3	-0.00214	ug/l	3.34	Sb	
Te	125	165	2	0.06851	ug/l	1.072	Te	
Cs	133	165	2	0.02367	ug/l	0.106	Cs	
Ba	137	165	3	0.01983	ug/l	0.446	Ba	
La	139	165	2	0.02542	ug/l	0.102	La	
Ce	140	165	2	0.02495	ug/l	1.772	Ce	
Pr	141	165	2	0.02792	ug/l	0.084	Pr	
Nd	146	165	2	0.02885	ug/l	0.208	Nd	
Sm	147	165	3	0.02113	ug/l	0.652	Sm	
Hf	178	165	2	0.03620	ug/l	2.26	Hf	
Ta	181	165	2	0.01022	ug/l	1.46	Ta	
W	182	165	2	0.39687	ug/l	4	W	
Re	185	193	3	0.01364	ug/l	0.05	Re	
Pt	195	193	2	0.00255	ug/l	0.12	Pt	
Au	197	193	3	0.12418	ug/l	1	Au	
Tl	205	193	3	-0.00118	ug/l	1.1	Tl	
Pb	208	193	3	0.04230	ug/l	0.346	Pb	
Bi	209	193	2	0.04467	ug/l	1.464	Bi	
Th	232	193	3	0.03614	ug/l	1.104	Th	
U	238	193	3	0.01697	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	6054819	0.99	7411413	81.7	80	120	Li (IS)	
Sc (IS)	45	2	151371	0.21	143379	105.6	80	120	Sc (IS)	
Sc (IS)	45	3	2718481	0.53	2392712	113.6	80	120	Sc (IS)	
Ge (IS)	72	2	355525	1.11	323154	110.0	80	120	Ge (IS)	
Ge (IS)	72	3	2241796	0.19	1861986	120.4	80	120	Ge (IS)	FAILED
In (IS)	115	3	14376116	0.27	12119833	118.6	80	120	In (IS)	
Ho (IS)	165	2	10394154	0.69	9598706	108.3	80	120	Ho (IS)	
Ho (IS)	165	3	16467110	1.13	13687738	120.3	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6892177	0.45	6085322	113.3	80	120	Ir (IS)	
Ir (IS)	193	3	8262159	0.63	6951639	118.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36424-A-19-B**
Data File Name	**055SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:48:20-06:00**
Type	**Sample**
VialNumber	**2307**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	7.61205	15.22409	ug/l	1000	Li	
Be	9	6	3	-0.01406	-0.02811	ug/l	1000	Be	
B	11	6	3	13.00965	26.01930	ug/l	2000	B	
Na	23	45	2	12156.55390	24313.10779	ug/l	50000	Na	
Mg	24	45	2	6251.58716	12503.17431	ug/l	50000	Mg	
Al	27	45	2	6.20779	12.41557	ug/l	100000	Al	
P	31	45	2	9.52589	19.05177	ug/l	100000	P	
K	39	45	2	3557.71040	7115.42079	ug/l	100000	K	
Ca	44	45	3	17839.54236	35679.08472	ug/l	100000	Ca	
Ti	47	45	3	0.68911	1.37822	ug/l	2000	Ti	
V	51	45	2	1.03770	2.07540	ug/l	2000	V	
Cr	52	45	2	0.44624	0.89249	ug/l	2000	Cr	
Mn	55	72	2	0.33782	0.67564	ug/l	5000	Mn	
Fe	57	72	2	4.79739	9.59478	ug/l	100000	Fe	
Co	59	72	2	0.02605	0.05209	ug/l	2000	Co	
Ni	60	72	2	0.44327	0.88654	ug/l	2000	Ni	
Cu	63	72	2	0.59971	1.19943	ug/l	2000	Cu	
Zn	66	72	2	2.31012	4.62024	ug/l	5000	Zn	
As	75	72	2	2.19950	4.39899	ug/l	2000	As	
Se	78	72	2	0.15102	0.30205	ug/l	1000	Se	
Sr	88	72	3	99.20007	198.40015	ug/l	2000	Sr	
Y	89	72	2	-0.00107	-0.00214	ug/l	200	Y	
Zr	90	72	2	0.04951	0.09903	ug/l	2000	Zr	
Nb	93	72	2	0.06478	0.12957	ug/l	100	Nb	
Mo	95	72	3	3.25998	6.51996	ug/l	1000	Mo	
Ru	101	72	2	-0.00436	-0.00872	ug/l	200	Ru	
Rh	103	72	2	-0.00396	-0.00791	ug/l	200	Rh	
Pd	105	72	2	-0.00550	-0.01101	ug/l	20	Pd	
Ag	107	115	3	0.00758	0.01516	ug/l	400	Ag	
Cd	111	115	3	-0.00350	-0.00700	ug/l	2000	Cd	
Sn	118	115	3	0.16299	0.32598	ug/l	2000	Sn	
Sb	121	115	3	0.02254	0.04507	ug/l	1000	Sb	
Te	125	165	2	0.01940	0.03879	ug/l	200	Te	
Cs	133	165	2	0.01243	0.02487	ug/l	2000	Cs	
Ba	137	165	3	17.02851	34.05703	ug/l	5000	Ba	
La	139	165	2	-0.00291	-0.00582	ug/l	200	La	
Ce	140	165	2	-0.00221	-0.00442	ug/l	200	Ce	
Pr	141	165	2	-0.00237	-0.00474	ug/l	200	Pr	
Nd	146	165	2	-0.00070	-0.00141	ug/l	200	Nd	
Sm	147	165	3	-0.00186	-0.00371	ug/l	2000	Sm	
Hf	178	165	2	0.06218	0.12435	ug/l	200	Hf	
Ta	181	165	2	-0.00806	-0.01613	ug/l	200	Ta	
W	182	165	2	0.33239	0.66478	ug/l	2000	W	
Re	185	193	3	0.00265	0.00530	ug/l	200	Re	
Pt	195	193	2	0.00408	0.00817	ug/l	200	Pt	
Au	197	193	3	0.00141	0.00282	ug/l	2000	Au	
Tl	205	193	3	-0.02422	-0.04843	ug/l	400	Tl	
Pb	208	193	3	0.08746	0.17493	ug/l	5000	Pb	
Bi	209	193	2	0.01288	0.02577	ug/l	2000	Bi	
Th	232	193	3	0.03289	0.06578	ug/l	2000	Th	
U	238	193	3	0.71906	1.43813	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5503564	1.47	7411413	74.3	80	120	Li (IS)	FAILED
Sc (IS)	45	2	138775	0.99	143379	96.8	80	120	Sc (IS)	
Sc (IS)	45	3	2667706	0.78	2392712	111.5	80	120	Sc (IS)	
Ge (IS)	72	2	334469	0.41	323154	103.5	80	120	Ge (IS)	
Ge (IS)	72	3	2208019	0.42	1861986	118.6	80	120	Ge (IS)	
In (IS)	115	3	13817241	1.64	12119833	114.0	80	120	In (IS)	
Ho (IS)	165	2	9990881	1.01	9598706	104.1	80	120	Ho (IS)	
Ho (IS)	165	3	16065135	1.06	13687738	117.4	80	120	Ho (IS)	
Ir (IS)	193	2	6375569	1.19	6085322	104.8	80	120	Ir (IS)	
Ir (IS)	193	3	7765406	0.61	6951639	111.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**MB 160-452611/1-A**
Data File Name	**056SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T21:55:06-06:00**
Type	**Sample**
VialNumber	**2308**
Dilution	**2**
Comment	**452611**
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.51222	1.02444	ug/l	1000	Li	
Be	9	6	3	-0.01387	-0.02774	ug/l	1000	Be	
B	11	6	3	1.60663	3.21326	ug/l	2000	B	
Na	23	45	2	10.43555	20.87109	ug/l	50000	Na	
Mg	24	45	2	1.69004	3.38009	ug/l	50000	Mg	
Al	27	45	2	4.48096	8.96191	ug/l	100000	Al	
P	31	45	2	10.42927	20.85853	ug/l	100000	P	
K	39	45	2	10.73664	21.47329	ug/l	100000	K	
Ca	44	45	3	12.21489	24.42978	ug/l	100000	Ca	
Ti	47	45	3	0.15082	0.30164	ug/l	2000	Ti	
V	51	45	2	0.01521	0.03041	ug/l	2000	V	
Cr	52	45	2	0.20854	0.41707	ug/l	2000	Cr	
Mn	55	72	2	0.09284	0.18569	ug/l	5000	Mn	
Fe	57	72	2	4.88202	9.76403	ug/l	100000	Fe	
Co	59	72	2	0.00785	0.01570	ug/l	2000	Co	
Ni	60	72	2	0.12555	0.25110	ug/l	2000	Ni	
Cu	63	72	2	-0.11291	-0.22581	ug/l	2000	Cu	
Zn	66	72	2	0.46698	0.93397	ug/l	5000	Zn	
As	75	72	2	-0.03133	-0.06266	ug/l	2000	As	
Se	78	72	2	0.10980	0.21960	ug/l	1000	Se	
Sr	88	72	3	0.04740	0.09481	ug/l	2000	Sr	
Y	89	72	2	0.00206	0.00413	ug/l	200	Y	
Zr	90	72	2	0.01221	0.02442	ug/l	2000	Zr	
Nb	93	72	2	-0.03011	-0.06021	ug/l	100	Nb	
Mo	95	72	3	0.03460	0.06920	ug/l	1000	Mo	
Ru	101	72	2	-0.00117	-0.00234	ug/l	200	Ru	
Rh	103	72	2	-0.00366	-0.00732	ug/l	200	Rh	
Pd	105	72	2	-0.00826	-0.01653	ug/l	20	Pd	
Ag	107	115	3	0.00364	0.00729	ug/l	400	Ag	
Cd	111	115	3	-0.00636	-0.01271	ug/l	2000	Cd	
Sn	118	115	3	7.48952	14.97903	ug/l	2000	Sn	
Sb	121	115	3	-0.02666	-0.05332	ug/l	1000	Sb	
Te	125	165	2	0.00216	0.00433	ug/l	200	Te	
Cs	133	165	2	-0.00171	-0.00341	ug/l	2000	Cs	
Ba	137	165	3	0.06117	0.12234	ug/l	5000	Ba	
La	139	165	2	-0.00058	-0.00116	ug/l	200	La	
Ce	140	165	2	0.00136	0.00272	ug/l	200	Ce	
Pr	141	165	2	-0.00181	-0.00361	ug/l	200	Pr	
Nd	146	165	2	0.00073	0.00147	ug/l	200	Nd	
Sm	147	165	3	-0.00274	-0.00547	ug/l	2000	Sm	
Hf	178	165	2	0.01416	0.02832	ug/l	200	Hf	
Ta	181	165	2	-0.01361	-0.02722	ug/l	200	Ta	
W	182	165	2	0.19288	0.38575	ug/l	2000	W	
Re	185	193	3	-0.00250	-0.00500	ug/l	200	Re	
Pt	195	193	2	0.00480	0.00961	ug/l	200	Pt	
Au	197	193	3	-0.02021	-0.04041	ug/l	2000	Au	
Tl	205	193	3	-0.03068	-0.06135	ug/l	400	Tl	
Pb	208	193	3	0.22077	0.44153	ug/l	5000	Pb	
Bi	209	193	2	0.00667	0.01335	ug/l	2000	Bi	
Th	232	193	3	0.00762	0.01525	ug/l	2000	Th	
U	238	193	3	-0.00150	-0.00299	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5959079	1.10	7411413	80.4	80	120	Li (IS)	
Sc (IS)	45	2	150028	1.71	143379	104.6	80	120	Sc (IS)	
Sc (IS)	45	3	2770027	0.99	2392712	115.8	80	120	Sc (IS)	
Ge (IS)	72	2	358745	0.75	323154	111.0	80	120	Ge (IS)	
Ge (IS)	72	3	2291557	0.65	1861986	123.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	14458012	0.23	12119833	119.3	80	120	In (IS)	
Ho (IS)	165	2	10420582	0.33	9598706	108.6	80	120	Ho (IS)	
Ho (IS)	165	3	16441275	1.28	13687738	120.1	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6867960	0.07	6085322	112.9	80	120	Ir (IS)	
Ir (IS)	193	3	8168902	0.88	6951639	117.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCS 160-452611/2-A**
Data File Name	**057SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:01:52-06:00**
Type	**Sample**
VialNumber	**2309**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	51.01654	102.03308	ug/l	1000	Li	
Be	9	6	3	51.92419	103.84839	ug/l	1000	Be	
B	11	6	3	106.88483	213.76966	ug/l	2000	B	
Na	23	45	2	5115.18645	10230.37291	ug/l	50000	Na	
Mg	24	45	2	4999.47123	9998.94245	ug/l	50000	Mg	
Al	27	45	2	4734.98556	9469.97112	ug/l	100000	Al	
P	31	45	2	462.24329	924.48658	ug/l	100000	P	
K	39	45	2	4759.64715	9519.29430	ug/l	100000	K	
Ca	44	45	3	5041.72770	10083.45541	ug/l	100000	Ca	
Ti	47	45	3	498.66855	997.33709	ug/l	2000	Ti	
V	51	45	2	490.90381	981.80763	ug/l	2000	V	
Cr	52	45	2	501.90733	1003.81466	ug/l	2000	Cr	
Mn	55	72	2	490.40339	980.80679	ug/l	5000	Mn	
Fe	57	72	2	5002.96951	10005.93901	ug/l	100000	Fe	
Co	59	72	2	504.45417	1008.90834	ug/l	2000	Co	
Ni	60	72	2	550.88469	1101.76937	ug/l	2000	Ni	
Cu	63	72	2	504.46118	1008.92236	ug/l	2000	Cu	
Zn	66	72	2	479.37670	958.75339	ug/l	5000	Zn	
As	75	72	2	475.25896	950.51793	ug/l	2000	As	
Se	78	72	2	226.11391	452.22782	ug/l	1000	Se	
Sr	88	72	3	496.92945	993.85890	ug/l	2000	Sr	
Y	89	72	2	0.00144	0.00289	ug/l	200	Y	
Zr	90	72	2	508.17503	1016.35006	ug/l	2000	Zr	
Nb	93	72	2	0.39918	0.79837	ug/l	100	Nb	
Mo	95	72	3	241.45595	482.91191	ug/l	1000	Mo	
Ru	101	72	2	-0.00413	-0.00826	ug/l	200	Ru	
Rh	103	72	2	0.01776	0.03552	ug/l	200	Rh	
Pd	105	72	2	0.02165	0.04330	ug/l	20	Pd	
Ag	107	115	3	94.68822	189.37645	ug/l	400	Ag	
Cd	111	115	3	490.01201	980.02402	ug/l	2000	Cd	
Sn	118	115	3	499.64140	999.28280	ug/l	2000	Sn	
Sb	121	115	3	245.33352	490.66705	ug/l	1000	Sb	
Te	125	165	2	0.04662	0.09324	ug/l	200	Te	
Cs	133	165	2	-0.00058	-0.00116	ug/l	2000	Cs	
Ba	137	165	3	479.16441	958.32882	ug/l	5000	Ba	
La	139	165	2	0.71255	1.42509	ug/l	200	La	
Ce	140	165	2	0.01899	0.03798	ug/l	200	Ce	
Pr	141	165	2	0.00063	0.00126	ug/l	200	Pr	
Nd	146	165	2	0.00678	0.01356	ug/l	200	Nd	
Sm	147	165	3	487.86613	975.73226	ug/l	2000	Sm	
Hf	178	165	2	0.29362	0.58724	ug/l	200	Hf	
Ta	181	165	2	0.28963	0.57926	ug/l	200	Ta	
W	182	165	2	503.99456	1007.98913	ug/l	2000	W	
Re	185	193	3	0.00610	0.01219	ug/l	200	Re	
Pt	195	193	2	0.00736	0.01471	ug/l	200	Pt	
Au	197	193	3	-0.02244	-0.04487	ug/l	2000	Au	
Tl	205	193	3	101.59329	203.18658	ug/l	400	Tl	
Pb	208	193	3	492.33758	984.67515	ug/l	5000	Pb	
Bi	209	193	2	468.31367	936.62734	ug/l	2000	Bi	
Th	232	193	3	483.37798	966.75596	ug/l	2000	Th	
U	238	193	3	488.04803	976.09606	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5809357	0.40	7411413	78.4	80	120	Li (IS)	FAILED
Sc (IS)	45	2	149149	0.55	143379	104.0	80	120	Sc (IS)	
Sc (IS)	45	3	2708506	1.18	2392712	113.2	80	120	Sc (IS)	
Ge (IS)	72	2	347681	0.23	323154	107.6	80	120	Ge (IS)	
Ge (IS)	72	3	2250448	0.71	1861986	120.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	13978323	1.65	12119833	115.3	80	120	In (IS)	
Ho (IS)	165	2	10192013	1.12	9598706	106.2	80	120	Ho (IS)	
Ho (IS)	165	3	16317008	0.69	13687738	119.2	80	120	Ho (IS)	
Ir (IS)	193	2	6501974	0.88	6085322	106.8	80	120	Ir (IS)	
Ir (IS)	193	3	8023642	0.35	6951639	115.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCSSRM 160-452611/3-A**
Data File Name	**058SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:08:33-06:00**
Type	**Sample**
VialNumber	**2310**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	7.89252	15.78503	ug/l	1000	Li	
Be	9	6	3	130.49418	260.98837	ug/l	1000	Be	
B	11	6	3	103.70421	207.40842	ug/l	2000	B	
Na	23	45	2	263.34315	526.68630	ug/l	50000	Na	
Mg	24	45	2	2468.79403	4937.58806	ug/l	50000	Mg	
Al	27	45	2	7390.43386	14780.86772	ug/l	100000	Al	
P	31	45	2	613.08501	1226.17001	ug/l	100000	P	
K	39	45	2	2055.82897	4111.65794	ug/l	100000	K	
Ca	44	45	3	5221.88011	10443.76022	ug/l	100000	Ca	
Ti	47	45	3	384.56304	769.12607	ug/l	2000	Ti	
V	51	45	2	61.78953	123.57906	ug/l	2000	V	
Cr	52	45	2	161.64067	323.28135	ug/l	2000	Cr	
Mn	55	72	2	260.13192	520.26383	ug/l	5000	Mn	
Fe	57	72	2	16352.65996	32705.31992	ug/l	100000	Fe	
Co	59	72	2	53.93286	107.86572	ug/l	2000	Co	
Ni	60	72	2	113.57352	227.14703	ug/l	2000	Ni	
Cu	63	72	2	208.22716	416.45432	ug/l	2000	Cu	
Zn	66	72	2	237.85712	475.71424	ug/l	5000	Zn	
As	75	72	2	193.31906	386.63811	ug/l	2000	As	
Se	78	72	2	229.68528	459.37056	ug/l	1000	Se	
Sr	88	72	3	130.11741	260.23483	ug/l	2000	Sr	
Y	89	72	2	8.83909	17.67818	ug/l	200	Y	
Zr	90	72	2	5.74908	11.49815	ug/l	2000	Zr	
Nb	93	72	2	0.55645	1.11290	ug/l	100	Nb	
Mo	95	72	3	134.34694	268.69388	ug/l	1000	Mo	
Ru	101	72	2	-0.00411	-0.00823	ug/l	200	Ru	
Rh	103	72	2	0.00044	0.00088	ug/l	200	Rh	
Pd	105	72	2	0.00761	0.01523	ug/l	20	Pd	
Ag	107	115	3	51.19816	102.39632	ug/l	400	Ag	
Cd	111	115	3	250.52039	501.04078	ug/l	2000	Cd	
Sn	118	115	3	121.49023	242.98046	ug/l	2000	Sn	
Sb	121	115	3	69.44330	138.88661	ug/l	1000	Sb	
Te	125	165	2	0.03377	0.06753	ug/l	200	Te	
Cs	133	165	2	1.12855	2.25711	ug/l	2000	Cs	
Ba	137	165	3	298.60151	597.20303	ug/l	5000	Ba	
La	139	165	2	26.82080	53.64160	ug/l	200	La	
Ce	140	165	2	59.76528	119.53056	ug/l	200	Ce	
Pr	141	165	2	6.40539	12.81077	ug/l	200	Pr	
Nd	146	165	2	24.38818	48.77636	ug/l	200	Nd	
Sm	147	165	3	4.28017	8.56033	ug/l	2000	Sm	
Hf	178	165	2	0.12040	0.24079	ug/l	200	Hf	
Ta	181	165	2	-0.02059	-0.04118	ug/l	200	Ta	
W	182	165	2	1.31277	2.62554	ug/l	2000	W	
Re	185	193	3	-0.00188	-0.00375	ug/l	200	Re	
Pt	195	193	2	0.00179	0.00358	ug/l	200	Pt	
Au	197	193	3	-0.02908	-0.05815	ug/l	2000	Au	
Tl	205	193	3	185.18375	370.36751	ug/l	400	Tl	
Pb	208	193	3	127.47340	254.94681	ug/l	5000	Pb	
Bi	209	193	2	0.36391	0.72781	ug/l	2000	Bi	
Th	232	193	3	12.76335	25.52671	ug/l	2000	Th	
U	238	193	3	108.78653	217.57307	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5819237	5.67	7411413	78.5	80	120	Li (IS)	FAILED
Sc (IS)	45	2	155445	1.48	143379	108.4	80	120	Sc (IS)	
Sc (IS)	45	3	2890951	8.31	2392712	120.8	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	354851	0.61	323154	109.8	80	120	Ge (IS)	
Ge (IS)	72	3	2245653	5.85	1861986	120.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	14189469	8.69	12119833	117.1	80	120	In (IS)	
Ho (IS)	165	2	10320924	0.80	9598706	107.5	80	120	Ho (IS)	
Ho (IS)	165	3	16232805	7.98	13687738	118.6	80	120	Ho (IS)	
Ir (IS)	193	2	6787897	0.83	6085322	111.5	80	120	Ir (IS)	
Ir (IS)	193	3	8209858	7.29	6951639	118.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36526-B-1-A**
Data File Name	**059SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:15:18-06:00**
Type	**Sample**
VialNumber	**2311**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	48.40807	96.81614	ug/l	1000	Li	
Be	9	6	3	1.36506	2.73013	ug/l	1000	Be	
B	11	6	3	16.67413	33.34827	ug/l	2000	B	
Na	23	45	2	2021.03224	4042.06449	ug/l	50000	Na	
Mg	24	45	2	30894.02969	61788.05938	ug/l	50000	Mg	
Al	27	45	2	33313.81979	66627.63958	ug/l	100000	Al	
P	31	45	2	1695.22024	3390.44049	ug/l	100000	P	
K	39	45	2	2814.83899	5629.67798	ug/l	100000	K	
Ca	44	45	3	47328.42510	94656.85020	ug/l	100000	Ca	
Ti	47	45	3	1390.82048	2781.64096	ug/l	2000	Ti	
V	51	45	2	88.50433	177.00866	ug/l	2000	V	
Cr	52	45	2	57.11678	114.23356	ug/l	2000	Cr	
Mn	55	72	2	610.22373	1220.44747	ug/l	5000	Mn	
Fe	57	72	2	69532.78352	139065.56704	ug/l	100000	Fe	
Co	59	72	2	20.97016	41.94032	ug/l	2000	Co	
Ni	60	72	2	74.95395	149.90791	ug/l	2000	Ni	
Cu	63	72	2	3920.50145	7841.00291	ug/l	2000	Cu	FAILED
Zn	66	72	2	65.05120	130.10241	ug/l	5000	Zn	
As	75	72	2	28.90532	57.81063	ug/l	2000	As	
Se	78	72	2	13.73621	27.47242	ug/l	1000	Se	
Sr	88	72	3	546.83731	1093.67461	ug/l	2000	Sr	
Y	89	72	2	16.27100	32.54199	ug/l	200	Y	
Zr	90	72	2	10.56542	21.13085	ug/l	2000	Zr	
Nb	93	72	2	0.39273	0.78545	ug/l	100	Nb	
Mo	95	72	3	13.83629	27.67258	ug/l	1000	Mo	
Ru	101	72	2	-0.00603	-0.01207	ug/l	200	Ru	
Rh	103	72	2	-0.00370	-0.00740	ug/l	200	Rh	
Pd	105	72	2	0.04155	0.08310	ug/l	20	Pd	
Ag	107	115	3	0.36650	0.73300	ug/l	400	Ag	
Cd	111	115	3	0.21466	0.42932	ug/l	2000	Cd	
Sn	118	115	3	9.46586	18.93171	ug/l	2000	Sn	
Sb	121	115	3	4.11017	8.22033	ug/l	1000	Sb	
Te	125	165	2	0.54632	1.09265	ug/l	200	Te	
Cs	133	165	2	2.59681	5.19362	ug/l	2000	Cs	
Ba	137	165	3	344.94882	689.89765	ug/l	5000	Ba	
La	139	165	2	29.33101	58.66201	ug/l	200	La	
Ce	140	165	2	59.92861	119.85722	ug/l	200	Ce	
Pr	141	165	2	6.68374	13.36749	ug/l	200	Pr	
Nd	146	165	2	27.22891	54.45781	ug/l	200	Nd	
Sm	147	165	3	5.28136	10.56272	ug/l	2000	Sm	
Hf	178	165	2	0.36970	0.73941	ug/l	200	Hf	
Ta	181	165	2	-0.00990	-0.01981	ug/l	200	Ta	
W	182	165	2	3.06331	6.12662	ug/l	2000	W	
Re	185	193	3	0.00334	0.00669	ug/l	200	Re	
Pt	195	193	2	0.00798	0.01595	ug/l	200	Pt	
Au	197	193	3	-0.00530	-0.01060	ug/l	2000	Au	
Tl	205	193	3	0.57853	1.15706	ug/l	400	Tl	
Pb	208	193	3	21.38486	42.76973	ug/l	5000	Pb	
Bi	209	193	2	1.28268	2.56535	ug/l	2000	Bi	
Th	232	193	3	16.51769	33.03537	ug/l	2000	Th	
U	238	193	3	8.80123	17.60245	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5445301	3.34	7411413	73.5	80	120	Li (IS)	FAILED
Sc (IS)	45	2	176329	1.48	143379	123.0	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3237855	4.36	2392712	135.3	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	358521	0.92	323154	110.9	80	120	Ge (IS)	
Ge (IS)	72	3	2234409	4.09	1861986	120.0	80	120	Ge (IS)	FAILED
In (IS)	115	3	13521363	5.23	12119833	111.6	80	120	In (IS)	
Ho (IS)	165	2	10267084	0.49	9598706	107.0	80	120	Ho (IS)	
Ho (IS)	165	3	15870572	6.10	13687738	115.9	80	120	Ho (IS)	
Ir (IS)	193	2	6438498	0.60	6085322	105.8	80	120	Ir (IS)	
Ir (IS)	193	3	7628731	4.84	6951639	109.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36526-B-2-A**
Data File Name	**060SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:22:02-06:00**
Type	**Sample**
VialNumber	**2312**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	33.32618	66.65237	ug/l	1000	Li	
Be	9	6	3	1.11941	2.23882	ug/l	1000	Be	
B	11	6	3	11.51206	23.02411	ug/l	2000	B	
Na	23	45	2	1500.75138	3001.50275	ug/l	50000	Na	
Mg	24	45	2	32172.19777	64344.39553	ug/l	50000	Mg	
Al	27	45	2	31070.41515	62140.83029	ug/l	100000	Al	
P	31	45	2	1441.57610	2883.15219	ug/l	100000	P	
K	39	45	2	3187.17443	6374.34887	ug/l	100000	K	
Ca	44	45	3	29245.20728	58490.41457	ug/l	100000	Ca	
Ti	47	45	3	1217.15201	2434.30402	ug/l	2000	Ti	
V	51	45	2	81.35685	162.71369	ug/l	2000	V	
Cr	52	45	2	39.20655	78.41311	ug/l	2000	Cr	
Mn	55	72	2	445.88017	891.76034	ug/l	5000	Mn	
Fe	57	72	2	64326.74467	128653.48934	ug/l	100000	Fe	
Co	59	72	2	17.30417	34.60834	ug/l	2000	Co	
Ni	60	72	2	61.64217	123.28435	ug/l	2000	Ni	
Cu	63	72	2	4470.13734	8940.27468	ug/l	2000	Cu	FAILED
Zn	66	72	2	49.33636	98.67272	ug/l	5000	Zn	
As	75	72	2	29.22651	58.45303	ug/l	2000	As	
Se	78	72	2	19.24579	38.49157	ug/l	1000	Se	
Sr	88	72	3	324.98998	649.97996	ug/l	2000	Sr	
Y	89	72	2	9.90080	19.80161	ug/l	200	Y	
Zr	90	72	2	7.87552	15.75104	ug/l	2000	Zr	
Nb	93	72	2	0.26278	0.52557	ug/l	100	Nb	
Mo	95	72	3	13.88241	27.76483	ug/l	1000	Mo	
Ru	101	72	2	-0.00570	-0.01141	ug/l	200	Ru	
Rh	103	72	2	-0.00463	-0.00927	ug/l	200	Rh	
Pd	105	72	2	0.02682	0.05364	ug/l	20	Pd	
Ag	107	115	3	0.28415	0.56830	ug/l	400	Ag	
Cd	111	115	3	0.12546	0.25092	ug/l	2000	Cd	
Sn	118	115	3	8.37790	16.75580	ug/l	2000	Sn	
Sb	121	115	3	2.72499	5.44999	ug/l	1000	Sb	
Te	125	165	2	0.47326	0.94651	ug/l	200	Te	
Cs	133	165	2	2.42956	4.85912	ug/l	2000	Cs	
Ba	137	165	3	201.48190	402.96380	ug/l	5000	Ba	
La	139	165	2	19.96053	39.92106	ug/l	200	La	
Ce	140	165	2	44.72476	89.44953	ug/l	200	Ce	
Pr	141	165	2	4.98313	9.96625	ug/l	200	Pr	
Nd	146	165	2	20.31953	40.63906	ug/l	200	Nd	
Sm	147	165	3	3.73834	7.47669	ug/l	2000	Sm	
Hf	178	165	2	0.28198	0.56396	ug/l	200	Hf	
Ta	181	165	2	-0.01531	-0.03061	ug/l	200	Ta	
W	182	165	2	3.17882	6.35763	ug/l	2000	W	
Re	185	193	3	0.00026	0.00052	ug/l	200	Re	
Pt	195	193	2	0.00770	0.01541	ug/l	200	Pt	
Au	197	193	3	0.04465	0.08930	ug/l	2000	Au	
Tl	205	193	3	0.27806	0.55612	ug/l	400	Tl	
Pb	208	193	3	15.94251	31.88503	ug/l	5000	Pb	
Bi	209	193	2	1.08080	2.16161	ug/l	2000	Bi	
Th	232	193	3	16.89226	33.78452	ug/l	2000	Th	
U	238	193	3	6.30936	12.61872	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5510177	0.65	7411413	74.3	80	120	Li (IS)	FAILED
Sc (IS)	45	2	174044	0.17	143379	121.4	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3237414	0.86	2392712	135.3	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	366135	1.33	323154	113.3	80	120	Ge (IS)	
Ge (IS)	72	3	2308644	0.43	1861986	124.0	80	120	Ge (IS)	FAILED
In (IS)	115	3	14033542	0.41	12119833	115.8	80	120	In (IS)	
Ho (IS)	165	2	10315090	0.74	9598706	107.5	80	120	Ho (IS)	
Ho (IS)	165	3	16351937	0.54	13687738	119.5	80	120	Ho (IS)	
Ir (IS)	193	2	6419376	0.66	6085322	105.5	80	120	Ir (IS)	
Ir (IS)	193	3	7846214	0.22	6951639	112.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-3-A**
Data File Name	**061SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:28:46-06:00**
Type	**Sample**
VialNumber	**2401**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	14.70561	29.41122	ug/l	1000	Li	
Be	9	6	3	0.77830	1.55660	ug/l	1000	Be	
B	11	6	3	5.48583	10.97165	ug/l	2000	B	
Na	23	45	2	234.73091	469.46183	ug/l	50000	Na	
Mg	24	45	2	31088.36535	62176.73071	ug/l	50000	Mg	
Al	27	45	2	31744.56832	63489.13664	ug/l	100000	Al	
P	31	45	2	2037.69021	4075.38042	ug/l	100000	P	
K	39	45	2	1656.24808	3312.49615	ug/l	100000	K	
Ca	44	45	3	15301.74461	30603.48922	ug/l	100000	Ca	
Ti	47	45	3	1225.36657	2450.73313	ug/l	2000	Ti	
V	51	45	2	80.88518	161.77036	ug/l	2000	V	
Cr	52	45	2	24.33445	48.66890	ug/l	2000	Cr	
Mn	55	72	2	191.92770	383.85541	ug/l	5000	Mn	
Fe	57	72	2	55374.40432	110748.80864	ug/l	100000	Fe	
Co	59	72	2	19.09587	38.19174	ug/l	2000	Co	
Ni	60	72	2	38.72811	77.45622	ug/l	2000	Ni	
Cu	63	72	2	5884.94599	11769.89199	ug/l	2000	Cu	FAILED
Zn	66	72	2	31.16407	62.32815	ug/l	5000	Zn	
As	75	72	2	26.77988	53.55977	ug/l	2000	As	
Se	78	72	2	13.49653	26.99306	ug/l	1000	Se	
Sr	88	72	3	439.01301	878.02603	ug/l	2000	Sr	
Y	89	72	2	11.91389	23.82778	ug/l	200	Y	
Zr	90	72	2	4.53408	9.06816	ug/l	2000	Zr	
Nb	93	72	2	0.17466	0.34932	ug/l	100	Nb	
Mo	95	72	3	10.66194	21.32387	ug/l	1000	Mo	
Ru	101	72	2	-0.00610	-0.01221	ug/l	200	Ru	
Rh	103	72	2	-0.00438	-0.00875	ug/l	200	Rh	
Pd	105	72	2	0.03183	0.06366	ug/l	20	Pd	
Ag	107	115	3	0.31517	0.63034	ug/l	400	Ag	
Cd	111	115	3	0.04693	0.09386	ug/l	2000	Cd	
Sn	118	115	3	7.68160	15.36319	ug/l	2000	Sn	
Sb	121	115	3	3.19110	6.38220	ug/l	1000	Sb	
Te	125	165	2	0.48887	0.97773	ug/l	200	Te	
Cs	133	165	2	1.59752	3.19504	ug/l	2000	Cs	
Ba	137	165	3	153.73007	307.46013	ug/l	5000	Ba	
La	139	165	2	25.50496	51.00992	ug/l	200	La	
Ce	140	165	2	50.86665	101.73329	ug/l	200	Ce	
Pr	141	165	2	5.53787	11.07574	ug/l	200	Pr	
Nd	146	165	2	22.69321	45.38641	ug/l	200	Nd	
Sm	147	165	3	3.99987	7.99974	ug/l	2000	Sm	
Hf	178	165	2	0.17205	0.34409	ug/l	200	Hf	
Ta	181	165	2	-0.00821	-0.01642	ug/l	200	Ta	
W	182	165	2	3.11883	6.23766	ug/l	2000	W	
Re	185	193	3	-0.00072	-0.00144	ug/l	200	Re	
Pt	195	193	2	0.00587	0.01174	ug/l	200	Pt	
Au	197	193	3	-0.00747	-0.01495	ug/l	2000	Au	
Tl	205	193	3	0.07976	0.15951	ug/l	400	Tl	
Pb	208	193	3	17.33139	34.66279	ug/l	5000	Pb	
Bi	209	193	2	1.40263	2.80526	ug/l	2000	Bi	
Th	232	193	3	14.46963	28.93927	ug/l	2000	Th	
U	238	193	3	5.17613	10.35225	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5580643	0.59	7411413	75.3	80	120	Li (IS)	FAILED
Sc (IS)	45	2	170851	5.30	143379	119.2	80	120	Sc (IS)	
Sc (IS)	45	3	3168415	0.41	2392712	132.4	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	370444	4.75	323154	114.6	80	120	Ge (IS)	
Ge (IS)	72	3	2320983	0.34	1861986	124.7	80	120	Ge (IS)	FAILED
In (IS)	115	3	14188316	0.94	12119833	117.1	80	120	In (IS)	
Ho (IS)	165	2	10469532	6.52	9598706	109.1	80	120	Ho (IS)	
Ho (IS)	165	3	16523882	1.24	13687738	120.7	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6610776	5.31	6085322	108.6	80	120	Ir (IS)	
Ir (IS)	193	3	7906643	1.04	6951639	113.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-4-A**
Data File Name	**062SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:35:28-06:00**
Type	**Sample**
VialNumber	**2402**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	14.02583	28.05166	ug/l	1000	Li	
Be	9	6	3	1.06348	2.12695	ug/l	1000	Be	
B	11	6	3	5.37688	10.75377	ug/l	2000	B	
Na	23	45	2	368.97537	737.95074	ug/l	50000	Na	
Mg	24	45	2	23847.94519	47695.89038	ug/l	50000	Mg	
Al	27	45	2	23066.26268	46132.52537	ug/l	100000	Al	
P	31	45	2	3094.22253	6188.44506	ug/l	100000	P	
K	39	45	2	5680.83225	11361.66449	ug/l	100000	K	
Ca	44	45	3	19763.75349	39527.50698	ug/l	100000	Ca	
Ti	47	45	3	1495.05591	2990.11182	ug/l	2000	Ti	
V	51	45	2	79.36023	158.72047	ug/l	2000	V	
Cr	52	45	2	35.98860	71.97721	ug/l	2000	Cr	
Mn	55	72	2	451.09206	902.18411	ug/l	5000	Mn	
Fe	57	72	2	67166.42061	134332.84121	ug/l	100000	Fe	
Co	59	72	2	31.59464	63.18928	ug/l	2000	Co	
Ni	60	72	2	42.52729	85.05459	ug/l	2000	Ni	
Cu	63	72	2	4331.19589	8662.39177	ug/l	2000	Cu	FAILED
Zn	66	72	2	69.51243	139.02486	ug/l	5000	Zn	
As	75	72	2	10.14368	20.28735	ug/l	2000	As	
Se	78	72	2	7.35502	14.71004	ug/l	1000	Se	
Sr	88	72	3	171.53460	343.06920	ug/l	2000	Sr	
Y	89	72	2	15.71500	31.43000	ug/l	200	Y	
Zr	90	72	2	6.00112	12.00224	ug/l	2000	Zr	
Nb	93	72	2	0.38870	0.77741	ug/l	100	Nb	
Mo	95	72	3	10.80011	21.60022	ug/l	1000	Mo	
Ru	101	72	2	-0.00581	-0.01162	ug/l	200	Ru	
Rh	103	72	2	-0.00563	-0.01126	ug/l	200	Rh	
Pd	105	72	2	0.01761	0.03521	ug/l	20	Pd	
Ag	107	115	3	0.39239	0.78477	ug/l	400	Ag	
Cd	111	115	3	0.09330	0.18660	ug/l	2000	Cd	
Sn	118	115	3	8.83522	17.67044	ug/l	2000	Sn	
Sb	121	115	3	1.63346	3.26693	ug/l	1000	Sb	
Te	125	165	2	0.80111	1.60222	ug/l	200	Te	
Cs	133	165	2	2.57106	5.14211	ug/l	2000	Cs	
Ba	137	165	3	178.72740	357.45479	ug/l	5000	Ba	
La	139	165	2	33.95553	67.91106	ug/l	200	La	
Ce	140	165	2	73.43821	146.87641	ug/l	200	Ce	
Pr	141	165	2	8.41933	16.83865	ug/l	200	Pr	
Nd	146	165	2	34.78549	69.57098	ug/l	200	Nd	
Sm	147	165	3	6.48734	12.97469	ug/l	2000	Sm	
Hf	178	165	2	0.21951	0.43903	ug/l	200	Hf	
Ta	181	165	2	0.01673	0.03346	ug/l	200	Ta	
W	182	165	2	2.08687	4.17375	ug/l	2000	W	
Re	185	193	3	0.21634	0.43267	ug/l	200	Re	
Pt	195	193	2	0.00977	0.01954	ug/l	200	Pt	
Au	197	193	3	-0.02063	-0.04125	ug/l	2000	Au	
Tl	205	193	3	0.26875	0.53751	ug/l	400	Tl	
Pb	208	193	3	7.64828	15.29656	ug/l	5000	Pb	
Bi	209	193	2	1.54939	3.09878	ug/l	2000	Bi	
Th	232	193	3	37.08318	74.16635	ug/l	2000	Th	
U	238	193	3	9.65830	19.31659	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5588270	3.30	7411413	75.4	80	120	Li (IS)	FAILED
Sc (IS)	45	2	173567	2.81	143379	121.1	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3227011	4.79	2392712	134.9	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	375339	2.66	323154	116.1	80	120	Ge (IS)	
Ge (IS)	72	3	2361241	4.37	1861986	126.8	80	120	Ge (IS)	FAILED
In (IS)	115	3	14446204	4.36	12119833	119.2	80	120	In (IS)	
Ho (IS)	165	2	10443281	1.09	9598706	108.8	80	120	Ho (IS)	
Ho (IS)	165	3	16815809	5.18	13687738	122.9	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6581911	1.28	6085322	108.2	80	120	Ir (IS)	
Ir (IS)	193	3	7992084	4.51	6951639	115.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-5-A**
Data File Name	**063SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:42:11-06:00**
Type	**Sample**
VialNumber	**2403**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	12.90654	25.81307	ug/l	1000	Li	
Be	9	6	3	1.00930	2.01860	ug/l	1000	Be	
B	11	6	3	9.99198	19.98396	ug/l	2000	B	
Na	23	45	2	764.16392	1528.32784	ug/l	50000	Na	
Mg	24	45	2	22219.79005	44439.58010	ug/l	50000	Mg	
Al	27	45	2	27747.32922	55494.65845	ug/l	100000	Al	
P	31	45	2	1848.42958	3696.85917	ug/l	100000	P	
K	39	45	2	4030.63900	8061.27800	ug/l	100000	K	
Ca	44	45	3	17851.51601	35703.03202	ug/l	100000	Ca	
Ti	47	45	3	1670.03929	3340.07859	ug/l	2000	Ti	
V	51	45	2	72.97408	145.94816	ug/l	2000	V	
Cr	52	45	2	21.34695	42.69389	ug/l	2000	Cr	
Mn	55	72	2	146.80437	293.60874	ug/l	5000	Mn	
Fe	57	72	2	55098.86594	110197.73189	ug/l	100000	Fe	
Co	59	72	2	18.47807	36.95613	ug/l	2000	Co	
Ni	60	72	2	31.42639	62.85278	ug/l	2000	Ni	
Cu	63	72	2	2916.76833	5833.53665	ug/l	2000	Cu	FAILED
Zn	66	72	2	32.57096	65.14192	ug/l	5000	Zn	
As	75	72	2	35.19549	70.39099	ug/l	2000	As	
Se	78	72	2	24.49505	48.99009	ug/l	1000	Se	
Sr	88	72	3	404.39696	808.79393	ug/l	2000	Sr	
Y	89	72	2	9.33000	18.66001	ug/l	200	Y	
Zr	90	72	2	5.61884	11.23767	ug/l	2000	Zr	
Nb	93	72	2	0.47330	0.94659	ug/l	100	Nb	
Mo	95	72	3	15.83869	31.67738	ug/l	1000	Mo	
Ru	101	72	2	-0.00556	-0.01113	ug/l	200	Ru	
Rh	103	72	2	-0.00500	-0.01001	ug/l	200	Rh	
Pd	105	72	2	0.03001	0.06003	ug/l	20	Pd	
Ag	107	115	3	0.69023	1.38046	ug/l	400	Ag	
Cd	111	115	3	0.05125	0.10250	ug/l	2000	Cd	
Sn	118	115	3	8.52119	17.04238	ug/l	2000	Sn	
Sb	121	115	3	3.67194	7.34387	ug/l	1000	Sb	
Te	125	165	2	0.84280	1.68561	ug/l	200	Te	
Cs	133	165	2	2.48764	4.97529	ug/l	2000	Cs	
Ba	137	165	3	191.98322	383.96644	ug/l	5000	Ba	
La	139	165	2	29.72733	59.45466	ug/l	200	La	
Ce	140	165	2	62.44287	124.88575	ug/l	200	Ce	
Pr	141	165	2	7.05396	14.10793	ug/l	200	Pr	
Nd	146	165	2	29.70587	59.41175	ug/l	200	Nd	
Sm	147	165	3	5.10765	10.21531	ug/l	2000	Sm	
Hf	178	165	2	0.19407	0.38815	ug/l	200	Hf	
Ta	181	165	2	-0.00058	-0.00116	ug/l	200	Ta	
W	182	165	2	5.63566	11.27131	ug/l	2000	W	
Re	185	193	3	0.06668	0.13337	ug/l	200	Re	
Pt	195	193	2	0.00585	0.01171	ug/l	200	Pt	
Au	197	193	3	0.00250	0.00501	ug/l	2000	Au	
Tl	205	193	3	0.14775	0.29550	ug/l	400	Tl	
Pb	208	193	3	13.84129	27.68258	ug/l	5000	Pb	
Bi	209	193	2	2.20711	4.41421	ug/l	2000	Bi	
Th	232	193	3	19.19719	38.39437	ug/l	2000	Th	
U	238	193	3	23.32639	46.65278	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5459981	3.43	7411413	73.7	80	120	Li (IS)	FAILED
Sc (IS)	45	2	159679	8.47	143379	111.4	80	120	Sc (IS)	
Sc (IS)	45	3	3175151	2.40	2392712	132.7	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	353518	6.65	323154	109.4	80	120	Ge (IS)	
Ge (IS)	72	3	2366722	2.57	1861986	127.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	14466499	3.04	12119833	119.4	80	120	In (IS)	
Ho (IS)	165	2	9743216	9.48	9598706	101.5	80	120	Ho (IS)	
Ho (IS)	165	3	16619103	3.14	13687738	121.4	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6132455	8.61	6085322	100.8	80	120	Ir (IS)	
Ir (IS)	193	3	7967079	3.22	6951639	114.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-6-A**
Data File Name	**064SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:48:54-06:00**
Type	**Sample**
VialNumber	**2404**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	13.71431	27.42863	ug/l	1000	Li	
Be	9	6	3	1.20030	2.40061	ug/l	1000	Be	
B	11	6	3	10.19751	20.39502	ug/l	2000	B	
Na	23	45	2	638.88386	1277.76772	ug/l	50000	Na	
Mg	24	45	2	22372.19800	44744.39600	ug/l	50000	Mg	
Al	27	45	2	29617.85760	59235.71520	ug/l	100000	Al	
P	31	45	2	1752.79874	3505.59748	ug/l	100000	P	
K	39	45	2	4047.94441	8095.88882	ug/l	100000	K	
Ca	44	45	3	19664.88523	39329.77046	ug/l	100000	Ca	
Ti	47	45	3	1742.64179	3485.28358	ug/l	2000	Ti	
V	51	45	2	73.38559	146.77119	ug/l	2000	V	
Cr	52	45	2	21.89403	43.78806	ug/l	2000	Cr	
Mn	55	72	2	147.68141	295.36281	ug/l	5000	Mn	
Fe	57	72	2	55171.62588	110343.25176	ug/l	100000	Fe	
Co	59	72	2	15.68605	31.37209	ug/l	2000	Co	
Ni	60	72	2	29.50054	59.00108	ug/l	2000	Ni	
Cu	63	72	2	2919.23254	5838.46509	ug/l	2000	Cu	FAILED
Zn	66	72	2	35.52335	71.04671	ug/l	5000	Zn	
As	75	72	2	37.14770	74.29540	ug/l	2000	As	
Se	78	72	2	23.14248	46.28497	ug/l	1000	Se	
Sr	88	72	3	504.15386	1008.30772	ug/l	2000	Sr	
Y	89	72	2	8.16543	16.33086	ug/l	200	Y	
Zr	90	72	2	4.89248	9.78496	ug/l	2000	Zr	
Nb	93	72	2	0.38816	0.77632	ug/l	100	Nb	
Mo	95	72	3	16.73373	33.46746	ug/l	1000	Mo	
Ru	101	72	2	-0.00557	-0.01113	ug/l	200	Ru	
Rh	103	72	2	-0.00495	-0.00990	ug/l	200	Rh	
Pd	105	72	2	0.03471	0.06942	ug/l	20	Pd	
Ag	107	115	3	0.79521	1.59042	ug/l	400	Ag	
Cd	111	115	3	0.05538	0.11075	ug/l	2000	Cd	
Sn	118	115	3	8.83115	17.66229	ug/l	2000	Sn	
Sb	121	115	3	4.36264	8.72528	ug/l	1000	Sb	
Te	125	165	2	0.84252	1.68503	ug/l	200	Te	
Cs	133	165	2	2.46327	4.92655	ug/l	2000	Cs	
Ba	137	165	3	242.21781	484.43562	ug/l	5000	Ba	
La	139	165	2	28.98483	57.96966	ug/l	200	La	
Ce	140	165	2	58.82432	117.64864	ug/l	200	Ce	
Pr	141	165	2	6.56545	13.13090	ug/l	200	Pr	
Nd	146	165	2	27.07956	54.15911	ug/l	200	Nd	
Sm	147	165	3	4.82769	9.65538	ug/l	2000	Sm	
Hf	178	165	2	0.17128	0.34257	ug/l	200	Hf	
Ta	181	165	2	-0.00410	-0.00820	ug/l	200	Ta	
W	182	165	2	6.46251	12.92501	ug/l	2000	W	
Re	185	193	3	0.02107	0.04214	ug/l	200	Re	
Pt	195	193	2	0.00682	0.01364	ug/l	200	Pt	
Au	197	193	3	0.06934	0.13867	ug/l	2000	Au	
Tl	205	193	3	0.17445	0.34890	ug/l	400	Tl	
Pb	208	193	3	19.49811	38.99622	ug/l	5000	Pb	
Bi	209	193	2	2.15806	4.31612	ug/l	2000	Bi	
Th	232	193	3	19.97158	39.94316	ug/l	2000	Th	
U	238	193	3	12.93473	25.86945	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5289786	4.76	7411413	71.4	80	120	Li (IS)	FAILED
Sc (IS)	45	2	166110	5.05	143379	115.9	80	120	Sc (IS)	
Sc (IS)	45	3	3045793	6.89	2392712	127.3	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	366837	4.26	323154	113.5	80	120	Ge (IS)	
Ge (IS)	72	3	2276865	4.77	1861986	122.3	80	120	Ge (IS)	FAILED
In (IS)	115	3	13635205	8.30	12119833	112.5	80	120	In (IS)	
Ho (IS)	165	2	10088607	5.06	9598706	105.1	80	120	Ho (IS)	
Ho (IS)	165	3	15667378	7.77	13687738	114.5	80	120	Ho (IS)	
Ir (IS)	193	2	6285283	4.31	6085322	103.3	80	120	Ir (IS)	
Ir (IS)	193	3	7506234	7.87	6951639	108.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**065LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T22:55:40-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	6.05342	ug/l	5	121.1	80	120	Li	FAILED
Be	9	6	3	0.64350	ug/l	0.5	128.7	80	120	Be	FAILED
B	11	6	3	114.82512	ug/l	100	114.8	80	120	B	
Na	23	45	2	104.83385	ug/l	100	104.8	80	120	Na	
Mg	24	45	2	53.50396	ug/l	50	107.0	80	120	Mg	
Al	27	45	2	52.55906	ug/l	50	105.1	80	120	Al	
P	31	45	2	94.51055	ug/l	100	94.5	80	120	P	
K	39	45	2	98.81914	ug/l	100	98.8	80	120	K	
Ca	44	45	3	202.51526	ug/l	200	101.3	80	120	Ca	
Ti	47	45	3	5.36173	ug/l	5	107.2	80	120	Ti	
V	51	45	2	10.32646	ug/l	10	103.3	80	120	V	
Cr	52	45	2	10.38002	ug/l	10	103.8	80	120	Cr	
Mn	55	72	2	4.07291	ug/l	4	101.8	80	120	Mn	
Fe	57	72	2	59.29888	ug/l	50	118.6	80	120	Fe	
Co	59	72	2	2.09815	ug/l	2	104.9	80	120	Co	
Ni	60	72	2	5.74522	ug/l	5	114.9	80	120	Ni	
Cu	63	72	2	3.52556	ug/l	3	117.5	80	120	Cu	
Zn	66	72	2	21.79054	ug/l	20	109.0	80	120	Zn	
As	75	72	2	10.58972	ug/l	10	105.9	80	120	As	
Se	78	72	2	5.49225	ug/l	5	109.8	80	120	Se	
Sr	88	72	3	4.94272	ug/l	5	98.9	80	120	Sr	
Y	89	72	2	4.85823	ug/l	5	97.2	80	120	Y	
Zr	90	72	2	4.99159	ug/l	5	99.8	80	120	Zr	
Nb	93	72	2	18.65208	ug/l	25	74.6	80	120	Nb	FAILED
Mo	95	72	3	4.66743	ug/l	5	93.3	80	120	Mo	
Ru	101	72	2	10.46439	ug/l	10	104.6	80	120	Ru	
Rh	103	72	2	10.14325	ug/l	10	101.4	80	120	Rh	
Pd	105	72	2	0.55956	ug/l	0.5	111.9	80	120	Pd	
Ag	107	115	3	1.89674	ug/l	2	94.8	80	120	Ag	
Cd	111	115	3	0.49708	ug/l	0.5	99.4	80	120	Cd	
Sn	118	115	3	1.84174	ug/l	2	92.1	80	120	Sn	
Sb	121	115	3	4.64445	ug/l	5	92.9	80	120	Sb	
Te	125	165	2	9.72034	ug/l	10	97.2	80	120	Te	
Cs	133	165	2	0.94402	ug/l	1	94.4	80	120	Cs	
Ba	137	165	3	1.97408	ug/l	2	98.7	80	120	Ba	
La	139	165	2	1.97402	ug/l	2	98.7	80	120	La	
Ce	140	165	2	9.77091	ug/l	10	97.7	80	120	Ce	
Pr	141	165	2	1.94737	ug/l	2	97.4	80	120	Pr	
Nd	146	165	2	1.93550	ug/l	2	96.8	80	120	Nd	
Sm	147	165	3	9.66157	ug/l	10	96.6	80	120	Sm	
Hf	178	165	2	9.15594	ug/l	10	91.6	80	120	Hf	
Ta	181	165	2	7.74405	ug/l	10	77.4	80	120	Ta	FAILED
W	182	165	2	4.92149	ug/l	5	98.4	80	120	W	
Re	185	193	3	9.17417	ug/l	10	91.7	80	120	Re	
Pt	195	193	2	1.07322	ug/l	1	107.3	80	120	Pt	
Au	197	193	3	4.47847	ug/l	5	89.6	80	120	Au	
Tl	205	193	3	1.82637	ug/l	2	91.3	80	120	Tl	
Pb	208	193	3	2.78396	ug/l	3	92.8	80	120	Pb	
Bi	209	193	2	18.22398	ug/l	20	91.1	80	120	Bi	
Th	232	193	3	1.77386	ug/l	2	88.7	80	120	Th	
U	238	193	3	0.89610	ug/l	1	89.6	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5637074	0.78	7411413	76.1	80	120	Li (IS)	FAILED
Sc (IS)	45	2	153100	5.23	143379	106.8	80	120	Sc (IS)	
Sc (IS)	45	3	2829261	1.13	2392712	118.2	80	120	Sc (IS)	
Ge (IS)	72	2	366388	3.76	323154	113.4	80	120	Ge (IS)	
Ge (IS)	72	3	2338297	0.65	1861986	125.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	14621338	1.43	12119833	120.6	80	120	In (IS)	FAILED
Ho (IS)	165	2	9880174	5.13	9598706	102.9	80	120	Ho (IS)	
Ho (IS)	165	3	16155827	1.68	13687738	118.0	80	120	Ho (IS)	
Ir (IS)	193	2	6453676	4.02	6085322	106.1	80	120	Ir (IS)	
Ir (IS)	193	3	8069586	1.60	6951639	116.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**066_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:02:23-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	106.41810	ug/l	100	106.4	90	110	Li	
Be	9	6	3	118.49079	ug/l	100	118.5	90	110	Be	FAILED
B	11	6	3	238.16367	ug/l	200	119.1	90	110	B	FAILED
Na	23	45	2	2462.00275	ug/l	2500	98.5	90	110	Na	
Mg	24	45	2	2406.79176	ug/l	2500	96.3	90	110	Mg	
Al	27	45	2	2206.66819	ug/l	2500	88.3	90	110	Al	FAILED
P	31	45	2	2277.97769	ug/l	2500	91.1	90	110	P	
K	39	45	2	2436.90916	ug/l	2500	97.5	90	110	K	
Ca	44	45	3	2569.23681	ug/l	2500	102.8	90	110	Ca	
Ti	47	45	3	100.89625	ug/l	100	100.9	90	110	Ti	
V	51	45	2	98.43242	ug/l	100	98.4	90	110	V	
Cr	52	45	2	103.57677	ug/l	100	103.6	90	110	Cr	
Mn	55	72	2	91.02622	ug/l	100	91.0	90	110	Mn	
Fe	57	72	2	2324.18466	ug/l	2500	93.0	90	110	Fe	
Co	59	72	2	99.47945	ug/l	100	99.5	90	110	Co	
Ni	60	72	2	100.06683	ug/l	100	100.1	90	110	Ni	
Cu	63	72	2	101.02950	ug/l	100	101.0	90	110	Cu	
Zn	66	72	2	100.78266	ug/l	100	100.8	90	110	Zn	
As	75	72	2	99.61215	ug/l	100	99.6	90	110	As	
Se	78	72	2	48.78423	ug/l	50	97.6	90	110	Se	
Sr	88	72	3	103.04337	ug/l	100	103.0	90	110	Sr	
Y	89	72	2	99.32036	ug/l	100	99.3	90	110	Y	
Zr	90	72	2	100.71162	ug/l	100	100.7	90	110	Zr	
Nb	93	72	2	50.51158	ug/l	50	101.0	90	110	Nb	
Mo	95	72	3	46.62605	ug/l	50	93.3	90	110	Mo	
Ru	101	72	2	98.18062	ug/l	100	98.2	90	110	Ru	
Rh	103	72	2	104.05921	ug/l	100	104.1	90	110	Rh	
Pd	105	72	2	10.61714	ug/l	10	106.2	90	110	Pd	
Ag	107	115	3	18.17775	ug/l	20	90.9	90	110	Ag	
Cd	111	115	3	94.86477	ug/l	100	94.9	90	110	Cd	
Sn	118	115	3	100.75825	ug/l	100	100.8	90	110	Sn	
Sb	121	115	3	50.37977	ug/l	50	100.8	90	110	Sb	
Te	125	165	2	98.31716	ug/l	100	98.3	90	110	Te	
Cs	133	165	2	97.93151	ug/l	100	97.9	90	110	Cs	
Ba	137	165	3	101.32131	ug/l	100	101.3	90	110	Ba	
La	139	165	2	101.08417	ug/l	100	101.1	90	110	La	
Ce	140	165	2	101.72525	ug/l	100	101.7	90	110	Ce	
Pr	141	165	2	100.52681	ug/l	100	100.5	90	110	Pr	
Nd	146	165	2	93.04268	ug/l	100	93.0	90	110	Nd	
Sm	147	165	3	101.73972	ug/l	100	101.7	90	110	Sm	
Hf	178	165	2	99.22732	ug/l	100	99.2	90	110	Hf	
Ta	181	165	2	102.80829	ug/l	100	102.8	90	110	Ta	
W	182	165	2	103.74968	ug/l	100	103.7	90	110	W	
Re	185	193	3	102.23863	ug/l	100	102.2	90	110	Re	
Pt	195	193	2	10.15291	ug/l	10	101.5	90	110	Pt	
Au	197	193	3	98.15364	ug/l	100	98.2	90	110	Au	
Tl	205	193	3	20.19309	ug/l	20	101.0	90	110	Tl	
Pb	208	193	3	99.86388	ug/l	100	99.9	90	110	Pb	
Bi	209	193	2	95.60219	ug/l	100	95.6	90	110	Bi	
Th	232	193	3	96.38933	ug/l	100	96.4	90	110	Th	
U	238	193	3	96.29415	ug/l	100	96.3	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5638842	0.63	7411413	76.1	80	120	Li (IS)	FAILED
Sc (IS)	45	2	156540	1.42	143379	109.2	80	120	Sc (IS)	
Sc (IS)	45	3	2849561	0.98	2392712	119.1	80	120	Sc (IS)	
Ge (IS)	72	2	384535	1.03	323154	119.0	80	120	Ge (IS)	
Ge (IS)	72	3	2361857	0.84	1861986	126.8	80	120	Ge (IS)	FAILED
In (IS)	115	3	14599043	1.36	12119833	120.5	80	120	In (IS)	FAILED
Ho (IS)	165	2	10281826	1.19	9598706	107.1	80	120	Ho (IS)	
Ho (IS)	165	3	16416252	0.17	13687738	119.9	80	120	Ho (IS)	
Ir (IS)	193	2	6659649	1.50	6085322	109.4	80	120	Ir (IS)	
Ir (IS)	193	3	8069727	0.47	6951639	116.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**067_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:09:08-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.68433	ug/l	1.388	Li	
Be	9	6	3	0.00553	ug/l	0.7	Be	
B	11	6	3	2.70431	ug/l	20	B	
Na	23	45	2	3.05135	ug/l	30	Na	
Mg	24	45	2	0.94097	ug/l	11.18	Mg	
Al	27	45	2	0.97631	ug/l	25.8	Al	
P	31	45	2	0.54603	ug/l	16.46	P	
K	39	45	2	0.38814	ug/l	83.2	K	
Ca	44	45	3	-3.69078	ug/l	136.2	Ca	
Ti	47	45	3	0.05833	ug/l	4.2	Ti	
V	51	45	2	-0.02713	ug/l	4.74	V	
Cr	52	45	2	0.00208	ug/l	6.52	Cr	
Mn	55	72	2	0.04203	ug/l	0.49	Mn	
Fe	57	72	2	1.25492	ug/l	40.7	Fe	
Co	59	72	2	0.03310	ug/l	0.434	Co	
Ni	60	72	2	0.02133	ug/l	0.8	Ni	
Cu	63	72	2	-0.21995	ug/l	0.902	Cu	
Zn	66	72	2	0.08913	ug/l	16.58	Zn	
As	75	72	2	-0.01817	ug/l	2.36	As	
Se	78	72	2	0.19560	ug/l	3.18	Se	
Sr	88	72	3	0.00773	ug/l	2	Sr	
Y	89	72	2	0.03128	ug/l	0.424	Y	
Zr	90	72	2	0.03228	ug/l	0.496	Zr	
Nb	93	72	2	0.26273	ug/l	4.62	Nb	
Mo	95	72	3	-0.00994	ug/l	2	Mo	
Ru	101	72	2	0.03260	ug/l	2	Ru	
Rh	103	72	2	0.03084	ug/l	1.634	Rh	
Pd	105	72	2	-0.00435	ug/l	0.08	Pd	
Ag	107	115	3	0.00415	ug/l	1.54	Ag	
Cd	111	115	3	0.00259	ug/l	0.4	Cd	
Sn	118	115	3	-0.00530	ug/l	2	Sn	
Sb	121	115	3	-0.01389	ug/l	3.34	Sb	
Te	125	165	2	0.05984	ug/l	1.072	Te	
Cs	133	165	2	0.02724	ug/l	0.106	Cs	
Ba	137	165	3	0.01483	ug/l	0.446	Ba	
La	139	165	2	0.02989	ug/l	0.102	La	
Ce	140	165	2	0.02969	ug/l	1.772	Ce	
Pr	141	165	2	0.02937	ug/l	0.084	Pr	
Nd	146	165	2	0.02831	ug/l	0.208	Nd	
Sm	147	165	3	0.00901	ug/l	0.652	Sm	
Hf	178	165	2	0.03603	ug/l	2.26	Hf	
Ta	181	165	2	0.01780	ug/l	1.46	Ta	
W	182	165	2	0.35578	ug/l	4	W	
Re	185	193	3	0.00520	ug/l	0.05	Re	
Pt	195	193	2	0.00613	ug/l	0.12	Pt	
Au	197	193	3	0.13379	ug/l	1	Au	
Tl	205	193	3	-0.00121	ug/l	1.1	Tl	
Pb	208	193	3	0.01890	ug/l	0.346	Pb	
Bi	209	193	2	0.02219	ug/l	1.464	Bi	
Th	232	193	3	0.02241	ug/l	1.104	Th	
U	238	193	3	0.00730	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5701576	0.62	7411413	76.9	80	120	Li (IS)	FAILED
Sc (IS)	45	2	158184	0.52	143379	110.3	80	120	Sc (IS)	
Sc (IS)	45	3	2862692	0.92	2392712	119.6	80	120	Sc (IS)	
Ge (IS)	72	2	370866	0.52	323154	114.8	80	120	Ge (IS)	
Ge (IS)	72	3	2348430	1.39	1861986	126.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	14850143	0.78	12119833	122.5	80	120	In (IS)	FAILED
Ho (IS)	165	2	10469083	0.89	9598706	109.1	80	120	Ho (IS)	
Ho (IS)	165	3	16379062	0.44	13687738	119.7	80	120	Ho (IS)	
Ir (IS)	193	2	6820801	1.07	6085322	112.1	80	120	Ir (IS)	
Ir (IS)	193	3	8335962	1.55	6951639	119.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-7-A**
Data File Name	**068SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:15:51-06:00**
Type	**Sample**
VialNumber	**2405**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	11.86057	23.72115	ug/l	1000	Li	
Be	9	6	3	0.75957	1.51914	ug/l	1000	Be	
B	11	6	3	8.36939	16.73878	ug/l	2000	B	
Na	23	45	2	315.30026	630.60051	ug/l	50000	Na	
Mg	24	45	2	22219.52659	44439.05319	ug/l	50000	Mg	
Al	27	45	2	27024.43560	54048.87119	ug/l	100000	Al	
P	31	45	2	1542.98488	3085.96977	ug/l	100000	P	
K	39	45	2	3177.21052	6354.42104	ug/l	100000	K	
Ca	44	45	3	19260.67269	38521.34538	ug/l	100000	Ca	
Ti	47	45	3	1458.61755	2917.23511	ug/l	2000	Ti	
V	51	45	2	73.46690	146.93379	ug/l	2000	V	
Cr	52	45	2	24.22414	48.44827	ug/l	2000	Cr	
Mn	55	72	2	172.58861	345.17722	ug/l	5000	Mn	
Fe	57	72	2	57267.95044	114535.90088	ug/l	100000	Fe	
Co	59	72	2	14.61679	29.23359	ug/l	2000	Co	
Ni	60	72	2	29.80551	59.61103	ug/l	2000	Ni	
Cu	63	72	2	3992.27877	7984.55754	ug/l	2000	Cu	FAILED
Zn	66	72	2	30.66586	61.33172	ug/l	5000	Zn	
As	75	72	2	38.97893	77.95787	ug/l	2000	As	
Se	78	72	2	33.98833	67.97666	ug/l	1000	Se	
Sr	88	72	3	343.32186	686.64371	ug/l	2000	Sr	
Y	89	72	2	8.21329	16.42658	ug/l	200	Y	
Zr	90	72	2	4.83500	9.67000	ug/l	2000	Zr	
Nb	93	72	2	0.46309	0.92618	ug/l	100	Nb	
Mo	95	72	3	19.62801	39.25602	ug/l	1000	Mo	
Ru	101	72	2	-0.00478	-0.00956	ug/l	200	Ru	
Rh	103	72	2	-0.00507	-0.01014	ug/l	200	Rh	
Pd	105	72	2	0.02525	0.05051	ug/l	20	Pd	
Ag	107	115	3	0.53574	1.07148	ug/l	400	Ag	
Cd	111	115	3	0.04629	0.09259	ug/l	2000	Cd	
Sn	118	115	3	7.56318	15.12637	ug/l	2000	Sn	
Sb	121	115	3	9.69820	19.39640	ug/l	1000	Sb	
Te	125	165	2	0.91383	1.82767	ug/l	200	Te	
Cs	133	165	2	2.45487	4.90975	ug/l	2000	Cs	
Ba	137	165	3	237.94182	475.88365	ug/l	5000	Ba	
La	139	165	2	25.79172	51.58343	ug/l	200	La	
Ce	140	165	2	53.10679	106.21358	ug/l	200	Ce	
Pr	141	165	2	5.88329	11.76657	ug/l	200	Pr	
Nd	146	165	2	23.72130	47.44260	ug/l	200	Nd	
Sm	147	165	3	4.11490	8.22981	ug/l	2000	Sm	
Hf	178	165	2	0.28240	0.56479	ug/l	200	Hf	
Ta	181	165	2	0.02528	0.05056	ug/l	200	Ta	
W	182	165	2	4.77289	9.54579	ug/l	2000	W	
Re	185	193	3	0.00147	0.00293	ug/l	200	Re	
Pt	195	193	2	0.00618	0.01237	ug/l	200	Pt	
Au	197	193	3	0.05569	0.11137	ug/l	2000	Au	
Tl	205	193	3	0.13322	0.26643	ug/l	400	Tl	
Pb	208	193	3	15.06817	30.13634	ug/l	5000	Pb	
Bi	209	193	2	2.59561	5.19122	ug/l	2000	Bi	
Th	232	193	3	19.44184	38.88368	ug/l	2000	Th	
U	238	193	3	6.84735	13.69471	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5444837	1.48	7411413	73.5	80	120	Li (IS)	FAILED
Sc (IS)	45	2	171071	1.80	143379	119.3	80	120	Sc (IS)	
Sc (IS)	45	3	3110352	1.02	2392712	130.0	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	368907	1.51	323154	114.2	80	120	Ge (IS)	
Ge (IS)	72	3	2321119	0.44	1861986	124.7	80	120	Ge (IS)	FAILED
In (IS)	115	3	14132007	0.53	12119833	116.6	80	120	In (IS)	
Ho (IS)	165	2	10347433	2.21	9598706	107.8	80	120	Ho (IS)	
Ho (IS)	165	3	16232196	0.38	13687738	118.6	80	120	Ho (IS)	
Ir (IS)	193	2	6467683	2.41	6085322	106.3	80	120	Ir (IS)	
Ir (IS)	193	3	7818897	1.69	6951639	112.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36526-B-8-A**
Data File Name	**069SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:22:35-06:00**
Type	**Sample**
VialNumber	**2406**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	12.43040	24.86079	ug/l	1000	Li	
Be	9	6	3	0.79366	1.58733	ug/l	1000	Be	
B	11	6	3	8.44355	16.88710	ug/l	2000	B	
Na	23	45	2	377.87346	755.74693	ug/l	50000	Na	
Mg	24	45	2	23657.35797	47314.71593	ug/l	50000	Mg	
Al	27	45	2	29507.21788	59014.43575	ug/l	100000	Al	
P	31	45	2	1969.29731	3938.59461	ug/l	100000	P	
K	39	45	2	2885.10557	5770.21115	ug/l	100000	K	
Ca	44	45	3	19348.00312	38696.00624	ug/l	100000	Ca	
Ti	47	45	3	1365.91769	2731.83538	ug/l	2000	Ti	
V	51	45	2	66.47833	132.95667	ug/l	2000	V	
Cr	52	45	2	26.58077	53.16153	ug/l	2000	Cr	
Mn	55	72	2	174.93389	349.86778	ug/l	5000	Mn	
Fe	57	72	2	52101.12718	104202.25437	ug/l	100000	Fe	
Co	59	72	2	20.77532	41.55063	ug/l	2000	Co	
Ni	60	72	2	33.29053	66.58107	ug/l	2000	Ni	
Cu	63	72	2	4118.92749	8237.85498	ug/l	2000	Cu	FAILED
Zn	66	72	2	35.64824	71.29647	ug/l	5000	Zn	
As	75	72	2	36.41565	72.83131	ug/l	2000	As	
Se	78	72	2	22.07932	44.15864	ug/l	1000	Se	
Sr	88	72	3	365.47971	730.95942	ug/l	2000	Sr	
Y	89	72	2	9.45539	18.91078	ug/l	200	Y	
Zr	90	72	2	5.05047	10.10094	ug/l	2000	Zr	
Nb	93	72	2	0.37295	0.74591	ug/l	100	Nb	
Mo	95	72	3	16.32285	32.64571	ug/l	1000	Mo	
Ru	101	72	2	-0.00486	-0.00971	ug/l	200	Ru	
Rh	103	72	2	-0.00370	-0.00739	ug/l	200	Rh	
Pd	105	72	2	0.03061	0.06123	ug/l	20	Pd	
Ag	107	115	3	0.46381	0.92763	ug/l	400	Ag	
Cd	111	115	3	0.04819	0.09638	ug/l	2000	Cd	
Sn	118	115	3	7.51954	15.03907	ug/l	2000	Sn	
Sb	121	115	3	8.24740	16.49479	ug/l	1000	Sb	
Te	125	165	2	1.09396	2.18792	ug/l	200	Te	
Cs	133	165	2	2.40095	4.80190	ug/l	2000	Cs	
Ba	137	165	3	232.62678	465.25357	ug/l	5000	Ba	
La	139	165	2	29.75793	59.51586	ug/l	200	La	
Ce	140	165	2	61.60210	123.20420	ug/l	200	Ce	
Pr	141	165	2	6.82268	13.64535	ug/l	200	Pr	
Nd	146	165	2	27.24308	54.48616	ug/l	200	Nd	
Sm	147	165	3	4.75163	9.50326	ug/l	2000	Sm	
Hf	178	165	2	0.23667	0.47333	ug/l	200	Hf	
Ta	181	165	2	0.00978	0.01955	ug/l	200	Ta	
W	182	165	2	4.85208	9.70417	ug/l	2000	W	
Re	185	193	3	0.01082	0.02165	ug/l	200	Re	
Pt	195	193	2	0.00837	0.01674	ug/l	200	Pt	
Au	197	193	3	0.13513	0.27025	ug/l	2000	Au	
Tl	205	193	3	0.14334	0.28668	ug/l	400	Tl	
Pb	208	193	3	16.25947	32.51894	ug/l	5000	Pb	
Bi	209	193	2	3.02458	6.04916	ug/l	2000	Bi	
Th	232	193	3	21.96896	43.93791	ug/l	2000	Th	
U	238	193	3	7.00369	14.00737	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5421812	0.83	7411413	73.2	80	120	Li (IS)	FAILED
Sc (IS)	45	2	169730	0.84	143379	118.4	80	120	Sc (IS)	
Sc (IS)	45	3	3174002	0.47	2392712	132.7	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	375502	0.80	323154	116.2	80	120	Ge (IS)	
Ge (IS)	72	3	2366586	0.70	1861986	127.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	14179860	0.51	12119833	117.0	80	120	In (IS)	
Ho (IS)	165	2	10382710	1.11	9598706	108.2	80	120	Ho (IS)	
Ho (IS)	165	3	16459994	0.44	13687738	120.3	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6429131	0.22	6085322	105.6	80	120	Ir (IS)	
Ir (IS)	193	3	7765179	1.66	6951639	111.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-9-A**
Data File Name	**070SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:29:17-06:00**
Type	**Sample**
VialNumber	**2407**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	15.17643	30.35286	ug/l	1000	Li	
Be	9	6	3	1.05362	2.10724	ug/l	1000	Be	
B	11	6	3	5.38340	10.76680	ug/l	2000	B	
Na	23	45	2	515.46470	1030.92940	ug/l	50000	Na	
Mg	24	45	2	24415.27669	48830.55337	ug/l	50000	Mg	
Al	27	45	2	24276.19533	48552.39066	ug/l	100000	Al	
P	31	45	2	3151.47142	6302.94285	ug/l	100000	P	
K	39	45	2	6914.01577	13828.03154	ug/l	100000	K	
Ca	44	45	3	14111.87347	28223.74695	ug/l	100000	Ca	
Ti	47	45	3	1435.21517	2870.43035	ug/l	2000	Ti	
V	51	45	2	87.22959	174.45919	ug/l	2000	V	
Cr	52	45	2	34.97109	69.94219	ug/l	2000	Cr	
Mn	55	72	2	335.42355	670.84710	ug/l	5000	Mn	
Fe	57	72	2	86363.72238	172727.44477	ug/l	100000	Fe	
Co	59	72	2	30.97866	61.95732	ug/l	2000	Co	
Ni	60	72	2	44.58067	89.16135	ug/l	2000	Ni	
Cu	63	72	2	3493.61906	6987.23811	ug/l	2000	Cu	FAILED
Zn	66	72	2	76.71377	153.42755	ug/l	5000	Zn	
As	75	72	2	12.48014	24.96028	ug/l	2000	As	
Se	78	72	2	9.34949	18.69899	ug/l	1000	Se	
Sr	88	72	3	195.21205	390.42410	ug/l	2000	Sr	
Y	89	72	2	16.97078	33.94155	ug/l	200	Y	
Zr	90	72	2	5.51427	11.02854	ug/l	2000	Zr	
Nb	93	72	2	0.37831	0.75662	ug/l	100	Nb	
Mo	95	72	3	11.18165	22.36329	ug/l	1000	Mo	
Ru	101	72	2	-0.00540	-0.01080	ug/l	200	Ru	
Rh	103	72	2	-0.00562	-0.01125	ug/l	200	Rh	
Pd	105	72	2	0.02167	0.04334	ug/l	20	Pd	
Ag	107	115	3	0.35608	0.71215	ug/l	400	Ag	
Cd	111	115	3	0.07285	0.14570	ug/l	2000	Cd	
Sn	118	115	3	8.18700	16.37400	ug/l	2000	Sn	
Sb	121	115	3	0.84460	1.68921	ug/l	1000	Sb	
Te	125	165	2	1.01297	2.02593	ug/l	200	Te	
Cs	133	165	2	2.73569	5.47138	ug/l	2000	Cs	
Ba	137	165	3	218.42046	436.84091	ug/l	5000	Ba	
La	139	165	2	44.78582	89.57164	ug/l	200	La	
Ce	140	165	2	95.60258	191.20517	ug/l	200	Ce	
Pr	141	165	2	10.69768	21.39536	ug/l	200	Pr	
Nd	146	165	2	43.27648	86.55296	ug/l	200	Nd	
Sm	147	165	3	7.80455	15.60911	ug/l	2000	Sm	
Hf	178	165	2	0.25278	0.50556	ug/l	200	Hf	
Ta	181	165	2	0.01880	0.03759	ug/l	200	Ta	
W	182	165	2	1.66904	3.33808	ug/l	2000	W	
Re	185	193	3	0.11622	0.23245	ug/l	200	Re	
Pt	195	193	2	0.00744	0.01489	ug/l	200	Pt	
Au	197	193	3	-0.00768	-0.01535	ug/l	2000	Au	
Tl	205	193	3	0.27693	0.55387	ug/l	400	Tl	
Pb	208	193	3	8.08413	16.16827	ug/l	5000	Pb	
Bi	209	193	2	1.95356	3.90713	ug/l	2000	Bi	
Th	232	193	3	35.57636	71.15273	ug/l	2000	Th	
U	238	193	3	10.25068	20.50136	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5375506	1.03	7411413	72.5	80	120	Li (IS)	FAILED
Sc (IS)	45	2	170061	2.62	143379	118.6	80	120	Sc (IS)	
Sc (IS)	45	3	3165785	0.51	2392712	132.3	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	374819	1.28	323154	116.0	80	120	Ge (IS)	
Ge (IS)	72	3	2334175	0.70	1861986	125.4	80	120	Ge (IS)	FAILED
In (IS)	115	3	14186002	0.44	12119833	117.0	80	120	In (IS)	
Ho (IS)	165	2	10129349	1.16	9598706	105.5	80	120	Ho (IS)	
Ho (IS)	165	3	16189381	0.76	13687738	118.3	80	120	Ho (IS)	
Ir (IS)	193	2	6276581	0.33	6085322	103.1	80	120	Ir (IS)	
Ir (IS)	193	3	7709944	0.39	6951639	110.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-10-A**
Data File Name	**071SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:36:00-06:00**
Type	**Sample**
VialNumber	**2408**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	12.77174	25.54348	ug/l	1000	Li	
Be	9	6	3	0.88616	1.77231	ug/l	1000	Be	
B	11	6	3	6.88938	13.77875	ug/l	2000	B	
Na	23	45	2	429.30559	858.61117	ug/l	50000	Na	
Mg	24	45	2	23471.14162	46942.28324	ug/l	50000	Mg	
Al	27	45	2	26878.87835	53757.75671	ug/l	100000	Al	
P	31	45	2	1802.63509	3605.27019	ug/l	100000	P	
K	39	45	2	1864.51439	3729.02878	ug/l	100000	K	
Ca	44	45	3	16463.27162	32926.54323	ug/l	100000	Ca	
Ti	47	45	3	1431.29239	2862.58478	ug/l	2000	Ti	
V	51	45	2	69.59485	139.18970	ug/l	2000	V	
Cr	52	45	2	23.54990	47.09981	ug/l	2000	Cr	
Mn	55	72	2	145.11812	290.23624	ug/l	5000	Mn	
Fe	57	72	2	47739.56959	95479.13918	ug/l	100000	Fe	
Co	59	72	2	13.60541	27.21081	ug/l	2000	Co	
Ni	60	72	2	30.65446	61.30893	ug/l	2000	Ni	
Cu	63	72	2	8384.97307	16769.94615	ug/l	2000	Cu	FAILED
Zn	66	72	2	26.08270	52.16541	ug/l	5000	Zn	
As	75	72	2	47.23111	94.46222	ug/l	2000	As	
Se	78	72	2	20.58526	41.17052	ug/l	1000	Se	
Sr	88	72	3	452.99079	905.98159	ug/l	2000	Sr	
Y	89	72	2	7.09499	14.18998	ug/l	200	Y	
Zr	90	72	2	5.25095	10.50190	ug/l	2000	Zr	
Nb	93	72	2	0.43114	0.86228	ug/l	100	Nb	
Mo	95	72	3	13.84579	27.69157	ug/l	1000	Mo	
Ru	101	72	2	-0.00651	-0.01303	ug/l	200	Ru	
Rh	103	72	2	-0.00530	-0.01059	ug/l	200	Rh	
Pd	105	72	2	0.06103	0.12206	ug/l	20	Pd	
Ag	107	115	3	0.91798	1.83595	ug/l	400	Ag	
Cd	111	115	3	0.04178	0.08355	ug/l	2000	Cd	
Sn	118	115	3	12.53596	25.07191	ug/l	2000	Sn	
Sb	121	115	3	20.81301	41.62603	ug/l	1000	Sb	
Te	125	165	2	0.57420	1.14839	ug/l	200	Te	
Cs	133	165	2	1.97359	3.94717	ug/l	2000	Cs	
Ba	137	165	3	206.25883	412.51766	ug/l	5000	Ba	
La	139	165	2	24.73056	49.46112	ug/l	200	La	
Ce	140	165	2	50.14987	100.29975	ug/l	200	Ce	
Pr	141	165	2	5.80596	11.61193	ug/l	200	Pr	
Nd	146	165	2	23.48831	46.97661	ug/l	200	Nd	
Sm	147	165	3	3.89362	7.78723	ug/l	2000	Sm	
Hf	178	165	2	0.21450	0.42901	ug/l	200	Hf	
Ta	181	165	2	0.01574	0.03148	ug/l	200	Ta	
W	182	165	2	6.11654	12.23307	ug/l	2000	W	
Re	185	193	3	0.00039	0.00078	ug/l	200	Re	
Pt	195	193	2	0.00874	0.01748	ug/l	200	Pt	
Au	197	193	3	0.02396	0.04791	ug/l	2000	Au	
Tl	205	193	3	0.05852	0.11705	ug/l	400	Tl	
Pb	208	193	3	15.69262	31.38525	ug/l	5000	Pb	
Bi	209	193	2	1.35457	2.70914	ug/l	2000	Bi	
Th	232	193	3	24.34305	48.68611	ug/l	2000	Th	
U	238	193	3	3.86315	7.72629	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5368091	0.57	7411413	72.4	80	120	Li (IS)	FAILED
Sc (IS)	45	2	177386	0.77	143379	123.7	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3209059	0.25	2392712	134.1	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	379541	1.30	323154	117.4	80	120	Ge (IS)	
Ge (IS)	72	3	2397882	0.18	1861986	128.8	80	120	Ge (IS)	FAILED
In (IS)	115	3	14425276	0.46	12119833	119.0	80	120	In (IS)	
Ho (IS)	165	2	10271902	0.55	9598706	107.0	80	120	Ho (IS)	
Ho (IS)	165	3	16520272	0.90	13687738	120.7	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6473679	0.59	6085322	106.4	80	120	Ir (IS)	
Ir (IS)	193	3	7892048	1.68	6951639	113.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-11-A**
Data File Name	**072SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:42:46-06:00**
Type	**Sample**
VialNumber	**2409**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	11.32644	22.65288	ug/l	1000	Li	
Be	9	6	3	0.98922	1.97844	ug/l	1000	Be	
B	11	6	3	6.46438	12.92877	ug/l	2000	B	
Na	23	45	2	479.90808	959.81615	ug/l	50000	Na	
Mg	24	45	2	21709.96273	43419.92546	ug/l	50000	Mg	
Al	27	45	2	26439.60577	52879.21155	ug/l	100000	Al	
P	31	45	2	2247.16303	4494.32606	ug/l	100000	P	
K	39	45	2	1932.85717	3865.71434	ug/l	100000	K	
Ca	44	45	3	14936.69569	29873.39138	ug/l	100000	Ca	
Ti	47	45	3	1419.67247	2839.34495	ug/l	2000	Ti	
V	51	45	2	67.32572	134.65145	ug/l	2000	V	
Cr	52	45	2	30.31156	60.62311	ug/l	2000	Cr	
Mn	55	72	2	112.45698	224.91396	ug/l	5000	Mn	
Fe	57	72	2	50515.65940	101031.31880	ug/l	100000	Fe	
Co	59	72	2	13.36135	26.72270	ug/l	2000	Co	
Ni	60	72	2	27.03087	54.06174	ug/l	2000	Ni	
Cu	63	72	2	8003.78971	16007.57942	ug/l	2000	Cu	FAILED
Zn	66	72	2	22.65203	45.30406	ug/l	5000	Zn	
As	75	72	2	64.00614	128.01227	ug/l	2000	As	
Se	78	72	2	26.35829	52.71658	ug/l	1000	Se	
Sr	88	72	3	647.32314	1294.64629	ug/l	2000	Sr	
Y	89	72	2	6.44074	12.88148	ug/l	200	Y	
Zr	90	72	2	4.52847	9.05694	ug/l	2000	Zr	
Nb	93	72	2	0.41649	0.83297	ug/l	100	Nb	
Mo	95	72	3	12.68601	25.37201	ug/l	1000	Mo	
Ru	101	72	2	-0.00495	-0.00991	ug/l	200	Ru	
Rh	103	72	2	-0.00388	-0.00776	ug/l	200	Rh	
Pd	105	72	2	0.04505	0.09009	ug/l	20	Pd	
Ag	107	115	3	0.97224	1.94448	ug/l	400	Ag	
Cd	111	115	3	0.03977	0.07954	ug/l	2000	Cd	
Sn	118	115	3	8.14969	16.29937	ug/l	2000	Sn	
Sb	121	115	3	23.91327	47.82654	ug/l	1000	Sb	
Te	125	165	2	0.51316	1.02632	ug/l	200	Te	
Cs	133	165	2	1.88016	3.76031	ug/l	2000	Cs	
Ba	137	165	3	239.95799	479.91597	ug/l	5000	Ba	
La	139	165	2	28.84975	57.69949	ug/l	200	La	
Ce	140	165	2	57.95612	115.91224	ug/l	200	Ce	
Pr	141	165	2	6.23349	12.46697	ug/l	200	Pr	
Nd	146	165	2	24.17222	48.34445	ug/l	200	Nd	
Sm	147	165	3	3.89757	7.79515	ug/l	2000	Sm	
Hf	178	165	2	0.18179	0.36359	ug/l	200	Hf	
Ta	181	165	2	0.00230	0.00459	ug/l	200	Ta	
W	182	165	2	7.22340	14.44681	ug/l	2000	W	
Re	185	193	3	0.00316	0.00631	ug/l	200	Re	
Pt	195	193	2	0.00806	0.01612	ug/l	200	Pt	
Au	197	193	3	0.02462	0.04923	ug/l	2000	Au	
Tl	205	193	3	0.05344	0.10688	ug/l	400	Tl	
Pb	208	193	3	12.67691	25.35382	ug/l	5000	Pb	
Bi	209	193	2	0.76885	1.53771	ug/l	2000	Bi	
Th	232	193	3	16.14429	32.28857	ug/l	2000	Th	
U	238	193	3	4.70020	9.40040	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5290087	0.82	7411413	71.4	80	120	Li (IS)	FAILED
Sc (IS)	45	2	174060	1.57	143379	121.4	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3192981	0.97	2392712	133.4	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	383144	0.85	323154	118.6	80	120	Ge (IS)	
Ge (IS)	72	3	2392811	0.38	1861986	128.5	80	120	Ge (IS)	FAILED
In (IS)	115	3	14305431	0.27	12119833	118.0	80	120	In (IS)	
Ho (IS)	165	2	10298663	0.37	9598706	107.3	80	120	Ho (IS)	
Ho (IS)	165	3	16388415	1.19	13687738	119.7	80	120	Ho (IS)	
Ir (IS)	193	2	6444792	0.64	6085322	105.9	80	120	Ir (IS)	
Ir (IS)	193	3	7874983	0.06	6951639	113.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-11-A SD**
Data File Name	**073SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:49:30-06:00**
Type	**Sample**
VialNumber	**2410**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	2.92446	29.24458	ug/l	1000	Li	
Be	9	6	3	0.18384	1.83838	ug/l	1000	Be	
B	11	6	3	1.40172	14.01725	ug/l	2000	B	
Na	23	45	2	102.64972	1026.49718	ug/l	50000	Na	
Mg	24	45	2	4659.16517	46591.65174	ug/l	50000	Mg	
Al	27	45	2	5682.71325	56827.13249	ug/l	100000	Al	
P	31	45	2	475.08997	4750.89975	ug/l	100000	P	
K	39	45	2	386.84643	3868.46430	ug/l	100000	K	
Ca	44	45	3	3180.57992	31805.79923	ug/l	100000	Ca	
Ti	47	45	3	299.46988	2994.69875	ug/l	2000	Ti	
V	51	45	2	13.86095	138.60950	ug/l	2000	V	
Cr	52	45	2	4.22087	42.20872	ug/l	2000	Cr	
Mn	55	72	2	21.62687	216.26869	ug/l	5000	Mn	
Fe	57	72	2	9918.86448	99188.64485	ug/l	100000	Fe	
Co	59	72	2	2.61216	26.12161	ug/l	2000	Co	
Ni	60	72	2	5.40357	54.03570	ug/l	2000	Ni	
Cu	63	72	2	1629.41245	16294.12453	ug/l	2000	Cu	
Zn	66	72	2	5.09186	50.91861	ug/l	5000	Zn	
As	75	72	2	12.50502	125.05020	ug/l	2000	As	
Se	78	72	2	5.14411	51.44115	ug/l	1000	Se	
Sr	88	72	3	128.08664	1280.86641	ug/l	2000	Sr	
Y	89	72	2	1.25081	12.50807	ug/l	200	Y	
Zr	90	72	2	0.87340	8.73405	ug/l	2000	Zr	
Nb	93	72	2	0.00472	0.04718	ug/l	100	Nb	
Mo	95	72	3	2.41412	24.14119	ug/l	1000	Mo	
Ru	101	72	2	-0.00376	-0.03756	ug/l	200	Ru	
Rh	103	72	2	-0.00539	-0.05385	ug/l	200	Rh	
Pd	105	72	2	0.00023	0.00228	ug/l	20	Pd	
Ag	107	115	3	0.19221	1.92209	ug/l	400	Ag	
Cd	111	115	3	-0.00316	-0.03163	ug/l	2000	Cd	
Sn	118	115	3	1.51191	15.11909	ug/l	2000	Sn	
Sb	121	115	3	4.57613	45.76129	ug/l	1000	Sb	
Te	125	165	2	0.13133	1.31330	ug/l	200	Te	
Cs	133	165	2	0.36045	3.60447	ug/l	2000	Cs	
Ba	137	165	3	43.80803	438.08034	ug/l	5000	Ba	
La	139	165	2	5.11989	51.19894	ug/l	200	La	
Ce	140	165	2	10.39620	103.96203	ug/l	200	Ce	
Pr	141	165	2	1.24118	12.41179	ug/l	200	Pr	
Nd	146	165	2	4.73430	47.34298	ug/l	200	Nd	
Sm	147	165	3	0.75711	7.57113	ug/l	2000	Sm	
Hf	178	165	2	0.03227	0.32272	ug/l	200	Hf	
Ta	181	165	2	-0.02319	-0.23194	ug/l	200	Ta	
W	182	165	2	1.37089	13.70891	ug/l	2000	W	
Re	185	193	3	-0.00178	-0.01777	ug/l	200	Re	
Pt	195	193	2	0.00129	0.01286	ug/l	200	Pt	
Au	197	193	3	-0.03142	-0.31421	ug/l	2000	Au	
Tl	205	193	3	-0.02555	-0.25554	ug/l	400	Tl	
Pb	208	193	3	2.50824	25.08235	ug/l	5000	Pb	
Bi	209	193	2	0.13576	1.35756	ug/l	2000	Bi	
Th	232	193	3	2.73877	27.38766	ug/l	2000	Th	
U	238	193	3	0.92860	9.28604	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5584034	2.14	7411413	75.3	80	120	Li (IS)	FAILED
Sc (IS)	45	2	163470	0.43	143379	114.0	80	120	Sc (IS)	
Sc (IS)	45	3	3035832	1.12	2392712	126.9	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	382879	1.27	323154	118.5	80	120	Ge (IS)	
Ge (IS)	72	3	2440964	0.44	1861986	131.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	14931222	0.38	12119833	123.2	80	120	In (IS)	FAILED
Ho (IS)	165	2	10325220	0.62	9598706	107.6	80	120	Ho (IS)	
Ho (IS)	165	3	16584084	0.28	13687738	121.2	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6469418	0.70	6085322	106.3	80	120	Ir (IS)	
Ir (IS)	193	3	8089019	0.65	6951639	116.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-11-B DU**
Data File Name	**074SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-10T23:56:13-06:00**
Type	**Sample**
VialNumber	**2411**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	11.13087	22.26173	ug/l	1000	Li	
Be	9	6	3	1.02017	2.04035	ug/l	1000	Be	
B	11	6	3	6.23210	12.46419	ug/l	2000	B	
Na	23	45	2	388.52223	777.04446	ug/l	50000	Na	
Mg	24	45	2	21456.65690	42913.31379	ug/l	50000	Mg	
Al	27	45	2	26178.47497	52356.94993	ug/l	100000	Al	
P	31	45	2	1982.33592	3964.67184	ug/l	100000	P	
K	39	45	2	1868.92469	3737.84939	ug/l	100000	K	
Ca	44	45	3	13813.50324	27627.00648	ug/l	100000	Ca	
Ti	47	45	3	1252.26756	2504.53512	ug/l	2000	Ti	
V	51	45	2	67.92361	135.84723	ug/l	2000	V	
Cr	52	45	2	22.75794	45.51589	ug/l	2000	Cr	
Mn	55	72	2	105.66018	211.32036	ug/l	5000	Mn	
Fe	57	72	2	50490.81884	100981.63769	ug/l	100000	Fe	
Co	59	72	2	12.50272	25.00543	ug/l	2000	Co	
Ni	60	72	2	27.22960	54.45919	ug/l	2000	Ni	
Cu	63	72	2	7248.50639	14497.01278	ug/l	2000	Cu	FAILED
Zn	66	72	2	23.24537	46.49074	ug/l	5000	Zn	
As	75	72	2	73.61009	147.22018	ug/l	2000	As	
Se	78	72	2	22.89350	45.78700	ug/l	1000	Se	
Sr	88	72	3	481.16597	962.33194	ug/l	2000	Sr	
Y	89	72	2	6.52788	13.05575	ug/l	200	Y	
Zr	90	72	2	4.44738	8.89477	ug/l	2000	Zr	
Nb	93	72	2	0.23244	0.46489	ug/l	100	Nb	
Mo	95	72	3	13.00664	26.01327	ug/l	1000	Mo	
Ru	101	72	2	-0.00449	-0.00898	ug/l	200	Ru	
Rh	103	72	2	-0.00447	-0.00894	ug/l	200	Rh	
Pd	105	72	2	0.04208	0.08417	ug/l	20	Pd	
Ag	107	115	3	1.01532	2.03063	ug/l	400	Ag	
Cd	111	115	3	0.03910	0.07821	ug/l	2000	Cd	
Sn	118	115	3	7.87602	15.75205	ug/l	2000	Sn	
Sb	121	115	3	42.51136	85.02271	ug/l	1000	Sb	
Te	125	165	2	0.75472	1.50944	ug/l	200	Te	
Cs	133	165	2	1.79549	3.59098	ug/l	2000	Cs	
Ba	137	165	3	186.17580	372.35160	ug/l	5000	Ba	
La	139	165	2	26.04423	52.08847	ug/l	200	La	
Ce	140	165	2	52.83391	105.66782	ug/l	200	Ce	
Pr	141	165	2	5.85799	11.71599	ug/l	200	Pr	
Nd	146	165	2	23.44002	46.88004	ug/l	200	Nd	
Sm	147	165	3	3.73996	7.47991	ug/l	2000	Sm	
Hf	178	165	2	0.17971	0.35941	ug/l	200	Hf	
Ta	181	165	2	-0.01068	-0.02136	ug/l	200	Ta	
W	182	165	2	6.63411	13.26822	ug/l	2000	W	
Re	185	193	3	0.00058	0.00117	ug/l	200	Re	
Pt	195	193	2	0.00678	0.01356	ug/l	200	Pt	
Au	197	193	3	0.02033	0.04065	ug/l	2000	Au	
Tl	205	193	3	0.03513	0.07026	ug/l	400	Tl	
Pb	208	193	3	12.81546	25.63093	ug/l	5000	Pb	
Bi	209	193	2	1.26488	2.52977	ug/l	2000	Bi	
Th	232	193	3	17.82970	35.65941	ug/l	2000	Th	
U	238	193	3	4.97109	9.94217	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5364833	0.63	7411413	72.4	80	120	Li (IS)	FAILED
Sc (IS)	45	2	172234	0.64	143379	120.1	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3244369	0.75	2392712	135.6	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	377740	1.76	323154	116.9	80	120	Ge (IS)	
Ge (IS)	72	3	2381113	0.14	1861986	127.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	14330954	1.09	12119833	118.2	80	120	In (IS)	
Ho (IS)	165	2	10114730	0.90	9598706	105.4	80	120	Ho (IS)	
Ho (IS)	165	3	16399063	0.58	13687738	119.8	80	120	Ho (IS)	
Ir (IS)	193	2	6328813	0.62	6085322	104.0	80	120	Ir (IS)	
Ir (IS)	193	3	7831749	1.88	6951639	112.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-11-C MS**
Data File Name	**075SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:02:57-06:00**
Type	**Sample**
VialNumber	**2412**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	67.70477	135.40954	ug/l	1000	Li	
Be	9	6	3	57.55327	115.10653	ug/l	1000	Be	
B	11	6	3	117.88774	235.77549	ug/l	2000	B	
Na	23	45	2	4774.31648	9548.63296	ug/l	50000	Na	
Mg	24	45	2	33317.00527	66634.01055	ug/l	50000	Mg	
Al	27	45	2	43188.46817	86376.93634	ug/l	100000	Al	
P	31	45	2	2263.94822	4527.89644	ug/l	100000	P	
K	39	45	2	6081.10911	12162.21823	ug/l	100000	K	
Ca	44	45	3	21202.50322	42405.00643	ug/l	100000	Ca	
Ti	47	45	3	2883.85855	5767.71709	ug/l	2000	Ti	FAILED
V	51	45	2	531.46623	1062.93247	ug/l	2000	V	
Cr	52	45	2	463.35892	926.71784	ug/l	2000	Cr	
Mn	55	72	2	656.00171	1312.00343	ug/l	5000	Mn	
Fe	57	72	2	61205.59036	122411.18072	ug/l	100000	Fe	
Co	59	72	2	516.39006	1032.78012	ug/l	2000	Co	
Ni	60	72	2	573.51397	1147.02794	ug/l	2000	Ni	
Cu	63	72	2	8451.08578	16902.17156	ug/l	2000	Cu	FAILED
Zn	66	72	2	549.57843	1099.15687	ug/l	5000	Zn	
As	75	72	2	540.82681	1081.65362	ug/l	2000	As	
Se	78	72	2	254.31672	508.63345	ug/l	1000	Se	
Sr	88	72	3	1021.36909	2042.73819	ug/l	2000	Sr	
Y	89	72	2	9.59974	19.19948	ug/l	200	Y	
Zr	90	72	2	516.67101	1033.34202	ug/l	2000	Zr	
Nb	93	72	2	1.26017	2.52033	ug/l	100	Nb	
Mo	95	72	3	262.45763	524.91526	ug/l	1000	Mo	
Ru	101	72	2	-0.00470	-0.00940	ug/l	200	Ru	
Rh	103	72	2	0.01816	0.03633	ug/l	200	Rh	
Pd	105	72	2	0.08050	0.16101	ug/l	20	Pd	
Ag	107	115	3	95.76229	191.52458	ug/l	400	Ag	
Cd	111	115	3	496.35502	992.71004	ug/l	2000	Cd	
Sn	118	115	3	497.17768	994.35535	ug/l	2000	Sn	
Sb	121	115	3	195.48877	390.97754	ug/l	1000	Sb	
Te	125	165	2	0.53514	1.07028	ug/l	200	Te	
Cs	133	165	2	1.88630	3.77259	ug/l	2000	Cs	
Ba	137	165	3	709.38745	1418.77490	ug/l	5000	Ba	
La	139	165	2	32.18214	64.36428	ug/l	200	La	
Ce	140	165	2	64.31860	128.63719	ug/l	200	Ce	
Pr	141	165	2	7.14148	14.28296	ug/l	200	Pr	
Nd	146	165	2	28.63976	57.27953	ug/l	200	Nd	
Sm	147	165	3	500.44592	1000.89184	ug/l	2000	Sm	
Hf	178	165	2	0.52122	1.04245	ug/l	200	Hf	
Ta	181	165	2	0.11011	0.22021	ug/l	200	Ta	
W	182	165	2	419.95284	839.90568	ug/l	2000	W	
Re	185	193	3	0.00809	0.01619	ug/l	200	Re	
Pt	195	193	2	0.00891	0.01782	ug/l	200	Pt	
Au	197	193	3	0.02853	0.05706	ug/l	2000	Au	
Tl	205	193	3	100.91346	201.82692	ug/l	400	Tl	
Pb	208	193	3	504.35192	1008.70383	ug/l	5000	Pb	
Bi	209	193	2	475.86973	951.73945	ug/l	2000	Bi	
Th	232	193	3	509.99720	1019.99440	ug/l	2000	Th	
U	238	193	3	493.65001	987.30002	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5333904	1.03	7411413	72.0	80	120	Li (IS)	FAILED
Sc (IS)	45	2	186854	0.83	143379	130.3	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3366584	0.38	2392712	140.7	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	373760	1.61	323154	115.7	80	120	Ge (IS)	
Ge (IS)	72	3	2351666	0.99	1861986	126.3	80	120	Ge (IS)	FAILED
In (IS)	115	3	14104944	1.00	12119833	116.4	80	120	In (IS)	
Ho (IS)	165	2	10262808	0.50	9598706	106.9	80	120	Ho (IS)	
Ho (IS)	165	3	16530612	1.13	13687738	120.8	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6276273	1.54	6085322	103.1	80	120	Ir (IS)	
Ir (IS)	193	3	7788123	0.57	6951639	112.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-11-D MSD**
Data File Name	**076SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:09:47-06:00**
Type	**Sample**
VialNumber	**2501**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	64.38015	128.76030	ug/l	1000	Li	
Be	9	6	3	57.39157	114.78314	ug/l	1000	Be	
B	11	6	3	119.54094	239.08189	ug/l	2000	B	
Na	23	45	2	4910.86436	9821.72872	ug/l	50000	Na	
Mg	24	45	2	26648.39149	53296.78297	ug/l	50000	Mg	
Al	27	45	2	35442.98897	70885.97795	ug/l	100000	Al	
P	31	45	2	2483.58079	4967.16159	ug/l	100000	P	
K	39	45	2	5940.74402	11881.48803	ug/l	100000	K	
Ca	44	45	3	22469.25206	44938.50412	ug/l	100000	Ca	
Ti	47	45	3	2375.22299	4750.44597	ug/l	2000	Ti	FAILED
V	51	45	2	543.83250	1087.66501	ug/l	2000	V	
Cr	52	45	2	485.28314	970.56628	ug/l	2000	Cr	
Mn	55	72	2	622.19266	1244.38531	ug/l	5000	Mn	
Fe	57	72	2	59562.78645	119125.57291	ug/l	100000	Fe	
Co	59	72	2	516.16411	1032.32822	ug/l	2000	Co	
Ni	60	72	2	564.75883	1129.51765	ug/l	2000	Ni	
Cu	63	72	2	9136.31245	18272.62489	ug/l	2000	Cu	FAILED
Zn	66	72	2	546.40317	1092.80633	ug/l	5000	Zn	
As	75	72	2	541.12377	1082.24754	ug/l	2000	As	
Se	78	72	2	244.85793	489.71586	ug/l	1000	Se	
Sr	88	72	3	933.43793	1866.87586	ug/l	2000	Sr	
Y	89	72	2	7.91713	15.83425	ug/l	200	Y	
Zr	90	72	2	520.56003	1041.12007	ug/l	2000	Zr	
Nb	93	72	2	1.02999	2.05997	ug/l	100	Nb	
Mo	95	72	3	270.89685	541.79371	ug/l	1000	Mo	
Ru	101	72	2	-0.00536	-0.01072	ug/l	200	Ru	
Rh	103	72	2	0.01768	0.03535	ug/l	200	Rh	
Pd	105	72	2	0.06586	0.13171	ug/l	20	Pd	
Ag	107	115	3	95.15884	190.31767	ug/l	400	Ag	
Cd	111	115	3	491.38987	982.77973	ug/l	2000	Cd	
Sn	118	115	3	498.79403	997.58807	ug/l	2000	Sn	
Sb	121	115	3	209.53996	419.07992	ug/l	1000	Sb	
Te	125	165	2	0.55953	1.11906	ug/l	200	Te	
Cs	133	165	2	1.39043	2.78087	ug/l	2000	Cs	
Ba	137	165	3	632.22642	1264.45283	ug/l	5000	Ba	
La	139	165	2	34.52467	69.04934	ug/l	200	La	
Ce	140	165	2	67.07868	134.15737	ug/l	200	Ce	
Pr	141	165	2	7.16434	14.32868	ug/l	200	Pr	
Nd	146	165	2	28.05584	56.11168	ug/l	200	Nd	
Sm	147	165	3	509.06421	1018.12842	ug/l	2000	Sm	
Hf	178	165	2	0.39432	0.78864	ug/l	200	Hf	
Ta	181	165	2	0.17774	0.35548	ug/l	200	Ta	
W	182	165	2	444.71399	889.42799	ug/l	2000	W	
Re	185	193	3	0.00942	0.01885	ug/l	200	Re	
Pt	195	193	2	0.01115	0.02230	ug/l	200	Pt	
Au	197	193	3	0.01939	0.03878	ug/l	2000	Au	
Tl	205	193	3	101.98008	203.96016	ug/l	400	Tl	
Pb	208	193	3	500.38094	1000.76188	ug/l	5000	Pb	
Bi	209	193	2	474.53861	949.07723	ug/l	2000	Bi	
Th	232	193	3	530.33264	1060.66527	ug/l	2000	Th	
U	238	193	3	495.28771	990.57541	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5273948	1.09	7411413	71.2	80	120	Li (IS)	FAILED
Sc (IS)	45	2	174659	1.24	143379	121.8	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3214114	0.75	2392712	134.3	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	372647	1.57	323154	115.3	80	120	Ge (IS)	
Ge (IS)	72	3	2326835	0.53	1861986	125.0	80	120	Ge (IS)	FAILED
In (IS)	115	3	14208742	0.32	12119833	117.2	80	120	In (IS)	
Ho (IS)	165	2	10253055	1.18	9598706	106.8	80	120	Ho (IS)	
Ho (IS)	165	3	16416190	0.93	13687738	119.9	80	120	Ho (IS)	
Ir (IS)	193	2	6361956	1.81	6085322	104.5	80	120	Ir (IS)	
Ir (IS)	193	3	7821118	0.79	6951639	112.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-12-A**
Data File Name	**077SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:16:37-06:00**
Type	**Sample**
VialNumber	**2502**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	11.93651	23.87303	ug/l	1000	Li	
Be	9	6	3	0.75916	1.51831	ug/l	1000	Be	
B	11	6	3	5.03087	10.06175	ug/l	2000	B	
Na	23	45	2	288.25679	576.51359	ug/l	50000	Na	
Mg	24	45	2	19761.39650	39522.79300	ug/l	50000	Mg	
Al	27	45	2	18111.20719	36222.41437	ug/l	100000	Al	
P	31	45	2	3155.72224	6311.44447	ug/l	100000	P	
K	39	45	2	6365.97456	12731.94911	ug/l	100000	K	
Ca	44	45	3	11906.59061	23813.18121	ug/l	100000	Ca	
Ti	47	45	3	1280.41254	2560.82508	ug/l	2000	Ti	
V	51	45	2	71.03795	142.07589	ug/l	2000	V	
Cr	52	45	2	25.39988	50.79976	ug/l	2000	Cr	
Mn	55	72	2	302.53567	605.07135	ug/l	5000	Mn	
Fe	57	72	2	60435.98827	120871.97655	ug/l	100000	Fe	
Co	59	72	2	22.75659	45.51319	ug/l	2000	Co	
Ni	60	72	2	34.81302	69.62604	ug/l	2000	Ni	
Cu	63	72	2	6180.35986	12360.71972	ug/l	2000	Cu	FAILED
Zn	66	72	2	61.64184	123.28368	ug/l	5000	Zn	
As	75	72	2	9.83942	19.67885	ug/l	2000	As	
Se	78	72	2	9.30770	18.61539	ug/l	1000	Se	
Sr	88	72	3	104.88142	209.76284	ug/l	2000	Sr	
Y	89	72	2	14.68148	29.36297	ug/l	200	Y	
Zr	90	72	2	4.53848	9.07696	ug/l	2000	Zr	
Nb	93	72	2	0.38073	0.76146	ug/l	100	Nb	
Mo	95	72	3	9.88299	19.76599	ug/l	1000	Mo	
Ru	101	72	2	-0.00562	-0.01125	ug/l	200	Ru	
Rh	103	72	2	-0.00572	-0.01143	ug/l	200	Rh	
Pd	105	72	2	0.01510	0.03020	ug/l	20	Pd	
Ag	107	115	3	0.55825	1.11651	ug/l	400	Ag	
Cd	111	115	3	0.13366	0.26732	ug/l	2000	Cd	
Sn	118	115	3	7.71119	15.42238	ug/l	2000	Sn	
Sb	121	115	3	0.93095	1.86189	ug/l	1000	Sb	
Te	125	165	2	0.70927	1.41854	ug/l	200	Te	
Cs	133	165	2	2.38378	4.76757	ug/l	2000	Cs	
Ba	137	165	3	167.77912	335.55825	ug/l	5000	Ba	
La	139	165	2	31.08828	62.17656	ug/l	200	La	
Ce	140	165	2	67.80179	135.60359	ug/l	200	Ce	
Pr	141	165	2	7.92190	15.84380	ug/l	200	Pr	
Nd	146	165	2	33.24926	66.49851	ug/l	200	Nd	
Sm	147	165	3	6.21945	12.43890	ug/l	2000	Sm	
Hf	178	165	2	0.16382	0.32764	ug/l	200	Hf	
Ta	181	165	2	0.02761	0.05521	ug/l	200	Ta	
W	182	165	2	4.87952	9.75904	ug/l	2000	W	
Re	185	193	3	0.09442	0.18884	ug/l	200	Re	
Pt	195	193	2	0.00339	0.00677	ug/l	200	Pt	
Au	197	193	3	-0.02521	-0.05042	ug/l	2000	Au	
Tl	205	193	3	0.39672	0.79345	ug/l	400	Tl	
Pb	208	193	3	7.17759	14.35518	ug/l	5000	Pb	
Bi	209	193	2	2.11237	4.22474	ug/l	2000	Bi	
Th	232	193	3	37.77175	75.54351	ug/l	2000	Th	
U	238	193	3	7.31125	14.62250	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5558461	1.56	7411413	75.0	80	120	Li (IS)	FAILED
Sc (IS)	45	2	165018	0.90	143379	115.1	80	120	Sc (IS)	
Sc (IS)	45	3	3120309	0.57	2392712	130.4	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	372391	0.75	323154	115.2	80	120	Ge (IS)	
Ge (IS)	72	3	2371979	0.83	1861986	127.4	80	120	Ge (IS)	FAILED
In (IS)	115	3	14599374	0.20	12119833	120.5	80	120	In (IS)	FAILED
Ho (IS)	165	2	10306032	0.68	9598706	107.4	80	120	Ho (IS)	
Ho (IS)	165	3	16504671	0.42	13687738	120.6	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6418733	0.84	6085322	105.5	80	120	Ir (IS)	
Ir (IS)	193	3	7941946	0.69	6951639	114.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**078LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:23:23-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	5.89285	ug/l	5	117.9	80	120	Li	
Be	9	6	3	0.59640	ug/l	0.5	119.3	80	120	Be	
B	11	6	3	112.56360	ug/l	100	112.6	80	120	B	
Na	23	45	2	99.86290	ug/l	100	99.9	80	120	Na	
Mg	24	45	2	53.70909	ug/l	50	107.4	80	120	Mg	
Al	27	45	2	51.44402	ug/l	50	102.9	80	120	Al	
P	31	45	2	97.43487	ug/l	100	97.4	80	120	P	
K	39	45	2	98.92654	ug/l	100	98.9	80	120	K	
Ca	44	45	3	201.85575	ug/l	200	100.9	80	120	Ca	
Ti	47	45	3	5.45831	ug/l	5	109.2	80	120	Ti	
V	51	45	2	10.05869	ug/l	10	100.6	80	120	V	
Cr	52	45	2	10.22893	ug/l	10	102.3	80	120	Cr	
Mn	55	72	2	4.00624	ug/l	4	100.2	80	120	Mn	
Fe	57	72	2	61.84029	ug/l	50	123.7	80	120	Fe	FAILED
Co	59	72	2	2.05737	ug/l	2	102.9	80	120	Co	
Ni	60	72	2	5.55503	ug/l	5	111.1	80	120	Ni	
Cu	63	72	2	4.66728	ug/l	3	155.6	80	120	Cu	FAILED
Zn	66	72	2	21.11896	ug/l	20	105.6	80	120	Zn	
As	75	72	2	10.32053	ug/l	10	103.2	80	120	As	
Se	78	72	2	5.70746	ug/l	5	114.1	80	120	Se	
Sr	88	72	3	4.98747	ug/l	5	99.7	80	120	Sr	
Y	89	72	2	4.81570	ug/l	5	96.3	80	120	Y	
Zr	90	72	2	4.99026	ug/l	5	99.8	80	120	Zr	
Nb	93	72	2	18.57961	ug/l	25	74.3	80	120	Nb	FAILED
Mo	95	72	3	4.76347	ug/l	5	95.3	80	120	Mo	
Ru	101	72	2	10.22564	ug/l	10	102.3	80	120	Ru	
Rh	103	72	2	9.94792	ug/l	10	99.5	80	120	Rh	
Pd	105	72	2	0.55109	ug/l	0.5	110.2	80	120	Pd	
Ag	107	115	3	1.90794	ug/l	2	95.4	80	120	Ag	
Cd	111	115	3	0.52123	ug/l	0.5	104.2	80	120	Cd	
Sn	118	115	3	1.87595	ug/l	2	93.8	80	120	Sn	
Sb	121	115	3	4.67336	ug/l	5	93.5	80	120	Sb	
Te	125	165	2	9.68146	ug/l	10	96.8	80	120	Te	
Cs	133	165	2	0.92240	ug/l	1	92.2	80	120	Cs	
Ba	137	165	3	1.98947	ug/l	2	99.5	80	120	Ba	
La	139	165	2	1.89424	ug/l	2	94.7	80	120	La	
Ce	140	165	2	9.40784	ug/l	10	94.1	80	120	Ce	
Pr	141	165	2	1.88486	ug/l	2	94.2	80	120	Pr	
Nd	146	165	2	1.85521	ug/l	2	92.8	80	120	Nd	
Sm	147	165	3	9.63377	ug/l	10	96.3	80	120	Sm	
Hf	178	165	2	8.73578	ug/l	10	87.4	80	120	Hf	
Ta	181	165	2	7.12283	ug/l	10	71.2	80	120	Ta	FAILED
W	182	165	2	5.27066	ug/l	5	105.4	80	120	W	
Re	185	193	3	9.29068	ug/l	10	92.9	80	120	Re	
Pt	195	193	2	1.02217	ug/l	1	102.2	80	120	Pt	
Au	197	193	3	4.55332	ug/l	5	91.1	80	120	Au	
Tl	205	193	3	1.89624	ug/l	2	94.8	80	120	Tl	
Pb	208	193	3	2.80360	ug/l	3	93.5	80	120	Pb	
Bi	209	193	2	16.89611	ug/l	20	84.5	80	120	Bi	
Th	232	193	3	1.82549	ug/l	2	91.3	80	120	Th	
U	238	193	3	0.90346	ug/l	1	90.3	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5786188	0.54	7411413	78.1	80	120	Li (IS)	FAILED
Sc (IS)	45	2	159894	1.21	143379	111.5	80	120	Sc (IS)	
Sc (IS)	45	3	2922395	0.53	2392712	122.1	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	383859	1.94	323154	118.8	80	120	Ge (IS)	
Ge (IS)	72	3	2423970	1.40	1861986	130.2	80	120	Ge (IS)	FAILED
In (IS)	115	3	15282885	0.44	12119833	126.1	80	120	In (IS)	FAILED
Ho (IS)	165	2	10554230	1.10	9598706	110.0	80	120	Ho (IS)	
Ho (IS)	165	3	16775239	1.09	13687738	122.6	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6763045	0.32	6085322	111.1	80	120	Ir (IS)	
Ir (IS)	193	3	8248877	0.22	6951639	118.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**079_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:30:04-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	107.79768	ug/l	100	107.8	90	110	Li	
Be	9	6	3	120.06890	ug/l	100	120.1	90	110	Be	FAILED
B	11	6	3	240.95779	ug/l	200	120.5	90	110	B	FAILED
Na	23	45	2	2433.81639	ug/l	2500	97.4	90	110	Na	
Mg	24	45	2	2391.84236	ug/l	2500	95.7	90	110	Mg	
Al	27	45	2	2180.19340	ug/l	2500	87.2	90	110	Al	FAILED
P	31	45	2	2282.60503	ug/l	2500	91.3	90	110	P	
K	39	45	2	2464.93137	ug/l	2500	98.6	90	110	K	
Ca	44	45	3	2595.23428	ug/l	2500	103.8	90	110	Ca	
Ti	47	45	3	102.00084	ug/l	100	102.0	90	110	Ti	
V	51	45	2	99.40999	ug/l	100	99.4	90	110	V	
Cr	52	45	2	103.92888	ug/l	100	103.9	90	110	Cr	
Mn	55	72	2	90.80816	ug/l	100	90.8	90	110	Mn	
Fe	57	72	2	2320.86349	ug/l	2500	92.8	90	110	Fe	
Co	59	72	2	99.54629	ug/l	100	99.5	90	110	Co	
Ni	60	72	2	100.94126	ug/l	100	100.9	90	110	Ni	
Cu	63	72	2	101.38479	ug/l	100	101.4	90	110	Cu	
Zn	66	72	2	99.99320	ug/l	100	100.0	90	110	Zn	
As	75	72	2	100.33508	ug/l	100	100.3	90	110	As	
Se	78	72	2	48.47606	ug/l	50	97.0	90	110	Se	
Sr	88	72	3	102.19868	ug/l	100	102.2	90	110	Sr	
Y	89	72	2	99.68561	ug/l	100	99.7	90	110	Y	
Zr	90	72	2	100.45636	ug/l	100	100.5	90	110	Zr	
Nb	93	72	2	50.33383	ug/l	50	100.7	90	110	Nb	
Mo	95	72	3	46.36677	ug/l	50	92.7	90	110	Mo	
Ru	101	72	2	97.97304	ug/l	100	98.0	90	110	Ru	
Rh	103	72	2	103.82144	ug/l	100	103.8	90	110	Rh	
Pd	105	72	2	10.54453	ug/l	10	105.4	90	110	Pd	
Ag	107	115	3	18.28089	ug/l	20	91.4	90	110	Ag	
Cd	111	115	3	95.08413	ug/l	100	95.1	90	110	Cd	
Sn	118	115	3	101.34821	ug/l	100	101.3	90	110	Sn	
Sb	121	115	3	50.99101	ug/l	50	102.0	90	110	Sb	
Te	125	165	2	97.77688	ug/l	100	97.8	90	110	Te	
Cs	133	165	2	100.21075	ug/l	100	100.2	90	110	Cs	
Ba	137	165	3	100.91206	ug/l	100	100.9	90	110	Ba	
La	139	165	2	102.16260	ug/l	100	102.2	90	110	La	
Ce	140	165	2	102.58215	ug/l	100	102.6	90	110	Ce	
Pr	141	165	2	101.77511	ug/l	100	101.8	90	110	Pr	
Nd	146	165	2	94.29173	ug/l	100	94.3	90	110	Nd	
Sm	147	165	3	101.23176	ug/l	100	101.2	90	110	Sm	
Hf	178	165	2	100.04675	ug/l	100	100.0	90	110	Hf	
Ta	181	165	2	101.89865	ug/l	100	101.9	90	110	Ta	
W	182	165	2	104.26872	ug/l	100	104.3	90	110	W	
Re	185	193	3	101.97030	ug/l	100	102.0	90	110	Re	
Pt	195	193	2	10.37878	ug/l	10	103.8	90	110	Pt	
Au	197	193	3	99.51631	ug/l	100	99.5	90	110	Au	
Tl	205	193	3	20.46957	ug/l	20	102.3	90	110	Tl	
Pb	208	193	3	99.88968	ug/l	100	99.9	90	110	Pb	
Bi	209	193	2	97.56795	ug/l	100	97.6	90	110	Bi	
Th	232	193	3	97.31720	ug/l	100	97.3	90	110	Th	
U	238	193	3	97.22289	ug/l	100	97.2	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5572891	1.13	7411413	75.2	80	120	Li (IS)	FAILED
Sc (IS)	45	2	159344	2.09	143379	111.1	80	120	Sc (IS)	
Sc (IS)	45	3	2889397	1.22	2392712	120.8	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	394833	2.34	323154	122.2	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2427570	0.31	1861986	130.4	80	120	Ge (IS)	FAILED
In (IS)	115	3	14889605	0.54	12119833	122.9	80	120	In (IS)	FAILED
Ho (IS)	165	2	10380475	0.43	9598706	108.1	80	120	Ho (IS)	
Ho (IS)	165	3	16796243	1.06	13687738	122.7	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6667196	0.79	6085322	109.6	80	120	Ir (IS)	
Ir (IS)	193	3	8135230	0.28	6951639	117.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**080_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:36:59-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.70310	ug/l	1.388	Li	
Be	9	6	3	-0.00319	ug/l	0.7	Be	
B	11	6	3	2.94179	ug/l	20	B	
Na	23	45	2	0.88931	ug/l	30	Na	
Mg	24	45	2	0.48836	ug/l	11.18	Mg	
Al	27	45	2	0.41609	ug/l	25.8	Al	
P	31	45	2	0.17392	ug/l	16.46	P	
K	39	45	2	-0.78741	ug/l	83.2	K	
Ca	44	45	3	-5.87869	ug/l	136.2	Ca	
Ti	47	45	3	0.05633	ug/l	4.2	Ti	
V	51	45	2	-0.03839	ug/l	4.74	V	
Cr	52	45	2	-0.00355	ug/l	6.52	Cr	
Mn	55	72	2	0.02227	ug/l	0.49	Mn	
Fe	57	72	2	0.61963	ug/l	40.7	Fe	
Co	59	72	2	0.01661	ug/l	0.434	Co	
Ni	60	72	2	0.00210	ug/l	0.8	Ni	
Cu	63	72	2	-0.02161	ug/l	0.902	Cu	
Zn	66	72	2	0.07227	ug/l	16.58	Zn	
As	75	72	2	0.00594	ug/l	2.36	As	
Se	78	72	2	0.32618	ug/l	3.18	Se	
Sr	88	72	3	0.00154	ug/l	2	Sr	
Y	89	72	2	0.01150	ug/l	0.424	Y	
Zr	90	72	2	0.02598	ug/l	0.496	Zr	
Nb	93	72	2	0.28160	ug/l	4.62	Nb	
Mo	95	72	3	0.01950	ug/l	2	Mo	
Ru	101	72	2	0.01612	ug/l	2	Ru	
Rh	103	72	2	0.01349	ug/l	1.634	Rh	
Pd	105	72	2	-0.00417	ug/l	0.08	Pd	
Ag	107	115	3	0.00452	ug/l	1.54	Ag	
Cd	111	115	3	-0.00110	ug/l	0.4	Cd	
Sn	118	115	3	-0.00225	ug/l	2	Sn	
Sb	121	115	3	-0.01025	ug/l	3.34	Sb	
Te	125	165	2	0.06419	ug/l	1.072	Te	
Cs	133	165	2	0.01269	ug/l	0.106	Cs	
Ba	137	165	3	0.00993	ug/l	0.446	Ba	
La	139	165	2	0.01475	ug/l	0.102	La	
Ce	140	165	2	0.01454	ug/l	1.772	Ce	
Pr	141	165	2	0.01509	ug/l	0.084	Pr	
Nd	146	165	2	0.01599	ug/l	0.208	Nd	
Sm	147	165	3	0.00217	ug/l	0.652	Sm	
Hf	178	165	2	0.02621	ug/l	2.26	Hf	
Ta	181	165	2	0.02494	ug/l	1.46	Ta	
W	182	165	2	0.50539	ug/l	4	W	
Re	185	193	3	0.00335	ug/l	0.05	Re	
Pt	195	193	2	0.00277	ug/l	0.12	Pt	
Au	197	193	3	0.10074	ug/l	1	Au	
Tl	205	193	3	0.00358	ug/l	1.1	Tl	
Pb	208	193	3	0.02218	ug/l	0.346	Pb	
Bi	209	193	2	0.02134	ug/l	1.464	Bi	
Th	232	193	3	0.01835	ug/l	1.104	Th	
U	238	193	3	0.00375	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5716425	1.69	7411413	77.1	80	120	Li (IS)	FAILED
Sc (IS)	45	2	158777	0.35	143379	110.7	80	120	Sc (IS)	
Sc (IS)	45	3	2899819	0.53	2392712	121.2	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	376320	1.36	323154	116.5	80	120	Ge (IS)	
Ge (IS)	72	3	2384460	0.34	1861986	128.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	15193061	0.54	12119833	125.4	80	120	In (IS)	FAILED
Ho (IS)	165	2	10430763	0.61	9598706	108.7	80	120	Ho (IS)	
Ho (IS)	165	3	16710572	0.58	13687738	122.1	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6790620	0.92	6085322	111.6	80	120	Ir (IS)	
Ir (IS)	193	3	8302131	1.08	6951639	119.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-13-A**
Data File Name	**081SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:43:42-06:00**
Type	**Sample**
VialNumber	**2503**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	11.75261	23.50523	ug/l	1000	Li	
Be	9	6	3	0.94224	1.88448	ug/l	1000	Be	
B	11	6	3	5.84737	11.69474	ug/l	2000	B	
Na	23	45	2	394.93545	789.87090	ug/l	50000	Na	
Mg	24	45	2	20752.77252	41505.54504	ug/l	50000	Mg	
Al	27	45	2	19591.72213	39183.44426	ug/l	100000	Al	
P	31	45	2	2594.74532	5189.49064	ug/l	100000	P	
K	39	45	2	5162.20051	10324.40102	ug/l	100000	K	
Ca	44	45	3	19509.22007	39018.44015	ug/l	100000	Ca	
Ti	47	45	3	1303.92036	2607.84073	ug/l	2000	Ti	
V	51	45	2	61.95223	123.90446	ug/l	2000	V	
Cr	52	45	2	34.46298	68.92596	ug/l	2000	Cr	
Mn	55	72	2	295.95789	591.91578	ug/l	5000	Mn	
Fe	57	72	2	50726.07137	101452.14275	ug/l	100000	Fe	
Co	59	72	2	19.03636	38.07272	ug/l	2000	Co	
Ni	60	72	2	40.08239	80.16477	ug/l	2000	Ni	
Cu	63	72	2	4435.07532	8870.15064	ug/l	2000	Cu	FAILED
Zn	66	72	2	52.60824	105.21649	ug/l	5000	Zn	
As	75	72	2	6.11399	12.22798	ug/l	2000	As	
Se	78	72	2	7.21253	14.42506	ug/l	1000	Se	
Sr	88	72	3	189.14416	378.28832	ug/l	2000	Sr	
Y	89	72	2	14.78814	29.57628	ug/l	200	Y	
Zr	90	72	2	5.36016	10.72032	ug/l	2000	Zr	
Nb	93	72	2	0.58891	1.17782	ug/l	100	Nb	
Mo	95	72	3	9.04666	18.09333	ug/l	1000	Mo	
Ru	101	72	2	-0.00196	-0.00392	ug/l	200	Ru	
Rh	103	72	2	-0.00481	-0.00962	ug/l	200	Rh	
Pd	105	72	2	0.02147	0.04295	ug/l	20	Pd	
Ag	107	115	3	0.50599	1.01199	ug/l	400	Ag	
Cd	111	115	3	0.04577	0.09154	ug/l	2000	Cd	
Sn	118	115	3	7.37049	14.74099	ug/l	2000	Sn	
Sb	121	115	3	0.74162	1.48324	ug/l	1000	Sb	
Te	125	165	2	0.66156	1.32311	ug/l	200	Te	
Cs	133	165	2	2.42847	4.85694	ug/l	2000	Cs	
Ba	137	165	3	200.84992	401.69984	ug/l	5000	Ba	
La	139	165	2	32.63647	65.27295	ug/l	200	La	
Ce	140	165	2	69.91423	139.82846	ug/l	200	Ce	
Pr	141	165	2	8.02064	16.04127	ug/l	200	Pr	
Nd	146	165	2	32.89098	65.78196	ug/l	200	Nd	
Sm	147	165	3	6.32691	12.65382	ug/l	2000	Sm	
Hf	178	165	2	0.35331	0.70663	ug/l	200	Hf	
Ta	181	165	2	0.07199	0.14398	ug/l	200	Ta	
W	182	165	2	2.72092	5.44183	ug/l	2000	W	
Re	185	193	3	0.11794	0.23587	ug/l	200	Re	
Pt	195	193	2	0.00579	0.01157	ug/l	200	Pt	
Au	197	193	3	0.01682	0.03363	ug/l	2000	Au	
Tl	205	193	3	0.23162	0.46324	ug/l	400	Tl	
Pb	208	193	3	5.94852	11.89704	ug/l	5000	Pb	
Bi	209	193	2	1.59590	3.19180	ug/l	2000	Bi	
Th	232	193	3	35.50559	71.01118	ug/l	2000	Th	
U	238	193	3	8.92233	17.84466	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5429504	2.83	7411413	73.3	80	120	Li (IS)	FAILED
Sc (IS)	45	2	168248	0.33	143379	117.3	80	120	Sc (IS)	
Sc (IS)	45	3	3153243	2.17	2392712	131.8	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	374088	0.71	323154	115.8	80	120	Ge (IS)	
Ge (IS)	72	3	2400053	2.35	1861986	128.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	14470301	3.25	12119833	119.4	80	120	In (IS)	
Ho (IS)	165	2	10250520	0.37	9598706	106.8	80	120	Ho (IS)	
Ho (IS)	165	3	16495359	4.00	13687738	120.5	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6423861	0.54	6085322	105.6	80	120	Ir (IS)	
Ir (IS)	193	3	7883156	2.84	6951639	113.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-14-A**
Data File Name	**082SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:50:24-06:00**
Type	**Sample**
VialNumber	**2504**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	11.70250	23.40499	ug/l	1000	Li	
Be	9	6	3	1.05712	2.11423	ug/l	1000	Be	
B	11	6	3	6.37435	12.74870	ug/l	2000	B	
Na	23	45	2	541.39682	1082.79364	ug/l	50000	Na	
Mg	24	45	2	21186.98878	42373.97756	ug/l	50000	Mg	
Al	27	45	2	21342.51352	42685.02704	ug/l	100000	Al	
P	31	45	2	2908.75606	5817.51211	ug/l	100000	P	
K	39	45	2	5576.99987	11153.99974	ug/l	100000	K	
Ca	44	45	3	20117.31178	40234.62356	ug/l	100000	Ca	
Ti	47	45	3	1251.82460	2503.64919	ug/l	2000	Ti	
V	51	45	2	67.35263	134.70525	ug/l	2000	V	
Cr	52	45	2	32.63123	65.26246	ug/l	2000	Cr	
Mn	55	72	2	288.17354	576.34708	ug/l	5000	Mn	
Fe	57	72	2	64986.27215	129972.54430	ug/l	100000	Fe	
Co	59	72	2	24.70276	49.40552	ug/l	2000	Co	
Ni	60	72	2	40.26669	80.53338	ug/l	2000	Ni	
Cu	63	72	2	4622.01910	9244.03819	ug/l	2000	Cu	FAILED
Zn	66	72	2	49.81184	99.62368	ug/l	5000	Zn	
As	75	72	2	7.83326	15.66653	ug/l	2000	As	
Se	78	72	2	9.75954	19.51908	ug/l	1000	Se	
Sr	88	72	3	172.59844	345.19688	ug/l	2000	Sr	
Y	89	72	2	15.07294	30.14588	ug/l	200	Y	
Zr	90	72	2	5.67733	11.35466	ug/l	2000	Zr	
Nb	93	72	2	0.43042	0.86084	ug/l	100	Nb	
Mo	95	72	3	8.16725	16.33449	ug/l	1000	Mo	
Ru	101	72	2	-0.00488	-0.00975	ug/l	200	Ru	
Rh	103	72	2	-0.00336	-0.00673	ug/l	200	Rh	
Pd	105	72	2	0.01830	0.03660	ug/l	20	Pd	
Ag	107	115	3	0.56258	1.12517	ug/l	400	Ag	
Cd	111	115	3	0.05318	0.10636	ug/l	2000	Cd	
Sn	118	115	3	8.13520	16.27039	ug/l	2000	Sn	
Sb	121	115	3	0.85114	1.70229	ug/l	1000	Sb	
Te	125	165	2	1.10768	2.21535	ug/l	200	Te	
Cs	133	165	2	2.67386	5.34771	ug/l	2000	Cs	
Ba	137	165	3	200.86987	401.73973	ug/l	5000	Ba	
La	139	165	2	34.30720	68.61440	ug/l	200	La	
Ce	140	165	2	74.55538	149.11076	ug/l	200	Ce	
Pr	141	165	2	8.59565	17.19131	ug/l	200	Pr	
Nd	146	165	2	35.50347	71.00693	ug/l	200	Nd	
Sm	147	165	3	6.68610	13.37220	ug/l	2000	Sm	
Hf	178	165	2	0.25684	0.51368	ug/l	200	Hf	
Ta	181	165	2	0.12205	0.24410	ug/l	200	Ta	
W	182	165	2	1.45201	2.90402	ug/l	2000	W	
Re	185	193	3	0.12355	0.24711	ug/l	200	Re	
Pt	195	193	2	0.00903	0.01805	ug/l	200	Pt	
Au	197	193	3	0.01664	0.03327	ug/l	2000	Au	
Tl	205	193	3	0.22957	0.45913	ug/l	400	Tl	
Pb	208	193	3	6.74228	13.48457	ug/l	5000	Pb	
Bi	209	193	2	2.27036	4.54072	ug/l	2000	Bi	
Th	232	193	3	39.34770	78.69540	ug/l	2000	Th	
U	238	193	3	10.54738	21.09475	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5440864	0.34	7411413	73.4	80	120	Li (IS)	FAILED
Sc (IS)	45	2	172743	2.09	143379	120.5	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3220063	1.22	2392712	134.6	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	386649	2.46	323154	119.6	80	120	Ge (IS)	
Ge (IS)	72	3	2428165	0.45	1861986	130.4	80	120	Ge (IS)	FAILED
In (IS)	115	3	14789294	0.96	12119833	122.0	80	120	In (IS)	FAILED
Ho (IS)	165	2	10325392	3.08	9598706	107.6	80	120	Ho (IS)	
Ho (IS)	165	3	16812152	0.77	13687738	122.8	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6462661	2.63	6085322	106.2	80	120	Ir (IS)	
Ir (IS)	193	3	8063890	1.25	6951639	116.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36526-B-15-A**
Data File Name	**083SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T00:57:05-06:00**
Type	**Sample**
VialNumber	**2505**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	10.68613	21.37225	ug/l	1000	Li	
Be	9	6	3	1.22275	2.44550	ug/l	1000	Be	
B	11	6	3	9.04224	18.08449	ug/l	2000	B	
Na	23	45	2	401.44018	802.88037	ug/l	50000	Na	
Mg	24	45	2	18663.07405	37326.14810	ug/l	50000	Mg	
Al	27	45	2	25666.05717	51332.11435	ug/l	100000	Al	
P	31	45	2	1449.82152	2899.64303	ug/l	100000	P	
K	39	45	2	1589.36144	3178.72288	ug/l	100000	K	
Ca	44	45	3	16110.21875	32220.43750	ug/l	100000	Ca	
Ti	47	45	3	1208.89558	2417.79116	ug/l	2000	Ti	
V	51	45	2	57.05597	114.11195	ug/l	2000	V	
Cr	52	45	2	19.62313	39.24627	ug/l	2000	Cr	
Mn	55	72	2	197.07660	394.15320	ug/l	5000	Mn	
Fe	57	72	2	43002.17871	86004.35742	ug/l	100000	Fe	
Co	59	72	2	15.42927	30.85854	ug/l	2000	Co	
Ni	60	72	2	32.63941	65.27882	ug/l	2000	Ni	
Cu	63	72	2	3277.60738	6555.21476	ug/l	2000	Cu	FAILED
Zn	66	72	2	31.20907	62.41813	ug/l	5000	Zn	
As	75	72	2	27.11970	54.23941	ug/l	2000	As	
Se	78	72	2	18.19476	36.38953	ug/l	1000	Se	
Sr	88	72	3	279.46382	558.92764	ug/l	2000	Sr	
Y	89	72	2	8.34600	16.69201	ug/l	200	Y	
Zr	90	72	2	6.76682	13.53364	ug/l	2000	Zr	
Nb	93	72	2	0.31517	0.63035	ug/l	100	Nb	
Mo	95	72	3	16.11274	32.22547	ug/l	1000	Mo	
Ru	101	72	2	-0.00468	-0.00937	ug/l	200	Ru	
Rh	103	72	2	-0.00455	-0.00909	ug/l	200	Rh	
Pd	105	72	2	0.01568	0.03135	ug/l	20	Pd	
Ag	107	115	3	0.25347	0.50694	ug/l	400	Ag	
Cd	111	115	3	0.04533	0.09066	ug/l	2000	Cd	
Sn	118	115	3	8.74632	17.49264	ug/l	2000	Sn	
Sb	121	115	3	6.44771	12.89543	ug/l	1000	Sb	
Te	125	165	2	0.54720	1.09440	ug/l	200	Te	
Cs	133	165	2	2.11783	4.23567	ug/l	2000	Cs	
Ba	137	165	3	198.76893	397.53786	ug/l	5000	Ba	
La	139	165	2	17.06550	34.13101	ug/l	200	La	
Ce	140	165	2	36.71905	73.43810	ug/l	200	Ce	
Pr	141	165	2	4.16758	8.33516	ug/l	200	Pr	
Nd	146	165	2	17.26987	34.53973	ug/l	200	Nd	
Sm	147	165	3	3.19711	6.39421	ug/l	2000	Sm	
Hf	178	165	2	0.25069	0.50139	ug/l	200	Hf	
Ta	181	165	2	0.04816	0.09631	ug/l	200	Ta	
W	182	165	2	4.77497	9.54995	ug/l	2000	W	
Re	185	193	3	0.00053	0.00105	ug/l	200	Re	
Pt	195	193	2	0.00592	0.01184	ug/l	200	Pt	
Au	197	193	3	0.02022	0.04045	ug/l	2000	Au	
Tl	205	193	3	0.26819	0.53639	ug/l	400	Tl	
Pb	208	193	3	21.63568	43.27136	ug/l	5000	Pb	
Bi	209	193	2	1.32979	2.65957	ug/l	2000	Bi	
Th	232	193	3	9.29710	18.59420	ug/l	2000	Th	
U	238	193	3	6.86935	13.73871	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5372448	1.59	7411413	72.5	80	120	Li (IS)	FAILED
Sc (IS)	45	2	176685	1.15	143379	123.2	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3303954	0.62	2392712	138.1	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	382378	1.47	323154	118.3	80	120	Ge (IS)	
Ge (IS)	72	3	2418136	0.55	1861986	129.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	14745428	0.19	12119833	121.7	80	120	In (IS)	FAILED
Ho (IS)	165	2	10396475	0.29	9598706	108.3	80	120	Ho (IS)	
Ho (IS)	165	3	16797278	0.87	13687738	122.7	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6487348	1.41	6085322	106.6	80	120	Ir (IS)	
Ir (IS)	193	3	7984058	0.89	6951639	114.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-16-A**
Data File Name	**084SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:03:47-06:00**
Type	**Sample**
VialNumber	**2506**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	11.66035	23.32070	ug/l	1000	Li	
Be	9	6	3	0.97394	1.94788	ug/l	1000	Be	
B	11	6	3	6.01561	12.03121	ug/l	2000	B	
Na	23	45	2	269.08821	538.17641	ug/l	50000	Na	
Mg	24	45	2	20858.77112	41717.54224	ug/l	50000	Mg	
Al	27	45	2	25976.23703	51952.47407	ug/l	100000	Al	
P	31	45	2	2107.17504	4214.35008	ug/l	100000	P	
K	39	45	2	1385.73440	2771.46880	ug/l	100000	K	
Ca	44	45	3	19311.19926	38622.39852	ug/l	100000	Ca	
Ti	47	45	3	1180.20297	2360.40594	ug/l	2000	Ti	
V	51	45	2	55.02918	110.05835	ug/l	2000	V	
Cr	52	45	2	18.36575	36.73149	ug/l	2000	Cr	
Mn	55	72	2	157.00828	314.01656	ug/l	5000	Mn	
Fe	57	72	2	43122.53937	86245.07874	ug/l	100000	Fe	
Co	59	72	2	12.40875	24.81750	ug/l	2000	Co	
Ni	60	72	2	29.56447	59.12894	ug/l	2000	Ni	
Cu	63	72	2	3643.19100	7286.38199	ug/l	2000	Cu	FAILED
Zn	66	72	2	27.27703	54.55406	ug/l	5000	Zn	
As	75	72	2	28.07317	56.14634	ug/l	2000	As	
Se	78	72	2	24.61185	49.22371	ug/l	1000	Se	
Sr	88	72	3	239.75025	479.50050	ug/l	2000	Sr	
Y	89	72	2	7.51821	15.03641	ug/l	200	Y	
Zr	90	72	2	4.83208	9.66415	ug/l	2000	Zr	
Nb	93	72	2	0.28330	0.56659	ug/l	100	Nb	
Mo	95	72	3	19.17544	38.35089	ug/l	1000	Mo	
Ru	101	72	2	-0.00387	-0.00775	ug/l	200	Ru	
Rh	103	72	2	-0.00383	-0.00766	ug/l	200	Rh	
Pd	105	72	2	0.01627	0.03254	ug/l	20	Pd	
Ag	107	115	3	0.30555	0.61111	ug/l	400	Ag	
Cd	111	115	3	0.05954	0.11908	ug/l	2000	Cd	
Sn	118	115	3	7.70094	15.40187	ug/l	2000	Sn	
Sb	121	115	3	2.89947	5.79894	ug/l	1000	Sb	
Te	125	165	2	0.54478	1.08956	ug/l	200	Te	
Cs	133	165	2	2.07175	4.14351	ug/l	2000	Cs	
Ba	137	165	3	145.05233	290.10465	ug/l	5000	Ba	
La	139	165	2	16.92336	33.84671	ug/l	200	La	
Ce	140	165	2	38.11633	76.23267	ug/l	200	Ce	
Pr	141	165	2	4.39498	8.78995	ug/l	200	Pr	
Nd	146	165	2	18.48058	36.96116	ug/l	200	Nd	
Sm	147	165	3	3.30073	6.60146	ug/l	2000	Sm	
Hf	178	165	2	0.18610	0.37220	ug/l	200	Hf	
Ta	181	165	2	0.02749	0.05498	ug/l	200	Ta	
W	182	165	2	4.44992	8.89985	ug/l	2000	W	
Re	185	193	3	-0.00161	-0.00322	ug/l	200	Re	
Pt	195	193	2	0.00572	0.01144	ug/l	200	Pt	
Au	197	193	3	0.01021	0.02042	ug/l	2000	Au	
Tl	205	193	3	0.07933	0.15865	ug/l	400	Tl	
Pb	208	193	3	20.31882	40.63765	ug/l	5000	Pb	
Bi	209	193	2	1.75680	3.51359	ug/l	2000	Bi	
Th	232	193	3	14.85642	29.71284	ug/l	2000	Th	
U	238	193	3	4.52500	9.05000	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5339978	0.58	7411413	72.1	80	120	Li (IS)	FAILED
Sc (IS)	45	2	171655	0.53	143379	119.7	80	120	Sc (IS)	
Sc (IS)	45	3	3235206	0.19	2392712	135.2	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	381198	1.59	323154	118.0	80	120	Ge (IS)	
Ge (IS)	72	3	2424024	0.70	1861986	130.2	80	120	Ge (IS)	FAILED
In (IS)	115	3	14734898	1.31	12119833	121.6	80	120	In (IS)	FAILED
Ho (IS)	165	2	10368263	1.03	9598706	108.0	80	120	Ho (IS)	
Ho (IS)	165	3	16978017	0.23	13687738	124.0	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6449065	0.94	6085322	106.0	80	120	Ir (IS)	
Ir (IS)	193	3	8035244	0.88	6951639	115.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-17-A**
Data File Name	**085SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:10:31-06:00**
Type	**Sample**
VialNumber	**2507**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	13.63265	27.26530	ug/l	1000	Li	
Be	9	6	3	0.93483	1.86966	ug/l	1000	Be	
B	11	6	3	7.10278	14.20556	ug/l	2000	B	
Na	23	45	2	398.95253	797.90507	ug/l	50000	Na	
Mg	24	45	2	25440.48760	50880.97520	ug/l	50000	Mg	
Al	27	45	2	28389.08959	56778.17918	ug/l	100000	Al	
P	31	45	2	1811.01323	3622.02646	ug/l	100000	P	
K	39	45	2	1726.91536	3453.83072	ug/l	100000	K	
Ca	44	45	3	18959.70325	37919.40650	ug/l	100000	Ca	
Ti	47	45	3	1424.07372	2848.14743	ug/l	2000	Ti	
V	51	45	2	63.42949	126.85898	ug/l	2000	V	
Cr	52	45	2	22.79733	45.59466	ug/l	2000	Cr	
Mn	55	72	2	179.94270	359.88540	ug/l	5000	Mn	
Fe	57	72	2	43467.98122	86935.96243	ug/l	100000	Fe	
Co	59	72	2	17.10564	34.21127	ug/l	2000	Co	
Ni	60	72	2	35.72695	71.45389	ug/l	2000	Ni	
Cu	63	72	2	4524.23914	9048.47829	ug/l	2000	Cu	FAILED
Zn	66	72	2	39.31142	78.62283	ug/l	5000	Zn	
As	75	72	2	25.77994	51.55988	ug/l	2000	As	
Se	78	72	2	20.09325	40.18649	ug/l	1000	Se	
Sr	88	72	3	264.15250	528.30500	ug/l	2000	Sr	
Y	89	72	2	7.42198	14.84395	ug/l	200	Y	
Zr	90	72	2	5.00772	10.01544	ug/l	2000	Zr	
Nb	93	72	2	0.36554	0.73108	ug/l	100	Nb	
Mo	95	72	3	8.96056	17.92112	ug/l	1000	Mo	
Ru	101	72	2	-0.00366	-0.00733	ug/l	200	Ru	
Rh	103	72	2	-0.00412	-0.00825	ug/l	200	Rh	
Pd	105	72	2	0.01551	0.03103	ug/l	20	Pd	
Ag	107	115	3	0.28486	0.56971	ug/l	400	Ag	
Cd	111	115	3	0.05461	0.10921	ug/l	2000	Cd	
Sn	118	115	3	7.85860	15.71720	ug/l	2000	Sn	
Sb	121	115	3	6.75643	13.51286	ug/l	1000	Sb	
Te	125	165	2	0.61733	1.23465	ug/l	200	Te	
Cs	133	165	2	2.05090	4.10179	ug/l	2000	Cs	
Ba	137	165	3	165.29437	330.58875	ug/l	5000	Ba	
La	139	165	2	19.00795	38.01590	ug/l	200	La	
Ce	140	165	2	42.56530	85.13059	ug/l	200	Ce	
Pr	141	165	2	4.87195	9.74391	ug/l	200	Pr	
Nd	146	165	2	20.07490	40.14980	ug/l	200	Nd	
Sm	147	165	3	3.55544	7.11088	ug/l	2000	Sm	
Hf	178	165	2	0.21498	0.42995	ug/l	200	Hf	
Ta	181	165	2	0.02037	0.04073	ug/l	200	Ta	
W	182	165	2	4.09762	8.19523	ug/l	2000	W	
Re	185	193	3	-0.00012	-0.00023	ug/l	200	Re	
Pt	195	193	2	0.00663	0.01325	ug/l	200	Pt	
Au	197	193	3	-0.00227	-0.00454	ug/l	2000	Au	
Tl	205	193	3	0.08608	0.17217	ug/l	400	Tl	
Pb	208	193	3	16.85001	33.70001	ug/l	5000	Pb	
Bi	209	193	2	1.59067	3.18133	ug/l	2000	Bi	
Th	232	193	3	14.86800	29.73601	ug/l	2000	Th	
U	238	193	3	3.85961	7.71921	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5188037	5.25	7411413	70.0	80	120	Li (IS)	FAILED
Sc (IS)	45	2	172727	2.73	143379	120.5	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3207491	7.84	2392712	134.1	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	379892	1.67	323154	117.6	80	120	Ge (IS)	
Ge (IS)	72	3	2395077	6.90	1861986	128.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	14428676	9.33	12119833	119.1	80	120	In (IS)	
Ho (IS)	165	2	10079904	3.32	9598706	105.0	80	120	Ho (IS)	
Ho (IS)	165	3	16375917	8.41	13687738	119.6	80	120	Ho (IS)	
Ir (IS)	193	2	6266532	3.51	6085322	103.0	80	120	Ir (IS)	
Ir (IS)	193	3	7755660	8.18	6951639	111.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-18-A**
Data File Name	**086SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:17:15-06:00**
Type	**Sample**
VialNumber	**2508**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	18.55987	37.11973	ug/l	1000	Li	
Be	9	6	3	1.31966	2.63931	ug/l	1000	Be	
B	11	6	3	8.54439	17.08878	ug/l	2000	B	
Na	23	45	2	538.85701	1077.71401	ug/l	50000	Na	
Mg	24	45	2	29236.88359	58473.76718	ug/l	50000	Mg	
Al	27	45	2	29491.58441	58983.16882	ug/l	100000	Al	
P	31	45	2	3585.66065	7171.32130	ug/l	100000	P	
K	39	45	2	7919.84244	15839.68488	ug/l	100000	K	
Ca	44	45	3	20925.79304	41851.58608	ug/l	100000	Ca	
Ti	47	45	3	1757.81540	3515.63079	ug/l	2000	Ti	
V	51	45	2	105.79836	211.59672	ug/l	2000	V	
Cr	52	45	2	40.66123	81.32247	ug/l	2000	Cr	
Mn	55	72	2	427.56016	855.12032	ug/l	5000	Mn	
Fe	57	72	2	93165.17393	186330.34786	ug/l	100000	Fe	
Co	59	72	2	35.13851	70.27701	ug/l	2000	Co	
Ni	60	72	2	50.16202	100.32404	ug/l	2000	Ni	
Cu	63	72	2	4637.09618	9274.19236	ug/l	2000	Cu	FAILED
Zn	66	72	2	93.27905	186.55811	ug/l	5000	Zn	
As	75	72	2	15.57861	31.15722	ug/l	2000	As	
Se	78	72	2	14.00737	28.01474	ug/l	1000	Se	
Sr	88	72	3	192.87117	385.74235	ug/l	2000	Sr	
Y	89	72	2	22.45689	44.91377	ug/l	200	Y	
Zr	90	72	2	7.61661	15.23321	ug/l	2000	Zr	
Nb	93	72	2	0.39395	0.78791	ug/l	100	Nb	
Mo	95	72	3	10.70068	21.40135	ug/l	1000	Mo	
Ru	101	72	2	-0.00429	-0.00859	ug/l	200	Ru	
Rh	103	72	2	-0.00665	-0.01330	ug/l	200	Rh	
Pd	105	72	2	0.03545	0.07089	ug/l	20	Pd	
Ag	107	115	3	0.54713	1.09426	ug/l	400	Ag	
Cd	111	115	3	0.09026	0.18051	ug/l	2000	Cd	
Sn	118	115	3	8.97984	17.95967	ug/l	2000	Sn	
Sb	121	115	3	0.71673	1.43346	ug/l	1000	Sb	
Te	125	165	2	1.55173	3.10346	ug/l	200	Te	
Cs	133	165	2	3.65931	7.31862	ug/l	2000	Cs	
Ba	137	165	3	272.85555	545.71109	ug/l	5000	Ba	
La	139	165	2	65.00411	130.00821	ug/l	200	La	
Ce	140	165	2	139.33453	278.66907	ug/l	200	Ce	
Pr	141	165	2	15.86859	31.73717	ug/l	200	Pr	
Nd	146	165	2	65.02774	130.05547	ug/l	200	Nd	
Sm	147	165	3	12.32349	24.64697	ug/l	2000	Sm	
Hf	178	165	2	0.27086	0.54173	ug/l	200	Hf	
Ta	181	165	2	0.04763	0.09526	ug/l	200	Ta	
W	182	165	2	4.97117	9.94234	ug/l	2000	W	
Re	185	193	3	0.08082	0.16164	ug/l	200	Re	
Pt	195	193	2	0.00666	0.01333	ug/l	200	Pt	
Au	197	193	3	-0.01216	-0.02432	ug/l	2000	Au	
Tl	205	193	3	0.34500	0.69000	ug/l	400	Tl	
Pb	208	193	3	9.53953	19.07907	ug/l	5000	Pb	
Bi	209	193	2	3.17570	6.35140	ug/l	2000	Bi	
Th	232	193	3	55.84224	111.68447	ug/l	2000	Th	
U	238	193	3	11.69939	23.39877	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5356116	0.13	7411413	72.3	80	120	Li (IS)	FAILED
Sc (IS)	45	2	181593	5.53	143379	126.7	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3355488	0.47	2392712	140.2	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	398609	3.80	323154	123.3	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2448814	0.29	1861986	131.5	80	120	Ge (IS)	FAILED
In (IS)	115	3	14835074	0.78	12119833	122.4	80	120	In (IS)	FAILED
Ho (IS)	165	2	10699771	6.25	9598706	111.5	80	120	Ho (IS)	
Ho (IS)	165	3	16889673	0.83	13687738	123.4	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6652154	4.32	6085322	109.3	80	120	Ir (IS)	
Ir (IS)	193	3	7985447	0.65	6951639	114.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-19-A**
Data File Name	**087SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:23:58-06:00**
Type	**Sample**
VialNumber	**2509**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	18.90549	37.81098	ug/l	1000	Li	
Be	9	6	3	1.41392	2.82784	ug/l	1000	Be	
B	11	6	3	20.71354	41.42708	ug/l	2000	B	
Na	23	45	2	1522.58864	3045.17728	ug/l	50000	Na	
Mg	24	45	2	26380.68576	52761.37153	ug/l	50000	Mg	
Al	27	45	2	33829.35340	67658.70680	ug/l	100000	Al	
P	31	45	2	1810.00149	3620.00298	ug/l	100000	P	
K	39	45	2	6252.97977	12505.95955	ug/l	100000	K	
Ca	44	45	3	17344.72030	34689.44061	ug/l	100000	Ca	
Ti	47	45	3	1204.53307	2409.06614	ug/l	2000	Ti	
V	51	45	2	115.35844	230.71689	ug/l	2000	V	
Cr	52	45	2	27.45552	54.91104	ug/l	2000	Cr	
Mn	55	72	2	372.28572	744.57144	ug/l	5000	Mn	
Fe	57	72	2	88082.14370	176164.28740	ug/l	100000	Fe	
Co	59	72	2	22.84609	45.69217	ug/l	2000	Co	
Ni	60	72	2	39.53594	79.07188	ug/l	2000	Ni	
Cu	63	72	2	11880.49971	23760.99941	ug/l	2000	Cu	FAILED
Zn	66	72	2	108.39792	216.79584	ug/l	5000	Zn	
As	75	72	2	42.28484	84.56969	ug/l	2000	As	
Se	78	72	2	17.46233	34.92466	ug/l	1000	Se	
Sr	88	72	3	258.17853	516.35706	ug/l	2000	Sr	
Y	89	72	2	19.44722	38.89444	ug/l	200	Y	
Zr	90	72	2	5.90475	11.80951	ug/l	2000	Zr	
Nb	93	72	2	0.27180	0.54360	ug/l	100	Nb	
Mo	95	72	3	19.21051	38.42101	ug/l	1000	Mo	
Ru	101	72	2	-0.00766	-0.01532	ug/l	200	Ru	
Rh	103	72	2	-0.00389	-0.00779	ug/l	200	Rh	
Pd	105	72	2	0.03077	0.06154	ug/l	20	Pd	
Ag	107	115	3	0.36176	0.72352	ug/l	400	Ag	
Cd	111	115	3	0.20832	0.41665	ug/l	2000	Cd	
Sn	118	115	3	9.18730	18.37459	ug/l	2000	Sn	
Sb	121	115	3	1.95210	3.90420	ug/l	1000	Sb	
Te	125	165	2	1.50001	3.00002	ug/l	200	Te	
Cs	133	165	2	4.02699	8.05399	ug/l	2000	Cs	
Ba	137	165	3	282.84351	565.68703	ug/l	5000	Ba	
La	139	165	2	50.71875	101.43751	ug/l	200	La	
Ce	140	165	2	104.51695	209.03389	ug/l	200	Ce	
Pr	141	165	2	12.25176	24.50352	ug/l	200	Pr	
Nd	146	165	2	52.39733	104.79466	ug/l	200	Nd	
Sm	147	165	3	9.59925	19.19850	ug/l	2000	Sm	
Hf	178	165	2	0.19249	0.38499	ug/l	200	Hf	
Ta	181	165	2	0.02996	0.05991	ug/l	200	Ta	
W	182	165	2	2.35142	4.70283	ug/l	2000	W	
Re	185	193	3	0.08304	0.16608	ug/l	200	Re	
Pt	195	193	2	0.00808	0.01616	ug/l	200	Pt	
Au	197	193	3	0.02624	0.05248	ug/l	2000	Au	
Tl	205	193	3	0.83745	1.67491	ug/l	400	Tl	
Pb	208	193	3	16.71397	33.42793	ug/l	5000	Pb	
Bi	209	193	2	4.29189	8.58378	ug/l	2000	Bi	
Th	232	193	3	26.73808	53.47616	ug/l	2000	Th	
U	238	193	3	16.46351	32.92701	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5347402	0.28	7411413	72.2	80	120	Li (IS)	FAILED
Sc (IS)	45	2	177706	1.01	143379	123.9	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	3306006	0.62	2392712	138.2	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	386534	1.10	323154	119.6	80	120	Ge (IS)	
Ge (IS)	72	3	2416717	0.66	1861986	129.8	80	120	Ge (IS)	FAILED
In (IS)	115	3	14693940	0.61	12119833	121.2	80	120	In (IS)	FAILED
Ho (IS)	165	2	10350525	2.62	9598706	107.8	80	120	Ho (IS)	
Ho (IS)	165	3	16542307	1.03	13687738	120.9	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6368934	0.27	6085322	104.7	80	120	Ir (IS)	
Ir (IS)	193	3	7851543	0.87	6951639	112.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**088LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:30:46-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	5.93261	ug/l	5	118.7	80	120	Li	
Be	9	6	3	0.60688	ug/l	0.5	121.4	80	120	Be	FAILED
B	11	6	3	115.25807	ug/l	100	115.3	80	120	B	
Na	23	45	2	98.66496	ug/l	100	98.7	80	120	Na	
Mg	24	45	2	50.64705	ug/l	50	101.3	80	120	Mg	
Al	27	45	2	51.32446	ug/l	50	102.6	80	120	Al	
P	31	45	2	89.29134	ug/l	100	89.3	80	120	P	
K	39	45	2	95.62961	ug/l	100	95.6	80	120	K	
Ca	44	45	3	197.88993	ug/l	200	98.9	80	120	Ca	
Ti	47	45	3	5.27866	ug/l	5	105.6	80	120	Ti	
V	51	45	2	10.18924	ug/l	10	101.9	80	120	V	
Cr	52	45	2	10.21243	ug/l	10	102.1	80	120	Cr	
Mn	55	72	2	3.91565	ug/l	4	97.9	80	120	Mn	
Fe	57	72	2	57.05810	ug/l	50	114.1	80	120	Fe	
Co	59	72	2	2.07934	ug/l	2	104.0	80	120	Co	
Ni	60	72	2	5.55651	ug/l	5	111.1	80	120	Ni	
Cu	63	72	2	4.21916	ug/l	3	140.6	80	120	Cu	FAILED
Zn	66	72	2	20.95072	ug/l	20	104.8	80	120	Zn	
As	75	72	2	10.36105	ug/l	10	103.6	80	120	As	
Se	78	72	2	4.74484	ug/l	5	94.9	80	120	Se	
Sr	88	72	3	5.01596	ug/l	5	100.3	80	120	Sr	
Y	89	72	2	4.78813	ug/l	5	95.8	80	120	Y	
Zr	90	72	2	4.92090	ug/l	5	98.4	80	120	Zr	
Nb	93	72	2	18.03565	ug/l	25	72.1	80	120	Nb	FAILED
Mo	95	72	3	4.72608	ug/l	5	94.5	80	120	Mo	
Ru	101	72	2	10.17825	ug/l	10	101.8	80	120	Ru	
Rh	103	72	2	9.93018	ug/l	10	99.3	80	120	Rh	
Pd	105	72	2	0.55966	ug/l	0.5	111.9	80	120	Pd	
Ag	107	115	3	1.91521	ug/l	2	95.8	80	120	Ag	
Cd	111	115	3	0.51476	ug/l	0.5	103.0	80	120	Cd	
Sn	118	115	3	1.81915	ug/l	2	91.0	80	120	Sn	
Sb	121	115	3	4.59399	ug/l	5	91.9	80	120	Sb	
Te	125	165	2	9.43843	ug/l	10	94.4	80	120	Te	
Cs	133	165	2	0.90371	ug/l	1	90.4	80	120	Cs	
Ba	137	165	3	1.96337	ug/l	2	98.2	80	120	Ba	
La	139	165	2	1.90836	ug/l	2	95.4	80	120	La	
Ce	140	165	2	9.48316	ug/l	10	94.8	80	120	Ce	
Pr	141	165	2	1.88155	ug/l	2	94.1	80	120	Pr	
Nd	146	165	2	1.92539	ug/l	2	96.3	80	120	Nd	
Sm	147	165	3	9.63292	ug/l	10	96.3	80	120	Sm	
Hf	178	165	2	8.75175	ug/l	10	87.5	80	120	Hf	
Ta	181	165	2	7.08876	ug/l	10	70.9	80	120	Ta	FAILED
W	182	165	2	4.71391	ug/l	5	94.3	80	120	W	
Re	185	193	3	9.25183	ug/l	10	92.5	80	120	Re	
Pt	195	193	2	1.02247	ug/l	1	102.2	80	120	Pt	
Au	197	193	3	4.53231	ug/l	5	90.6	80	120	Au	
Tl	205	193	3	1.80883	ug/l	2	90.4	80	120	Tl	
Pb	208	193	3	2.70527	ug/l	3	90.2	80	120	Pb	
Bi	209	193	2	16.75628	ug/l	20	83.8	80	120	Bi	
Th	232	193	3	1.75871	ug/l	2	87.9	80	120	Th	
U	238	193	3	0.88301	ug/l	1	88.3	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5537013	0.65	7411413	74.7	80	120	Li (IS)	FAILED
Sc (IS)	45	2	164535	2.01	143379	114.8	80	120	Sc (IS)	
Sc (IS)	45	3	3005338	0.29	2392712	125.6	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	395367	0.93	323154	122.3	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2440278	0.83	1861986	131.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	15383076	0.82	12119833	126.9	80	120	In (IS)	FAILED
Ho (IS)	165	2	10668754	0.78	9598706	111.1	80	120	Ho (IS)	
Ho (IS)	165	3	16904150	2.12	13687738	123.5	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6894896	0.51	6085322	113.3	80	120	Ir (IS)	
Ir (IS)	193	3	8259341	0.47	6951639	118.8	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**089_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:37:29-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	107.95015	ug/l	100	108.0	90	110	Li	
Be	9	6	3	120.55562	ug/l	100	120.6	90	110	Be	FAILED
B	11	6	3	239.67569	ug/l	200	119.8	90	110	B	FAILED
Na	23	45	2	2427.40252	ug/l	2500	97.1	90	110	Na	
Mg	24	45	2	2383.02868	ug/l	2500	95.3	90	110	Mg	
Al	27	45	2	2174.53707	ug/l	2500	87.0	90	110	Al	FAILED
P	31	45	2	2330.91098	ug/l	2500	93.2	90	110	P	
K	39	45	2	2465.46466	ug/l	2500	98.6	90	110	K	
Ca	44	45	3	2547.72796	ug/l	2500	101.9	90	110	Ca	
Ti	47	45	3	100.81117	ug/l	100	100.8	90	110	Ti	
V	51	45	2	99.76268	ug/l	100	99.8	90	110	V	
Cr	52	45	2	103.73693	ug/l	100	103.7	90	110	Cr	
Mn	55	72	2	90.99771	ug/l	100	91.0	90	110	Mn	
Fe	57	72	2	2326.95569	ug/l	2500	93.1	90	110	Fe	
Co	59	72	2	100.03563	ug/l	100	100.0	90	110	Co	
Ni	60	72	2	101.35509	ug/l	100	101.4	90	110	Ni	
Cu	63	72	2	101.65948	ug/l	100	101.7	90	110	Cu	
Zn	66	72	2	99.74226	ug/l	100	99.7	90	110	Zn	
As	75	72	2	100.58439	ug/l	100	100.6	90	110	As	
Se	78	72	2	49.90947	ug/l	50	99.8	90	110	Se	
Sr	88	72	3	102.21083	ug/l	100	102.2	90	110	Sr	
Y	89	72	2	99.37480	ug/l	100	99.4	90	110	Y	
Zr	90	72	2	100.50046	ug/l	100	100.5	90	110	Zr	
Nb	93	72	2	50.11288	ug/l	50	100.2	90	110	Nb	
Mo	95	72	3	46.04375	ug/l	50	92.1	90	110	Mo	
Ru	101	72	2	97.11088	ug/l	100	97.1	90	110	Ru	
Rh	103	72	2	102.69001	ug/l	100	102.7	90	110	Rh	
Pd	105	72	2	10.55274	ug/l	10	105.5	90	110	Pd	
Ag	107	115	3	18.39720	ug/l	20	92.0	90	110	Ag	
Cd	111	115	3	94.71765	ug/l	100	94.7	90	110	Cd	
Sn	118	115	3	102.31001	ug/l	100	102.3	90	110	Sn	
Sb	121	115	3	51.39533	ug/l	50	102.8	90	110	Sb	
Te	125	165	2	97.49646	ug/l	100	97.5	90	110	Te	
Cs	133	165	2	100.13499	ug/l	100	100.1	90	110	Cs	
Ba	137	165	3	102.19112	ug/l	100	102.2	90	110	Ba	
La	139	165	2	103.73071	ug/l	100	103.7	90	110	La	
Ce	140	165	2	103.70101	ug/l	100	103.7	90	110	Ce	
Pr	141	165	2	101.25991	ug/l	100	101.3	90	110	Pr	
Nd	146	165	2	93.27254	ug/l	100	93.3	90	110	Nd	
Sm	147	165	3	101.98468	ug/l	100	102.0	90	110	Sm	
Hf	178	165	2	99.23211	ug/l	100	99.2	90	110	Hf	
Ta	181	165	2	100.91957	ug/l	100	100.9	90	110	Ta	
W	182	165	2	103.81477	ug/l	100	103.8	90	110	W	
Re	185	193	3	101.49936	ug/l	100	101.5	90	110	Re	
Pt	195	193	2	10.26365	ug/l	10	102.6	90	110	Pt	
Au	197	193	3	99.15364	ug/l	100	99.2	90	110	Au	
Tl	205	193	3	20.58523	ug/l	20	102.9	90	110	Tl	
Pb	208	193	3	99.82334	ug/l	100	99.8	90	110	Pb	
Bi	209	193	2	95.35514	ug/l	100	95.4	90	110	Bi	
Th	232	193	3	96.37182	ug/l	100	96.4	90	110	Th	
U	238	193	3	95.67851	ug/l	100	95.7	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5528683	0.97	7411413	74.6	80	120	Li (IS)	FAILED
Sc (IS)	45	2	163947	1.56	143379	114.3	80	120	Sc (IS)	
Sc (IS)	45	3	2978609	0.25	2392712	124.5	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	406471	0.91	323154	125.8	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	2482411	0.61	1861986	133.3	80	120	Ge (IS)	FAILED
In (IS)	115	3	15030986	1.43	12119833	124.0	80	120	In (IS)	FAILED
Ho (IS)	165	2	10579900	0.75	9598706	110.2	80	120	Ho (IS)	
Ho (IS)	165	3	16848324	0.40	13687738	123.1	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6789579	0.75	6085322	111.6	80	120	Ir (IS)	
Ir (IS)	193	3	8188338	0.70	6951639	117.8	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**090_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:44:16-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.73212	ug/l	1.388	Li	
Be	9	6	3	0.01109	ug/l	0.7	Be	
B	11	6	3	3.13180	ug/l	20	B	
Na	23	45	2	0.73286	ug/l	30	Na	
Mg	24	45	2	1.10348	ug/l	11.18	Mg	
Al	27	45	2	0.85333	ug/l	25.8	Al	
P	31	45	2	1.07577	ug/l	16.46	P	
K	39	45	2	-1.17019	ug/l	83.2	K	
Ca	44	45	3	-5.98144	ug/l	136.2	Ca	
Ti	47	45	3	0.06597	ug/l	4.2	Ti	
V	51	45	2	0.00563	ug/l	4.74	V	
Cr	52	45	2	0.00299	ug/l	6.52	Cr	
Mn	55	72	2	0.04741	ug/l	0.49	Mn	
Fe	57	72	2	1.42459	ug/l	40.7	Fe	
Co	59	72	2	0.03024	ug/l	0.434	Co	
Ni	60	72	2	0.01434	ug/l	0.8	Ni	
Cu	63	72	2	-0.02603	ug/l	0.902	Cu	
Zn	66	72	2	0.08360	ug/l	16.58	Zn	
As	75	72	2	-0.01063	ug/l	2.36	As	
Se	78	72	2	0.34543	ug/l	3.18	Se	
Sr	88	72	3	0.01254	ug/l	2	Sr	
Y	89	72	2	0.02840	ug/l	0.424	Y	
Zr	90	72	2	0.02520	ug/l	0.496	Zr	
Nb	93	72	2	0.27963	ug/l	4.62	Nb	
Mo	95	72	3	-0.02373	ug/l	2	Mo	
Ru	101	72	2	0.03164	ug/l	2	Ru	
Rh	103	72	2	0.03114	ug/l	1.634	Rh	
Pd	105	72	2	-0.00323	ug/l	0.08	Pd	
Ag	107	115	3	0.00328	ug/l	1.54	Ag	
Cd	111	115	3	0.00670	ug/l	0.4	Cd	
Sn	118	115	3	-0.01438	ug/l	2	Sn	
Sb	121	115	3	-0.01517	ug/l	3.34	Sb	
Te	125	165	2	0.11029	ug/l	1.072	Te	
Cs	133	165	2	0.02519	ug/l	0.106	Cs	
Ba	137	165	3	0.02606	ug/l	0.446	Ba	
La	139	165	2	0.02931	ug/l	0.102	La	
Ce	140	165	2	0.03021	ug/l	1.772	Ce	
Pr	141	165	2	0.02986	ug/l	0.084	Pr	
Nd	146	165	2	0.03012	ug/l	0.208	Nd	
Sm	147	165	3	0.01488	ug/l	0.652	Sm	
Hf	178	165	2	0.04013	ug/l	2.26	Hf	
Ta	181	165	2	0.03530	ug/l	1.46	Ta	
W	182	165	2	0.33408	ug/l	4	W	
Re	185	193	3	0.00903	ug/l	0.05	Re	
Pt	195	193	2	0.00345	ug/l	0.12	Pt	
Au	197	193	3	0.12793	ug/l	1	Au	
Tl	205	193	3	-0.01213	ug/l	1.1	Tl	
Pb	208	193	3	0.00350	ug/l	0.346	Pb	
Bi	209	193	2	0.01657	ug/l	1.464	Bi	
Th	232	193	3	0.02471	ug/l	1.104	Th	
U	238	193	3	0.01350	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5609410	2.33	7411413	75.7	80	120	Li (IS)	FAILED
Sc (IS)	45	2	163139	0.50	143379	113.8	80	120	Sc (IS)	
Sc (IS)	45	3	2944903	0.85	2392712	123.1	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	384199	0.35	323154	118.9	80	120	Ge (IS)	
Ge (IS)	72	3	2399787	0.57	1861986	128.9	80	120	Ge (IS)	FAILED
In (IS)	115	3	15120816	0.78	12119833	124.8	80	120	In (IS)	FAILED
Ho (IS)	165	2	10466878	0.45	9598706	109.0	80	120	Ho (IS)	
Ho (IS)	165	3	16694513	0.87	13687738	122.0	80	120	Ho (IS)	FAILED
Ir (IS)	193	2	6871129	0.37	6085322	112.9	80	120	Ir (IS)	
Ir (IS)	193	3	8251199	1.63	6951639	118.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Blank Sample

Sample Name	**RINSE**
Data File Name	**091BLNK.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:51:00-06:00**
Type	**6-Blank**
VialNumber	**1**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**003CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	QC Flag
Li	7	6	3	0.89	ug/l	5	
Be	9	6	3	0.16	ug/l	0.5	
B	11	6	3	2.92	ug/l	50	
Na	23	45	2	54.24	ug/l	50	FAILED
Mg	24	45	2	29.98	ug/l	50	
Al	27	45	2	26.87	ug/l	30	
P	31	45	2	9.80	ug/l	50	
K	39	45	2	12.77	ug/l	100	
Ca	44	45	3	62.72	ug/l	100	
Ti	47	45	3	1.11	ug/l	5	
V	51	45	2	0.62	ug/l	10	
Cr	52	45	2	0.49	ug/l	10	
Mn	55	72	2	0.86	ug/l	2	
Fe	57	72	2	36.95	ug/l	50	
Co	59	72	2	0.28	ug/l	2	
Ni	60	72	2	0.38	ug/l	5	
Cu	63	72	2	2.51	ug/l	1	FAILED
Zn	66	72	2	1.20	ug/l	10	
As	75	72	2	0.34	ug/l	10	
Se	78	72	2	0.52	ug/l	5	
Sr	88	72	3	1.50	ug/l	5	
Y	89	72	2	0.10	ug/l	5	
Zr	90	72	2	0.32	ug/l	5	
Nb	93	72	2	0.35	ug/l	25	
Mo	95	72	3	1.45	ug/l	5	
Ru	101	72	2	0.09	ug/l	10	
Rh	103	72	2	0.08	ug/l	10	
Pd	105	72	2	0.01	ug/l	0.5	
Ag	107	115	3	0.07	ug/l	2	
Cd	111	115	3	0.27	ug/l	0.5	
Sn	118	115	3	0.64	ug/l	2	
Sb	121	115	3	0.13	ug/l	5	
Te	125	165	2	0.16	ug/l	10	
Cs	133	165	2	0.07	ug/l	0.1	
Ba	137	165	3	0.79	ug/l	2	
La	139	165	2	0.12	ug/l	2	
Ce	140	165	2	0.18	ug/l	10	
Pr	141	165	2	0.09	ug/l	2	
Nd	146	165	2	0.12	ug/l	2	
Sm	147	165	3	0.29	ug/l	10	
Hf	178	165	2	0.15	ug/l	10	
Ta	181	165	2	0.24	ug/l	10	
W	182	165	2	1.06	ug/l	5	
Re	185	193	3	0.09	ug/l	10	
Pt	195	193	2	0.01	ug/l	1	
Au	197	193	3	0.20	ug/l	5	
Tl	205	193	3	0.12	ug/l	2	
Pb	208	193	3	0.37	ug/l	3	
Bi	209	193	2	0.26	ug/l	20	
Th	232	193	3	0.36	ug/l	2	
U	238	193	3	0.27	ug/l	1	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	QC Flag
Li (IS)	6	3	4971696	1.23	7411413	67.1	80	120	FAILED
Sc (IS)	45	2	147436	0.27	143379	102.8	80	120	
Sc (IS)	45	3	2797831	0.30	2392712	116.9	80	120	
Ge (IS)	72	2	381234	0.28	323154	118.0	80	120	
Ge (IS)	72	3	2447708	0.84	1861986	131.5	80	120	FAILED
In (IS)	115	3	14717549	1.32	12119833	121.4	80	120	FAILED
Ho (IS)	165	2	10105704	0.30	9598706	105.3	80	120	
Ho (IS)	165	3	17023739	0.92	13687738	124.4	80	120	FAILED
Ir (IS)	193	2	6603617	0.68	6085322	108.5	80	120	
Ir (IS)	193	3	8225781	0.61	6951639	118.3	80	120	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Calibration Blank Report

Sample Name	**ICIS 1843378**
Data File Name	**092CALB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T01:57:45-06:00**
Type	**CalBlk**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**

QC Analyte Table

Element	m/z	ISTD	Tune Step	CPS	%RSD
Li	7	6	3	322233	1.44
Be	9	6	3	74	5.17
B	11	6	3	12882	4.26
Na	23	45	2	15929	2.49
Mg	24	45	2	520	22.12
Al	27	45	2	350	14.09
P	31	45	2	77	42.82
K	39	45	2	34206	0.88
Ca	44	45	3	24056	1.49
Ti	47	45	3	502	3.86
V	51	45	2	1391	7.45
Cr	52	45	2	1087	4.52
Mn	55	72	2	386	20.43
Fe	57	72	2	598	2.75
Co	59	72	2	538	2.50
Ni	60	72	2	123	5.41
Cu	63	72	2	6599	3.93
Zn	66	72	2	637	4.19
As	75	72	2	131	8.93
Se	78	72	2	82	13.03
Sr	88	72	3	1633	10.69
Y	89	72	2	203	7.51
Zr	90	72	2	292	15.49
Nb	93	72	2	4007	6.00
Mo	95	72	3	1355	1.58
Ru	101	72	2	113	2.94
Rh	103	72	2	811	9.37
Pd	105	72	2	19	50.96
Ag	107	115	3	548	3.35
Cd	111	115	3	72	2.69
Sn	118	115	3	3262	4.67
Sb	121	115	3	696	2.26
Te	125	165	2	7	132.33
Cs	133	165	2	310	3.23
Ba	137	165	3	474	13.00
La	139	165	2	318	8.92
Ce	140	165	2	397	14.14
Pr	141	165	2	360	18.79
Nd	146	165	2	48	56.40
Sm	147	165	3	119	38.17
Hf	178	165	2	230	7.25
Ta	181	165	2	14079	1.45
W	182	165	2	3834	8.74
Re	185	193	3	234	7.16
Pt	195	193	2	262	14.73
Au	197	193	3	1219	6.30
Tl	205	193	3	993	7.85
(Pb)	206	193	3	2064	5.01
(Pb)	207	193	3	2368	6.24
Pb	208	193	3	9076	3.14
Bi	209	193	2	3898	2.57
Th	232	193	3	1291	1.22
U	238	193	3	507	5.62

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD
Li (IS)	6	3	5676390	1.01
Sc (IS)	45	2	157398	0.45
Sc (IS)	45	3	2954313	1.65
Ge (IS)	72	2	379042	0.99
Ge (IS)	72	3	2413999	1.16
In (IS)	115	3	15281059	1.67
Ho (IS)	165	2	10495856	1.03
Ho (IS)	165	3	16807844	1.81
Ir (IS)	193	2	6895257	0.40
Ir (IS)	193	3	8354862	1.44

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Calibration Standard Report

Sample Name	**IC 1847444**
Data File Name	**093CALS.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:04:30-06:00**
Type	**CalStd**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**

QC Analyte Table

Element	m/z	ISTD	Tune Step	CPS	%RSD
Li	7	6	3	500697	1.19
Be	9	6	3	5711	2.54
B	11	6	3	755931	1.76
Na	23	45	2	169142	0.58
Mg	24	45	2	41452	1.64
Al	27	45	2	17999	0.82
P	31	45	2	2334	7.17
K	39	45	2	119860	1.41
Ca	44	45	3	334128	0.92
Ti	47	45	3	22587	0.61
V	51	45	2	93249	0.94
Cr	52	45	2	112670	0.24
Mn	55	72	2	28412	1.39
Fe	57	72	2	12665	1.33
Co	59	72	2	34721	1.77
Ni	60	72	2	22930	1.08
Cu	63	72	2	42621	1.66
Zn	66	72	2	46367	2.31
As	75	72	2	16207	2.04
Se	78	72	2	629	9.03
Sr	88	72	3	396021	0.33
Y	89	72	2	100188	1.14
Zr	90	72	2	76504	1.07
Nb	93	72	2	562537	2.57
Mo	95	72	3	76239	0.86
Ru	101	72	2	84896	1.77
Rh	103	72	2	478817	1.17
Pd	105	72	2	4791	7.54
Ag	107	115	3	76321	0.60
Cd	111	115	3	4320	3.01
Sn	118	115	3	47178	1.40
Sb	121	115	3	143076	1.03
Te	125	165	2	2629	2.18
Cs	133	165	2	20878	2.05
Ba	137	165	3	22538	1.65
La	139	165	2	87008	0.31
Ce	140	165	2	492644	0.13
Pr	141	165	2	103976	0.95
Nd	146	165	2	19330	2.62
Sm	147	165	3	166826	1.46
Hf	178	165	2	192306	0.57
Ta	181	165	2	645793	2.29
W	182	165	2	100822	1.43
Re	185	193	3	346515	0.83
Pt	195	193	2	13641	2.52
Au	197	193	3	131672	1.20
Tl	205	193	3	112176	1.86
(Pb)	206	193	3	60090	1.18
(Pb)	207	193	3	53564	1.39
Pb	208	193	3	241490	0.84
Bi	209	193	2	936211	0.71
Th	232	193	3	173767	0.68
U	238	193	3	84849	1.07

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	QC Flag
Li (IS)	6	3	5813170	0.54	5676390	102.4	80	120	
Sc (IS)	45	2	172543	10.98	157398	109.6	80	120	
Sc (IS)	45	3	2946969	0.72	2954313	99.8	80	120	
Ge (IS)	72	2	405218	7.84	379042	106.9	80	120	
Ge (IS)	72	3	2435204	1.41	2413999	100.9	80	120	
In (IS)	115	3	15252868	0.59	15281059	99.8	80	120	
Ho (IS)	165	2	11216208	10.82	10495856	106.9	80	120	
Ho (IS)	165	3	16850692	0.17	16807844	100.3	80	120	
Ir (IS)	193	2	7294649	8.73	6895257	105.8	80	120	
Ir (IS)	193	3	8356917	0.60	8354862	100.0	80	120	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Calibration Standard Report

Sample Name	**IC 1847445**
Data File Name	**094CALS.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:11:13-06:00**
Type	**CalStd**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**

QC Analyte Table

Element	m/z	ISTD	Tune Step	CPS	%RSD
Li	7	6	3	3700506	1.36
Be	9	6	3	1050317	0.11
B	11	6	3	1532544	0.63
Na	23	45	2	3881616	0.60
Mg	24	45	2	2007933	0.51
Al	27	45	2	821768	0.77
P	31	45	2	58773	0.82
K	39	45	2	2224220	0.27
Ca	44	45	3	3952746	0.55
Ti	47	45	3	440969	0.04
V	51	45	2	911176	1.18
Cr	52	45	2	1153686	0.74
Mn	55	72	2	672564	0.36
Fe	57	72	2	592030	1.80
Co	59	72	2	1744553	1.11
Ni	60	72	2	423702	1.20
Cu	63	72	2	1220821	0.29
Zn	66	72	2	228409	1.12
As	75	72	2	162638	1.07
Se	78	72	2	6245	6.22
Sr	88	72	3	8188416	0.51
Y	89	72	2	2178979	0.95
Zr	90	72	2	1653825	1.75
Nb	93	72	2	1628231	1.66
Mo	95	72	3	731389	0.45
Ru	101	72	2	860167	0.49
Rh	103	72	2	5242287	0.55
Pd	105	72	2	97795	0.61
Ag	107	115	3	714991	0.99
Cd	111	115	3	771292	0.68
Sn	118	115	3	2336079	1.41
Sb	121	115	3	1516708	0.75
Te	125	165	2	28819	1.71
Cs	133	165	2	2272865	0.85
Ba	137	165	3	1163585	0.37
La	139	165	2	4775107	0.75
Ce	140	165	2	5488447	0.42
Pr	141	165	2	5660980	0.35
Nd	146	165	2	963497	1.67
Sm	147	165	3	1771762	0.71
Hf	178	165	2	2164833	0.90
Ta	181	165	2	8712042	0.86
W	182	165	2	2183132	1.33
Re	185	193	3	3757233	1.34
Pt	195	193	2	134544	1.56
Au	197	193	3	2862513	0.34
Tl	205	193	3	1208469	1.12
(Pb)	206	193	3	2085456	0.35
(Pb)	207	193	3	1836852	1.55
Pb	208	193	3	8321762	0.56
Bi	209	193	2	5354705	0.13
Th	232	193	3	9593360	0.81
U	238	193	3	9097498	0.43

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	QC Flag
Li (IS)	6	3	5614341	0.72	5676390	98.9	80	120	
Sc (IS)	45	2	160748	1.00	157398	102.1	80	120	
Sc (IS)	45	3	2940992	1.20	2954313	99.5	80	120	
Ge (IS)	72	2	404657	0.93	379042	106.8	80	120	
Ge (IS)	72	3	2443826	1.40	2413999	101.2	80	120	
In (IS)	115	3	14915128	0.53	15281059	97.6	80	120	
Ho (IS)	165	2	10515255	0.60	10495856	100.2	80	120	
Ho (IS)	165	3	16904568	1.31	16807844	100.6	80	120	
Ir (IS)	193	2	6812385	0.67	6895257	98.8	80	120	
Ir (IS)	193	3	8179386	0.79	8354862	97.9	80	120	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Calibration Standard Report

Sample Name	**IC 1847446**
Data File Name	**095CALS.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:17:54-06:00**
Type	**CalStd**
VialNumber	**1103**
Dilution	**1**
Comment	
Operator	**LP 7700**

QC Analyte Table

Element	m/z	ISTD	Tune Step	CPS	%RSD
Li	7	6	3	7022389	0.95
Be	9	6	3	2070038	0.54
B	11	6	3	3051831	0.49
Na	23	45	2	7698108	1.45
Mg	24	45	2	3965895	1.64
Al	27	45	2	1680916	0.85
P	31	45	2	116060	1.27
K	39	45	2	4333088	0.16
Ca	44	45	3	7639998	0.34
Ti	47	45	3	861981	0.18
V	51	45	2	1918074	1.50
Cr	52	45	2	2313693	1.74
Mn	55	72	2	1442674	1.23
Fe	57	72	2	1231048	1.59
Co	59	72	2	3458141	1.08
Ni	60	72	2	833152	0.58
Cu	63	72	2	2404998	0.97
Zn	66	72	2	449294	0.60
As	75	72	2	318124	0.67
Se	78	72	2	12144	2.23
Sr	88	72	3	16207987	0.41
Y	89	72	2	4251827	0.71
Zr	90	72	2	3239438	0.16
Nb	93	72	2	3221006	0.70
Mo	95	72	3	1561255	0.87
Ru	101	72	2	1803908	0.35
Rh	103	72	2	10310336	0.57
Pd	105	72	2	190732	0.84
Ag	107	115	3	1583631	0.47
Cd	111	115	3	1657850	0.59
Sn	118	115	3	4657820	1.27
Sb	121	115	3	3007002	0.40
Te	125	165	2	56255	1.78
Cs	133	165	2	4501546	0.43
Ba	137	165	3	2417499	0.72
La	139	165	2	9535937	0.48
Ce	140	165	2	10882823	0.74
Pr	141	165	2	11272132	0.26
Nd	146	165	2	2111832	0.02
Sm	147	165	3	3567605	0.40
Hf	178	165	2	4383358	1.16
Ta	181	165	2	17516049	1.13
W	182	165	2	4364608	0.82
Re	185	193	3	7486781	0.29
Pt	195	193	2	269589	1.20
Au	197	193	3	5678348	0.47
Tl	205	193	3	2466449	1.09
(Pb)	206	193	3	4222693	0.70
(Pb)	207	193	3	3671448	0.85
Pb	208	193	3	16815077	0.54
Bi	209	193	2	10651325	0.37
Th	232	193	3	19475614	0.30
U	238	193	3	18302290	1.81

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	QC Flag
Li (IS)	6	3	5575210	0.14	5676390	98.2	80	120	
Sc (IS)	45	2	160282	1.45	157398	101.8	80	120	
Sc (IS)	45	3	2883790	0.51	2954313	97.6	80	120	
Ge (IS)	72	2	406193	1.00	379042	107.2	80	120	
Ge (IS)	72	3	2433839	0.50	2413999	100.8	80	120	
In (IS)	115	3	14613897	0.73	15281059	95.6	80	120	
Ho (IS)	165	2	10580541	0.12	10495856	100.8	80	120	
Ho (IS)	165	3	16911748	0.52	16807844	100.6	80	120	
Ir (IS)	193	2	6751654	0.65	6895257	97.9	80	120	
Ir (IS)	193	3	8196649	0.95	8354862	98.1	80	120	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**ICV 1848645**
Data File Name	**096_ICV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:24:38-06:00**
Type	**ICV**
VialNumber	**1104**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	102.29589	ug/l	100	102.3	90	110	Li	
Be	9	6	3	102.45242	ug/l	100	102.5	90	110	Be	
B	11	6	3	205.01698	ug/l	200	102.5	90	110	B	
Na	23	45	2	997.06210	ug/l	1000	99.7	90	110	Na	
Mg	24	45	2	983.58758	ug/l	1000	98.4	90	110	Mg	
Al	27	45	2	977.88981	ug/l	1000	97.8	90	110	Al	
P	31	45	2	993.16646	ug/l	1000	99.3	90	110	P	
K	39	45	2	968.22086	ug/l	1000	96.8	90	110	K	
Ca	44	45	3	1040.31304	ug/l	1000	104.0	90	110	Ca	
Ti	47	45	3	100.81849	ug/l	100	100.8	90	110	Ti	
V	51	45	2	94.91147	ug/l	100	94.9	90	110	V	
Cr	52	45	2	100.35998	ug/l	100	100.4	90	110	Cr	
Mn	55	72	2	96.48975	ug/l	100	96.5	90	110	Mn	
Fe	57	72	2	957.53892	ug/l	1000	95.8	90	110	Fe	
Co	59	72	2	102.40955	ug/l	100	102.4	90	110	Co	
Ni	60	72	2	105.15195	ug/l	100	105.2	90	110	Ni	
Cu	63	72	2	103.81127	ug/l	100	103.8	90	110	Cu	
Zn	66	72	2	103.76854	ug/l	100	103.8	90	110	Zn	
As	75	72	2	103.78980	ug/l	100	103.8	90	110	As	
Se	78	72	2	52.25163	ug/l	50	104.5	90	110	Se	
Sr	88	72	3	103.83604	ug/l	100	103.8	90	110	Sr	
Y	89	72	2	104.69566	ug/l	100	104.7	90	110	Y	
Zr	90	72	2	101.47374	ug/l	100	101.5	90	110	Zr	
Nb	93	72	2	44.49799	ug/l	50	89.0	90	110	Nb	FAILED
Mo	95	72	3	48.58419	ug/l	50	97.2	90	110	Mo	
Ru	101	72	2	96.30879	ug/l	100	96.3	90	110	Ru	
Rh	103	72	2	107.68100	ug/l	100	107.7	90	110	Rh	
Pd	105	72	2	10.59291	ug/l	10	105.9	90	110	Pd	
Ag	107	115	3	18.06559	ug/l	20	90.3	90	110	Ag	
Cd	111	115	3	95.81690	ug/l	100	95.8	90	110	Cd	
Sn	118	115	3	98.43218	ug/l	100	98.4	90	110	Sn	
Sb	121	115	3	50.11525	ug/l	50	100.2	90	110	Sb	
Te	125	165	2	100.30985	ug/l	100	100.3	90	110	Te	
Cs	133	165	2	102.38887	ug/l	100	102.4	90	110	Cs	
Ba	137	165	3	98.23739	ug/l	100	98.2	90	110	Ba	
La	139	165	2	100.24295	ug/l	100	100.2	90	110	La	
Ce	140	165	2	102.46479	ug/l	100	102.5	90	110	Ce	
Pr	141	165	2	101.25191	ug/l	100	101.3	90	110	Pr	
Nd	146	165	2	96.32261	ug/l	100	96.3	90	110	Nd	
Sm	147	165	3	102.40765	ug/l	100	102.4	90	110	Sm	
Hf	178	165	2	100.98819	ug/l	100	101.0	90	110	Hf	
Ta	181	165	2	65.28835	ug/l	100	65.3	90	110	Ta	FAILED
W	182	165	2	98.38060	ug/l	100	98.4	90	110	W	
Re	185	193	3	103.41517	ug/l	100	103.4	90	110	Re	
Pt	195	193	2	10.06664	ug/l	10	100.7	90	110	Pt	
Au	197	193	3	102.49384	ug/l	100	102.5	90	110	Au	
Tl	205	193	3	20.47048	ug/l	20	102.4	90	110	Tl	
Pb	208	193	3	100.91370	ug/l	100	100.9	90	110	Pb	
Bi	209	193	2	102.88696	ug/l	100	102.9	90	110	Bi	
Th	232	193	3	99.53569	ug/l	100	99.5	90	110	Th	
U	238	193	3	100.89634	ug/l	100	100.9	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5614601	1.44	5676390	98.9	80	120	Li (IS)	
Sc (IS)	45	2	157292	1.61	157398	99.9	80	120	Sc (IS)	
Sc (IS)	45	3	2877054	0.34	2954313	97.4	80	120	Sc (IS)	
Ge (IS)	72	2	399700	0.29	379042	105.4	80	120	Ge (IS)	
Ge (IS)	72	3	2384847	0.79	2413999	98.8	80	120	Ge (IS)	
In (IS)	115	3	14914451	0.52	15281059	97.6	80	120	In (IS)	
Ho (IS)	165	2	10472144	0.42	10495856	99.8	80	120	Ho (IS)	
Ho (IS)	165	3	16788797	0.75	16807844	99.9	80	120	Ho (IS)	
Ir (IS)	193	2	6866029	0.72	6895257	99.6	80	120	Ir (IS)	
Ir (IS)	193	3	8302727	1.29	8354862	99.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Initial Calibration Blank (ICB) - US EPA Method 6020

Sample Name	**ICB 1843378**
Data File Name	**097_ICB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:31:23-06:00**
Type	**ICB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	-0.02642	ug/l	1.388	Li	
Be	9	6	3	0.02372	ug/l	0.7	Be	
B	11	6	3	3.87347	ug/l	20	B	
Na	23	45	2	0.18111	ug/l	30	Na	
Mg	24	45	2	0.32163	ug/l	11.18	Mg	
Al	27	45	2	0.41890	ug/l	25.8	Al	
P	31	45	2	0.49889	ug/l	16.46	P	
K	39	45	2	-0.14328	ug/l	83.2	K	
Ca	44	45	3	0.78352	ug/l	136.2	Ca	
Ti	47	45	3	0.01873	ug/l	4.2	Ti	
V	51	45	2	0.03440	ug/l	4.74	V	
Cr	52	45	2	0.03892	ug/l	6.52	Cr	
Mn	55	72	2	0.04938	ug/l	0.49	Mn	
Fe	57	72	2	0.61228	ug/l	40.7	Fe	
Co	59	72	2	0.04435	ug/l	0.434	Co	
Ni	60	72	2	0.04554	ug/l	0.8	Ni	
Cu	63	72	2	-0.14568	ug/l	0.902	Cu	
Zn	66	72	2	0.07352	ug/l	16.58	Zn	
As	75	72	2	0.06658	ug/l	2.36	As	
Se	78	72	2	0.03765	ug/l	3.18	Se	
Sr	88	72	3	0.01569	ug/l	2	Sr	
Y	89	72	2	0.04416	ug/l	0.424	Y	
Zr	90	72	2	0.04105	ug/l	0.496	Zr	
Nb	93	72	2	0.54242	ug/l	4.62	Nb	
Mo	95	72	3	0.04881	ug/l	2	Mo	
Ru	101	72	2	0.04053	ug/l	2	Ru	
Rh	103	72	2	0.04624	ug/l	1.634	Rh	
Pd	105	72	2	0.00970	ug/l	0.08	Pd	
Ag	107	115	3	0.00136	ug/l	1.54	Ag	
Cd	111	115	3	0.02226	ug/l	0.4	Cd	
Sn	118	115	3	0.04415	ug/l	2	Sn	
Sb	121	115	3	0.02358	ug/l	3.34	Sb	
Te	125	165	2	0.07510	ug/l	1.072	Te	
Cs	133	165	2	0.03635	ug/l	0.106	Cs	
Ba	137	165	3	0.01329	ug/l	0.446	Ba	
La	139	165	2	0.03760	ug/l	0.102	La	
Ce	140	165	2	0.03953	ug/l	1.772	Ce	
Pr	141	165	2	0.03795	ug/l	0.084	Pr	
Nd	146	165	2	0.04112	ug/l	0.208	Nd	
Sm	147	165	3	0.01160	ug/l	0.652	Sm	
Hf	178	165	2	0.05002	ug/l	2.26	Hf	
Ta	181	165	2	0.08135	ug/l	1.46	Ta	
W	182	165	2	0.49454	ug/l	4	W	
Re	185	193	3	0.00994	ug/l	0.05	Re	
Pt	195	193	2	0.00053	ug/l	0.12	Pt	
Au	197	193	3	0.22716	ug/l	1	Au	
Tl	205	193	3	0.03867	ug/l	1.1	Tl	
Pb	208	193	3	0.01094	ug/l	0.346	Pb	
Bi	209	193	2	0.08338	ug/l	1.464	Bi	
Th	232	193	3	0.04316	ug/l	1.104	Th	
U	238	193	3	0.01572	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5690474	0.03	5676390	100.2	80	120	Li (IS)	
Sc (IS)	45	2	157045	0.86	157398	99.8	80	120	Sc (IS)	
Sc (IS)	45	3	2841950	0.69	2954313	96.2	80	120	Sc (IS)	
Ge (IS)	72	2	374726	0.70	379042	98.9	80	120	Ge (IS)	
Ge (IS)	72	3	2354929	1.08	2413999	97.6	80	120	Ge (IS)	
In (IS)	115	3	15042107	0.32	15281059	98.4	80	120	In (IS)	
Ho (IS)	165	2	10488066	0.51	10495856	99.9	80	120	Ho (IS)	
Ho (IS)	165	3	16751140	2.00	16807844	99.7	80	120	Ho (IS)	
Ir (IS)	193	2	6933824	0.85	6895257	100.6	80	120	Ir (IS)	
Ir (IS)	193	3	8282895	1.13	8354862	99.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CRI 1847444**
Data File Name	**098LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:38:08-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	4.80427	ug/l	5	96.1	80	120	Li	
Be	9	6	3	0.53481	ug/l	0.5	107.0	80	120	Be	
B	11	6	3	95.48671	ug/l	100	95.5	80	120	B	
Na	23	45	2	101.81340	ug/l	100	101.8	80	120	Na	
Mg	24	45	2	51.69900	ug/l	50	103.4	80	120	Mg	
Al	27	45	2	54.46154	ug/l	50	108.9	80	120	Al	
P	31	45	2	97.81192	ug/l	100	97.8	80	120	P	
K	39	45	2	99.52687	ug/l	100	99.5	80	120	K	
Ca	44	45	3	198.47936	ug/l	200	99.2	80	120	Ca	
Ti	47	45	3	5.06971	ug/l	5	101.4	80	120	Ti	
V	51	45	2	9.75804	ug/l	10	97.6	80	120	V	
Cr	52	45	2	9.78369	ug/l	10	97.8	80	120	Cr	
Mn	55	72	2	4.12211	ug/l	4	103.1	80	120	Mn	
Fe	57	72	2	53.11752	ug/l	50	106.2	80	120	Fe	
Co	59	72	2	2.10720	ug/l	2	105.4	80	120	Co	
Ni	60	72	2	5.61225	ug/l	5	112.2	80	120	Ni	
Cu	63	72	2	3.03424	ug/l	3	101.1	80	120	Cu	
Zn	66	72	2	21.55064	ug/l	20	107.8	80	120	Zn	
As	75	72	2	10.72101	ug/l	10	107.2	80	120	As	
Se	78	72	2	5.43485	ug/l	5	108.7	80	120	Se	
Sr	88	72	3	4.90466	ug/l	5	98.1	80	120	Sr	
Y	89	72	2	4.89442	ug/l	5	97.9	80	120	Y	
Zr	90	72	2	5.08824	ug/l	5	101.8	80	120	Zr	
Nb	93	72	2	19.37618	ug/l	25	77.5	80	120	Nb	FAILED
Mo	95	72	3	4.80706	ug/l	5	96.1	80	120	Mo	
Ru	101	72	2	10.07943	ug/l	10	100.8	80	120	Ru	
Rh	103	72	2	9.83862	ug/l	10	98.4	80	120	Rh	
Pd	105	72	2	0.54995	ug/l	0.5	110.0	80	120	Pd	
Ag	107	115	3	1.90250	ug/l	2	95.1	80	120	Ag	
Cd	111	115	3	0.52580	ug/l	0.5	105.2	80	120	Cd	
Sn	118	115	3	1.83975	ug/l	2	92.0	80	120	Sn	
Sb	121	115	3	4.56004	ug/l	5	91.2	80	120	Sb	
Te	125	165	2	9.98059	ug/l	10	99.8	80	120	Te	
Cs	133	165	2	0.96380	ug/l	1	96.4	80	120	Cs	
Ba	137	165	3	1.86896	ug/l	2	93.4	80	120	Ba	
La	139	165	2	1.89161	ug/l	2	94.6	80	120	La	
Ce	140	165	2	9.33244	ug/l	10	93.3	80	120	Ce	
Pr	141	165	2	1.90672	ug/l	2	95.3	80	120	Pr	
Nd	146	165	2	1.91472	ug/l	2	95.7	80	120	Nd	
Sm	147	165	3	9.45686	ug/l	10	94.6	80	120	Sm	
Hf	178	165	2	9.20072	ug/l	10	92.0	80	120	Hf	
Ta	181	165	2	7.47400	ug/l	10	74.7	80	120	Ta	FAILED
W	182	165	2	4.74966	ug/l	5	95.0	80	120	W	
Re	185	193	3	9.19729	ug/l	10	92.0	80	120	Re	
Pt	195	193	2	0.98399	ug/l	1	98.4	80	120	Pt	
Au	197	193	3	4.62412	ug/l	5	92.5	80	120	Au	
Tl	205	193	3	1.81758	ug/l	2	90.9	80	120	Tl	
Pb	208	193	3	2.76143	ug/l	3	92.0	80	120	Pb	
Bi	209	193	2	18.20605	ug/l	20	91.0	80	120	Bi	
Th	232	193	3	1.83893	ug/l	2	91.9	80	120	Th	
U	238	193	3	0.93014	ug/l	1	93.0	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5820225	1.27	5676390	102.5	80	120	Li (IS)	
Sc (IS)	45	2	159386	12.09	157398	101.3	80	120	Sc (IS)	
Sc (IS)	45	3	2928287	1.25	2954313	99.1	80	120	Sc (IS)	
Ge (IS)	72	2	383726	8.23	379042	101.2	80	120	Ge (IS)	
Ge (IS)	72	3	2412332	1.49	2413999	99.9	80	120	Ge (IS)	
In (IS)	115	3	15186894	0.92	15281059	99.4	80	120	In (IS)	
Ho (IS)	165	2	10466980	11.37	10495856	99.7	80	120	Ho (IS)	
Ho (IS)	165	3	16877694	0.24	16807844	100.4	80	120	Ho (IS)	
Ir (IS)	193	2	6862362	10.69	6895257	99.5	80	120	Ir (IS)	
Ir (IS)	193	3	8354707	0.63	8354862	100.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Interference Check Sample A (ICS-A) - US EPA Method 6020

Sample Name	**ICSA 1845716**
Data File Name	**099ICSA.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:44:50-06:00**
Type	**ICSA**
VialNumber	**1105**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.25831	ug/l	1.388	Li	
Be	9	6	3	0.00401	ug/l	0.7	Be	
B	11	6	3	2.66825	ug/l	20	B	
Na	23	45	2	102960.14045	ug/l	120000	Na	
Mg	24	45	2	102041.11074	ug/l	120000	Mg	
Al	27	45	2	104487.24597	ug/l	120000	Al	
P	31	45	2	111001.91085	ug/l	120000	P	
K	39	45	2	101248.97878	ug/l	120000	K	
Ca	44	45	3	97238.74733	ug/l	120000	Ca	
Ti	47	45	3	2119.47609	ug/l	2400	Ti	
V	51	45	2	0.24725	ug/l	4.74	V	
Cr	52	45	2	1.30184	ug/l	6.52	Cr	
Mn	55	72	2	3.24165	ug/l	0.49	Mn	FAILED
Fe	57	72	2	111073.61622	ug/l	120000	Fe	
Co	59	72	2	0.32756	ug/l	0.434	Co	
Ni	60	72	2	1.62381	ug/l	0.8	Ni	FAILED
Cu	63	72	2	1.03276	ug/l	0.902	Cu	FAILED
Zn	66	72	2	4.11549	ug/l	16.58	Zn	
As	75	72	2	0.11104	ug/l	2.36	As	
Se	78	72	2	0.26986	ug/l	3.18	Se	
Sr	88	72	3	1.03890	ug/l	2	Sr	
Y	89	72	2	0.05364	ug/l	0.424	Y	
Zr	90	72	2	2.37797	ug/l	0.496	Zr	FAILED
Nb	93	72	2	0.53780	ug/l	4.62	Nb	
Mo	95	72	3	2143.97310	ug/l	2400	Mo	
Ru	101	72	2	-0.00334	ug/l	2	Ru	
Rh	103	72	2	-0.00268	ug/l	1.634	Rh	
Pd	105	72	2	0.00611	ug/l	0.08	Pd	
Ag	107	115	3	0.10644	ug/l	1.54	Ag	
Cd	111	115	3	0.15816	ug/l	0.4	Cd	
Sn	118	115	3	0.13052	ug/l	2	Sn	
Sb	121	115	3	0.03034	ug/l	3.34	Sb	
Te	125	165	2	0.00886	ug/l	1.072	Te	
Cs	133	165	2	0.03852	ug/l	0.106	Cs	
Ba	137	165	3	0.53031	ug/l	0.446	Ba	FAILED
La	139	165	2	0.00669	ug/l	0.102	La	
Ce	140	165	2	0.55272	ug/l	1.772	Ce	
Pr	141	165	2	-0.00069	ug/l	0.084	Pr	
Nd	146	165	2	0.01117	ug/l	0.208	Nd	
Sm	147	165	3	0.00531	ug/l	0.652	Sm	
Hf	178	165	2	0.14120	ug/l	2.26	Hf	
Ta	181	165	2	0.17954	ug/l	1.46	Ta	
W	182	165	2	0.50150	ug/l	4	W	
Re	185	193	3	0.02289	ug/l	0.05	Re	
Pt	195	193	2	0.01741	ug/l	0.12	Pt	
Au	197	193	3	0.02912	ug/l	1	Au	
Tl	205	193	3	0.00628	ug/l	1.1	Tl	
Pb	208	193	3	0.11765	ug/l	0.346	Pb	
Bi	209	193	2	0.19604	ug/l	1.464	Bi	
Th	232	193	3	0.06693	ug/l	1.104	Th	
U	238	193	3	0.01248	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5670929	1.07	5676390	99.9	80	120	Li (IS)	
Sc (IS)	45	2	155768	0.49	157398	99.0	80	120	Sc (IS)	
Sc (IS)	45	3	2824305	1.30	2954313	95.6	80	120	Sc (IS)	
Ge (IS)	72	2	354804	0.56	379042	93.6	80	120	Ge (IS)	
Ge (IS)	72	3	2222970	1.18	2413999	92.1	80	120	Ge (IS)	
In (IS)	115	3	13470406	1.76	15281059	88.2	80	120	In (IS)	
Ho (IS)	165	2	10103022	0.87	10495856	96.3	80	120	Ho (IS)	
Ho (IS)	165	3	15731925	0.71	16807844	93.6	80	120	Ho (IS)	
Ir (IS)	193	2	6021730	0.41	6895257	87.3	80	120	Ir (IS)	
Ir (IS)	193	3	7297367	1.15	8354862	87.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Interference Check Sample AB (ICS-AB) - US EPA Method 6020

Sample Name	**ICSAB 1845717**
Data File Name	**100ICSB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:51:40-06:00**
Type	**ICSAB**
VialNumber	**1106**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	51.50707	ug/l	50	103.0	80	120	Li	
Be	9	6	3	48.98440	ug/l	50	98.0	80	120	Be	
B	11	6	3	95.50822	ug/l	100	95.5	80	120	B	
Na	23	45	2	100623.28936	ug/l	100000	100.6	80	120	Na	
Mg	24	45	2	101195.92083	ug/l	100000	101.2	80	120	Mg	
Al	27	45	2	104529.13501	ug/l	100000	104.5	80	120	Al	
P	31	45	2	109182.55384	ug/l	100000	109.2	80	120	P	
K	39	45	2	100896.18178	ug/l	100000	100.9	80	120	K	
Ca	44	45	3	98893.24185	ug/l	100000	98.9	80	120	Ca	
Ti	47	45	3	2200.94173	ug/l	2100	104.8	80	120	Ti	
V	51	45	2	48.96120	ug/l	50	97.9	80	120	V	
Cr	52	45	2	48.24922	ug/l	50	96.5	80	120	Cr	
Mn	55	72	2	52.19250	ug/l	50	104.4	80	120	Mn	
Fe	57	72	2	105569.49902	ug/l	100000	105.6	80	120	Fe	
Co	59	72	2	47.99263	ug/l	50	96.0	80	120	Co	
Ni	60	72	2	52.02443	ug/l	50	104.0	80	120	Ni	
Cu	63	72	2	46.83502	ug/l	50	93.7	80	120	Cu	
Zn	66	72	2	54.19955	ug/l	50	108.4	80	120	Zn	
As	75	72	2	54.13902	ug/l	50	108.3	80	120	As	
Se	78	72	2	27.75177	ug/l	25	111.0	80	120	Se	
Sr	88	72	3	55.16470	ug/l	50	110.3	80	120	Sr	
Y	89	72	2	52.05758	ug/l	50	104.1	80	120	Y	
Zr	90	72	2	35.92490	ug/l	50	71.8	80	120	Zr	FAILED
Nb	93	72	2	24.13644	ug/l	25	96.5	80	120	Nb	
Mo	95	72	3	2167.65465	ug/l	2050	105.7	80	120	Mo	
Ru	101	72	2	47.10782	ug/l	50	94.2	80	120	Ru	
Rh	103	72	2	48.65386	ug/l	50	97.3	80	120	Rh	
Pd	105	72	2	4.80928	ug/l	5	96.2	80	120	Pd	
Ag	107	115	3	9.42126	ug/l	10	94.2	80	120	Ag	
Cd	111	115	3	47.10707	ug/l	50	94.2	80	120	Cd	
Sn	118	115	3	52.60184	ug/l	50	105.2	80	120	Sn	
Sb	121	115	3	24.32127	ug/l	25	97.3	80	120	Sb	
Te	125	165	2	47.25464	ug/l	50	94.5	80	120	Te	
Cs	133	165	2	50.08802	ug/l	50	100.2	80	120	Cs	
Ba	137	165	3	48.04131	ug/l	50	96.1	80	120	Ba	
La	139	165	2	51.10069	ug/l	50	102.2	80	120	La	
Ce	140	165	2	51.67608	ug/l	50	103.4	80	120	Ce	
Pr	141	165	2	51.21555	ug/l	50	102.4	80	120	Pr	
Nd	146	165	2	47.64639	ug/l	50	95.3	80	120	Nd	
Sm	147	165	3	49.36323	ug/l	50	98.7	80	120	Sm	
Hf	178	165	2	33.13876	ug/l	50	66.3	80	120	Hf	FAILED
Ta	181	165	2	50.40294	ug/l	50	100.8	80	120	Ta	
W	182	165	2	47.21718	ug/l	50	94.4	80	120	W	
Re	185	193	3	53.97204	ug/l	50	107.9	80	120	Re	
Pt	195	193	2	5.07156	ug/l	5	101.4	80	120	Pt	
Au	197	193	3	51.76839	ug/l	50	103.5	80	120	Au	
Tl	205	193	3	9.42137	ug/l	10	94.2	80	120	Tl	
Pb	208	193	3	49.85005	ug/l	50	99.7	80	120	Pb	
Bi	209	193	2	50.74352	ug/l	50	101.5	80	120	Bi	
Th	232	193	3	54.19679	ug/l	50	108.4	80	120	Th	
U	238	193	3	54.39566	ug/l	50	108.8	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5666333	1.72	5676390	99.8	80	120	Li (IS)	
Sc (IS)	45	2	162098	9.68	157398	103.0	80	120	Sc (IS)	
Sc (IS)	45	3	2857015	1.20	2954313	96.7	80	120	Sc (IS)	
Ge (IS)	72	2	379234	7.07	379042	100.1	80	120	Ge (IS)	
Ge (IS)	72	3	2250318	0.43	2413999	93.2	80	120	Ge (IS)	
In (IS)	115	3	13450609	0.60	15281059	88.0	80	120	In (IS)	
Ho (IS)	165	2	9991688	10.26	10495856	95.2	80	120	Ho (IS)	
Ho (IS)	165	3	15654540	1.08	16807844	93.1	80	120	Ho (IS)	
Ir (IS)	193	2	5978091	9.41	6895257	86.7	80	120	Ir (IS)	
Ir (IS)	193	3	7174124	0.96	8354862	85.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**101_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T02:58:28-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	96.76605	ug/l	100	96.8	90	110	Li	
Be	9	6	3	97.59362	ug/l	100	97.6	90	110	Be	
B	11	6	3	192.76699	ug/l	200	96.4	90	110	B	
Na	23	45	2	2516.57908	ug/l	2500	100.7	90	110	Na	
Mg	24	45	2	2545.75286	ug/l	2500	101.8	90	110	Mg	
Al	27	45	2	2441.05812	ug/l	2500	97.6	90	110	Al	
P	31	45	2	2499.01282	ug/l	2500	100.0	90	110	P	
K	39	45	2	2514.39039	ug/l	2500	100.6	90	110	K	
Ca	44	45	3	2509.48417	ug/l	2500	100.4	90	110	Ca	
Ti	47	45	3	100.36204	ug/l	100	100.4	90	110	Ti	
V	51	45	2	94.87224	ug/l	100	94.9	90	110	V	
Cr	52	45	2	98.89697	ug/l	100	98.9	90	110	Cr	
Mn	55	72	2	96.28544	ug/l	100	96.3	90	110	Mn	
Fe	57	72	2	2431.61628	ug/l	2500	97.3	90	110	Fe	
Co	59	72	2	101.66690	ug/l	100	101.7	90	110	Co	
Ni	60	72	2	102.76301	ug/l	100	102.8	90	110	Ni	
Cu	63	72	2	101.26176	ug/l	100	101.3	90	110	Cu	
Zn	66	72	2	101.57857	ug/l	100	101.6	90	110	Zn	
As	75	72	2	102.12371	ug/l	100	102.1	90	110	As	
Se	78	72	2	51.92496	ug/l	50	103.8	90	110	Se	
Sr	88	72	3	101.09354	ug/l	100	101.1	90	110	Sr	
Y	89	72	2	102.90932	ug/l	100	102.9	90	110	Y	
Zr	90	72	2	103.16890	ug/l	100	103.2	90	110	Zr	
Nb	93	72	2	52.32904	ug/l	50	104.7	90	110	Nb	
Mo	95	72	3	48.56807	ug/l	50	97.1	90	110	Mo	
Ru	101	72	2	97.33291	ug/l	100	97.3	90	110	Ru	
Rh	103	72	2	103.44231	ug/l	100	103.4	90	110	Rh	
Pd	105	72	2	10.42657	ug/l	10	104.3	90	110	Pd	
Ag	107	115	3	18.19609	ug/l	20	91.0	90	110	Ag	
Cd	111	115	3	92.96788	ug/l	100	93.0	90	110	Cd	
Sn	118	115	3	99.60023	ug/l	100	99.6	90	110	Sn	
Sb	121	115	3	49.48240	ug/l	50	99.0	90	110	Sb	
Te	125	165	2	99.81272	ug/l	100	99.8	90	110	Te	
Cs	133	165	2	100.13616	ug/l	100	100.1	90	110	Cs	
Ba	137	165	3	97.52769	ug/l	100	97.5	90	110	Ba	
La	139	165	2	100.06729	ug/l	100	100.1	90	110	La	
Ce	140	165	2	100.84006	ug/l	100	100.8	90	110	Ce	
Pr	141	165	2	100.15244	ug/l	100	100.2	90	110	Pr	
Nd	146	165	2	95.85461	ug/l	100	95.9	90	110	Nd	
Sm	147	165	3	101.03671	ug/l	100	101.0	90	110	Sm	
Hf	178	165	2	99.78149	ug/l	100	99.8	90	110	Hf	
Ta	181	165	2	101.59401	ug/l	100	101.6	90	110	Ta	
W	182	165	2	101.22738	ug/l	100	101.2	90	110	W	
Re	185	193	3	98.68354	ug/l	100	98.7	90	110	Re	
Pt	195	193	2	9.99408	ug/l	10	99.9	90	110	Pt	
Au	197	193	3	98.40738	ug/l	100	98.4	90	110	Au	
Tl	205	193	3	19.52346	ug/l	20	97.6	90	110	Tl	
Pb	208	193	3	99.33406	ug/l	100	99.3	90	110	Pb	
Bi	209	193	2	99.60533	ug/l	100	99.6	90	110	Bi	
Th	232	193	3	97.38747	ug/l	100	97.4	90	110	Th	
U	238	193	3	98.53477	ug/l	100	98.5	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5764626	1.32	5676390	101.6	80	120	Li (IS)	
Sc (IS)	45	2	159363	0.38	157398	101.2	80	120	Sc (IS)	
Sc (IS)	45	3	2923620	1.21	2954313	99.0	80	120	Sc (IS)	
Ge (IS)	72	2	398883	1.18	379042	105.2	80	120	Ge (IS)	
Ge (IS)	72	3	2425629	1.59	2413999	100.5	80	120	Ge (IS)	
In (IS)	115	3	15077295	1.29	15281059	98.7	80	120	In (IS)	
Ho (IS)	165	2	10669710	0.68	10495856	101.7	80	120	Ho (IS)	
Ho (IS)	165	3	17085903	1.97	16807844	101.7	80	120	Ho (IS)	
Ir (IS)	193	2	6953273	0.40	6895257	100.8	80	120	Ir (IS)	
Ir (IS)	193	3	8436735	1.72	8354862	101.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**102_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:05:14-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	0.01527	ug/l	1.388	Li	
Be	9	6	3	0.01165	ug/l	0.7	Be	
B	11	6	3	3.19668	ug/l	20	B	
Na	23	45	2	4.74627	ug/l	30	Na	
Mg	24	45	2	2.38311	ug/l	11.18	Mg	
Al	27	45	2	2.32859	ug/l	25.8	Al	
P	31	45	2	4.57343	ug/l	16.46	P	
K	39	45	2	0.93241	ug/l	83.2	K	
Ca	44	45	3	0.76755	ug/l	136.2	Ca	
Ti	47	45	3	0.18205	ug/l	4.2	Ti	
V	51	45	2	0.04079	ug/l	4.74	V	
Cr	52	45	2	0.02650	ug/l	6.52	Cr	
Mn	55	72	2	0.05227	ug/l	0.49	Mn	
Fe	57	72	2	2.68867	ug/l	40.7	Fe	
Co	59	72	2	0.03153	ug/l	0.434	Co	
Ni	60	72	2	0.03308	ug/l	0.8	Ni	
Cu	63	72	2	-0.17417	ug/l	0.902	Cu	
Zn	66	72	2	0.05208	ug/l	16.58	Zn	
As	75	72	2	0.03395	ug/l	2.36	As	
Se	78	72	2	-0.00243	ug/l	3.18	Se	
Sr	88	72	3	0.01208	ug/l	2	Sr	
Y	89	72	2	0.03366	ug/l	0.424	Y	
Zr	90	72	2	0.04569	ug/l	0.496	Zr	
Nb	93	72	2	0.41040	ug/l	4.62	Nb	
Mo	95	72	3	0.53270	ug/l	2	Mo	
Ru	101	72	2	0.03227	ug/l	2	Ru	
Rh	103	72	2	0.03261	ug/l	1.634	Rh	
Pd	105	72	2	0.00904	ug/l	0.08	Pd	
Ag	107	115	3	0.00083	ug/l	1.54	Ag	
Cd	111	115	3	0.01088	ug/l	0.4	Cd	
Sn	118	115	3	0.02079	ug/l	2	Sn	
Sb	121	115	3	0.01981	ug/l	3.34	Sb	
Te	125	165	2	0.03840	ug/l	1.072	Te	
Cs	133	165	2	0.02862	ug/l	0.106	Cs	
Ba	137	165	3	0.00824	ug/l	0.446	Ba	
La	139	165	2	0.02738	ug/l	0.102	La	
Ce	140	165	2	0.02983	ug/l	1.772	Ce	
Pr	141	165	2	0.02979	ug/l	0.084	Pr	
Nd	146	165	2	0.03330	ug/l	0.208	Nd	
Sm	147	165	3	0.00749	ug/l	0.652	Sm	
Hf	178	165	2	0.05253	ug/l	2.26	Hf	
Ta	181	165	2	0.06891	ug/l	1.46	Ta	
W	182	165	2	0.33981	ug/l	4	W	
Re	185	193	3	0.00472	ug/l	0.05	Re	
Pt	195	193	2	0.00241	ug/l	0.12	Pt	
Au	197	193	3	0.17918	ug/l	1	Au	
Tl	205	193	3	0.03508	ug/l	1.1	Tl	
Pb	208	193	3	-0.00182	ug/l	0.346	Pb	
Bi	209	193	2	0.06071	ug/l	1.464	Bi	
Th	232	193	3	0.03484	ug/l	1.104	Th	
U	238	193	3	0.01062	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5659365	0.50	5676390	99.7	80	120	Li (IS)	
Sc (IS)	45	2	156725	1.35	157398	99.6	80	120	Sc (IS)	
Sc (IS)	45	3	2879755	0.20	2954313	97.5	80	120	Sc (IS)	
Ge (IS)	72	2	375310	0.51	379042	99.0	80	120	Ge (IS)	
Ge (IS)	72	3	2380660	0.49	2413999	98.6	80	120	Ge (IS)	
In (IS)	115	3	15241996	0.26	15281059	99.7	80	120	In (IS)	
Ho (IS)	165	2	10649764	0.82	10495856	101.5	80	120	Ho (IS)	
Ho (IS)	165	3	16949393	0.98	16807844	100.8	80	120	Ho (IS)	
Ir (IS)	193	2	6951253	0.38	6895257	100.8	80	120	Ir (IS)	
Ir (IS)	193	3	8488808	0.46	8354862	101.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**MB 160-453190/1-A**
Data File Name	**103SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:11:59-06:00**
Type	**Sample**
VialNumber	**3101**
Dilution	**2**
Comment	**453190**
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.02829	0.05659	ug/l	1000	Li	
Be	9	6	3	0.00012	0.00025	ug/l	1000	Be	
B	11	6	3	1.96918	3.93836	ug/l	2000	B	
Na	23	45	2	5.50306	11.00613	ug/l	50000	Na	
Mg	24	45	2	1.34195	2.68390	ug/l	50000	Mg	
Al	27	45	2	11.04073	22.08146	ug/l	100000	Al	
P	31	45	2	8.37639	16.75277	ug/l	100000	P	
K	39	45	2	-0.35577	-0.71154	ug/l	100000	K	
Ca	44	45	3	16.01425	32.02850	ug/l	100000	Ca	
Ti	47	45	3	0.27769	0.55537	ug/l	2000	Ti	
V	51	45	2	0.10681	0.21361	ug/l	2000	V	
Cr	52	45	2	0.06824	0.13649	ug/l	2000	Cr	
Mn	55	72	2	0.08125	0.16249	ug/l	5000	Mn	
Fe	57	72	2	2.17551	4.35103	ug/l	100000	Fe	
Co	59	72	2	-0.00581	-0.01162	ug/l	2000	Co	
Ni	60	72	2	0.01700	0.03400	ug/l	2000	Ni	
Cu	63	72	2	0.12027	0.24054	ug/l	2000	Cu	
Zn	66	72	2	0.65222	1.30444	ug/l	5000	Zn	
As	75	72	2	0.01377	0.02754	ug/l	2000	As	
Se	78	72	2	0.13674	0.27348	ug/l	1000	Se	
Sr	88	72	3	0.03902	0.07805	ug/l	2000	Sr	
Y	89	72	2	-0.00693	-0.01386	ug/l	200	Y	
Zr	90	72	2	0.02965	0.05929	ug/l	2000	Zr	
Nb	93	72	2	0.22492	0.44984	ug/l	100	Nb	
Mo	95	72	3	0.32152	0.64304	ug/l	1000	Mo	
Ru	101	72	2	-0.00712	-0.01424	ug/l	200	Ru	
Rh	103	72	2	-0.00688	-0.01376	ug/l	200	Rh	
Pd	105	72	2	0.00429	0.00857	ug/l	20	Pd	
Ag	107	115	3	0.00219	0.00437	ug/l	400	Ag	
Cd	111	115	3	0.00003	0.00006	ug/l	2000	Cd	
Sn	118	115	3	0.10121	0.20242	ug/l	2000	Sn	
Sb	121	115	3	0.00578	0.01156	ug/l	1000	Sb	
Te	125	165	2	-0.00818	-0.01636	ug/l	200	Te	
Cs	133	165	2	-0.00139	-0.00278	ug/l	2000	Cs	
Ba	137	165	3	0.04046	0.08091	ug/l	5000	Ba	
La	139	165	2	-0.00443	-0.00887	ug/l	200	La	
Ce	140	165	2	-0.00264	-0.00529	ug/l	200	Ce	
Pr	141	165	2	-0.00550	-0.01100	ug/l	200	Pr	
Nd	146	165	2	-0.00204	-0.00408	ug/l	200	Nd	
Sm	147	165	3	-0.00516	-0.01032	ug/l	2000	Sm	
Hf	178	165	2	0.03736	0.07471	ug/l	200	Hf	
Ta	181	165	2	0.07605	0.15209	ug/l	200	Ta	
W	182	165	2	0.25646	0.51292	ug/l	2000	W	
Re	185	193	3	-0.00425	-0.00850	ug/l	200	Re	
Pt	195	193	2	0.00005	0.00010	ug/l	200	Pt	
Au	197	193	3	0.02993	0.05986	ug/l	2000	Au	
Tl	205	193	3	0.00564	0.01128	ug/l	400	Tl	
Pb	208	193	3	0.02635	0.05271	ug/l	5000	Pb	
Bi	209	193	2	0.04104	0.08208	ug/l	2000	Bi	
Th	232	193	3	0.03774	0.07548	ug/l	2000	Th	
U	238	193	3	-0.00276	-0.00551	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5412167	1.77	5676390	95.3	80	120	Li (IS)	
Sc (IS)	45	2	150892	0.34	157398	95.9	80	120	Sc (IS)	
Sc (IS)	45	3	2831411	0.92	2954313	95.8	80	120	Sc (IS)	
Ge (IS)	72	2	375027	0.46	379042	98.9	80	120	Ge (IS)	
Ge (IS)	72	3	2384342	1.68	2413999	98.8	80	120	Ge (IS)	
In (IS)	115	3	14936803	1.10	15281059	97.7	80	120	In (IS)	
Ho (IS)	165	2	10495527	0.92	10495856	100.0	80	120	Ho (IS)	
Ho (IS)	165	3	16985489	1.06	16807844	101.1	80	120	Ho (IS)	
Ir (IS)	193	2	6847853	0.89	6895257	99.3	80	120	Ir (IS)	
Ir (IS)	193	3	8257200	0.53	8354862	98.8	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCS 160-453190/2-A**
Data File Name	**104SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:18:41-06:00**
Type	**Sample**
VialNumber	**3102**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	47.27711	94.55421	ug/l	1000	Li	
Be	9	6	3	44.68651	89.37303	ug/l	1000	Be	
B	11	6	3	90.83644	181.67287	ug/l	2000	B	
Na	23	45	2	5045.78793	10091.57586	ug/l	50000	Na	
Mg	24	45	2	5095.69853	10191.39705	ug/l	50000	Mg	
Al	27	45	2	5109.41608	10218.83217	ug/l	100000	Al	
P	31	45	2	473.70965	947.41929	ug/l	100000	P	
K	39	45	2	4798.67067	9597.34135	ug/l	100000	K	
Ca	44	45	3	4904.24900	9808.49800	ug/l	100000	Ca	
Ti	47	45	3	490.92690	981.85379	ug/l	2000	Ti	
V	51	45	2	469.92930	939.85860	ug/l	2000	V	
Cr	52	45	2	473.98236	947.96473	ug/l	2000	Cr	
Mn	55	72	2	511.55778	1023.11556	ug/l	5000	Mn	
Fe	57	72	2	5131.47814	10262.95628	ug/l	100000	Fe	
Co	59	72	2	507.44937	1014.89874	ug/l	2000	Co	
Ni	60	72	2	553.91905	1107.83809	ug/l	2000	Ni	
Cu	63	72	2	508.87652	1017.75305	ug/l	2000	Cu	
Zn	66	72	2	480.29257	960.58514	ug/l	5000	Zn	
As	75	72	2	477.30684	954.61368	ug/l	2000	As	
Se	78	72	2	234.54873	469.09746	ug/l	1000	Se	
Sr	88	72	3	496.97153	993.94307	ug/l	2000	Sr	
Y	89	72	2	-0.00103	-0.00207	ug/l	200	Y	
Zr	90	72	2	515.04788	1030.09576	ug/l	2000	Zr	
Nb	93	72	2	1.25854	2.51708	ug/l	100	Nb	
Mo	95	72	3	252.13338	504.26676	ug/l	1000	Mo	
Ru	101	72	2	-0.00694	-0.01389	ug/l	200	Ru	
Rh	103	72	2	0.01611	0.03222	ug/l	200	Rh	
Pd	105	72	2	0.03132	0.06265	ug/l	20	Pd	
Ag	107	115	3	94.55189	189.10378	ug/l	400	Ag	
Cd	111	115	3	478.60033	957.20066	ug/l	2000	Cd	
Sn	118	115	3	472.90886	945.81771	ug/l	2000	Sn	
Sb	121	115	3	240.17222	480.34444	ug/l	1000	Sb	
Te	125	165	2	0.05631	0.11263	ug/l	200	Te	
Cs	133	165	2	-0.00158	-0.00315	ug/l	2000	Cs	
Ba	137	165	3	462.31696	924.63392	ug/l	5000	Ba	
La	139	165	2	0.69799	1.39599	ug/l	200	La	
Ce	140	165	2	0.01505	0.03010	ug/l	200	Ce	
Pr	141	165	2	-0.00209	-0.00418	ug/l	200	Pr	
Nd	146	165	2	0.00598	0.01196	ug/l	200	Nd	
Sm	147	165	3	487.33566	974.67131	ug/l	2000	Sm	
Hf	178	165	2	0.45549	0.91098	ug/l	200	Hf	
Ta	181	165	2	0.71437	1.42873	ug/l	200	Ta	
W	182	165	2	487.76605	975.53210	ug/l	2000	W	
Re	185	193	3	0.00511	0.01021	ug/l	200	Re	
Pt	195	193	2	0.02526	0.05052	ug/l	200	Pt	
Au	197	193	3	0.01770	0.03540	ug/l	2000	Au	
Tl	205	193	3	96.34670	192.69340	ug/l	400	Tl	
Pb	208	193	3	488.16894	976.33788	ug/l	5000	Pb	
Bi	209	193	2	486.49111	972.98223	ug/l	2000	Bi	
Th	232	193	3	489.70334	979.40668	ug/l	2000	Th	
U	238	193	3	498.82674	997.65348	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5412424	0.49	5676390	95.3	80	120	Li (IS)	
Sc (IS)	45	2	150236	1.12	157398	95.4	80	120	Sc (IS)	
Sc (IS)	45	3	2782547	0.83	2954313	94.2	80	120	Sc (IS)	
Ge (IS)	72	2	357327	0.55	379042	94.3	80	120	Ge (IS)	
Ge (IS)	72	3	2303565	0.70	2413999	95.4	80	120	Ge (IS)	
In (IS)	115	3	14461653	0.96	15281059	94.6	80	120	In (IS)	
Ho (IS)	165	2	10353548	0.26	10495856	98.6	80	120	Ho (IS)	
Ho (IS)	165	3	16988361	0.95	16807844	101.1	80	120	Ho (IS)	
Ir (IS)	193	2	6501366	1.08	6895257	94.3	80	120	Ir (IS)	
Ir (IS)	193	3	8301959	0.16	8354862	99.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36587-D-2-A**
Data File Name	**105SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:25:24-06:00**
Type	**Sample**
VialNumber	**3103**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.12569	0.25137	ug/l	1000	Li	
Be	9	6	3	0.00172	0.00344	ug/l	1000	Be	
B	11	6	3	9.71688	19.43377	ug/l	2000	B	
Na	23	45	2	27981.43215	55962.86430	ug/l	50000	Na	
Mg	24	45	2	2240.76420	4481.52840	ug/l	50000	Mg	
Al	27	45	2	5.94574	11.89148	ug/l	100000	Al	
P	31	45	2	14.55558	29.11116	ug/l	100000	P	
K	39	45	2	1052.54004	2105.08008	ug/l	100000	K	
Ca	44	45	3	8849.95770	17699.91540	ug/l	100000	Ca	
Ti	47	45	3	0.33623	0.67247	ug/l	2000	Ti	
V	51	45	2	0.20887	0.41775	ug/l	2000	V	
Cr	52	45	2	1.18784	2.37568	ug/l	2000	Cr	
Mn	55	72	2	0.88037	1.76073	ug/l	5000	Mn	
Fe	57	72	2	13.81978	27.63955	ug/l	100000	Fe	
Co	59	72	2	0.03447	0.06895	ug/l	2000	Co	
Ni	60	72	2	0.22303	0.44605	ug/l	2000	Ni	
Cu	63	72	2	12.69539	25.39077	ug/l	2000	Cu	
Zn	66	72	2	9.82967	19.65934	ug/l	5000	Zn	
As	75	72	2	0.21025	0.42050	ug/l	2000	As	
Se	78	72	2	0.34242	0.68485	ug/l	1000	Se	
Sr	88	72	3	49.44569	98.89137	ug/l	2000	Sr	
Y	89	72	2	0.10703	0.21407	ug/l	200	Y	
Zr	90	72	2	0.59361	1.18721	ug/l	2000	Zr	
Nb	93	72	2	-0.03410	-0.06820	ug/l	100	Nb	
Mo	95	72	3	0.35782	0.71563	ug/l	1000	Mo	
Ru	101	72	2	-0.00591	-0.01183	ug/l	200	Ru	
Rh	103	72	2	-0.00652	-0.01305	ug/l	200	Rh	
Pd	105	72	2	0.00672	0.01344	ug/l	20	Pd	
Ag	107	115	3	0.01712	0.03425	ug/l	400	Ag	
Cd	111	115	3	0.04581	0.09161	ug/l	2000	Cd	
Sn	118	115	3	0.31083	0.62166	ug/l	2000	Sn	
Sb	121	115	3	0.05663	0.11326	ug/l	1000	Sb	
Te	125	165	2	-0.01181	-0.02363	ug/l	200	Te	
Cs	133	165	2	-0.00163	-0.00326	ug/l	2000	Cs	
Ba	137	165	3	17.33448	34.66896	ug/l	5000	Ba	
La	139	165	2	0.00867	0.01733	ug/l	200	La	
Ce	140	165	2	-0.00398	-0.00795	ug/l	200	Ce	
Pr	141	165	2	-0.00269	-0.00538	ug/l	200	Pr	
Nd	146	165	2	0.01539	0.03078	ug/l	200	Nd	
Sm	147	165	3	0.01961	0.03922	ug/l	2000	Sm	
Hf	178	165	2	0.00730	0.01460	ug/l	200	Hf	
Ta	181	165	2	0.02819	0.05639	ug/l	200	Ta	
W	182	165	2	0.88710	1.77419	ug/l	2000	W	
Re	185	193	3	-0.00428	-0.00857	ug/l	200	Re	
Pt	195	193	2	0.01665	0.03330	ug/l	200	Pt	
Au	197	193	3	-0.00327	-0.00655	ug/l	2000	Au	
Tl	205	193	3	0.14340	0.28680	ug/l	400	Tl	
Pb	208	193	3	0.68726	1.37451	ug/l	5000	Pb	
Bi	209	193	2	0.09597	0.19194	ug/l	2000	Bi	
Th	232	193	3	0.11796	0.23592	ug/l	2000	Th	
U	238	193	3	0.02254	0.04509	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5370422	2.58	5676390	94.6	80	120	Li (IS)	
Sc (IS)	45	2	144165	0.21	157398	91.6	80	120	Sc (IS)	
Sc (IS)	45	3	2726775	2.58	2954313	92.3	80	120	Sc (IS)	
Ge (IS)	72	2	361910	0.38	379042	95.5	80	120	Ge (IS)	
Ge (IS)	72	3	2309654	2.55	2413999	95.7	80	120	Ge (IS)	
In (IS)	115	3	14417738	2.37	15281059	94.4	80	120	In (IS)	
Ho (IS)	165	2	10232655	0.55	10495856	97.5	80	120	Ho (IS)	
Ho (IS)	165	3	16460331	3.20	16807844	97.9	80	120	Ho (IS)	
Ir (IS)	193	2	6651845	0.15	6895257	96.5	80	120	Ir (IS)	
Ir (IS)	193	3	8020432	3.23	8354862	96.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36587-D-2-A SD**
Data File Name	**106SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:32:06-06:00**
Type	**Sample**
VialNumber	**3104**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.00938	0.09376	ug/l	1000	Li	
Be	9	6	3	-0.00161	-0.01612	ug/l	1000	Be	
B	11	6	3	2.25697	22.56973	ug/l	2000	B	
Na	23	45	2	5393.63901	53936.39010	ug/l	50000	Na	
Mg	24	45	2	417.29089	4172.90888	ug/l	50000	Mg	
Al	27	45	2	3.11719	31.17187	ug/l	100000	Al	
P	31	45	2	3.88531	38.85307	ug/l	100000	P	
K	39	45	2	207.11543	2071.15428	ug/l	100000	K	
Ca	44	45	3	1707.27646	17072.76460	ug/l	100000	Ca	
Ti	47	45	3	0.10046	1.00456	ug/l	2000	Ti	
V	51	45	2	0.06484	0.64837	ug/l	2000	V	
Cr	52	45	2	0.23287	2.32865	ug/l	2000	Cr	
Mn	55	72	2	0.18762	1.87620	ug/l	5000	Mn	
Fe	57	72	2	3.55700	35.57004	ug/l	100000	Fe	
Co	59	72	2	0.01128	0.11278	ug/l	2000	Co	
Ni	60	72	2	0.05141	0.51415	ug/l	2000	Ni	
Cu	63	72	2	2.33670	23.36700	ug/l	2000	Cu	
Zn	66	72	2	2.44180	24.41800	ug/l	5000	Zn	
As	75	72	2	0.02153	0.21529	ug/l	2000	As	
Se	78	72	2	0.16788	1.67884	ug/l	1000	Se	
Sr	88	72	3	8.71472	87.14723	ug/l	2000	Sr	
Y	89	72	2	0.01795	0.17952	ug/l	200	Y	
Zr	90	72	2	0.12562	1.25619	ug/l	2000	Zr	
Nb	93	72	2	-0.05214	-0.52137	ug/l	100	Nb	
Mo	95	72	3	0.21342	2.13424	ug/l	1000	Mo	
Ru	101	72	2	-0.00644	-0.06436	ug/l	200	Ru	
Rh	103	72	2	-0.00679	-0.06791	ug/l	200	Rh	
Pd	105	72	2	0.00178	0.01780	ug/l	20	Pd	
Ag	107	115	3	0.00088	0.00881	ug/l	400	Ag	
Cd	111	115	3	0.01135	0.11349	ug/l	2000	Cd	
Sn	118	115	3	0.07968	0.79676	ug/l	2000	Sn	
Sb	121	115	3	0.01492	0.14924	ug/l	1000	Sb	
Te	125	165	2	-0.02396	-0.23963	ug/l	200	Te	
Cs	133	165	2	-0.00318	-0.03179	ug/l	2000	Cs	
Ba	137	165	3	3.33914	33.39136	ug/l	5000	Ba	
La	139	165	2	-0.00216	-0.02161	ug/l	200	La	
Ce	140	165	2	-0.00443	-0.04429	ug/l	200	Ce	
Pr	141	165	2	-0.00489	-0.04886	ug/l	200	Pr	
Nd	146	165	2	0.00045	0.00452	ug/l	200	Nd	
Sm	147	165	3	0.00117	0.01175	ug/l	2000	Sm	
Hf	178	165	2	-0.00296	-0.02960	ug/l	200	Hf	
Ta	181	165	2	-0.00052	-0.00523	ug/l	200	Ta	
W	182	165	2	0.19554	1.95541	ug/l	2000	W	
Re	185	193	3	-0.00531	-0.05311	ug/l	200	Re	
Pt	195	193	2	0.00271	0.02708	ug/l	200	Pt	
Au	197	193	3	-0.01107	-0.11074	ug/l	2000	Au	
Tl	205	193	3	0.03875	0.38754	ug/l	400	Tl	
Pb	208	193	3	0.13870	1.38696	ug/l	5000	Pb	
Bi	209	193	2	0.03146	0.31456	ug/l	2000	Bi	
Th	232	193	3	0.02803	0.28034	ug/l	2000	Th	
U	238	193	3	0.00199	0.01993	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5705365	0.37	5676390	100.5	80	120	Li (IS)	
Sc (IS)	45	2	151187	0.73	157398	96.1	80	120	Sc (IS)	
Sc (IS)	45	3	2829091	0.34	2954313	95.8	80	120	Sc (IS)	
Ge (IS)	72	2	374271	0.18	379042	98.7	80	120	Ge (IS)	
Ge (IS)	72	3	2383960	0.61	2413999	98.8	80	120	Ge (IS)	
In (IS)	115	3	15017458	0.82	15281059	98.3	80	120	In (IS)	
Ho (IS)	165	2	10497495	1.27	10495856	100.0	80	120	Ho (IS)	
Ho (IS)	165	3	16872294	0.18	16807844	100.4	80	120	Ho (IS)	
Ir (IS)	193	2	6796251	1.45	6895257	98.6	80	120	Ir (IS)	
Ir (IS)	193	3	8250804	0.64	8354862	98.8	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36587-D-2-B MS**
Data File Name	**107SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:38:49-06:00**
Type	**Sample**
VialNumber	**3105**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	48.22806	96.45611	ug/l	1000	Li	
Be	9	6	3	45.63891	91.27782	ug/l	1000	Be	
B	11	6	3	98.61961	197.23921	ug/l	2000	B	
Na	23	45	2	32144.39655	64288.79310	ug/l	50000	Na	
Mg	24	45	2	7283.17905	14566.35810	ug/l	50000	Mg	
Al	27	45	2	5163.77589	10327.55178	ug/l	100000	Al	
P	31	45	2	491.56865	983.13731	ug/l	100000	P	
K	39	45	2	5908.89459	11817.78919	ug/l	100000	K	
Ca	44	45	3	13333.91108	26667.82215	ug/l	100000	Ca	
Ti	47	45	3	496.38822	992.77643	ug/l	2000	Ti	
V	51	45	2	479.47666	958.95333	ug/l	2000	V	
Cr	52	45	2	481.98257	963.96514	ug/l	2000	Cr	
Mn	55	72	2	509.83393	1019.66785	ug/l	5000	Mn	
Fe	57	72	2	5132.23729	10264.47458	ug/l	100000	Fe	
Co	59	72	2	504.00007	1008.00014	ug/l	2000	Co	
Ni	60	72	2	549.29853	1098.59705	ug/l	2000	Ni	
Cu	63	72	2	517.92329	1035.84658	ug/l	2000	Cu	
Zn	66	72	2	510.96881	1021.93762	ug/l	5000	Zn	
As	75	72	2	490.81288	981.62575	ug/l	2000	As	
Se	78	72	2	237.40533	474.81065	ug/l	1000	Se	
Sr	88	72	3	552.11962	1104.23924	ug/l	2000	Sr	
Y	89	72	2	0.11047	0.22095	ug/l	200	Y	
Zr	90	72	2	516.02865	1032.05730	ug/l	2000	Zr	
Nb	93	72	2	0.45365	0.90730	ug/l	100	Nb	
Mo	95	72	3	256.19987	512.39973	ug/l	1000	Mo	
Ru	101	72	2	-0.00640	-0.01281	ug/l	200	Ru	
Rh	103	72	2	0.01902	0.03804	ug/l	200	Rh	
Pd	105	72	2	0.02964	0.05928	ug/l	20	Pd	
Ag	107	115	3	94.05406	188.10811	ug/l	400	Ag	
Cd	111	115	3	483.66055	967.32109	ug/l	2000	Cd	
Sn	118	115	3	478.77381	957.54762	ug/l	2000	Sn	
Sb	121	115	3	245.64585	491.29171	ug/l	1000	Sb	
Te	125	165	2	0.11184	0.22368	ug/l	200	Te	
Cs	133	165	2	0.00100	0.00200	ug/l	2000	Cs	
Ba	137	165	3	486.26358	972.52716	ug/l	5000	Ba	
La	139	165	2	0.72912	1.45823	ug/l	200	La	
Ce	140	165	2	0.01445	0.02890	ug/l	200	Ce	
Pr	141	165	2	0.00304	0.00609	ug/l	200	Pr	
Nd	146	165	2	0.02282	0.04564	ug/l	200	Nd	
Sm	147	165	3	491.87687	983.75374	ug/l	2000	Sm	
Hf	178	165	2	0.13808	0.27615	ug/l	200	Hf	
Ta	181	165	2	0.49354	0.98709	ug/l	200	Ta	
W	182	165	2	501.57907	1003.15813	ug/l	2000	W	
Re	185	193	3	0.00521	0.01042	ug/l	200	Re	
Pt	195	193	2	0.00354	0.00709	ug/l	200	Pt	
Au	197	193	3	-0.00251	-0.00502	ug/l	2000	Au	
Tl	205	193	3	97.00446	194.00893	ug/l	400	Tl	
Pb	208	193	3	495.91078	991.82155	ug/l	5000	Pb	
Bi	209	193	2	486.66595	973.33189	ug/l	2000	Bi	
Th	232	193	3	501.75157	1003.50315	ug/l	2000	Th	
U	238	193	3	512.29255	1024.58509	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5345221	2.15	5676390	94.2	80	120	Li (IS)	
Sc (IS)	45	2	146412	0.98	157398	93.0	80	120	Sc (IS)	
Sc (IS)	45	3	2735144	0.83	2954313	92.6	80	120	Sc (IS)	
Ge (IS)	72	2	351161	1.20	379042	92.6	80	120	Ge (IS)	
Ge (IS)	72	3	2255693	0.88	2413999	93.4	80	120	Ge (IS)	
In (IS)	115	3	14058266	0.92	15281059	92.0	80	120	In (IS)	
Ho (IS)	165	2	10105615	0.61	10495856	96.3	80	120	Ho (IS)	
Ho (IS)	165	3	16559896	0.58	16807844	98.5	80	120	Ho (IS)	
Ir (IS)	193	2	6333719	0.27	6895257	91.9	80	120	Ir (IS)	
Ir (IS)	193	3	7970356	0.32	8354862	95.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36587-D-2-C MSD**
Data File Name	**108SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:45:31-06:00**
Type	**Sample**
VialNumber	**3106**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	46.92239	93.84478	ug/l	1000	Li	
Be	9	6	3	44.67897	89.35794	ug/l	1000	Be	
B	11	6	3	98.68053	197.36106	ug/l	2000	B	
Na	23	45	2	33246.25455	66492.50910	ug/l	50000	Na	
Mg	24	45	2	7431.94526	14863.89052	ug/l	50000	Mg	
Al	27	45	2	5245.69096	10491.38193	ug/l	100000	Al	
P	31	45	2	509.72266	1019.44532	ug/l	100000	P	
K	39	45	2	6062.08058	12124.16116	ug/l	100000	K	
Ca	44	45	3	13407.01999	26814.03998	ug/l	100000	Ca	
Ti	47	45	3	496.90339	993.80678	ug/l	2000	Ti	
V	51	45	2	494.97323	989.94645	ug/l	2000	V	
Cr	52	45	2	495.28936	990.57872	ug/l	2000	Cr	
Mn	55	72	2	525.07189	1050.14378	ug/l	5000	Mn	
Fe	57	72	2	5283.75882	10567.51764	ug/l	100000	Fe	
Co	59	72	2	520.57811	1041.15623	ug/l	2000	Co	
Ni	60	72	2	559.98508	1119.97016	ug/l	2000	Ni	
Cu	63	72	2	531.96625	1063.93249	ug/l	2000	Cu	
Zn	66	72	2	523.62428	1047.24856	ug/l	5000	Zn	
As	75	72	2	501.28268	1002.56536	ug/l	2000	As	
Se	78	72	2	244.90496	489.80991	ug/l	1000	Se	
Sr	88	72	3	545.19579	1090.39157	ug/l	2000	Sr	
Y	89	72	2	0.11271	0.22541	ug/l	200	Y	
Zr	90	72	2	530.26499	1060.52998	ug/l	2000	Zr	
Nb	93	72	2	0.27187	0.54374	ug/l	100	Nb	
Mo	95	72	3	251.69439	503.38878	ug/l	1000	Mo	
Ru	101	72	2	-0.00970	-0.01940	ug/l	200	Ru	
Rh	103	72	2	0.01658	0.03315	ug/l	200	Rh	
Pd	105	72	2	0.03645	0.07290	ug/l	20	Pd	
Ag	107	115	3	94.40316	188.80631	ug/l	400	Ag	
Cd	111	115	3	487.69512	975.39024	ug/l	2000	Cd	
Sn	118	115	3	482.69151	965.38302	ug/l	2000	Sn	
Sb	121	115	3	244.68013	489.36027	ug/l	1000	Sb	
Te	125	165	2	0.08495	0.16990	ug/l	200	Te	
Cs	133	165	2	-0.00074	-0.00148	ug/l	2000	Cs	
Ba	137	165	3	492.23891	984.47782	ug/l	5000	Ba	
La	139	165	2	0.75271	1.50542	ug/l	200	La	
Ce	140	165	2	0.01558	0.03117	ug/l	200	Ce	
Pr	141	165	2	0.00238	0.00475	ug/l	200	Pr	
Nd	146	165	2	0.02011	0.04022	ug/l	200	Nd	
Sm	147	165	3	497.13615	994.27229	ug/l	2000	Sm	
Hf	178	165	2	0.08125	0.16249	ug/l	200	Hf	
Ta	181	165	2	0.46017	0.92034	ug/l	200	Ta	
W	182	165	2	516.85074	1033.70149	ug/l	2000	W	
Re	185	193	3	0.00476	0.00951	ug/l	200	Re	
Pt	195	193	2	0.00575	0.01149	ug/l	200	Pt	
Au	197	193	3	-0.01020	-0.02039	ug/l	2000	Au	
Tl	205	193	3	97.12057	194.24115	ug/l	400	Tl	
Pb	208	193	3	490.17076	980.34152	ug/l	5000	Pb	
Bi	209	193	2	500.05393	1000.10786	ug/l	2000	Bi	
Th	232	193	3	498.95577	997.91154	ug/l	2000	Th	
U	238	193	3	509.69675	1019.39351	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5517741	0.91	5676390	97.2	80	120	Li (IS)	
Sc (IS)	45	2	146324	4.35	157398	93.0	80	120	Sc (IS)	
Sc (IS)	45	3	2777787	0.67	2954313	94.0	80	120	Sc (IS)	
Ge (IS)	72	2	348628	3.08	379042	92.0	80	120	Ge (IS)	
Ge (IS)	72	3	2303456	0.51	2413999	95.4	80	120	Ge (IS)	
In (IS)	115	3	14192759	0.48	15281059	92.9	80	120	In (IS)	
Ho (IS)	165	2	9971115	4.95	10495856	95.0	80	120	Ho (IS)	
Ho (IS)	165	3	16570265	0.71	16807844	98.6	80	120	Ho (IS)	
Ir (IS)	193	2	6280129	3.47	6895257	91.1	80	120	Ir (IS)	
Ir (IS)	193	3	8102416	0.62	8354862	97.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**MB 160-452612/1-A**
Data File Name	**109SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:52:13-06:00**
Type	**Sample**
VialNumber	**3107**
Dilution	**2**
Comment	**452612**
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	-0.18175	-0.36349	ug/l	1000	Li	
Be	9	6	3	0.00314	0.00628	ug/l	1000	Be	
B	11	6	3	1.68107	3.36215	ug/l	2000	B	
Na	23	45	2	6.08249	12.16498	ug/l	50000	Na	
Mg	24	45	2	1.91979	3.83958	ug/l	50000	Mg	
Al	27	45	2	15.78739	31.57477	ug/l	100000	Al	
P	31	45	2	11.53691	23.07382	ug/l	100000	P	
K	39	45	2	6.81237	13.62475	ug/l	100000	K	
Ca	44	45	3	12.61993	25.23985	ug/l	100000	Ca	
Ti	47	45	3	0.40221	0.80442	ug/l	2000	Ti	
V	51	45	2	0.05446	0.10891	ug/l	2000	V	
Cr	52	45	2	0.17547	0.35095	ug/l	2000	Cr	
Mn	55	72	2	0.20134	0.40267	ug/l	5000	Mn	
Fe	57	72	2	9.02568	18.05136	ug/l	100000	Fe	
Co	59	72	2	0.03140	0.06279	ug/l	2000	Co	
Ni	60	72	2	0.13401	0.26802	ug/l	2000	Ni	
Cu	63	72	2	0.35604	0.71207	ug/l	2000	Cu	
Zn	66	72	2	0.61034	1.22068	ug/l	5000	Zn	
As	75	72	2	0.14916	0.29832	ug/l	2000	As	
Se	78	72	2	0.11817	0.23634	ug/l	1000	Se	
Sr	88	72	3	0.06896	0.13793	ug/l	2000	Sr	
Y	89	72	2	-0.00650	-0.01300	ug/l	200	Y	
Zr	90	72	2	0.03945	0.07890	ug/l	2000	Zr	
Nb	93	72	2	-0.07663	-0.15326	ug/l	100	Nb	
Mo	95	72	3	0.27262	0.54524	ug/l	1000	Mo	
Ru	101	72	2	-0.00847	-0.01694	ug/l	200	Ru	
Rh	103	72	2	-0.00613	-0.01225	ug/l	200	Rh	
Pd	105	72	2	0.00149	0.00297	ug/l	20	Pd	
Ag	107	115	3	0.00891	0.01782	ug/l	400	Ag	
Cd	111	115	3	0.04203	0.08405	ug/l	2000	Cd	
Sn	118	115	3	7.48036	14.96071	ug/l	2000	Sn	
Sb	121	115	3	0.04070	0.08140	ug/l	1000	Sb	
Te	125	165	2	-0.00804	-0.01609	ug/l	200	Te	
Cs	133	165	2	-0.00379	-0.00758	ug/l	2000	Cs	
Ba	137	165	3	0.13079	0.26157	ug/l	5000	Ba	
La	139	165	2	-0.00327	-0.00655	ug/l	200	La	
Ce	140	165	2	0.00289	0.00578	ug/l	200	Ce	
Pr	141	165	2	-0.00522	-0.01044	ug/l	200	Pr	
Nd	146	165	2	-0.00062	-0.00124	ug/l	200	Nd	
Sm	147	165	3	0.00432	0.00863	ug/l	2000	Sm	
Hf	178	165	2	-0.00613	-0.01226	ug/l	200	Hf	
Ta	181	165	2	0.01263	0.02526	ug/l	200	Ta	
W	182	165	2	1.01772	2.03544	ug/l	2000	W	
Re	185	193	3	-0.00546	-0.01093	ug/l	200	Re	
Pt	195	193	2	0.00174	0.00347	ug/l	200	Pt	
Au	197	193	3	-0.02279	-0.04558	ug/l	2000	Au	
Tl	205	193	3	0.19726	0.39452	ug/l	400	Tl	
Pb	208	193	3	0.06734	0.13468	ug/l	5000	Pb	
Bi	209	193	2	0.11062	0.22123	ug/l	2000	Bi	
Th	232	193	3	0.11425	0.22849	ug/l	2000	Th	
U	238	193	3	0.03577	0.07155	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5689923	0.62	5676390	100.2	80	120	Li (IS)	
Sc (IS)	45	2	148730	0.61	157398	94.5	80	120	Sc (IS)	
Sc (IS)	45	3	2741500	0.45	2954313	92.8	80	120	Sc (IS)	
Ge (IS)	72	2	365700	0.45	379042	96.5	80	120	Ge (IS)	
Ge (IS)	72	3	2336241	0.82	2413999	96.8	80	120	Ge (IS)	
In (IS)	115	3	14689362	1.15	15281059	96.1	80	120	In (IS)	
Ho (IS)	165	2	10461723	0.24	10495856	99.7	80	120	Ho (IS)	
Ho (IS)	165	3	16853913	1.01	16807844	100.3	80	120	Ho (IS)	
Ir (IS)	193	2	6855893	0.80	6895257	99.4	80	120	Ir (IS)	
Ir (IS)	193	3	8316536	0.43	8354862	99.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCS 160-452612/2-A**
Data File Name	**110SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T03:58:55-06:00**
Type	**Sample**
VialNumber	**3108**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	47.52831	95.05663	ug/l	1000	Li	
Be	9	6	3	44.51330	89.02661	ug/l	1000	Be	
B	11	6	3	89.17088	178.34176	ug/l	2000	B	
Na	23	45	2	5118.34537	10236.69074	ug/l	50000	Na	
Mg	24	45	2	5206.63920	10413.27841	ug/l	50000	Mg	
Al	27	45	2	5244.53859	10489.07717	ug/l	100000	Al	
P	31	45	2	495.14040	990.28079	ug/l	100000	P	
K	39	45	2	4948.55147	9897.10295	ug/l	100000	K	
Ca	44	45	3	5067.88726	10135.77452	ug/l	100000	Ca	
Ti	47	45	3	502.97031	1005.94063	ug/l	2000	Ti	
V	51	45	2	486.84211	973.68422	ug/l	2000	V	
Cr	52	45	2	492.05032	984.10064	ug/l	2000	Cr	
Mn	55	72	2	523.32128	1046.64256	ug/l	5000	Mn	
Fe	57	72	2	5257.98324	10515.96649	ug/l	100000	Fe	
Co	59	72	2	522.30607	1044.61214	ug/l	2000	Co	
Ni	60	72	2	560.27372	1120.54745	ug/l	2000	Ni	
Cu	63	72	2	515.99121	1031.98241	ug/l	2000	Cu	
Zn	66	72	2	490.75189	981.50378	ug/l	5000	Zn	
As	75	72	2	491.16665	982.33331	ug/l	2000	As	
Se	78	72	2	247.44579	494.89159	ug/l	1000	Se	
Sr	88	72	3	504.92410	1009.84819	ug/l	2000	Sr	
Y	89	72	2	0.00041	0.00082	ug/l	200	Y	
Zr	90	72	2	523.98423	1047.96845	ug/l	2000	Zr	
Nb	93	72	2	0.15552	0.31104	ug/l	100	Nb	
Mo	95	72	3	251.00073	502.00146	ug/l	1000	Mo	
Ru	101	72	2	-0.00670	-0.01340	ug/l	200	Ru	
Rh	103	72	2	0.01582	0.03164	ug/l	200	Rh	
Pd	105	72	2	0.03315	0.06629	ug/l	20	Pd	
Ag	107	115	3	94.54164	189.08328	ug/l	400	Ag	
Cd	111	115	3	487.15285	974.30570	ug/l	2000	Cd	
Sn	118	115	3	492.43701	984.87402	ug/l	2000	Sn	
Sb	121	115	3	243.03054	486.06107	ug/l	1000	Sb	
Te	125	165	2	0.06519	0.13038	ug/l	200	Te	
Cs	133	165	2	-0.00221	-0.00441	ug/l	2000	Cs	
Ba	137	165	3	470.37254	940.74508	ug/l	5000	Ba	
La	139	165	2	0.72199	1.44397	ug/l	200	La	
Ce	140	165	2	0.01473	0.02945	ug/l	200	Ce	
Pr	141	165	2	-0.00115	-0.00230	ug/l	200	Pr	
Nd	146	165	2	0.00477	0.00954	ug/l	200	Nd	
Sm	147	165	3	493.19524	986.39049	ug/l	2000	Sm	
Hf	178	165	2	0.05434	0.10868	ug/l	200	Hf	
Ta	181	165	2	0.33909	0.67818	ug/l	200	Ta	
W	182	165	2	494.06307	988.12614	ug/l	2000	W	
Re	185	193	3	0.00450	0.00899	ug/l	200	Re	
Pt	195	193	2	0.00340	0.00681	ug/l	200	Pt	
Au	197	193	3	-0.01885	-0.03770	ug/l	2000	Au	
Tl	205	193	3	99.13150	198.26300	ug/l	400	Tl	
Pb	208	193	3	500.88149	1001.76298	ug/l	5000	Pb	
Bi	209	193	2	500.70511	1001.41022	ug/l	2000	Bi	
Th	232	193	3	504.53962	1009.07924	ug/l	2000	Th	
U	238	193	3	514.04620	1028.09241	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5549396	0.68	5676390	97.8	80	120	Li (IS)	
Sc (IS)	45	2	146941	1.36	157398	93.4	80	120	Sc (IS)	
Sc (IS)	45	3	2717765	0.54	2954313	92.0	80	120	Sc (IS)	
Ge (IS)	72	2	352209	0.46	379042	92.9	80	120	Ge (IS)	
Ge (IS)	72	3	2288576	0.84	2413999	94.8	80	120	Ge (IS)	
In (IS)	115	3	14460343	1.02	15281059	94.6	80	120	In (IS)	
Ho (IS)	165	2	10241907	0.65	10495856	97.6	80	120	Ho (IS)	
Ho (IS)	165	3	16781197	1.06	16807844	99.8	80	120	Ho (IS)	
Ir (IS)	193	2	6494034	0.43	6895257	94.2	80	120	Ir (IS)	
Ir (IS)	193	3	8153910	1.46	8354862	97.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCSSRM 160-452612/3-A**
Data File Name	**111SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:05:39-06:00**
Type	**Sample**
VialNumber	**3109**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	6.46746	64.67462	ug/l	1000	Li	
Be	9	6	3	102.74864	1027.48638	ug/l	1000	Be	
B	11	6	3	82.09984	820.99842	ug/l	2000	B	
Na	23	45	2	221.11616	2211.16162	ug/l	50000	Na	
Mg	24	45	2	2576.33820	25763.38197	ug/l	50000	Mg	
Al	27	45	2	8258.44522	82584.45222	ug/l	100000	Al	
P	31	45	2	627.89547	6278.95466	ug/l	100000	P	
K	39	45	2	2080.93003	20809.30034	ug/l	100000	K	
Ca	44	45	3	4951.91079	49519.10787	ug/l	100000	Ca	
Ti	47	45	3	434.56511	4345.65106	ug/l	2000	Ti	
V	51	45	2	58.06494	580.64937	ug/l	2000	V	
Cr	52	45	2	150.18756	1501.87561	ug/l	2000	Cr	
Mn	55	72	2	260.56134	2605.61335	ug/l	5000	Mn	
Fe	57	72	2	15665.52269	156655.22695	ug/l	100000	Fe	
Co	59	72	2	53.18639	531.86394	ug/l	2000	Co	
Ni	60	72	2	111.73404	1117.34038	ug/l	2000	Ni	
Cu	63	72	2	200.93777	2009.37765	ug/l	2000	Cu	
Zn	66	72	2	232.33707	2323.37066	ug/l	5000	Zn	
As	75	72	2	186.92008	1869.20079	ug/l	2000	As	
Se	78	72	2	225.38868	2253.88680	ug/l	1000	Se	
Sr	88	72	3	122.28094	1222.80944	ug/l	2000	Sr	
Y	89	72	2	9.23822	92.38220	ug/l	200	Y	
Zr	90	72	2	5.91121	59.11206	ug/l	2000	Zr	
Nb	93	72	2	0.75088	7.50875	ug/l	100	Nb	
Mo	95	72	3	130.23509	1302.35092	ug/l	1000	Mo	
Ru	101	72	2	-0.00828	-0.08281	ug/l	200	Ru	
Rh	103	72	2	0.00087	0.00871	ug/l	200	Rh	
Pd	105	72	2	0.01938	0.19380	ug/l	20	Pd	
Ag	107	115	3	48.97104	489.71044	ug/l	400	Ag	
Cd	111	115	3	233.48266	2334.82658	ug/l	2000	Cd	
Sn	118	115	3	123.57418	1235.74184	ug/l	2000	Sn	
Sb	121	115	3	61.25473	612.54731	ug/l	1000	Sb	
Te	125	165	2	0.03242	0.32425	ug/l	200	Te	
Cs	133	165	2	1.06938	10.69382	ug/l	2000	Cs	
Ba	137	165	3	271.56524	2715.65236	ug/l	5000	Ba	
La	139	165	2	28.59401	285.94009	ug/l	200	La	
Ce	140	165	2	62.98582	629.85818	ug/l	200	Ce	
Pr	141	165	2	6.91439	69.14391	ug/l	200	Pr	
Nd	146	165	2	26.48217	264.82173	ug/l	200	Nd	
Sm	147	165	3	4.57898	45.78979	ug/l	2000	Sm	
Hf	178	165	2	0.13966	1.39660	ug/l	200	Hf	
Ta	181	165	2	0.00474	0.04736	ug/l	200	Ta	
W	182	165	2	1.20632	12.06325	ug/l	2000	W	
Re	185	193	3	-0.00427	-0.04274	ug/l	200	Re	
Pt	195	193	2	-0.00050	-0.00497	ug/l	200	Pt	
Au	197	193	3	-0.01936	-0.19360	ug/l	2000	Au	
Tl	205	193	3	178.86662	1788.66620	ug/l	400	Tl	
Pb	208	193	3	136.78296	1367.82962	ug/l	5000	Pb	
Bi	209	193	2	0.66061	6.60608	ug/l	2000	Bi	
Th	232	193	3	13.68458	136.84575	ug/l	2000	Th	
U	238	193	3	108.72156	1087.21565	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5569183	1.05	5676390	98.1	80	120	Li (IS)	
Sc (IS)	45	2	148755	1.74	157398	94.5	80	120	Sc (IS)	
Sc (IS)	45	3	2860098	0.65	2954313	96.8	80	120	Sc (IS)	
Ge (IS)	72	2	352177	1.32	379042	92.9	80	120	Ge (IS)	
Ge (IS)	72	3	2254815	1.02	2413999	93.4	80	120	Ge (IS)	
In (IS)	115	3	14337295	1.22	15281059	93.8	80	120	In (IS)	
Ho (IS)	165	2	10304921	0.71	10495856	98.2	80	120	Ho (IS)	
Ho (IS)	165	3	16730024	0.97	16807844	99.5	80	120	Ho (IS)	
Ir (IS)	193	2	6712983	0.90	6895257	97.4	80	120	Ir (IS)	
Ir (IS)	193	3	8230293	0.19	8354862	98.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-20-A**
Data File Name	**112SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:12:22-06:00**
Type	**Sample**
VialNumber	**3110**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	16.05028	32.10056	ug/l	1000	Li	
Be	9	6	3	0.80267	1.60535	ug/l	1000	Be	
B	11	6	3	6.03777	12.07553	ug/l	2000	B	
Na	23	45	2	423.34445	846.68890	ug/l	50000	Na	
Mg	24	45	2	31281.57379	62563.14758	ug/l	50000	Mg	
Al	27	45	2	32765.59031	65531.18062	ug/l	100000	Al	
P	31	45	2	1999.96619	3999.93237	ug/l	100000	P	
K	39	45	2	7062.65133	14125.30266	ug/l	100000	K	
Ca	44	45	3	15179.05743	30358.11486	ug/l	100000	Ca	
Ti	47	45	3	1734.42278	3468.84556	ug/l	2000	Ti	
V	51	45	2	99.49213	198.98427	ug/l	2000	V	
Cr	52	45	2	19.71161	39.42323	ug/l	2000	Cr	
Mn	55	72	2	339.01067	678.02134	ug/l	5000	Mn	
Fe	57	72	2	77198.47467	154396.94934	ug/l	100000	Fe	
Co	59	72	2	21.30721	42.61441	ug/l	2000	Co	
Ni	60	72	2	45.58763	91.17526	ug/l	2000	Ni	
Cu	63	72	2	7842.34221	15684.68443	ug/l	2000	Cu	FAILED
Zn	66	72	2	109.11332	218.22663	ug/l	5000	Zn	
As	75	72	2	36.76138	73.52276	ug/l	2000	As	
Se	78	72	2	20.27069	40.54139	ug/l	1000	Se	
Sr	88	72	3	303.15441	606.30882	ug/l	2000	Sr	
Y	89	72	2	16.80182	33.60364	ug/l	200	Y	
Zr	90	72	2	4.92571	9.85142	ug/l	2000	Zr	
Nb	93	72	2	0.20112	0.40225	ug/l	100	Nb	
Mo	95	72	3	24.35815	48.71631	ug/l	1000	Mo	
Ru	101	72	2	-0.00632	-0.01264	ug/l	200	Ru	
Rh	103	72	2	-0.00696	-0.01393	ug/l	200	Rh	
Pd	105	72	2	0.03824	0.07649	ug/l	20	Pd	
Ag	107	115	3	0.47427	0.94854	ug/l	400	Ag	
Cd	111	115	3	0.16793	0.33585	ug/l	2000	Cd	
Sn	118	115	3	8.34880	16.69761	ug/l	2000	Sn	
Sb	121	115	3	1.76427	3.52854	ug/l	1000	Sb	
Te	125	165	2	0.92995	1.85989	ug/l	200	Te	
Cs	133	165	2	3.97378	7.94757	ug/l	2000	Cs	
Ba	137	165	3	328.47907	656.95815	ug/l	5000	Ba	
La	139	165	2	56.24549	112.49098	ug/l	200	La	
Ce	140	165	2	122.15855	244.31709	ug/l	200	Ce	
Pr	141	165	2	13.98667	27.97333	ug/l	200	Pr	
Nd	146	165	2	54.53926	109.07853	ug/l	200	Nd	
Sm	147	165	3	9.04959	18.09918	ug/l	2000	Sm	
Hf	178	165	2	0.14607	0.29213	ug/l	200	Hf	
Ta	181	165	2	0.03397	0.06795	ug/l	200	Ta	
W	182	165	2	3.20938	6.41876	ug/l	2000	W	
Re	185	193	3	0.02940	0.05881	ug/l	200	Re	
Pt	195	193	2	0.00585	0.01169	ug/l	200	Pt	
Au	197	193	3	0.03978	0.07955	ug/l	2000	Au	
Tl	205	193	3	0.99878	1.99755	ug/l	400	Tl	
Pb	208	193	3	17.98192	35.96383	ug/l	5000	Pb	
Bi	209	193	2	3.94069	7.88138	ug/l	2000	Bi	
Th	232	193	3	26.59401	53.18803	ug/l	2000	Th	
U	238	193	3	7.35303	14.70606	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5441005	5.65	5676390	95.9	80	120	Li (IS)	
Sc (IS)	45	2	168896	0.20	157398	107.3	80	120	Sc (IS)	
Sc (IS)	45	3	3212726	6.43	2954313	108.7	80	120	Sc (IS)	
Ge (IS)	72	2	368350	0.92	379042	97.2	80	120	Ge (IS)	
Ge (IS)	72	3	2319802	5.28	2413999	96.1	80	120	Ge (IS)	
In (IS)	115	3	14178155	7.55	15281059	92.8	80	120	In (IS)	
Ho (IS)	165	2	10324117	0.23	10495856	98.4	80	120	Ho (IS)	
Ho (IS)	165	3	16747755	7.36	16807844	99.6	80	120	Ho (IS)	
Ir (IS)	193	2	6486552	0.47	6895257	94.1	80	120	Ir (IS)	
Ir (IS)	193	3	7909684	7.15	8354862	94.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**113LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:19:07-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	4.79648	ug/l	5	95.9	80	120	Li	
Be	9	6	3	0.52633	ug/l	0.5	105.3	80	120	Be	
B	11	6	3	92.47312	ug/l	100	92.5	80	120	B	
Na	23	45	2	100.65142	ug/l	100	100.7	80	120	Na	
Mg	24	45	2	52.89622	ug/l	50	105.8	80	120	Mg	
Al	27	45	2	54.98604	ug/l	50	110.0	80	120	Al	
P	31	45	2	98.24837	ug/l	100	98.2	80	120	P	
K	39	45	2	97.59365	ug/l	100	97.6	80	120	K	
Ca	44	45	3	201.09829	ug/l	200	100.5	80	120	Ca	
Ti	47	45	3	5.28391	ug/l	5	105.7	80	120	Ti	
V	51	45	2	9.78358	ug/l	10	97.8	80	120	V	
Cr	52	45	2	9.75089	ug/l	10	97.5	80	120	Cr	
Mn	55	72	2	4.16647	ug/l	4	104.2	80	120	Mn	
Fe	57	72	2	56.17037	ug/l	50	112.3	80	120	Fe	
Co	59	72	2	2.13131	ug/l	2	106.6	80	120	Co	
Ni	60	72	2	5.68855	ug/l	5	113.8	80	120	Ni	
Cu	63	72	2	3.55964	ug/l	3	118.7	80	120	Cu	
Zn	66	72	2	21.99529	ug/l	20	110.0	80	120	Zn	
As	75	72	2	10.46685	ug/l	10	104.7	80	120	As	
Se	78	72	2	5.03344	ug/l	5	100.7	80	120	Se	
Sr	88	72	3	4.97974	ug/l	5	99.6	80	120	Sr	
Y	89	72	2	4.98741	ug/l	5	99.7	80	120	Y	
Zr	90	72	2	5.05033	ug/l	5	101.0	80	120	Zr	
Nb	93	72	2	18.94330	ug/l	25	75.8	80	120	Nb	FAILED
Mo	95	72	3	4.99629	ug/l	5	99.9	80	120	Mo	
Ru	101	72	2	10.31861	ug/l	10	103.2	80	120	Ru	
Rh	103	72	2	9.96673	ug/l	10	99.7	80	120	Rh	
Pd	105	72	2	0.55865	ug/l	0.5	111.7	80	120	Pd	
Ag	107	115	3	1.90118	ug/l	2	95.1	80	120	Ag	
Cd	111	115	3	0.52776	ug/l	0.5	105.6	80	120	Cd	
Sn	118	115	3	1.93557	ug/l	2	96.8	80	120	Sn	
Sb	121	115	3	4.61460	ug/l	5	92.3	80	120	Sb	
Te	125	165	2	9.42346	ug/l	10	94.2	80	120	Te	
Cs	133	165	2	0.95438	ug/l	1	95.4	80	120	Cs	
Ba	137	165	3	1.88455	ug/l	2	94.2	80	120	Ba	
La	139	165	2	1.86228	ug/l	2	93.1	80	120	La	
Ce	140	165	2	9.31356	ug/l	10	93.1	80	120	Ce	
Pr	141	165	2	1.89148	ug/l	2	94.6	80	120	Pr	
Nd	146	165	2	1.90690	ug/l	2	95.3	80	120	Nd	
Sm	147	165	3	9.52638	ug/l	10	95.3	80	120	Sm	
Hf	178	165	2	8.86352	ug/l	10	88.6	80	120	Hf	
Ta	181	165	2	7.41130	ug/l	10	74.1	80	120	Ta	FAILED
W	182	165	2	4.73491	ug/l	5	94.7	80	120	W	
Re	185	193	3	9.16156	ug/l	10	91.6	80	120	Re	
Pt	195	193	2	1.00627	ug/l	1	100.6	80	120	Pt	
Au	197	193	3	4.56001	ug/l	5	91.2	80	120	Au	
Tl	205	193	3	1.92807	ug/l	2	96.4	80	120	Tl	
Pb	208	193	3	2.84182	ug/l	3	94.7	80	120	Pb	
Bi	209	193	2	17.56806	ug/l	20	87.8	80	120	Bi	
Th	232	193	3	1.87472	ug/l	2	93.7	80	120	Th	
U	238	193	3	0.94406	ug/l	1	94.4	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5708733	0.40	5676390	100.6	80	120	Li (IS)	
Sc (IS)	45	2	155751	0.78	157398	99.0	80	120	Sc (IS)	
Sc (IS)	45	3	2835082	0.45	2954313	96.0	80	120	Sc (IS)	
Ge (IS)	72	2	376899	0.34	379042	99.4	80	120	Ge (IS)	
Ge (IS)	72	3	2353729	1.23	2413999	97.5	80	120	Ge (IS)	
In (IS)	115	3	14855700	0.45	15281059	97.2	80	120	In (IS)	
Ho (IS)	165	2	10518781	0.34	10495856	100.2	80	120	Ho (IS)	
Ho (IS)	165	3	16732672	0.64	16807844	99.6	80	120	Ho (IS)	
Ir (IS)	193	2	6904458	0.98	6895257	100.1	80	120	Ir (IS)	
Ir (IS)	193	3	8240046	0.61	8354862	98.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**114_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:25:49-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	97.55037	ug/l	100	97.6	90	110	Li	
Be	9	6	3	96.46417	ug/l	100	96.5	90	110	Be	
B	11	6	3	193.02431	ug/l	200	96.5	90	110	B	
Na	23	45	2	2507.43206	ug/l	2500	100.3	90	110	Na	
Mg	24	45	2	2541.59723	ug/l	2500	101.7	90	110	Mg	
Al	27	45	2	2465.49363	ug/l	2500	98.6	90	110	Al	
P	31	45	2	2515.07685	ug/l	2500	100.6	90	110	P	
K	39	45	2	2502.55211	ug/l	2500	100.1	90	110	K	
Ca	44	45	3	2526.86755	ug/l	2500	101.1	90	110	Ca	
Ti	47	45	3	101.09811	ug/l	100	101.1	90	110	Ti	
V	51	45	2	96.74799	ug/l	100	96.7	90	110	V	
Cr	52	45	2	100.17477	ug/l	100	100.2	90	110	Cr	
Mn	55	72	2	96.21438	ug/l	100	96.2	90	110	Mn	
Fe	57	72	2	2461.11235	ug/l	2500	98.4	90	110	Fe	
Co	59	72	2	102.32907	ug/l	100	102.3	90	110	Co	
Ni	60	72	2	103.00725	ug/l	100	103.0	90	110	Ni	
Cu	63	72	2	102.02355	ug/l	100	102.0	90	110	Cu	
Zn	66	72	2	102.75361	ug/l	100	102.8	90	110	Zn	
As	75	72	2	103.16416	ug/l	100	103.2	90	110	As	
Se	78	72	2	52.30686	ug/l	50	104.6	90	110	Se	
Sr	88	72	3	103.02808	ug/l	100	103.0	90	110	Sr	
Y	89	72	2	104.06324	ug/l	100	104.1	90	110	Y	
Zr	90	72	2	103.56954	ug/l	100	103.6	90	110	Zr	
Nb	93	72	2	53.06635	ug/l	50	106.1	90	110	Nb	
Mo	95	72	3	48.54371	ug/l	50	97.1	90	110	Mo	
Ru	101	72	2	98.87277	ug/l	100	98.9	90	110	Ru	
Rh	103	72	2	103.99312	ug/l	100	104.0	90	110	Rh	
Pd	105	72	2	10.60763	ug/l	10	106.1	90	110	Pd	
Ag	107	115	3	18.10093	ug/l	20	90.5	90	110	Ag	
Cd	111	115	3	93.34842	ug/l	100	93.3	90	110	Cd	
Sn	118	115	3	99.97217	ug/l	100	100.0	90	110	Sn	
Sb	121	115	3	50.67749	ug/l	50	101.4	90	110	Sb	
Te	125	165	2	99.11284	ug/l	100	99.1	90	110	Te	
Cs	133	165	2	99.14349	ug/l	100	99.1	90	110	Cs	
Ba	137	165	3	97.94512	ug/l	100	97.9	90	110	Ba	
La	139	165	2	99.00696	ug/l	100	99.0	90	110	La	
Ce	140	165	2	99.29695	ug/l	100	99.3	90	110	Ce	
Pr	141	165	2	99.42803	ug/l	100	99.4	90	110	Pr	
Nd	146	165	2	92.04301	ug/l	100	92.0	90	110	Nd	
Sm	147	165	3	101.38944	ug/l	100	101.4	90	110	Sm	
Hf	178	165	2	99.90752	ug/l	100	99.9	90	110	Hf	
Ta	181	165	2	101.88733	ug/l	100	101.9	90	110	Ta	
W	182	165	2	101.08825	ug/l	100	101.1	90	110	W	
Re	185	193	3	98.97476	ug/l	100	99.0	90	110	Re	
Pt	195	193	2	9.96175	ug/l	10	99.6	90	110	Pt	
Au	197	193	3	98.96516	ug/l	100	99.0	90	110	Au	
Tl	205	193	3	19.78953	ug/l	20	98.9	90	110	Tl	
Pb	208	193	3	100.15307	ug/l	100	100.2	90	110	Pb	
Bi	209	193	2	100.63455	ug/l	100	100.6	90	110	Bi	
Th	232	193	3	98.68919	ug/l	100	98.7	90	110	Th	
U	238	193	3	99.51417	ug/l	100	99.5	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5657225	0.58	5676390	99.7	80	120	Li (IS)	
Sc (IS)	45	2	152798	1.17	157398	97.1	80	120	Sc (IS)	
Sc (IS)	45	3	2826599	0.25	2954313	95.7	80	120	Sc (IS)	
Ge (IS)	72	2	384601	1.29	379042	101.5	80	120	Ge (IS)	
Ge (IS)	72	3	2355233	0.86	2413999	97.6	80	120	Ge (IS)	
In (IS)	115	3	14641647	1.29	15281059	95.8	80	120	In (IS)	
Ho (IS)	165	2	10511486	0.57	10495856	100.1	80	120	Ho (IS)	
Ho (IS)	165	3	16657200	0.95	16807844	99.1	80	120	Ho (IS)	
Ir (IS)	193	2	6837603	0.38	6895257	99.2	80	120	Ir (IS)	
Ir (IS)	193	3	8267939	1.15	8354862	99.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**115_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:32:34-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	-0.13353	ug/l	1.388	Li	
Be	9	6	3	0.00995	ug/l	0.7	Be	
B	11	6	3	2.67756	ug/l	20	B	
Na	23	45	2	0.95943	ug/l	30	Na	
Mg	24	45	2	0.47975	ug/l	11.18	Mg	
Al	27	45	2	0.44645	ug/l	25.8	Al	
P	31	45	2	0.28752	ug/l	16.46	P	
K	39	45	2	0.21923	ug/l	83.2	K	
Ca	44	45	3	-0.32604	ug/l	136.2	Ca	
Ti	47	45	3	0.01824	ug/l	4.2	Ti	
V	51	45	2	0.03093	ug/l	4.74	V	
Cr	52	45	2	0.01113	ug/l	6.52	Cr	
Mn	55	72	2	0.02278	ug/l	0.49	Mn	
Fe	57	72	2	0.75500	ug/l	40.7	Fe	
Co	59	72	2	0.02471	ug/l	0.434	Co	
Ni	60	72	2	0.02664	ug/l	0.8	Ni	
Cu	63	72	2	-0.19495	ug/l	0.902	Cu	
Zn	66	72	2	0.07604	ug/l	16.58	Zn	
As	75	72	2	0.05839	ug/l	2.36	As	
Se	78	72	2	-0.07478	ug/l	3.18	Se	
Sr	88	72	3	0.00557	ug/l	2	Sr	
Y	89	72	2	0.02116	ug/l	0.424	Y	
Zr	90	72	2	0.02277	ug/l	0.496	Zr	
Nb	93	72	2	0.28550	ug/l	4.62	Nb	
Mo	95	72	3	0.11657	ug/l	2	Mo	
Ru	101	72	2	0.01244	ug/l	2	Ru	
Rh	103	72	2	0.02117	ug/l	1.634	Rh	
Pd	105	72	2	0.00446	ug/l	0.08	Pd	
Ag	107	115	3	0.00069	ug/l	1.54	Ag	
Cd	111	115	3	0.01400	ug/l	0.4	Cd	
Sn	118	115	3	0.05224	ug/l	2	Sn	
Sb	121	115	3	0.02226	ug/l	3.34	Sb	
Te	125	165	2	0.02743	ug/l	1.072	Te	
Cs	133	165	2	0.01354	ug/l	0.106	Cs	
Ba	137	165	3	0.00784	ug/l	0.446	Ba	
La	139	165	2	0.01719	ug/l	0.102	La	
Ce	140	165	2	0.01648	ug/l	1.772	Ce	
Pr	141	165	2	0.01647	ug/l	0.084	Pr	
Nd	146	165	2	0.01834	ug/l	0.208	Nd	
Sm	147	165	3	0.00309	ug/l	0.652	Sm	
Hf	178	165	2	0.02967	ug/l	2.26	Hf	
Ta	181	165	2	0.03471	ug/l	1.46	Ta	
W	182	165	2	0.37522	ug/l	4	W	
Re	185	193	3	0.00198	ug/l	0.05	Re	
Pt	195	193	2	-0.00001	ug/l	0.12	Pt	
Au	197	193	3	0.13115	ug/l	1	Au	
Tl	205	193	3	0.06147	ug/l	1.1	Tl	
Pb	208	193	3	0.02134	ug/l	0.346	Pb	
Bi	209	193	2	0.05865	ug/l	1.464	Bi	
Th	232	193	3	0.03031	ug/l	1.104	Th	
U	238	193	3	0.00595	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5759465	0.35	5676390	101.5	80	120	Li (IS)	
Sc (IS)	45	2	153615	0.88	157398	97.6	80	120	Sc (IS)	
Sc (IS)	45	3	2841463	0.20	2954313	96.2	80	120	Sc (IS)	
Ge (IS)	72	2	364871	0.35	379042	96.3	80	120	Ge (IS)	
Ge (IS)	72	3	2318167	0.43	2413999	96.0	80	120	Ge (IS)	
In (IS)	115	3	14950314	0.76	15281059	97.8	80	120	In (IS)	
Ho (IS)	165	2	10498663	0.55	10495856	100.0	80	120	Ho (IS)	
Ho (IS)	165	3	16688993	1.12	16807844	99.3	80	120	Ho (IS)	
Ir (IS)	193	2	6925876	0.57	6895257	100.4	80	120	Ir (IS)	
Ir (IS)	193	3	8355508	0.55	8354862	100.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-20-A SD**
Data File Name	**116SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:39:18-06:00**
Type	**Sample**
VialNumber	**3111**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	2.99616	29.96163	ug/l	1000	Li	
Be	9	6	3	0.15319	1.53192	ug/l	1000	Be	
B	11	6	3	2.17884	21.78839	ug/l	2000	B	
Na	23	45	2	90.22389	902.23885	ug/l	50000	Na	
Mg	24	45	2	6721.57908	67215.79083	ug/l	50000	Mg	
Al	27	45	2	7121.25746	71212.57463	ug/l	100000	Al	
P	31	45	2	431.65051	4316.50507	ug/l	100000	P	
K	39	45	2	1526.85695	15268.56948	ug/l	100000	K	
Ca	44	45	3	3295.64906	32956.49059	ug/l	100000	Ca	
Ti	47	45	3	374.43352	3744.33522	ug/l	2000	Ti	
V	51	45	2	21.01552	210.15521	ug/l	2000	V	
Cr	52	45	2	4.22506	42.25061	ug/l	2000	Cr	
Mn	55	72	2	62.61914	626.19142	ug/l	5000	Mn	
Fe	57	72	2	15277.27768	152772.77683	ug/l	100000	Fe	
Co	59	72	2	4.16319	41.63186	ug/l	2000	Co	
Ni	60	72	2	9.06767	90.67670	ug/l	2000	Ni	
Cu	63	72	2	1598.43972	15984.39720	ug/l	2000	Cu	
Zn	66	72	2	22.53254	225.32538	ug/l	5000	Zn	
As	75	72	2	7.25884	72.58844	ug/l	2000	As	
Se	78	72	2	3.78197	37.81969	ug/l	1000	Se	
Sr	88	72	3	58.91555	589.15550	ug/l	2000	Sr	
Y	89	72	2	3.24906	32.49061	ug/l	200	Y	
Zr	90	72	2	1.00801	10.08008	ug/l	2000	Zr	
Nb	93	72	2	0.14740	1.47404	ug/l	100	Nb	
Mo	95	72	3	4.68207	46.82073	ug/l	1000	Mo	
Ru	101	72	2	-0.00344	-0.03441	ug/l	200	Ru	
Rh	103	72	2	-0.00071	-0.00709	ug/l	200	Rh	
Pd	105	72	2	0.00936	0.09364	ug/l	20	Pd	
Ag	107	115	3	0.08792	0.87922	ug/l	400	Ag	
Cd	111	115	3	0.02937	0.29367	ug/l	2000	Cd	
Sn	118	115	3	1.56851	15.68506	ug/l	2000	Sn	
Sb	121	115	3	0.33683	3.36831	ug/l	1000	Sb	
Te	125	165	2	0.22987	2.29867	ug/l	200	Te	
Cs	133	165	2	0.78026	7.80259	ug/l	2000	Cs	
Ba	137	165	3	59.22416	592.24165	ug/l	5000	Ba	
La	139	165	2	9.98428	99.84280	ug/l	200	La	
Ce	140	165	2	23.77531	237.75315	ug/l	200	Ce	
Pr	141	165	2	2.68967	26.89671	ug/l	200	Pr	
Nd	146	165	2	10.38392	103.83916	ug/l	200	Nd	
Sm	147	165	3	1.74221	17.42211	ug/l	2000	Sm	
Hf	178	165	2	0.10844	1.08435	ug/l	200	Hf	
Ta	181	165	2	0.02268	0.22682	ug/l	200	Ta	
W	182	165	2	0.62793	6.27930	ug/l	2000	W	
Re	185	193	3	0.00290	0.02903	ug/l	200	Re	
Pt	195	193	2	-0.00029	-0.00290	ug/l	200	Pt	
Au	197	193	3	0.03265	0.32653	ug/l	2000	Au	
Tl	205	193	3	0.15723	1.57229	ug/l	400	Tl	
Pb	208	193	3	3.42017	34.20174	ug/l	5000	Pb	
Bi	209	193	2	0.78033	7.80334	ug/l	2000	Bi	
Th	232	193	3	4.45080	44.50799	ug/l	2000	Th	
U	238	193	3	1.36821	13.68210	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5684131	0.58	5676390	100.1	80	120	Li (IS)	
Sc (IS)	45	2	156924	0.73	157398	99.7	80	120	Sc (IS)	
Sc (IS)	45	3	2904733	0.25	2954313	98.3	80	120	Sc (IS)	
Ge (IS)	72	2	373157	0.97	379042	98.4	80	120	Ge (IS)	
Ge (IS)	72	3	2345512	0.18	2413999	97.2	80	120	Ge (IS)	
In (IS)	115	3	14647889	1.68	15281059	95.9	80	120	In (IS)	
Ho (IS)	165	2	10475656	0.49	10495856	99.8	80	120	Ho (IS)	
Ho (IS)	165	3	16717682	0.83	16807844	99.5	80	120	Ho (IS)	
Ir (IS)	193	2	6680567	0.82	6895257	96.9	80	120	Ir (IS)	
Ir (IS)	193	3	8154871	0.78	8354862	97.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-20-B MS**
Data File Name	**117SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:46:03-06:00**
Type	**Sample**
VialNumber	**3112**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	61.39674	122.79348	ug/l	1000	Li	
Be	9	6	3	45.23917	90.47834	ug/l	1000	Be	
B	11	6	3	89.50586	179.01173	ug/l	2000	B	
Na	23	45	2	4782.14715	9564.29430	ug/l	50000	Na	
Mg	24	45	2	30617.84882	61235.69764	ug/l	50000	Mg	
Al	27	45	2	42127.39815	84254.79631	ug/l	100000	Al	
P	31	45	2	2955.33297	5910.66594	ug/l	100000	P	
K	39	45	2	9674.19467	19348.38934	ug/l	100000	K	
Ca	44	45	3	17233.66036	34467.32071	ug/l	100000	Ca	
Ti	47	45	3	1869.11549	3738.23099	ug/l	2000	Ti	
V	51	45	2	521.40522	1042.81044	ug/l	2000	V	
Cr	52	45	2	452.46759	904.93518	ug/l	2000	Cr	
Mn	55	72	2	831.86262	1663.72523	ug/l	5000	Mn	
Fe	57	72	2	96484.08403	192968.16807	ug/l	100000	Fe	
Co	59	72	2	527.79799	1055.59597	ug/l	2000	Co	
Ni	60	72	2	591.16680	1182.33360	ug/l	2000	Ni	
Cu	63	72	2	8886.88317	17773.76635	ug/l	2000	Cu	FAILED
Zn	66	72	2	655.98849	1311.97698	ug/l	5000	Zn	
As	75	72	2	534.29638	1068.59275	ug/l	2000	As	
Se	78	72	2	257.94650	515.89300	ug/l	1000	Se	
Sr	88	72	3	737.39849	1474.79697	ug/l	2000	Sr	
Y	89	72	2	15.65942	31.31884	ug/l	200	Y	
Zr	90	72	2	516.90393	1033.80786	ug/l	2000	Zr	
Nb	93	72	2	0.93644	1.87287	ug/l	100	Nb	
Mo	95	72	3	297.54797	595.09595	ug/l	1000	Mo	
Ru	101	72	2	-0.00866	-0.01732	ug/l	200	Ru	
Rh	103	72	2	0.01731	0.03462	ug/l	200	Rh	
Pd	105	72	2	0.06566	0.13131	ug/l	20	Pd	
Ag	107	115	3	92.87780	185.75560	ug/l	400	Ag	
Cd	111	115	3	479.43112	958.86223	ug/l	2000	Cd	
Sn	118	115	3	461.95824	923.91649	ug/l	2000	Sn	
Sb	121	115	3	163.90986	327.81972	ug/l	1000	Sb	
Te	125	165	2	1.36191	2.72381	ug/l	200	Te	
Cs	133	165	2	3.67472	7.34944	ug/l	2000	Cs	
Ba	137	165	3	723.24618	1446.49237	ug/l	5000	Ba	
La	139	165	2	55.22931	110.45862	ug/l	200	La	
Ce	140	165	2	117.21469	234.42938	ug/l	200	Ce	
Pr	141	165	2	13.32768	26.65537	ug/l	200	Pr	
Nd	146	165	2	51.65984	103.31968	ug/l	200	Nd	
Sm	147	165	3	500.04103	1000.08206	ug/l	2000	Sm	
Hf	178	165	2	0.52289	1.04577	ug/l	200	Hf	
Ta	181	165	2	0.31111	0.62223	ug/l	200	Ta	
W	182	165	2	411.64688	823.29376	ug/l	2000	W	
Re	185	193	3	0.02946	0.05892	ug/l	200	Re	
Pt	195	193	2	0.00411	0.00823	ug/l	200	Pt	
Au	197	193	3	0.05493	0.10985	ug/l	2000	Au	
Tl	205	193	3	97.39056	194.78112	ug/l	400	Tl	
Pb	208	193	3	503.55885	1007.11771	ug/l	5000	Pb	
Bi	209	193	2	493.68119	987.36239	ug/l	2000	Bi	
Th	232	193	3	519.99767	1039.99535	ug/l	2000	Th	
U	238	193	3	506.58825	1013.17649	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5487997	0.12	5676390	96.7	80	120	Li (IS)	
Sc (IS)	45	2	173566	1.06	157398	110.3	80	120	Sc (IS)	
Sc (IS)	45	3	3217324	1.23	2954313	108.9	80	120	Sc (IS)	
Ge (IS)	72	2	358901	0.45	379042	94.7	80	120	Ge (IS)	
Ge (IS)	72	3	2287914	0.51	2413999	94.8	80	120	Ge (IS)	
In (IS)	115	3	14171129	0.40	15281059	92.7	80	120	In (IS)	
Ho (IS)	165	2	10195080	0.68	10495856	97.1	80	120	Ho (IS)	
Ho (IS)	165	3	16593147	0.96	16807844	98.7	80	120	Ho (IS)	
Ir (IS)	193	2	6326853	1.03	6895257	91.8	80	120	Ir (IS)	
Ir (IS)	193	3	7948731	0.15	8354862	95.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-20-C MSD**
Data File Name	**118SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:52:47-06:00**
Type	**Sample**
VialNumber	**3201**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	67.85858	135.71715	ug/l	1000	Li	
Be	9	6	3	46.66515	93.33029	ug/l	1000	Be	
B	11	6	3	93.73457	187.46913	ug/l	2000	B	
Na	23	45	2	4681.55867	9363.11735	ug/l	50000	Na	
Mg	24	45	2	37138.95073	74277.90145	ug/l	50000	Mg	
Al	27	45	2	48078.60178	96157.20355	ug/l	100000	Al	
P	31	45	2	2960.92416	5921.84832	ug/l	100000	P	
K	39	45	2	12058.33657	24116.67314	ug/l	100000	K	
Ca	44	45	3	21276.82587	42553.65175	ug/l	100000	Ca	
Ti	47	45	3	2620.47218	5240.94435	ug/l	2000	Ti	FAILED
V	51	45	2	530.80669	1061.61338	ug/l	2000	V	
Cr	52	45	2	433.26609	866.53217	ug/l	2000	Cr	
Mn	55	72	2	888.14281	1776.28562	ug/l	5000	Mn	
Fe	57	72	2	108522.51610	217045.03219	ug/l	100000	Fe	FAILED
Co	59	72	2	533.85158	1067.70317	ug/l	2000	Co	
Ni	60	72	2	600.02128	1200.04257	ug/l	2000	Ni	
Cu	63	72	2	9912.28118	19824.56236	ug/l	2000	Cu	FAILED
Zn	66	72	2	665.21684	1330.43368	ug/l	5000	Zn	
As	75	72	2	531.47665	1062.95330	ug/l	2000	As	
Se	78	72	2	264.49386	528.98771	ug/l	1000	Se	
Sr	88	72	3	870.65792	1741.31584	ug/l	2000	Sr	
Y	89	72	2	20.74820	41.49640	ug/l	200	Y	
Zr	90	72	2	523.66120	1047.32240	ug/l	2000	Zr	
Nb	93	72	2	0.87952	1.75904	ug/l	100	Nb	
Mo	95	72	3	305.81568	611.63136	ug/l	1000	Mo	
Ru	101	72	2	-0.00830	-0.01661	ug/l	200	Ru	
Rh	103	72	2	0.01727	0.03455	ug/l	200	Rh	
Pd	105	72	2	0.08488	0.16976	ug/l	20	Pd	
Ag	107	115	3	95.27392	190.54784	ug/l	400	Ag	
Cd	111	115	3	487.17750	974.35500	ug/l	2000	Cd	
Sn	118	115	3	473.84506	947.69013	ug/l	2000	Sn	
Sb	121	115	3	156.95067	313.90133	ug/l	1000	Sb	
Te	125	165	2	2.13528	4.27056	ug/l	200	Te	
Cs	133	165	2	4.90464	9.80928	ug/l	2000	Cs	
Ba	137	165	3	857.88121	1715.76243	ug/l	5000	Ba	
La	139	165	2	73.54255	147.08510	ug/l	200	La	
Ce	140	165	2	153.20038	306.40076	ug/l	200	Ce	
Pr	141	165	2	18.64140	37.28280	ug/l	200	Pr	
Nd	146	165	2	67.06825	134.13651	ug/l	200	Nd	
Sm	147	165	3	506.94292	1013.88585	ug/l	2000	Sm	
Hf	178	165	2	0.40158	0.80316	ug/l	200	Hf	
Ta	181	165	2	0.42245	0.84489	ug/l	200	Ta	
W	182	165	2	406.54123	813.08246	ug/l	2000	W	
Re	185	193	3	0.12462	0.24923	ug/l	200	Re	
Pt	195	193	2	0.00279	0.00558	ug/l	200	Pt	
Au	197	193	3	0.09430	0.18859	ug/l	2000	Au	
Tl	205	193	3	100.19231	200.38462	ug/l	400	Tl	
Pb	208	193	3	516.86378	1033.72757	ug/l	5000	Pb	
Bi	209	193	2	505.85881	1011.71763	ug/l	2000	Bi	
Th	232	193	3	542.40174	1084.80348	ug/l	2000	Th	
U	238	193	3	522.38391	1044.76782	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5367040	0.10	5676390	94.6	80	120	Li (IS)	
Sc (IS)	45	2	182460	0.89	157398	115.9	80	120	Sc (IS)	
Sc (IS)	45	3	3333481	0.76	2954313	112.8	80	120	Sc (IS)	
Ge (IS)	72	2	363356	0.37	379042	95.9	80	120	Ge (IS)	
Ge (IS)	72	3	2264122	0.03	2413999	93.8	80	120	Ge (IS)	
In (IS)	115	3	13837421	1.53	15281059	90.6	80	120	In (IS)	
Ho (IS)	165	2	10219824	0.08	10495856	97.4	80	120	Ho (IS)	
Ho (IS)	165	3	16371898	0.61	16807844	97.4	80	120	Ho (IS)	
Ir (IS)	193	2	6353061	0.83	6895257	92.1	80	120	Ir (IS)	
Ir (IS)	193	3	7725081	0.69	8354862	92.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**160-36526-B-21-A**
Data File Name	**119SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T04:59:35-06:00**
Type	**Sample**
VialNumber	**3202**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	9.95437	19.90875	ug/l	1000	Li	
Be	9	6	3	0.61835	1.23669	ug/l	1000	Be	
B	11	6	3	6.88613	13.77227	ug/l	2000	B	
Na	23	45	2	291.78439	583.56878	ug/l	50000	Na	
Mg	24	45	2	21914.99583	43829.99167	ug/l	50000	Mg	
Al	27	45	2	26368.89084	52737.78168	ug/l	100000	Al	
P	31	45	2	1347.26018	2694.52037	ug/l	100000	P	
K	39	45	2	4355.52490	8711.04980	ug/l	100000	K	
Ca	44	45	3	10482.11442	20964.22884	ug/l	100000	Ca	
Ti	47	45	3	646.33370	1292.66739	ug/l	2000	Ti	
V	51	45	2	75.05660	150.11319	ug/l	2000	V	
Cr	52	45	2	27.39467	54.78934	ug/l	2000	Cr	
Mn	55	72	2	287.01073	574.02146	ug/l	5000	Mn	
Fe	57	72	2	69999.91523	139999.83045	ug/l	100000	Fe	
Co	59	72	2	15.79021	31.58041	ug/l	2000	Co	
Ni	60	72	2	33.45316	66.90632	ug/l	2000	Ni	
Cu	63	72	2	5464.28165	10928.56329	ug/l	2000	Cu	FAILED
Zn	66	72	2	77.77001	155.54001	ug/l	5000	Zn	
As	75	72	2	30.80649	61.61298	ug/l	2000	As	
Se	78	72	2	12.14632	24.29264	ug/l	1000	Se	
Sr	88	72	3	179.68406	359.36812	ug/l	2000	Sr	
Y	89	72	2	15.09123	30.18245	ug/l	200	Y	
Zr	90	72	2	4.15377	8.30754	ug/l	2000	Zr	
Nb	93	72	2	0.21112	0.42223	ug/l	100	Nb	
Mo	95	72	3	16.87521	33.75042	ug/l	1000	Mo	
Ru	101	72	2	-0.00900	-0.01800	ug/l	200	Ru	
Rh	103	72	2	-0.00591	-0.01181	ug/l	200	Rh	
Pd	105	72	2	0.02664	0.05328	ug/l	20	Pd	
Ag	107	115	3	0.30475	0.60949	ug/l	400	Ag	
Cd	111	115	3	0.13196	0.26392	ug/l	2000	Cd	
Sn	118	115	3	7.78397	15.56794	ug/l	2000	Sn	
Sb	121	115	3	1.73936	3.47872	ug/l	1000	Sb	
Te	125	165	2	0.72236	1.44472	ug/l	200	Te	
Cs	133	165	2	4.02996	8.05991	ug/l	2000	Cs	
Ba	137	165	3	203.22310	406.44621	ug/l	5000	Ba	
La	139	165	2	51.89673	103.79345	ug/l	200	La	
Ce	140	165	2	111.12195	222.24389	ug/l	200	Ce	
Pr	141	165	2	12.70388	25.40777	ug/l	200	Pr	
Nd	146	165	2	50.04156	100.08313	ug/l	200	Nd	
Sm	147	165	3	8.62481	17.24961	ug/l	2000	Sm	
Hf	178	165	2	0.12724	0.25448	ug/l	200	Hf	
Ta	181	165	2	0.14007	0.28015	ug/l	200	Ta	
W	182	165	2	3.82514	7.65027	ug/l	2000	W	
Re	185	193	3	0.00429	0.00857	ug/l	200	Re	
Pt	195	193	2	0.00380	0.00761	ug/l	200	Pt	
Au	197	193	3	0.02524	0.05047	ug/l	2000	Au	
Tl	205	193	3	0.78922	1.57843	ug/l	400	Tl	
Pb	208	193	3	13.28198	26.56396	ug/l	5000	Pb	
Bi	209	193	2	2.77749	5.55499	ug/l	2000	Bi	
Th	232	193	3	24.40573	48.81146	ug/l	2000	Th	
U	238	193	3	8.68958	17.37915	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5538171	1.13	5676390	97.6	80	120	Li (IS)	
Sc (IS)	45	2	166537	3.57	157398	105.8	80	120	Sc (IS)	
Sc (IS)	45	3	3047189	0.22	2954313	103.1	80	120	Sc (IS)	
Ge (IS)	72	2	375199	2.05	379042	99.0	80	120	Ge (IS)	
Ge (IS)	72	3	2319426	0.27	2413999	96.1	80	120	Ge (IS)	
In (IS)	115	3	14263877	1.46	15281059	93.3	80	120	In (IS)	
Ho (IS)	165	2	10564967	3.00	10495856	100.7	80	120	Ho (IS)	
Ho (IS)	165	3	16526942	1.28	16807844	98.3	80	120	Ho (IS)	
Ir (IS)	193	2	6649612	2.01	6895257	96.4	80	120	Ir (IS)	
Ir (IS)	193	3	7951408	1.02	8354862	95.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**160-36526-B-22-A**
Data File Name	**120SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T05:06:17-06:00**
Type	**Sample**
VialNumber	**3203**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	10.88207	21.76414	ug/l	1000	Li	
Be	9	6	3	1.10474	2.20948	ug/l	1000	Be	
B	11	6	3	3.95760	7.91521	ug/l	2000	B	
Na	23	45	2	379.15939	758.31877	ug/l	50000	Na	
Mg	24	45	2	23724.34948	47448.69897	ug/l	50000	Mg	
Al	27	45	2	24983.07556	49966.15111	ug/l	100000	Al	
P	31	45	2	2704.83950	5409.67900	ug/l	100000	P	
K	39	45	2	6764.19960	13528.39920	ug/l	100000	K	
Ca	44	45	3	22069.88689	44139.77378	ug/l	100000	Ca	
Ti	47	45	3	1636.02340	3272.04679	ug/l	2000	Ti	
V	51	45	2	63.81381	127.62761	ug/l	2000	V	
Cr	52	45	2	20.82061	41.64123	ug/l	2000	Cr	
Mn	55	72	2	262.80460	525.60920	ug/l	5000	Mn	
Fe	57	72	2	48451.45164	96902.90328	ug/l	100000	Fe	
Co	59	72	2	47.73298	95.46597	ug/l	2000	Co	
Ni	60	72	2	68.04793	136.09586	ug/l	2000	Ni	
Cu	63	72	2	18538.51841	37077.03682	ug/l	2000	Cu	FAILED
Zn	66	72	2	94.24432	188.48864	ug/l	5000	Zn	
As	75	72	2	6.34410	12.68821	ug/l	2000	As	
Se	78	72	2	6.50816	13.01632	ug/l	1000	Se	
Sr	88	72	3	159.60292	319.20584	ug/l	2000	Sr	
Y	89	72	2	19.70553	39.41107	ug/l	200	Y	
Zr	90	72	2	6.59088	13.18176	ug/l	2000	Zr	
Nb	93	72	2	0.63632	1.27264	ug/l	100	Nb	
Mo	95	72	3	6.84042	13.68084	ug/l	1000	Mo	
Ru	101	72	2	-0.00788	-0.01576	ug/l	200	Ru	
Rh	103	72	2	-0.00496	-0.00993	ug/l	200	Rh	
Pd	105	72	2	0.03502	0.07004	ug/l	20	Pd	
Ag	107	115	3	0.37692	0.75384	ug/l	400	Ag	
Cd	111	115	3	0.16376	0.32753	ug/l	2000	Cd	
Sn	118	115	3	7.85279	15.70558	ug/l	2000	Sn	
Sb	121	115	3	0.75908	1.51816	ug/l	1000	Sb	
Te	125	165	2	0.66223	1.32447	ug/l	200	Te	
Cs	133	165	2	2.77244	5.54487	ug/l	2000	Cs	
Ba	137	165	3	165.78303	331.56605	ug/l	5000	Ba	
La	139	165	2	23.56873	47.13745	ug/l	200	La	
Ce	140	165	2	53.09950	106.19901	ug/l	200	Ce	
Pr	141	165	2	6.40471	12.80942	ug/l	200	Pr	
Nd	146	165	2	28.18088	56.36176	ug/l	200	Nd	
Sm	147	165	3	6.01661	12.03322	ug/l	2000	Sm	
Hf	178	165	2	0.24235	0.48470	ug/l	200	Hf	
Ta	181	165	2	0.10454	0.20907	ug/l	200	Ta	
W	182	165	2	2.01602	4.03204	ug/l	2000	W	
Re	185	193	3	0.03745	0.07489	ug/l	200	Re	
Pt	195	193	2	0.00495	0.00990	ug/l	200	Pt	
Au	197	193	3	0.25582	0.51164	ug/l	2000	Au	
Tl	205	193	3	0.33594	0.67188	ug/l	400	Tl	
Pb	208	193	3	6.57197	13.14393	ug/l	5000	Pb	
Bi	209	193	2	1.83677	3.67354	ug/l	2000	Bi	
Th	232	193	3	35.22454	70.44908	ug/l	2000	Th	
U	238	193	3	22.26457	44.52913	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5353257	0.43	5676390	94.3	80	120	Li (IS)	
Sc (IS)	45	2	165038	0.18	157398	104.9	80	120	Sc (IS)	
Sc (IS)	45	3	3084248	0.90	2954313	104.4	80	120	Sc (IS)	
Ge (IS)	72	2	372487	0.57	379042	98.3	80	120	Ge (IS)	
Ge (IS)	72	3	2321006	0.80	2413999	96.1	80	120	Ge (IS)	
In (IS)	115	3	14365433	0.75	15281059	94.0	80	120	In (IS)	
Ho (IS)	165	2	10479494	0.61	10495856	99.8	80	120	Ho (IS)	
Ho (IS)	165	3	16721131	0.46	16807844	99.5	80	120	Ho (IS)	
Ir (IS)	193	2	6573402	1.10	6895257	95.3	80	120	Ir (IS)	
Ir (IS)	193	3	7983560	1.30	8354862	95.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**280-130833-A-1-G**
Data File Name	**121SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T05:13:05-06:00**
Type	**Sample**
VialNumber	**3204**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	66.05179	132.10358	ug/l	1000	Li	
Be	9	6	3	0.43412	0.86825	ug/l	1000	Be	
B	11	6	3	130.06396	260.12793	ug/l	2000	B	
Na	23	45	2	10937.75602	21875.51203	ug/l	50000	Na	
Mg	24	45	2	35273.98528	70547.97056	ug/l	50000	Mg	
Al	27	45	2	140629.39806	281258.79611	ug/l	100000	Al	FAILED
P	31	45	2	189.12847	378.25694	ug/l	100000	P	
K	39	45	2	1525.42727	3050.85454	ug/l	100000	K	
Ca	44	45	3	587515.98780	1175031.97560	ug/l	100000	Ca	FAILED
Ti	47	45	3	165.18585	330.37170	ug/l	2000	Ti	
V	51	45	2	34.63067	69.26135	ug/l	2000	V	
Cr	52	45	2	11932.90189	23865.80378	ug/l	2000	Cr	FAILED
Mn	55	72	2	1630.49189	3260.98378	ug/l	5000	Mn	
Fe	57	72	2	78942.74460	157885.48920	ug/l	100000	Fe	
Co	59	72	2	64.80917	129.61834	ug/l	2000	Co	
Ni	60	72	2	116.82494	233.64988	ug/l	2000	Ni	
Cu	63	72	2	67.38492	134.76984	ug/l	2000	Cu	
Zn	66	72	2	19.20496	38.40991	ug/l	5000	Zn	
As	75	72	2	3.79901	7.59803	ug/l	2000	As	
Se	78	72	2	2.14404	4.28809	ug/l	1000	Se	
Sr	88	72	3	1155.15084	2310.30168	ug/l	2000	Sr	
Y	89	72	2	86.29010	172.58021	ug/l	200	Y	
Zr	90	72	2	528.14842	1056.29683	ug/l	2000	Zr	
Nb	93	72	2	1.81500	3.63000	ug/l	100	Nb	
Mo	95	72	3	25.71445	51.42890	ug/l	1000	Mo	
Ru	101	72	2	0.00556	0.01112	ug/l	200	Ru	
Rh	103	72	2	0.01081	0.02163	ug/l	200	Rh	
Pd	105	72	2	0.15405	0.30810	ug/l	20	Pd	
Ag	107	115	3	0.77407	1.54815	ug/l	400	Ag	
Cd	111	115	3	0.41473	0.82946	ug/l	2000	Cd	
Sn	118	115	3	14.61887	29.23773	ug/l	2000	Sn	
Sb	121	115	3	3.32335	6.64670	ug/l	1000	Sb	
Te	125	165	2	0.10731	0.21461	ug/l	200	Te	
Cs	133	165	2	0.12570	0.25140	ug/l	2000	Cs	
Ba	137	165	3	219.88074	439.76147	ug/l	5000	Ba	
La	139	165	2	74.62816	149.25631	ug/l	200	La	
Ce	140	165	2	29.98710	59.97420	ug/l	200	Ce	
Pr	141	165	2	2.34746	4.69492	ug/l	200	Pr	
Nd	146	165	2	8.57172	17.14345	ug/l	200	Nd	
Sm	147	165	3	2.19459	4.38917	ug/l	2000	Sm	
Hf	178	165	2	10.75083	21.50166	ug/l	200	Hf	
Ta	181	165	2	0.17276	0.34553	ug/l	200	Ta	
W	182	165	2	4.49815	8.99631	ug/l	2000	W	
Re	185	193	3	0.00654	0.01308	ug/l	200	Re	
Pt	195	193	2	0.03502	0.07003	ug/l	200	Pt	
Au	197	193	3	-0.00972	-0.01944	ug/l	2000	Au	
Tl	205	193	3	0.08241	0.16482	ug/l	400	Tl	
Pb	208	193	3	367.21862	734.43724	ug/l	5000	Pb	
Bi	209	193	2	0.24776	0.49552	ug/l	2000	Bi	
Th	232	193	3	16.05506	32.11013	ug/l	2000	Th	
U	238	193	3	8.47401	16.94802	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	4612214	3.01	5676390	81.3	80	120	Li (IS)	
Sc (IS)	45	2	158343	0.93	157398	100.6	80	120	Sc (IS)	
Sc (IS)	45	3	2911323	6.10	2954313	98.5	80	120	Sc (IS)	
Ge (IS)	72	2	324718	1.76	379042	85.7	80	120	Ge (IS)	
Ge (IS)	72	3	2087305	3.67	2413999	86.5	80	120	Ge (IS)	
In (IS)	115	3	13399055	5.39	15281059	87.7	80	120	In (IS)	
Ho (IS)	165	2	9187583	1.17	10495856	87.5	80	120	Ho (IS)	
Ho (IS)	165	3	15595562	6.09	16807844	92.8	80	120	Ho (IS)	
Ir (IS)	193	2	5633132	0.13	6895257	81.7	80	120	Ir (IS)	
Ir (IS)	193	3	7373739	3.84	8354862	88.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-130833-A-2-F**
Data File Name	**122SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T05:19:54-06:00**
Type	**Sample**
VialNumber	**3205**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	10.19335	101.93352	ug/l	1000	Li	
Be	9	6	3	0.53023	5.30226	ug/l	1000	Be	
B	11	6	3	9.62412	96.24119	ug/l	2000	B	
Na	23	45	2	858.69667	8586.96670	ug/l	50000	Na	
Mg	24	45	2	3378.09442	33780.94421	ug/l	50000	Mg	
Al	27	45	2	65542.42063	655424.20632	ug/l	100000	Al	
P	31	45	2	330.32645	3303.26447	ug/l	100000	P	
K	39	45	2	2989.39569	29893.95687	ug/l	100000	K	
Ca	44	45	3	7404.50060	74045.00600	ug/l	100000	Ca	
Ti	47	45	3	492.91420	4929.14199	ug/l	2000	Ti	
V	51	45	2	26.71244	267.12437	ug/l	2000	V	
Cr	52	45	2	19.96948	199.69480	ug/l	2000	Cr	
Mn	55	72	2	380.03800	3800.38002	ug/l	5000	Mn	
Fe	57	72	2	18004.69728	180046.97277	ug/l	100000	Fe	
Co	59	72	2	5.09801	50.98008	ug/l	2000	Co	
Ni	60	72	2	15.59584	155.95836	ug/l	2000	Ni	
Cu	63	72	2	107.26077	1072.60767	ug/l	2000	Cu	
Zn	66	72	2	424.03956	4240.39559	ug/l	5000	Zn	
As	75	72	2	10.81628	108.16276	ug/l	2000	As	
Se	78	72	2	0.97060	9.70603	ug/l	1000	Se	
Sr	88	72	3	164.72278	1647.22781	ug/l	2000	Sr	
Y	89	72	2	4.54676	45.46758	ug/l	200	Y	
Zr	90	72	2	9.23597	92.35966	ug/l	2000	Zr	
Nb	93	72	2	2.87920	28.79200	ug/l	100	Nb	
Mo	95	72	3	6.49322	64.93216	ug/l	1000	Mo	
Ru	101	72	2	-0.00539	-0.05391	ug/l	200	Ru	
Rh	103	72	2	-0.00025	-0.00246	ug/l	200	Rh	
Pd	105	72	2	0.01461	0.14607	ug/l	20	Pd	
Ag	107	115	3	0.36329	3.63287	ug/l	400	Ag	
Cd	111	115	3	0.42158	4.21579	ug/l	2000	Cd	
Sn	118	115	3	62.90950	629.09500	ug/l	2000	Sn	
Sb	121	115	3	0.65803	6.58030	ug/l	1000	Sb	
Te	125	165	2	0.05516	0.55157	ug/l	200	Te	
Cs	133	165	2	2.48630	24.86298	ug/l	2000	Cs	
Ba	137	165	3	222.55587	2225.55873	ug/l	5000	Ba	
La	139	165	2	8.92804	89.28043	ug/l	200	La	
Ce	140	165	2	17.75203	177.52025	ug/l	200	Ce	
Pr	141	165	2	2.16257	21.62568	ug/l	200	Pr	
Nd	146	165	2	8.31880	83.18799	ug/l	200	Nd	
Sm	147	165	3	1.48319	14.83190	ug/l	2000	Sm	
Hf	178	165	2	0.25378	2.53784	ug/l	200	Hf	
Ta	181	165	2	0.32579	3.25793	ug/l	200	Ta	
W	182	165	2	1.19186	11.91864	ug/l	2000	W	
Re	185	193	3	-0.00388	-0.03876	ug/l	200	Re	
Pt	195	193	2	0.00320	0.03200	ug/l	200	Pt	
Au	197	193	3	-0.01967	-0.19668	ug/l	2000	Au	
Tl	205	193	3	0.18527	1.85273	ug/l	400	Tl	
Pb	208	193	3	121.34052	1213.40520	ug/l	5000	Pb	
Bi	209	193	2	0.19799	1.97986	ug/l	2000	Bi	
Th	232	193	3	2.63204	26.32044	ug/l	2000	Th	
U	238	193	3	5201.04672	52010.46722	ug/l	2000	U	FAILED

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5451475	1.06	5676390	96.0	80	120	Li (IS)	
Sc (IS)	45	2	155387	0.47	157398	98.7	80	120	Sc (IS)	
Sc (IS)	45	3	2965338	0.32	2954313	100.4	80	120	Sc (IS)	
Ge (IS)	72	2	357449	0.23	379042	94.3	80	120	Ge (IS)	
Ge (IS)	72	3	2267927	1.16	2413999	93.9	80	120	Ge (IS)	
In (IS)	115	3	14636800	1.26	15281059	95.8	80	120	In (IS)	
Ho (IS)	165	2	10502452	0.16	10495856	100.1	80	120	Ho (IS)	
Ho (IS)	165	3	16767811	1.76	16807844	99.8	80	120	Ho (IS)	
Ir (IS)	193	2	6756312	0.42	6895257	98.0	80	120	Ir (IS)	
Ir (IS)	193	3	8286556	0.78	8354862	99.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**MB 160-452936/1-A**
Data File Name	**123SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T05:26:36-06:00**
Type	**Sample**
VialNumber	**3206**
Dilution	**2**
Comment	**452936**
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.04658	0.09317	ug/l	1000	Li	
Be	9	6	3	-0.00389	-0.00777	ug/l	1000	Be	
B	11	6	3	1.31091	2.62182	ug/l	2000	B	
Na	23	45	2	5.19968	10.39935	ug/l	50000	Na	
Mg	24	45	2	1.27466	2.54933	ug/l	50000	Mg	
Al	27	45	2	5.85337	11.70674	ug/l	100000	Al	
P	31	45	2	7.07454	14.14907	ug/l	100000	P	
K	39	45	2	-1.41934	-2.83867	ug/l	100000	K	
Ca	44	45	3	17.83296	35.66592	ug/l	100000	Ca	
Ti	47	45	3	0.26856	0.53711	ug/l	2000	Ti	
V	51	45	2	0.07006	0.14013	ug/l	2000	V	
Cr	52	45	2	0.08466	0.16933	ug/l	2000	Cr	
Mn	55	72	2	0.15634	0.31268	ug/l	5000	Mn	
Fe	57	72	2	2.24657	4.49313	ug/l	100000	Fe	
Co	59	72	2	-0.00410	-0.00820	ug/l	2000	Co	
Ni	60	72	2	0.06814	0.13628	ug/l	2000	Ni	
Cu	63	72	2	0.32573	0.65147	ug/l	2000	Cu	
Zn	66	72	2	0.97561	1.95121	ug/l	5000	Zn	
As	75	72	2	0.02791	0.05583	ug/l	2000	As	
Se	78	72	2	-0.05094	-0.10188	ug/l	1000	Se	
Sr	88	72	3	0.04074	0.08148	ug/l	2000	Sr	
Y	89	72	2	-0.00468	-0.00935	ug/l	200	Y	
Zr	90	72	2	0.02385	0.04770	ug/l	2000	Zr	
Nb	93	72	2	-0.09097	-0.18195	ug/l	100	Nb	
Mo	95	72	3	0.05776	0.11552	ug/l	1000	Mo	
Ru	101	72	2	-0.00872	-0.01745	ug/l	200	Ru	
Rh	103	72	2	-0.00702	-0.01404	ug/l	200	Rh	
Pd	105	72	2	0.00151	0.00301	ug/l	20	Pd	
Ag	107	115	3	0.00865	0.01729	ug/l	400	Ag	
Cd	111	115	3	0.00193	0.00385	ug/l	2000	Cd	
Sn	118	115	3	0.19089	0.38177	ug/l	2000	Sn	
Sb	121	115	3	0.01318	0.02635	ug/l	1000	Sb	
Te	125	165	2	-0.01600	-0.03200	ug/l	200	Te	
Cs	133	165	2	-0.00483	-0.00966	ug/l	2000	Cs	
Ba	137	165	3	0.05904	0.11808	ug/l	5000	Ba	
La	139	165	2	-0.00494	-0.00989	ug/l	200	La	
Ce	140	165	2	-0.00452	-0.00904	ug/l	200	Ce	
Pr	141	165	2	-0.00552	-0.01104	ug/l	200	Pr	
Nd	146	165	2	-0.00365	-0.00730	ug/l	200	Nd	
Sm	147	165	3	-0.00528	-0.01055	ug/l	2000	Sm	
Hf	178	165	2	-0.00669	-0.01338	ug/l	200	Hf	
Ta	181	165	2	0.02050	0.04100	ug/l	200	Ta	
W	182	165	2	0.45711	0.91422	ug/l	2000	W	
Re	185	193	3	-0.00529	-0.01058	ug/l	200	Re	
Pt	195	193	2	0.00271	0.00542	ug/l	200	Pt	
Au	197	193	3	-0.02479	-0.04958	ug/l	2000	Au	
Tl	205	193	3	0.01815	0.03630	ug/l	400	Tl	
Pb	208	193	3	0.14034	0.28067	ug/l	5000	Pb	
Bi	209	193	2	0.04509	0.09018	ug/l	2000	Bi	
Th	232	193	3	0.01429	0.02859	ug/l	2000	Th	
U	238	193	3	0.03868	0.07735	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5278188	0.38	5676390	93.0	80	120	Li (IS)	
Sc (IS)	45	2	146901	0.92	157398	93.3	80	120	Sc (IS)	
Sc (IS)	45	3	2802520	1.52	2954313	94.9	80	120	Sc (IS)	
Ge (IS)	72	2	363531	0.32	379042	95.9	80	120	Ge (IS)	
Ge (IS)	72	3	2356484	0.55	2413999	97.6	80	120	Ge (IS)	
In (IS)	115	3	15089762	1.04	15281059	98.7	80	120	In (IS)	
Ho (IS)	165	2	10455805	0.29	10495856	99.6	80	120	Ho (IS)	
Ho (IS)	165	3	16973384	0.94	16807844	101.0	80	120	Ho (IS)	
Ir (IS)	193	2	6906071	0.60	6895257	100.2	80	120	Ir (IS)	
Ir (IS)	193	3	8350142	0.39	8354862	99.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCS 160-452936/2-A**
Data File Name	**124SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T05:33:19-06:00**
Type	**Sample**
VialNumber	**3207**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	48.51035	97.02070	ug/l	1000	Li	
Be	9	6	3	46.11281	92.22562	ug/l	1000	Be	
B	11	6	3	91.82289	183.64578	ug/l	2000	B	
Na	23	45	2	5075.29755	10150.59509	ug/l	50000	Na	
Mg	24	45	2	5026.38338	10052.76676	ug/l	50000	Mg	
Al	27	45	2	4888.84250	9777.68501	ug/l	100000	Al	
P	31	45	2	462.64817	925.29634	ug/l	100000	P	
K	39	45	2	4778.66891	9557.33783	ug/l	100000	K	
Ca	44	45	3	5076.85776	10153.71552	ug/l	100000	Ca	
Ti	47	45	3	502.77891	1005.55783	ug/l	2000	Ti	
V	51	45	2	477.84105	955.68209	ug/l	2000	V	
Cr	52	45	2	481.75560	963.51120	ug/l	2000	Cr	
Mn	55	72	2	510.77463	1021.54926	ug/l	5000	Mn	
Fe	57	72	2	5201.40692	10402.81384	ug/l	100000	Fe	
Co	59	72	2	513.85897	1027.71795	ug/l	2000	Co	
Ni	60	72	2	557.99458	1115.98916	ug/l	2000	Ni	
Cu	63	72	2	517.31925	1034.63849	ug/l	2000	Cu	
Zn	66	72	2	489.98673	979.97345	ug/l	5000	Zn	
As	75	72	2	489.51133	979.02267	ug/l	2000	As	
Se	78	72	2	239.14865	478.29730	ug/l	1000	Se	
Sr	88	72	3	511.57242	1023.14484	ug/l	2000	Sr	
Y	89	72	2	48.27706	96.55411	ug/l	200	Y	
Zr	90	72	2	515.96883	1031.93766	ug/l	2000	Zr	
Nb	93	72	2	24.79384	49.58767	ug/l	100	Nb	
Mo	95	72	3	253.32167	506.64334	ug/l	1000	Mo	
Ru	101	72	2	49.90246	99.80493	ug/l	200	Ru	
Rh	103	72	2	54.82422	109.64844	ug/l	200	Rh	
Pd	105	72	2	4.06381	8.12763	ug/l	20	Pd	
Ag	107	115	3	95.84624	191.69248	ug/l	400	Ag	
Cd	111	115	3	488.53269	977.06538	ug/l	2000	Cd	
Sn	118	115	3	488.36998	976.73996	ug/l	2000	Sn	
Sb	121	115	3	243.21299	486.42598	ug/l	1000	Sb	
Te	125	165	2	43.56840	87.13680	ug/l	200	Te	
Cs	133	165	2	44.01998	88.03996	ug/l	2000	Cs	
Ba	137	165	3	473.53504	947.07008	ug/l	5000	Ba	
La	139	165	2	49.81874	99.63747	ug/l	200	La	
Ce	140	165	2	48.56149	97.12298	ug/l	200	Ce	
Pr	141	165	2	48.95469	97.90938	ug/l	200	Pr	
Nd	146	165	2	45.38237	90.76474	ug/l	200	Nd	
Sm	147	165	3	495.02324	990.04649	ug/l	2000	Sm	
Hf	178	165	2	46.65248	93.30496	ug/l	200	Hf	
Ta	181	165	2	46.18292	92.36585	ug/l	200	Ta	
W	182	165	2	505.15828	1010.31655	ug/l	2000	W	
Re	185	193	3	50.47453	100.94905	ug/l	200	Re	
Pt	195	193	2	4.95646	9.91292	ug/l	200	Pt	
Au	197	193	3	7.34404	14.68809	ug/l	2000	Au	
Tl	205	193	3	99.75830	199.51659	ug/l	400	Tl	
Pb	208	193	3	506.39847	1012.79693	ug/l	5000	Pb	
Bi	209	193	2	498.24087	996.48175	ug/l	2000	Bi	
Th	232	193	3	506.14909	1012.29818	ug/l	2000	Th	
U	238	193	3	519.49343	1038.98687	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5206909	0.27	5676390	91.7	80	120	Li (IS)	
Sc (IS)	45	2	146166	1.63	157398	92.9	80	120	Sc (IS)	
Sc (IS)	45	3	2731309	0.61	2954313	92.5	80	120	Sc (IS)	
Ge (IS)	72	2	355380	1.03	379042	93.8	80	120	Ge (IS)	
Ge (IS)	72	3	2311566	0.20	2413999	95.8	80	120	Ge (IS)	
In (IS)	115	3	14544617	0.26	15281059	95.2	80	120	In (IS)	
Ho (IS)	165	2	10345183	0.19	10495856	98.6	80	120	Ho (IS)	
Ho (IS)	165	3	17056842	0.92	16807844	101.5	80	120	Ho (IS)	
Ir (IS)	193	2	6681732	0.37	6895257	96.9	80	120	Ir (IS)	
Ir (IS)	193	3	8268476	0.98	8354862	99.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Report

Sample Name	**460-196683-D-2-A**
Data File Name	**125SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T05:40:03-06:00**
Type	**Sample**
VialNumber	**3208**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.86054	1.72107	ug/l	1000	Li	
Be	9	6	3	0.00186	0.00372	ug/l	1000	Be	
B	11	6	3	54.57419	109.14838	ug/l	2000	B	
Na	23	45	2	78488.52290	156977.04581	ug/l	50000	Na	FAILED
Mg	24	45	2	18322.66757	36645.33513	ug/l	50000	Mg	
Al	27	45	2	129.66954	259.33908	ug/l	100000	Al	
P	31	45	2	2697.12540	5394.25080	ug/l	100000	P	
K	39	45	2	6489.97302	12979.94604	ug/l	100000	K	
Ca	44	45	3	50801.34616	101602.69232	ug/l	100000	Ca	
Ti	47	45	3	6.70942	13.41883	ug/l	2000	Ti	
V	51	45	2	1.48863	2.97726	ug/l	2000	V	
Cr	52	45	2	1.89146	3.78292	ug/l	2000	Cr	
Mn	55	72	2	34.86436	69.72872	ug/l	5000	Mn	
Fe	57	72	2	568.55675	1137.11349	ug/l	100000	Fe	
Co	59	72	2	0.23454	0.46908	ug/l	2000	Co	
Ni	60	72	2	2.18113	4.36227	ug/l	2000	Ni	
Cu	63	72	2	139.17363	278.34725	ug/l	2000	Cu	
Zn	66	72	2	65.95675	131.91349	ug/l	5000	Zn	
As	75	72	2	0.63524	1.27048	ug/l	2000	As	
Se	78	72	2	0.38837	0.77675	ug/l	1000	Se	
Sr	88	72	3	161.21595	322.43190	ug/l	2000	Sr	
Y	89	72	2	0.09765	0.19529	ug/l	200	Y	
Zr	90	72	2	0.41925	0.83849	ug/l	2000	Zr	
Nb	93	72	2	0.20710	0.41421	ug/l	100	Nb	
Mo	95	72	3	1.06150	2.12300	ug/l	1000	Mo	
Ru	101	72	2	-0.00573	-0.01146	ug/l	200	Ru	
Rh	103	72	2	-0.00589	-0.01177	ug/l	200	Rh	
Pd	105	72	2	0.00737	0.01474	ug/l	20	Pd	
Ag	107	115	3	0.37020	0.74041	ug/l	400	Ag	
Cd	111	115	3	0.29238	0.58475	ug/l	2000	Cd	
Sn	118	115	3	2.61578	5.23156	ug/l	2000	Sn	
Sb	121	115	3	0.19986	0.39972	ug/l	1000	Sb	
Te	125	165	2	0.01275	0.02551	ug/l	200	Te	
Cs	133	165	2	0.01455	0.02909	ug/l	2000	Cs	
Ba	137	165	3	19.97601	39.95201	ug/l	5000	Ba	
La	139	165	2	0.08468	0.16937	ug/l	200	La	
Ce	140	165	2	0.16662	0.33325	ug/l	200	Ce	
Pr	141	165	2	0.01400	0.02800	ug/l	200	Pr	
Nd	146	165	2	0.07030	0.14059	ug/l	200	Nd	
Sm	147	165	3	0.01676	0.03353	ug/l	2000	Sm	
Hf	178	165	2	0.00821	0.01642	ug/l	200	Hf	
Ta	181	165	2	0.21656	0.43313	ug/l	200	Ta	
W	182	165	2	1.08297	2.16594	ug/l	2000	W	
Re	185	193	3	-0.00219	-0.00439	ug/l	200	Re	
Pt	195	193	2	0.00563	0.01125	ug/l	200	Pt	
Au	197	193	3	0.00522	0.01044	ug/l	2000	Au	
Tl	205	193	3	0.14584	0.29168	ug/l	400	Tl	
Pb	208	193	3	2.33845	4.67691	ug/l	5000	Pb	
Bi	209	193	2	1.33750	2.67500	ug/l	2000	Bi	
Th	232	193	3	0.09538	0.19075	ug/l	2000	Th	
U	238	193	3	1.04180	2.08361	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5362521	0.08	5676390	94.5	80	120	Li (IS)	
Sc (IS)	45	2	142742	0.33	157398	90.7	80	120	Sc (IS)	
Sc (IS)	45	3	2738616	1.01	2954313	92.7	80	120	Sc (IS)	
Ge (IS)	72	2	347327	1.01	379042	91.6	80	120	Ge (IS)	
Ge (IS)	72	3	2235149	0.55	2413999	92.6	80	120	Ge (IS)	
In (IS)	115	3	14042103	0.49	15281059	91.9	80	120	In (IS)	
Ho (IS)	165	2	10197912	0.22	10495856	97.2	80	120	Ho (IS)	
Ho (IS)	165	3	16299560	1.17	16807844	97.0	80	120	Ho (IS)	
Ir (IS)	193	2	6478371	0.21	6895257	94.0	80	120	Ir (IS)	
Ir (IS)	193	3	7892344	0.45	8354862	94.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**126LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T05:46:52-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	4.46306	ug/l	5	89.3	80	120	Li	
Be	9	6	3	0.50101	ug/l	0.5	100.2	80	120	Be	
B	11	6	3	88.91928	ug/l	100	88.9	80	120	B	
Na	23	45	2	106.44070	ug/l	100	106.4	80	120	Na	
Mg	24	45	2	53.25065	ug/l	50	106.5	80	120	Mg	
Al	27	45	2	53.27048	ug/l	50	106.5	80	120	Al	
P	31	45	2	97.85644	ug/l	100	97.9	80	120	P	
K	39	45	2	97.22006	ug/l	100	97.2	80	120	K	
Ca	44	45	3	202.65703	ug/l	200	101.3	80	120	Ca	
Ti	47	45	3	5.11803	ug/l	5	102.4	80	120	Ti	
V	51	45	2	9.83863	ug/l	10	98.4	80	120	V	
Cr	52	45	2	9.83391	ug/l	10	98.3	80	120	Cr	
Mn	55	72	2	4.25329	ug/l	4	106.3	80	120	Mn	
Fe	57	72	2	53.79566	ug/l	50	107.6	80	120	Fe	
Co	59	72	2	2.13138	ug/l	2	106.6	80	120	Co	
Ni	60	72	2	5.69617	ug/l	5	113.9	80	120	Ni	
Cu	63	72	2	3.15462	ug/l	3	105.2	80	120	Cu	
Zn	66	72	2	21.77147	ug/l	20	108.9	80	120	Zn	
As	75	72	2	10.73439	ug/l	10	107.3	80	120	As	
Se	78	72	2	4.74916	ug/l	5	95.0	80	120	Se	
Sr	88	72	3	5.11678	ug/l	5	102.3	80	120	Sr	
Y	89	72	2	5.03577	ug/l	5	100.7	80	120	Y	
Zr	90	72	2	4.99730	ug/l	5	99.9	80	120	Zr	
Nb	93	72	2	16.98099	ug/l	25	67.9	80	120	Nb	FAILED
Mo	95	72	3	5.04293	ug/l	5	100.9	80	120	Mo	
Ru	101	72	2	10.41502	ug/l	10	104.2	80	120	Ru	
Rh	103	72	2	10.09806	ug/l	10	101.0	80	120	Rh	
Pd	105	72	2	0.56937	ug/l	0.5	113.9	80	120	Pd	
Ag	107	115	3	1.88538	ug/l	2	94.3	80	120	Ag	
Cd	111	115	3	0.53015	ug/l	0.5	106.0	80	120	Cd	
Sn	118	115	3	1.89472	ug/l	2	94.7	80	120	Sn	
Sb	121	115	3	4.61905	ug/l	5	92.4	80	120	Sb	
Te	125	165	2	9.41488	ug/l	10	94.1	80	120	Te	
Cs	133	165	2	0.92252	ug/l	1	92.3	80	120	Cs	
Ba	137	165	3	1.89084	ug/l	2	94.5	80	120	Ba	
La	139	165	2	1.85965	ug/l	2	93.0	80	120	La	
Ce	140	165	2	9.19909	ug/l	10	92.0	80	120	Ce	
Pr	141	165	2	1.87192	ug/l	2	93.6	80	120	Pr	
Nd	146	165	2	1.90309	ug/l	2	95.2	80	120	Nd	
Sm	147	165	3	9.56733	ug/l	10	95.7	80	120	Sm	
Hf	178	165	2	8.56344	ug/l	10	85.6	80	120	Hf	
Ta	181	165	2	5.77480	ug/l	10	57.7	80	120	Ta	FAILED
W	182	165	2	4.78354	ug/l	5	95.7	80	120	W	
Re	185	193	3	9.17910	ug/l	10	91.8	80	120	Re	
Pt	195	193	2	1.01393	ug/l	1	101.4	80	120	Pt	
Au	197	193	3	4.56394	ug/l	5	91.3	80	120	Au	
Tl	205	193	3	1.87333	ug/l	2	93.7	80	120	Tl	
Pb	208	193	3	2.85541	ug/l	3	95.2	80	120	Pb	
Bi	209	193	2	17.67995	ug/l	20	88.4	80	120	Bi	
Th	232	193	3	1.85621	ug/l	2	92.8	80	120	Th	
U	238	193	3	0.96119	ug/l	1	96.1	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5861045	0.26	5676390	103.3	80	120	Li (IS)	
Sc (IS)	45	2	151220	0.11	157398	96.1	80	120	Sc (IS)	
Sc (IS)	45	3	2792638	0.53	2954313	94.5	80	120	Sc (IS)	
Ge (IS)	72	2	365958	0.30	379042	96.5	80	120	Ge (IS)	
Ge (IS)	72	3	2314869	1.07	2413999	95.9	80	120	Ge (IS)	
In (IS)	115	3	14923581	0.38	15281059	97.7	80	120	In (IS)	
Ho (IS)	165	2	10466579	0.21	10495856	99.7	80	120	Ho (IS)	
Ho (IS)	165	3	16736476	0.80	16807844	99.6	80	120	Ho (IS)	
Ir (IS)	193	2	6845074	0.06	6895257	99.3	80	120	Ir (IS)	
Ir (IS)	193	3	8308577	1.12	8354862	99.4	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**127_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T05:53:35-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	95.03836	ug/l	100	95.0	90	110	Li	
Be	9	6	3	92.99015	ug/l	100	93.0	90	110	Be	
B	11	6	3	186.60409	ug/l	200	93.3	90	110	B	
Na	23	45	2	2499.46744	ug/l	2500	100.0	90	110	Na	
Mg	24	45	2	2535.83538	ug/l	2500	101.4	90	110	Mg	
Al	27	45	2	2423.78213	ug/l	2500	97.0	90	110	Al	
P	31	45	2	2440.73575	ug/l	2500	97.6	90	110	P	
K	39	45	2	2482.51928	ug/l	2500	99.3	90	110	K	
Ca	44	45	3	2546.24021	ug/l	2500	101.8	90	110	Ca	
Ti	47	45	3	101.02464	ug/l	100	101.0	90	110	Ti	
V	51	45	2	96.31602	ug/l	100	96.3	90	110	V	
Cr	52	45	2	100.03470	ug/l	100	100.0	90	110	Cr	
Mn	55	72	2	97.72151	ug/l	100	97.7	90	110	Mn	
Fe	57	72	2	2471.21145	ug/l	2500	98.8	90	110	Fe	
Co	59	72	2	103.29988	ug/l	100	103.3	90	110	Co	
Ni	60	72	2	104.65405	ug/l	100	104.7	90	110	Ni	
Cu	63	72	2	102.89319	ug/l	100	102.9	90	110	Cu	
Zn	66	72	2	103.81623	ug/l	100	103.8	90	110	Zn	
As	75	72	2	103.09784	ug/l	100	103.1	90	110	As	
Se	78	72	2	51.02634	ug/l	50	102.1	90	110	Se	
Sr	88	72	3	104.81854	ug/l	100	104.8	90	110	Sr	
Y	89	72	2	105.41892	ug/l	100	105.4	90	110	Y	
Zr	90	72	2	104.54288	ug/l	100	104.5	90	110	Zr	
Nb	93	72	2	52.69734	ug/l	50	105.4	90	110	Nb	
Mo	95	72	3	49.25896	ug/l	50	98.5	90	110	Mo	
Ru	101	72	2	100.91171	ug/l	100	100.9	90	110	Ru	
Rh	103	72	2	106.68476	ug/l	100	106.7	90	110	Rh	
Pd	105	72	2	10.88166	ug/l	10	108.8	90	110	Pd	
Ag	107	115	3	18.03660	ug/l	20	90.2	90	110	Ag	
Cd	111	115	3	93.27718	ug/l	100	93.3	90	110	Cd	
Sn	118	115	3	99.86754	ug/l	100	99.9	90	110	Sn	
Sb	121	115	3	49.93065	ug/l	50	99.9	90	110	Sb	
Te	125	165	2	98.37951	ug/l	100	98.4	90	110	Te	
Cs	133	165	2	96.37846	ug/l	100	96.4	90	110	Cs	
Ba	137	165	3	98.75116	ug/l	100	98.8	90	110	Ba	
La	139	165	2	97.68443	ug/l	100	97.7	90	110	La	
Ce	140	165	2	99.01822	ug/l	100	99.0	90	110	Ce	
Pr	141	165	2	98.04069	ug/l	100	98.0	90	110	Pr	
Nd	146	165	2	91.53388	ug/l	100	91.5	90	110	Nd	
Sm	147	165	3	101.95278	ug/l	100	102.0	90	110	Sm	
Hf	178	165	2	100.92277	ug/l	100	100.9	90	110	Hf	
Ta	181	165	2	102.67972	ug/l	100	102.7	90	110	Ta	
W	182	165	2	102.06217	ug/l	100	102.1	90	110	W	
Re	185	193	3	99.39920	ug/l	100	99.4	90	110	Re	
Pt	195	193	2	9.91471	ug/l	10	99.1	90	110	Pt	
Au	197	193	3	99.09417	ug/l	100	99.1	90	110	Au	
Tl	205	193	3	19.86027	ug/l	20	99.3	90	110	Tl	
Pb	208	193	3	101.04539	ug/l	100	101.0	90	110	Pb	
Bi	209	193	2	99.11942	ug/l	100	99.1	90	110	Bi	
Th	232	193	3	99.17349	ug/l	100	99.2	90	110	Th	
U	238	193	3	99.38899	ug/l	100	99.4	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5529268	1.20	5676390	97.4	80	120	Li (IS)	
Sc (IS)	45	2	145718	0.76	157398	92.6	80	120	Sc (IS)	
Sc (IS)	45	3	2714258	1.16	2954313	91.9	80	120	Sc (IS)	
Ge (IS)	72	2	365522	0.81	379042	96.4	80	120	Ge (IS)	
Ge (IS)	72	3	2276263	0.52	2413999	94.3	80	120	Ge (IS)	
In (IS)	115	3	14627023	0.48	15281059	95.7	80	120	In (IS)	
Ho (IS)	165	2	10417284	0.11	10495856	99.3	80	120	Ho (IS)	
Ho (IS)	165	3	16653675	0.38	16807844	99.1	80	120	Ho (IS)	
Ir (IS)	193	2	6902501	0.80	6895257	100.1	80	120	Ir (IS)	
Ir (IS)	193	3	8315910	1.59	8354862	99.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**128_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:00:20-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	-0.28936	ug/l	1.388	Li	
Be	9	6	3	0.01105	ug/l	0.7	Be	
B	11	6	3	3.36409	ug/l	20	B	
Na	23	45	2	1.87415	ug/l	30	Na	
Mg	24	45	2	0.53859	ug/l	11.18	Mg	
Al	27	45	2	0.66652	ug/l	25.8	Al	
P	31	45	2	0.20326	ug/l	16.46	P	
K	39	45	2	-0.09773	ug/l	83.2	K	
Ca	44	45	3	0.65664	ug/l	136.2	Ca	
Ti	47	45	3	0.01438	ug/l	4.2	Ti	
V	51	45	2	0.01590	ug/l	4.74	V	
Cr	52	45	2	0.01939	ug/l	6.52	Cr	
Mn	55	72	2	0.03168	ug/l	0.49	Mn	
Fe	57	72	2	0.49271	ug/l	40.7	Fe	
Co	59	72	2	0.03145	ug/l	0.434	Co	
Ni	60	72	2	0.03496	ug/l	0.8	Ni	
Cu	63	72	2	-0.18410	ug/l	0.902	Cu	
Zn	66	72	2	0.08032	ug/l	16.58	Zn	
As	75	72	2	0.04889	ug/l	2.36	As	
Se	78	72	2	-0.08235	ug/l	3.18	Se	
Sr	88	72	3	0.01256	ug/l	2	Sr	
Y	89	72	2	0.01815	ug/l	0.424	Y	
Zr	90	72	2	0.02831	ug/l	0.496	Zr	
Nb	93	72	2	0.36321	ug/l	4.62	Nb	
Mo	95	72	3	0.08186	ug/l	2	Mo	
Ru	101	72	2	0.02052	ug/l	2	Ru	
Rh	103	72	2	0.02200	ug/l	1.634	Rh	
Pd	105	72	2	0.00646	ug/l	0.08	Pd	
Ag	107	115	3	0.00116	ug/l	1.54	Ag	
Cd	111	115	3	0.01732	ug/l	0.4	Cd	
Sn	118	115	3	0.05095	ug/l	2	Sn	
Sb	121	115	3	0.03154	ug/l	3.34	Sb	
Te	125	165	2	0.06032	ug/l	1.072	Te	
Cs	133	165	2	0.02284	ug/l	0.106	Cs	
Ba	137	165	3	0.01153	ug/l	0.446	Ba	
La	139	165	2	0.01753	ug/l	0.102	La	
Ce	140	165	2	0.01825	ug/l	1.772	Ce	
Pr	141	165	2	0.01671	ug/l	0.084	Pr	
Nd	146	165	2	0.02090	ug/l	0.208	Nd	
Sm	147	165	3	0.00673	ug/l	0.652	Sm	
Hf	178	165	2	0.04662	ug/l	2.26	Hf	
Ta	181	165	2	0.05642	ug/l	1.46	Ta	
W	182	165	2	0.39891	ug/l	4	W	
Re	185	193	3	0.00453	ug/l	0.05	Re	
Pt	195	193	2	0.00058	ug/l	0.12	Pt	
Au	197	193	3	0.15141	ug/l	1	Au	
Tl	205	193	3	0.05015	ug/l	1.1	Tl	
Pb	208	193	3	0.02974	ug/l	0.346	Pb	
Bi	209	193	2	0.06170	ug/l	1.464	Bi	
Th	232	193	3	0.04909	ug/l	1.104	Th	
U	238	193	3	0.01169	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5640300	1.19	5676390	99.4	80	120	Li (IS)	
Sc (IS)	45	2	146642	0.87	157398	93.2	80	120	Sc (IS)	
Sc (IS)	45	3	2752123	0.56	2954313	93.2	80	120	Sc (IS)	
Ge (IS)	72	2	351524	2.02	379042	92.7	80	120	Ge (IS)	
Ge (IS)	72	3	2244858	0.20	2413999	93.0	80	120	Ge (IS)	
In (IS)	115	3	14745291	1.41	15281059	96.5	80	120	In (IS)	
Ho (IS)	165	2	10358836	3.01	10495856	98.7	80	120	Ho (IS)	
Ho (IS)	165	3	16738812	0.79	16807844	99.6	80	120	Ho (IS)	
Ir (IS)	193	2	6888510	2.36	6895257	99.9	80	120	Ir (IS)	
Ir (IS)	193	3	8365480	0.54	8354862	100.1	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**460-196683-D-2-A SD**
Data File Name	**129SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:07:05-06:00**
Type	**Sample**
VialNumber	**3209**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.06202	0.62023	ug/l	1000	Li	
Be	9	6	3	0.00297	0.02970	ug/l	1000	Be	
B	11	6	3	11.91577	119.15772	ug/l	2000	B	
Na	23	45	2	15567.26427	155672.64265	ug/l	50000	Na	
Mg	24	45	2	3652.96693	36529.66934	ug/l	50000	Mg	
Al	27	45	2	36.70316	367.03156	ug/l	100000	Al	
P	31	45	2	532.94958	5329.49582	ug/l	100000	P	
K	39	45	2	1232.39024	12323.90243	ug/l	100000	K	
Ca	44	45	3	10107.93645	101079.36455	ug/l	100000	Ca	
Ti	47	45	3	1.34188	13.41881	ug/l	2000	Ti	
V	51	45	2	0.25988	2.59882	ug/l	2000	V	
Cr	52	45	2	0.37968	3.79680	ug/l	2000	Cr	
Mn	55	72	2	6.79450	67.94500	ug/l	5000	Mn	
Fe	57	72	2	111.59924	1115.99240	ug/l	100000	Fe	
Co	59	72	2	0.04406	0.44064	ug/l	2000	Co	
Ni	60	72	2	0.45417	4.54167	ug/l	2000	Ni	
Cu	63	72	2	25.44455	254.44551	ug/l	2000	Cu	
Zn	66	72	2	14.21149	142.11485	ug/l	5000	Zn	
As	75	72	2	0.09398	0.93982	ug/l	2000	As	
Se	78	72	2	-0.07029	-0.70291	ug/l	1000	Se	
Sr	88	72	3	31.26561	312.65614	ug/l	2000	Sr	
Y	89	72	2	0.02024	0.20237	ug/l	200	Y	
Zr	90	72	2	0.12914	1.29142	ug/l	2000	Zr	
Nb	93	72	2	0.14124	1.41242	ug/l	100	Nb	
Mo	95	72	3	0.23542	2.35422	ug/l	1000	Mo	
Ru	101	72	2	-0.00682	-0.06819	ug/l	200	Ru	
Rh	103	72	2	-0.00367	-0.03668	ug/l	200	Rh	
Pd	105	72	2	0.00230	0.02302	ug/l	20	Pd	
Ag	107	115	3	0.06836	0.68362	ug/l	400	Ag	
Cd	111	115	3	0.05237	0.52365	ug/l	2000	Cd	
Sn	118	115	3	0.52001	5.20008	ug/l	2000	Sn	
Sb	121	115	3	0.05457	0.54568	ug/l	1000	Sb	
Te	125	165	2	0.00054	0.00539	ug/l	200	Te	
Cs	133	165	2	0.00330	0.03301	ug/l	2000	Cs	
Ba	137	165	3	3.90447	39.04465	ug/l	5000	Ba	
La	139	165	2	0.01421	0.14213	ug/l	200	La	
Ce	140	165	2	0.02934	0.29344	ug/l	200	Ce	
Pr	141	165	2	0.00080	0.00803	ug/l	200	Pr	
Nd	146	165	2	0.01803	0.18026	ug/l	200	Nd	
Sm	147	165	3	0.00001	0.00009	ug/l	2000	Sm	
Hf	178	165	2	0.07052	0.70518	ug/l	200	Hf	
Ta	181	165	2	0.04715	0.47146	ug/l	200	Ta	
W	182	165	2	0.18978	1.89779	ug/l	2000	W	
Re	185	193	3	-0.00271	-0.02713	ug/l	200	Re	
Pt	195	193	2	0.00104	0.01043	ug/l	200	Pt	
Au	197	193	3	0.02597	0.25971	ug/l	2000	Au	
Tl	205	193	3	0.02189	0.21889	ug/l	400	Tl	
Pb	208	193	3	0.46007	4.60068	ug/l	5000	Pb	
Bi	209	193	2	0.26719	2.67195	ug/l	2000	Bi	
Th	232	193	3	0.01799	0.17989	ug/l	2000	Th	
U	238	193	3	0.19564	1.95642	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5544299	0.41	5676390	97.7	80	120	Li (IS)	
Sc (IS)	45	2	141325	1.00	157398	89.8	80	120	Sc (IS)	
Sc (IS)	45	3	2670337	0.99	2954313	90.4	80	120	Sc (IS)	
Ge (IS)	72	2	350994	0.26	379042	92.6	80	120	Ge (IS)	
Ge (IS)	72	3	2265446	0.93	2413999	93.8	80	120	Ge (IS)	
In (IS)	115	3	14395487	1.01	15281059	94.2	80	120	In (IS)	
Ho (IS)	165	2	10236595	0.81	10495856	97.5	80	120	Ho (IS)	
Ho (IS)	165	3	16502409	0.81	16807844	98.2	80	120	Ho (IS)	
Ir (IS)	193	2	6703535	0.44	6895257	97.2	80	120	Ir (IS)	
Ir (IS)	193	3	8235274	0.46	8354862	98.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**460-196683-D-2-B MS**
Data File Name	**130SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:13:49-06:00**
Type	**Sample**
VialNumber	**3210**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	49.12590	98.25179	ug/l	1000	Li	
Be	9	6	3	46.43386	92.86772	ug/l	1000	Be	
B	11	6	3	152.93241	305.86481	ug/l	2000	B	
Na	23	45	2	79798.23931	159596.47862	ug/l	50000	Na	FAILED
Mg	24	45	2	22659.68893	45319.37785	ug/l	50000	Mg	
Al	27	45	2	5162.98695	10325.97391	ug/l	100000	Al	
P	31	45	2	2779.79598	5559.59197	ug/l	100000	P	
K	39	45	2	11028.17574	22056.35149	ug/l	100000	K	
Ca	44	45	3	54657.54585	109315.09171	ug/l	100000	Ca	
Ti	47	45	3	495.96006	991.92013	ug/l	2000	Ti	
V	51	45	2	497.43114	994.86229	ug/l	2000	V	
Cr	52	45	2	492.77694	985.55389	ug/l	2000	Cr	
Mn	55	72	2	555.26114	1110.52227	ug/l	5000	Mn	
Fe	57	72	2	5879.90895	11759.81790	ug/l	100000	Fe	
Co	59	72	2	515.03173	1030.06345	ug/l	2000	Co	
Ni	60	72	2	549.56548	1099.13097	ug/l	2000	Ni	
Cu	63	72	2	640.07944	1280.15889	ug/l	2000	Cu	
Zn	66	72	2	605.17331	1210.34661	ug/l	5000	Zn	
As	75	72	2	511.13622	1022.27243	ug/l	2000	As	
Se	78	72	2	244.89423	489.78846	ug/l	1000	Se	
Sr	88	72	3	681.79046	1363.58093	ug/l	2000	Sr	
Y	89	72	2	48.74674	97.49348	ug/l	200	Y	
Zr	90	72	2	375.91878	751.83755	ug/l	2000	Zr	
Nb	93	72	2	17.10289	34.20577	ug/l	100	Nb	
Mo	95	72	3	260.20355	520.40711	ug/l	1000	Mo	
Ru	101	72	2	49.00919	98.01837	ug/l	200	Ru	
Rh	103	72	2	52.72271	105.44543	ug/l	200	Rh	
Pd	105	72	2	4.92117	9.84234	ug/l	20	Pd	
Ag	107	115	3	95.11520	190.23041	ug/l	400	Ag	
Cd	111	115	3	491.69194	983.38388	ug/l	2000	Cd	
Sn	118	115	3	462.19888	924.39775	ug/l	2000	Sn	
Sb	121	115	3	249.75763	499.51526	ug/l	1000	Sb	
Te	125	165	2	42.05356	84.10712	ug/l	200	Te	
Cs	133	165	2	41.97733	83.95466	ug/l	2000	Cs	
Ba	137	165	3	500.57515	1001.15030	ug/l	5000	Ba	
La	139	165	2	48.84090	97.68179	ug/l	200	La	
Ce	140	165	2	48.15936	96.31872	ug/l	200	Ce	
Pr	141	165	2	47.98950	95.97900	ug/l	200	Pr	
Nd	146	165	2	44.73042	89.46085	ug/l	200	Nd	
Sm	147	165	3	506.34684	1012.69368	ug/l	2000	Sm	
Hf	178	165	2	17.96597	35.93193	ug/l	200	Hf	
Ta	181	165	2	4.47095	8.94190	ug/l	200	Ta	
W	182	165	2	506.80221	1013.60442	ug/l	2000	W	
Re	185	193	3	50.81685	101.63371	ug/l	200	Re	
Pt	195	193	2	4.82556	9.65112	ug/l	200	Pt	
Au	197	193	3	25.43918	50.87837	ug/l	2000	Au	
Tl	205	193	3	98.48197	196.96394	ug/l	400	Tl	
Pb	208	193	3	496.92946	993.85891	ug/l	5000	Pb	
Bi	209	193	2	490.65069	981.30138	ug/l	2000	Bi	
Th	232	193	3	381.23505	762.47009	ug/l	2000	Th	
U	238	193	3	528.73822	1057.47643	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5168376	0.87	5676390	91.1	80	120	Li (IS)	
Sc (IS)	45	2	140455	0.91	157398	89.2	80	120	Sc (IS)	
Sc (IS)	45	3	2640456	1.26	2954313	89.4	80	120	Sc (IS)	
Ge (IS)	72	2	338395	1.23	379042	89.3	80	120	Ge (IS)	
Ge (IS)	72	3	2149361	1.60	2413999	89.0	80	120	Ge (IS)	
In (IS)	115	3	13385618	0.33	15281059	87.6	80	120	In (IS)	
Ho (IS)	165	2	9896043	0.59	10495856	94.3	80	120	Ho (IS)	
Ho (IS)	165	3	15930796	0.72	16807844	94.8	80	120	Ho (IS)	
Ir (IS)	193	2	6303079	1.64	6895257	91.4	80	120	Ir (IS)	
Ir (IS)	193	3	7713881	1.10	8354862	92.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**460-196683-D-2-C MSD**
Data File Name	**131SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:20:39-06:00**
Type	**Sample**
VialNumber	**3211**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	48.12611	96.25223	ug/l	1000	Li	
Be	9	6	3	45.99051	91.98102	ug/l	1000	Be	
B	11	6	3	151.52474	303.04948	ug/l	2000	B	
Na	23	45	2	80668.81659	161337.63318	ug/l	50000	Na	FAILED
Mg	24	45	2	22663.90942	45327.81884	ug/l	50000	Mg	
Al	27	45	2	5184.44263	10368.88526	ug/l	100000	Al	
P	31	45	2	2830.94785	5661.89571	ug/l	100000	P	
K	39	45	2	11029.63137	22059.26274	ug/l	100000	K	
Ca	44	45	3	53949.13363	107898.26726	ug/l	100000	Ca	
Ti	47	45	3	491.60030	983.20059	ug/l	2000	Ti	
V	51	45	2	495.42318	990.84637	ug/l	2000	V	
Cr	52	45	2	492.39224	984.78448	ug/l	2000	Cr	
Mn	55	72	2	549.95109	1099.90219	ug/l	5000	Mn	
Fe	57	72	2	5673.62722	11347.25445	ug/l	100000	Fe	
Co	59	72	2	507.98199	1015.96398	ug/l	2000	Co	
Ni	60	72	2	542.58965	1085.17930	ug/l	2000	Ni	
Cu	63	72	2	634.07519	1268.15037	ug/l	2000	Cu	
Zn	66	72	2	594.89051	1189.78102	ug/l	5000	Zn	
As	75	72	2	504.69894	1009.39789	ug/l	2000	As	
Se	78	72	2	244.96686	489.93373	ug/l	1000	Se	
Sr	88	72	3	681.74269	1363.48538	ug/l	2000	Sr	
Y	89	72	2	48.06979	96.13958	ug/l	200	Y	
Zr	90	72	2	369.31743	738.63486	ug/l	2000	Zr	
Nb	93	72	2	16.50768	33.01536	ug/l	100	Nb	
Mo	95	72	3	259.97399	519.94798	ug/l	1000	Mo	
Ru	101	72	2	48.25758	96.51516	ug/l	200	Ru	
Rh	103	72	2	51.90803	103.81606	ug/l	200	Rh	
Pd	105	72	2	4.89451	9.78903	ug/l	20	Pd	
Ag	107	115	3	93.18206	186.36411	ug/l	400	Ag	
Cd	111	115	3	488.51559	977.03117	ug/l	2000	Cd	
Sn	118	115	3	451.62859	903.25718	ug/l	2000	Sn	
Sb	121	115	3	248.31304	496.62607	ug/l	1000	Sb	
Te	125	165	2	42.16767	84.33534	ug/l	200	Te	
Cs	133	165	2	41.53165	83.06330	ug/l	2000	Cs	
Ba	137	165	3	497.40250	994.80501	ug/l	5000	Ba	
La	139	165	2	48.47250	96.94501	ug/l	200	La	
Ce	140	165	2	47.73834	95.47668	ug/l	200	Ce	
Pr	141	165	2	48.08674	96.17347	ug/l	200	Pr	
Nd	146	165	2	44.60633	89.21266	ug/l	200	Nd	
Sm	147	165	3	499.97156	999.94312	ug/l	2000	Sm	
Hf	178	165	2	17.51515	35.03029	ug/l	200	Hf	
Ta	181	165	2	4.29946	8.59892	ug/l	200	Ta	
W	182	165	2	501.11506	1002.23012	ug/l	2000	W	
Re	185	193	3	50.78285	101.56569	ug/l	200	Re	
Pt	195	193	2	4.70086	9.40173	ug/l	200	Pt	
Au	197	193	3	26.33102	52.66203	ug/l	2000	Au	
Tl	205	193	3	99.27108	198.54216	ug/l	400	Tl	
Pb	208	193	3	499.05258	998.10515	ug/l	5000	Pb	
Bi	209	193	2	479.62091	959.24182	ug/l	2000	Bi	
Th	232	193	3	376.93342	753.86684	ug/l	2000	Th	
U	238	193	3	522.99244	1045.98488	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5254566	0.75	5676390	92.6	80	120	Li (IS)	
Sc (IS)	45	2	141208	0.66	157398	89.7	80	120	Sc (IS)	
Sc (IS)	45	3	2660845	0.57	2954313	90.1	80	120	Sc (IS)	
Ge (IS)	72	2	342449	1.32	379042	90.3	80	120	Ge (IS)	
Ge (IS)	72	3	2147742	0.92	2413999	89.0	80	120	Ge (IS)	
In (IS)	115	3	13503074	0.36	15281059	88.4	80	120	In (IS)	
Ho (IS)	165	2	9952864	0.79	10495856	94.8	80	120	Ho (IS)	
Ho (IS)	165	3	16025583	0.58	16807844	95.3	80	120	Ho (IS)	
Ir (IS)	193	2	6370419	0.44	6895257	92.4	80	120	Ir (IS)	
Ir (IS)	193	3	7664660	1.07	8354862	91.7	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**460-196683-D-2-A PDS**
Data File Name	**132SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:27:28-06:00**
Type	**Sample**
VialNumber	**3212**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	0.70398	1.40796	ug/l	1000	Li	
Be	9	6	3	0.00924	0.01847	ug/l	1000	Be	
B	11	6	3	54.68413	109.36825	ug/l	2000	B	
Na	23	45	2	77358.53013	154717.06025	ug/l	50000	Na	FAILED
Mg	24	45	2	18148.02143	36296.04287	ug/l	50000	Mg	
Al	27	45	2	128.39076	256.78152	ug/l	100000	Al	
P	31	45	2	2667.48668	5334.97335	ug/l	100000	P	
K	39	45	2	6414.83395	12829.66790	ug/l	100000	K	
Ca	44	45	3	50103.95485	100207.90970	ug/l	100000	Ca	
Ti	47	45	3	6.67909	13.35817	ug/l	2000	Ti	
V	51	45	2	1.42394	2.84788	ug/l	2000	V	
Cr	52	45	2	1.86047	3.72093	ug/l	2000	Cr	
Mn	55	72	2	34.59482	69.18963	ug/l	5000	Mn	
Fe	57	72	2	554.29529	1108.59059	ug/l	100000	Fe	
Co	59	72	2	0.24168	0.48335	ug/l	2000	Co	
Ni	60	72	2	2.07440	4.14880	ug/l	2000	Ni	
Cu	63	72	2	137.80409	275.60819	ug/l	2000	Cu	
Zn	66	72	2	65.46129	130.92259	ug/l	5000	Zn	
As	75	72	2	0.64093	1.28185	ug/l	2000	As	
Se	78	72	2	0.40581	0.81161	ug/l	1000	Se	
Sr	88	72	3	162.50473	325.00946	ug/l	2000	Sr	
Y	89	72	2	0.12712	0.25424	ug/l	200	Y	
Zr	90	72	2	0.53749	1.07497	ug/l	2000	Zr	
Nb	93	72	2	210.49566	420.99133	ug/l	100	Nb	FAILED
Mo	95	72	3	1.04926	2.09851	ug/l	1000	Mo	
Ru	101	72	2	-0.00746	-0.01492	ug/l	200	Ru	
Rh	103	72	2	-0.00520	-0.01040	ug/l	200	Rh	
Pd	105	72	2	0.00804	0.01607	ug/l	20	Pd	
Ag	107	115	3	0.36068	0.72137	ug/l	400	Ag	
Cd	111	115	3	0.30356	0.60713	ug/l	2000	Cd	
Sn	118	115	3	2.56434	5.12868	ug/l	2000	Sn	
Sb	121	115	3	0.22695	0.45390	ug/l	1000	Sb	
Te	125	165	2	88.23059	176.46118	ug/l	200	Te	
Cs	133	165	2	0.02087	0.04174	ug/l	2000	Cs	
Ba	137	165	3	19.79282	39.58564	ug/l	5000	Ba	
La	139	165	2	0.08303	0.16606	ug/l	200	La	
Ce	140	165	2	0.16593	0.33186	ug/l	200	Ce	
Pr	141	165	2	0.01497	0.02993	ug/l	200	Pr	
Nd	146	165	2	0.07092	0.14184	ug/l	200	Nd	
Sm	147	165	3	0.02610	0.05219	ug/l	2000	Sm	
Hf	178	165	2	70.22563	140.45126	ug/l	200	Hf	
Ta	181	165	2	66.33540	132.67080	ug/l	200	Ta	
W	182	165	2	1.00138	2.00276	ug/l	2000	W	
Re	185	193	3	-0.00066	-0.00131	ug/l	200	Re	
Pt	195	193	2	0.18758	0.37515	ug/l	200	Pt	
Au	197	193	3	0.93487	1.86975	ug/l	2000	Au	
Tl	205	193	3	0.21049	0.42098	ug/l	400	Tl	
Pb	208	193	3	2.29198	4.58396	ug/l	5000	Pb	
Bi	209	193	2	1.29406	2.58813	ug/l	2000	Bi	
Th	232	193	3	0.23648	0.47295	ug/l	2000	Th	
U	238	193	3	1.04261	2.08522	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5353037	0.58	5676390	94.3	80	120	Li (IS)	
Sc (IS)	45	2	139597	0.89	157398	88.7	80	120	Sc (IS)	
Sc (IS)	45	3	2638387	0.94	2954313	89.3	80	120	Sc (IS)	
Ge (IS)	72	2	337897	0.88	379042	89.1	80	120	Ge (IS)	
Ge (IS)	72	3	2142614	0.09	2413999	88.8	80	120	Ge (IS)	
In (IS)	115	3	13668047	0.37	15281059	89.4	80	120	In (IS)	
Ho (IS)	165	2	10009522	0.65	10495856	95.4	80	120	Ho (IS)	
Ho (IS)	165	3	15889486	0.92	16807844	94.5	80	120	Ho (IS)	
Ir (IS)	193	2	6392652	0.59	6895257	92.7	80	120	Ir (IS)	
Ir (IS)	193	3	7768247	0.64	8354862	93.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**MB 160-453489/1-A**
Data File Name	**133SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:34:18-06:00**
Type	**Sample**
VialNumber	**3301**
Dilution	**2**
Comment	**453489**
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	-0.11216	-0.22432	ug/l	1000	Li	
Be	9	6	3	-0.00043	-0.00086	ug/l	1000	Be	
B	11	6	3	2.40680	4.81359	ug/l	2000	B	
Na	23	45	2	9.90713	19.81426	ug/l	50000	Na	
Mg	24	45	2	1.23292	2.46585	ug/l	50000	Mg	
Al	27	45	2	2.40932	4.81864	ug/l	100000	Al	
P	31	45	2	6.94163	13.88326	ug/l	100000	P	
K	39	45	2	0.28006	0.56013	ug/l	100000	K	
Ca	44	45	3	9.87707	19.75413	ug/l	100000	Ca	
Ti	47	45	3	0.16662	0.33325	ug/l	2000	Ti	
V	51	45	2	0.06586	0.13173	ug/l	2000	V	
Cr	52	45	2	0.03964	0.07929	ug/l	2000	Cr	
Mn	55	72	2	0.03808	0.07616	ug/l	5000	Mn	
Fe	57	72	2	0.04316	0.08631	ug/l	100000	Fe	
Co	59	72	2	0.01110	0.02221	ug/l	2000	Co	
Ni	60	72	2	0.10819	0.21638	ug/l	2000	Ni	
Cu	63	72	2	-0.12849	-0.25698	ug/l	2000	Cu	
Zn	66	72	2	0.31164	0.62328	ug/l	5000	Zn	
As	75	72	2	0.03857	0.07713	ug/l	2000	As	
Se	78	72	2	0.14751	0.29503	ug/l	1000	Se	
Sr	88	72	3	0.04930	0.09860	ug/l	2000	Sr	
Y	89	72	2	-0.00774	-0.01548	ug/l	200	Y	
Zr	90	72	2	0.00826	0.01652	ug/l	2000	Zr	
Nb	93	72	2	0.29459	0.58919	ug/l	100	Nb	
Mo	95	72	3	0.05782	0.11565	ug/l	1000	Mo	
Ru	101	72	2	-0.00786	-0.01571	ug/l	200	Ru	
Rh	103	72	2	-0.00621	-0.01241	ug/l	200	Rh	
Pd	105	72	2	-0.00038	-0.00077	ug/l	20	Pd	
Ag	107	115	3	0.00529	0.01058	ug/l	400	Ag	
Cd	111	115	3	0.00437	0.00873	ug/l	2000	Cd	
Sn	118	115	3	0.13210	0.26420	ug/l	2000	Sn	
Sb	121	115	3	0.04178	0.08356	ug/l	1000	Sb	
Te	125	165	2	0.00415	0.00831	ug/l	200	Te	
Cs	133	165	2	-0.00389	-0.00778	ug/l	2000	Cs	
Ba	137	165	3	0.02755	0.05509	ug/l	5000	Ba	
La	139	165	2	-0.00611	-0.01223	ug/l	200	La	
Ce	140	165	2	-0.00560	-0.01119	ug/l	200	Ce	
Pr	141	165	2	-0.00617	-0.01235	ug/l	200	Pr	
Nd	146	165	2	-0.00386	-0.00772	ug/l	200	Nd	
Sm	147	165	3	-0.00515	-0.01030	ug/l	2000	Sm	
Hf	178	165	2	0.09599	0.19198	ug/l	200	Hf	
Ta	181	165	2	0.04656	0.09313	ug/l	200	Ta	
W	182	165	2	0.38185	0.76369	ug/l	2000	W	
Re	185	193	3	-0.00530	-0.01059	ug/l	200	Re	
Pt	195	193	2	0.00381	0.00762	ug/l	200	Pt	
Au	197	193	3	-0.00518	-0.01035	ug/l	2000	Au	
Tl	205	193	3	0.08767	0.17534	ug/l	400	Tl	
Pb	208	193	3	0.05037	0.10073	ug/l	5000	Pb	
Bi	209	193	2	0.06550	0.13099	ug/l	2000	Bi	
Th	232	193	3	0.06477	0.12954	ug/l	2000	Th	
U	238	193	3	-0.00065	-0.00131	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5599232	1.03	5676390	98.6	80	120	Li (IS)	
Sc (IS)	45	2	144339	0.43	157398	91.7	80	120	Sc (IS)	
Sc (IS)	45	3	2659004	1.66	2954313	90.0	80	120	Sc (IS)	
Ge (IS)	72	2	352872	0.62	379042	93.1	80	120	Ge (IS)	
Ge (IS)	72	3	2263945	1.48	2413999	93.8	80	120	Ge (IS)	
In (IS)	115	3	14427654	2.73	15281059	94.4	80	120	In (IS)	
Ho (IS)	165	2	10354788	0.32	10495856	98.7	80	120	Ho (IS)	
Ho (IS)	165	3	16321189	1.59	16807844	97.1	80	120	Ho (IS)	
Ir (IS)	193	2	6747632	0.81	6895257	97.9	80	120	Ir (IS)	
Ir (IS)	193	3	8142051	2.63	8354862	97.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**LCS 160-453489/2-A**
Data File Name	**134SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:41:00-06:00**
Type	**Sample**
VialNumber	**3302**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	45.84975	91.69950	ug/l	1000	Li	
Be	9	6	3	42.19632	84.39264	ug/l	1000	Be	
B	11	6	3	86.21953	172.43907	ug/l	2000	B	
Na	23	45	2	4936.13058	9872.26116	ug/l	50000	Na	
Mg	24	45	2	4985.46694	9970.93388	ug/l	50000	Mg	
Al	27	45	2	4920.68751	9841.37501	ug/l	100000	Al	
P	31	45	2	453.97649	907.95298	ug/l	100000	P	
K	39	45	2	4647.02771	9294.05543	ug/l	100000	K	
Ca	44	45	3	4863.19859	9726.39717	ug/l	100000	Ca	
Ti	47	45	3	493.49336	986.98672	ug/l	2000	Ti	
V	51	45	2	463.04514	926.09028	ug/l	2000	V	
Cr	52	45	2	466.74054	933.48109	ug/l	2000	Cr	
Mn	55	72	2	505.84679	1011.69358	ug/l	5000	Mn	
Fe	57	72	2	4868.74509	9737.49019	ug/l	100000	Fe	
Co	59	72	2	505.30998	1010.61996	ug/l	2000	Co	
Ni	60	72	2	545.40004	1090.80009	ug/l	2000	Ni	
Cu	63	72	2	503.57742	1007.15485	ug/l	2000	Cu	
Zn	66	72	2	477.79801	955.59603	ug/l	5000	Zn	
As	75	72	2	478.94958	957.89917	ug/l	2000	As	
Se	78	72	2	235.18689	470.37379	ug/l	1000	Se	
Sr	88	72	3	496.86933	993.73866	ug/l	2000	Sr	
Y	89	72	2	0.00310	0.00621	ug/l	200	Y	
Zr	90	72	2	522.34747	1044.69493	ug/l	2000	Zr	
Nb	93	72	2	0.56218	1.12436	ug/l	100	Nb	
Mo	95	72	3	251.19281	502.38562	ug/l	1000	Mo	
Ru	101	72	2	-0.00753	-0.01506	ug/l	200	Ru	
Rh	103	72	2	0.01481	0.02963	ug/l	200	Rh	
Pd	105	72	2	0.03115	0.06230	ug/l	20	Pd	
Ag	107	115	3	91.70423	183.40846	ug/l	400	Ag	
Cd	111	115	3	468.64441	937.28883	ug/l	2000	Cd	
Sn	118	115	3	473.68166	947.36333	ug/l	2000	Sn	
Sb	121	115	3	237.74128	475.48257	ug/l	1000	Sb	
Te	125	165	2	0.07895	0.15790	ug/l	200	Te	
Cs	133	165	2	-0.00053	-0.00107	ug/l	2000	Cs	
Ba	137	165	3	455.02764	910.05528	ug/l	5000	Ba	
La	139	165	2	0.69084	1.38169	ug/l	200	La	
Ce	140	165	2	0.01588	0.03175	ug/l	200	Ce	
Pr	141	165	2	-0.00256	-0.00511	ug/l	200	Pr	
Nd	146	165	2	0.00625	0.01251	ug/l	200	Nd	
Sm	147	165	3	479.29458	958.58916	ug/l	2000	Sm	
Hf	178	165	2	0.24412	0.48823	ug/l	200	Hf	
Ta	181	165	2	0.47885	0.95771	ug/l	200	Ta	
W	182	165	2	488.88275	977.76551	ug/l	2000	W	
Re	185	193	3	0.00445	0.00889	ug/l	200	Re	
Pt	195	193	2	0.00361	0.00723	ug/l	200	Pt	
Au	197	193	3	-0.01151	-0.02303	ug/l	2000	Au	
Tl	205	193	3	96.63119	193.26239	ug/l	400	Tl	
Pb	208	193	3	485.45527	970.91054	ug/l	5000	Pb	
Bi	209	193	2	489.58854	979.17708	ug/l	2000	Bi	
Th	232	193	3	487.22478	974.44956	ug/l	2000	Th	
U	238	193	3	498.88438	997.76876	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5283716	0.47	5676390	93.1	80	120	Li (IS)	
Sc (IS)	45	2	141420	0.84	157398	89.8	80	120	Sc (IS)	
Sc (IS)	45	3	2629639	0.26	2954313	89.0	80	120	Sc (IS)	
Ge (IS)	72	2	335035	1.65	379042	88.4	80	120	Ge (IS)	
Ge (IS)	72	3	2209306	1.30	2413999	91.5	80	120	Ge (IS)	
In (IS)	115	3	14079302	0.47	15281059	92.1	80	120	In (IS)	
Ho (IS)	165	2	10094582	0.41	10495856	96.2	80	120	Ho (IS)	
Ho (IS)	165	3	16489585	1.62	16807844	98.1	80	120	Ho (IS)	
Ir (IS)	193	2	6435557	1.42	6895257	93.3	80	120	Ir (IS)	
Ir (IS)	193	3	8036909	1.17	8354862	96.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131403-B-1-A**
Data File Name	**135SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:47:44-06:00**
Type	**Sample**
VialNumber	**3303**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	32.76346	65.52691	ug/l	1000	Li	
Be	9	6	3	0.03648	0.07295	ug/l	1000	Be	
B	11	6	3	60.19643	120.39287	ug/l	2000	B	
Na	23	45	2	17272.50694	34545.01388	ug/l	50000	Na	
Mg	24	45	2	91814.11699	183628.23398	ug/l	50000	Mg	FAILED
Al	27	45	2	38.09932	76.19864	ug/l	100000	Al	
P	31	45	2	8792.09878	17584.19756	ug/l	100000	P	
K	39	45	2	111716.38239	223432.76478	ug/l	100000	K	FAILED
Ca	44	45	3	298451.05187	596902.10374	ug/l	100000	Ca	FAILED
Ti	47	45	3	51.55729	103.11458	ug/l	2000	Ti	
V	51	45	2	26.03252	52.06504	ug/l	2000	V	
Cr	52	45	2	6.67318	13.34636	ug/l	2000	Cr	
Mn	55	72	2	1060.83195	2121.66390	ug/l	5000	Mn	
Fe	57	72	2	2489.84447	4979.68894	ug/l	100000	Fe	
Co	59	72	2	6.35508	12.71016	ug/l	2000	Co	
Ni	60	72	2	18.86111	37.72221	ug/l	2000	Ni	
Cu	63	72	2	24.29089	48.58178	ug/l	2000	Cu	
Zn	66	72	2	12.53876	25.07751	ug/l	5000	Zn	
As	75	72	2	109.14734	218.29468	ug/l	2000	As	
Se	78	72	2	2.28265	4.56529	ug/l	1000	Se	
Sr	88	72	3	2460.92194	4921.84389	ug/l	2000	Sr	FAILED
Y	89	72	2	0.58011	1.16022	ug/l	200	Y	
Zr	90	72	2	1.38441	2.76881	ug/l	2000	Zr	
Nb	93	72	2	0.91433	1.82866	ug/l	100	Nb	
Mo	95	72	3	5.14669	10.29338	ug/l	1000	Mo	
Ru	101	72	2	-0.00848	-0.01697	ug/l	200	Ru	
Rh	103	72	2	-0.00484	-0.00967	ug/l	200	Rh	
Pd	105	72	2	0.10628	0.21257	ug/l	20	Pd	
Ag	107	115	3	0.03187	0.06374	ug/l	400	Ag	
Cd	111	115	3	0.14485	0.28970	ug/l	2000	Cd	
Sn	118	115	3	1.60969	3.21937	ug/l	2000	Sn	
Sb	121	115	3	1.07656	2.15312	ug/l	1000	Sb	
Te	125	165	2	0.09695	0.19391	ug/l	200	Te	
Cs	133	165	2	3.35287	6.70575	ug/l	2000	Cs	
Ba	137	165	3	480.68525	961.37049	ug/l	5000	Ba	
La	139	165	2	0.57872	1.15744	ug/l	200	La	
Ce	140	165	2	1.67473	3.34947	ug/l	200	Ce	
Pr	141	165	2	0.12449	0.24898	ug/l	200	Pr	
Nd	146	165	2	0.52803	1.05607	ug/l	200	Nd	
Sm	147	165	3	0.10790	0.21580	ug/l	2000	Sm	
Hf	178	165	2	0.04317	0.08634	ug/l	200	Hf	
Ta	181	165	2	0.12738	0.25477	ug/l	200	Ta	
W	182	165	2	1.30831	2.61661	ug/l	2000	W	
Re	185	193	3	-0.00258	-0.00516	ug/l	200	Re	
Pt	195	193	2	0.00214	0.00428	ug/l	200	Pt	
Au	197	193	3	-0.00722	-0.01444	ug/l	2000	Au	
Tl	205	193	3	0.35422	0.70843	ug/l	400	Tl	
Pb	208	193	3	0.80107	1.60214	ug/l	5000	Pb	
Bi	209	193	2	0.11811	0.23622	ug/l	2000	Bi	
Th	232	193	3	0.34116	0.68233	ug/l	2000	Th	
U	238	193	3	0.29536	0.59073	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5194291	1.07	5676390	91.5	80	120	Li (IS)	
Sc (IS)	45	2	142404	0.36	157398	90.5	80	120	Sc (IS)	
Sc (IS)	45	3	2762487	0.87	2954313	93.5	80	120	Sc (IS)	
Ge (IS)	72	2	326758	0.77	379042	86.2	80	120	Ge (IS)	
Ge (IS)	72	3	2116801	0.75	2413999	87.7	80	120	Ge (IS)	
In (IS)	115	3	13032595	1.11	15281059	85.3	80	120	In (IS)	
Ho (IS)	165	2	9605862	1.44	10495856	91.5	80	120	Ho (IS)	
Ho (IS)	165	3	15419990	0.43	16807844	91.7	80	120	Ho (IS)	
Ir (IS)	193	2	5976107	1.47	6895257	86.7	80	120	Ir (IS)	
Ir (IS)	193	3	7375575	0.33	8354862	88.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131403-B-2-A**
Data File Name	**136SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T06:54:26-06:00**
Type	**Sample**
VialNumber	**3304**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	38.40417	76.80834	ug/l	1000	Li	
Be	9	6	3	0.02163	0.04326	ug/l	1000	Be	
B	11	6	3	12.45282	24.90564	ug/l	2000	B	
Na	23	45	2	17628.77114	35257.54228	ug/l	50000	Na	
Mg	24	45	2	81995.53945	163991.07890	ug/l	50000	Mg	FAILED
Al	27	45	2	16.18388	32.36776	ug/l	100000	Al	
P	31	45	2	7499.93830	14999.87660	ug/l	100000	P	
K	39	45	2	76920.62849	153841.25698	ug/l	100000	K	
Ca	44	45	3	297307.48445	594614.96891	ug/l	100000	Ca	FAILED
Ti	47	45	3	20.64773	41.29546	ug/l	2000	Ti	
V	51	45	2	12.10573	24.21145	ug/l	2000	V	
Cr	52	45	2	4.46394	8.92789	ug/l	2000	Cr	
Mn	55	72	2	1512.44079	3024.88158	ug/l	5000	Mn	
Fe	57	72	2	2085.30849	4170.61697	ug/l	100000	Fe	
Co	59	72	2	5.85668	11.71336	ug/l	2000	Co	
Ni	60	72	2	21.14129	42.28257	ug/l	2000	Ni	
Cu	63	72	2	13.50194	27.00388	ug/l	2000	Cu	
Zn	66	72	2	6.50081	13.00162	ug/l	5000	Zn	
As	75	72	2	143.10324	286.20648	ug/l	2000	As	
Se	78	72	2	1.38370	2.76739	ug/l	1000	Se	
Sr	88	72	3	2399.60198	4799.20396	ug/l	2000	Sr	FAILED
Y	89	72	2	0.43236	0.86472	ug/l	200	Y	
Zr	90	72	2	0.87527	1.75054	ug/l	2000	Zr	
Nb	93	72	2	0.28665	0.57329	ug/l	100	Nb	
Mo	95	72	3	6.39368	12.78737	ug/l	1000	Mo	
Ru	101	72	2	-0.00814	-0.01627	ug/l	200	Ru	
Rh	103	72	2	-0.00521	-0.01042	ug/l	200	Rh	
Pd	105	72	2	0.10992	0.21984	ug/l	20	Pd	
Ag	107	115	3	0.01906	0.03812	ug/l	400	Ag	
Cd	111	115	3	0.06306	0.12611	ug/l	2000	Cd	
Sn	118	115	3	0.44624	0.89247	ug/l	2000	Sn	
Sb	121	115	3	0.79257	1.58515	ug/l	1000	Sb	
Te	125	165	2	0.05838	0.11676	ug/l	200	Te	
Cs	133	165	2	2.73071	5.46141	ug/l	2000	Cs	
Ba	137	165	3	372.23593	744.47187	ug/l	5000	Ba	
La	139	165	2	0.50962	1.01925	ug/l	200	La	
Ce	140	165	2	1.98717	3.97434	ug/l	200	Ce	
Pr	141	165	2	0.09997	0.19994	ug/l	200	Pr	
Nd	146	165	2	0.40302	0.80605	ug/l	200	Nd	
Sm	147	165	3	0.07850	0.15701	ug/l	2000	Sm	
Hf	178	165	2	0.04026	0.08052	ug/l	200	Hf	
Ta	181	165	2	0.06820	0.13641	ug/l	200	Ta	
W	182	165	2	0.95390	1.90779	ug/l	2000	W	
Re	185	193	3	-0.00350	-0.00700	ug/l	200	Re	
Pt	195	193	2	0.00250	0.00499	ug/l	200	Pt	
Au	197	193	3	-0.01550	-0.03099	ug/l	2000	Au	
Tl	205	193	3	0.11275	0.22551	ug/l	400	Tl	
Pb	208	193	3	0.58092	1.16183	ug/l	5000	Pb	
Bi	209	193	2	0.08090	0.16181	ug/l	2000	Bi	
Th	232	193	3	0.13714	0.27427	ug/l	2000	Th	
U	238	193	3	0.18904	0.37809	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5297271	0.64	5676390	93.3	80	120	Li (IS)	
Sc (IS)	45	2	140899	1.07	157398	89.5	80	120	Sc (IS)	
Sc (IS)	45	3	2739309	1.05	2954313	92.7	80	120	Sc (IS)	
Ge (IS)	72	2	324704	0.52	379042	85.7	80	120	Ge (IS)	
Ge (IS)	72	3	2074570	0.84	2413999	85.9	80	120	Ge (IS)	
In (IS)	115	3	13007709	0.28	15281059	85.1	80	120	In (IS)	
Ho (IS)	165	2	9575859	1.48	10495856	91.2	80	120	Ho (IS)	
Ho (IS)	165	3	15466656	1.11	16807844	92.0	80	120	Ho (IS)	
Ir (IS)	193	2	5993354	0.41	6895257	86.9	80	120	Ir (IS)	
Ir (IS)	193	3	7394338	1.00	8354862	88.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131403-B-2-A SD**
Data File Name	**137SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:01:10-06:00**
Type	**Sample**
VialNumber	**3305**
Dilution	**10**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	7.05099	70.50994	ug/l	1000	Li	
Be	9	6	3	0.00261	0.02610	ug/l	1000	Be	
B	11	6	3	2.70980	27.09799	ug/l	2000	B	
Na	23	45	2	3454.82944	34548.29441	ug/l	50000	Na	
Mg	24	45	2	16401.01627	164010.16267	ug/l	50000	Mg	
Al	27	45	2	6.86686	68.66861	ug/l	100000	Al	
P	31	45	2	1485.73244	14857.32444	ug/l	100000	P	
K	39	45	2	15068.96419	150689.64188	ug/l	100000	K	
Ca	44	45	3	61142.04801	611420.48008	ug/l	100000	Ca	
Ti	47	45	3	4.18013	41.80128	ug/l	2000	Ti	
V	51	45	2	2.38990	23.89898	ug/l	2000	V	
Cr	52	45	2	0.88213	8.82127	ug/l	2000	Cr	
Mn	55	72	2	291.76433	2917.64335	ug/l	5000	Mn	
Fe	57	72	2	400.95471	4009.54714	ug/l	100000	Fe	
Co	59	72	2	1.14002	11.40019	ug/l	2000	Co	
Ni	60	72	2	4.32974	43.29742	ug/l	2000	Ni	
Cu	63	72	2	2.53593	25.35930	ug/l	2000	Cu	
Zn	66	72	2	1.81999	18.19990	ug/l	5000	Zn	
As	75	72	2	27.07928	270.79283	ug/l	2000	As	
Se	78	72	2	0.17005	1.70049	ug/l	1000	Se	
Sr	88	72	3	461.58535	4615.85352	ug/l	2000	Sr	
Y	89	72	2	0.07650	0.76503	ug/l	200	Y	
Zr	90	72	2	0.17972	1.79721	ug/l	2000	Zr	
Nb	93	72	2	-0.01013	-0.10126	ug/l	100	Nb	
Mo	95	72	3	1.25374	12.53741	ug/l	1000	Mo	
Ru	101	72	2	-0.00841	-0.08411	ug/l	200	Ru	
Rh	103	72	2	-0.00604	-0.06040	ug/l	200	Rh	
Pd	105	72	2	0.02284	0.22838	ug/l	20	Pd	
Ag	107	115	3	0.00225	0.02249	ug/l	400	Ag	
Cd	111	115	3	0.01611	0.16111	ug/l	2000	Cd	
Sn	118	115	3	0.11441	1.14409	ug/l	2000	Sn	
Sb	121	115	3	0.18234	1.82340	ug/l	1000	Sb	
Te	125	165	2	0.00503	0.05029	ug/l	200	Te	
Cs	133	165	2	0.50977	5.09766	ug/l	2000	Cs	
Ba	137	165	3	67.38922	673.89216	ug/l	5000	Ba	
La	139	165	2	0.09246	0.92465	ug/l	200	La	
Ce	140	165	2	0.38298	3.82975	ug/l	200	Ce	
Pr	141	165	2	0.01439	0.14386	ug/l	200	Pr	
Nd	146	165	2	0.08152	0.81523	ug/l	200	Nd	
Sm	147	165	3	0.01485	0.14854	ug/l	2000	Sm	
Hf	178	165	2	0.02856	0.28558	ug/l	200	Hf	
Ta	181	165	2	0.00208	0.02082	ug/l	200	Ta	
W	182	165	2	0.21929	2.19287	ug/l	2000	W	
Re	185	193	3	-0.00472	-0.04715	ug/l	200	Re	
Pt	195	193	2	0.00016	0.00159	ug/l	200	Pt	
Au	197	193	3	-0.02104	-0.21041	ug/l	2000	Au	
Tl	205	193	3	0.05073	0.50734	ug/l	400	Tl	
Pb	208	193	3	0.12187	1.21871	ug/l	5000	Pb	
Bi	209	193	2	0.04883	0.48833	ug/l	2000	Bi	
Th	232	193	3	0.03815	0.38154	ug/l	2000	Th	
U	238	193	3	0.03630	0.36305	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5685365	0.69	5676390	100.2	80	120	Li (IS)	
Sc (IS)	45	2	139499	0.32	157398	88.6	80	120	Sc (IS)	
Sc (IS)	45	3	2641180	0.36	2954313	89.4	80	120	Sc (IS)	
Ge (IS)	72	2	331868	0.11	379042	87.6	80	120	Ge (IS)	
Ge (IS)	72	3	2153985	0.87	2413999	89.2	80	120	Ge (IS)	
In (IS)	115	3	13770714	0.46	15281059	90.1	80	120	In (IS)	
Ho (IS)	165	2	9998457	0.79	10495856	95.3	80	120	Ho (IS)	
Ho (IS)	165	3	15665240	0.74	16807844	93.2	80	120	Ho (IS)	
Ir (IS)	193	2	6433210	0.88	6895257	93.3	80	120	Ir (IS)	
Ir (IS)	193	3	7715139	0.99	8354862	92.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131403-B-2-B MS**
Data File Name	**138SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:07:53-06:00**
Type	**Sample**
VialNumber	**3306**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	84.45184	168.90369	ug/l	1000	Li	
Be	9	6	3	42.79970	85.59940	ug/l	1000	Be	
B	11	6	3	93.73042	187.46084	ug/l	2000	B	
Na	23	45	2	22173.48350	44346.96700	ug/l	50000	Na	
Mg	24	45	2	86304.90852	172609.81704	ug/l	50000	Mg	FAILED
Al	27	45	2	5157.61326	10315.22652	ug/l	100000	Al	
P	31	45	2	7811.65829	15623.31657	ug/l	100000	P	
K	39	45	2	79379.79550	158759.59100	ug/l	100000	K	
Ca	44	45	3	301805.87237	603611.74473	ug/l	100000	Ca	FAILED
Ti	47	45	3	453.21028	906.42056	ug/l	2000	Ti	
V	51	45	2	485.42643	970.85285	ug/l	2000	V	
Cr	52	45	2	469.69204	939.38408	ug/l	2000	Cr	
Mn	55	72	2	2002.33282	4004.66564	ug/l	5000	Mn	
Fe	57	72	2	7514.63725	15029.27450	ug/l	100000	Fe	
Co	59	72	2	512.83425	1025.66850	ug/l	2000	Co	
Ni	60	72	2	557.50622	1115.01244	ug/l	2000	Ni	
Cu	63	72	2	507.93301	1015.86602	ug/l	2000	Cu	
Zn	66	72	2	477.60542	955.21084	ug/l	5000	Zn	
As	75	72	2	652.26690	1304.53381	ug/l	2000	As	
Se	78	72	2	254.47549	508.95098	ug/l	1000	Se	
Sr	88	72	3	2962.77308	5925.54616	ug/l	2000	Sr	FAILED
Y	89	72	2	0.43409	0.86818	ug/l	200	Y	
Zr	90	72	2	404.26357	808.52713	ug/l	2000	Zr	
Nb	93	72	2	0.39521	0.79042	ug/l	100	Nb	
Mo	95	72	3	279.48400	558.96801	ug/l	1000	Mo	
Ru	101	72	2	-0.00727	-0.01454	ug/l	200	Ru	
Rh	103	72	2	0.01803	0.03606	ug/l	200	Rh	
Pd	105	72	2	0.14737	0.29475	ug/l	20	Pd	
Ag	107	115	3	89.49007	178.98015	ug/l	400	Ag	
Cd	111	115	3	468.36182	936.72364	ug/l	2000	Cd	
Sn	118	115	3	444.14687	888.29373	ug/l	2000	Sn	
Sb	121	115	3	244.22549	488.45097	ug/l	1000	Sb	
Te	125	165	2	0.20680	0.41360	ug/l	200	Te	
Cs	133	165	2	2.66532	5.33065	ug/l	2000	Cs	
Ba	137	165	3	832.42525	1664.85050	ug/l	5000	Ba	
La	139	165	2	1.21877	2.43754	ug/l	200	La	
Ce	140	165	2	1.99755	3.99511	ug/l	200	Ce	
Pr	141	165	2	0.10296	0.20592	ug/l	200	Pr	
Nd	146	165	2	0.42356	0.84712	ug/l	200	Nd	
Sm	147	165	3	493.14827	986.29654	ug/l	2000	Sm	
Hf	178	165	2	0.10275	0.20550	ug/l	200	Hf	
Ta	181	165	2	0.31147	0.62295	ug/l	200	Ta	
W	182	165	2	495.29459	990.58918	ug/l	2000	W	
Re	185	193	3	0.00540	0.01080	ug/l	200	Re	
Pt	195	193	2	-0.00016	-0.00032	ug/l	200	Pt	
Au	197	193	3	-0.01540	-0.03079	ug/l	2000	Au	
Tl	205	193	3	95.87216	191.74431	ug/l	400	Tl	
Pb	208	193	3	479.43186	958.86372	ug/l	5000	Pb	
Bi	209	193	2	484.83050	969.66100	ug/l	2000	Bi	
Th	232	193	3	428.82281	857.64563	ug/l	2000	Th	
U	238	193	3	514.73180	1029.46361	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5222494	0.76	5676390	92.0	80	120	Li (IS)	
Sc (IS)	45	2	138497	1.90	157398	88.0	80	120	Sc (IS)	
Sc (IS)	45	3	2591824	1.52	2954313	87.7	80	120	Sc (IS)	
Ge (IS)	72	2	311317	0.82	379042	82.1	80	120	Ge (IS)	
Ge (IS)	72	3	1946777	0.90	2413999	80.6	80	120	Ge (IS)	
In (IS)	115	3	12577172	0.18	15281059	82.3	80	120	In (IS)	
Ho (IS)	165	2	9357859	0.82	10495856	89.2	80	120	Ho (IS)	
Ho (IS)	165	3	14975053	0.86	16807844	89.1	80	120	Ho (IS)	
Ir (IS)	193	2	5687374	1.50	6895257	82.5	80	120	Ir (IS)	
Ir (IS)	193	3	7101543	0.39	8354862	85.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**139LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:14:37-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	4.36626	ug/l	5	87.3	80	120	Li	
Be	9	6	3	0.47880	ug/l	0.5	95.8	80	120	Be	
B	11	6	3	82.55983	ug/l	100	82.6	80	120	B	
Na	23	45	2	109.22166	ug/l	100	109.2	80	120	Na	
Mg	24	45	2	58.44776	ug/l	50	116.9	80	120	Mg	
Al	27	45	2	55.06713	ug/l	50	110.1	80	120	Al	
P	31	45	2	98.70212	ug/l	100	98.7	80	120	P	
K	39	45	2	105.16487	ug/l	100	105.2	80	120	K	
Ca	44	45	3	213.12912	ug/l	200	106.6	80	120	Ca	
Ti	47	45	3	5.16046	ug/l	5	103.2	80	120	Ti	
V	51	45	2	9.70268	ug/l	10	97.0	80	120	V	
Cr	52	45	2	9.75542	ug/l	10	97.6	80	120	Cr	
Mn	55	72	2	4.52024	ug/l	4	113.0	80	120	Mn	
Fe	57	72	2	54.13024	ug/l	50	108.3	80	120	Fe	
Co	59	72	2	2.13260	ug/l	2	106.6	80	120	Co	
Ni	60	72	2	5.56605	ug/l	5	111.3	80	120	Ni	
Cu	63	72	2	3.11987	ug/l	3	104.0	80	120	Cu	
Zn	66	72	2	21.80734	ug/l	20	109.0	80	120	Zn	
As	75	72	2	10.72581	ug/l	10	107.3	80	120	As	
Se	78	72	2	5.54367	ug/l	5	110.9	80	120	Se	
Sr	88	72	3	5.26961	ug/l	5	105.4	80	120	Sr	
Y	89	72	2	5.11443	ug/l	5	102.3	80	120	Y	
Zr	90	72	2	5.22065	ug/l	5	104.4	80	120	Zr	
Nb	93	72	2	16.68655	ug/l	25	66.7	80	120	Nb	FAILED
Mo	95	72	3	5.11774	ug/l	5	102.4	80	120	Mo	
Ru	101	72	2	10.56084	ug/l	10	105.6	80	120	Ru	
Rh	103	72	2	10.19264	ug/l	10	101.9	80	120	Rh	
Pd	105	72	2	0.58321	ug/l	0.5	116.6	80	120	Pd	
Ag	107	115	3	1.87339	ug/l	2	93.7	80	120	Ag	
Cd	111	115	3	0.57337	ug/l	0.5	114.7	80	120	Cd	
Sn	118	115	3	1.90617	ug/l	2	95.3	80	120	Sn	
Sb	121	115	3	4.72088	ug/l	5	94.4	80	120	Sb	
Te	125	165	2	9.32288	ug/l	10	93.2	80	120	Te	
Cs	133	165	2	0.92309	ug/l	1	92.3	80	120	Cs	
Ba	137	165	3	1.94703	ug/l	2	97.4	80	120	Ba	
La	139	165	2	1.82193	ug/l	2	91.1	80	120	La	
Ce	140	165	2	9.03224	ug/l	10	90.3	80	120	Ce	
Pr	141	165	2	1.86108	ug/l	2	93.1	80	120	Pr	
Nd	146	165	2	1.88656	ug/l	2	94.3	80	120	Nd	
Sm	147	165	3	9.55308	ug/l	10	95.5	80	120	Sm	
Hf	178	165	2	8.43563	ug/l	10	84.4	80	120	Hf	
Ta	181	165	2	5.06115	ug/l	10	50.6	80	120	Ta	FAILED
W	182	165	2	5.13520	ug/l	5	102.7	80	120	W	
Re	185	193	3	9.13933	ug/l	10	91.4	80	120	Re	
Pt	195	193	2	0.98641	ug/l	1	98.6	80	120	Pt	
Au	197	193	3	4.59042	ug/l	5	91.8	80	120	Au	
Tl	205	193	3	2.00009	ug/l	2	100.0	80	120	Tl	
Pb	208	193	3	2.86697	ug/l	3	95.6	80	120	Pb	
Bi	209	193	2	18.82299	ug/l	20	94.1	80	120	Bi	
Th	232	193	3	2.14969	ug/l	2	107.5	80	120	Th	
U	238	193	3	0.97801	ug/l	1	97.8	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5783588	1.15	5676390	101.9	80	120	Li (IS)	
Sc (IS)	45	2	139457	1.13	157398	88.6	80	120	Sc (IS)	
Sc (IS)	45	3	2580241	0.70	2954313	87.3	80	120	Sc (IS)	
Ge (IS)	72	2	338941	0.82	379042	89.4	80	120	Ge (IS)	
Ge (IS)	72	3	2116624	0.47	2413999	87.7	80	120	Ge (IS)	
In (IS)	115	3	13935156	0.27	15281059	91.2	80	120	In (IS)	
Ho (IS)	165	2	10112394	0.75	10495856	96.3	80	120	Ho (IS)	
Ho (IS)	165	3	15744438	0.17	16807844	93.7	80	120	Ho (IS)	
Ir (IS)	193	2	6559796	0.83	6895257	95.1	80	120	Ir (IS)	
Ir (IS)	193	3	7816355	1.04	8354862	93.6	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**140_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:21:19-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	93.81788	ug/l	100	93.8	90	110	Li	
Be	9	6	3	89.71657	ug/l	100	89.7	90	110	Be	FAILED
B	11	6	3	175.54447	ug/l	200	87.8	90	110	B	FAILED
Na	23	45	2	2483.17823	ug/l	2500	99.3	90	110	Na	
Mg	24	45	2	2530.89843	ug/l	2500	101.2	90	110	Mg	
Al	27	45	2	2462.61472	ug/l	2500	98.5	90	110	Al	
P	31	45	2	2451.09940	ug/l	2500	98.0	90	110	P	
K	39	45	2	2465.41342	ug/l	2500	98.6	90	110	K	
Ca	44	45	3	2543.01051	ug/l	2500	101.7	90	110	Ca	
Ti	47	45	3	101.09076	ug/l	100	101.1	90	110	Ti	
V	51	45	2	95.03926	ug/l	100	95.0	90	110	V	
Cr	52	45	2	93.97101	ug/l	100	94.0	90	110	Cr	
Mn	55	72	2	98.53297	ug/l	100	98.5	90	110	Mn	
Fe	57	72	2	2480.08707	ug/l	2500	99.2	90	110	Fe	
Co	59	72	2	103.55594	ug/l	100	103.6	90	110	Co	
Ni	60	72	2	103.99927	ug/l	100	104.0	90	110	Ni	
Cu	63	72	2	95.59802	ug/l	100	95.6	90	110	Cu	
Zn	66	72	2	104.59952	ug/l	100	104.6	90	110	Zn	
As	75	72	2	103.96110	ug/l	100	104.0	90	110	As	
Se	78	72	2	51.55558	ug/l	50	103.1	90	110	Se	
Sr	88	72	3	104.89044	ug/l	100	104.9	90	110	Sr	
Y	89	72	2	106.96637	ug/l	100	107.0	90	110	Y	
Zr	90	72	2	106.59754	ug/l	100	106.6	90	110	Zr	
Nb	93	72	2	53.66817	ug/l	50	107.3	90	110	Nb	
Mo	95	72	3	49.92230	ug/l	50	99.8	90	110	Mo	
Ru	101	72	2	102.66010	ug/l	100	102.7	90	110	Ru	
Rh	103	72	2	109.05934	ug/l	100	109.1	90	110	Rh	
Pd	105	72	2	11.02004	ug/l	10	110.2	90	110	Pd	FAILED
Ag	107	115	3	18.06467	ug/l	20	90.3	90	110	Ag	
Cd	111	115	3	94.12579	ug/l	100	94.1	90	110	Cd	
Sn	118	115	3	100.35921	ug/l	100	100.4	90	110	Sn	
Sb	121	115	3	50.13862	ug/l	50	100.3	90	110	Sb	
Te	125	165	2	95.80344	ug/l	100	95.8	90	110	Te	
Cs	133	165	2	97.47410	ug/l	100	97.5	90	110	Cs	
Ba	137	165	3	97.86331	ug/l	100	97.9	90	110	Ba	
La	139	165	2	97.98341	ug/l	100	98.0	90	110	La	
Ce	140	165	2	98.88969	ug/l	100	98.9	90	110	Ce	
Pr	141	165	2	98.86481	ug/l	100	98.9	90	110	Pr	
Nd	146	165	2	91.94339	ug/l	100	91.9	90	110	Nd	
Sm	147	165	3	101.21742	ug/l	100	101.2	90	110	Sm	
Hf	178	165	2	100.54645	ug/l	100	100.5	90	110	Hf	
Ta	181	165	2	101.78059	ug/l	100	101.8	90	110	Ta	
W	182	165	2	102.24819	ug/l	100	102.2	90	110	W	
Re	185	193	3	99.72123	ug/l	100	99.7	90	110	Re	
Pt	195	193	2	10.05457	ug/l	10	100.5	90	110	Pt	
Au	197	193	3	100.23219	ug/l	100	100.2	90	110	Au	
Tl	205	193	3	19.98664	ug/l	20	99.9	90	110	Tl	
Pb	208	193	3	101.47121	ug/l	100	101.5	90	110	Pb	
Bi	209	193	2	101.93162	ug/l	100	101.9	90	110	Bi	
Th	232	193	3	100.85785	ug/l	100	100.9	90	110	Th	
U	238	193	3	102.14529	ug/l	100	102.1	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5459884	0.41	5676390	96.2	80	120	Li (IS)	
Sc (IS)	45	2	135660	1.02	157398	86.2	80	120	Sc (IS)	
Sc (IS)	45	3	2535043	0.98	2954313	85.8	80	120	Sc (IS)	
Ge (IS)	72	2	337182	0.24	379042	89.0	80	120	Ge (IS)	
Ge (IS)	72	3	2115134	0.11	2413999	87.6	80	120	Ge (IS)	
In (IS)	115	3	13821089	0.46	15281059	90.4	80	120	In (IS)	
Ho (IS)	165	2	9972449	0.28	10495856	95.0	80	120	Ho (IS)	
Ho (IS)	165	3	15743838	1.43	16807844	93.7	80	120	Ho (IS)	
Ir (IS)	193	2	6502393	1.17	6895257	94.3	80	120	Ir (IS)	
Ir (IS)	193	3	7851272	0.68	8354862	94.0	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**141_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:28:06-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	-0.33970	ug/l	1.388	Li	
Be	9	6	3	0.01049	ug/l	0.7	Be	
B	11	6	3	2.82765	ug/l	20	B	
Na	23	45	2	5.96925	ug/l	30	Na	
Mg	24	45	2	0.38494	ug/l	11.18	Mg	
Al	27	45	2	0.19238	ug/l	25.8	Al	
P	31	45	2	0.95960	ug/l	16.46	P	
K	39	45	2	1.10381	ug/l	83.2	K	
Ca	44	45	3	-0.48525	ug/l	136.2	Ca	
Ti	47	45	3	0.01340	ug/l	4.2	Ti	
V	51	45	2	-0.00114	ug/l	4.74	V	
Cr	52	45	2	0.00932	ug/l	6.52	Cr	
Mn	55	72	2	0.09877	ug/l	0.49	Mn	
Fe	57	72	2	0.30463	ug/l	40.7	Fe	
Co	59	72	2	0.01971	ug/l	0.434	Co	
Ni	60	72	2	0.02186	ug/l	0.8	Ni	
Cu	63	72	2	-0.25556	ug/l	0.902	Cu	
Zn	66	72	2	0.05670	ug/l	16.58	Zn	
As	75	72	2	0.04491	ug/l	2.36	As	
Se	78	72	2	-0.18957	ug/l	3.18	Se	
Sr	88	72	3	0.02842	ug/l	2	Sr	
Y	89	72	2	0.00682	ug/l	0.424	Y	
Zr	90	72	2	0.04432	ug/l	0.496	Zr	
Nb	93	72	2	0.34153	ug/l	4.62	Nb	
Mo	95	72	3	0.09772	ug/l	2	Mo	
Ru	101	72	2	0.00305	ug/l	2	Ru	
Rh	103	72	2	0.00740	ug/l	1.634	Rh	
Pd	105	72	2	0.00555	ug/l	0.08	Pd	
Ag	107	115	3	0.00400	ug/l	1.54	Ag	
Cd	111	115	3	0.01609	ug/l	0.4	Cd	
Sn	118	115	3	0.04697	ug/l	2	Sn	
Sb	121	115	3	0.05832	ug/l	3.34	Sb	
Te	125	165	2	0.08116	ug/l	1.072	Te	
Cs	133	165	2	0.01389	ug/l	0.106	Cs	
Ba	137	165	3	0.01075	ug/l	0.446	Ba	
La	139	165	2	0.00549	ug/l	0.102	La	
Ce	140	165	2	0.00479	ug/l	1.772	Ce	
Pr	141	165	2	0.00580	ug/l	0.084	Pr	
Nd	146	165	2	0.00728	ug/l	0.208	Nd	
Sm	147	165	3	0.00545	ug/l	0.652	Sm	
Hf	178	165	2	0.05454	ug/l	2.26	Hf	
Ta	181	165	2	0.00059	ug/l	1.46	Ta	
W	182	165	2	0.41272	ug/l	4	W	
Re	185	193	3	0.00255	ug/l	0.05	Re	
Pt	195	193	2	0.00092	ug/l	0.12	Pt	
Au	197	193	3	0.16046	ug/l	1	Au	
Tl	205	193	3	0.07134	ug/l	1.1	Tl	
Pb	208	193	3	0.02390	ug/l	0.346	Pb	
Bi	209	193	2	0.06123	ug/l	1.464	Bi	
Th	232	193	3	0.06488	ug/l	1.104	Th	
U	238	193	3	0.00808	ug/l	0.462	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5616795	0.76	5676390	99.0	80	120	Li (IS)	
Sc (IS)	45	2	134939	0.45	157398	85.7	80	120	Sc (IS)	
Sc (IS)	45	3	2536954	0.31	2954313	85.9	80	120	Sc (IS)	
Ge (IS)	72	2	325031	0.67	379042	85.8	80	120	Ge (IS)	
Ge (IS)	72	3	2071643	0.74	2413999	85.8	80	120	Ge (IS)	
In (IS)	115	3	13853241	0.59	15281059	90.7	80	120	In (IS)	
Ho (IS)	165	2	9893338	1.08	10495856	94.3	80	120	Ho (IS)	
Ho (IS)	165	3	15542011	0.16	16807844	92.5	80	120	Ho (IS)	
Ir (IS)	193	2	6577180	0.58	6895257	95.4	80	120	Ir (IS)	
Ir (IS)	193	3	7893826	0.66	8354862	94.5	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131403-B-2-C MSD**
Data File Name	**142SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:34:49-06:00**
Type	**Sample**
VialNumber	**3307**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	84.17658	168.35315	ug/l	1000	Li	
Be	9	6	3	42.93218	85.86435	ug/l	1000	Be	
B	11	6	3	94.31586	188.63172	ug/l	2000	B	
Na	23	45	2	22274.04823	44548.09647	ug/l	50000	Na	
Mg	24	45	2	88013.81495	176027.62990	ug/l	50000	Mg	FAILED
Al	27	45	2	5185.30318	10370.60636	ug/l	100000	Al	
P	31	45	2	7867.30576	15734.61153	ug/l	100000	P	
K	39	45	2	80302.60675	160605.21351	ug/l	100000	K	
Ca	44	45	3	309529.58929	619059.17857	ug/l	100000	Ca	FAILED
Ti	47	45	3	445.97942	891.95884	ug/l	2000	Ti	
V	51	45	2	494.98190	989.96381	ug/l	2000	V	
Cr	52	45	2	476.39011	952.78023	ug/l	2000	Cr	
Mn	55	72	2	2024.60756	4049.21511	ug/l	5000	Mn	
Fe	57	72	2	7539.43999	15078.87999	ug/l	100000	Fe	
Co	59	72	2	518.96626	1037.93251	ug/l	2000	Co	
Ni	60	72	2	559.83994	1119.67989	ug/l	2000	Ni	
Cu	63	72	2	510.72752	1021.45504	ug/l	2000	Cu	
Zn	66	72	2	477.27976	954.55951	ug/l	5000	Zn	
As	75	72	2	652.85012	1305.70024	ug/l	2000	As	
Se	78	72	2	258.10939	516.21878	ug/l	1000	Se	
Sr	88	72	3	2989.85240	5979.70479	ug/l	2000	Sr	FAILED
Y	89	72	2	0.44747	0.89495	ug/l	200	Y	
Zr	90	72	2	407.97616	815.95233	ug/l	2000	Zr	
Nb	93	72	2	1.28624	2.57247	ug/l	100	Nb	
Mo	95	72	3	273.85410	547.70821	ug/l	1000	Mo	
Ru	101	72	2	-0.00574	-0.01148	ug/l	200	Ru	
Rh	103	72	2	0.01872	0.03744	ug/l	200	Rh	
Pd	105	72	2	0.15886	0.31773	ug/l	20	Pd	
Ag	107	115	3	90.10983	180.21967	ug/l	400	Ag	
Cd	111	115	3	468.09397	936.18795	ug/l	2000	Cd	
Sn	118	115	3	457.29236	914.58473	ug/l	2000	Sn	
Sb	121	115	3	235.51692	471.03385	ug/l	1000	Sb	
Te	125	165	2	0.12017	0.24034	ug/l	200	Te	
Cs	133	165	2	2.73981	5.47961	ug/l	2000	Cs	
Ba	137	165	3	836.72910	1673.45820	ug/l	5000	Ba	
La	139	165	2	1.22177	2.44353	ug/l	200	La	
Ce	140	165	2	2.02755	4.05510	ug/l	200	Ce	
Pr	141	165	2	0.10494	0.20987	ug/l	200	Pr	
Nd	146	165	2	0.40875	0.81750	ug/l	200	Nd	
Sm	147	165	3	490.59069	981.18138	ug/l	2000	Sm	
Hf	178	165	2	0.51060	1.02119	ug/l	200	Hf	
Ta	181	165	2	0.36622	0.73245	ug/l	200	Ta	
W	182	165	2	494.56128	989.12256	ug/l	2000	W	
Re	185	193	3	0.00730	0.01460	ug/l	200	Re	
Pt	195	193	2	0.00316	0.00631	ug/l	200	Pt	
Au	197	193	3	0.03116	0.06232	ug/l	2000	Au	
Tl	205	193	3	96.65352	193.30705	ug/l	400	Tl	
Pb	208	193	3	480.17151	960.34302	ug/l	5000	Pb	
Bi	209	193	2	486.07202	972.14404	ug/l	2000	Bi	
Th	232	193	3	436.43438	872.86877	ug/l	2000	Th	
U	238	193	3	516.77654	1033.55309	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5087300	1.84	5676390	89.6	80	120	Li (IS)	
Sc (IS)	45	2	133064	0.66	157398	84.5	80	120	Sc (IS)	
Sc (IS)	45	3	2510602	1.83	2954313	85.0	80	120	Sc (IS)	
Ge (IS)	72	2	302803	0.39	379042	79.9	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	1921809	2.11	2413999	79.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	12384408	2.49	15281059	81.0	80	120	In (IS)	
Ho (IS)	165	2	9194772	1.40	10495856	87.6	80	120	Ho (IS)	
Ho (IS)	165	3	14807204	2.55	16807844	88.1	80	120	Ho (IS)	
Ir (IS)	193	2	5616850	0.47	6895257	81.5	80	120	Ir (IS)	
Ir (IS)	193	3	7037573	2.70	8354862	84.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131403-B-2-D MS**
Data File Name	**143SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:41:33-06:00**
Type	**Sample**
VialNumber	**3308**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	38.28086	76.56171	ug/l	1000	Li	
Be	9	6	3	0.02355	0.04711	ug/l	1000	Be	
B	11	6	3	13.04895	26.09789	ug/l	2000	B	
Na	23	45	2	17379.58511	34759.17021	ug/l	50000	Na	
Mg	24	45	2	81357.07766	162714.15531	ug/l	50000	Mg	FAILED
Al	27	45	2	15.68345	31.36689	ug/l	100000	Al	
P	31	45	2	7476.71866	14953.43732	ug/l	100000	P	
K	39	45	2	76876.84141	153753.68283	ug/l	100000	K	
Ca	44	45	3	304497.57237	608995.14473	ug/l	100000	Ca	FAILED
Ti	47	45	3	21.13828	42.27656	ug/l	2000	Ti	
V	51	45	2	12.17186	24.34371	ug/l	2000	V	
Cr	52	45	2	4.53232	9.06463	ug/l	2000	Cr	
Mn	55	72	2	1508.44589	3016.89178	ug/l	5000	Mn	
Fe	57	72	2	2073.83031	4147.66062	ug/l	100000	Fe	
Co	59	72	2	5.84129	11.68258	ug/l	2000	Co	
Ni	60	72	2	21.16189	42.32377	ug/l	2000	Ni	
Cu	63	72	2	13.53264	27.06528	ug/l	2000	Cu	
Zn	66	72	2	6.52995	13.05990	ug/l	5000	Zn	
As	75	72	2	164.62131	329.24262	ug/l	2000	As	
Se	78	72	2	6.32570	12.65140	ug/l	1000	Se	
Sr	88	72	3	2459.69808	4919.39616	ug/l	2000	Sr	FAILED
Y	89	72	2	0.43793	0.87586	ug/l	200	Y	
Zr	90	72	2	1.03488	2.06975	ug/l	2000	Zr	
Nb	93	72	2	0.34479	0.68958	ug/l	100	Nb	
Mo	95	72	3	6.79152	13.58305	ug/l	1000	Mo	
Ru	101	72	2	-0.00960	-0.01919	ug/l	200	Ru	
Rh	103	72	2	-0.00394	-0.00788	ug/l	200	Rh	
Pd	105	72	2	0.10914	0.21828	ug/l	20	Pd	
Ag	107	115	3	0.02427	0.04855	ug/l	400	Ag	
Cd	111	115	3	2.26107	4.52214	ug/l	2000	Cd	
Sn	118	115	3	0.46760	0.93519	ug/l	2000	Sn	
Sb	121	115	3	50.40612	100.81225	ug/l	1000	Sb	
Te	125	165	2	0.05292	0.10584	ug/l	200	Te	
Cs	133	165	2	2.74503	5.49006	ug/l	2000	Cs	
Ba	137	165	3	379.63040	759.26079	ug/l	5000	Ba	
La	139	165	2	0.50832	1.01663	ug/l	200	La	
Ce	140	165	2	1.99700	3.99400	ug/l	200	Ce	
Pr	141	165	2	0.10022	0.20044	ug/l	200	Pr	
Nd	146	165	2	0.42317	0.84634	ug/l	200	Nd	
Sm	147	165	3	0.09248	0.18496	ug/l	2000	Sm	
Hf	178	165	2	0.04454	0.08909	ug/l	200	Hf	
Ta	181	165	2	0.05867	0.11735	ug/l	200	Ta	
W	182	165	2	1.31531	2.63061	ug/l	2000	W	
Re	185	193	3	-0.00277	-0.00553	ug/l	200	Re	
Pt	195	193	2	0.00076	0.00152	ug/l	200	Pt	
Au	197	193	3	0.00217	0.00433	ug/l	2000	Au	
Tl	205	193	3	25.19169	50.38338	ug/l	400	Tl	
Pb	208	193	3	9.44843	18.89686	ug/l	5000	Pb	
Bi	209	193	2	0.11587	0.23174	ug/l	2000	Bi	
Th	232	193	3	0.39128	0.78256	ug/l	2000	Th	
U	238	193	3	0.21619	0.43238	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5077067	0.25	5676390	89.4	80	120	Li (IS)	
Sc (IS)	45	2	130947	0.35	157398	83.2	80	120	Sc (IS)	
Sc (IS)	45	3	2523050	0.35	2954313	85.4	80	120	Sc (IS)	
Ge (IS)	72	2	304137	0.49	379042	80.2	80	120	Ge (IS)	
Ge (IS)	72	3	1923411	1.48	2413999	79.7	80	120	Ge (IS)	FAILED
In (IS)	115	3	12395844	1.01	15281059	81.1	80	120	In (IS)	
Ho (IS)	165	2	9190456	0.92	10495856	87.6	80	120	Ho (IS)	
Ho (IS)	165	3	14473717	0.55	16807844	86.1	80	120	Ho (IS)	
Ir (IS)	193	2	5756309	0.54	6895257	83.5	80	120	Ir (IS)	
Ir (IS)	193	3	6924569	0.22	8354862	82.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131403-B-2-E MSD**
Data File Name	**144SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:48:18-06:00**
Type	**Sample**
VialNumber	**3309**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	38.46635	76.93271	ug/l	1000	Li	
Be	9	6	3	0.02050	0.04099	ug/l	1000	Be	
B	11	6	3	12.05787	24.11575	ug/l	2000	B	
Na	23	45	2	17338.40135	34676.80270	ug/l	50000	Na	
Mg	24	45	2	82140.31695	164280.63391	ug/l	50000	Mg	FAILED
Al	27	45	2	17.76838	35.53677	ug/l	100000	Al	
P	31	45	2	7594.47128	15188.94257	ug/l	100000	P	
K	39	45	2	78114.11777	156228.23555	ug/l	100000	K	
Ca	44	45	3	304625.19627	609250.39254	ug/l	100000	Ca	FAILED
Ti	47	45	3	21.02400	42.04800	ug/l	2000	Ti	
V	51	45	2	12.32366	24.64733	ug/l	2000	V	
Cr	52	45	2	4.47262	8.94524	ug/l	2000	Cr	
Mn	55	72	2	1525.32115	3050.64229	ug/l	5000	Mn	
Fe	57	72	2	2092.34836	4184.69673	ug/l	100000	Fe	
Co	59	72	2	5.83684	11.67367	ug/l	2000	Co	
Ni	60	72	2	21.22554	42.45107	ug/l	2000	Ni	
Cu	63	72	2	34.27604	68.55208	ug/l	2000	Cu	
Zn	66	72	2	18.66384	37.32767	ug/l	5000	Zn	
As	75	72	2	165.68051	331.36102	ug/l	2000	As	
Se	78	72	2	6.83847	13.67693	ug/l	1000	Se	
Sr	88	72	3	2488.12419	4976.24838	ug/l	2000	Sr	FAILED
Y	89	72	2	0.42729	0.85457	ug/l	200	Y	
Zr	90	72	2	0.78069	1.56137	ug/l	2000	Zr	
Nb	93	72	2	0.30319	0.60637	ug/l	100	Nb	
Mo	95	72	3	6.76219	13.52439	ug/l	1000	Mo	
Ru	101	72	2	-0.00790	-0.01581	ug/l	200	Ru	
Rh	103	72	2	-0.00416	-0.00831	ug/l	200	Rh	
Pd	105	72	2	0.10889	0.21778	ug/l	20	Pd	
Ag	107	115	3	0.01145	0.02290	ug/l	400	Ag	
Cd	111	115	3	2.21395	4.42789	ug/l	2000	Cd	
Sn	118	115	3	0.48720	0.97440	ug/l	2000	Sn	
Sb	121	115	3	49.91170	99.82340	ug/l	1000	Sb	
Te	125	165	2	0.05711	0.11422	ug/l	200	Te	
Cs	133	165	2	2.72061	5.44122	ug/l	2000	Cs	
Ba	137	165	3	385.07418	770.14836	ug/l	5000	Ba	
La	139	165	2	0.50506	1.01012	ug/l	200	La	
Ce	140	165	2	2.03018	4.06035	ug/l	200	Ce	
Pr	141	165	2	0.10207	0.20413	ug/l	200	Pr	
Nd	146	165	2	0.40734	0.81468	ug/l	200	Nd	
Sm	147	165	3	0.07619	0.15238	ug/l	2000	Sm	
Hf	178	165	2	0.04007	0.08014	ug/l	200	Hf	
Ta	181	165	2	0.04401	0.08802	ug/l	200	Ta	
W	182	165	2	0.87265	1.74530	ug/l	2000	W	
Re	185	193	3	-0.00312	-0.00625	ug/l	200	Re	
Pt	195	193	2	0.00293	0.00586	ug/l	200	Pt	
Au	197	193	3	-0.00779	-0.01559	ug/l	2000	Au	
Tl	205	193	3	24.90980	49.81960	ug/l	400	Tl	
Pb	208	193	3	12.22260	24.44520	ug/l	5000	Pb	
Bi	209	193	2	0.07540	0.15080	ug/l	2000	Bi	
Th	232	193	3	0.17020	0.34039	ug/l	2000	Th	
U	238	193	3	0.19387	0.38775	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	4921465	0.74	5676390	86.7	80	120	Li (IS)	
Sc (IS)	45	2	129862	0.43	157398	82.5	80	120	Sc (IS)	
Sc (IS)	45	3	2475955	0.96	2954313	83.8	80	120	Sc (IS)	
Ge (IS)	72	2	301806	0.43	379042	79.6	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	1872690	0.05	2413999	77.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	12213409	0.78	15281059	79.9	80	120	In (IS)	FAILED
Ho (IS)	165	2	9225855	0.23	10495856	87.9	80	120	Ho (IS)	
Ho (IS)	165	3	14109796	0.64	16807844	83.9	80	120	Ho (IS)	
Ir (IS)	193	2	5623438	0.64	6895257	81.6	80	120	Ir (IS)	
Ir (IS)	193	3	6786743	0.65	8354862	81.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Sample Name	**280-131403-B-2-A PDS**
Data File Name	**145SMPL.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T07:55:03-06:00**
Type	**Sample**
VialNumber	**3310**
Dilution	**2**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	FinalConcentration	Units	High Value	Analyte	QC Flag
Li	7	6	3	83.39954	166.79909	ug/l	1000	Li	
Be	9	6	3	4.28287	8.56574	ug/l	1000	Be	
B	11	6	3	867.87065	1735.74131	ug/l	2000	B	
Na	23	45	2	17418.11652	34836.23304	ug/l	50000	Na	
Mg	24	45	2	78191.50748	156383.01497	ug/l	50000	Mg	FAILED
Al	27	45	2	495.79193	991.58387	ug/l	100000	Al	
P	31	45	2	8146.75155	16293.50310	ug/l	100000	P	
K	39	45	2	75280.16811	150560.33621	ug/l	100000	K	
Ca	44	45	3	301613.31496	603226.62992	ug/l	100000	Ca	FAILED
Ti	47	45	3	67.66144	135.32288	ug/l	2000	Ti	
V	51	45	2	104.42457	208.84913	ug/l	2000	V	
Cr	52	45	2	94.66629	189.33257	ug/l	2000	Cr	
Mn	55	72	2	1499.01550	2998.03100	ug/l	5000	Mn	
Fe	57	72	2	2517.83910	5035.67820	ug/l	100000	Fe	
Co	59	72	2	24.55009	49.10019	ug/l	2000	Co	
Ni	60	72	2	70.77886	141.55772	ug/l	2000	Ni	
Cu	63	72	2	42.99222	85.98444	ug/l	2000	Cu	
Zn	66	72	2	206.17617	412.35234	ug/l	5000	Zn	
As	75	72	2	243.54964	487.09928	ug/l	2000	As	
Se	78	72	2	51.80247	103.60493	ug/l	1000	Se	
Sr	88	72	3	2483.81806	4967.63611	ug/l	2000	Sr	FAILED
Y	89	72	2	0.43103	0.86206	ug/l	200	Y	
Zr	90	72	2	51.48546	102.97092	ug/l	2000	Zr	
Nb	93	72	2	0.51551	1.03102	ug/l	100	Nb	
Mo	95	72	3	58.26426	116.52852	ug/l	1000	Mo	
Ru	101	72	2	-0.00672	-0.01344	ug/l	200	Ru	
Rh	103	72	2	-0.00225	-0.00450	ug/l	200	Rh	
Pd	105	72	2	0.11400	0.22800	ug/l	20	Pd	
Ag	107	115	3	16.91500	33.82999	ug/l	400	Ag	
Cd	111	115	3	4.50044	9.00089	ug/l	2000	Cd	
Sn	118	115	3	18.86798	37.73597	ug/l	2000	Sn	
Sb	121	115	3	50.15882	100.31764	ug/l	1000	Sb	
Te	125	165	2	0.06003	0.12007	ug/l	200	Te	
Cs	133	165	2	2.70742	5.41483	ug/l	2000	Cs	
Ba	137	165	3	397.22447	794.44894	ug/l	5000	Ba	
La	139	165	2	0.52756	1.05512	ug/l	200	La	
Ce	140	165	2	1.98458	3.96916	ug/l	200	Ce	
Pr	141	165	2	0.10015	0.20029	ug/l	200	Pr	
Nd	146	165	2	0.40806	0.81611	ug/l	200	Nd	
Sm	147	165	3	100.57989	201.15977	ug/l	2000	Sm	
Hf	178	165	2	0.15496	0.30993	ug/l	200	Hf	
Ta	181	165	2	0.31928	0.63857	ug/l	200	Ta	
W	182	165	2	46.43256	92.86511	ug/l	2000	W	
Re	185	193	3	-0.00116	-0.00232	ug/l	200	Re	
Pt	195	193	2	0.00039	0.00078	ug/l	200	Pt	
Au	197	193	3	-0.00557	-0.01114	ug/l	2000	Au	
Tl	205	193	3	17.82222	35.64445	ug/l	400	Tl	
Pb	208	193	3	27.61701	55.23402	ug/l	5000	Pb	
Bi	209	193	2	0.07043	0.14086	ug/l	2000	Bi	
Th	232	193	3	20.42500	40.85001	ug/l	2000	Th	
U	238	193	3	9.40764	18.81528	ug/l	2000	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	4698661	0.24	5676390	82.8	80	120	Li (IS)	
Sc (IS)	45	2	127220	0.57	157398	80.8	80	120	Sc (IS)	
Sc (IS)	45	3	2346800	0.64	2954313	79.4	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	294395	1.40	379042	77.7	80	120	Ge (IS)	FAILED
Ge (IS)	72	3	1789438	0.59	2413999	74.1	80	120	Ge (IS)	FAILED
In (IS)	115	3	11604522	1.20	15281059	75.9	80	120	In (IS)	FAILED
Ho (IS)	165	2	8937915	0.92	10495856	85.2	80	120	Ho (IS)	
Ho (IS)	165	3	13653008	0.43	16807844	81.2	80	120	Ho (IS)	
Ir (IS)	193	2	5525569	0.39	6895257	80.1	80	120	Ir (IS)	
Ir (IS)	193	3	6592501	1.07	8354862	78.9	80	120	Ir (IS)	FAILED

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Low Level Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCVL 1847444**
Data File Name	**146LCCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T08:01:47-06:00**
Type	**CRI**
VialNumber	**1101**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	4.22829	ug/l	5	84.6	80	120	Li	
Be	9	6	3	0.46120	ug/l	0.5	92.2	80	120	Be	
B	11	6	3	88.89697	ug/l	100	88.9	80	120	B	
Na	23	45	2	112.88726	ug/l	100	112.9	80	120	Na	
Mg	24	45	2	55.65334	ug/l	50	111.3	80	120	Mg	
Al	27	45	2	54.73386	ug/l	50	109.5	80	120	Al	
P	31	45	2	99.52357	ug/l	100	99.5	80	120	P	
K	39	45	2	105.35746	ug/l	100	105.4	80	120	K	
Ca	44	45	3	209.51914	ug/l	200	104.8	80	120	Ca	
Ti	47	45	3	5.12636	ug/l	5	102.5	80	120	Ti	
V	51	45	2	9.62695	ug/l	10	96.3	80	120	V	
Cr	52	45	2	9.66167	ug/l	10	96.6	80	120	Cr	
Mn	55	72	2	4.48599	ug/l	4	112.1	80	120	Mn	
Fe	57	72	2	53.75851	ug/l	50	107.5	80	120	Fe	
Co	59	72	2	2.10841	ug/l	2	105.4	80	120	Co	
Ni	60	72	2	5.68090	ug/l	5	113.6	80	120	Ni	
Cu	63	72	2	3.07515	ug/l	3	102.5	80	120	Cu	
Zn	66	72	2	21.85201	ug/l	20	109.3	80	120	Zn	
As	75	72	2	10.85244	ug/l	10	108.5	80	120	As	
Se	78	72	2	5.10828	ug/l	5	102.2	80	120	Se	
Sr	88	72	3	5.34054	ug/l	5	106.8	80	120	Sr	
Y	89	72	2	5.20801	ug/l	5	104.2	80	120	Y	
Zr	90	72	2	4.94161	ug/l	5	98.8	80	120	Zr	
Nb	93	72	2	17.30254	ug/l	25	69.2	80	120	Nb	FAILED
Mo	95	72	3	5.19068	ug/l	5	103.8	80	120	Mo	
Ru	101	72	2	10.73921	ug/l	10	107.4	80	120	Ru	
Rh	103	72	2	10.39378	ug/l	10	103.9	80	120	Rh	
Pd	105	72	2	0.59705	ug/l	0.5	119.4	80	120	Pd	
Ag	107	115	3	1.90675	ug/l	2	95.3	80	120	Ag	
Cd	111	115	3	0.51254	ug/l	0.5	102.5	80	120	Cd	
Sn	118	115	3	1.87610	ug/l	2	93.8	80	120	Sn	
Sb	121	115	3	4.67634	ug/l	5	93.5	80	120	Sb	
Te	125	165	2	8.92120	ug/l	10	89.2	80	120	Te	
Cs	133	165	2	0.94641	ug/l	1	94.6	80	120	Cs	
Ba	137	165	3	1.97679	ug/l	2	98.8	80	120	Ba	
La	139	165	2	1.86972	ug/l	2	93.5	80	120	La	
Ce	140	165	2	9.12265	ug/l	10	91.2	80	120	Ce	
Pr	141	165	2	1.87995	ug/l	2	94.0	80	120	Pr	
Nd	146	165	2	1.90531	ug/l	2	95.3	80	120	Nd	
Sm	147	165	3	9.85448	ug/l	10	98.5	80	120	Sm	
Hf	178	165	2	8.44052	ug/l	10	84.4	80	120	Hf	
Ta	181	165	2	5.09495	ug/l	10	50.9	80	120	Ta	FAILED
W	182	165	2	4.59252	ug/l	5	91.9	80	120	W	
Re	185	193	3	9.14629	ug/l	10	91.5	80	120	Re	
Pt	195	193	2	1.00002	ug/l	1	100.0	80	120	Pt	
Au	197	193	3	4.57950	ug/l	5	91.6	80	120	Au	
Tl	205	193	3	1.92488	ug/l	2	96.2	80	120	Tl	
Pb	208	193	3	2.86948	ug/l	3	95.6	80	120	Pb	
Bi	209	193	2	18.29927	ug/l	20	91.5	80	120	Bi	
Th	232	193	3	1.84193	ug/l	2	92.1	80	120	Th	
U	238	193	3	0.96078	ug/l	1	96.1	80	120	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5272085	1.35	5676390	92.9	80	120	Li (IS)	
Sc (IS)	45	2	128384	0.89	157398	81.6	80	120	Sc (IS)	
Sc (IS)	45	3	2344372	0.50	2954313	79.4	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	311449	0.46	379042	82.2	80	120	Ge (IS)	
Ge (IS)	72	3	1920701	1.46	2413999	79.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	12871429	0.55	15281059	84.2	80	120	In (IS)	
Ho (IS)	165	2	9509698	0.37	10495856	90.6	80	120	Ho (IS)	
Ho (IS)	165	3	14269547	0.88	16807844	84.9	80	120	Ho (IS)	
Ir (IS)	193	2	6149836	0.69	6895257	89.2	80	120	Ir (IS)	
Ir (IS)	193	3	7179354	1.36	8354862	85.9	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Verification (CCV) - US EPA Method 6020

Sample Name	**CCV 1847445**
Data File Name	**147_CCV.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T08:08:31-06:00**
Type	**CCV**
VialNumber	**1102**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	ExpectedValue	%Recovery	%QC Low	%QC High	Analyte	QC Flag
Li	7	6	3	94.19956	ug/l	100	94.2	90	110	Li	
Be	9	6	3	86.66785	ug/l	100	86.7	90	110	Be	FAILED
B	11	6	3	178.63545	ug/l	200	89.3	90	110	B	FAILED
Na	23	45	2	2474.09070	ug/l	2500	99.0	90	110	Na	
Mg	24	45	2	2518.50867	ug/l	2500	100.7	90	110	Mg	
Al	27	45	2	2468.53444	ug/l	2500	98.7	90	110	Al	
P	31	45	2	2483.07505	ug/l	2500	99.3	90	110	P	
K	39	45	2	2512.35750	ug/l	2500	100.5	90	110	K	
Ca	44	45	3	2560.26780	ug/l	2500	102.4	90	110	Ca	
Ti	47	45	3	101.43559	ug/l	100	101.4	90	110	Ti	
V	51	45	2	96.08041	ug/l	100	96.1	90	110	V	
Cr	52	45	2	95.13582	ug/l	100	95.1	90	110	Cr	
Mn	55	72	2	97.64761	ug/l	100	97.6	90	110	Mn	
Fe	57	72	2	2441.67591	ug/l	2500	97.7	90	110	Fe	
Co	59	72	2	101.28761	ug/l	100	101.3	90	110	Co	
Ni	60	72	2	102.66701	ug/l	100	102.7	90	110	Ni	
Cu	63	72	2	94.15404	ug/l	100	94.2	90	110	Cu	
Zn	66	72	2	103.72691	ug/l	100	103.7	90	110	Zn	
As	75	72	2	104.20721	ug/l	100	104.2	90	110	As	
Se	78	72	2	52.79442	ug/l	50	105.6	90	110	Se	
Sr	88	72	3	107.65842	ug/l	100	107.7	90	110	Sr	
Y	89	72	2	107.96139	ug/l	100	108.0	90	110	Y	
Zr	90	72	2	106.51708	ug/l	100	106.5	90	110	Zr	
Nb	93	72	2	53.58889	ug/l	50	107.2	90	110	Nb	
Mo	95	72	3	50.69722	ug/l	50	101.4	90	110	Mo	
Ru	101	72	2	102.50915	ug/l	100	102.5	90	110	Ru	
Rh	103	72	2	107.98708	ug/l	100	108.0	90	110	Rh	
Pd	105	72	2	11.04347	ug/l	10	110.4	90	110	Pd	FAILED
Ag	107	115	3	17.99833	ug/l	20	90.0	90	110	Ag	FAILED
Cd	111	115	3	93.81272	ug/l	100	93.8	90	110	Cd	
Sn	118	115	3	99.04486	ug/l	100	99.0	90	110	Sn	
Sb	121	115	3	50.02309	ug/l	50	100.0	90	110	Sb	
Te	125	165	2	94.43363	ug/l	100	94.4	90	110	Te	
Cs	133	165	2	96.63240	ug/l	100	96.6	90	110	Cs	
Ba	137	165	3	93.59290	ug/l	100	93.6	90	110	Ba	
La	139	165	2	97.77997	ug/l	100	97.8	90	110	La	
Ce	140	165	2	98.71551	ug/l	100	98.7	90	110	Ce	
Pr	141	165	2	98.40341	ug/l	100	98.4	90	110	Pr	
Nd	146	165	2	92.50717	ug/l	100	92.5	90	110	Nd	
Sm	147	165	3	102.79022	ug/l	100	102.8	90	110	Sm	
Hf	178	165	2	99.78963	ug/l	100	99.8	90	110	Hf	
Ta	181	165	2	99.79828	ug/l	100	99.8	90	110	Ta	
W	182	165	2	98.91683	ug/l	100	98.9	90	110	W	
Re	185	193	3	99.11504	ug/l	100	99.1	90	110	Re	
Pt	195	193	2	9.99317	ug/l	10	99.9	90	110	Pt	
Au	197	193	3	100.56222	ug/l	100	100.6	90	110	Au	
Tl	205	193	3	18.25899	ug/l	20	91.3	90	110	Tl	
Pb	208	193	3	101.24619	ug/l	100	101.2	90	110	Pb	
Bi	209	193	2	104.90762	ug/l	100	104.9	90	110	Bi	
Th	232	193	3	100.81413	ug/l	100	100.8	90	110	Th	
U	238	193	3	102.10415	ug/l	100	102.1	90	110	U	

QC ISTD Table

Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	4945197	0.32	5676390	87.1	80	120	Li (IS)	
Sc (IS)	45	2	123680	0.53	157398	78.6	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	2295370	0.56	2954313	77.7	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	313566	0.45	379042	82.7	80	120	Ge (IS)	
Ge (IS)	72	3	1921676	0.75	2413999	79.6	80	120	Ge (IS)	FAILED
In (IS)	115	3	12730739	1.29	15281059	83.3	80	120	In (IS)	
Ho (IS)	165	2	9451697	0.47	10495856	90.1	80	120	Ho (IS)	
Ho (IS)	165	3	14376052	1.38	16807844	85.5	80	120	Ho (IS)	
Ir (IS)	193	2	6000589	0.70	6895257	87.0	80	120	Ir (IS)	
Ir (IS)	193	3	7199445	1.08	8354862	86.2	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Continuing Calibration Blank (CCB) - US EPA Method 6020

Sample Name	**CCB 1843378**
Data File Name	**148_CCB.D**
DataPath	**C:\ICPMH\1\DATA\121019B2.B**
Acq Date Time	**2019-12-11T08:15:16-06:00**
Type	**CCB**
VialNumber	**4**
Dilution	**1**
Comment	
Operator	**LP 7700**
ISTDRefDataFileName	**092CALB.D**

QC Analyte Table

Element	m/z	ISTD	Tune Step	Meas Value	Units	QC High	Analyte	QC Flag
Li	7	6	3	-0.46091	ug/l	1.388	Li	
Be	9	6	3	0.00618	ug/l	0.7	Be	
B	11	6	3	6.02107	ug/l	20	B	
Na	23	45	2	9.80561	ug/l	30	Na	
Mg	24	45	2	0.66373	ug/l	11.18	Mg	
Al	27	45	2	0.24205	ug/l	25.8	Al	
P	31	45	2	0.77757	ug/l	16.46	P	
K	39	45	2	1.46563	ug/l	83.2	K	
Ca	44	45	3	-0.23447	ug/l	136.2	Ca	
Ti	47	45	3	0.01321	ug/l	4.2	Ti	
V	51	45	2	-0.00324	ug/l	4.74	V	
Cr	52	45	2	0.00133	ug/l	6.52	Cr	
Mn	55	72	2	0.12426	ug/l	0.49	Mn	
Fe	57	72	2	0.15821	ug/l	40.7	Fe	
Co	59	72	2	0.01016	ug/l	0.434	Co	
Ni	60	72	2	0.01861	ug/l	0.8	Ni	
Cu	63	72	2	-0.26359	ug/l	0.902	Cu	
Zn	66	72	2	0.06617	ug/l	16.58	Zn	
As	75	72	2	0.06410	ug/l	2.36	As	
Se	78	72	2	0.14021	ug/l	3.18	Se	
Sr	88	72	3	0.04167	ug/l	2	Sr	
Y	89	72	2	0.00686	ug/l	0.424	Y	
Zr	90	72	2	0.04178	ug/l	0.496	Zr	
Nb	93	72	2	0.30366	ug/l	4.62	Nb	
Mo	95	72	3	0.07748	ug/l	2	Mo	
Ru	101	72	2	0.00685	ug/l	2	Ru	
Rh	103	72	2	0.00746	ug/l	1.634	Rh	
Pd	105	72	2	0.00405	ug/l	0.08	Pd	
Ag	107	115	3	0.00059	ug/l	1.54	Ag	
Cd	111	115	3	0.01634	ug/l	0.4	Cd	
Sn	118	115	3	0.02629	ug/l	2	Sn	
Sb	121	115	3	0.05310	ug/l	3.34	Sb	
Te	125	165	2	0.02898	ug/l	1.072	Te	
Cs	133	165	2	0.01394	ug/l	0.106	Cs	
Ba	137	165	3	0.01437	ug/l	0.446	Ba	
La	139	165	2	0.00583	ug/l	0.102	La	
Ce	140	165	2	0.00689	ug/l	1.772	Ce	
Pr	141	165	2	0.00578	ug/l	0.084	Pr	
Nd	146	165	2	0.00920	ug/l	0.208	Nd	
Sm	147	165	3	0.00678	ug/l	0.652	Sm	
Hf	178	165	2	0.05331	ug/l	2.26	Hf	
Ta	181	165	2	-0.00501	ug/l	1.46	Ta	
W	182	165	2	0.27554	ug/l	4	W	
Re	185	193	3	0.00362	ug/l	0.05	Re	
Pt	195	193	2	0.00206	ug/l	0.12	Pt	
Au	197	193	3	0.15107	ug/l	1	Au	
Tl	205	193	3	0.05399	ug/l	1.1	Tl	
Pb	208	193	3	0.01304	ug/l	0.346	Pb	
Bi	209	193	2	0.04643	ug/l	1.464	Bi	
Th	232	193	3	0.05597	ug/l	1.104	Th	
U	238	193	3	0.00975	ug/l	0.462	U	

QC ISTD Table

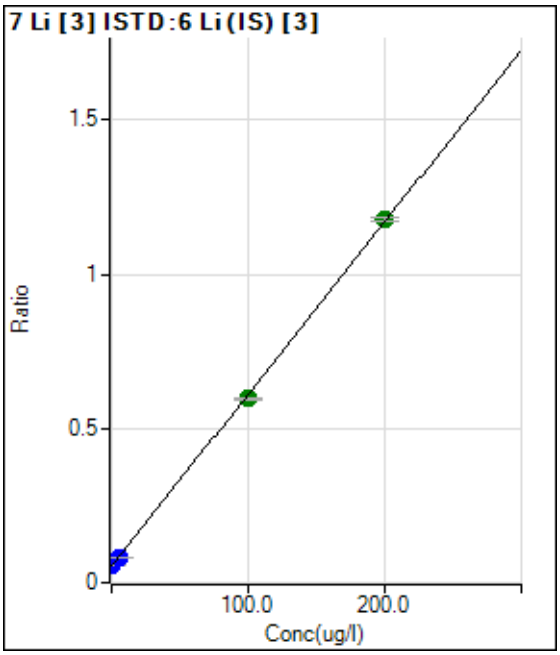
Element	m/z	Tune Step	CPS	%RSD	Reference CPS	%Recovery	Lower Limit	Upper Limit	Analyte	QC Flag
Li (IS)	6	3	5147125	0.28	5676390	90.7	80	120	Li (IS)	
Sc (IS)	45	2	125898	1.50	157398	80.0	80	120	Sc (IS)	FAILED
Sc (IS)	45	3	2324517	1.37	2954313	78.7	80	120	Sc (IS)	FAILED
Ge (IS)	72	2	304721	1.56	379042	80.4	80	120	Ge (IS)	
Ge (IS)	72	3	1889475	0.17	2413999	78.3	80	120	Ge (IS)	FAILED
In (IS)	115	3	13012572	0.90	15281059	85.2	80	120	In (IS)	
Ho (IS)	165	2	9425883	0.45	10495856	89.8	80	120	Ho (IS)	
Ho (IS)	165	3	14472874	0.41	16807844	86.1	80	120	Ho (IS)	
Ir (IS)	193	2	6093520	0.48	6895257	88.4	80	120	Ir (IS)	
Ir (IS)	193	3	7209756	1.97	8354862	86.3	80	120	Ir (IS)	

TuneStep	TuneFile
2	**he.u**
3	**nogas.u**

Calibration for 004CALS.D

Batch Folder:	C:¥ICPMH¥1¥DATA¥121019B2.B¥
Analysis File:	121019B2.batch.xml
DA Date-Time:	12/10/2019 4:20:25 PM
Calibration Title:	
Calibration Method:	External Calibration
VIS Interpolation Fit:	
Tune Step:	#1 he.u
	#2 nogas.u

Level	Standard Data File	Sample Name	Acq. Date-Time
1	003CALB.D	ICIS 1843378	12/10/2019 3:57:44 PM
2	004CALS.D	IC 1847444	12/10/2019 4:04:31 PM
3	005CALS.D	IC 1847445	12/10/2019 4:11:12 PM
4	006CALS.D	IC 1847446	12/10/2019 4:17:57 PM
5			
6			
7			



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	396592.32	0.0535	P	1.8
2	☐	5.000	4.833	594877.18	0.0805	P	0.5
3	☐	100.000	97.350	4415161.81	0.5964	A	0.9
4	☐	200.000	201.329	8633037.86	1.1762	A	1.1
5	☐						
6	☐						
7	☐						

y = 0.0056 * x + 0.0535

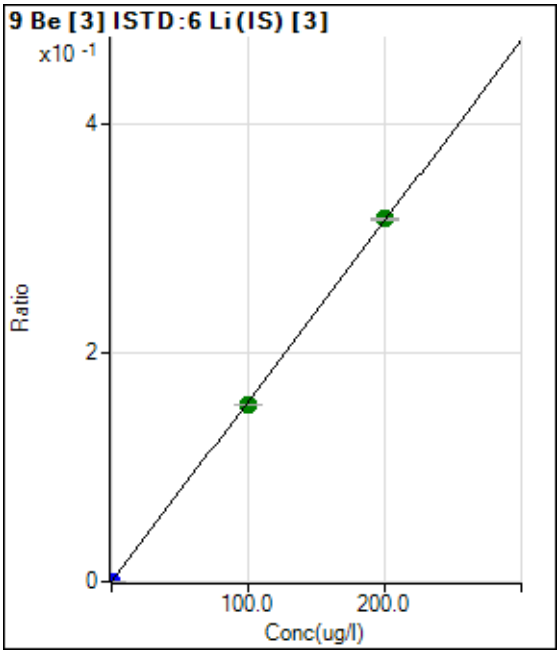
R = 0.9999

DL = 0.5083

BEC = 9.597

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	225.57	0.0000	P	1.9
2	☐	0.500	0.471	5715.56	0.0008	P	2.7
3	☐	100.000	97.908	1143216.97	0.1544	A	0.3
4	☐	200.000	201.046	2327189.91	0.3170	A	0.6
5	☐						
6	☐						
7	☐						

y = 0.0016 * x + 3.0434E-005

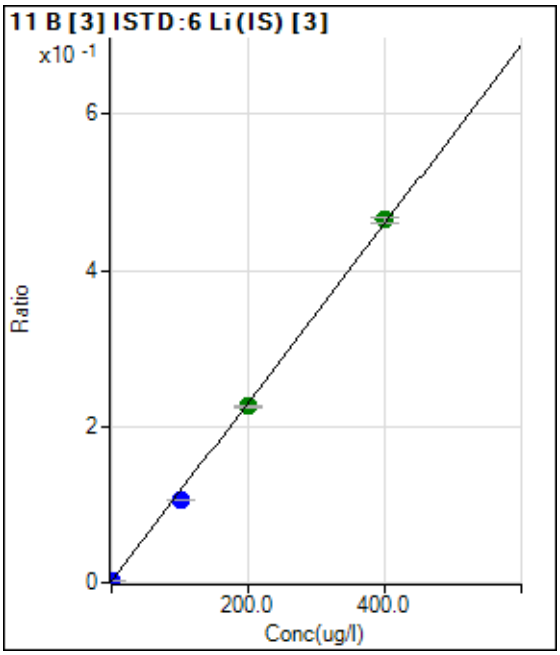
R = 0.9999

DL = 0.001095

BEC = 0.0193

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	12858.31	0.0017	P	5.7
2	☐	100.000	91.489	786949.18	0.1064	P	1.1
3	☐	200.000	195.458	1669035.95	0.2254	A	0.9
4	☐	400.000	404.399	3409942.03	0.4646	A	1.3
5	☐						
6	☐						
7	☐						

y = 0.0011 * x + 0.0017

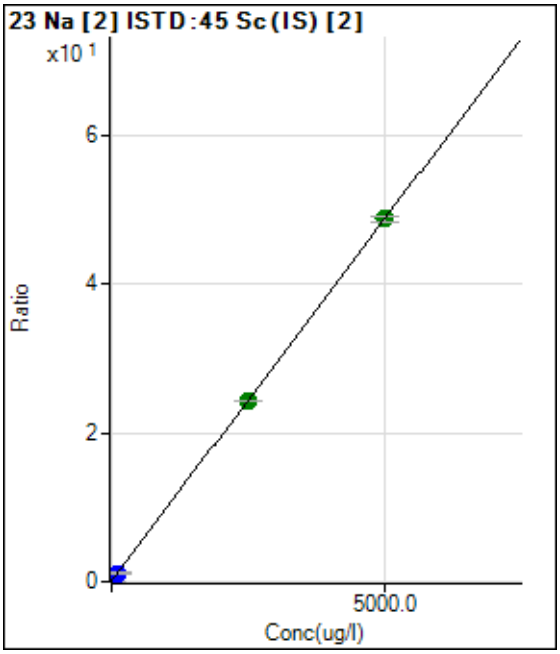
R = 0.9996

DL = 0.2602

BEC = 1.516

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	13850.15	0.0966	P	2.1
2	☐	100.000	108.689	155362.68	1.1544	P	11.7
3	☐	2500.000	2485.802	3623334.91	24.2889	A	0.2
4	☐	5000.000	5006.925	7433004.89	48.8249	A	1.3
5	☐						
6	☐						
7	☐						

y = 0.0097 * x + 0.0966

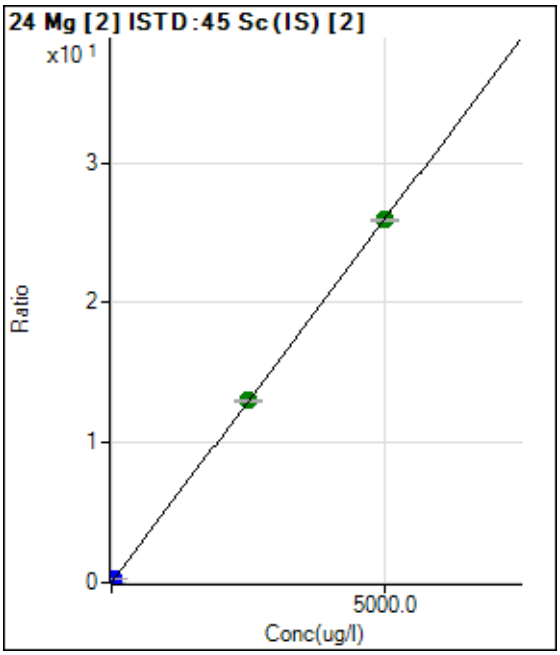
R = 1.0000

DL = 0.64

BEC = 9.925

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	322.24	0.0022	P	8.3
2	☐	50.000	55.054	38699.65	0.2877	P	12.2
3	☐	2500.000	2505.079	1937594.33	12.9888	A	0.3
4	☐	5000.000	4997.410	3944452.65	25.9092	A	0.8
5	☐						
6	☐						
7	☐						

y = 0.0052 * x + 0.0022

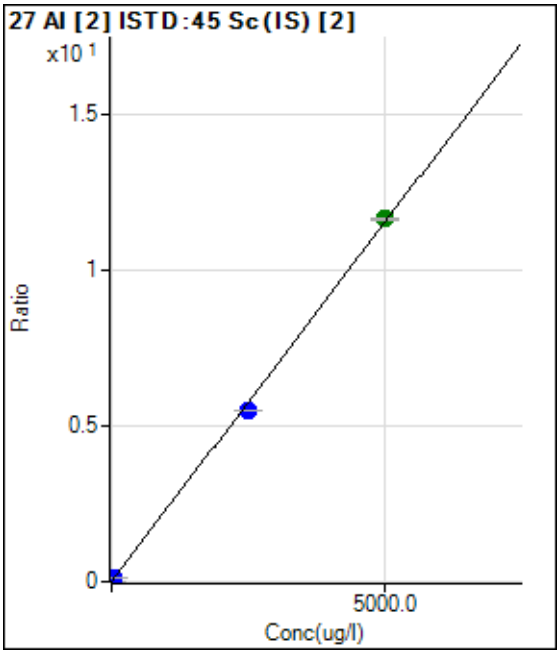
R = 1.0000

DL = 0.1075

BEC = 0.4336

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	273.35	0.0019	P	13.4
2	☐	50.000	55.537	17461.19	0.1297	P	11.3
3	☐	2500.000	2391.533	821198.82	5.5049	P	0.2
4	☐	5000.000	5054.178	1770875.58	11.6317	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0023 * x + 0.0019

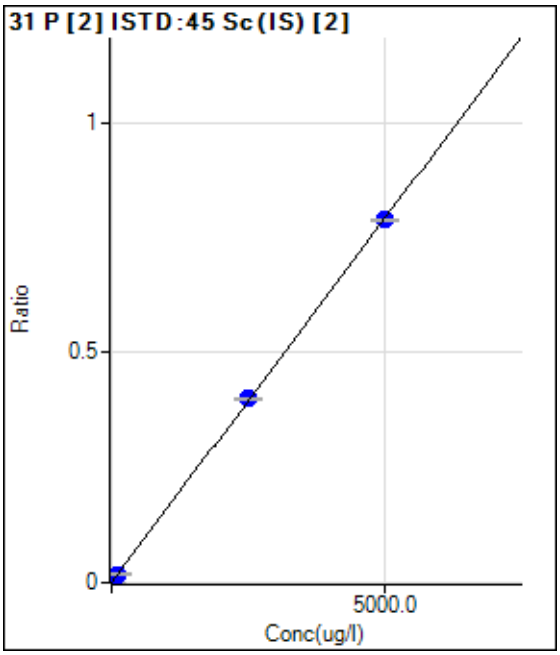
R = 0.9996

DL = 0.3325

BEC = 0.8282

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	72.22	0.0005	P	42.4
2	☐	100.000	110.830	2428.04	0.0180	P	9.4
3	☐	2500.000	2524.736	59526.83	0.3991	P	1.9
4	☐	5000.000	4987.415	119943.84	0.7878	P	0.6
5	☐						
6	☐						
7	☐						

y = 1.5787E-004 * x + 5.0436E-004

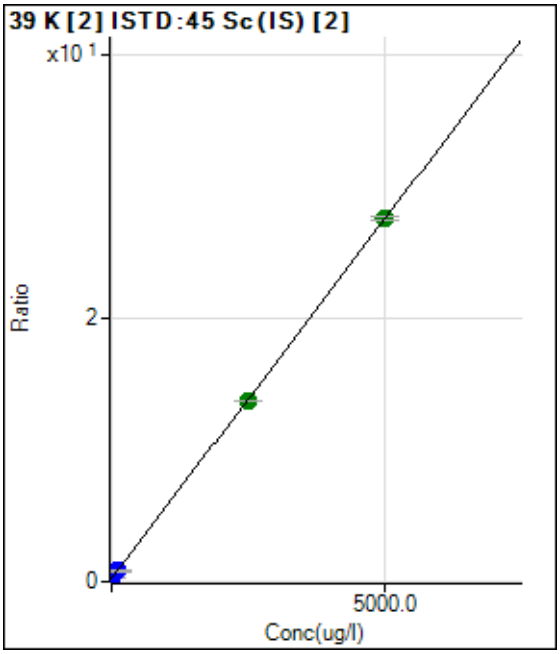
R = 1.0000

DL = 4.059

BEC = 3.195

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	31720.89	0.2212	P	1.1
2	☐	100.000	106.673	108062.48	0.8022	P	10.4
3	☐	2500.000	2484.344	2051268.48	13.7506	A	0.2
4	☐	5000.000	5007.695	4185422.89	27.4925	A	1.1
5	☐						
6	☐						
7	☐						

y = 0.0054 * x + 0.2212

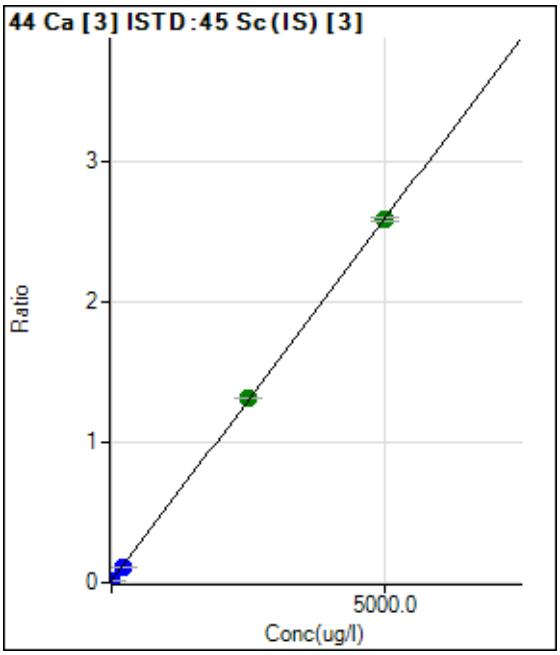
R = 1.0000

DL = 1.323

BEC = 40.63

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	27539.65	0.0115	P	1.5
2	☐	200.000	193.772	265868.65	0.1116	P	0.6
3	☐	2500.000	2520.140	3220002.14	1.3134	A	0.3
4	☐	5000.000	4990.179	6437026.99	2.5893	A	1.1
5	☐						
6	☐						
7	☐						

y = 5.1658E−004 * x + 0.0115

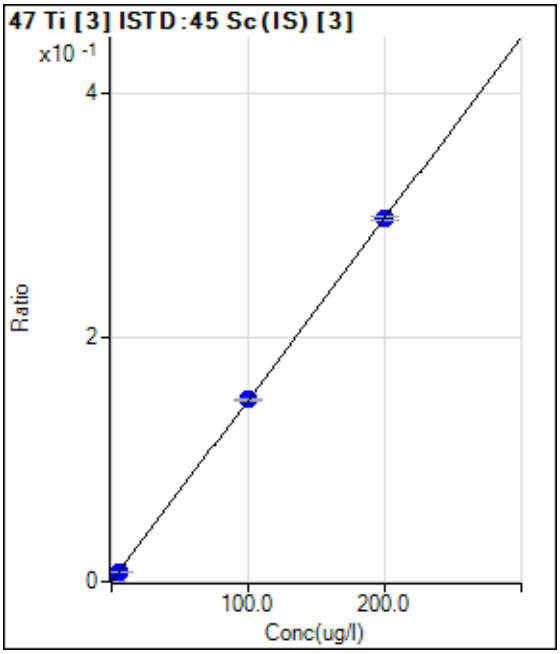
R = 1.0000

DL = 0.9903

BEC = 22.28

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	338.01	0.0001	P	2.9
2	☐	5.000	4.962	17877.77	0.0075	P	1.5
3	☐	100.000	100.245	365093.75	0.1489	P	0.5
4	☐	200.000	199.879	737813.61	0.2968	P	1.0
5	☐						
6	☐						
7	☐						

y = 0.0015 * x + 1.4124E−004

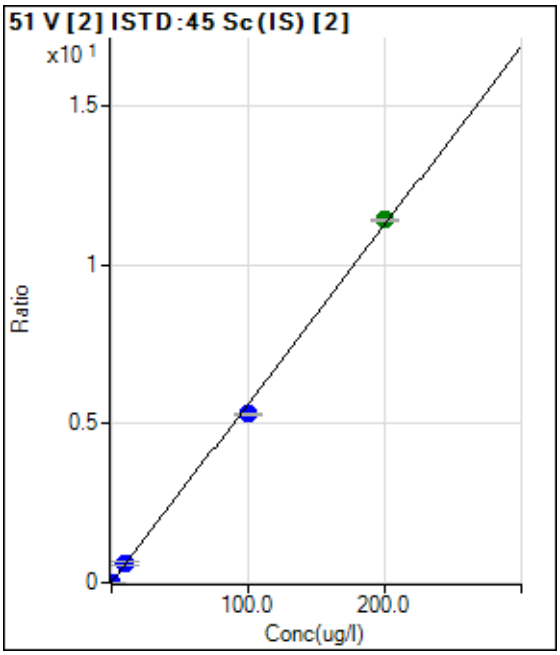
R = 1.0000

DL = 0.008184

BEC = 0.09517

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1573.48	0.0110	P	5.5
2	☐	10.000	10.411	80158.00	0.5962	P	13.2
3	☐	100.000	94.107	790818.74	5.3009	P	1.6
4	☐	200.000	202.926	1738302.53	11.4179	A	0.7
5	☐						
6	☐						
7	☐						

y = 0.0562 * x + 0.0110

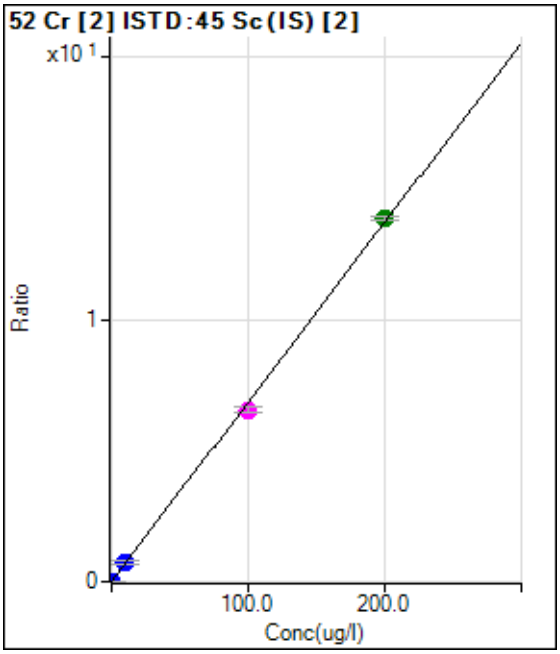
R = 0.9992

DL = 0.03245

BEC = 0.1953

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1104.53	0.0077	P	6.7
2	☐	10.000	10.562	98111.07	0.7296	P	12.9
3	☐	100.000	95.719	977245.04	6.5499	M	3.0
4	☐	200.000	202.113	2104224.13	13.8218	A	1.0
5	☐						
6	☐						
7	☐						

y = 0.0683 * x + 0.0077

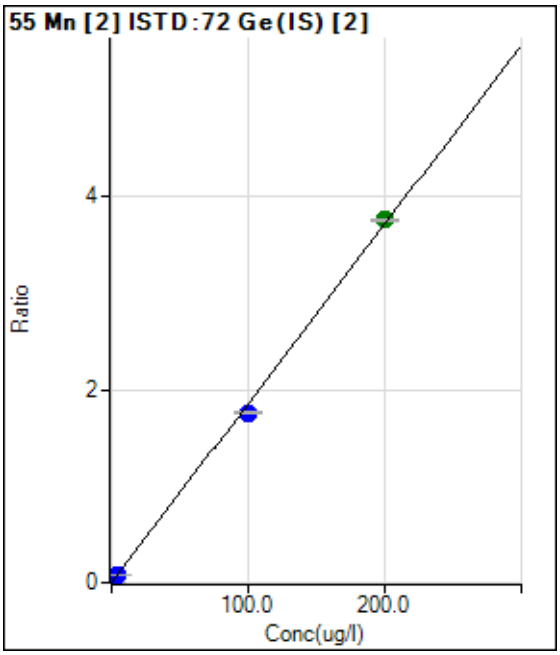
R = 0.9996

DL = 0.02258

BEC = 0.1127

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	270.01	0.0008	P	5.0
2	☐	4.000	4.262	24841.42	0.0800	P	11.7
3	☐	100.000	94.947	610331.37	1.7636	P	1.7
4	☐	200.000	202.521	1356067.60	3.7608	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0186 * x + 8.3514E-004

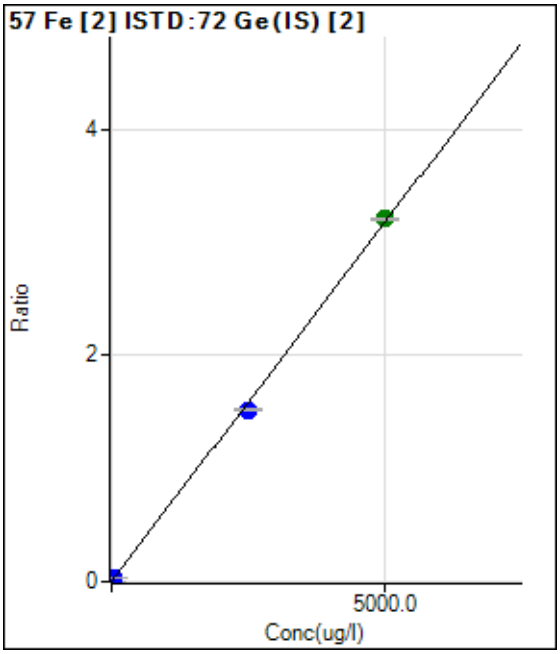
R = 0.9995

DL = 0.006715

BEC = 0.04498

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	465.59	0.0014	P	8.9
2	☐	50.000	53.578	11003.83	0.0354	P	10.5
3	☐	2500.000	2388.048	524495.75	1.5155	P	1.4
4	☐	5000.000	5055.940	1156356.80	3.2070	A	0.5
5	☐						
6	☐						
7	☐						

y = 6.3401E-004 * x + 0.0014

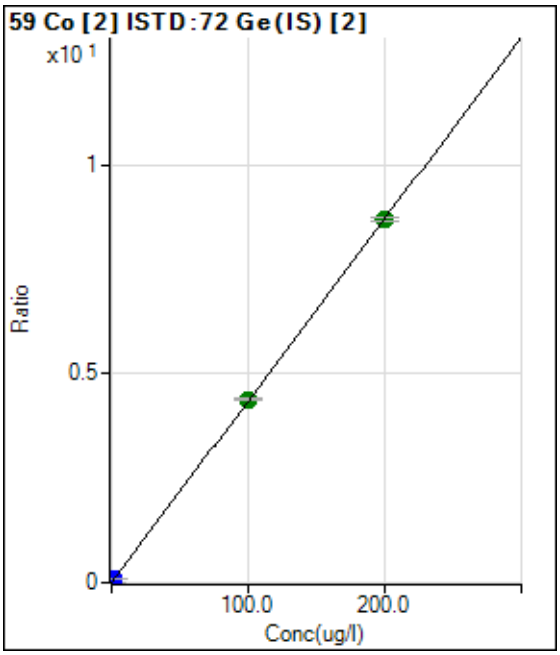
R = 0.9996

DL = 0.604

BEC = 2.271

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	443.36	0.0014	P	7.4
2	☐	2.000	2.164	29702.28	0.0956	P	10.2
3	☐	100.000	100.797	1518765.64	4.3884	A	1.3
4	☐	200.000	199.600	3132835.61	8.6887	A	1.2
5	☐						
6	☐						
7	☐						

y = 0.0435 * x + 0.0014

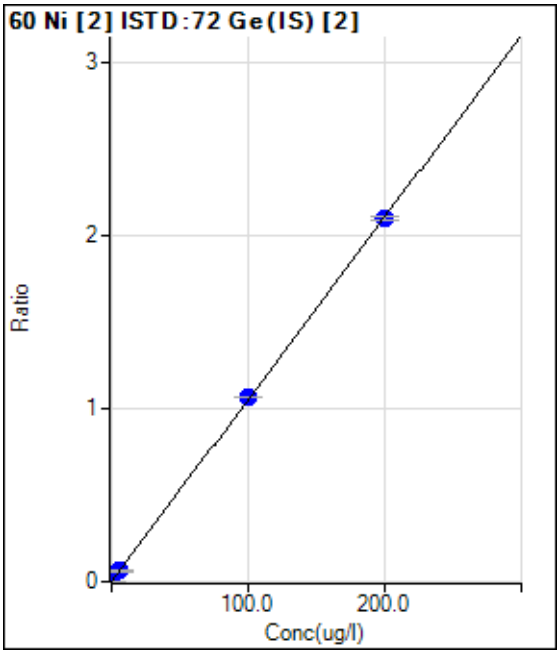
R = 1.0000

DL = 0.007019

BEC = 0.0315

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	150.01	0.0005	P	22.3
2	☐	5.000	5.858	19308.95	0.0621	P	10.0
3	☐	100.000	101.570	370160.82	1.0694	P	0.2
4	☐	200.000	199.193	756040.88	2.0968	P	1.2
5	☐						
6	☐						
7	☐						

y = 0.0105 * x + 4.6515E-004

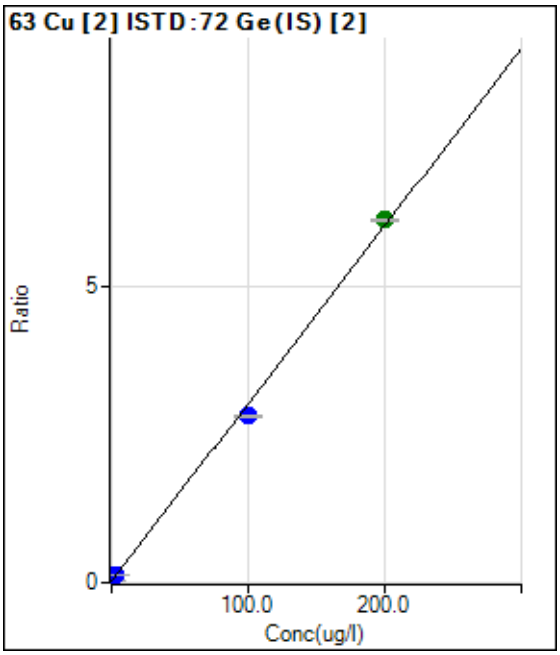
R = 1.0000

DL = 0.02953

BEC = 0.0442

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	7527.47	0.0233	P	2.5
2	☐	3.000	3.362	38643.07	0.1244	P	11.2
3	☐	100.000	92.974	975903.38	2.8194	P	1.1
4	☐	200.000	203.508	2215284.24	6.1437	A	0.8
5	☐						
6	☐						
7	☐						

y = 0.0301 * x + 0.0233

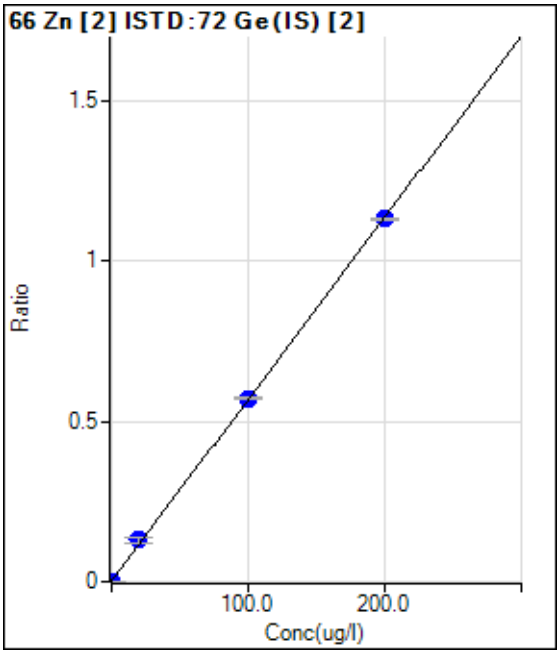
R = 0.9990

DL = 0.05798

BEC = 0.7746

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	541.14	0.0017	P	10.9
2	☐	20.000	22.573	40291.27	0.1297	P	11.0
3	☐	100.000	100.755	198370.36	0.5731	P	0.5
4	☐	200.000	199.365	408302.02	1.1323	P	0.2
5	☐						
6	☐						
7	☐						

y = 0.0057 * x + 0.0017

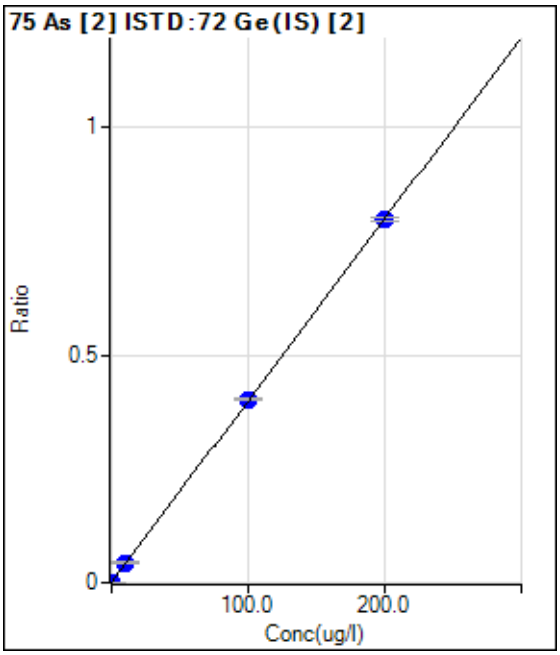
R = 0.9999

DL = 0.09649

BEC = 0.2949

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	175.57	0.0005	P	9.3
2	☐	10.000	10.892	13682.50	0.0440	P	10.8
3	☐	100.000	100.686	139361.70	0.4026	P	0.7
4	☐	200.000	199.613	287601.99	0.7976	P	1.0
5	☐						
6	☐						
7	☐						

y = 0.0040 * x + 5.4284E-004

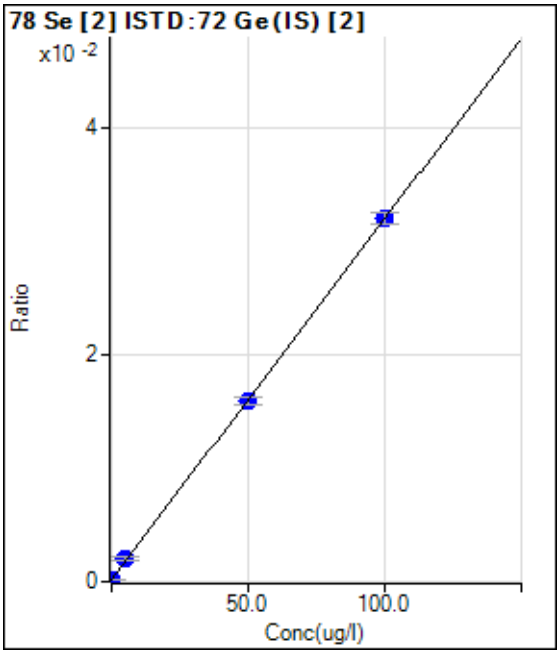
R = 1.0000

DL = 0.03782

BEC = 0.1359

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	46.67	0.0001	P	20.3
2	☐	5.000	5.820	616.71	0.0020	P	20.3
3	☐	50.000	49.634	5505.55	0.0159	P	3.6
4	☐	100.000	100.142	11520.90	0.0320	P	3.0
5	☐						
6	☐						
7	☐						

y = 3.1762E-004 * x + 1.4474E-004

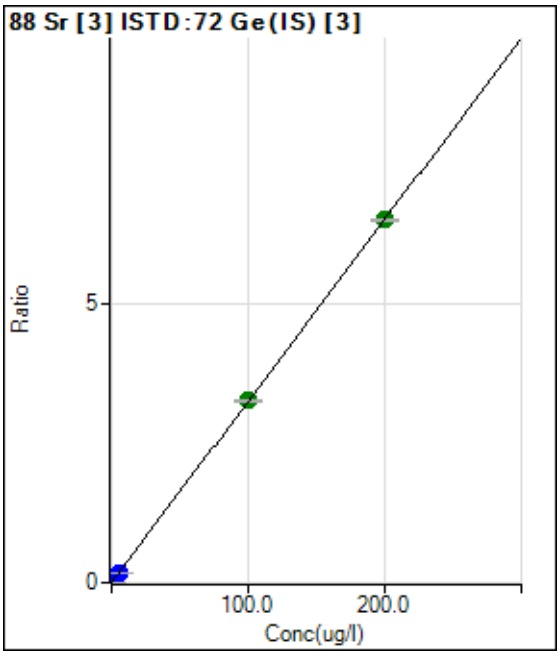
R = 0.9999

DL = 0.2769

BEC = 0.4557

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1397.90	0.0008	P	7.2
2	☐	5.000	4.820	293531.13	0.1578	P	0.6
3	☐	100.000	100.148	6313171.99	3.2651	A	0.6
4	☐	200.000	199.931	12915888.42	6.5175	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0326 * x + 7.5063E-004

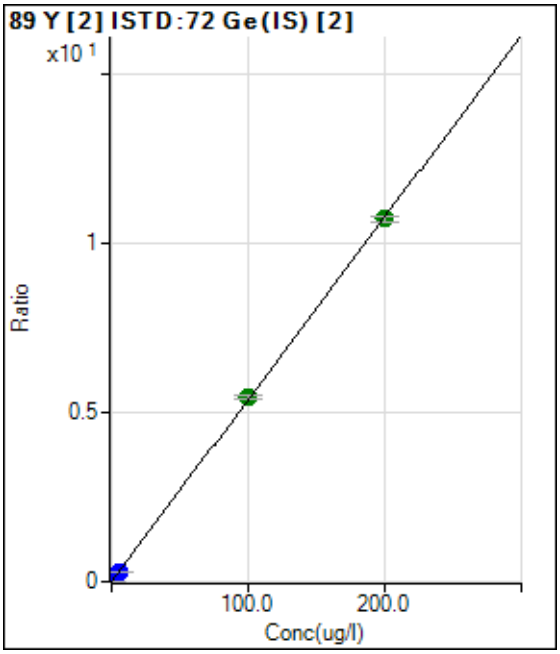
R = 1.0000

DL = 0.004944

BEC = 0.02303

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	144.45	0.0004	P	27.3
2	☐	5.000	5.104	85499.37	0.2752	P	11.3
3	☐	100.000	101.605	1893235.44	5.4708	A	2.0
4	☐	200.000	199.195	3867029.73	10.7250	A	1.5
5	☐						
6	☐						
7	☐						

y = 0.0538 * x + 4.4645E-004

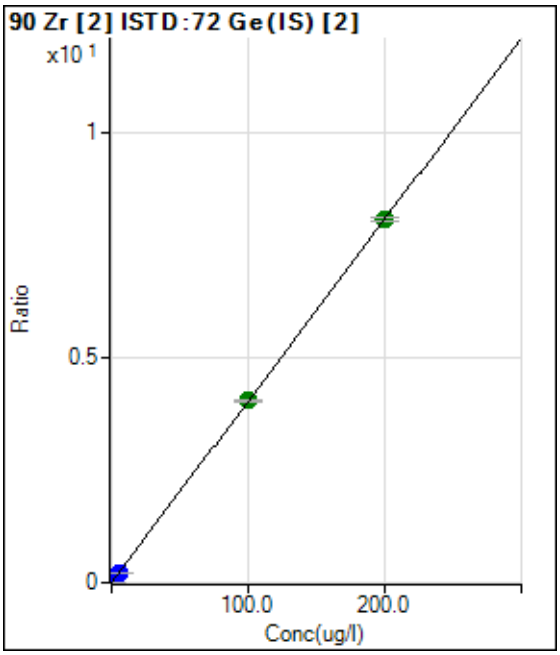
R = 0.9999

DL = 0.006792

BEC = 0.008292

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	221.12	0.0007	P	8.5
2	☐	5.000	5.093	64077.84	0.2061	P	10.0
3	☐	100.000	100.251	1399687.37	4.0444	A	1.5
4	☐	200.000	199.872	2907152.49	8.0626	A	0.9
5	☐						
6	☐						
7	☐						

y = 0.0403 * x + 6.8406E-004

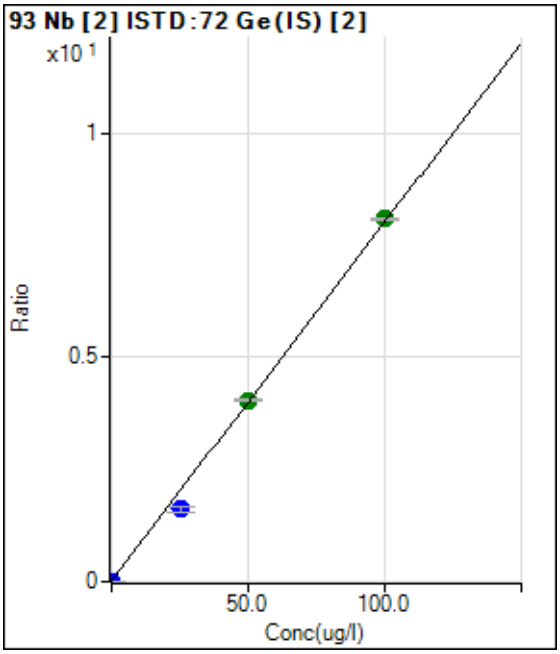
R = 1.0000

DL = 0.004309

BEC = 0.01696

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4297.39	0.0133	P	9.0
2	☐	25.000	20.043	502532.33	1.6155	P	9.0
3	☐	50.000	50.466	1400798.04	4.0476	A	1.4
4	☐	100.000	101.006	2916345.76	8.0878	A	0.3
5	☐						
6	☐						
7	☐						

y = 0.0799 * x + 0.0133

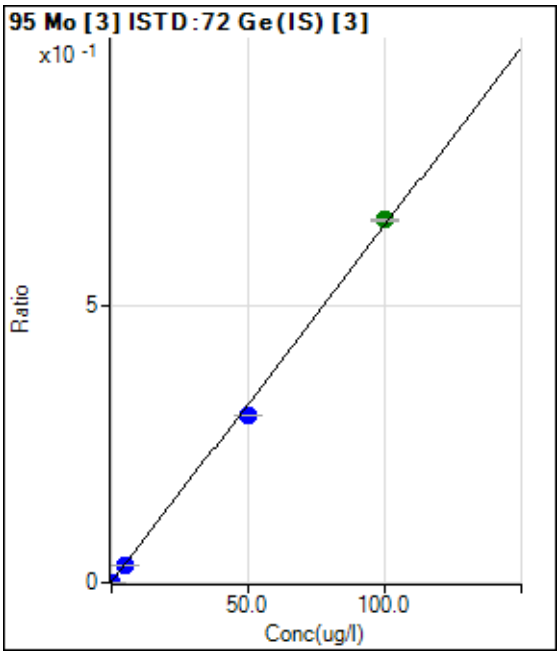
R = 0.9984

DL = 0.04484

BEC = 0.1665

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1811.29	0.0010	P	7.0
2	☐	5.000	4.729	58507.60	0.0315	P	1.8
3	☐	50.000	46.802	585341.41	0.3027	P	0.2
4	☐	100.000	101.613	1300194.86	0.6561	A	0.6
5	☐						
6	☐						
7	☐						

y = 0.0064 * x + 9.7280E-004

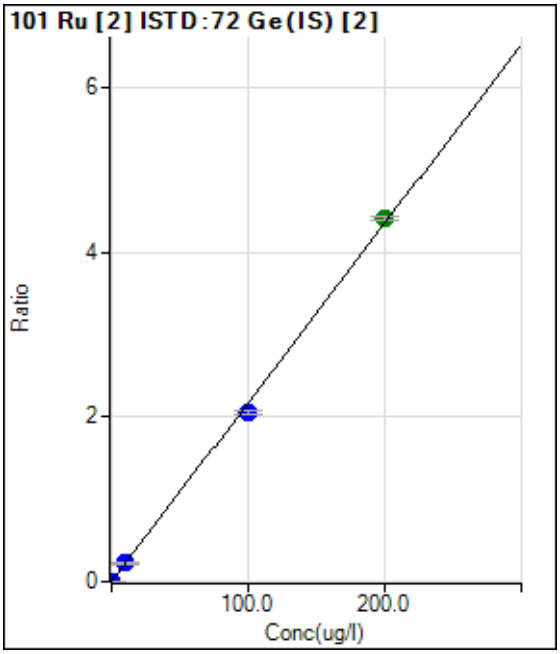
R = 0.9992

DL = 0.03168

BEC = 0.1509

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	71.11	0.0002	P	27.6
2	☐	10.000	10.550	71335.22	0.2294	P	9.6
3	☐	100.000	94.539	710872.61	2.0541	P	1.5
4	☐	200.000	202.703	1587943.33	4.4039	A	1.0
5	☐						
6	☐						
7	☐						

y = 0.0217 * x + 2.2081E-004

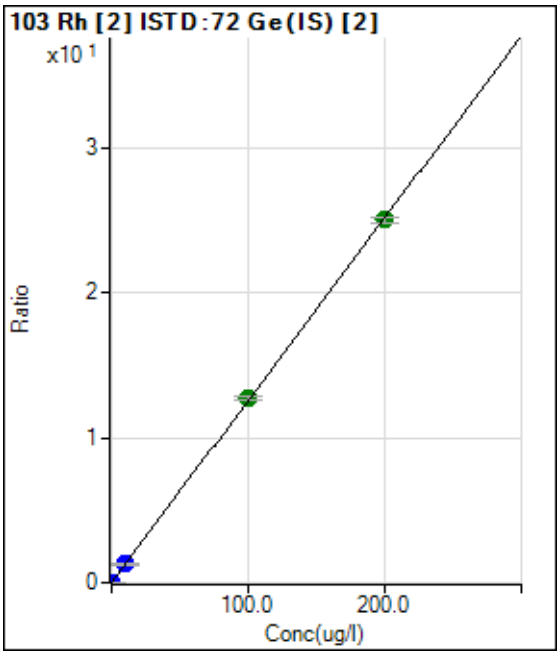
R = 0.9993

DL = 0.008406

BEC = 0.01016

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	650.04	0.0020	P	2.5
2	☐	10.000	10.303	402607.56	1.2954	P	10.3
3	☐	100.000	101.740	4420506.25	12.7740	A	2.1
4	☐	200.000	199.115	9013546.05	24.9982	A	1.3
5	☐						
6	☐						
7	☐						

y = 0.1255 * x + 0.0020

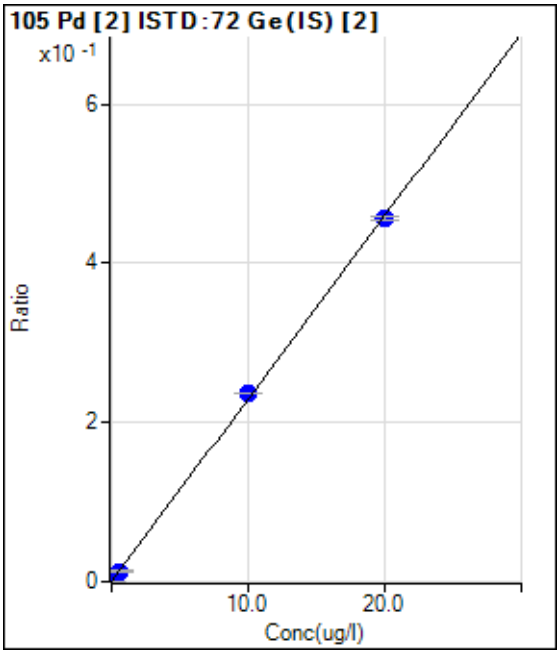
R = 0.9999

DL = 0.001222

BEC = 0.01602

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	91.12	0.0003	P	23.1
2	☐	0.500	0.559	4078.42	0.0131	P	10.3
3	☐	10.000	10.297	81921.72	0.2367	P	0.6
4	☐	20.000	19.850	164413.35	0.4560	P	1.1
5	☐						
6	☐						
7	☐						

y = 0.0230 * x + 2.8256E-004

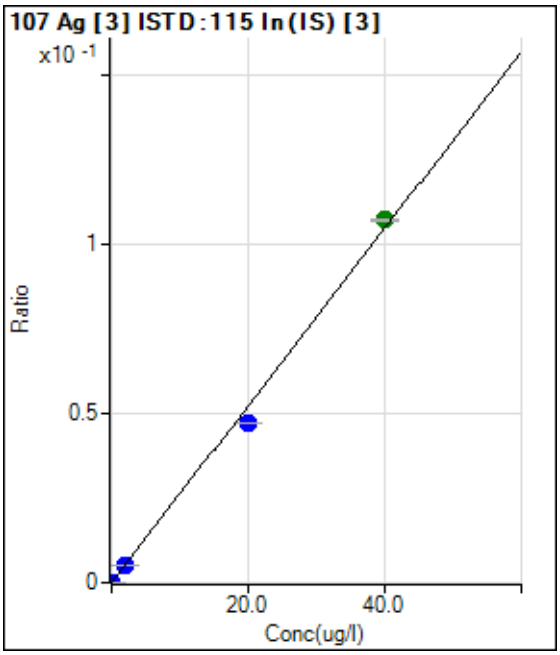
R = 0.9998

DL = 0.008538

BEC = 0.01231

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	373.35	0.0000	P	18.0
2	☐	2.000	1.854	58697.31	0.0049	P	1.5
3	☐	20.000	18.020	571583.81	0.0471	P	0.3
4	☐	40.000	40.997	1303962.22	0.1072	A	0.7
5	☐						
6	☐						
7	☐						

y = 0.0026 * x + 3.0826E-005

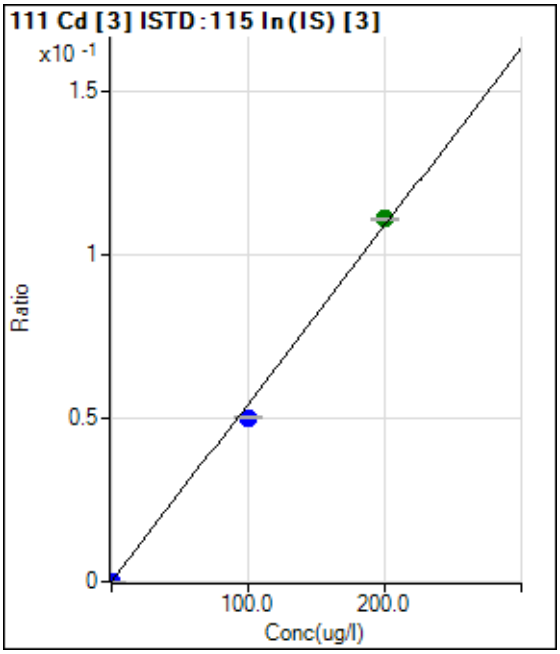
R = 0.9980

DL = 0.006362

BEC = 0.01179

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	113.96	0.0000	P	20.8
2	☐	0.500	0.486	3300.23	0.0003	P	4.0
3	☐	100.000	92.231	609038.76	0.0502	P	1.1
4	☐	200.000	203.884	1350375.09	0.1110	A	0.5
5	☐						
6	☐						
7	☐						

y = 5.4451E-004 * x + 9.4044E-006

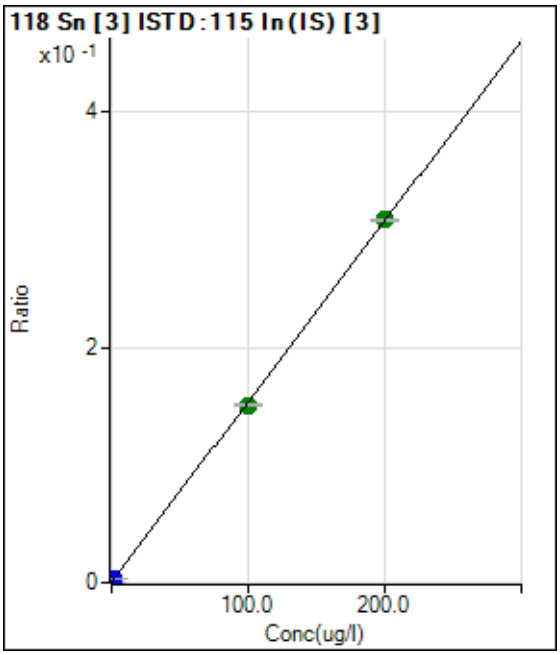
R = 0.9988

DL = 0.01079

BEC = 0.01727

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3214.89	0.0003	P	0.6
2	☐	2.000	1.738	35294.46	0.0029	P	0.2
3	☐	100.000	98.305	1832502.21	0.1511	A	0.7
4	☐	200.000	200.850	3752225.50	0.3085	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0015 * x + 2.6526E-004

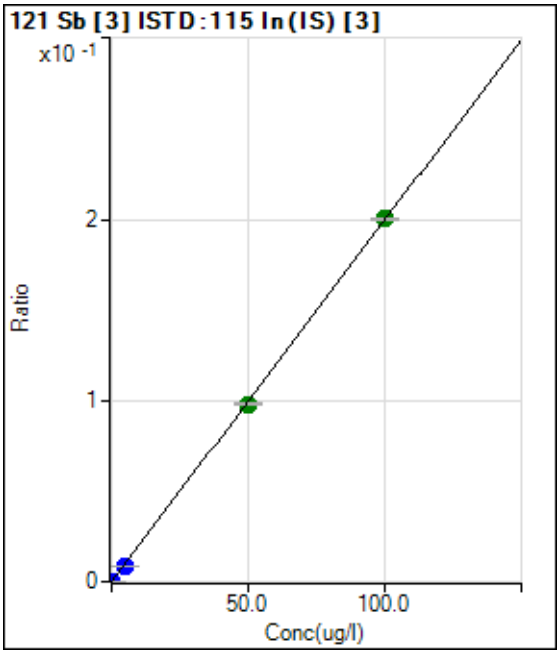
R = 0.9999

DL = 0.003265

BEC = 0.1728

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1366.78	0.0001	P	5.5
2	☐	5.000	4.414	107196.88	0.0089	P	1.5
3	☐	50.000	49.123	1188326.27	0.0980	A	1.4
4	☐	100.000	100.468	2436479.70	0.2003	A	0.9
5	☐						
6	☐						
7	☐						

y = 0.0020 * x + 1.1277E-004

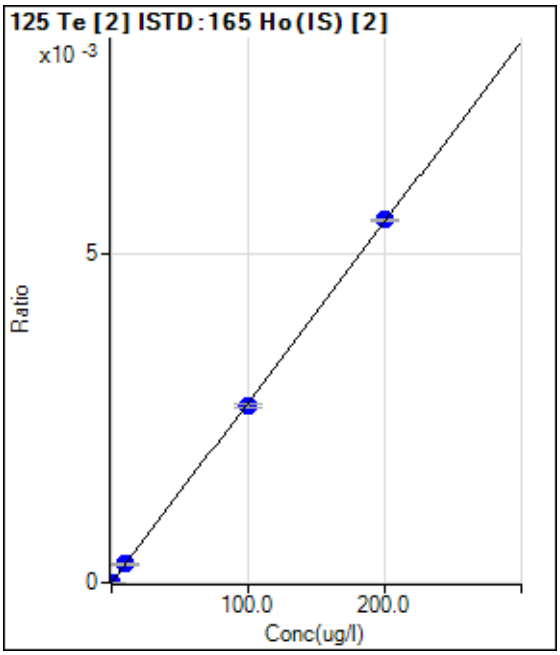
R = 0.9999

DL = 0.009301

BEC = 0.05659

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	5.56	0.0000	P	91.6
2	☐	10.000	10.255	2536.97	0.0003	P	8.0
3	☐	100.000	97.739	25618.05	0.0027	P	2.6
4	☐	200.000	201.118	53516.02	0.0055	P	0.9
5	☐						
6	☐						
7	☐						

y = 2.7456E-005 * x + 5.8109E-007

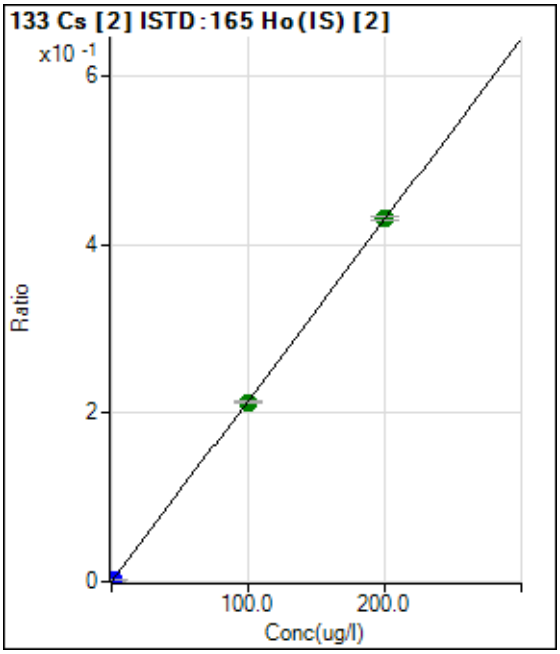
R = 0.9999

DL = 0.05819

BEC = 0.02116

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	276.68	0.0000	P	5.7
2	☐	1.000	0.932	18219.48	0.0020	P	9.3
3	☐	100.000	98.998	2027849.31	0.2125	A	1.0
4	☐	200.000	200.501	4169345.67	0.4303	A	1.1
5	☐						
6	☐						
7	☐						

y = 0.0021 * x + 2.8829E-005

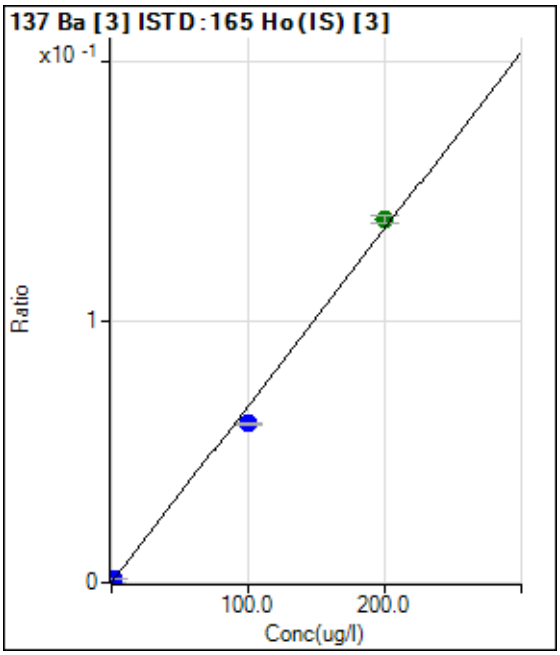
R = 1.0000

DL = 0.002286

BEC = 0.01344

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	360.02	0.0000	P	11.4
2	☐	2.000	1.782	16801.35	0.0012	P	0.8
3	☐	100.000	89.704	835159.29	0.0609	P	0.8
4	☐	200.000	205.150	1957441.57	0.1392	A	2.0
5	☐						
6	☐						
7	☐						

y = 6.7840E-004 * x + 2.6300E-005

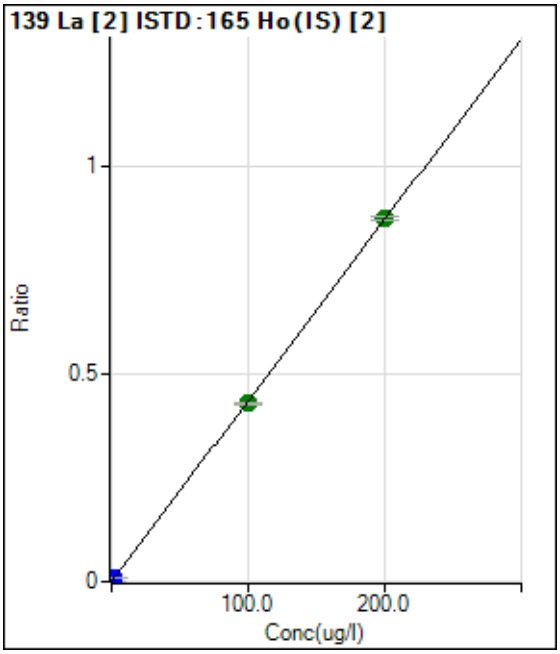
R = 0.9979

DL = 0.01331

BEC = 0.03877

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	218.90	0.0000	P	7.2
2	☐	2.000	1.900	74537.26	0.0083	P	10.7
3	☐	100.000	98.781	4110615.53	0.4307	A	0.9
4	☐	200.000	200.611	8474805.64	0.8746	A	1.0
5	☐						
6	☐						
7	☐						

y = 0.0044 * x + 2.2802E-005

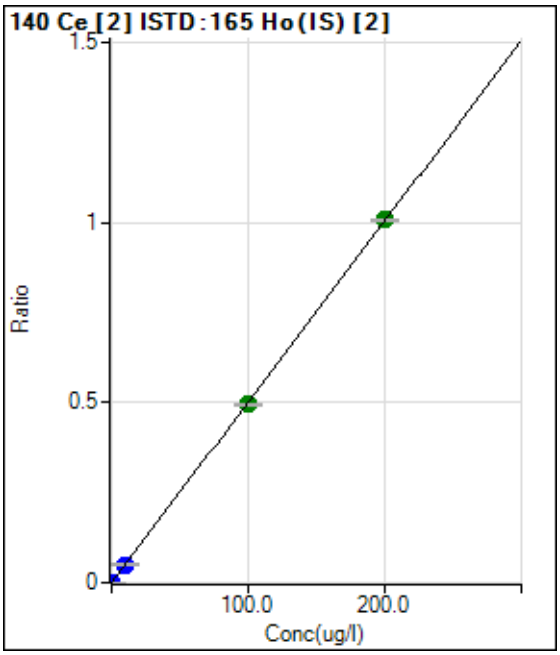
R = 1.0000

DL = 0.001125

BEC = 0.00523

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	258.90	0.0000	P	14.7
2	☐	10.000	9.626	433180.43	0.0483	P	11.2
3	☐	100.000	98.514	4713930.42	0.4939	A	0.5
4	☐	200.000	200.762	9752219.09	1.0064	A	0.6
5	☐						
6	☐						
7	☐						

y = 0.0050 * x + 2.6977E-005

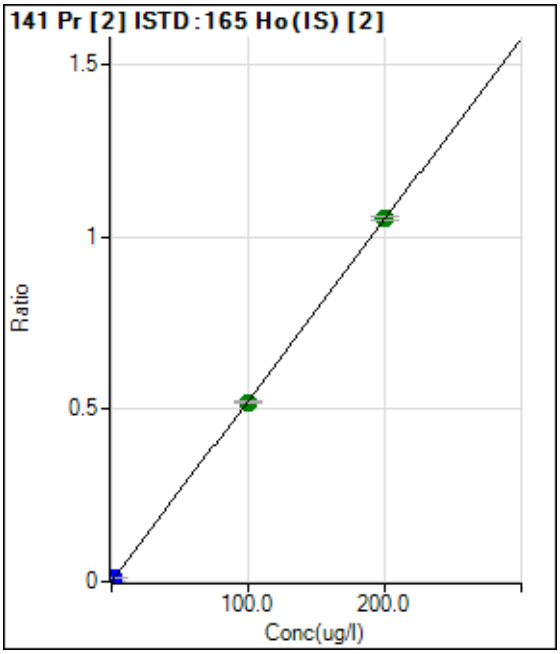
R = 1.0000

DL = 0.002369

BEC = 0.005382

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	196.67	0.0000	P	17.8
2	☐	2.000	1.955	92447.21	0.0103	P	10.7
3	☐	100.000	99.277	4982557.35	0.5220	A	0.3
4	☐	200.000	200.362	10208640.54	1.0535	A	0.9
5	☐						
6	☐						
7	☐						

y = 0.0053 * x + 2.0485E-005

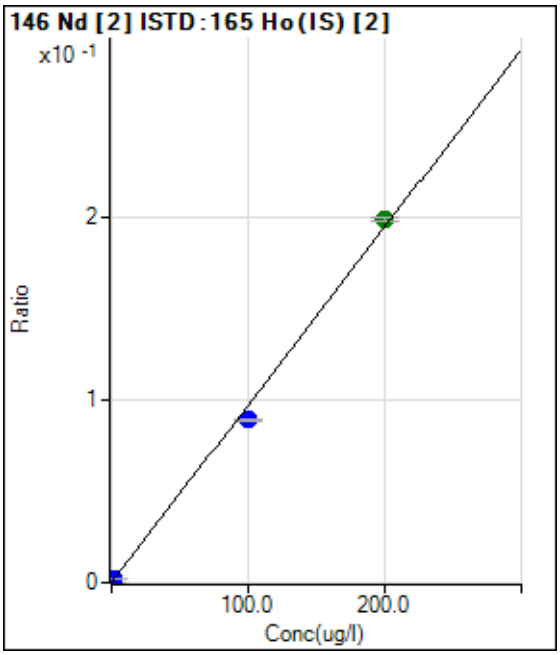
R = 1.0000

DL = 0.002081

BEC = 0.003896

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	30.00	0.0000	P	11.2
2	☐	2.000	1.916	16740.29	0.0019	P	8.4
3	☐	100.000	91.629	848836.59	0.0889	P	0.8
4	☐	200.000	204.186	1920310.06	0.1982	A	1.0
5	☐						
6	☐						
7	☐						

y = 9.7052E-004 * x + 3.1255E-006

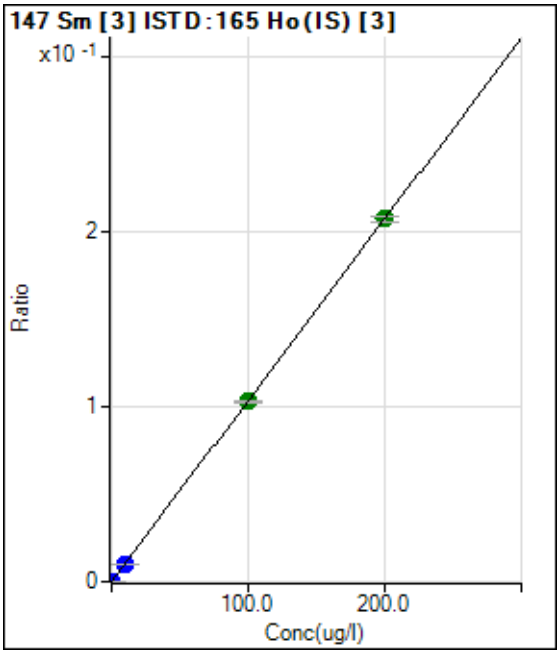
R = 0.9986

DL = 0.001077

BEC = 0.00322

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	82.22	0.0000	P	4.5
2	☐	10.000	9.147	128984.58	0.0095	P	1.8
3	☐	100.000	99.653	1416464.75	0.1033	A	1.1
4	☐	200.000	200.216	2917402.07	0.2075	A	1.8
5	☐						
6	☐						
7	☐						

y = 0.0010 * x + 6.0069E-006

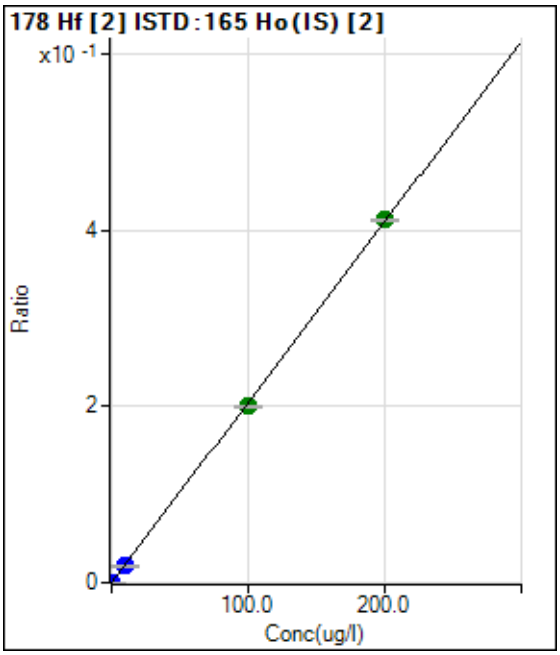
R = 1.0000

DL = 0.0007902

BEC = 0.005797

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	194.46	0.0000	P	1.7
2	☐	10.000	9.241	170084.89	0.0189	P	10.2
3	☐	100.000	97.608	1907988.11	0.1999	A	0.7
4	☐	200.000	201.234	3993388.17	0.4121	A	0.7
5	☐						
6	☐						
7	☐						

y = 0.0020 * x + 2.0258E-005

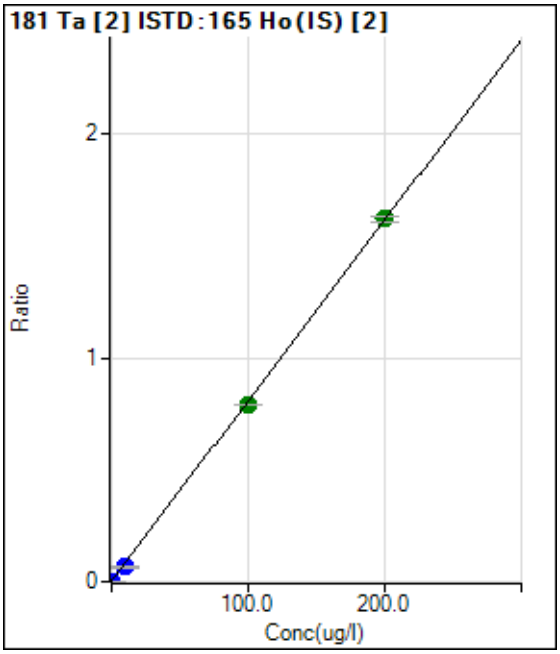
R = 0.9999

DL = 0.0005184

BEC = 0.009893

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	14381.53	0.0015	P	0.9
2	☐	10.000	7.965	589452.17	0.0657	P	10.8
3	☐	100.000	98.219	7568973.15	0.7930	A	0.4
4	☐	200.000	200.992	15709081.71	1.6212	A	1.3
5	☐						
6	☐						
7	☐						

y = 0.0081 * x + 0.0015

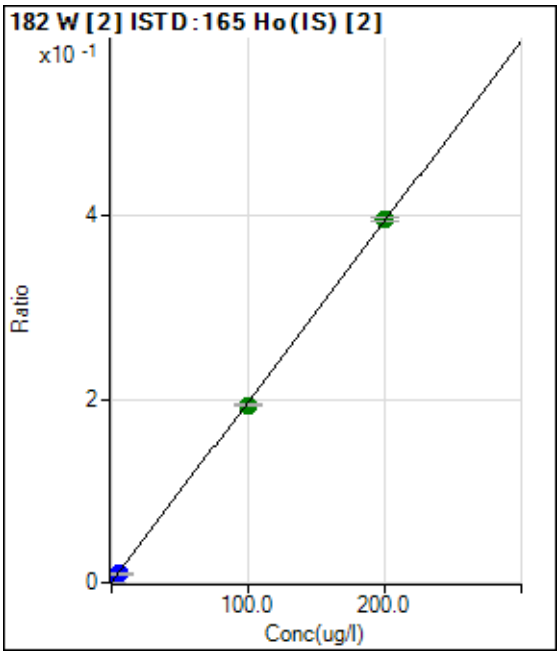
R = 0.9999

DL = 0.005225

BEC = 0.1859

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3279.37	0.0003	P	10.4
2	☐	5.000	4.706	86126.78	0.0096	P	10.6
3	☐	100.000	98.296	1848070.18	0.1936	A	1.1
4	☐	200.000	200.859	3830443.94	0.3953	A	1.2
5	☐						
6	☐						
7	☐						

y = 0.0020 * x + 3.4163E-004

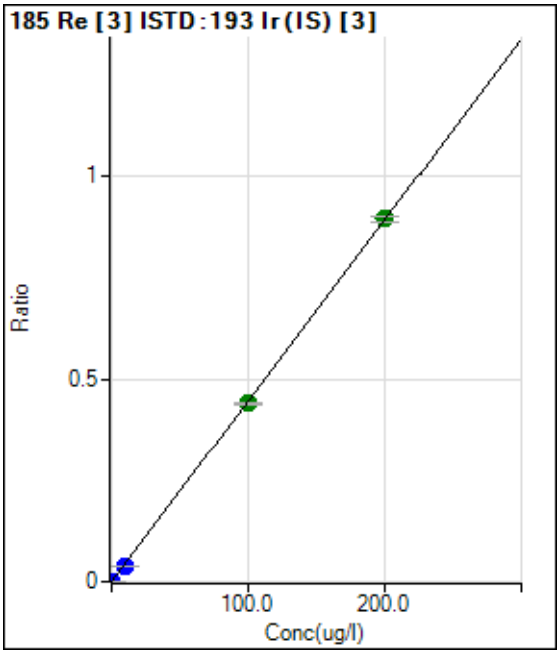
R = 0.9999

DL = 0.05414

BEC = 0.1737

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	126.67	0.0000	P	21.3
2	☐	10.000	8.775	268214.59	0.0391	P	0.3
3	☐	100.000	98.664	3034795.02	0.4400	A	0.9
4	☐	200.000	200.729	6248846.50	0.8952	A	1.2
5	☐						
6	☐						
7	☐						

y = 0.0045 * x + 1.8233E-005

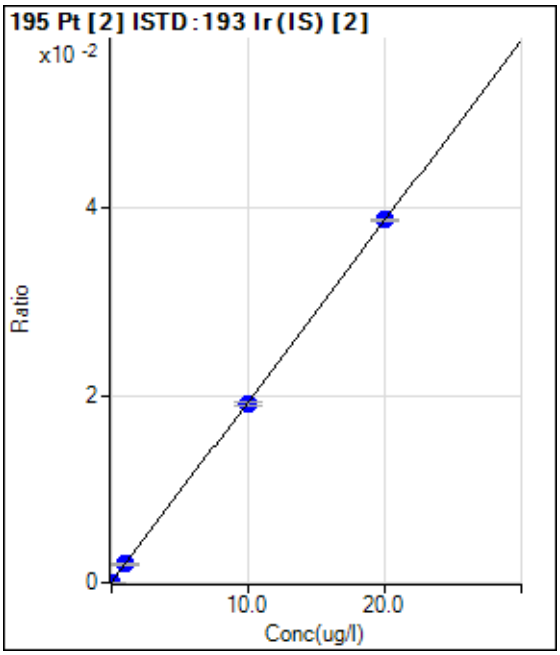
R = 1.0000

DL = 0.002613

BEC = 0.004089

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	204.45	0.0000	P	7.1
2	☐	1.000	1.041	11634.81	0.0020	P	9.8
3	☐	10.000	9.871	114024.33	0.0191	P	1.7
4	☐	20.000	20.062	230628.79	0.0388	P	0.8
5	☐						
6	☐						
7	☐						

y = 0.0019 * x + 3.3596E-005

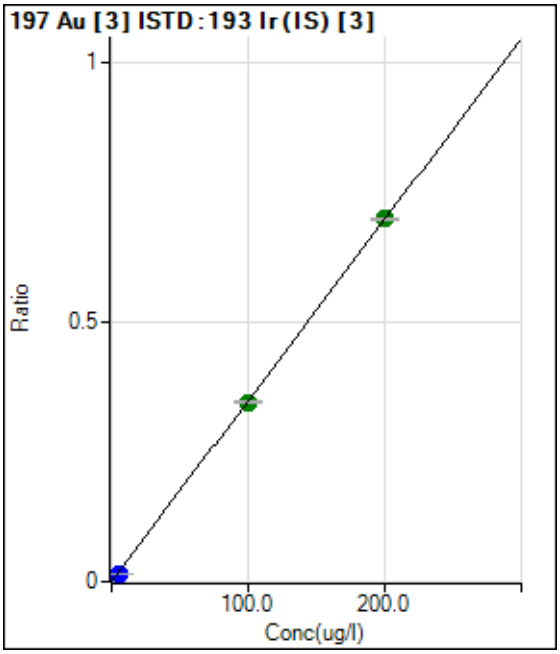
R = 1.0000

DL = 0.003721

BEC = 0.01739

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1386.79	0.0002	P	12.2
2	☐	5.000	4.437	107408.51	0.0157	P	0.3
3	☐	100.000	99.094	2385660.19	0.3459	A	1.2
4	☐	200.000	200.467	4883393.05	0.6995	A	0.3
5	☐						
6	☐						
7	☐						

y = 0.0035 * x + 1.9959E-004

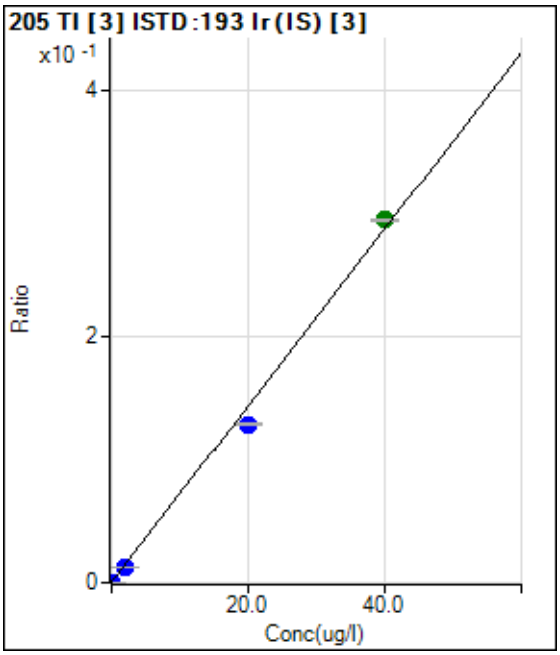
R = 1.0000

DL = 0.02097

BEC = 0.05721

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2913.73	0.0004	P	3.4
2	☐	2.000	1.778	90235.06	0.0132	P	1.1
3	☐	20.000	17.890	888078.68	0.1288	P	0.5
4	☐	40.000	41.066	2059496.50	0.2950	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0072 * x + 4.1922E-004

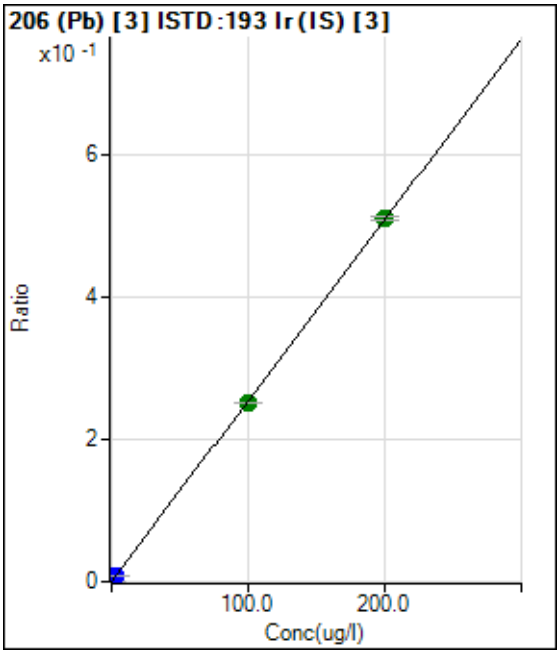
R = 0.9978

DL = 0.00598

BEC = 0.05844

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1959.10	0.0003	P	6.6
2	☐	3.000	2.637	47848.65	0.0070	P	1.3
3	☐	100.000	98.630	1731184.35	0.2510	A	0.4
4	☐	200.000	200.690	3563138.11	0.5104	A	1.2
5	☐						
6	☐						
7	☐						

y = 0.0025 * x + 2.8189E-004

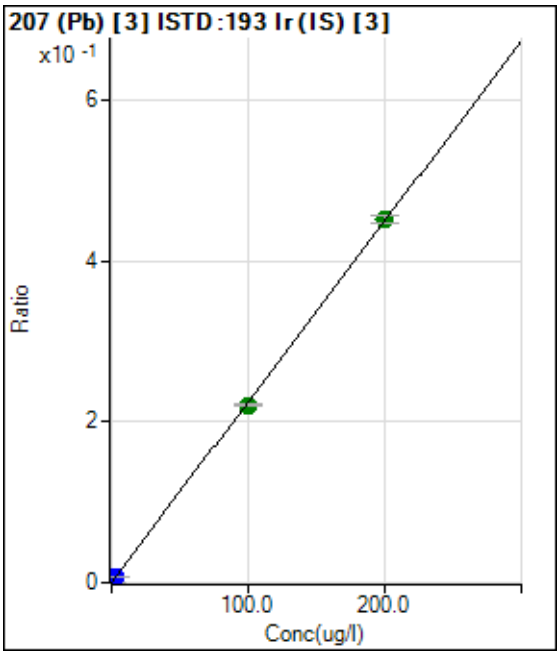
R = 1.0000

DL = 0.02197

BEC = 0.1109

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2159.14	0.0003	P	7.8
2	☐	3.000	2.652	42876.81	0.0063	P	1.5
3	☐	100.000	98.343	1523698.61	0.2209	A	0.8
4	☐	200.000	200.834	3147019.95	0.4508	A	2.0
5	☐						
6	☐						
7	☐						

y = 0.0022 * x + 3.1066E-004

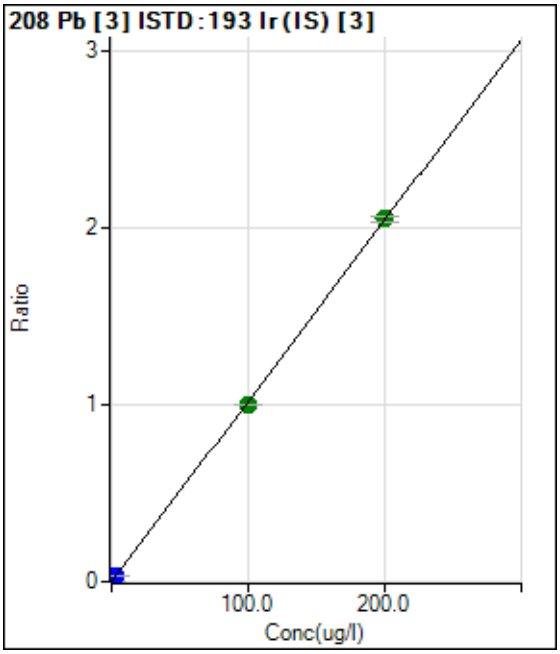
R = 0.9999

DL = 0.03225

BEC = 0.1385

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	8178.92	0.0012	P	4.0
2	☐	3.000	2.653	193637.15	0.0283	P	0.9
3	☐	100.000	98.032	6913069.53	1.0023	A	0.8
4	☐	200.000	200.989	14336497.46	2.0537	A	1.2
5	☐						
6	☐						
7	☐						

y = 0.0102 * x + 0.0012

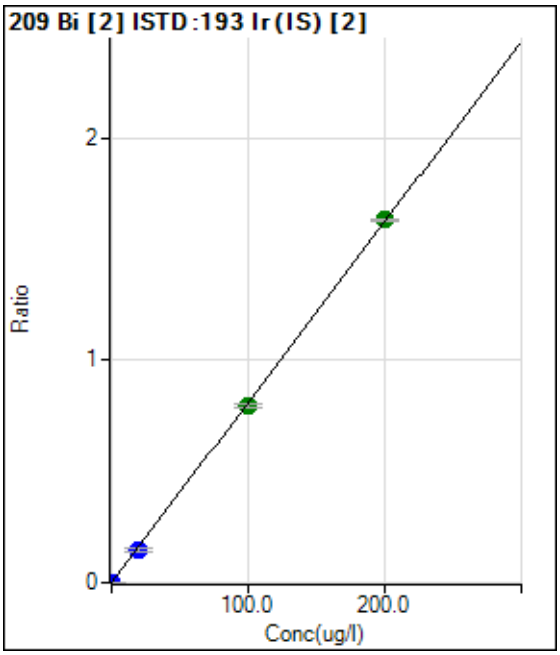
R = 0.9999

DL = 0.01395

BEC = 0.1152

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4753.13	0.0008	P	3.5
2	☐	20.000	18.117	840621.17	0.1476	P	8.6
3	☐	100.000	98.138	4751821.32	0.7961	A	1.4
4	☐	200.000	201.119	9695456.52	1.6306	A	0.2
5	☐						
6	☐						
7	☐						

y = 0.0081 * x + 7.8122E-004

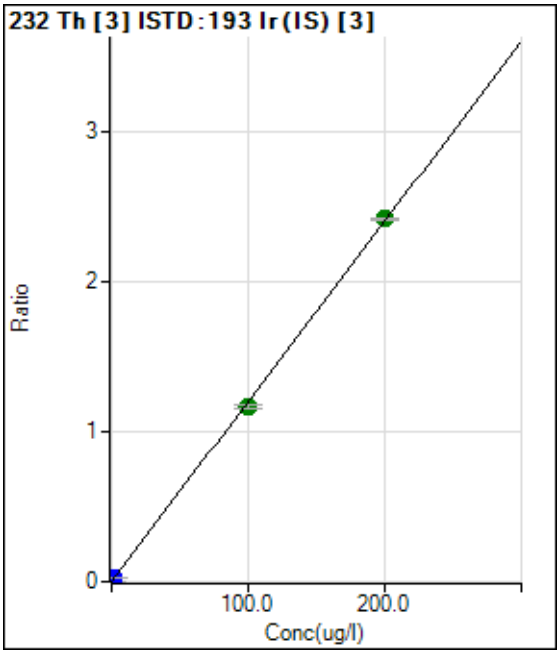
R = 0.9999

DL = 0.01026

BEC = 0.0964

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1601.26	0.0002	P	9.0
2	☐	2.000	1.726	143495.76	0.0209	P	0.7
3	☐	100.000	97.144	8041544.74	1.1659	A	1.2
4	☐	200.000	201.431	16875388.50	2.4173	A	0.7
5	☐						
6	☐						
7	☐						

y = 0.0120 * x + 2.3045E-004

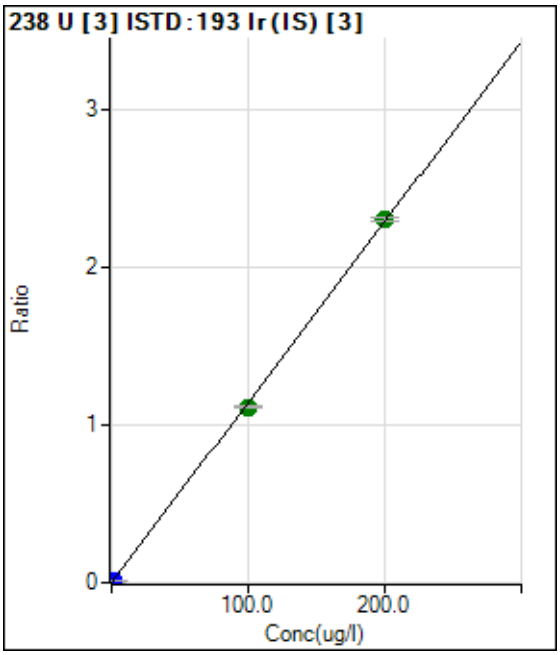
R = 0.9998

DL = 0.00518

BEC = 0.0192

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	473.36	0.0001	P	7.3
2	☐	1.000	0.883	69637.27	0.0102	P	1.8
3	☐	100.000	97.520	7692089.40	1.1153	A	0.8
4	☐	200.000	201.241	16064954.35	2.3014	A	1.1
5	☐						
6	☐						
7	☐						

y = 0.0114 * x + 6.8115E-005

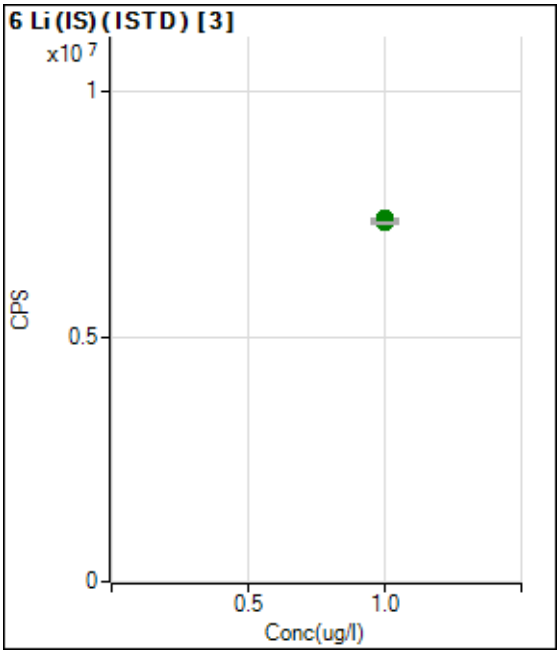
R = 0.9999

DL = 0.001312

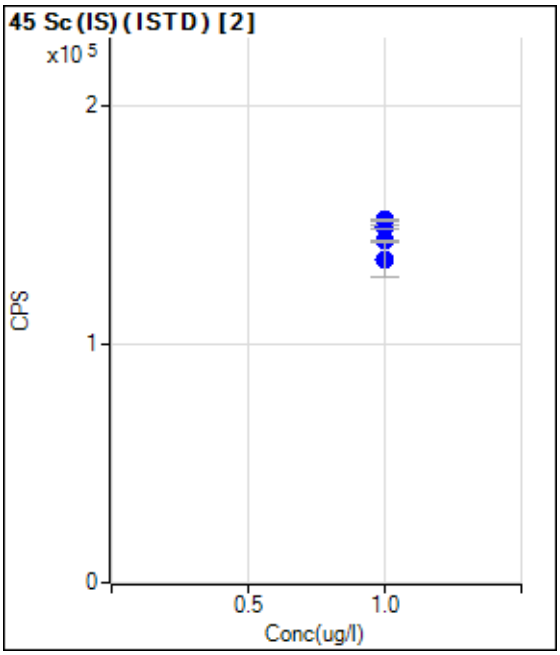
BEC = 0.005956

Weight: None

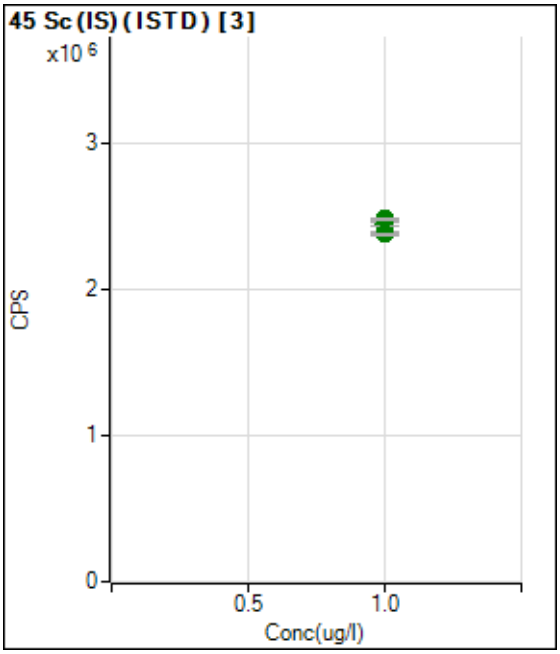
Min Conc: <None>



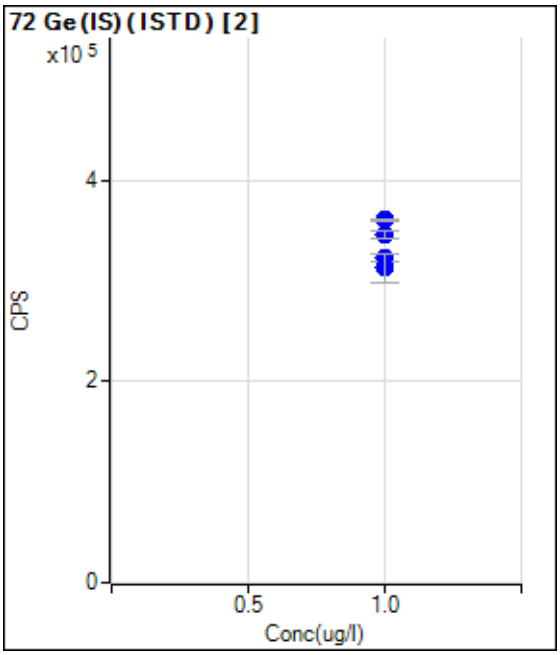
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		7411412.65		A	0.5
2	☐	1.000		7393428.22		A	0.7
3	☐	1.000		7403747.52		A	0.8
4	☐	1.000		7340345.91		A	0.6
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



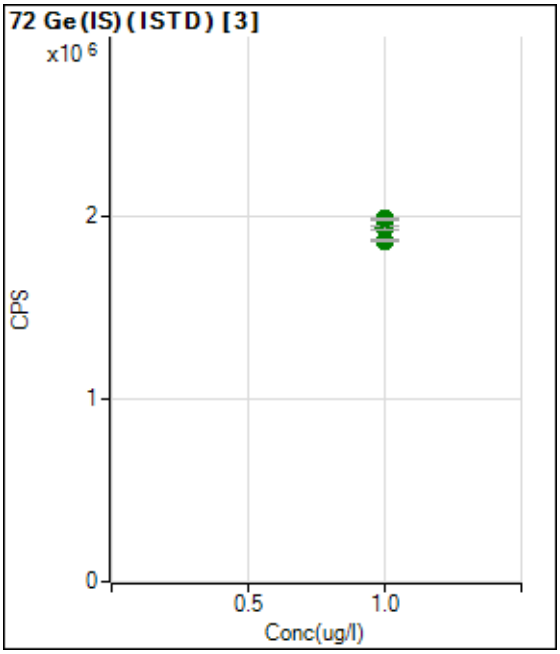
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		143379.26		P	0.5
2	☐	1.000		135712.57		P	10.6
3	☐	1.000		149177.03		P	0.8
4	☐	1.000		152248.37		P	0.9
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



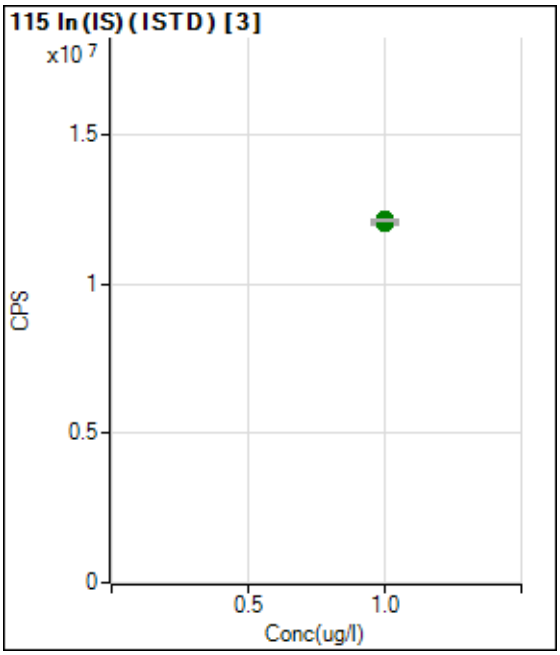
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2392711.74		A	0.8
2	☐	1.000		2382182.55		A	0.4
3	☐	1.000		2451691.80		A	0.6
4	☐	1.000		2486063.73		A	0.5
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



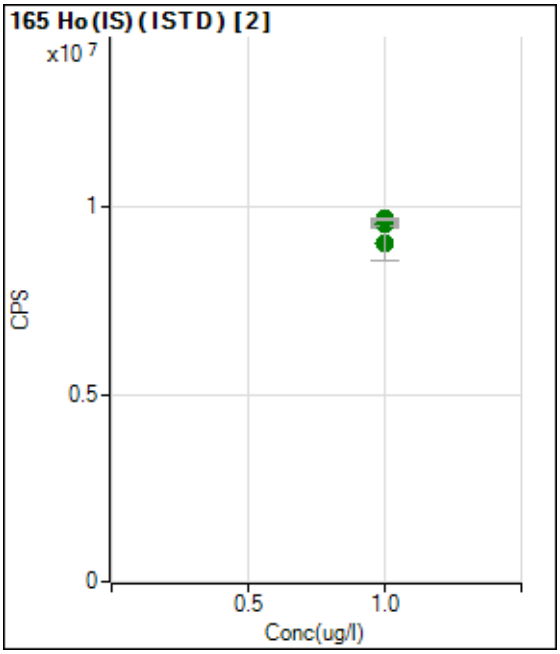
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		323154.34		P	1.9
2	☐	1.000		312750.41		P	9.1
3	☐	1.000		346141.86		P	1.9
4	☐	1.000		360583.52		P	0.6
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



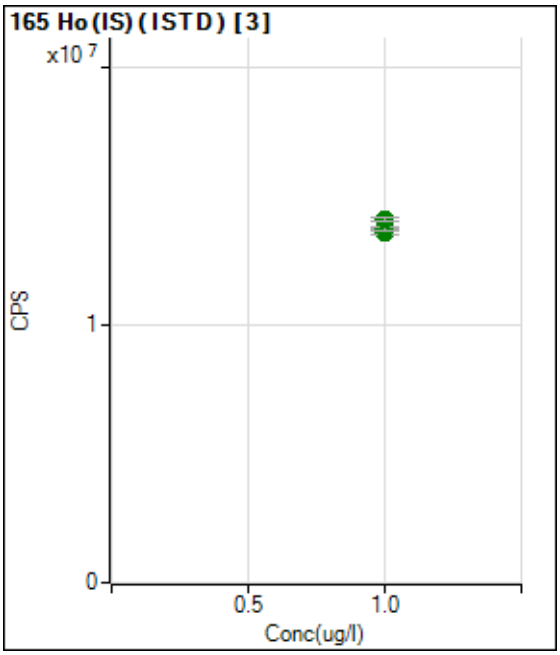
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		1861985.86		A	0.4
2	☐	1.000		1859584.07		A	0.6
3	☐	1.000		1933598.29		A	0.7
4	☐	1.000		1981713.98		A	0.5
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



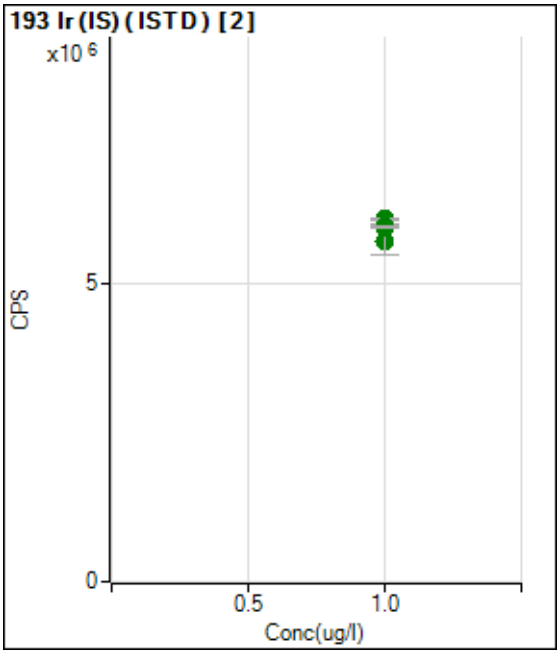
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		12119832.59		A	0.6
2	☐	1.000		12032588.34		A	0.3
3	☐	1.000		12125196.87		A	0.5
4	☐	1.000		12162441.44		A	0.4
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



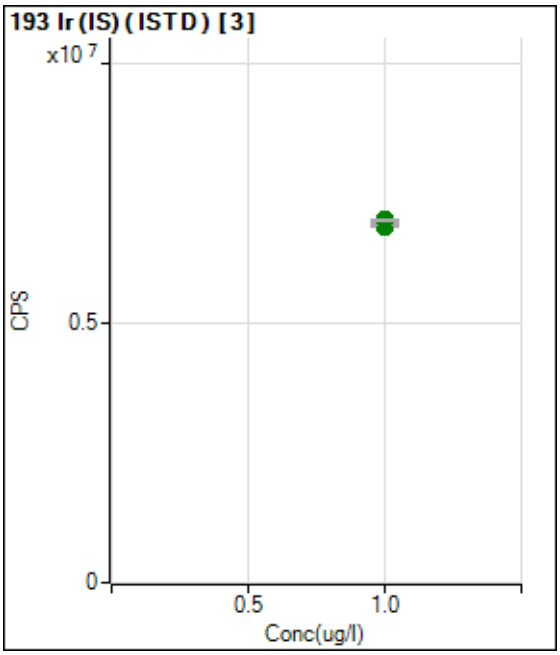
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		9598706.45		A	0.7
2	☐	1.000		9037315.28		A	9.7
3	☐	1.000		9545047.29		A	0.7
4	☐	1.000		9690579.71		A	0.7
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		13687737.85		A	0.5
2	☐	1.000		13600553.55		A	1.5
3	☐	1.000		13718005.21		A	1.1
4	☐	1.000		14064146.87		A	1.1
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		6085322.34		A	0.9
2	☐	1.000		5724753.53		A	9.0
3	☐	1.000		5969550.81		A	0.7
4	☐	1.000		5945959.84		A	0.5
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					

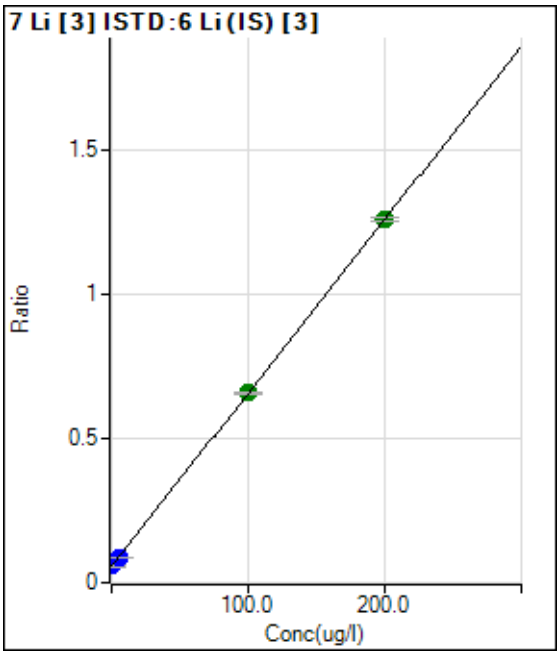


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		6951638.99		A	0.9
2	☐	1.000		6850876.64		A	0.6
3	☐	1.000		6897432.40		A	0.8
4	☐	1.000		6980866.91		A	0.5
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					

Calibration for 093CALS.D

Batch Folder:	C:¥ICPMH¥1¥DATA¥121019B2.B¥
Analysis File:	121019B2.batch.xml
DA Date-Time:	12/11/2019 2:20:28 AM
Calibration Title:	
Calibration Method:	External Calibration
VIS Interpolation Fit:	
Tune Step:	#1 he.u
	#2 nogas.u

Level	Standard Data File	Sample Name	Acq. Date-Time
1	092CALB.D	ICIS 1843378	12/11/2019 1:57:45 AM
2	093CALS.D	IC 1847444	12/11/2019 2:04:30 AM
3	094CALS.D	IC 1847445	12/11/2019 2:11:13 AM
4	095CALS.D	IC 1847446	12/11/2019 2:17:54 AM
5			
6			
7			



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	322233.44	0.0568	P	0.4
2	☐	5.000	4.882	500696.62	0.0861	P	1.6
3	☐	100.000	100.126	3700505.92	0.6591	A	1.1
4	☐	200.000	199.940	7022388.58	1.2596	A	1.1
5	☐						
6	☐						
7	☐						

y = 0.0060 * x + 0.0568

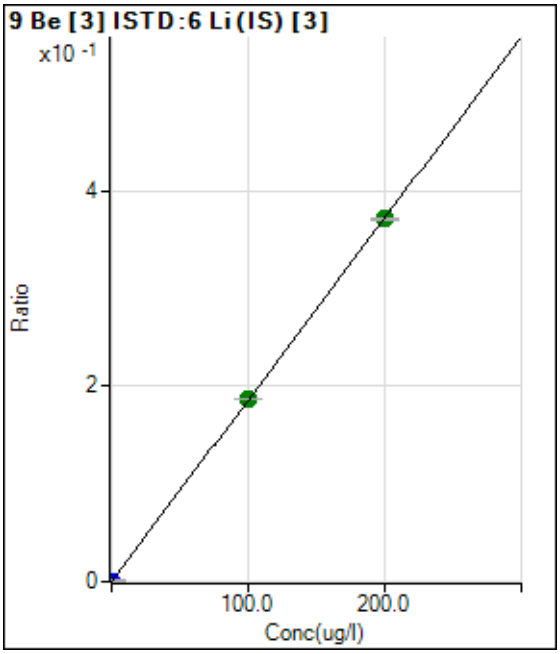
R = 1.0000

DL = 0.1271

BEC = 9.436

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	74.45	0.0000	P	6.1
2	☐	0.500	0.521	5711.15	0.0010	P	2.6
3	☐	100.000	100.616	1050316.57	0.1871	A	0.8
4	☐	200.000	199.692	2070037.97	0.3713	A	0.6
5	☐						
6	☐						
7	☐						

y = 0.0019 * x + 1.3121E-005

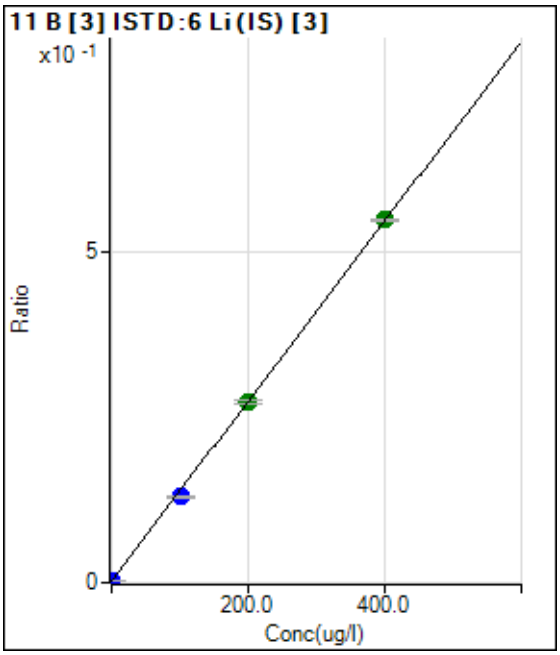
R = 1.0000

DL = 0.001299

BEC = 0.007057

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	12881.64	0.0023	P	3.3
2	☐	100.000	94.163	755930.85	0.1300	P	2.3
3	☐	200.000	199.497	1532543.83	0.2730	A	1.3
4	☐	400.000	401.711	3051830.58	0.5474	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0014 * x + 0.0023

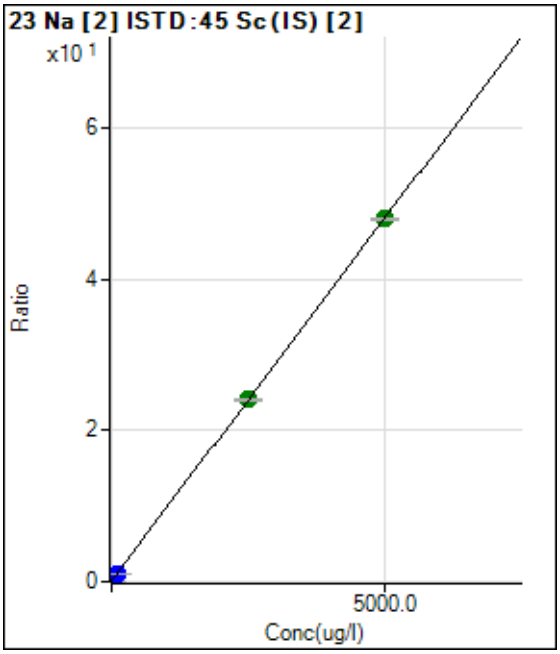
R = 0.9999

DL = 0.1637

BEC = 1.672

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	15928.67	0.1012	P	2.9
2	☐	100.000	92.463	169141.76	0.9881	P	10.8
3	☐	2500.000	2507.022	3881616.09	24.1485	A	1.0
4	☐	5000.000	4996.640	7698108.08	48.0289	A	0.5
5	☐						
6	☐						
7	☐						

y = 0.0096 * x + 0.1012

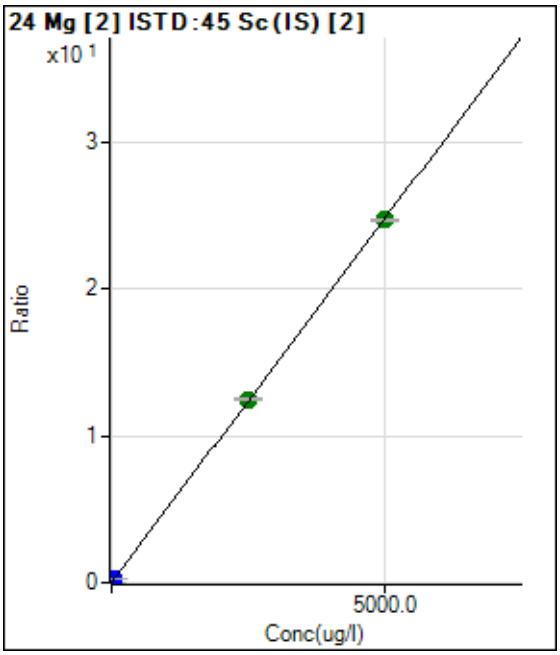
R = 1.0000

DL = 0.907

BEC = 10.55

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	520.03	0.0033	P	22.0
2	☐	50.000	48.203	41452.47	0.2423	P	11.5
3	☐	2500.000	2519.158	2007933.22	12.4918	A	0.8
4	☐	5000.000	4990.439	3965895.01	24.7429	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0050 * x + 0.0033

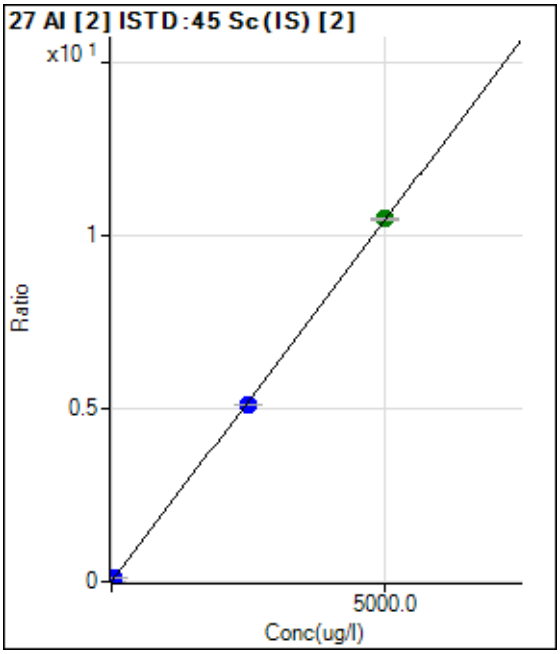
R = 1.0000

DL = 0.4393

BEC = 0.6663

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	350.02	0.0022	P	14.4
2	☐	50.000	49.319	17999.49	0.1051	P	10.6
3	☐	2500.000	2449.082	821768.18	5.1122	P	0.3
4	☐	5000.000	5025.466	1680916.16	10.4878	A	0.6
5	☐						
6	☐						
7	☐						

y = 0.0021 * x + 0.0022

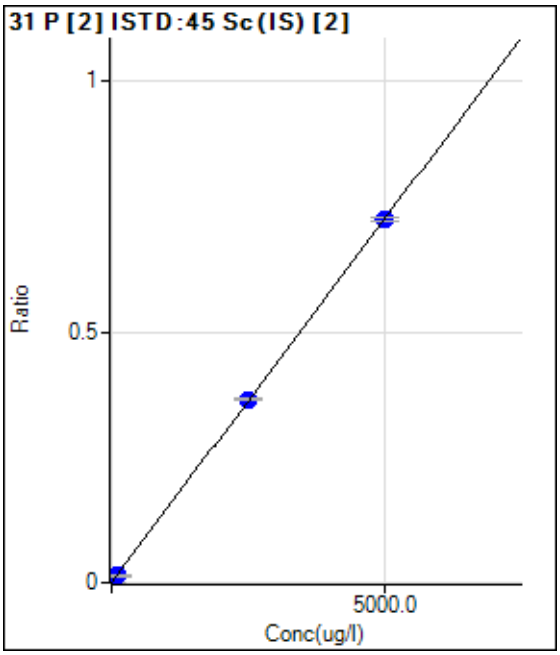
R = 0.9999

DL = 0.4614

BEC = 1.066

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	76.67	0.0005	P	42.7
2	☐	100.000	90.313	2333.59	0.0136	P	8.0
3	☐	2500.000	2518.509	58773.44	0.3657	P	1.4
4	☐	5000.000	4990.939	116059.75	0.7241	P	1.1
5	☐						
6	☐						
7	☐						

y = 1.4499E-004 * x + 4.8669E-004

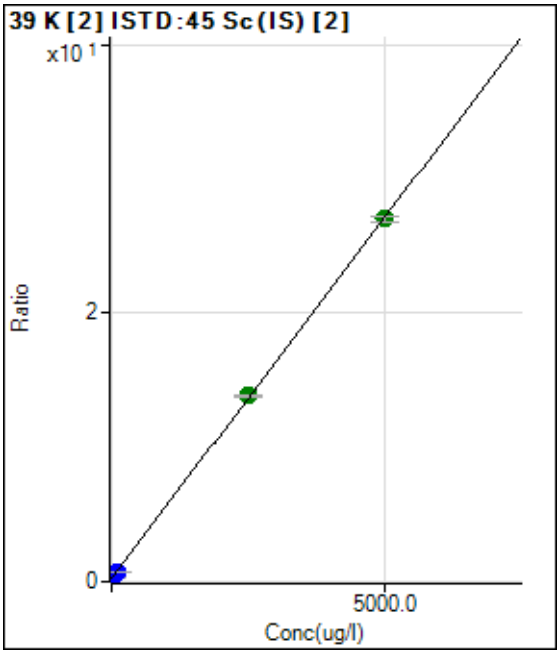
R = 1.0000

DL = 4.296

BEC = 3.357

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	34206.48	0.2173	P	0.5
2	☐	100.000	89.748	119860.47	0.7002	P	10.9
3	☐	2500.000	2531.293	2224220.25	13.8373	A	0.7
4	☐	5000.000	4984.558	4333088.48	27.0375	A	1.3
5	☐						
6	☐						
7	☐						

y = 0.0054 * x + 0.2173

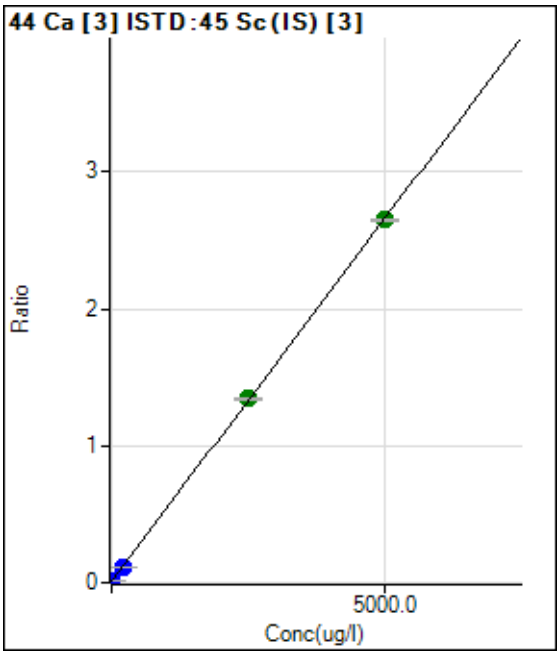
R = 1.0000

DL = 0.6094

BEC = 40.39

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	24055.72	0.0081	P	1.4
2	☐	200.000	198.761	334128.21	0.1134	P	0.2
3	☐	2500.000	2523.256	3952745.56	1.3441	A	0.9
4	☐	5000.000	4988.422	7639997.66	2.6493	A	0.3
5	☐						
6	☐						
7	☐						

y = 5.2946E−004 * x + 0.0081

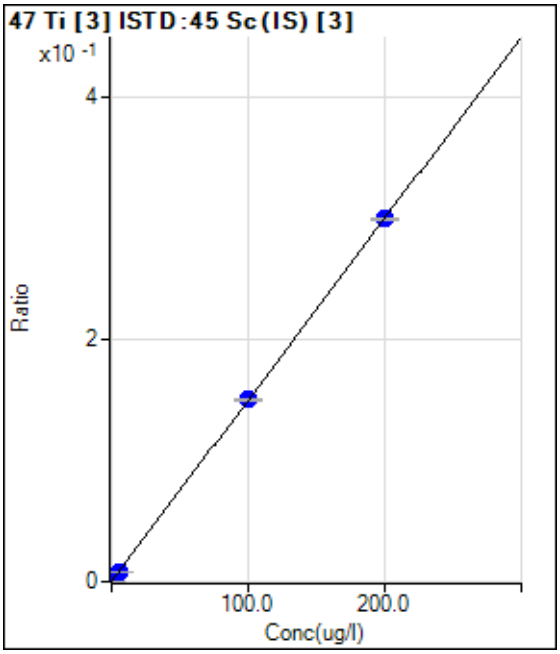
R = 1.0000

DL = 0.6489

BEC = 15.38

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	501.79	0.0002	P	2.2
2	☐	5.000	5.015	22587.02	0.0077	P	0.8
3	☐	100.000	100.220	440968.60	0.1500	P	1.2
4	☐	200.000	199.889	861981.14	0.2989	P	0.7
5	☐						
6	☐						
7	☐						

y = 0.0015 * x + 1.6981E−004

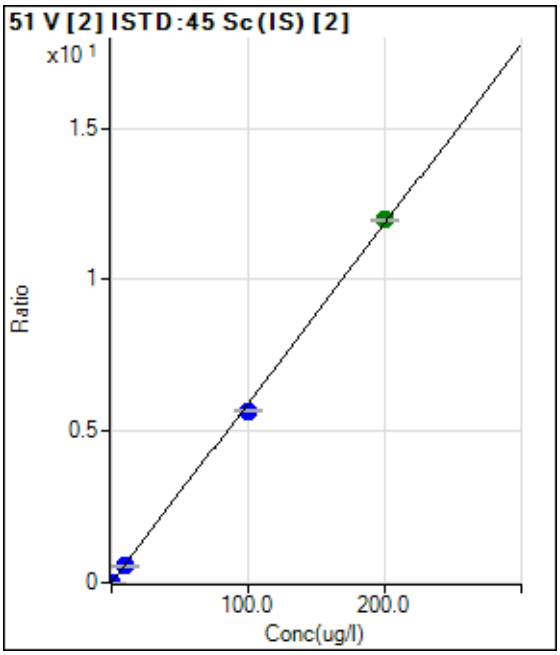
R = 1.0000

DL = 0.007593

BEC = 0.1136

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1391.23	0.0088	P	7.1
2	☐	10.000	9.062	93248.78	0.5447	P	10.8
3	☐	100.000	95.697	911176.04	5.6684	P	0.7
4	☐	200.000	202.198	1918074.00	11.9669	A	0.5
5	☐						
6	☐						
7	☐						

y = 0.0591 * x + 0.0088

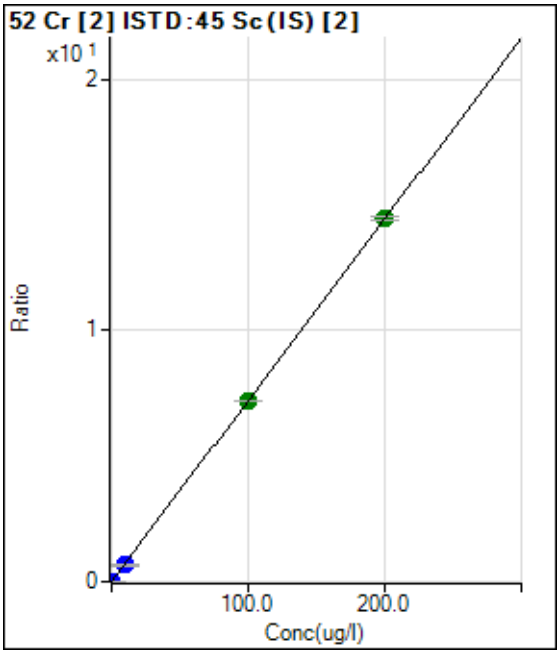
R = 0.9996

DL = 0.03188

BEC = 0.1494

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1086.75	0.0069	P	4.5
2	☐	10.000	9.036	112670.00	0.6579	P	10.2
3	☐	100.000	99.531	1153685.88	7.1771	A	0.5
4	☐	200.000	200.283	2313692.57	14.4354	A	1.2
5	☐						
6	☐						
7	☐						

y = 0.0720 * x + 0.0069

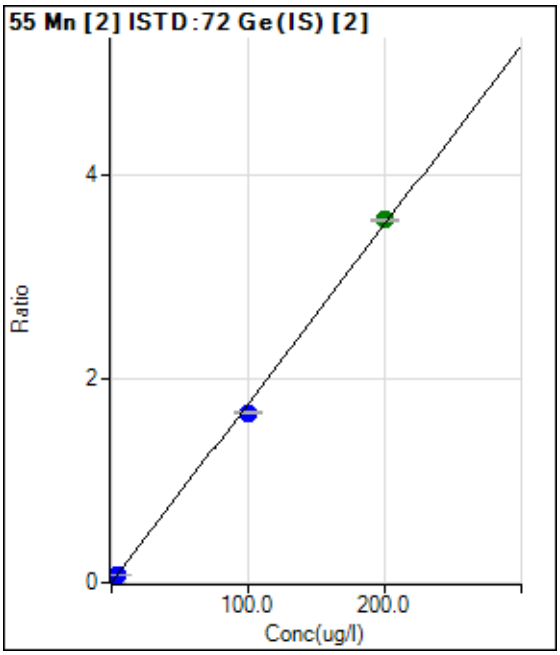
R = 1.0000

DL = 0.01299

BEC = 0.09584

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	385.58	0.0010	P	20.3
2	☐	4.000	3.961	28412.32	0.0704	P	8.8
3	☐	100.000	94.787	672563.98	1.6621	P	0.6
4	☐	200.000	202.607	1442674.49	3.5516	A	0.3
5	☐						
6	☐						
7	☐						

y = 0.0175 * x + 0.0010

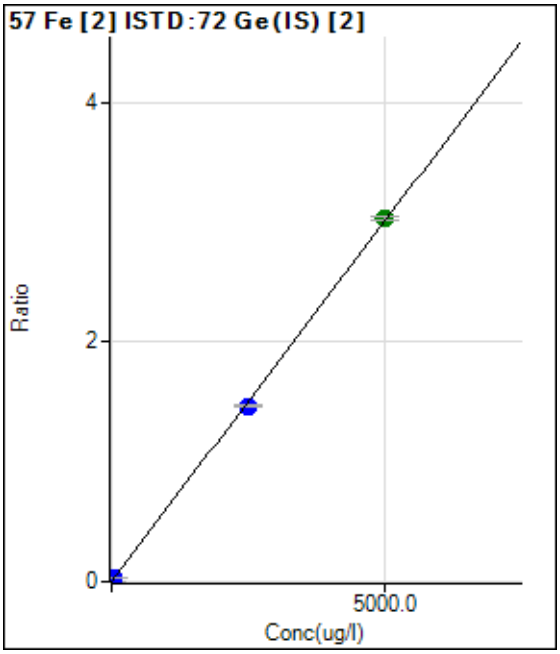
R = 0.9994

DL = 0.03532

BEC = 0.05804

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	597.82	0.0016	P	2.9
2	☐	50.000	49.504	12664.99	0.0314	P	6.2
3	☐	2500.000	2429.346	592029.57	1.4630	P	1.0
4	☐	5000.000	5035.332	1231048.01	3.0306	A	1.0
5	☐						
6	☐						
7	☐						

y = 6.0156E-004 * x + 0.0016

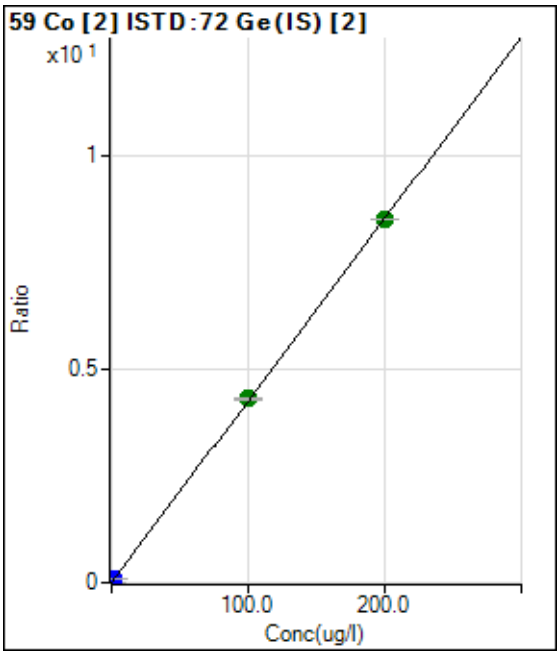
R = 0.9998

DL = 0.23

BEC = 2.622

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	537.81	0.0014	P	1.8
2	☐	2.000	1.984	34721.48	0.0861	P	8.3
3	☐	100.000	101.007	1744552.58	4.3112	A	0.5
4	☐	200.000	199.496	3458141.30	8.5135	A	0.1
5	☐						
6	☐						
7	☐						

y = 0.0427 * x + 0.0014

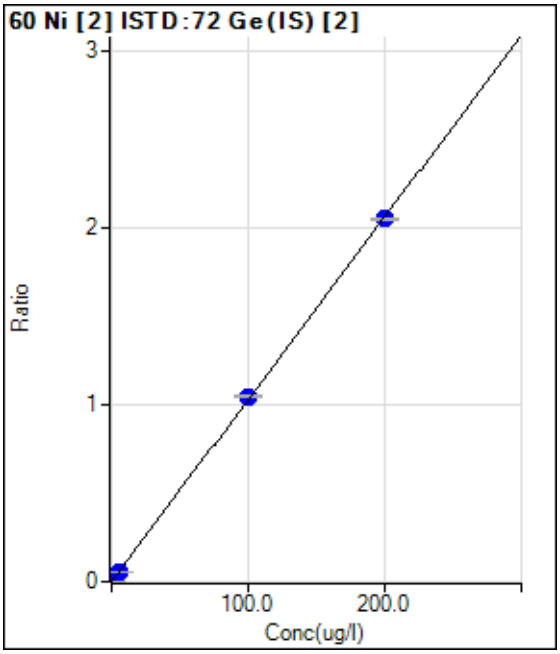
R = 1.0000

DL = 0.001772

BEC = 0.03325

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	123.34	0.0003	P	6.4
2	☐	5.000	5.488	22930.00	0.0568	P	8.5
3	☐	100.000	101.650	423702.32	1.0471	P	0.7
4	☐	200.000	199.163	833152.39	2.0512	P	0.6
5	☐						
6	☐						
7	☐						

y = 0.0103 * x + 3.2554E-004

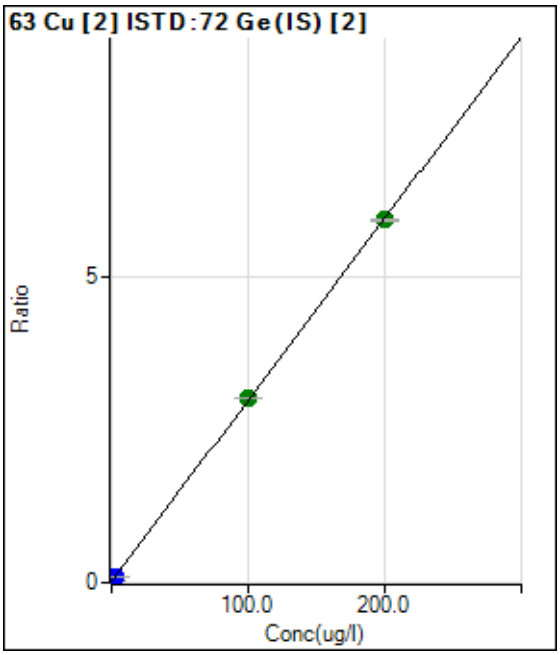
R = 0.9999

DL = 0.006064

BEC = 0.03161

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6599.29	0.0174	P	4.7
2	☐	3.000	2.976	42621.21	0.1056	P	7.0
3	☐	100.000	101.293	1220820.88	3.0171	A	0.7
4	☐	200.000	199.354	2404998.02	5.9210	A	0.8
5	☐						
6	☐						
7	☐						

y = 0.0296 * x + 0.0174

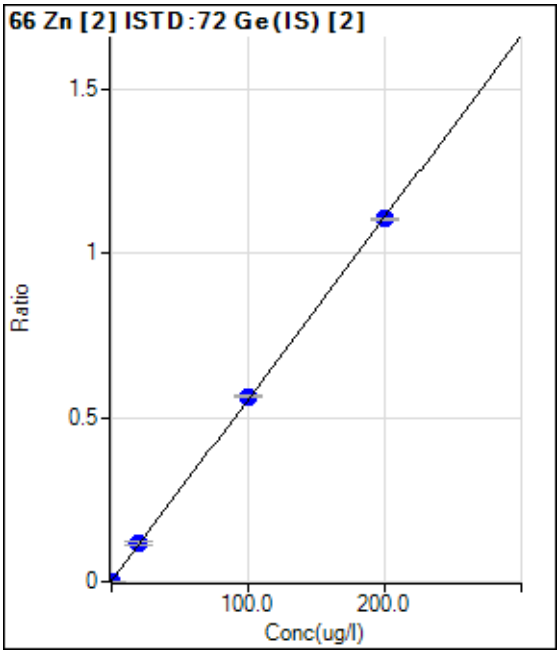
R = 1.0000

DL = 0.08213

BEC = 0.5881

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	636.71	0.0017	P	3.9
2	☐	20.000	20.434	46367.05	0.1150	P	9.3
3	☐	100.000	101.507	228408.95	0.5645	P	1.2
4	☐	200.000	199.203	449294.08	1.1061	P	0.4
5	☐						
6	☐						
7	☐						

y = 0.0055 * x + 0.0017

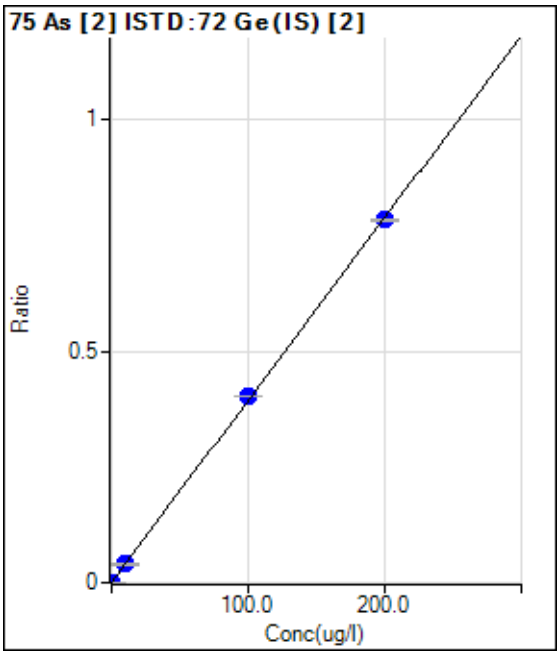
R = 1.0000

DL = 0.03509

BEC = 0.303

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	131.12	0.0003	P	8.0
2	☐	10.000	10.109	16206.95	0.0401	P	6.2
3	☐	100.000	102.059	162637.93	0.4019	P	0.3
4	☐	200.000	198.965	318124.44	0.7832	P	0.6
5	☐						
6	☐						
7	☐						

y = 0.0039 * x + 3.4575E-004

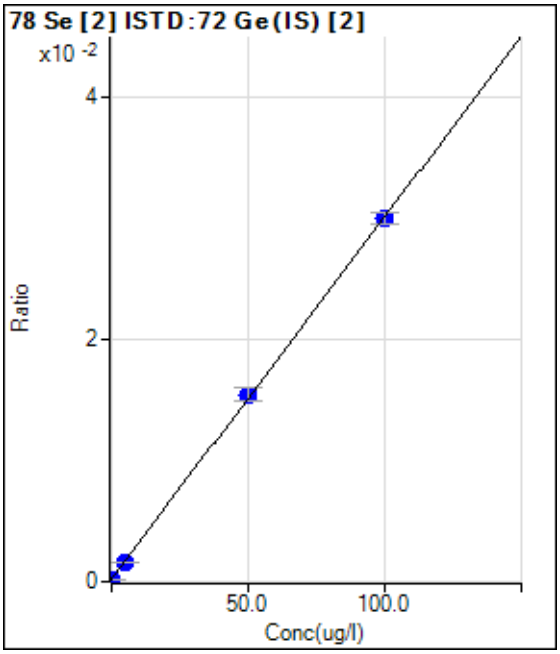
R = 0.9999

DL = 0.02097

BEC = 0.08787

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	82.22	0.0002	P	13.9
2	☐	5.000	4.476	628.93	0.0016	P	5.1
3	☐	50.000	51.027	6244.73	0.0154	P	7.1
4	☐	100.000	99.513	12143.61	0.0299	P	3.2
5	☐						
6	☐						
7	☐						

y = 2.9831E-004 * x + 2.1711E-004

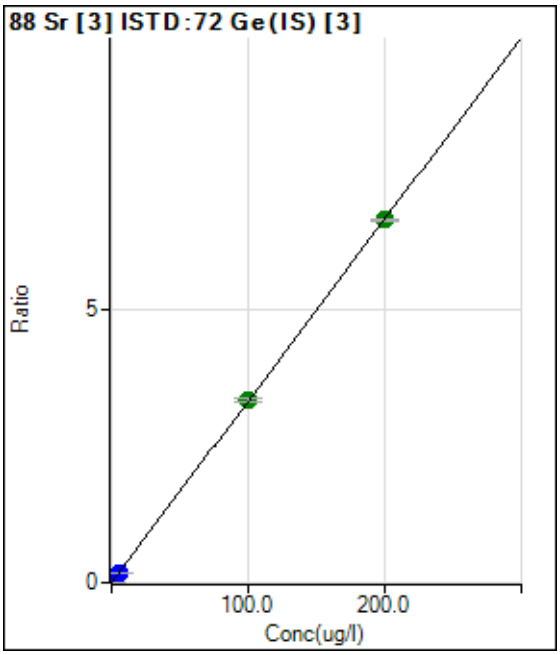
R = 0.9999

DL = 0.3029

BEC = 0.7278

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1633.48	0.0007	P	9.6
2	☐	5.000	4.859	396021.00	0.1626	P	1.7
3	☐	100.000	100.505	8188416.27	3.3511	A	1.6
4	☐	200.000	199.751	16207987.12	6.6596	A	0.7
5	☐						
6	☐						
7	☐						

y = 0.0333 * x + 6.7624E-004

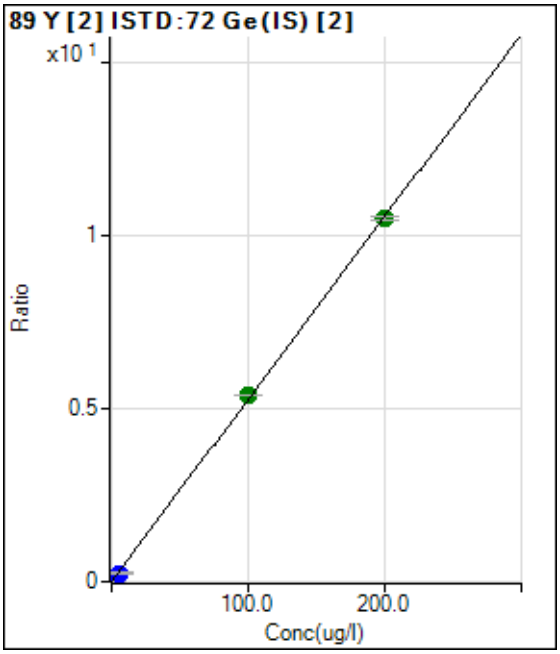
R = 1.0000

DL = 0.005852

BEC = 0.02029

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	203.35	0.0005	P	8.1
2	☐	5.000	4.706	100188.04	0.2482	P	7.8
3	☐	100.000	102.292	2178979.10	5.3849	A	0.8
4	☐	200.000	198.862	4251826.99	10.4680	A	1.0
5	☐						
6	☐						
7	☐						

y = 0.0526 * x + 5.3667E-004

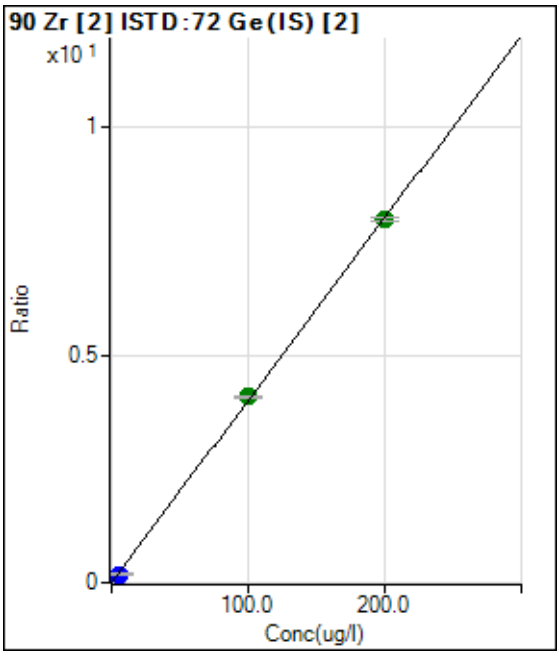
R = 0.9999

DL = 0.002473

BEC = 0.0102

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	292.24	0.0008	P	15.8
2	☐	5.000	4.713	76503.74	0.1896	P	8.4
3	☐	100.000	101.974	1653825.09	4.0869	A	1.4
4	☐	200.000	199.020	3239438.46	7.9757	A	1.0
5	☐						
6	☐						
7	☐						

y = 0.0401 * x + 7.7129E-004

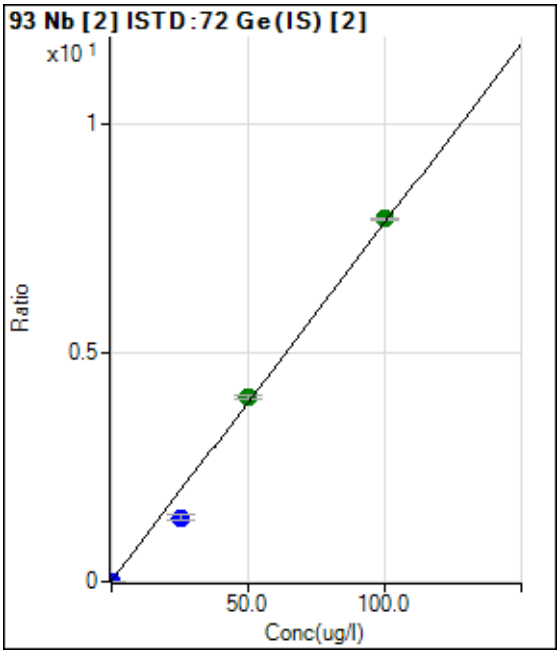
R = 0.9999

DL = 0.009097

BEC = 0.01925

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4007.36	0.0106	P	6.2
2	☐	25.000	17.694	562537.15	1.3954	P	9.8
3	☐	50.000	51.280	1628231.14	4.0240	A	1.9
4	☐	100.000	101.187	3221005.99	7.9299	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0783 * x + 0.0106

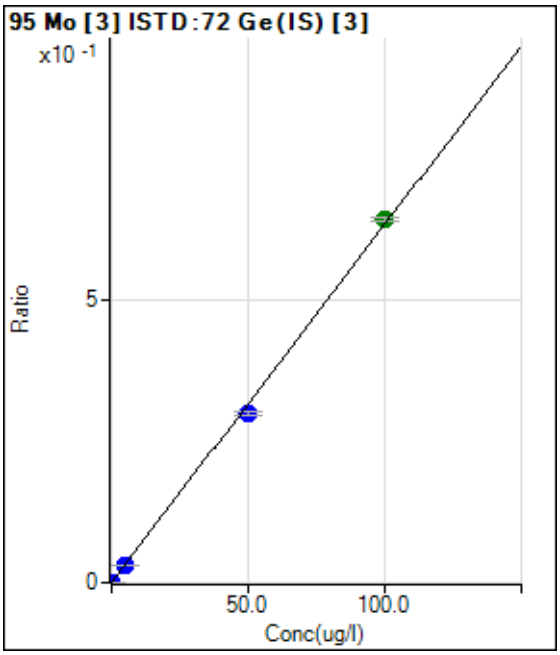
R = 0.9964

DL = 0.02532

BEC = 0.1351

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1354.55	0.0006	P	1.3
2	☐	5.000	4.864	76238.84	0.0313	P	1.6
3	☐	50.000	47.256	731388.67	0.2993	P	1.4
4	☐	100.000	101.379	1561255.37	0.6415	A	0.9
5	☐						
6	☐						
7	☐						

y = 0.0063 * x + 5.6113E-004

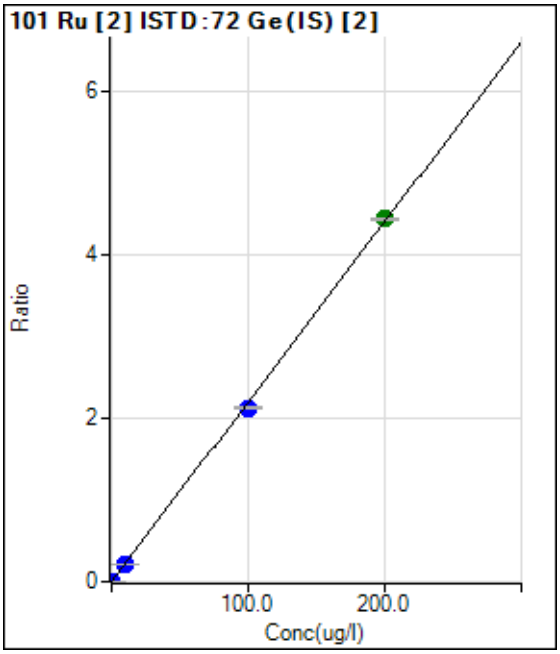
R = 0.9994

DL = 0.003483

BEC = 0.08876

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	113.34	0.0003	P	2.0
2	☐	10.000	9.533	84896.17	0.2101	P	5.8
3	☐	100.000	96.556	860166.51	2.1258	P	0.7
4	☐	200.000	201.745	1803908.19	4.4412	A	0.8
5	☐						
6	☐						
7	☐						

y = 0.0220 * x + 2.9898E-004

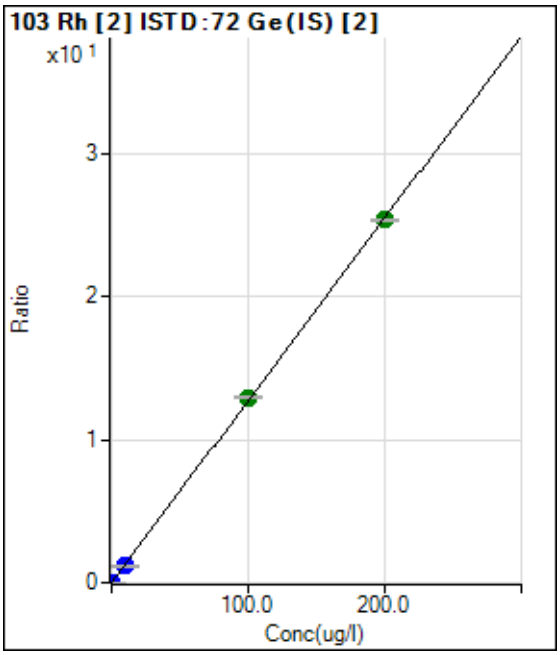
R = 0.9998

DL = 0.0007971

BEC = 0.01358

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	811.17	0.0021	P	8.6
2	☐	10.000	9.293	478816.82	1.1862	P	7.4
3	☐	100.000	101.661	5242286.83	12.9553	A	0.5
4	☐	200.000	199.205	10310335.61	25.3837	A	0.6
5	☐						
6	☐						
7	☐						

y = 0.1274 * x + 0.0021

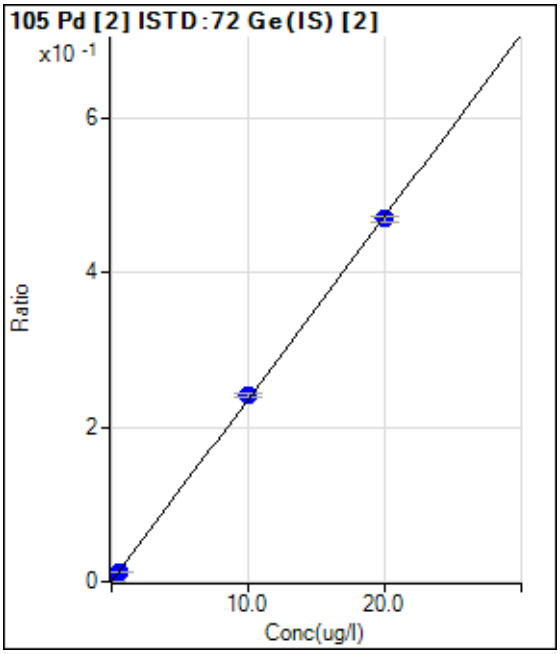
R = 0.9999

DL = 0.004308

BEC = 0.01679

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	18.89	0.0000	P	52.0
2	☐	0.500	0.499	4790.86	0.0118	P	0.5
3	☐	10.000	10.233	97795.32	0.2417	P	1.4
4	☐	20.000	19.884	190731.71	0.4696	P	1.6
5	☐						
6	☐						
7	☐						

y = 0.0236 * x + 4.9983E-005

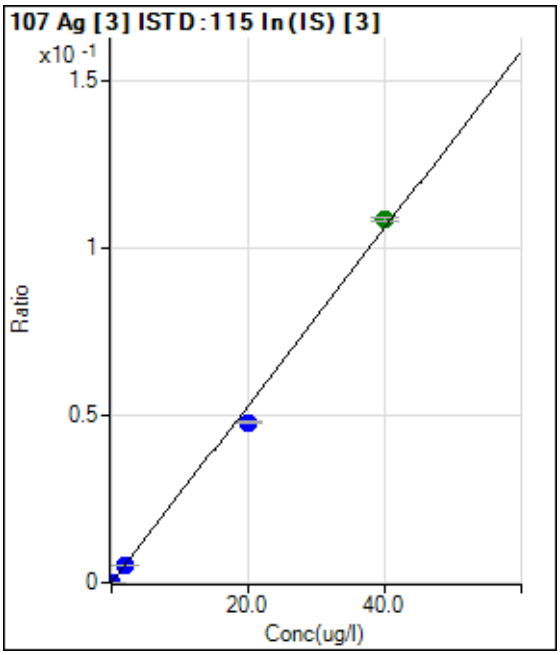
R = 0.9999

DL = 0.003299

BEC = 0.002117

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	547.81	0.0000	P	3.7
2	☐	2.000	1.878	76320.84	0.0050	P	1.2
3	☐	20.000	18.108	714991.22	0.0479	P	0.9
4	☐	40.000	40.952	1583630.72	0.1084	A	1.0
5	☐						
6	☐						
7	☐						

y = 0.0026 * x + 3.5855E-005

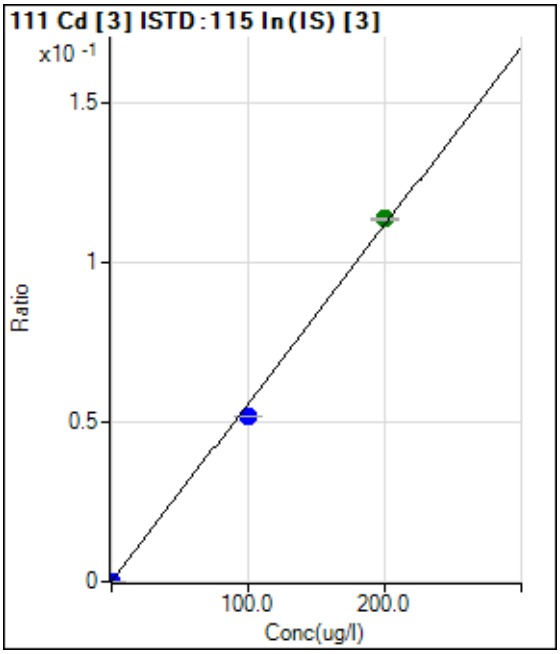
R = 0.9982

DL = 0.001486

BEC = 0.01355

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	71.86	0.0000	P	4.3
2	☐	0.500	0.500	4320.13	0.0003	P	2.4
3	☐	100.000	92.803	771291.53	0.0517	P	0.7
4	☐	200.000	203.598	1657850.49	0.1134	A	0.4
5	☐						
6	☐						
7	☐						

y = 5.5718E-004 * x + 4.7047E-006

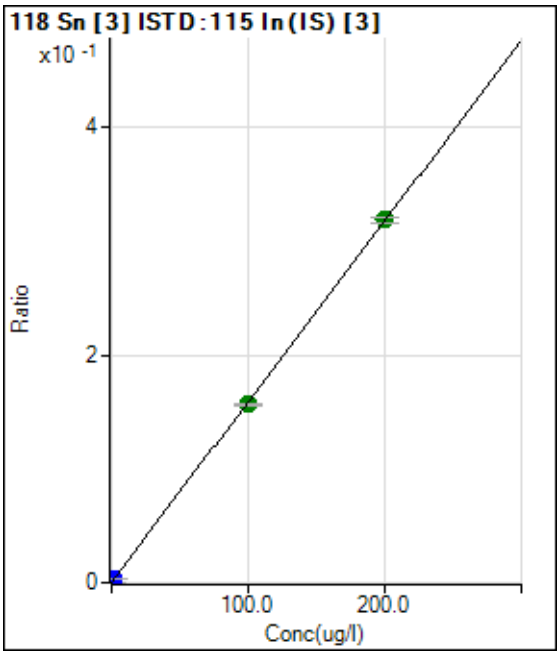
R = 0.9989

DL = 0.001079

BEC = 0.008444

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3261.56	0.0002	P	3.0
2	☐	2.000	1.815	47177.93	0.0031	P	1.9
3	☐	100.000	98.558	2336079.31	0.1566	A	0.9
4	☐	200.000	200.723	4657820.24	0.3187	A	1.8
5	☐						
6	☐						
7	☐						

y = 0.0016 * x + 2.1337E-004

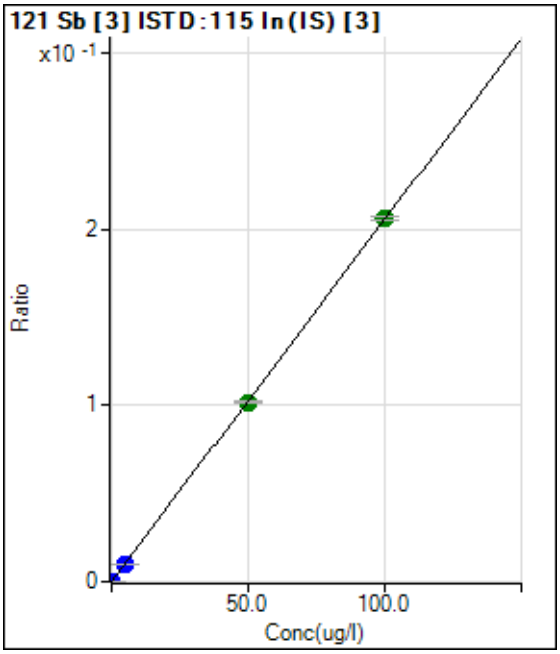
R = 1.0000

DL = 0.01211

BEC = 0.1345

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	695.60	0.0000	P	1.2
2	☐	5.000	4.549	143076.40	0.0094	P	0.6
3	☐	50.000	49.534	1516708.15	0.1017	A	0.7
4	☐	100.000	100.256	3007002.14	0.2058	A	1.0
5	☐						
6	☐						
7	☐						

y = 0.0021 * x + 4.5519E-005

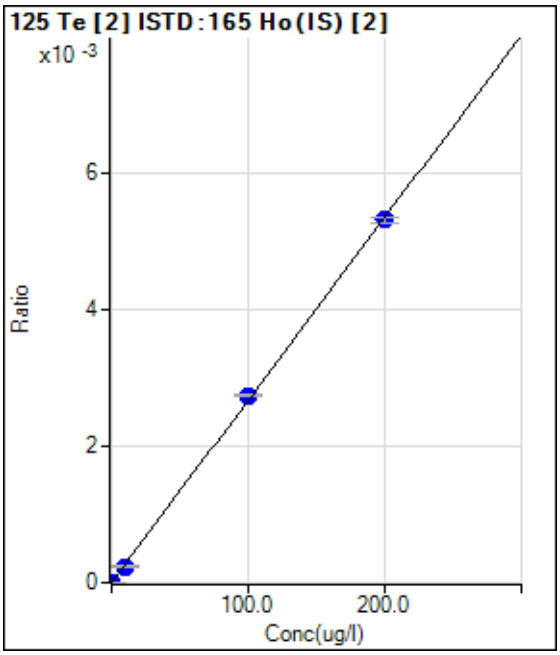
R = 1.0000

DL = 0.0008232

BEC = 0.02218

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	6.67	0.0000	P	132.9
2	☐	10.000	8.795	2629.21	0.0002	P	8.2
3	☐	100.000	102.472	28818.89	0.0027	P	1.1
4	☐	200.000	198.824	56254.88	0.0053	P	1.8
5	☐						
6	☐						
7	☐						

y = 2.6738E-005 * x + 6.4073E-007

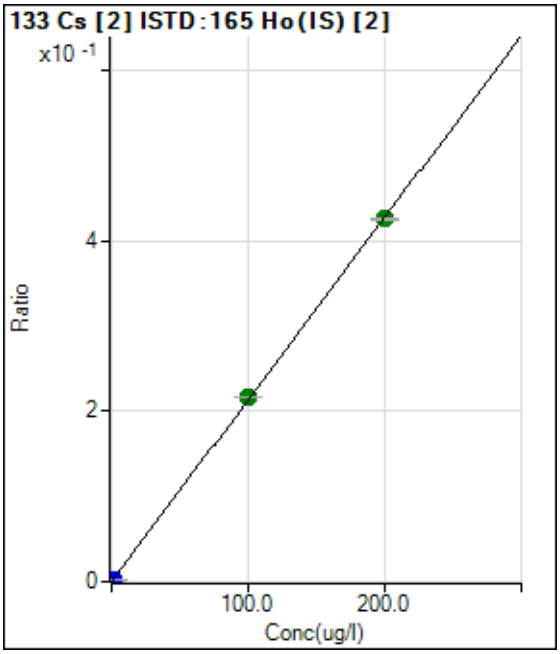
R = 0.9998

DL = 0.09556

BEC = 0.02396

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	310.02	0.0000	P	4.2
2	☐	1.000	0.865	20878.33	0.0019	P	10.6
3	☐	100.000	101.277	2272865.42	0.2161	A	0.5
4	☐	200.000	199.362	4501545.66	0.4255	A	0.3
5	☐						
6	☐						
7	☐						

y = 0.0021 * x + 2.9546E-005

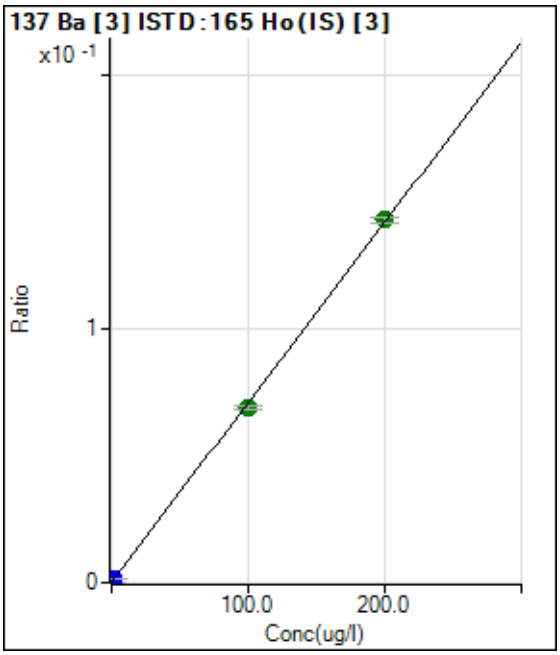
R = 1.0000

DL = 0.00175

BEC = 0.01385

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	474.48	0.0000	P	14.4
2	☐	2.000	1.846	22538.31	0.0013	P	1.5
3	☐	100.000	97.013	1163584.50	0.0688	A	1.6
4	☐	200.000	201.495	2417499.46	0.1430	A	1.2
5	☐						
6	☐						
7	☐						

y = 7.0933E-004 * x + 2.8271E-005

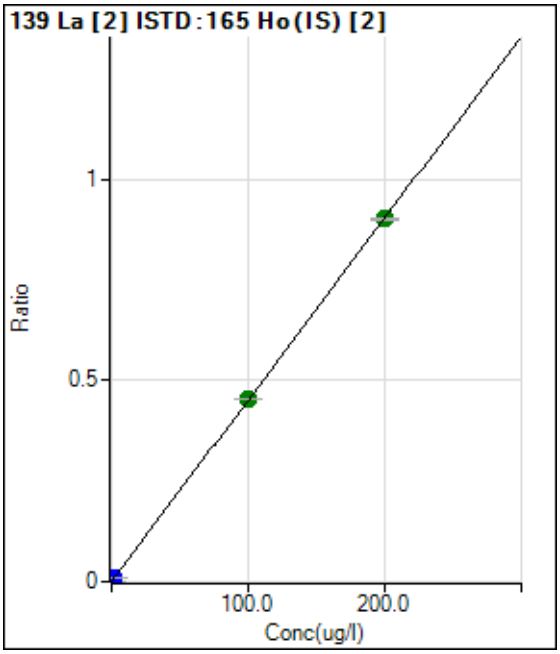
R = 0.9998

DL = 0.01719

BEC = 0.03986

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	317.80	0.0000	P	9.0
2	☐	2.000	1.725	87008.42	0.0078	P	10.3
3	☐	100.000	100.614	4775106.98	0.4541	A	0.2
4	☐	200.000	199.696	9535937.22	0.9013	A	0.5
5	☐						
6	☐						
7	☐						

y = 0.0045 * x + 3.0282E-005

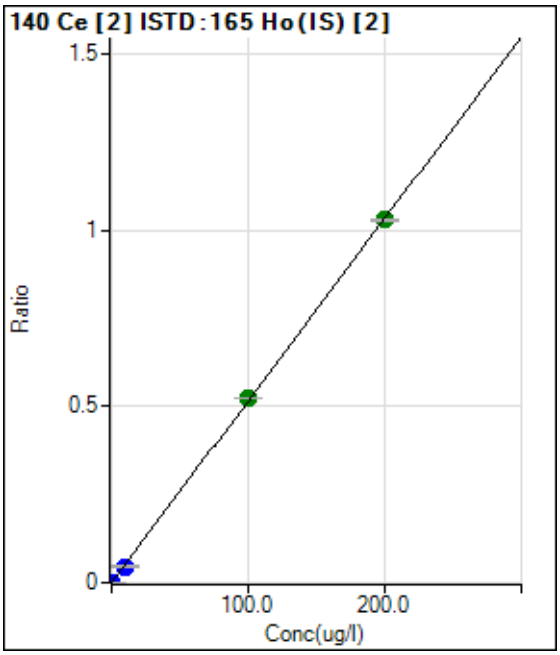
R = 1.0000

DL = 0.001818

BEC = 0.00671

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	396.69	0.0000	P	13.3
2	☐	10.000	8.573	492643.78	0.0442	P	10.1
3	☐	100.000	101.215	5488447.35	0.5220	A	0.4
4	☐	200.000	199.464	10882823.45	1.0286	A	0.9
5	☐						
6	☐						
7	☐						

y = 0.0052 * x + 3.7769E-005

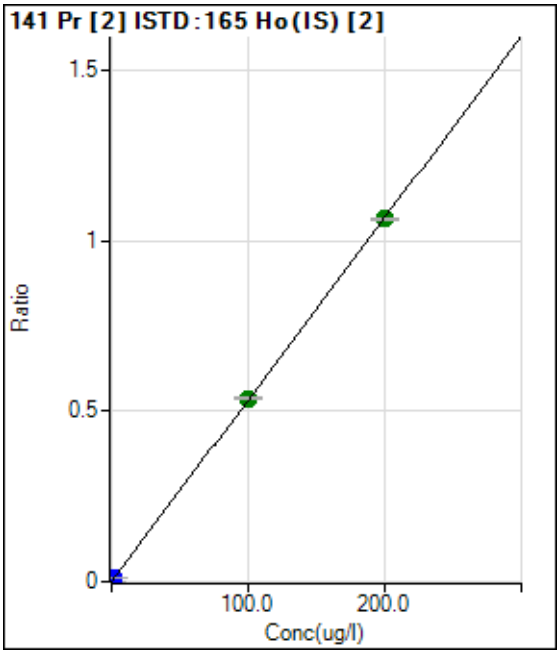
R = 0.9999

DL = 0.002933

BEC = 0.007325

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	360.02	0.0000	P	19.8
2	☐	2.000	1.744	103975.97	0.0093	P	10.9
3	☐	100.000	100.852	5660979.78	0.5384	A	0.8
4	☐	200.000	199.577	11272132.12	1.0654	A	0.2
5	☐						
6	☐						
7	☐						

y = 0.0053 * x + 3.4343E-005

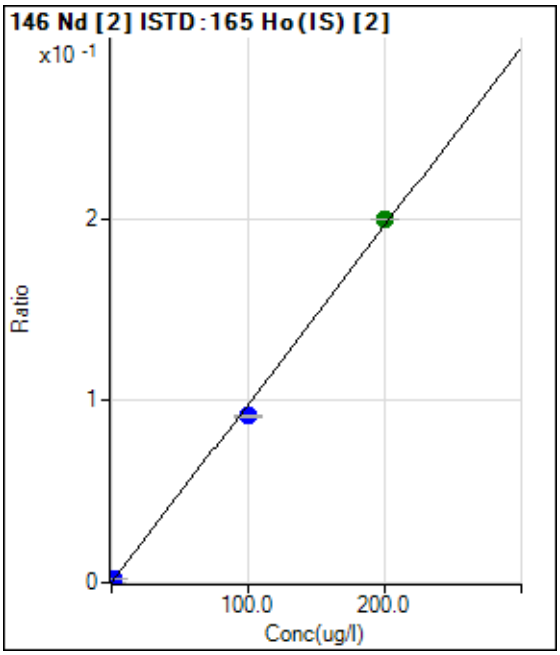
R = 1.0000

DL = 0.00382

BEC = 0.006434

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	47.78	0.0000	P	55.9
2	☐	2.000	1.762	19329.74	0.0017	P	8.6
3	☐	100.000	93.338	963497.22	0.0916	P	1.1
4	☐	200.000	203.333	2111831.81	0.1996	A	0.1
5	☐						
6	☐						
7	☐						

y = 9.8160E-004 * x + 4.5402E-006

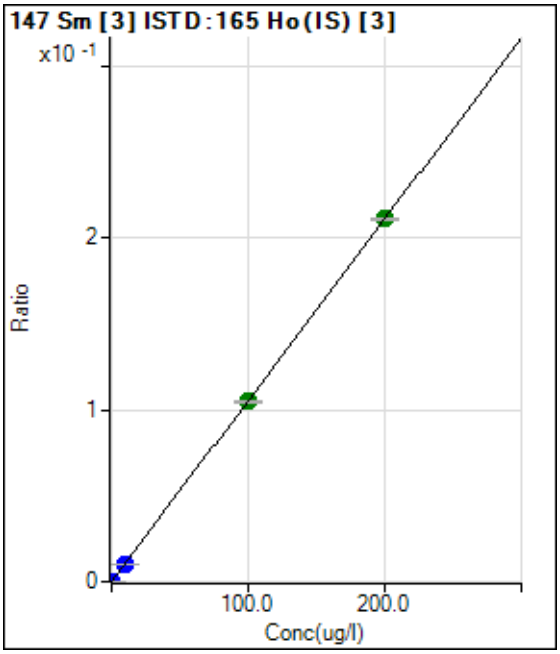
R = 0.9991

DL = 0.007764

BEC = 0.004625

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	118.90	0.0000	P	37.6
2	☐	10.000	9.393	166825.76	0.0099	P	1.5
3	☐	100.000	99.506	1771761.55	0.1048	A	0.8
4	☐	200.000	200.277	3567605.22	0.2110	A	0.6
5	☐						
6	☐						
7	☐						

y = 0.0011 * x + 7.0623E-006

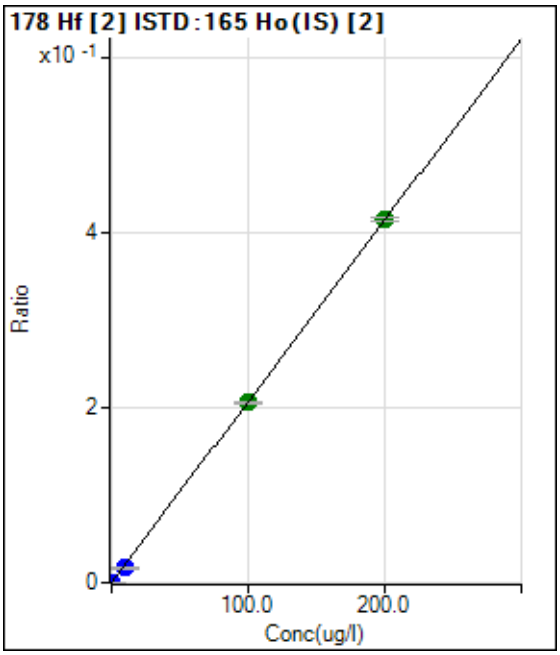
R = 1.0000

DL = 0.007569

BEC = 0.006705

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	230.01	0.0000	P	7.4
2	☐	10.000	8.338	192305.87	0.0173	P	9.7
3	☐	100.000	99.540	2164833.14	0.2059	A	1.0
4	☐	200.000	200.313	4383357.78	0.4143	A	1.2
5	☐						
6	☐						
7	☐						

y = 0.0021 * x + 2.1917E-005

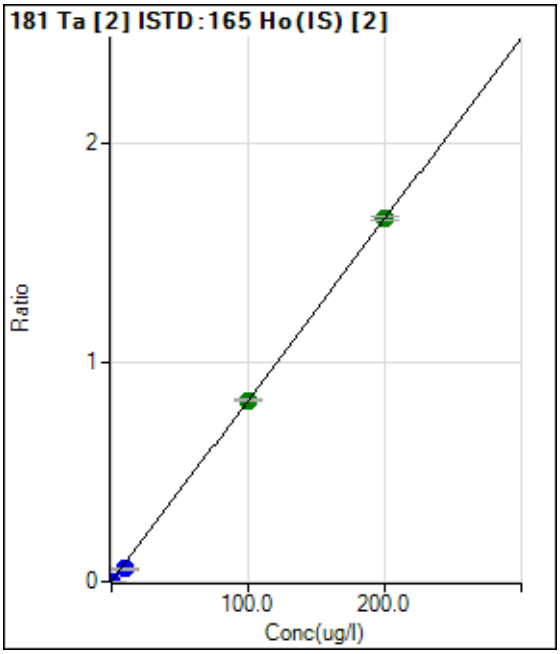
R = 1.0000

DL = 0.002358

BEC = 0.0106

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	14078.95	0.0013	P	2.1
2	☐	10.000	6.866	645793.41	0.0581	P	12.3
3	☐	100.000	100.072	8712041.53	0.8285	A	0.6
4	☐	200.000	200.121	17516048.91	1.6555	A	1.1
5	☐						
6	☐						
7	☐						

y = 0.0083 * x + 0.0013

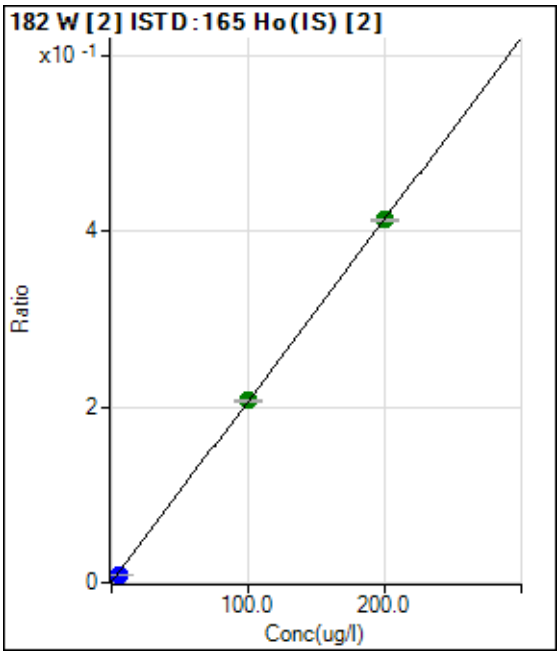
R = 0.9999

DL = 0.01003

BEC = 0.1623

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3833.95	0.0004	P	9.7
2	☐	5.000	4.208	100822.35	0.0090	P	8.9
3	☐	100.000	100.463	2183131.88	0.2076	A	1.1
4	☐	200.000	199.788	4364607.99	0.4125	A	0.8
5	☐						
6	☐						
7	☐						

y = 0.0021 * x + 3.6550E-004

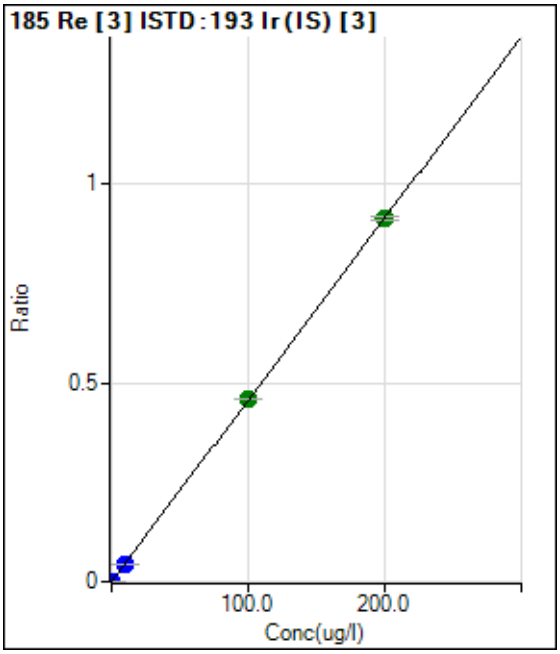
R = 1.0000

DL = 0.05162

BEC = 0.1772

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	234.46	0.0000	P	5.9
2	☐	10.000	9.064	346515.38	0.0415	P	0.3
3	☐	100.000	100.473	3757233.38	0.4593	A	0.6
4	☐	200.000	199.810	7486781.35	0.9135	A	1.1
5	☐						
6	☐						
7	☐						

y = 0.0046 * x + 2.8049E-005

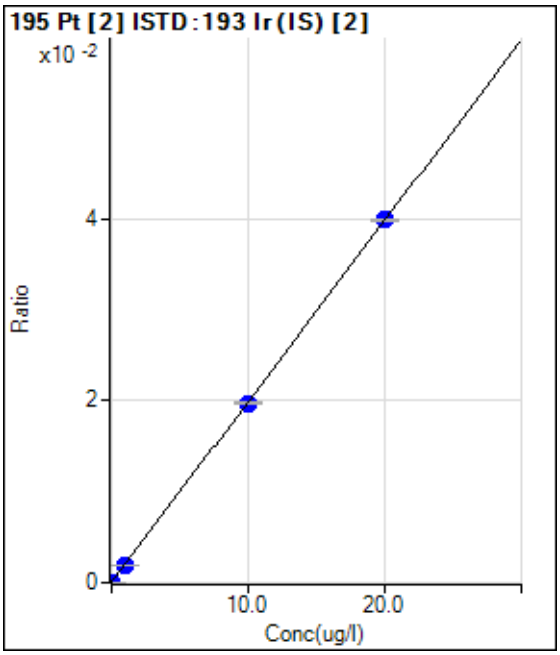
R = 1.0000

DL = 0.001088

BEC = 0.006136

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	262.24	0.0000	P	15.1
2	☐	1.000	0.925	13640.84	0.0019	P	7.9
3	☐	10.000	9.908	134543.52	0.0198	P	1.7
4	☐	20.000	20.050	269589.13	0.0399	P	0.6
5	☐						
6	☐						
7	☐						

y = 0.0020 * x + 3.8045E-005

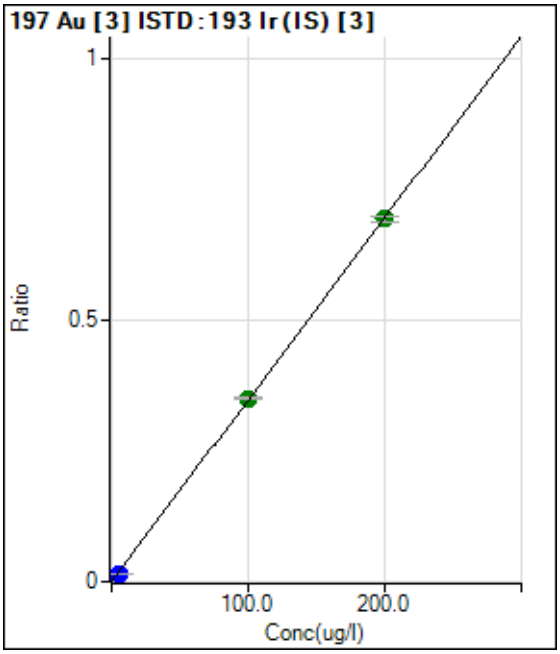
R = 1.0000

DL = 0.00867

BEC = 0.01912

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1218.99	0.0001	P	6.1
2	☐	5.000	4.498	131671.72	0.0158	P	0.7
3	☐	100.000	100.811	2862513.40	0.3500	A	0.6
4	☐	200.000	199.607	5678348.18	0.6928	A	1.3
5	☐						
6	☐						
7	☐						

y = 0.0035 * x + 1.4590E-004

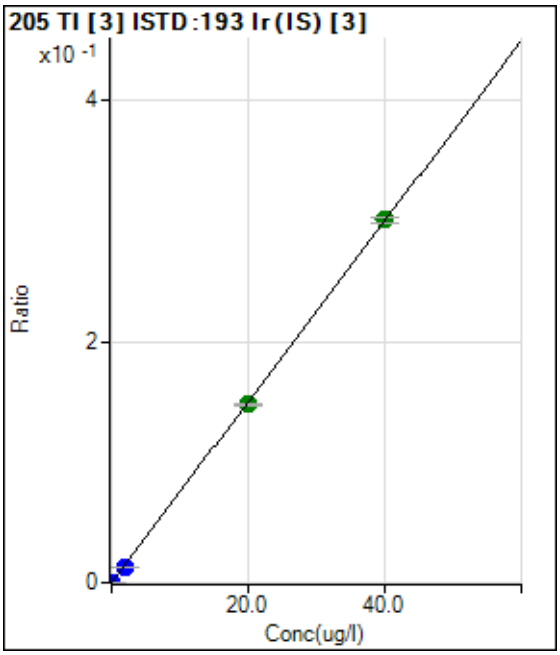
R = 1.0000

DL = 0.007655

BEC = 0.04204

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	993.40	0.0001	P	7.2
2	☐	2.000	1.776	112176.00	0.0134	P	1.4
3	☐	20.000	19.707	1208468.61	0.1477	A	0.4
4	☐	40.000	40.158	2466448.66	0.3009	A	1.9
5	☐						
6	☐						
7	☐						

y = 0.0075 * x + 1.1887E-004

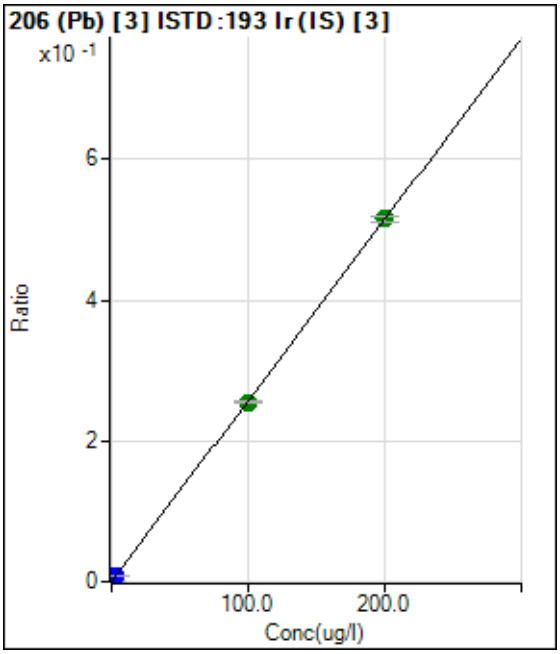
R = 1.0000

DL = 0.003428

BEC = 0.01587

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2063.56	0.0002	P	5.1
2	☐	3.000	2.703	60089.70	0.0072	P	1.5
3	☐	100.000	99.143	2085455.80	0.2550	A	1.0
4	☐	200.000	200.433	4222692.96	0.5152	A	1.6
5	☐						
6	☐						
7	☐						

y = 0.0026 * x + 2.4702E-004

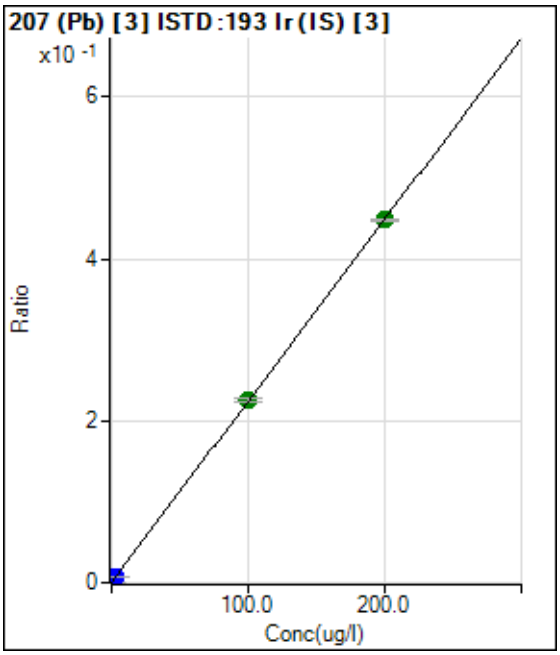
R = 1.0000

DL = 0.01483

BEC = 0.09614

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	2368.06	0.0003	P	6.6
2	☐	3.000	2.736	53563.96	0.0064	P	1.3
3	☐	100.000	100.178	1836852.38	0.2246	A	2.3
4	☐	200.000	199.915	3671448.25	0.4479	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0022 * x + 2.8350E-004

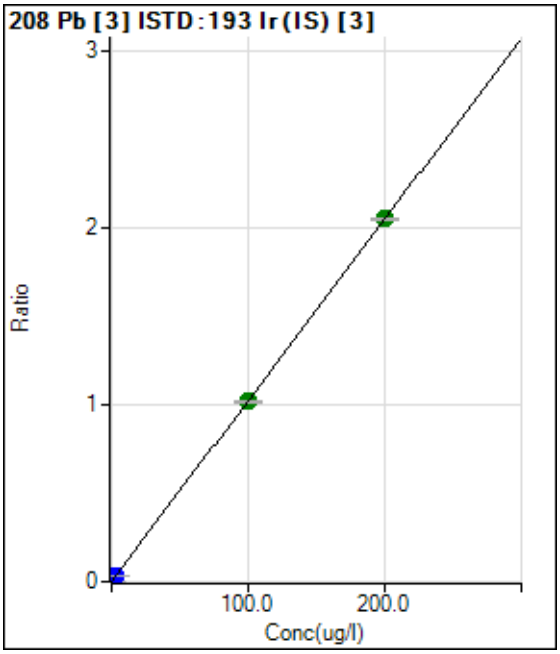
R = 1.0000

DL = 0.02503

BEC = 0.1266

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	9075.83	0.0011	P	3.5
2	☐	3.000	2.717	241489.61	0.0289	P	0.7
3	☐	100.000	99.312	8321762.12	1.0175	A	1.3
4	☐	200.000	200.348	16815076.56	2.0515	A	0.4
5	☐						
6	☐						
7	☐						

y = 0.0102 * x + 0.0011

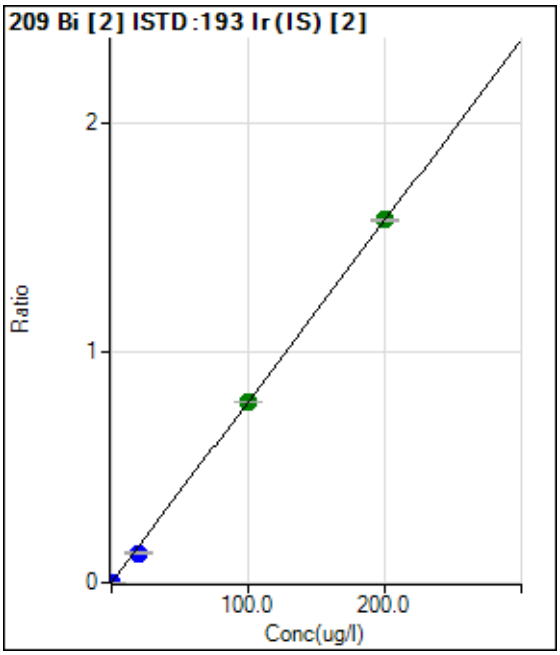
R = 1.0000

DL = 0.01101

BEC = 0.1062

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3898.43	0.0006	P	3.0
2	☐	20.000	16.318	936210.52	0.1289	P	8.1
3	☐	100.000	99.838	5354704.57	0.7860	A	0.6
4	☐	200.000	200.449	10651324.84	1.5776	A	0.3
5	☐						
6	☐						
7	☐						

y = 0.0079 * x + 5.6542E-004

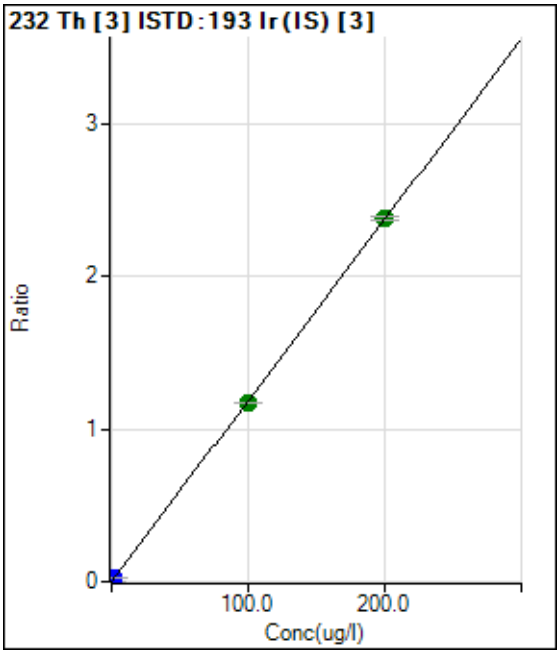
R = 0.9998

DL = 0.00642

BEC = 0.07187

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1291.22	0.0002	P	2.4
2	☐	2.000	1.742	173767.34	0.0208	P	0.3
3	☐	100.000	98.968	9593359.65	1.1729	A	0.7
4	☐	200.000	200.519	19475614.02	2.3762	A	1.2
5	☐						
6	☐						
7	☐						

y = 0.0118 * x + 1.5458E-004

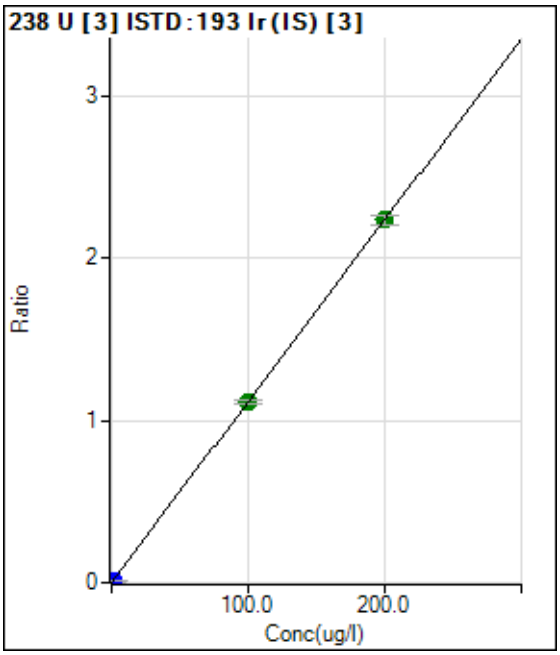
R = 1.0000

DL = 0.0009528

BEC = 0.01305

Weight: None

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	506.70	0.0001	P	4.6
2	☐	1.000	0.905	84848.88	0.0102	P	0.9
3	☐	100.000	99.688	9097497.71	1.1123	A	1.2
4	☐	200.000	200.157	18302289.59	2.2333	A	2.7
5	☐						
6	☐						
7	☐						

y = 0.0112 * x + 6.0629E-005

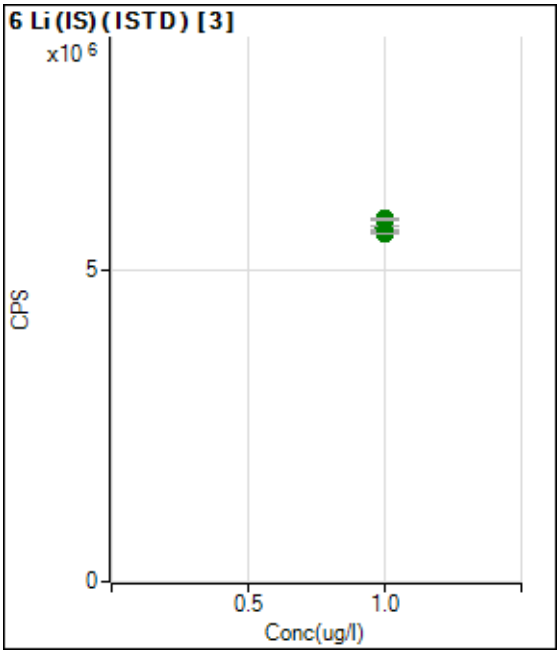
R = 1.0000

DL = 0.0007434

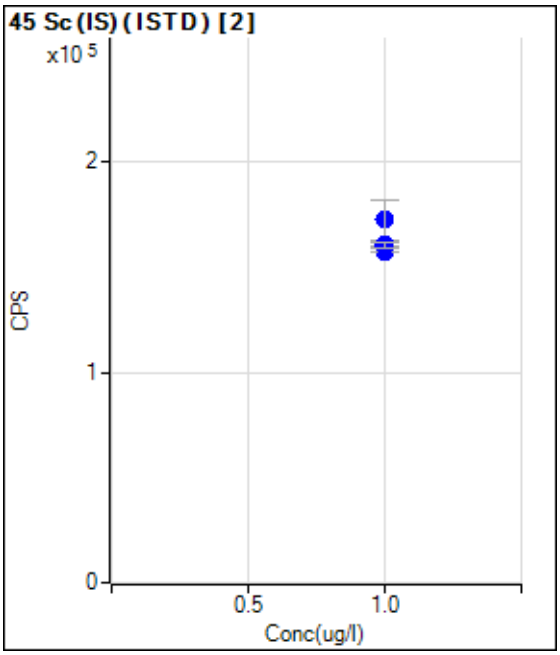
BEC = 0.005434

Weight: None

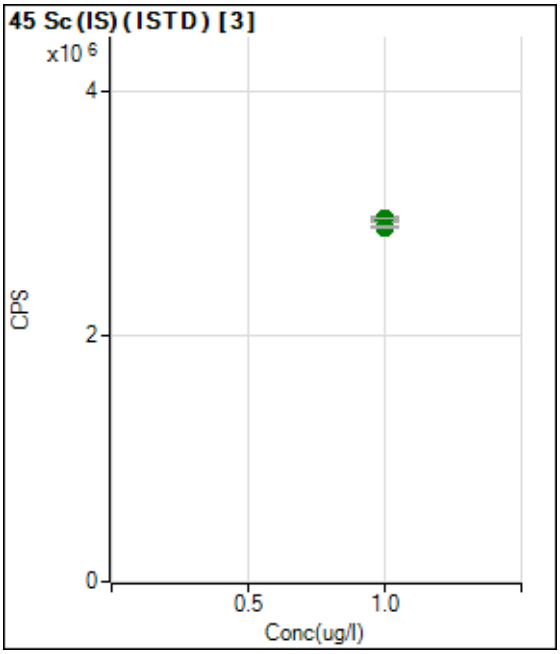
Min Conc: <None>



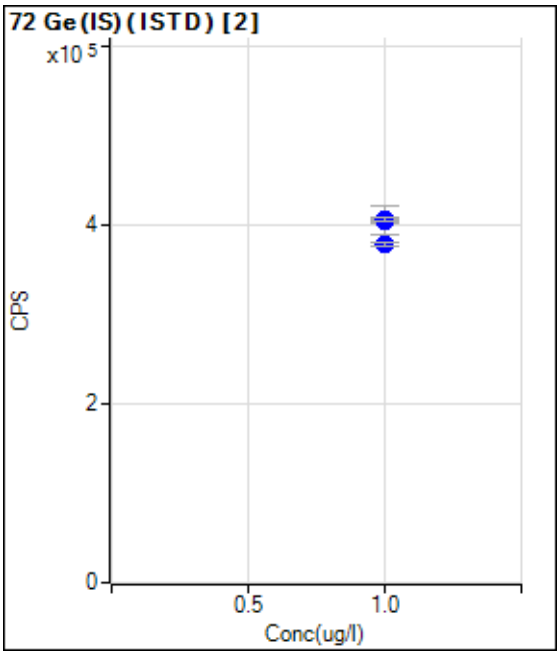
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		5676389.97		A	1.0
2	☐	1.000		5813169.60		A	0.5
3	☐	1.000		5614341.48		A	0.7
4	☐	1.000		5575209.60		A	0.1
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



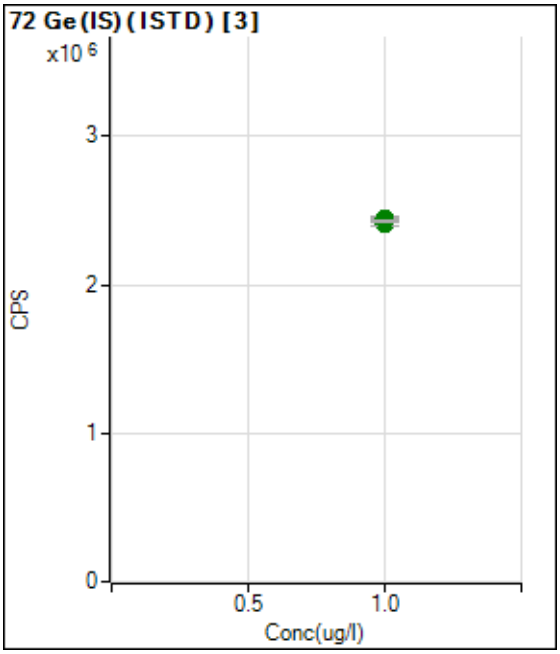
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		157398.15		P	0.4
2	☐	1.000		172542.60		P	11.0
3	☐	1.000		160748.30		P	1.0
4	☐	1.000		160282.06		P	1.4
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



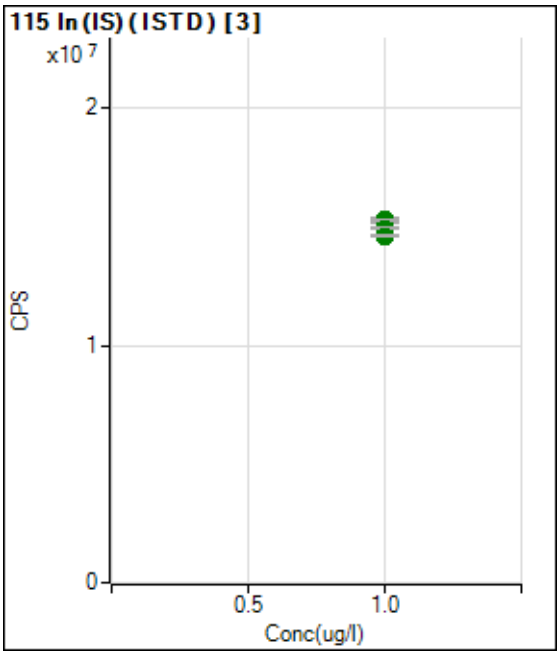
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2954313.22		A	1.6
2	☐	1.000		2946968.53		A	0.7
3	☐	1.000		2940991.59		A	1.2
4	☐	1.000		2883790.20		A	0.5
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



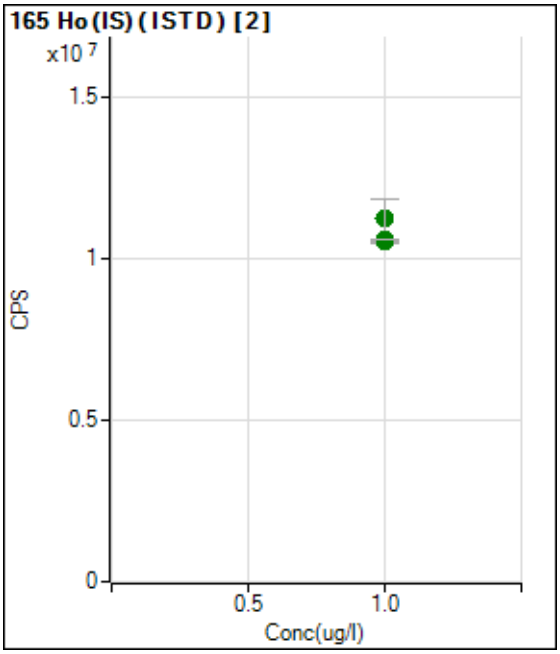
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		379042.11		P	1.0
2	☐	1.000		405217.92		P	7.8
3	☐	1.000		404656.81		P	0.9
4	☐	1.000		406193.09		P	1.0
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



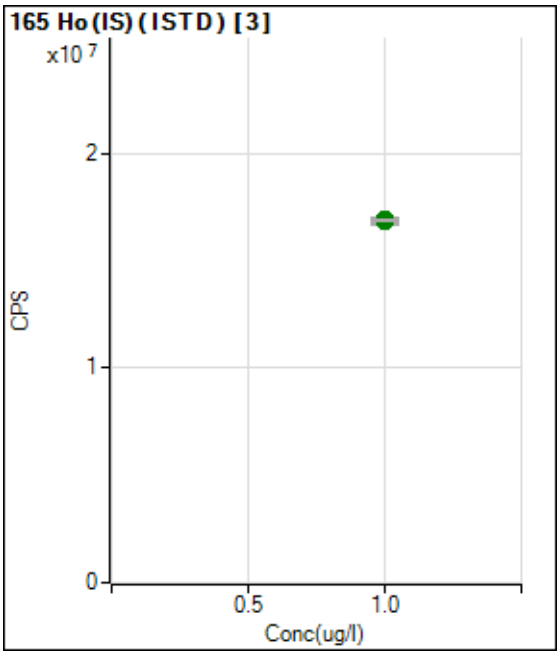
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		2413999.20		A	1.2
2	☐	1.000		2435204.15		A	1.4
3	☐	1.000		2443825.75		A	1.4
4	☐	1.000		2433838.94		A	0.5
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



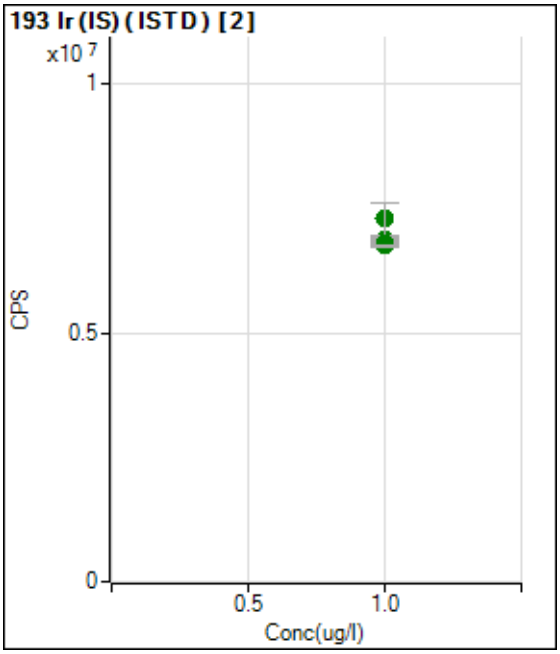
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		15281059.39		A	1.7
2	☐	1.000		15252868.45		A	0.6
3	☐	1.000		14915128.28		A	0.5
4	☐	1.000		14613896.96		A	0.7
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



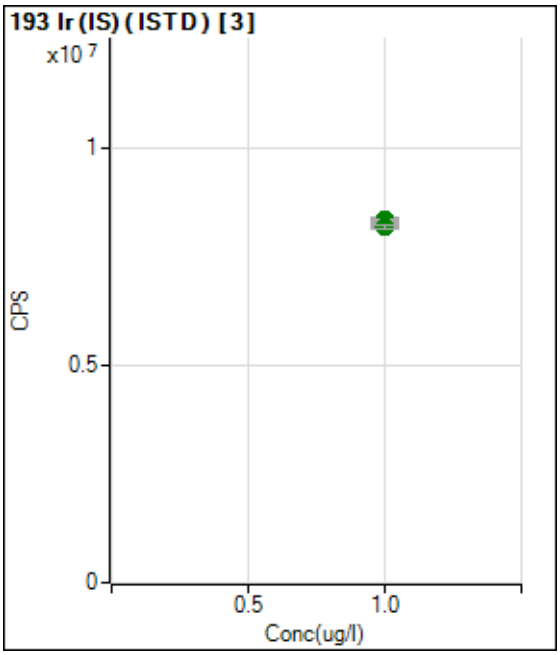
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		10495856.02		A	1.0
2	☐	1.000		11216208.17		A	10.8
3	☐	1.000		10515254.98		A	0.6
4	☐	1.000		10580541.02		A	0.1
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		16807843.50		A	1.8
2	☐	1.000		16850691.69		A	0.2
3	☐	1.000		16904567.80		A	1.3
4	☐	1.000		16911748.08		A	0.5
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		6895256.77		A	0.4
2	☐	1.000		7294648.50		A	8.7
3	☐	1.000		6812385.39		A	0.7
4	☐	1.000		6751654.34		A	0.7
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		8354861.89		A	1.4
2	☐	1.000		8356917.17		A	0.6
3	☐	1.000		8179385.57		A	0.8
4	☐	1.000		8196649.05		A	0.9
5	☐	1.000					
6	☐	1.000					
7	☐	1.000					

121019B2-1

Tune Ste	Mass	Name	R	a	b (blank)	DL	BEC	Units
3	7	Li	0.999856	0.005576	0.053514361	0.508288	9.596989	ug/l
3	9	Be	0.99991	0.001577	3.04338E-05	0.001095	0.019301	ug/l
3	11	B	0.999628	0.001144	0.001735174	0.260219	1.516102	ug/l
2	23	Na	0.99999	0.009732	0.096592094	0.64002	9.925013	ug/l
2	24	Mg	0.999999	0.005184	0.002248025	0.107517	0.433641	ug/l
2	27	Al	0.999603	0.002301	0.001905725	0.332546	0.828206	ug/l
2	31	P	0.999981	0.000158	0.00050436	4.059198	3.194878	ug/l
2	39	K	0.99999	0.005446	0.2212426	1.322529	40.6258	ug/l
3	44	Ca	0.999984	0.000517	0.011510371	0.990327	22.28183	ug/l
3	47	Ti	0.999999	0.001484	0.000141244	0.008184	0.095169	ug/l
2	51	V	0.999239	0.056212	0.010976167	0.032447	0.195262	ug/l
2	52	Cr	0.999585	0.068348	0.007702699	0.022585	0.112698	ug/l
2	55	Mn	0.999458	0.018566	0.000835142	0.006715	0.044983	ug/l
2	57	Fe	0.999581	0.000634	0.001439931	0.604036	2.271141	ug/l
2	59	Co	0.999988	0.043524	0.001370899	0.007019	0.031498	ug/l
2	60	Ni	0.999951	0.010524	0.000465146	0.029531	0.044198	ug/l
2	63	Cu	0.998963	0.030074	0.023295569	0.057979	0.774598	ug/l
2	66	Zn	0.99992	0.005671	0.001672268	0.09649	0.294861	ug/l
2	75	As	0.999986	0.003993	0.000542836	0.037821	0.135947	ug/l
2	78	Se	0.999949	0.000318	0.000144741	0.276892	0.455709	ug/l
3	88	Sr	0.999999	0.032595	0.000750632	0.004944	0.023029	ug/l
2	89	Y	0.999946	0.053839	0.000446446	0.006792	0.008292	ug/l
2	90	Zr	0.999999	0.040336	0.000684063	0.004309	0.016959	ug/l
2	93	Nb	0.998401	0.079941	0.013309973	0.044841	0.166498	ug/l
3	95	Mo	0.999157	0.006447	0.000972804	0.03168	0.150884	ug/l
2	101	Ru	0.999336	0.021725	0.000220813	0.008406	0.010164	ug/l
2	103	Rh	0.999937	0.125536	0.002011521	0.001222	0.016023	ug/l
2	105	Pd	0.999822	0.022957	0.000282561	0.008538	0.012308	ug/l
3	107	Ag	0.998	0.002614	3.08255E-05	0.006362	0.011791	ug/l
3	111	Cd	0.998779	0.000545	9.40435E-06	0.010794	0.017271	ug/l
3	118	Sn	0.999943	0.001535	0.000265264	0.003265	0.172844	ug/l
3	121	Sb	0.999935	0.001993	0.000112773	0.009301	0.056588	ug/l
2	125	Te	0.999885	2.75E-05	5.8109E-07	0.058187	0.021164	ug/l
2	133	Cs	0.99998	0.002146	2.88295E-05	0.002286	0.013435	ug/l
3	137	Ba	0.997877	0.000678	2.63001E-05	0.01331	0.038768	ug/l
2	139	La	0.99997	0.004359	2.28015E-05	0.001125	0.00523	ug/l
2	140	Ce	0.999955	0.005013	2.69772E-05	0.002369	0.005382	ug/l
2	141	Pr	0.999989	0.005258	2.04851E-05	0.002081	0.003896	ug/l
2	146	Nd	0.998581	0.000971	3.12549E-06	0.001077	0.00322	ug/l
3	147	Sm	0.999992	0.001036	6.00688E-06	0.00079	0.005797	ug/l
2	178	Hf	0.999885	0.002048	2.02583E-05	0.000518	0.009893	ug/l
2	181	Ta	0.999916	0.008058	0.001498291	0.005225	0.185929	ug/l
2	182	W	0.999942	0.001966	0.000341631	0.054141	0.173739	ug/l
3	185	Re	0.999958	0.004459	1.82327E-05	0.002613	0.004089	ug/l
2	195	Pt	0.999958	0.001932	3.35956E-05	0.003721	0.017392	ug/l
3	197	Au	0.999984	0.003489	0.000199588	0.020965	0.057213	ug/l
3	205	Tl	0.997758	0.007174	0.000419224	0.00598	0.058439	ug/l
3	206	(Pb)	0.999964	0.002542	0.000281894	0.021972	0.110898	ug/l
3	207	(Pb)	0.999946	0.002243	0.000310663	0.032252	0.138491	ug/l
3	208	Pb	0.999924	0.010212	0.001176672	0.013952	0.115222	ug/l
2	209	Bi	0.999906	0.008104	0.000781216	0.010261	0.096403	ug/l
3	232	Th	0.999837	0.012	0.000230445	0.00518	0.019204	ug/l
3	238	U	0.999875	0.011436	6.81147E-05	0.001312	0.005956	ug/l
3	6	Li (IS)						ug/l
2	45	Sc (IS)						ug/l
3	45	Sc (IS)						ug/l
2	72	Ge (IS)						ug/l
3	72	Ge (IS)						ug/l
3	115	In (IS)						ug/l
2	165	Ho (IS)						ug/l
3	165	Ho (IS)						ug/l
2	193	Ir (IS)						ug/l
3	193	Ir (IS)						ug/l

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Metals Y Intercept

Analyst: LKP
Instrument: 7700
Calibration File: 121019B2
Matrix: Water
Units: PPB

Date: 12/11/2019

Element	MDL	3XMDL	Y-Intercept	Pass/Fail
LI	2.00	6.00	0.0535144	PASS
BE	0.20	0.60	3.043E-05	PASS
B	45.00	135.00	0.0017352	PASS
NA	20.00	60.00	0.0965921	PASS
MG	20.00	60.00	0.002248	PASS
AL	20.00	60.00	0.0019057	PASS
P	45.00	135.00	0.0005044	PASS
K	45.00	135.00	0.2212426	PASS
CA	45.00	135.00	0.0115104	PASS
TI	2.00	6.00	0.0001412	PASS
V	4.00	12.00	0.0109762	PASS
CR	4.00	12.00	0.0077027	PASS
MN	0.90	2.70	0.0008351	PASS
FE	20.00	60.00	0.0014399	PASS
CO	0.90	2.70	0.0013709	PASS
NI	2.00	6.00	0.0004651	PASS
CU	0.40	1.20	0.0232956	PASS
ZN	7.50	22.50	0.0016723	PASS
AS	4.00	12.00	0.0005428	PASS
SE	2.00	6.00	0.0001447	PASS
SR	2.00	6.00	0.0007506	PASS
Y	2.00	6.00	0.0004464	PASS
ZR	2.00	6.00	0.0006841	PASS
NB	10.00	30.00	0.01331	PASS
MO	2.00	6.00	0.0009728	PASS
RU	4.00	12.00	0.0002208	PASS
RH	4.00	12.00	0.0020115	PASS
PD	0.20	0.60	0.0002826	PASS
AG	0.90	2.70	3.083E-05	PASS
CD	0.20	0.60	9.404E-06	PASS
SN	1.20	3.60	0.0002653	PASS
SB	2.00	6.00	0.0001128	PASS
TE	7.50	22.50	5.811E-07	PASS
CS	0.20	0.60	2.883E-05	PASS
BA	0.90	2.70	2.63E-05	PASS
LA	0.90	2.70	2.28E-05	PASS
CE	4.00	12.00	2.698E-05	PASS
PR	0.90	2.70	2.049E-05	PASS
ND	0.90	2.70	3.125E-06	PASS
SM	4.00	12.00	6.007E-06	PASS
HF	4.00	12.00	2.026E-05	PASS
TA	4.00	12.00	0.0014983	PASS
W	2.00	6.00	0.0003416	PASS
RE	0.40	1.20	1.823E-05	PASS
PT	0.40	1.20	3.36E-05	PASS
AU	5.00	15.00	0.0001996	PASS
TL	0.90	2.70	0.0004192	PASS
(PB 206)	1.00	3.00	0.0002819	PASS
(PB 207)	1.00	3.00	0.0003107	PASS
PB	1.00	3.00	0.0011767	PASS
BI	7.50	22.50	0.0007812	PASS
TH	0.90	2.70	0.0002304	PASS
U	0.40	1.20	6.811E-05	PASS

Analyst:
Instrument: 7700
Calibration File: 121019B2
Matrix: Soil
Units: PPB

Element	MDL	3XMDL	Y-Intercept	Pass/Fail
LI	4.00	12.00	0.053514	PASS
BE	0.40	1.20	0.000030	PASS
B	45.00	135.00	0.001735	PASS
NA	75.00	225.00	0.096592	PASS
MG	25.00	75.00	0.002248	PASS
AL	20.00	60.00	0.001906	PASS
P	200.00	600.00	0.000504	PASS
K	40.00	120.00	0.221243	PASS
CA	100.00	300.00	0.011510	PASS
TI	2.40	7.20	0.000141	PASS
V	4.00	12.00	0.010976	PASS
CR	4.50	13.50	0.007703	PASS
MN	2.00	6.00	0.000835	PASS
FE	20.00	60.00	0.001440	PASS
CO	0.75	2.25	0.001371	PASS
NI	2.00	6.00	0.000465	PASS
CU	4.00	12.00	0.023296	PASS
ZN	20.00	60.00	0.001672	PASS
AS	4.00	12.00	0.000543	PASS
SE	3.20	9.60	0.000145	PASS
SR	2.40	7.20	0.000751	PASS
Y	4.00	12.00	0.000446	PASS
ZR	4.00	12.00	0.000684	PASS
NB	12.00	36.00	0.013310	PASS
MO	2.00	6.00	0.000973	PASS
RU	4.00	12.00	0.000221	PASS
RH	4.00	12.00	0.002012	PASS
PD	0.40	1.20	0.000283	PASS
AG	0.75	2.25	0.000031	PASS
CD	0.24	0.72	0.000009	PASS
SN	0.90	2.70	0.000265	PASS
SB	2.00	6.00	0.000113	PASS
TE	4.00	12.00	0.000001	PASS
CS	2.00	6.00	0.000029	PASS
BA	5.00	15.00	0.000026	PASS
LA	0.75	2.25	0.000023	PASS
CE	4.00	12.00	0.000027	PASS
PR	0.75	2.25	0.000020	PASS
ND	0.75	2.25	0.000003	PASS
SM	4.00	12.00	0.000006	PASS
HF	4.00	12.00	0.000020	PASS
TA	4.00	12.00	0.001498	PASS
W	10.00	30.00	0.000342	PASS
RE	4.00	12.00	0.000018	PASS
PT	0.40	1.20	0.000034	PASS
AU	2.00	6.00	0.000200	PASS
TL	2.00	6.00	0.000419	PASS
(PB 206)	1.25	3.75	0.000282	PASS
(PB 207)	1.25	3.75	0.000311	PASS
PB	1.25	3.75	0.001177	PASS
BI	7.50	22.50	0.000781	PASS
TH	0.90	2.70	0.000230	PASS
U	0.40	1.20	0.000068	PASS

121019B2-2

Tune Ste	Mass	Name	R	a	b (blank)	DL	BEC	Units
3	7	Li	0.999999	0.006016	0.05676572	0.127087	9.435928	ug/l
3	9	Be	0.999992	0.001859	1.31205E-05	0.001299	0.007057	ug/l
3	11	B	0.999863	0.001357	0.002268853	0.163721	1.671956	ug/l
2	23	Na	0.999997	0.009592	0.101207246	0.907037	10.55123	ug/l
2	24	Mg	0.999987	0.004957	0.003302944	0.439267	0.666267	ug/l
2	27	Al	0.999914	0.002086	0.002224605	0.461381	1.066191	ug/l
2	31	P	0.999985	0.000145	0.000486685	4.296118	3.356615	ug/l
2	39	K	0.999961	0.005381	0.217322182	0.609427	40.38953	ug/l
3	44	Ca	0.999981	0.000529	0.008143239	0.648923	15.38029	ug/l
3	47	Ti	0.999999	0.001495	0.00016981	0.007593	0.11362	ug/l
2	51	V	0.999628	0.05914	0.008837624	0.03188	0.149435	ug/l
2	52	Cr	0.999989	0.072041	0.006904482	0.012986	0.095842	ug/l
2	55	Mn	0.999438	0.017525	0.001017138	0.035317	0.05804	ug/l
2	57	Fe	0.999835	0.000602	0.001577283	0.230049	2.621984	ug/l
2	59	Co	0.999979	0.042668	0.001418758	0.001772	0.033251	ug/l
2	60	Ni	0.999946	0.010297	0.000325536	0.006064	0.031613	ug/l
2	63	Cu	0.999965	0.029613	0.017414716	0.082129	0.588067	ug/l
2	66	Zn	0.999951	0.005544	0.001679702	0.035088	0.302955	ug/l
2	75	As	0.999909	0.003935	0.000345747	0.020968	0.087872	ug/l
2	78	Se	0.99988	0.000298	0.000217105	0.302902	0.727789	ug/l
3	88	Sr	0.999994	0.033336	0.000676237	0.005852	0.020286	ug/l
2	89	Y	0.999882	0.052637	0.000536665	0.002473	0.010196	ug/l
2	90	Zr	0.999912	0.040071	0.00077129	0.009097	0.019248	ug/l
2	93	Nb	0.996428	0.078265	0.010573728	0.025324	0.135102	ug/l
3	95	Mo	0.99937	0.006322	0.000561134	0.003483	0.088758	ug/l
2	101	Ru	0.999756	0.022013	0.000298979	0.000797	0.013582	ug/l
2	103	Rh	0.999926	0.127415	0.002139003	0.004308	0.016788	ug/l
2	105	Pd	0.999884	0.023615	4.99826E-05	0.003299	0.002117	ug/l
3	107	Ag	0.998165	0.002645	3.58546E-05	0.001486	0.013554	ug/l
3	111	Cd	0.99895	0.000557	4.70473E-06	0.001079	0.008444	ug/l
3	118	Sn	0.999959	0.001587	0.000213368	0.012113	0.134452	ug/l
3	121	Sb	0.999979	0.002052	4.55192E-05	0.000823	0.022183	ug/l
2	125	Te	0.999829	2.67E-05	6.40735E-07	0.095561	0.023963	ug/l
2	133	Cs	0.999964	0.002134	2.95456E-05	0.00175	0.013846	ug/l
3	137	Ba	0.999819	0.000709	2.82708E-05	0.017189	0.039856	ug/l
2	139	La	0.99999	0.004513	3.02824E-05	0.001818	0.00671	ug/l
2	140	Ce	0.999933	0.005157	3.77694E-05	0.002933	0.007325	ug/l
2	141	Pr	0.999982	0.005338	3.43434E-05	0.00382	0.006434	ug/l
2	146	Nd	0.999105	0.000982	4.54023E-06	0.007764	0.004625	ug/l
3	147	Sm	0.999993	0.001053	7.06229E-06	0.007569	0.006705	ug/l
2	178	Hf	0.999972	0.002068	2.19174E-05	0.002358	0.010598	ug/l
2	181	Ta	0.999893	0.008266	0.001341526	0.010027	0.162299	ug/l
2	182	W	0.999986	0.002063	0.000365504	0.051624	0.177178	ug/l
3	185	Re	0.999982	0.004571	2.80486E-05	0.001088	0.006136	ug/l
2	195	Pt	0.999981	0.00199	3.80453E-05	0.00867	0.019122	ug/l
3	197	Au	0.99998	0.00347	0.000145901	0.007655	0.042044	ug/l
3	205	Tl	0.999953	0.007491	0.000118873	0.003428	0.015869	ug/l
3	206	(Pb)	0.999986	0.002569	0.000247021	0.014827	0.096142	ug/l
3	207	(Pb)	0.999998	0.002239	0.000283503	0.025029	0.126611	ug/l
3	208	Pb	0.999991	0.010234	0.001086449	0.011006	0.106158	ug/l
2	209	Bi	0.999844	0.007868	0.000565424	0.00642	0.071868	ug/l
3	232	Th	0.999979	0.01185	0.000154581	0.000953	0.013045	ug/l
3	238	U	0.999998	0.011157	6.06291E-05	0.000743	0.005434	ug/l
3	6	Li (IS)						ug/l
2	45	Sc (IS)						ug/l
3	45	Sc (IS)						ug/l
2	72	Ge (IS)						ug/l
3	72	Ge (IS)						ug/l
3	115	In (IS)						ug/l
2	165	Ho (IS)						ug/l
3	165	Ho (IS)						ug/l
2	193	Ir (IS)						ug/l
3	193	Ir (IS)						ug/l

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Metals Y Intercept

Analyst: LKP
Instrument: 7700
Calibration File: 121019B2
Matrix: Water
Units: PPB

Date: 12/11/2019

Element	MDL	3XMDL	Y-Intercept	Pass/Fail
LI	2.00	6.00	0.0567657	PASS
BE	0.20	0.60	1.312E-05	PASS
B	45.00	135.00	0.0022689	PASS
NA	20.00	60.00	0.1012072	PASS
MG	20.00	60.00	0.0033029	PASS
AL	20.00	60.00	0.0022246	PASS
P	45.00	135.00	0.0004867	PASS
K	45.00	135.00	0.2173222	PASS
CA	45.00	135.00	0.0081432	PASS
TI	2.00	6.00	0.0001698	PASS
V	4.00	12.00	0.0088376	PASS
CR	4.00	12.00	0.0069045	PASS
MN	0.90	2.70	0.0010171	PASS
FE	20.00	60.00	0.0015773	PASS
CO	0.90	2.70	0.0014188	PASS
NI	2.00	6.00	0.0003255	PASS
CU	0.40	1.20	0.0174147	PASS
ZN	7.50	22.50	0.0016797	PASS
AS	4.00	12.00	0.0003457	PASS
SE	2.00	6.00	0.0002171	PASS
SR	2.00	6.00	0.0006762	PASS
Y	2.00	6.00	0.0005367	PASS
ZR	2.00	6.00	0.0007713	PASS
NB	10.00	30.00	0.0105737	PASS
MO	2.00	6.00	0.0005611	PASS
RU	4.00	12.00	0.000299	PASS
RH	4.00	12.00	0.002139	PASS
PD	0.20	0.60	4.998E-05	PASS
AG	0.90	2.70	3.585E-05	PASS
CD	0.20	0.60	4.705E-06	PASS
SN	1.20	3.60	0.0002134	PASS
SB	2.00	6.00	4.552E-05	PASS
TE	7.50	22.50	6.407E-07	PASS
CS	0.20	0.60	2.955E-05	PASS
BA	0.90	2.70	2.827E-05	PASS
LA	0.90	2.70	3.028E-05	PASS
CE	4.00	12.00	3.777E-05	PASS
PR	0.90	2.70	3.434E-05	PASS
ND	0.90	2.70	4.54E-06	PASS
SM	4.00	12.00	7.062E-06	PASS
HF	4.00	12.00	2.192E-05	PASS
TA	4.00	12.00	0.0013415	PASS
W	2.00	6.00	0.0003655	PASS
RE	0.40	1.20	2.805E-05	PASS
PT	0.40	1.20	3.805E-05	PASS
AU	5.00	15.00	0.0001459	PASS
TL	0.90	2.70	0.0001189	PASS
(PB 206)	1.00	3.00	0.000247	PASS
(PB 207)	1.00	3.00	0.0002835	PASS
PB	1.00	3.00	0.0010864	PASS
BI	7.50	22.50	0.0005654	PASS
TH	0.90	2.70	0.0001546	PASS
U	0.40	1.20	6.063E-05	PASS

Analyst:
Instrument: 7700
Calibration File: 121019B2
Matrix: Soil
Units: PPB

Element	MDL	3XMDL	Y-Intercept	Pass/Fail
LI	4.00	12.00	0.056766	PASS
BE	0.40	1.20	0.000013	PASS
B	45.00	135.00	0.002269	PASS
NA	75.00	225.00	0.101207	PASS
MG	25.00	75.00	0.003303	PASS
AL	20.00	60.00	0.002225	PASS
P	200.00	600.00	0.000487	PASS
K	40.00	120.00	0.217322	PASS
CA	100.00	300.00	0.008143	PASS
TI	2.40	7.20	0.000170	PASS
V	4.00	12.00	0.008838	PASS
CR	4.50	13.50	0.006904	PASS
MN	2.00	6.00	0.001017	PASS
FE	20.00	60.00	0.001577	PASS
CO	0.75	2.25	0.001419	PASS
NI	2.00	6.00	0.000326	PASS
CU	4.00	12.00	0.017415	PASS
ZN	20.00	60.00	0.001680	PASS
AS	4.00	12.00	0.000346	PASS
SE	3.20	9.60	0.000217	PASS
SR	2.40	7.20	0.000676	PASS
Y	4.00	12.00	0.000537	PASS
ZR	4.00	12.00	0.000771	PASS
NB	12.00	36.00	0.010574	PASS
MO	2.00	6.00	0.000561	PASS
RU	4.00	12.00	0.000299	PASS
RH	4.00	12.00	0.002139	PASS
PD	0.40	1.20	0.000050	PASS
AG	0.75	2.25	0.000036	PASS
CD	0.24	0.72	0.000005	PASS
SN	0.90	2.70	0.000213	PASS
SB	2.00	6.00	0.000046	PASS
TE	4.00	12.00	0.000001	PASS
CS	2.00	6.00	0.000030	PASS
BA	5.00	15.00	0.000028	PASS
LA	0.75	2.25	0.000030	PASS
CE	4.00	12.00	0.000038	PASS
PR	0.75	2.25	0.000034	PASS
ND	0.75	2.25	0.000005	PASS
SM	4.00	12.00	0.000007	PASS
HF	4.00	12.00	0.000022	PASS
TA	4.00	12.00	0.001342	PASS
W	10.00	30.00	0.000366	PASS
RE	4.00	12.00	0.000028	PASS
PT	0.40	1.20	0.000038	PASS
AU	2.00	6.00	0.000146	PASS
TL	2.00	6.00	0.000119	PASS
(PB 206)	1.25	3.75	0.000247	PASS
(PB 207)	1.25	3.75	0.000284	PASS
PB	1.25	3.75	0.001086	PASS
BI	7.50	22.50	0.000565	PASS
TH	0.90	2.70	0.000155	PASS
U	0.40	1.20	0.000061	PASS

	Method	Type	Vial	Sample	Comment	Dil/Lvl	ISTD Conc
1		Keyword		Start of TUNE			
2		Keyword		TN_6020.U			
3		Keyword		1307			
4		Keyword		End of TUNE			
5		Keyword		Start of SMPL			
6	C:\ICPMH\1\METHODS\MET_2014.m	6-Blank	1	RINSE (453933)		1.000	Level 1
7	C:\ICPMH\1\METHODS\MET_2014.m	CalBlk	4	ICIS 1843378		Level 1	Level 1
8	C:\ICPMH\1\METHODS\MET_2014.m	CalStd	1101	IC 1847444		Level 2	Level 1
9	C:\ICPMH\1\METHODS\MET_2014.m	CalStd	1102	IC 1847445		Level 3	Level 1
10	C:\ICPMH\1\METHODS\MET_2014.m	CalStd	1103	IC 1847446		Level 4	Level 1
11	C:\ICPMH\1\METHODS\MET_2014.m	ICV	1104	ICV 1848645		1.000	Level 1
12	C:\ICPMH\1\METHODS\MET_2014.m	ICB	4	ICB 1843378		1.000	Level 1
13	C:\ICPMH\1\METHODS\MET_2014.m	CRI	1101	CRI 1847444		1.000	Level 1
14	C:\ICPMH\1\METHODS\MET_2014.m	ICSA	1105	ICSA 1845716		1.000	Level 1
15	C:\ICPMH\1\METHODS\MET_2014.m	ICSAB	1106	ICSAB 1845717		1.000	Level 1
16	C:\ICPMH\1\METHODS\MET_2014.m	Sample	1301	LRC 1841695		1.000	Level 1
17	C:\ICPMH\1\METHODS\MET_2014.m	Sample	1302	LRC 1841696		1.000	Level 1
18	C:\ICPMH\1\METHODS\MET_2014.m	CCV	1102	CCV 1847445		1.000	Level 1
19	C:\ICPMH\1\METHODS\MET_2014.m	CCB	4	CCB 1843378		1.000	Level 1
20	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2101	LB 160-453305/1-C	453488	10.0 ~~2.000~~	Level 1
21	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2102	LCS 160-453488/2-A		10.0 ~~2.000~~	Level 1
22	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2103	160-36545-A-1-B		10.0 ~~2.000~~	Level 1
23	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2104	160-36545-A-1-B SD -U		10.00	Level 1
24	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2105	160-36545-A-1-C MS		10.0 ~~2.000~~	Level 1
25	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2106	160-36545-A-1-D MSD		2.000	Level 1
26	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2107	MB 160-452973/1-A	452973	2.000	Level 1
27	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2108	LCS 160-452973/2-A		2.000	Level 1
28	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2109	280-131342-E-2-A		2.000	Level 1
29	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2110	280-131342-E-3-A		2.000	Level 1
30	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2111	280-131342-E-3-A SD -All		10.00	Level 1
31	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2112	280-131342-E-3-B MS		2.000	Level 1
32	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2201	280-131342-E-3-C MSD		2.000	Level 1
33	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2202	280-131342-E-4-A		2.000	Level 1

LKP 12/11/19

LKP 121019 File:121019B2 Inst: 7700 Tune:1848444 Is:1848475 PIA:1844739 Rinse:1843378

	Method	Type	Vial	Sample	Comment	Dil/Lvl	ISTD Conc
34	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2203	280-131342-E-5-A		2.000	Level 1
35	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2204	280-131342-E-6-A -All		2.000	Level 1
36	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2205	280-131342-E-7-A		2.000	Level 1
37	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2206	MB 160-452721/1-A	452721	2.000	Level 1
38	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2207	LCS 160-452721/2-A		2.000	Level 1
39	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2208	160-36400-A-7-B		2.000	Level 1
40	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2209	160-36400-A-8-B		2.000	Level 1
41	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2210	160-36400-A-10-B		2.000	Level 1
42	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2211	160-36400-A-11-B		2.000	Level 1
43	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2212	160-36419-A-12-D		2.000	Level 1
44	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2301	160-36419-A-12-D SD		10.00	Level 1
45	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2302	160-36419-A-12-E MS		2.000	Level 1
46	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2303	160-36419-A-12-F MSD - Be, Cd, Ni		2.000	Level 1
47	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2304	160-36419-A-12-D PDS		2.000	Level 1
48	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2305	160-36419-A-13-B		2.000	Level 1
49	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2306	160-36424-A-18-B		2.000	Level 1
50	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2307	160-36424-A-19-B		2.000	Level 1
51	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2308	MB 160-452611/1-A	452611	2.000	Level 1
52	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2309	LCS 160-452611/2-A		2.000	Level 1
53	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2310	LCSSRM 160-452611/3-A		2.000	Level 1
54	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2311	160-36526-B-1-A		2.000	Level 1
55	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2312	160-36526-B-2-A		2.000	Level 1
56	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2401	160-36526-B-3-A		2.000	Level 1
57	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2402	160-36526-B-4-A		2.000	Level 1
58	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2403	160-36526-B-5-A		2.000	Level 1
59	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2404	160-36526-B-6-A -Th, Li		2.000	Level 1
60	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2405	160-36526-B-7-A		2.000	Level 1
61	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2406	160-36526-B-8-A		2.000	Level 1
62	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2407	160-36526-B-9-A		2.000	Level 1
63	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2408	160-36526-B-10-A		2.000	Level 1
64	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2409	160-36526-B-11-A		2.000	Level 1
65	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2410	160-36526-B-11-A SD		10.00	Level 1
66	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2411	160-36526-B-11-B DU		2.000	Level 1

	Method	Type	Vial	Sample	Comment	Dil/Lvl	ISTD Conc
67	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2412	160-36526-B-11-C MS		2.000	Level 1
68	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2501	160-36526-B-11-D MSD		2.000	Level 1
69	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2502	160-36526-B-12-A		2.000	Level 1
70	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2503	160-36526-B-13-A		2.000	Level 1
71	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2504	160-36526-B-14-A		2.000	Level 1
72	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2505	160-36526-B-15-A		2.000	Level 1
73	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2506	160-36526-B-16-A -Th, Li		2.000	Level 1
74	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2507	160-36526-B-17-A		2.000	Level 1
75	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2508	160-36526-B-18-A		2.000	Level 1
76	C:\ICPMH\1\METHODS\MET_2014.m	Sample	2509	160-36526-B-19-A		2.000	Level 1
77	C:\ICPMH\1\METHODS\MET_2014.m	CRI	1101	CCVL 1847444		1.000	Level 1
78	C:\ICPMH\1\METHODS\MET_2014.m	CCV	1102	CCV 1847445		1.000	Level 1
79	C:\ICPMH\1\METHODS\MET_2014.m	CCB	4	CCB 1843378		1.000	Level 1
80	C:\ICPMH\1\METHODS\MET_2014.m	6-Blank	1	RINSE (453935)		1.000	Level 1
81	C:\ICPMH\1\METHODS\MET_2014.m	CalBlk	4	ICIS 1843378		Level 1	Level 1
82	C:\ICPMH\1\METHODS\MET_2014.m	CalStd	1101	IC 1847444		Level 2	Level 1
83	C:\ICPMH\1\METHODS\MET_2014.m	CalStd	1102	IC 1847445		Level 3	Level 1
84	C:\ICPMH\1\METHODS\MET_2014.m	CalStd	1103	IC 1847446		Level 4	Level 1
85	C:\ICPMH\1\METHODS\MET_2014.m	ICV	1104	ICV 1848645		1.000	Level 1
86	C:\ICPMH\1\METHODS\MET_2014.m	ICB	4	ICB 1843378		1.000	Level 1
87	C:\ICPMH\1\METHODS\MET_2014.m	CRI	1101	CRI 1847444		1.000	Level 1
88	C:\ICPMH\1\METHODS\MET_2014.m	ICSA	1105	ICSA 1845716		1.000	Level 1
89	C:\ICPMH\1\METHODS\MET_2014.m	ICSAB	1106	ICSAB 1845717		1.000	Level 1
90	C:\ICPMH\1\METHODS\MET_2014.m	CCV	1102	CCV 1847445		1.000	Level 1
91	C:\ICPMH\1\METHODS\MET_2014.m	CCB	4	CCB 1843378		1.000	Level 1
92	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3101	MB 160-453190/1-A	453190	2.000	Level 1
93	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3102	LCS 160-453190/2-A		2.000	Level 1
94	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3103	160-36587-D-2-A		2.000	Level 1
95	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3104	160-36587-D-2-A SD -Tl		10.00	Level 1
96	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3105	160-36587-D-2-B MS		2.000	Level 1
97	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3106	160-36587-D-2-C MSD		2.000	Level 1
98	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3107	MB 160-452612/1-A - Th, Li	452612	2.000	Level 1
99	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3108	LCS 160-452612/2-A		2.000	Level 1

	Method	Type	Vial	Sample	Comment	Dil/Lvl	ISTD Conc
100	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3109	LCSSRM 160-452612/3-A		10.00	Level 1
101	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3110	160-36526-B-20-A		2.000	Level 1
102	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3111	160-36526-B-20-A SD		10.00	Level 1
103	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3112	160-36526-B-20-B MS		2.000	Level 1
104	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3201	160-36526-B-20-C MSD		2.000	Level 1
105	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3202	160-36526-B-21-A -TH, LI		2.000	Level 1
106	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3203	160-36526-B-22-A		2.000	Level 1
107	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3204	280-130833-A-1-G		2.000	Level 1
108	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3205	280-130833-A-2-F -TH		10.00	Level 1
109	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3206	~~MB 160-452936/1-A~~	452936	2.000	Level 1
110	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3207	LCS 160-452936/2-A		2.000	Level 1
111	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3208	460-196683-D-2-A		2.000	Level 1
112	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3209	460-196683-D-2-A SD		10.00	Level 1
113	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3210	460-196683-D-2-B MS LKP		2.000	Level 1
114	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3211	460-196683-D-2-C MSD 12/11/19		2.000	Level 1
115	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3212	~~460-196683-D-2-A PDS~~		2.000	Level 1
116	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3301	MB 160-453489/1-A	453489	2.000	Level 1
117	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3302	LCS 160-453489/2-A		2.000	Level 1
118	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3303	280-131403-B-1-A		2.000	Level 1
119	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3304	280-131403-B-2-A		2.000	Level 1
120	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3305	280-131403-B-2-A SD		10.00	Level 1
121	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3306	280-131403-B-2-B MS		2.000	Level 1
122	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3307	280-131403-B-2-C MSD -All		2.000	Level 1
123	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3308	280-131403-B-2-D MS		2.000	Level 1
124	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3309	280-131403-B-2-E MSD		2.000	Level 1
125	C:\ICPMH\1\METHODS\MET_2014.m	Sample	3310	280-131403-B-2-A PDS		2.000	Level 1
126		Keyword		End of SMPL			
127		Keyword		Start of CCV			
128	C:\ICPMH\1\METHODS\MET_2014.m	CRI	1101	CCVL 1847444		1.000	Level 1
129	C:\ICPMH\1\METHODS\MET_2014.m	CCV	1102	CCV 1847445		1.000	Level 1
130	C:\ICPMH\1\METHODS\MET_2014.m	CCB	4	CCB 1843378		1.000	Level 1
131		Keyword		End of CCV			
132		Keyword		Start of TERM			

	Method	Type	Vial	Sample	Comment	Dil/Lvl	ISTD Conc
133		Keyword					
134		Keyword		End of TERM			
135		Keyword		End of Sequence			
136		Keyword		Start of CALIB			
137		Keyword		End of CALIB			
138		Keyword		Start of BLANK			
139		Keyword		End of BLANK			
140		Keyword		Start of ERRTERM			
141		Keyword		End of ERRTERM			

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, St. Louis Job Number: 160-36526-1

SDG No.:

Project: ACMS - Yerington OU-4B_OU-5_SOIL

Client Sample ID	Lab Sample ID
STSB27_0-0.5	160-36526-1
STSB27_0.5-3	160-36526-2
STSB27_3-6	160-36526-3
STSB27_6-15	160-36526-4
STSB28_0-0.5	160-36526-5
STSB28-FD_0-0.5	160-36526-6
STSB28_0.5-3	160-36526-7
STSB28_3-6	160-36526-8
STSB28_6-15	160-36526-9
STSB29_0-0.5	160-36526-10
STSB29_0.5-3	160-36526-11
STSB29_3-6	160-36526-12
STSB29_6-15	160-36526-13
STSB29-FD_6-15	160-36526-14
STSB30_0-0.5	160-36526-15
STSB30_0.5-3	160-36526-16
STSB30_3-6	160-36526-17
STSB30_6-15	160-36526-18
STSB31_0-0.5	160-36526-19
STSB31_0.5-3	160-36526-20
STSB31_3-6	160-36526-21
STSB31_6-15	160-36526-22

Comments:

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, St. Louis Job Number: 160-36526-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: Moisture RL Date: 01/28/2011 14:43

Analyte	Wavelength/ Mass	RL (%)	
Percent Moisture		0.1	
Percent Solids		0.1	

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, St. Louis Job Number: 160-36526-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: Moisture XRL Date: 01/28/2011 14:42

Analyte	Wavelength/ Mass	XRL (%)	
Percent Moisture		0.1	
Percent Solids		0.1	

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Instrument ID: NOEQUIP Analysis Method: Moisture

Start Date: 11/28/2019 11:12 End Date: 11/28/2019 11:12

Lab Sample Id	D/F	Type	Time	Analytes																							
				% Sol	Moist																						
160-36526-1	1	T	11:12	X	X																						
160-36526-2	1	T	11:12	X	X																						
160-36526-3	1	T	11:12	X	X																						
160-36526-4	1	T	11:12	X	X																						
160-36526-5	1	T	11:12	X	X																						
160-36526-6	1	T	11:12	X	X																						
160-36526-7	1	T	11:12	X	X																						
160-36526-8	1	T	11:12	X	X																						
160-36526-9	1	T	11:12	X	X																						
160-36526-10	1	T	11:12	X	X																						
160-36526-11	1	T	11:12	X	X																						
160-36526-12	1	T	11:12	X	X																						
160-36526-13	1	T	11:12	X	X																						
160-36526-14	1	T	11:12	X	X																						
160-36526-15	1	T	11:12	X	X																						
160-36526-16	1	T	11:12	X	X																						
160-36526-17	1	T	11:12	X	X																						
160-36526-18	1	T	11:12	X	X																						
160-36526-19	1	T	11:12	X	X																						
160-36526-20	1	T	11:12	X	X																						
160-36526-20 DU	1	T	11:12	X	X																						

Prep Types:
T = Total/NA

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, St. Louis Job No.: 160-36526-1

SDG No.:

Instrument ID: NOEQUIP Analysis Method: Moisture

Start Date: 11/28/2019 12:00 End Date: 11/28/2019 12:00

Lab Sample Id	D/F	Type	Time	Analytes																							
				% Sol	Moist																						
ZZZZZZ			12:00																								
ZZZZZZ			12:00																								
ZZZZZZ			12:00																								
ZZZZZZ			12:00																								
160-36526-21	1	T	12:00	X	X																						
160-36526-22	1	T	12:00	X	X																						
ZZZZZZ			12:00																								
ZZZZZZ			12:00																								
ZZZZZZ			12:00																								
160-36453-A-23 DU	1	T	12:00	X	X																						
ZZZZZZ			12:00																								
ZZZZZZ			12:00																								
ZZZZZZ			12:00																								
ZZZZZZ			12:00																								
ZZZZZZ			12:00																								

Prep Types:
T = Total/NA

FORM XIII-IN

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, St. Loui Job No.: 160-36526-1

SDG No.:

Batch Number: 452332 Batch Start Date: 11/28/19 11:12 Batch Analyst: Patel, Kaushal P

Batch Method: Moisture Batch End Date: 12/02/19 13:54

Lab Sample ID	Client Sample ID	Method Chain	Basis	DISH#	DishWeight	SampleMassWet	SampleMassDry		
160-36526-B-1	STSB27_0-0.5	Moisture	T	1	0.9982 g	16.3344 g	16.0973 g		
160-36526-B-2	STSB27_0.5-3	Moisture	T	2	1.0128 g	15.1648 g	14.7001 g		
160-36526-B-3	STSB27_3-6	Moisture	T	3	1.0008 g	16.4696 g	15.7777 g		
160-36526-B-4	STSB27_6-15	Moisture	T	4	1.0094 g	15.4721 g	14.2399 g		
160-36526-B-5	STSB28_0-0.5	Moisture	T	5	0.9999 g	15.6181 g	14.8774 g		
160-36526-B-6	STSB28-FD_0-0.5	Moisture	T	6	1.0071 g	14.9891 g	14.2653 g		
160-36526-B-7	STSB28_0.5-3	Moisture	T	7	0.9949 g	15.5437 g	14.8895 g		
160-36526-B-8	STSB28_3-6	Moisture	T	8	1.0209 g	14.6054 g	13.9711 g		
160-36526-B-9	STSB28_6-15	Moisture	T	9	1.0041 g	13.2865 g	11.2075 g		
160-36526-B-10	STSB29_0-0.5	Moisture	T	10	1.0060 g	16.7711 g	16.0587 g		
160-36526-B-11	STSB29_0.5-3	Moisture	T	11	1.0092 g	16.8122 g	16.0929 g		
160-36526-B-12	STSB29_3-6	Moisture	T	12	1.0055 g	14.1441 g	13.5790 g		
160-36526-B-13	STSB29_6-15	Moisture	T	13	1.0049 g	14.2046 g	13.1757 g		
160-36526-B-14	STSB29-FD_6-15	Moisture	T	14	1.0112 g	16.9566 g	15.3739 g		
160-36526-B-15	STSB30_0-0.5	Moisture	T	15	1.0040 g	17.4058 g	16.5536 g		
160-36526-B-16	STSB30_0.5-3	Moisture	T	16	1.0019 g	16.8312 g	16.0108 g		
160-36526-B-17	STSB30_3-6	Moisture	T	17	1.0099 g	16.2672 g	15.5816 g		
160-36526-B-18	STSB30_6-15	Moisture	T	18	1.0064 g	14.8811 g	12.6347 g		
160-36526-B-19	STSB31_0-0.5	Moisture	T	19	1.0145 g	15.4397 g	14.3128 g		
160-36526-B-20	STSB31_0.5-3	Moisture	T	20	0.9967 g	16.2963 g	15.4468 g		
160-36526-B-20 DU	STSB31_0.5-3	Moisture	T	21	1.0053 g	18.5479 g	17.6455 g		

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.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, St. Loui Job No.: 160-36526-1

SDG No.:

Batch Number: 452332 Batch Start Date: 11/28/19 11:12 Batch Analyst: Patel, Kaushal P

Batch Method: Moisture Batch End Date: 12/02/19 13:54

Batch Notes	
Balance ID	0034150065
Batch Comment	TRAY -E1
Date samples were placed in the oven	11/28/2019
Oven Temp In	103.8 Degrees C
Time samples were place in the oven	11:54
Date samples were removed from oven	12/02/2019
Oven Temp Out	104.0 Degrees C
Time Samples were removed from oven	13:54
Oven ID	OC
Thermometer ID	A142186

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.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, St. Loui Job No.: 160-36526-1

SDG No.:

Batch Number: 452334 Batch Start Date: 11/28/19 12:00 Batch Analyst: Patel, Kaushal P

Batch Method: Moisture Batch End Date: 12/02/19 13:54

Lab Sample ID	Client Sample ID	Method Chain	Basis	DISH#	DishWeight	SampleMassWet	SampleMassDry		
160-36526-B-21	STSB31_3-6	Moisture	T	5	1.0094 g	19.1137 g	18.0496 g		
160-36526-B-22	STSB31_6-15	Moisture	T	6	1.0106 g	10.9784 g	10.4492 g		
160-36453-A-23 DU		Moisture	T	10	1.0103 g	11.7326 g	11.5456 g		

Batch Notes	
Balance ID	0034150065
Batch Comment	TRAY G-2
Date samples were placed in the oven	11/28/2019
Oven Temp In	104 Degrees C
Time samples were place in the oven	12:26
Date samples were removed from oven	12/02/2019
Oven Temp Out	104.0 Degrees C
Time Samples were removed from oven	13:54
Oven ID	OC
Thermometer ID	A142186

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.

GAMMA SPECTROSCOPY

Method 901.1
Ra-226

Radium-226 & Other Gamma Emitters (GS) by Method 901.1

Prep Batch: 452567

Fill Geometry, 21-Day In-Growth

Gamma Spectroscopy Analysis Detail Report
Prep Batch: 452567

Lab Id: MB 160-452567/1-A | Analyzed: 12/25/19 10:44 | Ts: 30 | Sigma: 2
Client ID: | Detector: GV16 | Decay Corrected: No | Ingrowth:

Analyte	MB Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	-0.05823	0.152	0.152	U	pCi/g	1.00	0.355	455099
Radium-228	-0.01981	0.167	0.167	U	pCi/g	1.00	0.249	455099

Lab Id: LCS 160-452567/2-A | Analyzed: 12/25/19 10:46 | Ts: 30 | Sigma: 2
Client ID: | Detector: GV17 | Decay Corrected: No | Ingrowth:

Analyte	LCS Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Americium-241	94.90	1.54	9.97		pCi/g		1.11	455100
Cesium-137	27.06	0.655	2.89		pCi/g		0.218	455100
Cobalt-60	10.48	0.335	1.10		pCi/g		0.0972	455100

Lab Id: 160-36526-1 | Analyzed: 12/25/19 08:19 | Ts: 30 | Sigma: 2
Client ID: STSB27_0-0.5 | Detector: GV16 | Decay Corrected: No | Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	1.68	0.215	0.277		pCi/g	1.00	0.145	455099
Radium-228	0.731	0.258	0.269		pCi/g	1.00	0.244	455099

Lab Id: 160-36526-2 | Analyzed: 12/25/19 08:19 | Ts: 30 | Sigma: 2
Client ID: STSB27_0.5-3 | Detector: GV17 | Decay Corrected: No | Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	2.01	0.230	0.311		pCi/g	1.00	0.146	455100
Radium-228	0.787	0.188	0.204		pCi/g	1.00	0.197	455100

Lab Id: 160-36526-3 | Analyzed: 12/25/19 08:20 | Ts: 30 | Sigma: 2
Client ID: STSB27_3-6 | Detector: GV5 | Decay Corrected: No | Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	1.96	0.254	0.326		pCi/g	1.00	0.146	455104
Radium-228	0.702	0.218	0.229		pCi/g	1.00	0.279	455104

Lab Id: 160-36526-4 | Analyzed: 12/25/19 09:01 | Ts: 30 | Sigma: 2
Client ID: STSB27_6-15 | Detector: GV16 | Decay Corrected: No | Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	1.69	0.247	0.303		pCi/g	1.00	0.168	455099
Radium-228	1.11	0.312	0.332		pCi/g	1.00	0.310	455099

Gamma Spectroscopy Analysis Detail Report
Prep Batch: 452567

Lab Id: 160-36526-5 | Analyzed: 12/25/19 09:02 | Ts: 30 | Sigma: 2
Client ID: STSB28_0-0.5 | Detector: GV17 | Decay Corrected: No | Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	1.93	0.216	0.295		pCi/g	1.00	0.113	455100
Radium-228	0.863	0.225	0.242		pCi/g	1.00	0.258	455100

Lab Id: 160-36526-6 | Analyzed: 12/25/19 09:03 | Ts: 30 | Sigma: 2
Client ID: STSB28-FD_0-0.5 | Detector: GV5 | Decay Corrected: No | Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	1.77	0.255	0.315		pCi/g	1.00	0.175	455104
Radium-228	0.807	0.249	0.262		pCi/g	1.00	0.213	455104

Lab Id: 160-36526-7 | Analyzed: 12/25/19 09:34 | Ts: 30 | Sigma: 2
Client ID: STSB28_0.5-3 | Detector: GV9 | Decay Corrected: No | Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	2.72	0.238	0.370		pCi/g	1.00	0.120	455101
Radium-228	0.684	0.205	0.216		pCi/g	1.00	0.354	455101

Lab Id: 160-36526-8 | Analyzed: 12/25/19 09:35 | Ts: 30 | Sigma: 2
Client ID: STSB28_3-6 | Detector: GV12 | Decay Corrected: No | Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	3.11	0.317	0.448		pCi/g	1.00	0.181	455102
Radium-228	1.13	0.229	0.256		pCi/g	1.00	0.0977	455102

Lab Id: 160-36526-9 | Analyzed: 12/25/19 09:35 | Ts: 30 | Sigma: 2
Client ID: STSB28_6-15 | Detector: GV14 | Decay Corrected: No | Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	2.28	0.339	0.413		pCi/g	1.00	0.205	455098
Radium-228	1.98	0.337	0.393		pCi/g	1.00	0.174	455098

Lab Id: 160-36526-10 | Analyzed: 12/25/19 09:36 | Ts: 30 | Sigma: 2
Client ID: STSB29_0-0.5 | Detector: GV16 | Decay Corrected: No | Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	1.22	0.230	0.263		pCi/g	1.00	0.175	455099
Radium-228	0.740	0.165	0.181		pCi/g	1.00	0.245	455099

Gamma Spectroscopy Analysis Detail Report
Prep Batch: 452567

Lab Id: 160-36526-11 Analyzed: 12/25/19 09:36 Ts: 30 Sigma: 2
Client ID: STSB29_0.5-3 Detector: GV17 Decay Corrected: No Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	1.34	0.209	0.251		pCi/g	1.00	0.137	455100
Radium-228	0.962	0.177	0.202		pCi/g	1.00	0.0877	455100

Lab Id: 160-36526-11 DU Analyzed: 12/25/19 10:10 Ts: 30 Sigma: 2
Client ID: STSB29_0.5-3 Detector: GV9 Decay Corrected: No Ingrowth:

Analyte	DU Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	1.419	0.231	0.274		pCi/g	1.00	0.162	455101
Radium-228	0.6580	0.230	0.240		pCi/g	1.00	0.209	455101

Lab Id: 160-36526-12 Analyzed: 12/25/19 09:37 Ts: 30 Sigma: 2
Client ID: STSB29_3-6 Detector: GV5 Decay Corrected: No Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	1.14	0.253	0.280		pCi/g	1.00	0.242	455104
Radium-228	1.16	0.290	0.314		pCi/g	1.00	0.331	455104

Lab Id: 160-36526-13 Analyzed: 12/25/19 10:11 Ts: 30 Sigma: 2
Client ID: STSB29_6-15 Detector: GV12 Decay Corrected: No Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	1.79	0.360	0.404		pCi/g	1.00	0.291	455102
Radium-228	1.33	0.345	0.371		pCi/g	1.00	0.206	455102

Lab Id: 160-36526-14 Analyzed: 12/25/19 10:11 Ts: 30 Sigma: 2
Client ID: STSB29-FD_6-15 Detector: GV14 Decay Corrected: No Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	1.66	0.279	0.328		pCi/g	1.00	0.207	455098
Radium-228	1.42	0.229	0.271		pCi/g	1.00	0.212	455098

Lab Id: 160-36526-15 Analyzed: 12/25/19 10:12 Ts: 30 Sigma: 2
Client ID: STSB30_0-0.5 Detector: GV16 Decay Corrected: No Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	2.82	0.274	0.401		pCi/g	1.00	0.167	455099
Radium-228	0.735	0.286	0.296		pCi/g	1.00	0.279	455099

Gamma Spectroscopy Analysis Detail Report
Prep Batch: 452567

Lab Id: 160-36526-16 Analyzed: 12/25/19 10:13 Ts: 30 Sigma: 2
Client ID: STSB30_0.5-3 Detector: GV17 Decay Corrected: No Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	2.35	0.240	0.343		pCi/g	1.00	0.120	455100
Radium-228	0.832	0.235	0.250		pCi/g	1.00	0.173	455100

Lab Id: 160-36526-17 Analyzed: 12/25/19 10:14 Ts: 30 Sigma: 2
Client ID: STSB30_3-6 Detector: GV5 Decay Corrected: No Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	2.15	0.288	0.364		pCi/g	1.00	0.181	455104
Radium-228	0.972	0.302	0.317		pCi/g	1.00	0.230	455104

Lab Id: 160-36526-18 Analyzed: 12/25/19 10:42 Ts: 30 Sigma: 2
Client ID: STSB30_6-15 Detector: GV9 Decay Corrected: No Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	2.17	0.303	0.377		pCi/g	1.00	0.200	455101
Radium-228	1.43	0.274	0.310		pCi/g	1.00	0.203	455101

Lab Id: 160-36526-19 Analyzed: 12/25/19 10:43 Ts: 30 Sigma: 2
Client ID: STSB31_0-0.5 Detector: GV12 Decay Corrected: No Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	4.73	0.425	0.643		pCi/g	1.00	0.245	455102
Radium-228	0.866	0.338	0.349		pCi/g	1.00	0.530	455102

Lab Id: 160-36526-20 Analyzed: 12/25/19 10:43 Ts: 30 Sigma: 2
Client ID: STSB31_0.5-3 Detector: GV14 Decay Corrected: No Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	3.60	0.308	0.485		pCi/g	1.00	0.144	455098
Radium-228	0.970	0.225	0.246		pCi/g	1.00	0.216	455098

Gamma Spectroscopy Analysis Detail Report
Prep Batch: 452567

Quality Control Summary

Method Blank ID:	Analyte	Parent Result	Spike Added	MB Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	DER Limit	Z Factor
MB 160-452567/1-A	Radium-226			-0.05823	U	pCi/g							-.7679
MB 160-452567/1-A	Radium-228			-0.01981	U	pCi/g							-.2378
Lab Control Sample ID:	**Analyte**	**Parent Result**	**Spike Added**	**LCS Result**	**Qualifier**	**Unit**	**% Rec**	**% Rec Limits**	**RPD**	**RER**	**DER**	**DER Limit**	**Z Factor**
LCS 160-452567/2-A	Americium-241		96.6	94.90		pCi/g	98	75 - 125					-.3184
LCS 160-452567/2-A	Cesium-137		27.3	27.06		pCi/g	99	75 - 125					-.1774
LCS 160-452567/2-A	Cobalt-60		10.8	10.48		pCi/g	97	75 - 125					-.4623
Duplicate ID:	**Analyte**	**Parent Result**	**Spike Added**	**DU Result**	**Qualifier**	**Unit**	**% Rec**	**% Rec Limits**	**RPD**	**RER**	**DER**	**DER Limit**	**Z Factor**
160-36526-11	Radium-226	1.34		1.419		pCi/g			6	0.15	0.41	2	.4125
160-36526-11	Radium-228	0.962		0.6580		pCi/g			38	0.69	1.94	2	1.9401

Glossary:

Ts = Count Duration, Sample

GAMMA SPECTROSCOPY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, St. Loui Job No.: 160-36526-1

SDG No.:

Batch Number: 452567 Batch Start Date: 12/01/19 08:08 Batch Analyst: Small, Sean J

Batch Method: Fill_Geo-21 Batch End Date: 12/01/19 10:11

Lab Sample ID	Client Sample ID	Method Chain	Basis	TareWeight	GrossWeight	InitialAmount	IngDecDate1	IngDecDate3	Geometry
MB 160-452567/1		Fill_Geo-21, 901.1				291.18 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
LCS 160-452567/2		Fill_Geo-21, 901.1				341.9 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-1-A	STSB27_0-0.5	Fill_Geo-21, 901.1	T	46.5 g	453.8 g	407.3 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-2-A	STSB27_0.5-3	Fill_Geo-21, 901.1	T	46.4 g	462.3 g	415.9 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-3-A	STSB27_3-6	Fill_Geo-21, 901.1	T	46.4 g	475.4 g	429 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-4-A	STSB27_6-15	Fill_Geo-21, 901.1	T	46.6 g	370.5 g	323.9 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-5-A	STSB28_0-0.5	Fill_Geo-21, 901.1	T	46.7 g	450.3 g	403.6 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-6-A	STSB28-FD_0-0.5	Fill_Geo-21, 901.1	T	46.6 g	459.4 g	412.8 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-7-A	STSB28_0.5-3	Fill_Geo-21, 901.1	T	46.5 g	452.9 g	406.4 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-8-A	STSB28_3-6	Fill_Geo-21, 901.1	T	46.9 g	431.9 g	385 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-9-A	STSB28_6-15	Fill_Geo-21, 901.1	T	46.6 g	271.1 g	224.5 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-10-A	STSB29_0-0.5	Fill_Geo-21, 901.1	T	46.7 g	451.2 g	404.5 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-11-A	STSB29_0.5-3	Fill_Geo-21, 901.1	T	46.5 g	429.7 g	383.2 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-11-B DU	STSB29_0.5-3	Fill_Geo-21, 901.1	T	46.5 g	429.7 g	383.2 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-12-A	STSB29_3-6	Fill_Geo-21, 901.1	T	46.4 g	378.5 g	332.1 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-13-A	STSB29_6-15	Fill_Geo-21, 901.1	T	46.0 g	313.7 g	267.7 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-14-A	STSB29-FD_6-15	Fill_Geo-21, 901.1	T	46.3 g	330.0 g	283.7 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-15-A	STSB30_0-0.5	Fill_Geo-21, 901.1	T	46.6 g	439.9 g	393.3 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-16-A	STSB30_0.5-3	Fill_Geo-21, 901.1	T	46.2 g	449.9 g	403.7 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-17-A	STSB30_3-6	Fill_Geo-21, 901.1	T	46.4 g	454.1 g	407.7 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-18-A	STSB30_6-15	Fill_Geo-21, 901.1	T	46.1 g	290.2 g	244.1 g	12/1/19 09:25	12/22/19 09:25	Tuna Can

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.

GAMMA SPECTROSCOPY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, St. Loui Job No.: 160-36526-1

SDG No.:

Batch Number: 452567 Batch Start Date: 12/01/19 08:08 Batch Analyst: Small, Sean J

Batch Method: Fill_Geo-21 Batch End Date: 12/01/19 10:11

Lab Sample ID	Client Sample ID	Method Chain	Basis	TareWeight	GrossWeight	InitialAmount	IngDecDate1	IngDecDate3	Geometry
160-36526-A-19-A	STSB31_0-0.5	Fill_Geo-21, 901.1	T	46.2 g	404.9 g	358.7 g	12/1/19 09:25	12/22/19 09:25	Tuna Can
160-36526-A-20-A	STSB31_0.5-3	Fill_Geo-21, 901.1	T	46.5 g	455.2 g	408.7 g	12/1/19 09:25	12/22/19 09:25	Tuna Can

Lab Sample ID	Client Sample ID	Method Chain	Basis	Tuna Can LCS 00009					
MB 160-452567/1		Fill_Geo-21, 901.1							
LCS 160-452567/2		Fill_Geo-21, 901.1		# g					
160-36526-A-1-A	STSB27_0-0.5	Fill_Geo-21, 901.1	T						
160-36526-A-2-A	STSB27_0.5-3	Fill_Geo-21, 901.1	T						
160-36526-A-3-A	STSB27_3-6	Fill_Geo-21, 901.1	T						
160-36526-A-4-A	STSB27_6-15	Fill_Geo-21, 901.1	T						
160-36526-A-5-A	STSB28_0-0.5	Fill_Geo-21, 901.1	T						
160-36526-A-6-A	STSB28-FD_0-0.5	Fill_Geo-21, 901.1	T						
160-36526-A-7-A	STSB28_0.5-3	Fill_Geo-21, 901.1	T						
160-36526-A-8-A	STSB28_3-6	Fill_Geo-21, 901.1	T						
160-36526-A-9-A	STSB28_6-15	Fill_Geo-21, 901.1	T						
160-36526-A-10-A	STSB29_0-0.5	Fill_Geo-21, 901.1	T						
160-36526-A-11-A	STSB29_0.5-3	Fill_Geo-21, 901.1	T						
160-36526-A-11-B DU	STSB29_0.5-3	Fill_Geo-21, 901.1	T						
160-36526-A-12-A	STSB29_3-6	Fill_Geo-21, 901.1	T						
160-36526-A-13-A	STSB29_6-15	Fill_Geo-21, 901.1	T						
160-36526-A-14-A	STSB29-FD_6-15	Fill_Geo-21, 901.1	T						

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.

GAMMA SPECTROSCOPY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, St. Loui Job No.: 160-36526-1

SDG No.:

Batch Number: 452567 Batch Start Date: 12/01/19 08:08 Batch Analyst: Small, Sean J

Batch Method: Fill_Geo-21 Batch End Date: 12/01/19 10:11

Lab Sample ID	Client Sample ID	Method Chain	Basis	Tuna Can LCS 00009					
160-36526-A-15-A	STSB30_0-0.5	Fill_Geo-21, 901.1	T						
160-36526-A-16-A	STSB30_0.5-3	Fill_Geo-21, 901.1	T						
160-36526-A-17-A	STSB30_3-6	Fill_Geo-21, 901.1	T						
160-36526-A-18-A	STSB30_6-15	Fill_Geo-21, 901.1	T						
160-36526-A-19-A	STSB31_0-0.5	Fill_Geo-21, 901.1	T						
160-36526-A-20-A	STSB31_0.5-3	Fill_Geo-21, 901.1	T						

Batch Notes	
Balance ID	1121432711
SOP Number	ST-RC-0003, ST-RC-0025

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.

Test America St. Louis Spectrum ID: 16_Gamma_20192292

Sample Description: 452567_Gamma_MB 160-452567~1-A
Detector: Detector #16
Batch ID: 452567
Work Order Number: Gamma
Lot Number: MB 160-452567~1-A

Decay to Time: 12/25/2019 10:44 Live Time: 1800 sec
Acquisition Time: 12/25/2019 10:44:33 Real Time: 1805 sec
Analysis Time: 12/25/2019 11:14 Dead Time: 0.25 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 16_Soil_TunaCan.Clb
Efficiency Cal Desc: 16_TunaCan_90099_071012
Efficiency Cal Date: 7/13/2012 09:47
Energy Cal Date: 2/28/2012 09:35
Library: Client_Long_Rev15.lib
Bkgd Correction File: 16_2019-12-07_1450.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	2.200E+00	105.1	2.313E+00	2.316E+00	7.919E+00
NA-22	-3.302E-01	105.5	3.484E-01	3.488E-01	1.315E+00
K-40	1.118E+00	262.1	2.929E+00	2.930E+00	1.079E+01
Sc-46	2.499E-01	103.3	2.581E-01	2.584E-01	8.951E-01
CR-51	-2.955E+00	45.2	1.336E+00	1.345E+00	1.581E+01
MN-54	-4.297E-01	103.3	4.438E-01	4.443E-01	1.012E+00
FE-59	7.152E-01	29.7	2.121E-01	2.151E-01	6.888E-01
Co-56	4.850E-02	621.3	3.013E-01	3.013E-01	9.019E-01
CO-57	7.357E-02	216.5	1.593E-01	1.593E-01	5.514E-01
CO-58	2.271E-01	95.2	2.162E-01	2.165E-01	7.477E-01
CO-60	3.959E-01	30.1	1.191E-01	1.208E-01	4.617E-01
ZN-65	2.529E-01	255.9	6.470E-01	6.472E-01	2.349E+00
NB-94	1.289E-07	260031205.0	3.351E-01	3.351E-01	1.209E+00
ZR-95	-1.817E-01	211.2	3.838E-01	3.840E-01	1.251E+00
NB-95	0.000E+00	1.#INF	8.074E-02	8.074E-02	1.093E+00
RU-103	5.341E-02	519.7	2.776E-01	2.776E-01	7.128E-01
RH-106	2.528E+00	138.4	3.500E+00	3.502E+00	1.205E+01
AG-108M	3.057E-01	51.9	1.586E-01	1.594E-01	3.719E-01
AG-110M	-2.057E-02	2056.7	4.232E-01	4.232E-01	1.557E+00
SN-113	-8.968E-04	30609.6	2.745E-01	2.745E-01	1.784E+00
SB-124	1.685E-01	116.6	1.965E-01	1.966E-01	1.720E+00
SB-125	1.101E+00	75.7	8.331E-01	8.350E-01	2.186E+00
I-131	2.372E-01	99.0	2.348E-01	2.351E-01	6.742E-01
Gd-153	-6.741E-01	180.6	1.218E+00	1.218E+00	4.083E+00
Ga-68	-1.289E+01	135.3	1.743E+01	1.745E+01	3.931E+01
Tc-99m	0.000E+00	1.#INF	3.476E-02	3.476E-02	9.923E-01
BA-133	-3.577E-01	113.2	4.048E-01	4.052E-01	1.379E+00
CS-134	3.885E-01	82.1	3.191E-01	3.198E-01	1.081E+00
CS-137	2.630E-01	126.7	3.333E-01	3.336E-01	1.154E+00
CE-139	0.000E+00	1.#INF	1.515E-01	1.515E-01	6.977E-01
Ba-140	1.247E-01	131.0	1.634E-01	1.635E-01	3.103E+00
La-140	2.338E-01	106.4	2.489E-01	2.492E-01	1.061E+00
CE-141	-4.131E-01	148.1	6.116E-01	6.120E-01	2.057E+00

CE-144	0.000E+00	1.#INF	7.833E-01	7.833E-01	7.595E+00
PM-144	-8.850E-02	366.2	3.241E-01	3.241E-01	1.153E+00
EU-152	1.253E+00	64.8	8.115E-01	8.142E-01	1.510E+00
EU-154	6.053E-01	83.9	5.077E-01	5.087E-01	1.134E+00
EU-155	-3.221E-03	24588.2	7.919E-01	7.919E-01	5.845E+00
HF-181	1.588E-01	307.4	4.883E-01	4.884E-01	1.231E+00
Ta-182	-5.119E-02	1920.9	9.834E-01	9.834E-01	3.643E+00
Hg-203	-2.733E-01	92.8	2.538E-01	2.542E-01	8.572E-01
TL-208	-1.924E-01	65.5	1.261E-01	1.265E-01	1.089E+00
PM-146	-3.224E-01	74.5	2.403E-01	2.408E-01	1.220E+00
Y-88	-3.062E-01	149.0	4.561E-01	4.565E-01	1.175E+00
Cd-113m	-3.915E+03	81.3	3.182E+03	3.192E+03	1.068E+04
Cd-109	-5.472E+00	172.2	9.423E+00	9.428E+00	3.161E+01
Cf-251	1.863E+00	49.4	9.199E-01	9.347E-01	2.297E+00
Cf-249	-6.958E-02	717.7	4.994E-01	4.994E-01	1.737E+00
Sn-126	1.518E+00	159.1	2.415E+00	2.417E+00	8.222E+00
PB-210	1.145E+01	69.6	7.971E+00	7.999E+00	2.163E+01
PB-212	-1.614E-01	310.7	5.014E-01	5.015E-01	1.774E+00
PB-214	4.956E-01	85.4	4.234E-01	4.242E-01	1.324E+00
BI-207	-1.061E+00	45.9	4.864E-01	4.893E-01	1.777E+00
BI-212	0.000E+00	1.#INF	2.408E+00	2.408E+00	1.236E+01
U-235	-1.828E+00	90.3	1.651E+00	1.654E+00	7.816E+00
BI-214	-6.274E-01	130.1	8.164E-01	8.170E-01	3.826E+00
BI-210M	-1.070E-01	426.1	4.557E-01	4.558E-01	1.537E+00
AC-228	-2.135E-01	420.4	8.975E-01	8.976E-01	2.682E+00
TH-227	5.920E-01	127.5	7.550E-01	7.558E-01	9.083E+00
TH-229	5.659E+00	46.6	2.634E+00	2.673E+00	7.672E+00
TH-234	7.241E+00	37.0	2.678E+00	2.708E+00	8.196E+00
PA-231	0.000E+00	1.#INF	4.019E+00	4.019E+00	4.812E+01
PA-233	0.000E+00	1.#INF	2.962E-01	2.962E-01	3.935E+00
PA-234	-5.322E-01	252.5	1.344E+00	1.344E+00	4.565E+00
PA-234M	2.474E+01	166.7	4.123E+01	4.125E+01	1.379E+02
AM-241	2.121E-01	353.9	7.507E-01	7.508E-01	2.570E+00
Np-237	-2.120E+00	66.0	1.400E+00	1.405E+00	9.746E+00
Ir-192	0.000E+00	1.#INF	4.855E-02	4.855E-02	1.644E+00
Cs-136	1.554E-01	116.1	1.803E-01	1.806E-01	1.032E+00
Np-239	-9.401E-01	180.3	1.695E+00	1.696E+00	5.677E+00
Nd-147	1.150E+00	98.5	1.132E+00	1.134E+00	2.936E+00
TL-210	5.544E-02	550.4	3.051E-01	3.051E-01	1.107E+00
Kr-85	0.000E+00	1.#INF	1.975E+01	1.975E+01	3.026E+02
Total	6.783E+01				

Analyst: Caleb Quinn

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Sample description
452567_Gamma_MB 160-452567~1-A

Spectrum Filename: C:\User\SPC\Det16\16_Gamma_20192292.An1

Acquisition information
Start time: 12/25/2019 10:44:33 AM
Live time: 1800
Real time: 1805
Dead time: 0.25 %
Detector ID: 16

Detector system
Ge16 SN/11012217

Calibration
Filename: 16_Soil_TunaCan.Clb
16_TunaCan_90099_071012

Energy Calibration
Created: 2/28/2012 9:35:31 AM
Zero offset: 0.050 keV
Gain: 0.250 keV/channel
Quadratic: -2.285E-08 keV/channel^2

Efficiency Calibration
Created: 7/13/2012 9:47:24 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.01 %
Log(Eff): 1.477416E-02 + (-5.514266E-01*Log(E)) + (-1.443482E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.17 %
Log(Eff): -2.408438E+01 + (8.948554E+00*Log(E)) + (-9.513599E-01*Log(E)^2)

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.06keV)
Stop channel: 8000 (1999.64keV)
Peak rejection level: 1000.000%
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

(Page 3 of 21)

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	12/25/2019 10:44:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	16_2019-12-07_1450.PBC 12/7/2019 2:50:17 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 3 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1639

***** 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
46.43	21.	69.60	0.68	2.352E-02	46.54	4.250	PBC<MDA	PB210
50.14	5.	306.30	0.96	2.644E-02	50.14	8.000	PBC<MDA	TH227
59.54	5.	353.86	0.97	3.327E-02	59.54	35.900	PBC<MDA	AM241
63.41	24.	52.07	1.25	3.561E-02	63.29	3.810	PBC<MDA	TH234
64.28	10.	159.14	0.98	3.619E-02	64.28	9.700	PBC<MDA	Sn126
80.99	13.	114.95	0.99	4.361E-02	80.99	34.060	PBC<MDA	BA133
92.79	56.	21.87	0.81	4.642E-02	92.59	5.584	PBC<MDA	TH234
					93.35	5.561	PBC<MDA	AC228
121.78	11.	96.07	1.03	4.731E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	1.552E-01	CO57
122.06	5.	216.46	1.03	4.729E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	7.357E-02	CO57
162.66	9.	131.00	1.07	4.136E-02	162.66	6.220	PBC<MDA	Ba140
176.60	23.	49.39	1.08	3.977E-02	176.60	17.000	PBC<MDA	Cf251
185.72	24.	54.25	1.09	3.839E-02	185.72	54.000	PBC<MDA	U235
193.51	20.	46.56	1.09	3.730E-02	193.51	4.400	PBC<MDA	TH229
205.33	3.	421.12	1.11	3.577E-02	205.33	5.010	PBC<MDA	U235
210.85	8.	161.08	1.11	3.511E-02	210.85	2.990	PBC<MDA	TH229
235.97	9.	127.54	1.13	3.242E-02	235.97	12.300	PBC<MDA	TH227
238.63	-4.	310.75	1.14	3.216E-02	238.63	43.300	PBC<MDA	PB212
241.75	5.	246.65	1.14	3.185E-02	242.00	7.430	PBC<MDA	PB214
244.69	8.	148.22	1.14	3.160E-02	244.69	7.580	PBC<MDA	EU152

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
277.28	9.	88.03	1.17	2.890E-02	277.28	6.310	PBC<MDA	TL208
345.83	3.	895.18	1.23	2.467E-02	345.83	15.070	PBC<MDA	HF181
352.00	8.	85.45	1.91	2.436E-02	351.93	37.600	PBC<MDA	PB214
364.48	2.	443.47	1.25	2.375E-02	364.48	81.700	PBC<MDA	I131
427.88	10.	103.73	1.31	2.115E-02	427.88	29.600	PBC<MDA	SB125
433.94	10.	51.90	1.31	2.093E-02	433.94	90.480	PBC<MDA	AG108M
463.37	7.	113.90	1.34	1.996E-02	463.37	10.470	PBC<MDA	SB125
477.60	8.	105.15	1.35	1.952E-02	477.60	10.520	PBC<MDA	BE7
482.00	3.	307.45	1.35	1.939E-02	482.00	80.500	PBC<MDA	HF181
487.02	8.	118.39	1.36	1.925E-02	487.02	45.500	PBC<MDA	La140
497.05	2.	519.69	1.37	1.896E-02	497.05	90.900	PBC<MDA	RU103
511.86	48.	21.25	2.63	1.856E-02	511.86	20.000	7.184E+00	RH106
531.00	5.	98.49	1.40	1.807E-02	531.00	13.000	PBC<MDA	Nd147
621.92	7.	138.45	1.48	1.609E-02	621.92	9.930	PBC<MDA	RH106
635.89	3.	166.67	1.49	1.583E-02	635.89	11.310	PBC<MDA	SB125
636.97	5.	98.97	1.49	1.581E-02	636.97	7.170	PBC<MDA	I131
661.66	6.	126.70	1.51	1.537E-02	661.66	85.210	PBC<MDA	CS137
722.79	5.	116.59	1.57	1.439E-02	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	2.266E-01	AG108M
					723.36	20.220	1.019E+00	EU154
747.16	5.	96.61	1.59	1.404E-02	747.16	34.000	PBC<MDA	PM146
766.41	4.	166.69	1.60	1.378E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	PBC<MDA	PA234M
795.87	8.	82.15	1.63	1.340E-02	795.87	85.530	PBC<MDA	CS134
799.60	1.	550.37	1.63	1.335E-02	799.60	98.960	PBC<MDA	TL210
810.78	5.	95.18	1.64	1.322E-02	810.78	99.460	PBC<MDA	CO58
815.77	6.	106.44	1.65	1.316E-02	815.77	23.280	PBC<MDA	La140
818.50	2.	281.92	1.65	1.312E-02	818.50	100.000	PBC<MDA	Cs136
846.77	1.	857.32	1.67	1.280E-02	846.77	99.935	PBC<MDA	Co56
880.53	3.	252.49	1.70	1.243E-02	880.53	6.000	PBC<MDA	PA234
889.28	6.	103.30	1.71	1.234E-02	889.28	99.984	PBC<MDA	Sc46
911.07	-1.	420.44	1.73	1.211E-02	911.07	29.000	PBC<MDA	AC228
996.33	6.	83.87	1.80	1.133E-02	996.33	10.600	PBC<MDA	EU154
1001.00	2.	296.91	1.81	1.129E-02	1001.00	0.837	PBC<MDA	PA234M
1048.07	4.	116.06	1.84	1.091E-02	1048.07	80.000	PBC<MDA	Cs136
1099.25	6.	45.72	1.89	1.052E-02	1099.25	56.500	PBC<MDA	FE59
1112.07	7.	80.99	1.90	1.043E-02	1112.07	13.644	PBC<MDA	EU152
1115.55	2.	255.89	1.90	1.041E-02	1115.55	50.600	PBC<MDA	ZN65
1173.24	7.	41.22	1.95	1.002E-02	1173.24	99.900	PBC<MDA	CO60
1238.28	1.	899.50	2.00	9.617E-03	1238.28	66.070	PBC<MDA	Co56
1291.60	7.	37.80	2.05	9.314E-03	1291.60	43.200	PBC<MDA	FE59
1332.50	7.	43.85	2.08	9.097E-03	1332.50	99.980	PBC<MDA	CO60
1460.83	2.	262.08	2.19	8.482E-03	1460.83	10.670	PBC<MDA	K40

No unknown peaks passed sensitivity test.

This section based on library: Client_Long_Rev15.lib

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********** 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	185.41	46.43	60.	21.	0.011	69.60	0.682s
TH-227	200.26	50.14	107.	5.	0.003	306.30	0.963s
AM-241	237.83	59.54	127.	5.	0.003	353.86	0.971s
TH-234	253.31	63.41	45.	24.	0.013	52.07	1.248s
Sn-126	256.79	64.28	112.	10.	0.005	159.14	0.976s
BA-133	323.60	80.99	56.	13.	0.007	114.95	0.991
Np-237	345.59	86.49	470.	-23.	-0.013	66.02	0.996s
EU-155	345.80	86.54	448.	-17.	-0.009	178.05	0.996s
Sn-126	347.39	86.94	431.	-17.	-0.009	174.67	0.997s
Sn-126	349.91	87.57	414.	-17.	-0.009	171.14	0.997s
Cd-109	351.79	88.04	419.	-17.	-0.009	172.22	0.998s
Nd-147	364.02	91.10	436.	-17.	-0.009	175.13	1.001s
TH-234	370.79	92.79	58.	26.	0.014	52.52	0.806
AC-228	373.02	93.35	460.	-24.	-0.013	60.61	1.003s
Gd-153	389.61	97.50	470.	-17.	-0.010	180.64	1.007s
Np-239	397.61	99.50	488.	-6.	-0.004	488.53	1.008s
Gd-153	412.40	103.20	494.	0.	0.000	1000.00	1.012s
Np-239	414.40	103.70	494.	0.	0.000	1000.00	1.012s
Np-239	424.11	106.13	536.	-18.	-0.010	180.28	1.014s
EU-152	486.69	121.78	53.	11.	0.006	96.07	1.029s
CO-57	487.81	122.06	65.	5.	0.003	216.46	1.029s
PA-234	524.73	131.29	200.	-8.	-0.004	252.49	1.038s
HF-181	531.64	133.02	208.	0.	0.000	1000.00	1.039s
CE-144	533.70	133.54	208.	0.	0.000	1000.00	1.040s
HF-181	544.74	136.30	208.	0.	0.000	1000.00	1.042
CO-57	545.43	136.47	208.	0.	0.000	1000.00	1.042
Tc-99m	561.57	140.51	208.	0.	0.000	1000.00	1.046s
U-235	574.67	143.79	202.	-16.	-0.009	90.32	1.049s
CE-141	581.29	145.44	270.	-16.	-0.009	148.07	1.050s
Ba-140	650.14	162.66	65.	9.	0.005	131.00	1.066s
U-235	653.01	163.38	79.	-9.	-0.005	143.59	1.067s
CE-139	662.90	165.85	70.	0.	0.000	1000.00	1.069s
Cf-251	705.88	176.60	29.	23.	0.013	49.39	1.079s
U-235	742.34	185.72	40.	24.	0.013	54.25	1.087s
TH-229	773.49	193.51	18.	20.	0.011	46.56	1.094s
U-235	820.76	205.33	44.	3.	0.002	421.12	1.105s
TH-229	842.82	210.85	44.	8.	0.004	161.08	1.110s
Cf-251	907.40	227.00	33.	-3.	-0.002	362.86	1.125s
TH-227	943.27	235.97	59.	9.	0.005	127.54	1.133s
PB-212	953.91	238.63	80.	-4.	-0.002	310.75	1.136s
PB-214	967.37	242.00	71.	5.	0.003	246.65	1.139s
EU-152	978.14	244.69	65.	8.	0.004	148.22	1.141s
TH-227	1024.32	256.24	48.	-5.	-0.003	274.95	1.152s
Cd-113m	1054.15	263.70	47.	-13.	-0.007	81.28	1.158s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
BI-210M	1062.67	265.83	68.	-3.	-0.002	426.06	1.160s
TL-208	1108.46	277.28	24.	9.	0.005	88.03	1.171s
Hg-203	1116.13	279.20	52.	-12.	-0.006	92.85	1.173
I-131	1136.52	284.30	56.	-15.	-0.009	49.83	1.177
PB-214	1179.67	295.09	176.	-18.	-0.010	34.26	1.187
TL-210	1183.31	296.00	181.	-12.	-0.006	165.57	1.188
PB-212	1199.42	300.03	193.	-2.	-0.001	989.35	1.191s
PA-231	1199.58	300.07	195.	0.	0.000	1000.00	1.192s
PA-233	1200.02	300.18	195.	0.	0.000	1000.00	1.192s
PA-231	1209.90	302.65	195.	0.	0.000	1000.00	1.194s
BA-133	1210.70	302.85	195.	0.	0.000	1000.00	1.194s
Ba-140	1218.69	304.85	195.	0.	0.000	1000.00	1.196s
BI-210M	1218.88	304.90	195.	0.	0.000	1000.00	1.196s
Ir-192	1233.05	308.44	195.	0.	0.000	1000.00	1.199s
PA-233	1247.34	312.01	195.	0.	0.000	1000.00	1.202s
Ir-192	1265.24	316.49	195.	0.	0.000	1000.00	1.206s
CR-51	1279.62	320.08	232.	-14.	-0.008	45.22	1.210s
La-140	1314.31	328.76	238.	-16.	-0.009	38.21	1.217
Cf-249	1333.02	333.44	254.	-16.	-0.009	139.24	1.222s
AC-228	1352.54	338.32	275.	-21.	-0.012	34.24	1.226s
Cs-136	1361.54	340.57	287.	-17.	-0.009	146.95	1.228s
EU-152	1376.40	344.29	304.	-17.	-0.010	41.86	1.231s
HF-181	1382.56	345.83	284.	3.	0.001	895.18	1.233s
PB-214	1407.23	352.00	17.	8.	0.005	85.45	1.910s
BA-133	1423.24	356.00	55.	-10.	-0.005	113.17	1.242
I-131	1457.16	364.48	20.	2.	0.001	443.47	1.250s
BA-133	1534.57	383.84	78.	-13.	-0.007	55.33	1.267s
Cf-249	1551.01	387.95	90.	-2.	-0.001	717.68	1.271s
SB-125	1710.67	427.88	22.	10.	0.005	103.73	1.307s
AG-108M	1734.91	433.94	5.	10.	0.006	51.90	1.312s
PM-146	1814.67	453.88	32.	-8.	-0.004	74.54	1.330s
SB-125	1852.61	463.37	32.	7.	0.004	113.90	1.338s
Ir-192	1871.38	468.06	45.	-6.	-0.003	163.30	1.342s
BE-7	1909.51	477.60	32.	8.	0.005	105.15	1.351s
HF-181	1927.12	482.00	47.	3.	0.002	307.45	1.355s
La-140	1947.21	487.02	43.	8.	0.005	118.39	1.359s
RU-103	1987.33	497.05	17.	2.	0.001	519.69	1.368s
RH-106	2046.57	511.86	28.	48.	0.027	21.25	2.631s
Kr-85	2055.03	513.98	76.	0.	0.000	1000.00	1.383s
Nd-147	2123.10	531.00	4.	5.	0.003	98.49	1.398s
Ba-140	2148.14	537.26	22.	-3.	-0.001	361.53	1.404s
CS-134	2252.03	563.24	39.	-15.	-0.008	89.51	1.427s
CS-134	2276.36	569.32	27.	-4.	-0.002	190.39	1.432s
PA-234	2276.96	569.47	31.	0.	0.000	1000.00	1.432s
BI-207	2277.89	569.70	35.	-4.	-0.002	221.61	1.432s
TL-208	2331.16	583.02	29.	-10.	-0.006	97.05	1.444s
SB-125	2401.07	600.50	93.	-9.	-0.005	150.00	1.460s
CS-134	2417.91	604.71	103.	0.	0.000	1000.00	1.463s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
BI-214	2436.31	609.31	111.	-8.	-0.005	130.12	1.467s
RU-103	2440.26	610.30	103.	0.	0.000	1000.00	1.468s
AG-108M	2456.19	614.28	103.	0.	0.000	1000.00	1.472s
PM-144	2471.31	618.06	103.	0.	0.000	1000.00	1.475s
RH-106	2486.73	621.92	47.	7.	0.004	138.45	1.479s
SB-125	2542.62	635.89	11.	3.	0.002	166.67	1.491s
I-131	2546.96	636.97	8.	5.	0.003	98.97	1.492s
AG-110M	2630.10	657.76	37.	-12.	-0.007	93.15	1.510s
CS-137	2645.69	661.66	28.	6.	0.003	126.70	1.513s
PM-144	2785.22	696.54	35.	-2.	-0.001	366.17	1.544s
SB-124	2890.19	722.79	17.	5.	0.003	116.59	1.567
AG-108M	2890.80	722.94	22.	0.	0.000	1000.00	1.567
EU-154	2892.49	723.36	22.	0.	0.000	1000.00	1.567
BI-212	2907.73	727.17	21.	0.	0.000	1000.00	1.570s
PM-146	2941.93	735.72	33.	-15.	-0.008	87.57	1.578s
PM-146	2987.69	747.16	5.	5.	0.003	96.61	1.588s
ZR-95	3025.97	756.73	9.	-2.	-0.001	211.21	1.596s
AG-110M	3054.82	763.94	25.	-3.	-0.001	270.42	1.602
NB-95	3062.21	765.79	27.	0.	0.000	1000.00	1.604s
PA-234M	3064.70	766.41	23.	4.	0.002	166.69	1.605s
EU-152	3114.73	778.92	14.	-4.	-0.002	204.63	1.615s
BI-212	3140.74	785.42	14.	-6.	-0.003	138.44	1.621s
CS-134	3182.54	795.87	18.	8.	0.004	82.15	1.630s
TL-210	3197.46	799.60	26.	1.	0.001	550.37	1.633s
CS-134	3206.86	801.95	45.	-11.	-0.006	88.84	1.635s
CO-58	3242.16	810.78	10.	5.	0.003	95.18	1.643s
La-140	3262.14	815.77	16.	6.	0.003	106.44	1.647s
Cs-136	3273.06	818.50	22.	2.	0.001	281.92	1.649s
MN-54	3338.46	834.85	20.	-10.	-0.006	103.28	1.663s
Co-56	3386.15	846.77	15.	1.	0.001	857.32	1.674s
TL-208	3441.33	860.56	11.	-3.	-0.001	209.64	1.685s
NB-94	3483.47	871.10	23.	-11.	-0.006	70.16	1.695s
EU-154	3492.00	873.23	43.	-9.	-0.005	110.44	1.696
PA-234	3521.21	880.53	21.	3.	0.001	252.49	1.703s
PA-234	3532.05	883.24	24.	0.	0.000	1000.00	1.705s
Sc-46	3556.21	889.28	14.	6.	0.003	103.30	1.710s
Y-88	3591.26	898.04	16.	-7.	-0.004	88.54	1.718s
AC-228	3643.38	911.07	9.	-1.	-0.001	420.44	1.729s
AG-110M	3749.09	937.49	15.	-3.	-0.002	289.64	1.751s
PA-234	3783.21	946.02	15.	-6.	-0.003	147.67	1.759s
EU-152	3855.58	964.11	16.	-2.	-0.001	253.55	1.774s
AC-228	3875.02	968.97	20.	-2.	-0.001	286.57	1.778s
EU-154	3984.48	996.33	11.	6.	0.003	83.87	1.801s
PA-234M	4003.15	1001.00	20.	2.	0.001	296.91	1.805s
Co-56	4150.56	1037.84	11.	-7.	-0.004	117.90	1.836s
Cs-136	4191.49	1048.07	6.	4.	0.002	116.06	1.845s
RH-106	4200.65	1050.36	10.	0.	0.000	927.36	1.847s
BI-207	4253.86	1063.66	24.	-15.	-0.009	45.86	1.858s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Ga-68	4308.84	1077.40	16.	-7.	-0.004	135.27	1.870s
FE-59	4396.27	1099.25	0.	6.	0.003	45.72	1.888s
EU-152	4447.58	1112.07	11.	7.	0.004	80.99	1.899s
ZN-65	4461.46	1115.55	18.	2.	0.001	255.89	1.901s
BI-214	4480.43	1120.29	24.	-4.	-0.002	99.36	1.906s
Sc-46	4481.49	1120.55	20.	0.	0.000	1000.00	1.906s
CO-60	4692.30	1173.24	0.	7.	0.004	41.22	1.950s
Ta-182	4755.57	1189.05	11.	-2.	-0.001	344.64	1.963s
Ta-182	4885.06	1221.41	0.	0.	0.000	1000.00	1.990s
Co-56	4952.57	1238.28	6.	1.	0.000	899.50	2.004s
NA-22	5097.62	1274.53	18.	-6.	-0.003	105.52	2.034s
EU-154	5097.66	1274.54	22.	0.	0.000	1000.00	2.034s
FE-59	5165.91	1291.60	0.	7.	0.004	37.80	2.048s
TL-210	5251.57	1313.00	6.	-1.	0.000	846.32	2.066s
CO-60	5329.61	1332.50	1.	7.	0.004	43.85	2.081s
AG-110M	5536.89	1384.30	12.	-8.	-0.004	110.40	2.124s
EU-152	5631.75	1408.00	6.	-2.	-0.001	304.14	2.143s
K-40	5843.19	1460.83	10.	2.	0.001	262.08	2.186s
La-140	6385.02	1596.21	6.	-1.	-0.001	356.74	2.294s
SB-124	6764.37	1690.98	7.	-1.	0.000	567.50	2.369s
BI-214	7058.61	1764.49	12.	-5.	-0.003	104.83	2.427s
Co-56	7086.08	1771.35	12.	-2.	-0.001	207.20	2.433s
Y-88	7345.12	1836.06	7.	-4.	-0.002	148.95	2.483s

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
BE-7	C	2.2000E+00				5.31E+01	
			477.60	2.200E+00	?(	7.919E+00 1.05E+02 1.05E+01	G
NA-22	C	-3.3018E-01				9.50E+02	
			1274.53	-3.302E-01	?(P	1.315E+00 1.06E+02 9.99E+01	G
K-40	N	1.1177E+00				4.66E+11	
			1460.83	1.118E+00	?(P	1.079E+01 2.62E+02 1.07E+01	G
Sc-46	F	2.4989E-01				8.38E+01	
			889.28	2.499E-01	?(P	8.951E-01 1.03E+02 1.00E+02	G
			1120.55	0.000E+00	-	1.262E+00 1.00E+03 1.00E+02	G

(Page 9 of 21)

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CR-51	F	-2.9548E+00					2.77E+01	
			320.08	-2.955E+00	&(P	1.581E+01	4.52E+01	9.94E+00 G
MN-54	C	-4.2969E-01					3.12E+02	
			834.85	-4.297E-01	?(	1.012E+00	1.03E+02	1.00E+02 G
FE-59	F	7.1524E-01					4.45E+01	
			1099.25	5.231E-01	?(P	6.888E-01	4.57E+01	5.65E+01 G
			1291.60	9.665E-01	?(	1.018E+00	3.78E+01	4.32E+01 G
Co-56	C	4.8498E-02					7.73E+01	
			846.77	4.345E-02	&(	9.019E-01	8.57E+02	9.99E+01 G
			1238.28	5.614E-02	?(P	1.264E+00	9.00E+02	6.61E+01 G
			1037.84	-2.386E+00	+	6.416E+00	1.18E+02	1.41E+01 G
			1771.35	-1.226E+00	+	9.298E+00	2.07E+02	1.55E+01 A
CO-57	C	7.3573E-02					2.72E+02	
			122.06	7.357E-02	?(	5.514E-01	2.16E+02	8.56E+01 G
			136.47	0.000E+00	-	7.952E+00	1.00E+03	1.07E+01 G
CO-58	C	2.2712E-01					7.09E+01	
			810.78	2.271E-01	?(P	7.477E-01	9.52E+01	9.95E+01 G
CO-60	F	3.9593E-01					1.93E+03	
			1332.50	4.226E-01	?(P	4.617E-01	4.39E+01	1.00E+02 G
			1173.24	3.693E-01	?(P	4.092E-01	4.12E+01	9.99E+01 G
ZN-65	F	2.5286E-01					2.44E+02	
			1115.55	2.529E-01	?(	2.349E+00	2.56E+02	5.06E+01 G
NB-94	I	1.2886E-07					7.41E+06	
			702.63	1.289E-07	%(	1.209E+00	2.60E+08	9.79E+01 G
			871.10	-4.735E-01	+	1.105E+00	7.02E+01	9.99E+01 G
ZR-95	I	-1.8174E-01					6.40E+01	
			756.73	-1.817E-01	?(P	1.251E+00	2.11E+02	5.45E+01 G
			724.20	2.918E-02	%	2.136E+00	1.98E+03	4.42E+01 G
RU-103	I	5.3409E-02					3.93E+01	
			497.05	5.341E-02	?(P	7.128E-01	5.20E+02	9.09E+01 G
			610.30	0.000E+00	&	2.957E+01	1.00E+03	5.75E+00 GA
RH-106	I	2.5279E+00					3.74E+02	
			621.92	2.528E+00	?(	1.205E+01	1.38E+02	9.93E+00 G
			1050.36	-1.635E+00	+	5.825E+01	9.27E+02	1.56E+00 G
			511.86	7.184E+00	?	4.096E+00	2.12E+01	2.00E+01 GA

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
AG-108M	C	3.0566E-01					1.53E+05	
			433.94	3.057E-01	?(P	3.719E-01	5.19E+01	9.05E+01 G
			722.94	0.000E+00	&	1.044E+00	1.00E+03	9.08E+01 G
			614.28	0.000E+00	-	1.902E+00	1.00E+03	8.98E+01 G
AG-110M	F	-2.0575E-02					2.50E+02	
			884.68	-2.057E-02	%(	1.557E+00	2.06E+03	7.27E+01 G
			657.76	-4.529E-01	+ P	1.179E+00	9.32E+01	9.46E+01 G
			937.49	-4.090E-01	+	2.830E+00	2.90E+02	3.44E+01 G
			1384.30	-2.071E+00	+	4.880E+00	1.10E+02	2.43E+01 G
			763.94	-4.813E-01	+	4.667E+00	2.70E+02	2.23E+01 G
SN-113	F	-8.9684E-04					1.15E+02	
			391.69	-8.968E-04	%(P	1.784E+00	3.06E+04	6.40E+01 G
SB-124	F	1.6850E-01					6.02E+01	
			602.73	-2.245E-02	%(P	1.720E+00	1.55E+03	9.83E+01 G
			1690.98	-1.328E-01	+ P	2.287E+00	5.67E+02	4.78E+01 G
			722.79	1.904E+00	&(	7.760E+00	1.17E+02	1.08E+01 G
SB-125	I	1.1012E+00					1.01E+03	
			427.88	8.606E-01	&(P	2.186E+00	1.04E+02	2.96E+01 G
			600.50	-1.759E+00	+	8.994E+00	1.50E+02	1.79E+01 G
			635.89	9.312E-01	?(	5.639E+00	1.67E+02	1.13E+01 G
			463.37	1.965E+00	&(P	7.686E+00	1.14E+02	1.05E+01 G
I-131	I	2.3722E-01					8.02E+00	
			364.48	5.726E-02	?(	6.742E-01	4.43E+02	8.17E+01 G
			284.30	-4.918E+00	& P	1.202E+01	4.98E+01	6.14E+00 G
			636.97	2.288E+00	?(	7.924E+00	9.90E+01	7.17E+00 G
Gd-153	F	-6.7413E-01					2.42E+02	
			97.50	-6.741E-01	?(	4.083E+00	1.81E+02	3.00E+01 G
			103.20	0.000E+00	+	5.696E+00	1.00E+03	2.18E+01 G
Ga-68	C	-1.2887E+01					4.71E-02	
			1077.40	-1.289E+01	?(	3.931E+01	1.35E+02	3.30E+00 G
BA-133	F	-3.5767E-01					3.85E+03	
			356.00	-3.577E-01	&(	1.379E+00	1.13E+02	6.20E+01 G
			302.85	0.000E+00	+	7.564E+00	1.00E+03	1.83E+01 G
			383.84	-3.475E+00	+ P	1.189E+01	5.53E+01	8.94E+00 GA
			80.99	4.684E-01	& P	1.403E+00	1.15E+02	3.41E+01 GA
CS-134	I	3.8847E-01					7.54E+02	
			795.87	3.885E-01	?(	1.081E+00	8.21E+01	8.55E+01 G
			604.71	0.000E+00	-	1.730E+00	1.00E+03	9.76E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			569.32	-8.416E-01	+	5.665E+00	1.90E+02	1.54E+01 G
			801.95	-5.455E+00	+	1.635E+01	8.88E+01	8.69E+00 G
			563.24	-5.721E+00	+	1.223E+01	8.95E+01	8.35E+00 G
CS-137	I	2.6305E-01					1.10E+04	
			661.66	2.630E-01	?(P	1.154E+00	1.27E+02	8.52E+01 G
Ba-140	I	1.2473E-01					1.28E+01	
			537.26	-3.391E-01	?(	3.103E+00	3.62E+02	2.44E+01 G
			162.66	1.944E+00	?(	8.698E+00	1.31E+02	6.22E+00 G
			304.85	0.000E+00	&	3.247E+01	1.00E+03	4.29E+00 G
La-140	I	2.3382E-01					1.28E+01	
			1596.21	-9.867E-02	?(P	1.061E+00	3.57E+02	9.54E+01 G
			487.02	5.191E-01	?(	2.107E+00	1.18E+02	4.55E+01 G
			328.76	-1.760E+00	+ P	7.973E+00	3.82E+01	2.03E+01 G
			815.77	1.039E+00	?(	3.842E+00	1.06E+02	2.33E+01 G
CE-141	I	-4.1309E-01					3.25E+01	
			145.44	-4.131E-01	?(	2.057E+00	1.48E+02	4.82E+01 G
PM-144	C	-8.8505E-02					3.63E+02	
			696.54	-8.850E-02	?(	1.153E+00	3.66E+02	9.90E+01 G
			618.06	0.000E+00	+	1.732E+00	1.00E+03	9.91E+01 G
EU-152	F	1.2529E+00					4.94E+03	
			121.78	4.646E-01	?(	1.510E+00	9.61E+01	2.86E+01 G
			344.29	-1.479E+00	+ P	7.115E+00	4.19E+01	2.65E+01 G
			1112.07	2.578E+00	?(	7.092E+00	8.10E+01	1.36E+01 G
			778.92	-1.261E+00	+	6.352E+00	2.05E+02	1.29E+01 G
			964.11	-7.644E-01	-	7.057E+00	2.54E+02	1.46E+01 G
			244.69	1.840E+00	?(	9.354E+00	1.48E+02	7.58E+00 G
			1408.00	-6.064E-01	-	4.282E+00	3.04E+02	2.10E+01 GA
EU-154	I	6.0530E-01					3.14E+03	
			123.10	9.617E-03	&(	1.134E+00	3.34E+03	4.08E+01 G
			1274.54	0.000E+00	-	4.122E+00	1.00E+03	3.52E+01 G
			723.36	0.000E+00	-	4.692E+00	1.00E+03	2.02E+01 G
			873.23	-3.198E+00	+	1.207E+01	1.10E+02	1.23E+01 G
			1004.77	-9.134E-02	%	6.777E+00	2.01E+03	1.80E+01 G
			996.33	2.898E+00	&(	8.295E+00	8.39E+01	1.06E+01 G
EU-155	I	-3.2206E-03					1.81E+03	
			105.31	-3.221E-03	%(P	5.845E+00	2.46E+04	2.12E+01 G
			86.54	-6.797E-01	+	4.059E+00	1.78E+02	3.07E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
HF-181	F	1.5884E-01					4.24E+01	
			482.00	1.139E-01	?(	1.231E+00	3.07E+02	8.05E+01 G
			133.02	0.000E+00	&	1.942E+00	1.00E+03	4.33E+01 G
			345.83	3.990E-01	&(P	1.214E+01	8.95E+02	1.51E+01 G
			136.30	0.000E+00	-	1.451E+01	1.00E+03	5.85E+00 G
Ta-182	F	-5.1192E-02					1.14E+02	
			1121.30	-5.119E-02	%(	3.643E+00	1.92E+03	3.49E+01 G
			1221.41	0.000E+00	+	1.561E+00	1.00E+03	2.70E+01 G
			1189.05	-8.069E-01	+	6.363E+00	3.45E+02	1.62E+01 G
Hg-203	F	-2.7330E-01					4.66E+01	
			279.20	-2.733E-01	?(	8.572E-01	9.28E+01	8.15E+01 G
TL-208	N	-1.9242E-01					6.98E+02	
			583.02	-4.030E-01	?(P	1.089E+00	9.71E+01	8.45E+01 G
			277.28	2.628E+00	?(P	7.833E+00	8.80E+01	6.31E+00 G
			860.56	-8.878E-01	+ P	6.304E+00	2.10E+02	1.24E+01 G
PM-146	C	-3.2236E-01					2.02E+03	
			453.88	-3.224E-01	?(P	1.220E+00	7.45E+01	6.50E+01 G
			747.16	6.236E-01	+ P	1.506E+00	9.66E+01	3.40E+01 G
			735.72	-2.522E+00	+	5.100E+00	8.76E+01	2.25E+01 G
Y-88	F	-3.0622E-01					1.07E+02	
			1836.06	-3.062E-01	?(P	1.175E+00	1.49E+02	9.92E+01 G
			898.04	-3.216E-01	+ P	1.024E+00	8.85E+01	9.37E+01 G
Cd-113m		-3.9149E+03					5.33E+03	
			263.70	-3.915E+03	?(	1.068E+04	8.13E+01	6.00E-03 K
Cd-109	F	-5.4717E+00					4.53E+02	
			88.04	-5.472E+00	&(	3.161E+01	1.72E+02	3.79E+00 G
Cf-251	T	1.8626E+00					3.28E+05	
			176.60	1.863E+00	&(	2.297E+00	4.94E+01	1.70E+01 G
			227.00	-7.939E-01	-	7.801E+00	3.63E+02	6.30E+00 GA
Cf-249	T	-6.9581E-02					1.28E+05	
			387.95	-6.958E-02	?(	1.737E+00	7.18E+02	6.60E+01 G
			333.44	-2.326E+00	+	1.088E+01	1.39E+02	1.55E+01 G
Sn-126		1.5177E+00					3.65E+07	
			87.57	-5.540E-01	-	3.181E+00	1.71E+02	3.75E+01 GA
			64.28	1.518E+00	?(	8.222E+00	1.59E+02	9.70E+00 G
			86.94	-2.304E+00	+	1.350E+01	1.75E+02	9.04E+00 GA

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

PB-210   N   1.1453E+01                                      8.14E+03
                          46.54 1.145E+01 *(P 2.163E+01 6.96E+01 4.25E+00 G

PB-212   N  -1.6136E-01                                      6.98E+02
                         238.63-1.614E-01 ?(P 1.774E+00 3.11E+02 4.33E+01 G
                         300.03-1.233E+00 +   4.178E+01 9.89E+02 3.28E+00 GA

PB-214   N   4.9557E-01                                      5.84E+05
                         351.93 4.956E-01 *(P 1.324E+00 8.54E+01 3.76E+01 G
                         295.09-1.858E+00 + P 6.710E+00 3.43E+01 1.93E+01 G
                         242.00 1.156E+00 ? P 9.838E+00 2.47E+02 7.43E+00 GA

BI-207   C  -1.0607E+00                                      1.18E+04
                        1063.66-1.061E+00 ?(P 1.777E+00 4.59E+01 7.45E+01 G
                         569.70-1.353E-01 + P 1.004E+00 2.22E+02 9.77E+01 G

U-235    N  -1.8280E+00                                      2.57E+11
                         143.79-1.828E+00 ?(P 7.816E+00 9.03E+01 1.10E+01 G
                         205.33 9.237E-01 + P 1.042E+01 4.21E+02 5.01E+00 G
                         163.38-2.387E+00 +   1.171E+01 1.44E+02 5.08E+00 G
                         185.72 6.342E-01 +   8.658E-01 5.42E+01 5.40E+01 GA

BI-214   N  -6.2737E-01                                      5.84E+05
                         609.31-6.274E-01 ?(P 3.826E+00 1.30E+02 4.61E+01 G
                        1120.29-1.447E+00 + P 9.072E+00 9.94E+01 1.51E+01 G
                        1764.49-2.694E+00 + P 9.422E+00 1.05E+02 1.54E+01 G

BI-210M  T  -1.0697E-01                                      1.10E+09
                         265.83-1.070E-01 ?(P 1.537E+00 4.26E+02 5.00E+01 G
                         304.90 0.000E+00 &   4.976E+00 1.00E+03 2.80E+01 G

AC-228   N  -2.1348E-01                                      2.10E+03
                         911.07-2.135E-01 ?(P 2.682E+00 4.20E+02 2.90E+01 G
                         968.97-5.657E-01 + P 6.438E+00 2.87E+02 1.75E+01 G
                         338.32-3.855E+00 + P 1.476E+01 3.42E+01 1.20E+01 G
                          93.35-5.088E+00 & P 2.205E+01 6.06E+01 5.56E+00 XA

TH-227   N   5.9196E-01                                      7.95E+03
                         256.24-1.298E+00 ?(  9.083E+00 2.75E+02 7.00E+00 G
                         235.97 1.227E+00 ?(  5.350E+00 1.28E+02 1.23E+01 G
                          50.14 1.269E+00 ?(  1.338E+01 3.06E+02 8.00E+00 G

TH-229   N   5.6585E+00                                      2.68E+06
                         193.51 6.658E+00 *(  7.672E+00 4.66E+01 4.40E+00 G
                         210.85 4.188E+00 ?(P 1.781E+01 1.61E+02 2.99E+00 G
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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

TH-234   N   7.2411E+00                                      1.63E+12
                           92.59 5.570E+00  (P 8.196E+00 5.25E+01 5.58E+00 G
                           63.29 9.691E+00  (P 1.396E+01 5.21E+01 3.81E+00 G

PA-234   N  -5.3224E-01                                      1.63E+12
                          131.29-5.322E-01 ?(  4.565E+00 2.52E+02 1.80E+01 G
                          946.02-2.112E+00 +   7.307E+00 1.48E+02 1.34E+01 G
                          569.47 0.000E+00 +   1.131E+01 1.00E+03 8.20E+00 G
                          883.24 0.000E+00 +   1.192E+01 1.00E+03 9.60E+00 G
                          880.53 1.987E+00 ?   1.806E+01 2.52E+02 6.00E+00 GA

PA-234M  N   2.4736E+01                                      1.63E+12
                         1001.00 1.286E+01 ?(P 1.379E+02 2.97E+02 8.37E-01 G
                          766.41 5.856E+01 ?(P 3.440E+02 1.67E+02 2.94E-01 G

AM-241   T   2.1215E-01                                      1.58E+05
                           59.54 2.121E-01  (P 2.570E+00 3.54E+02 3.59E+01 G

Np-237   F  -2.1203E+00                                      2.14E+06
                           86.49-2.120E+00  (P 9.746E+00 6.60E+01 1.31E+01 G

Cs-136   F   1.5539E-01                                      1.30E+01
                          818.50 1.014E-01 ?(  1.032E+00 2.82E+02 1.00E+02 G
                         1048.07 2.229E-01 ?(  9.291E-01 1.16E+02 8.00E+01 G
                          340.57-7.851E-01 +   3.877E+00 1.47E+02 4.69E+01 G

Np-239   T  -9.4010E-01                                      2.36E+00
                          103.70 0.000E+00 &   5.171E+00 1.00E+03 2.40E+01 X
                          106.13-9.401E-01 ?(  5.677E+00 1.80E+02 2.27E+01 G
                           99.50-5.025E-01 +   8.275E+00 4.89E+02 1.50E+01 X

Nd-147       1.1496E+00                                      1.11E+01
                          531.00 1.150E+00 ?(  2.936E+00 9.85E+01 1.30E+01 G
                           91.10-7.250E-01 -   4.259E+00 1.75E+02 2.83E+01 G

TL-210   N   5.5440E-02                                      5.84E+05
                          799.60 5.544E-02 ?(  1.107E+00 5.50E+02 9.90E+01 G
                          296.00-2.976E-01 &   1.667E+00 1.66E+02 7.90E+01 G
                         1313.00-1.917E-01 +   3.970E+00 8.46E+02 2.10E+01 GA
   ( - 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.
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% - 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	
TH-227	50.14	107.	5.	0.003	306.30	1.269E+00	
AM-241	59.54	127.	5.	0.003	353.86	2.121E-01	P
Sn-126	64.28	112.	10.	0.005	159.14	1.518E+00	
BA-133	80.99	56.	13.	0.007	114.95	4.684E-01	P
Np-237	86.49	470.	-23.	-0.013	66.02	-2.120E+00	P
EU-155	86.54	448.	-17.	-0.009	178.05	-6.797E-01	
Sn-126	86.94	431.	-17.	-0.009	174.67	-2.304E+00	
Sn-126	87.57	414.	-17.	-0.009	171.14	-5.540E-01	
Cd-109	88.04	419.	-17.	-0.009	172.22	-5.472E+00	
Nd-147	91.10	436.	-17.	-0.009	175.13	-7.250E-01	
AC-228	93.35	460.	-24.	-0.013	60.61	-5.088E+00	P
Gd-153	97.50	470.	-17.	-0.010	180.64	-6.741E-01	
Np-239	99.50	488.	-6.	-0.004	488.53	-5.025E-01	
Np-239	106.13	536.	-18.	-0.010	180.28	-9.401E-01	
EU-152	121.78	53.	11.	0.006	96.07	4.646E-01	
CO-57	122.06	65.	5.	0.003	216.46	7.357E-02	
PA-234	131.29	200.	-8.	-0.004	252.49	-5.322E-01	
U-235	143.79	202.	-16.	-0.009	90.32	-1.828E+00	P
CE-141	145.44	270.	-16.	-0.009	148.07	-4.131E-01	
Ba-140	162.66	65.	9.	0.005	131.00	1.944E+00	
U-235	163.38	79.	-9.	-0.005	143.59	-2.387E+00	
Cf-251	176.60	29.	23.	0.013	49.39	1.863E+00	
U-235	185.72	40.	24.	0.013	54.25	6.342E-01	
TH-229	193.51	18.	20.	0.011	46.56	6.658E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
U-235	205.33	44.	3.	0.002	421.12	9.237E-01	P
TH-229	210.85	44.	8.	0.004	161.08	4.188E+00	P
Cf-251	227.00	33.	-3.	-0.002	362.86	-7.939E-01	
TH-227	235.97	59.	9.	0.005	127.54	1.227E+00	
PB-212	238.63	80.	-4.	-0.002	310.75	-1.614E-01	P
EU-152	244.69	65.	8.	0.004	148.22	1.840E+00	
TH-227	256.24	48.	-5.	-0.003	274.95	-1.298E+00	
Cd-113m	263.70	47.	-13.	-0.007	81.28	-3.915E+03	
BI-210M	265.83	68.	-3.	-0.002	426.06	-1.070E-01	P
TL-208	277.28	24.	9.	0.005	88.03	2.628E+00	P
Hg-203	279.20	52.	-12.	-0.006	92.85	-2.733E-01	
I-131	284.30	56.	-15.	-0.009	49.83	-4.918E+00	P
TL-210	296.00	181.	-12.	-0.006	165.57	-2.976E-01	
PB-212	300.03	193.	-2.	-0.001	989.35	-1.233E+00	
CR-51	320.08	232.	-14.	-0.008	45.22	-2.955E+00	P
La-140	328.76	238.	-16.	-0.009	38.21	-1.760E+00	P
Cf-249	333.44	254.	-16.	-0.009	139.24	-2.326E+00	
AC-228	338.32	275.	-21.	-0.012	34.24	-3.855E+00	P
Cs-136	340.57	287.	-17.	-0.009	146.95	-7.851E-01	
EU-152	344.29	304.	-17.	-0.010	41.86	-1.479E+00	P
HF-181	345.83	284.	3.	0.001	895.18	3.990E-01	P
BA-133	356.00	55.	-10.	-0.005	113.17	-3.577E-01	
I-131	364.48	20.	2.	0.001	443.47	5.726E-02	
BA-133	383.84	78.	-13.	-0.007	55.33	-3.475E+00	P
Cf-249	387.95	90.	-2.	-0.001	717.68	-6.958E-02	
SB-125	427.88	22.	10.	0.005	103.73	8.606E-01	P
AG-108M	433.94	5.	10.	0.006	51.90	3.057E-01	P
PM-146	453.88	32.	-8.	-0.004	74.54	-3.224E-01	P
SB-125	463.37	32.	7.	0.004	113.90	1.965E+00	P
Ir-192	468.06	45.	-6.	-0.003	163.30	-3.251E-01	
BE-7	477.60	32.	8.	0.005	105.15	2.200E+00	
HF-181	482.00	47.	3.	0.002	307.45	1.139E-01	
La-140	487.02	43.	8.	0.005	118.39	5.191E-01	
RU-103	497.05	17.	2.	0.001	519.69	5.341E-02	P
RH-106	511.86	28.	48.	0.027	21.25	7.184E+00	
Nd-147	531.00	4.	5.	0.003	98.49	1.150E+00	
Ba-140	537.26	22.	-3.	-0.001	361.53	-3.391E-01	
CS-134	563.24	39.	-15.	-0.008	89.51	-5.721E+00	
CS-134	569.32	27.	-4.	-0.002	190.39	-8.416E-01	
BI-207	569.70	35.	-4.	-0.002	221.61	-1.353E-01	P
TL-208	583.02	29.	-10.	-0.006	97.05	-4.030E-01	P
SB-125	600.50	93.	-9.	-0.005	150.00	-1.759E+00	
BI-214	609.31	111.	-8.	-0.005	130.12	-6.274E-01	P
RH-106	621.92	47.	7.	0.004	138.45	2.528E+00	
SB-125	635.89	11.	3.	0.002	166.67	9.312E-01	
I-131	636.97	8.	5.	0.003	98.97	2.288E+00	
AG-110M	657.76	37.	-12.	-0.007	93.15	-4.529E-01	P
CS-137	661.66	28.	6.	0.003	126.70	2.630E-01	P

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
PM-144	696.54	35.	-2.	-0.001	366.17	-8.850E-02		
SB-124	722.79	17.	5.	0.003	116.59	1.904E+00		
PM-146	735.72	33.	-15.	-0.008	87.57	-2.522E+00		
PM-146	747.16	5.	5.	0.003	96.61	6.236E-01		P
ZR-95	756.73	9.	-2.	-0.001	211.21	-1.817E-01		P
AG-110M	763.94	25.	-3.	-0.001	270.42	-4.813E-01		
PA-234M	766.41	23.	4.	0.002	166.69	5.856E+01		P
EU-152	778.92	14.	-4.	-0.002	204.63	-1.261E+00		
BI-212	785.42	14.	-6.	-0.003	138.44	-1.924E+01		
CS-134	795.87	18.	8.	0.004	82.15	3.885E-01		
TL-210	799.60	26.	1.	0.001	550.37	5.544E-02		
CS-134	801.95	45.	-11.	-0.006	88.84	-5.455E+00		
CO-58	810.78	10.	5.	0.003	95.18	2.271E-01		P
La-140	815.77	16.	6.	0.003	106.44	1.039E+00		
Cs-136	818.50	22.	2.	0.001	281.92	1.014E-01		
MN-54	834.85	20.	-10.	-0.006	103.28	-4.297E-01		
Co-56	846.77	15.	1.	0.001	857.32	4.345E-02		
TL-208	860.56	11.	-3.	-0.001	209.64	-8.878E-01		P
NB-94	871.10	23.	-11.	-0.006	70.16	-4.735E-01		
EU-154	873.23	43.	-9.	-0.005	110.44	-3.198E+00		
PA-234	880.53	21.	3.	0.001	252.49	1.987E+00		
Sc-46	889.28	14.	6.	0.003	103.30	2.499E-01		P
Y-88	898.04	16.	-7.	-0.004	88.54	-3.216E-01		P
AC-228	911.07	9.	-1.	-0.001	420.44	-2.135E-01		P
AG-110M	937.49	15.	-3.	-0.002	289.64	-4.090E-01		
PA-234	946.02	15.	-6.	-0.003	147.67	-2.112E+00		
EU-152	964.11	16.	-2.	-0.001	253.55	-7.644E-01		
AC-228	968.97	20.	-2.	-0.001	286.57	-5.657E-01		P
EU-154	996.33	11.	6.	0.003	83.87	2.898E+00		
PA-234M	1001.00	20.	2.	0.001	296.91	1.286E+01		P
Co-56	1037.84	11.	-7.	-0.004	117.90	-2.386E+00		
Cs-136	1048.07	6.	4.	0.002	116.06	2.229E-01		
RH-106	1050.36	10.	0.	0.000	927.36	-1.635E+00		
BI-207	1063.66	24.	-15.	-0.009	45.86	-1.061E+00		P
Ga-68	1077.40	16.	-7.	-0.004	135.27	-1.289E+01		
EU-152	1112.07	11.	7.	0.004	80.99	2.578E+00		
ZN-65	1115.55	18.	2.	0.001	255.89	2.529E-01		
BI-214	1120.29	24.	-4.	-0.002	99.36	-1.447E+00		P
CO-60	1173.24	0.	7.	0.004	41.22	3.693E-01		P
Ta-182	1189.05	11.	-2.	-0.001	344.64	-8.069E-01		
Co-56	1238.28	6.	1.	0.000	899.50	5.614E-02		P
NA-22	1274.53	18.	-6.	-0.003	105.52	-3.302E-01		P
TL-210	1313.00	6.	-1.	0.000	846.32	-1.917E-01		
CO-60	1332.50	1.	7.	0.004	43.85	4.226E-01		P
AG-110M	1384.30	12.	-8.	-0.004	110.40	-2.071E+00		
EU-152	1408.00	6.	-2.	-0.001	304.14	-6.064E-01		
K-40	1460.83	10.	2.	0.001	262.08	1.118E+00		P
La-140	1596.21	6.	-1.	-0.001	356.74	-9.867E-02		P

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
SB-124	1690.98	7.	-1.	0.000	567.50	-1.328E-01	P
BI-214	1764.49	12.	-5.	-0.003	104.83	-2.694E+00	P
Co-56	1771.35	12.	-2.	-0.001	207.20	-1.226E+00	
Y-88	1836.06	7.	-4.	-0.002	148.95	-3.062E-01	P

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 Counting 1 Sigma	MDA Bq/Sample
BE-7	#A	2.2000E+00	2.2000E+00	1.051E+02%	7.92E+00
NA-22	#A	-3.3018E-01	-3.3018E-01	1.055E+02%	1.31E+00
K-40	#A	1.1177E+00	1.1177E+00	2.621E+02%	1.08E+01
Sc-46	#A	2.4989E-01	2.4989E-01	1.033E+02%	8.95E-01
CR-51	#A	-2.9547E+00	-2.9548E+00	4.522E+01%	1.58E+01
MN-54	#A	-4.2969E-01	-4.2969E-01	1.033E+02%	1.01E+00
FE-59	#	7.1524E-01	7.1524E-01	2.966E+01%	6.89E-01
Co-56	#A	4.8497E-02	4.8498E-02	6.213E+02%	9.02E-01
CO-57	#A	7.3572E-02	7.3573E-02	2.165E+02%	5.51E-01
CO-58	#A	2.2712E-01	2.2712E-01	9.518E+01%	7.48E-01
CO-60	#A	3.9593E-01	3.9593E-01	3.009E+01%	4.62E-01
ZN-65	#A	2.5286E-01	2.5286E-01	2.559E+02%	2.35E+00
NB-94	#A	1.2886E-07	1.2886E-07	2.600E+08%	1.21E+00
ZR-95	#A	-1.8174E-01	-1.8174E-01	2.112E+02%	1.25E+00
NB-95	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.09E+00
RU-103	#A	5.3409E-02	5.3409E-02	5.197E+02%	7.13E-01
RH-106	#A	2.5279E+00	2.5279E+00	1.384E+02%	1.21E+01
AG-108M	#A	3.0566E-01	3.0566E-01	5.190E+01%	3.72E-01
AG-110M	#A	-2.0575E-02	-2.0575E-02	2.057E+03%	1.56E+00
SN-113	#A	-8.9684E-04	-8.9684E-04	3.061E+04%	1.78E+00
SB-124	#A	1.6850E-01	1.6850E-01	1.166E+02%	1.72E+00
SB-125	#A	1.1012E+00	1.1012E+00	7.565E+01%	2.19E+00
I-131	#A	2.3721E-01	2.3722E-01	9.897E+01%	6.74E-01
Gd-153	#A	-6.7413E-01	-6.7413E-01	1.806E+02%	4.08E+00
Ga-68	#A	-1.2815E+01	-1.2887E+01	1.353E+02%	3.93E+01
Tc-99m	#A	0.0000E+00	0.0000E+00	1.000E+03%	9.92E-01
BA-133	#A	-3.5767E-01	-3.5767E-01	1.132E+02%	1.38E+00
CS-134	#A	3.8847E-01	3.8847E-01	8.215E+01%	1.08E+00
CS-137	#A	2.6305E-01	2.6305E-01	1.267E+02%	1.15E+00
CE-139	#A	0.0000E+00	0.0000E+00	1.000E+03%	6.98E-01
Ba-140	#A	1.2473E-01	1.2473E-01	1.310E+02%	3.10E+00
La-140	#A	2.3381E-01	2.3382E-01	1.064E+02%	1.06E+00
CE-141	#A	-4.1308E-01	-4.1309E-01	1.481E+02%	2.06E+00
CE-144	#A	0.0000E+00	0.0000E+00	1.000E+03%	7.59E+00
PM-144	#A	-8.8505E-02	-8.8505E-02	3.662E+02%	1.15E+00
EU-152	#A	1.2529E+00	1.2529E+00	6.477E+01%	1.51E+00

EU-154	#A	6.0530E-01	6.0530E-01	8.387E+01%	1.13E+00
EU-155	#A	-3.2206E-03	-3.2206E-03	2.459E+04%	5.84E+00
HF-181	#A	1.5884E-01	1.5884E-01	3.074E+02%	1.23E+00
Ta-182	#A	-5.1191E-02	-5.1192E-02	1.921E+03%	3.64E+00
Hg-203	#A	-2.7329E-01	-2.7330E-01	9.285E+01%	8.57E-01
TL-208	#A	-1.9242E-01	-1.9242E-01	6.552E+01%	1.09E+00
PM-146	#A	-3.2236E-01	-3.2236E-01	7.454E+01%	1.22E+00
Y-88	#A	-3.0622E-01	-3.0622E-01	1.490E+02%	1.18E+00
Cd-113m	#A	-3.9149E+03	-3.9149E+03	8.128E+01%	1.07E+04
Cd-109	#A	-5.4716E+00	-5.4717E+00	1.722E+02%	3.16E+01
Cf-251	#A	1.8626E+00	1.8626E+00	4.939E+01%	2.30E+00
Cf-249	#A	-6.9581E-02	-6.9581E-02	7.177E+02%	1.74E+00
Sn-126	#A	1.5177E+00	1.5177E+00	1.591E+02%	8.22E+00
PB-210	#A	1.1453E+01	1.1453E+01	6.960E+01%	2.16E+01
PB-212	#A	-1.6136E-01	-1.6136E-01	3.107E+02%	1.77E+00
PB-214	#A	4.9557E-01	4.9557E-01	8.545E+01%	1.32E+00
BI-207	#A	-1.0607E+00	-1.0607E+00	4.586E+01%	1.78E+00
BI-212	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.24E+01
U-235	#A	-1.8280E+00	-1.8280E+00	9.032E+01%	7.82E+00
BI-214	#A	-6.2737E-01	-6.2737E-01	1.301E+02%	3.83E+00
BI-210M	#A	-1.0697E-01	-1.0697E-01	4.261E+02%	1.54E+00
AC-228	#A	-2.1348E-01	-2.1348E-01	4.204E+02%	2.68E+00
TH-227	#A	5.9196E-01	5.9196E-01	1.275E+02%	9.08E+00
TH-229	#A	5.6585E+00	5.6585E+00	4.656E+01%	7.67E+00
TH-234	A	7.2411E+00	7.2411E+00	3.698E+01%	8.20E+00
PA-231	#A	0.0000E+00	0.0000E+00	7.071E+02%	4.81E+01
PA-233	#A	0.0000E+00	0.0000E+00	7.071E+02%	3.93E+00
PA-234	#A	-5.3224E-01	-5.3224E-01	2.525E+02%	4.56E+00
PA-234M	#A	2.4736E+01	2.4736E+01	1.667E+02%	1.38E+02
AM-241	#A	2.1215E-01	2.1215E-01	3.539E+02%	2.57E+00
Np-237	#A	-2.1203E+00	-2.1203E+00	6.602E+01%	9.75E+00
Ir-192	#A	0.0000E+00	0.0000E+00	7.071E+02%	1.64E+00
Cs-136	#A	1.5538E-01	1.5539E-01	1.161E+02%	1.03E+00
Np-239	#A	-9.4000E-01	-9.4010E-01	1.803E+02%	5.68E+00
Nd-147	#A	1.1496E+00	1.1496E+00	9.849E+01%	2.94E+00
TL-210	#A	5.5440E-02	5.5440E-02	5.504E+02%	1.11E+00
Kr-85	#A	0.0000E+00	0.0000E+00	1.000E+03%	3.03E+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

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-----------------------------   S U M M A R Y   -----------------------------
Total Activity (   25.1 to  1999.6 keV)     1.869E+01  Bq/Sample
Total Decayed Activity (   25.1 to  1999.6 keV) 1.8693817E+01  Bq/Sample
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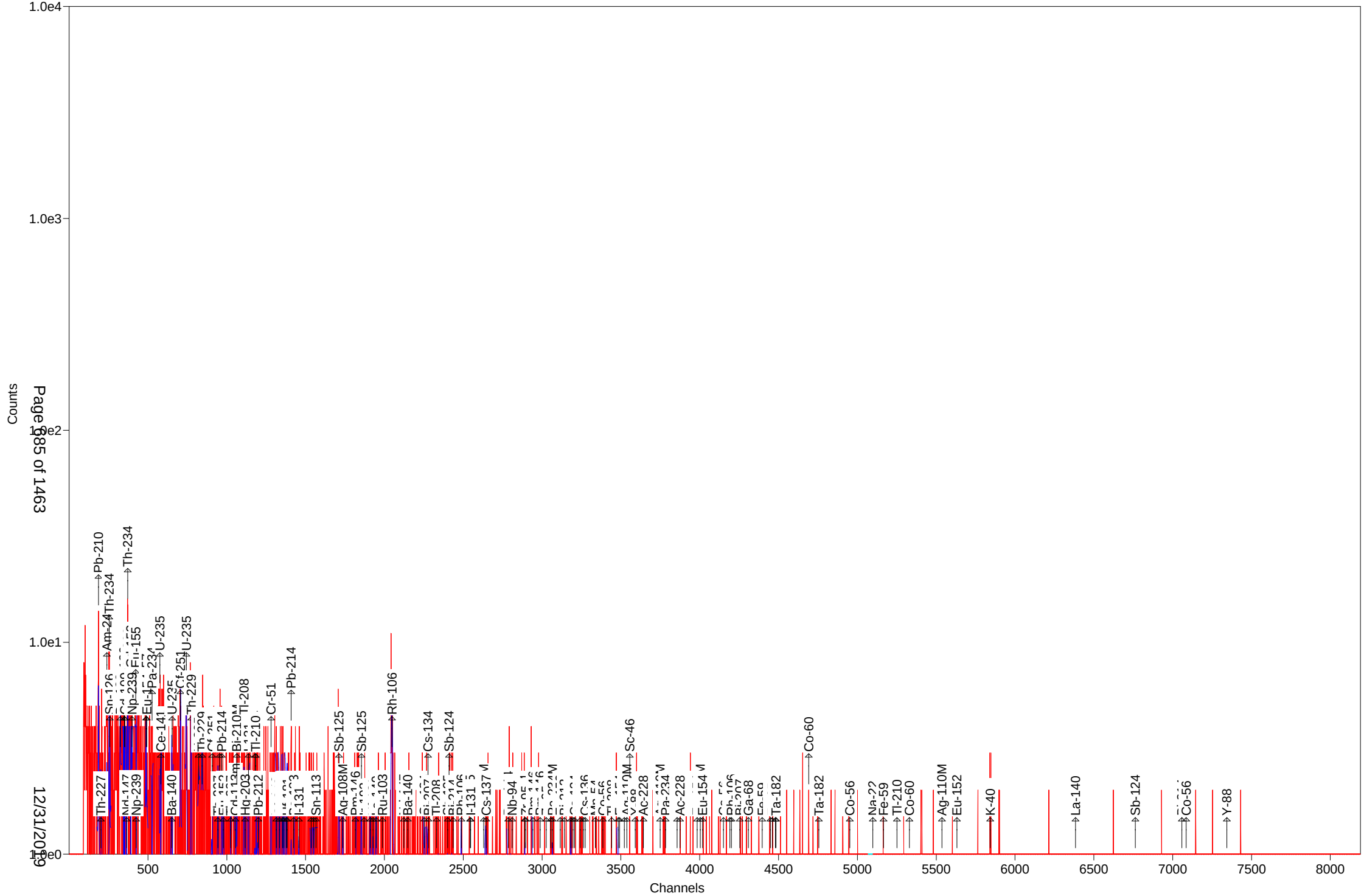
452567_Gamma_MB 160-452567~1-A. 16_Gamma_20192292.spc.



Sample Description: 452567_Gamma_LCS 160-452567~2-A
Detector: Detector #17
Batch ID: 452567
Work Order Number: Gamma
Lot Number: LCS 160-452567~2-A

Decay to Time: 12/25/2019 10:45 Live Time: 1800 sec
Acquisition Time: 12/25/2019 10:46:04 Real Time: 1811 sec
Analysis Time: 12/25/2019 11:16 Dead Time: 0.60 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 17_Soil_TunaCan.Clb
Efficiency Cal Desc: 17_TunaCan_90099_032612
Efficiency Cal Date: 4/12/2012 09:28
Energy Cal Date: 2/29/2012 10:33
Library: Client_Long_Rev15.lib
Bkgd Correction File: 17_2019-12-07_1454.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	-8.649E-01	1267.1	1.096E+01	1.096E+01	3.686E+01
NA-22	2.533E-01	150.0	3.799E-01	3.801E-01	1.352E+00
K-40	5.301E+00	92.0	4.877E+00	4.884E+00	1.285E+01
Sc-46	1.488E+00	96.1	1.430E+00	1.432E+00	4.759E+00
CR-51	-2.840E+00	200.8	5.702E+00	5.704E+00	2.821E+01
MN-54	7.636E-01	157.5	1.202E+00	1.203E+00	2.733E+00
FE-59	-1.833E+00	126.2	2.313E+00	2.315E+00	6.075E+00
Co-56	2.766E-01	68.9	1.906E-01	1.911E-01	2.963E+00
CO-57	-5.407E-01	146.1	7.898E-01	7.903E-01	2.626E+00
CO-58	-1.262E+00	90.6	1.143E+00	1.145E+00	3.807E+00
CO-60	1.326E+02	1.6	2.118E+00	6.987E+00	1.229E+00
ZN-65	0.000E+00	1.#INF	5.047E-01	5.047E-01	9.292E+00
NB-94	-1.234E-01	777.9	9.598E-01	9.598E-01	2.297E+00
ZR-95	-1.829E+00	85.5	1.564E+00	1.567E+00	4.433E+00
NB-95	7.888E-02	1069.1	8.433E-01	8.433E-01	2.889E+00
RU-103	6.869E-02	1674.3	1.150E+00	1.150E+00	2.828E+00
RH-106	1.675E+01	70.5	1.180E+01	1.183E+01	4.869E+01
AG-108M	-1.029E+00	48.2	4.955E-01	4.983E-01	3.197E+00
AG-110M	6.788E-01	89.4	6.071E-01	6.081E-01	6.904E+00
SN-113	1.740E-01	1032.7	1.797E+00	1.797E+00	6.026E+00
SB-124	-8.860E-03	15973.2	1.415E+00	1.415E+00	4.762E+00
SB-125	1.288E+00	61.8	7.963E-01	7.991E-01	9.397E+00
I-131	1.352E+00	77.4	1.047E+00	1.049E+00	2.896E+00
Gd-153	3.299E-01	515.2	1.700E+00	1.700E+00	6.304E+00
Ga-68	-6.853E+01	85.7	5.874E+01	5.886E+01	1.274E+02
Tc-99m	-8.568E-02	1005.5	8.616E-01	8.616E-01	2.879E+00
BA-133	-1.647E+00	101.9	1.678E+00	1.680E+00	5.572E+00
CS-134	1.863E+00	59.9	1.117E+00	1.121E+00	3.715E+00
CS-137	3.423E+02	1.2	4.144E+00	1.828E+01	2.753E+00
CE-139	7.198E-01	113.8	8.188E-01	8.216E-01	2.721E+00
Ba-140	-2.438E+00	164.5	4.011E+00	4.013E+00	9.815E+00
La-140	8.213E-01	96.7	7.941E-01	7.953E-01	1.092E+00
CE-141	1.174E+00	101.0	1.186E+00	1.188E+00	3.939E+00

CE-144	-4.193E-02	16343.4	6.853E+00	6.853E+00	2.297E+01
PM-144	4.310E-01	201.5	8.686E-01	8.689E-01	2.069E+00
EU-152	2.190E+00	117.6	2.575E+00	2.577E+00	7.993E+00
EU-154	2.410E+00	113.7	2.740E+00	2.743E+00	5.359E+00
EU-155	2.248E+00	96.3	2.165E+00	2.169E+00	1.012E+01
HF-181	1.138E+00	124.3	1.415E+00	1.416E+00	3.433E+00
Ta-182	3.641E+00	106.2	3.866E+00	3.870E+00	1.293E+01
Hg-203	-8.648E-01	112.7	9.746E-01	9.758E-01	3.243E+00
TL-208	3.572E+00	25.7	9.187E-01	9.372E-01	1.945E+00
PM-146	1.338E+00	92.3	1.235E+00	1.237E+00	4.658E+00
Y-88	5.037E-01	141.1	7.108E-01	7.114E-01	1.200E+00
Cd-113m	4.757E+03	231.1	1.100E+04	1.100E+04	3.690E+04
Cd-109	-4.079E+00	613.7	2.503E+01	2.503E+01	8.336E+01
Cf-251	-1.693E+00	226.7	3.839E+00	3.841E+00	1.024E+01
Cf-249	0.000E+00	1.#INF	3.958E-01	3.958E-01	5.902E+00
Sn-126	8.387E+00	101.7	8.525E+00	8.537E+00	2.828E+01
PB-210	9.467E+03	1.1	1.070E+02	5.661E+02	1.877E+02
PB-212	6.968E+00	17.2	1.197E+00	1.279E+00	3.622E+00
PB-214	6.779E+00	29.2	1.981E+00	2.012E+00	5.132E+00
BI-207	1.925E+00	88.8	1.709E+00	1.712E+00	3.739E+00
BI-212	1.299E+01	84.3	1.095E+01	1.097E+01	3.646E+01
U-235	0.000E+00	1.#INF	3.064E+00	3.064E+00	2.300E+01
BI-214	4.646E+00	25.1	1.166E+00	1.191E+00	3.580E+00
BI-210M	-1.590E+00	70.3	1.118E+00	1.122E+00	4.992E+00
AC-228	6.698E+00	57.5	3.853E+00	3.868E+00	1.051E+01
TH-227	3.561E+01	48.7	1.733E+01	1.747E+01	2.833E+01
TH-229	7.623E+00	115.5	8.803E+00	8.824E+00	4.371E+01
TH-234	1.928E+00	184.5	3.557E+00	3.559E+00	5.550E+01
PA-231	-1.787E+01	267.0	4.772E+01	4.773E+01	1.588E+02
PA-233	-2.103E-02	7345.8	1.545E+00	1.545E+00	1.306E+01
PA-234	5.916E+00	85.6	5.061E+00	5.071E+00	1.400E+01
PA-234M	-2.502E+02	64.2	1.605E+02	1.610E+02	6.629E+02
AM-241	1.200E+03	0.8	9.756E+00	6.306E+01	1.398E+01
Np-237	4.851E+00	148.0	7.177E+00	7.183E+00	2.382E+01
Ir-192	7.225E-01	99.9	7.218E-01	7.230E-01	3.107E+00
Cs-136	1.173E+00	99.7	1.170E+00	1.172E+00	3.902E+00
Np-239	2.515E+00	117.8	2.963E+00	2.967E+00	9.840E+00
Nd-147	-7.560E+00	108.4	8.194E+00	8.206E+00	1.991E+01
TL-210	-3.211E-01	291.9	9.373E-01	9.375E-01	3.185E+00
Kr-85	-2.356E+02	107.9	2.541E+02	2.545E+02	8.462E+02
Total	1.606E+04				

Analyst: Caleb Quinn

Sample description
452567_Gamma_LCS 160-452567~2-A

Spectrum Filename: C:\User\SPC\Det17\17_Gamma_20192437.An1

Acquisition information
Start time: 12/25/2019 10:46:04 AM
Live time: 1800
Real time: 1811
Dead time: 0.60 %
Detector ID: 17

Detector system
Ge17 SN/11080671

Calibration
Filename: 17_Soil_TunaCan.Clb
17_TunaCan_90099_032612

Energy Calibration
Created: 2/29/2012 10:33:23 AM
Zero offset: 0.108 keV
Gain: 0.250 keV/channel
Quadratic: -2.584E-08 keV/channel^2

Efficiency Calibration
Created: 4/12/2012 9:28:42 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.91 %
Log(Eff): -5.264190E-01 + (-4.024164E-01*Log(E)) + (-2.604461E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.00 %
Log(Eff): -2.343889E+01 + (8.582715E+00*Log(E)) + (-9.075430E-01*Log(E)^2)

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.12keV)
Stop channel: 8000 (1999.54keV)
Peak rejection level: 1000.000%
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

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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	12/25/2019 10:45:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	17_2019-12-07_1454.PBC 12/7/2019 2:54:46 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 22 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1352

***** 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
32.14	129.	34.97	0.81	1.021E-02				
36.58	272.	22.43	0.85	1.351E-02				
40.33	161.	37.55	0.77	1.640E-02				
42.03	132.	49.18	0.77	1.769E-02				
46.62	15211.	1.13	0.74	2.106E-02	46.54	4.250	9.467E+03	PB210
50.14	241.	48.67	0.78	2.357E-02	50.14	8.000	PBC<MDA	TH227
59.62	22939.	0.81	0.76	2.962E-02	59.54	35.900	1.200E+03	AM241
63.29	24.	184.47	0.79	3.164E-02	63.29	3.810	PBC<MDA	TH234
64.28	47.	101.65	0.79	3.216E-02	64.28	9.700	PBC<MDA	Sn126
77.21	196.	22.55	1.16	3.755E-02				
80.99	7.	741.18	0.81	3.884E-02	80.99	34.060	PBC<MDA	BA133
86.49	46.	147.96	0.81	4.026E-02	86.49	13.100	PBC<MDA	Np237
					86.54	30.700	2.069E+00	EU155
86.54	46.	149.38	0.81	4.027E-02	86.49	13.100	PBC<MDA	Np237
					86.54	30.700	2.070E+00	EU155
					86.94	9.040	7.014E+00	Sn126
92.38	-17.	396.10	0.82	4.144E-02	92.59	5.584	PBC<MDA	TH234
93.14	48.	141.37	0.82	4.156E-02	93.35	5.561	PBC<MDA	AC228
97.50	7.	658.04	0.82	4.213E-02	97.50	30.000	PBC<MDA	Gd153
103.20	7.	793.03	0.83	4.265E-02	103.20	21.800	PBC<MDA	Gd153
103.70	36.	142.50	0.83	4.269E-02	103.70	24.000	PBC<MDA	Np239
105.31	41.	121.61	0.83	4.278E-02	105.31	21.200	PBC<MDA	EU155

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
106.13	44.	117.85	0.83	4.282E-02	106.13	22.700	PBC<MDA	Np239
123.10	30.	168.22	0.85	4.270E-02	123.10	40.790	PBC<MDA	EU154
125.87	49.	47.17	0.35	4.254E-02				
131.29	19.	302.06	0.85	4.212E-02	131.29	18.000	PBC<MDA	PA234
145.44	41.	100.99	0.87	4.059E-02	145.44	48.200	PBC<MDA	CE141
165.85	40.	113.75	0.89	3.825E-02	165.85	79.900	PBC<MDA	CE139
182.86	32.	59.29	0.50	3.583E-02				
185.72	6.	770.91	0.91	3.545E-02	185.72	54.000	PBC<MDA	U235
201.34	32.	71.37	0.30	3.357E-02				
210.85	38.	115.48	0.93	3.253E-02	210.85	2.990	PBC<MDA	TH229
238.43	156.	20.71	0.47	2.991E-02	238.63	43.300	6.349E+00	PB212
244.69	42.	133.37	0.96	2.938E-02	244.69	7.580	PBC<MDA	EU152
263.64	14.	231.15	0.98	2.790E-02	263.70	0.006	PBC<MDA	Cd113m
284.30	19.	204.23	1.00	2.648E-02	284.30	6.140	PBC<MDA	I131
295.48	58.	49.67	2.14	2.580E-02	295.09	19.300	PBC<MDA	PB214
					296.00	79.000	PBC<MDA	TL210
316.49	36.	99.90	1.03	2.456E-02	316.49	87.040	PBC<MDA	Ir192
328.76	20.	177.57	1.04	2.391E-02	328.76	20.300	PBC<MDA	La140
352.28	107.	30.78	1.32	2.279E-02	351.93	37.600	6.929E+00	PB214
383.84	35.	125.81	1.09	2.143E-02	383.84	8.940	PBC<MDA	BA133
404.66	36.	54.13	0.33	2.064E-02				
453.88	11.	400.91	1.15	1.900E-02	453.88	65.000	PBC<MDA	PM146
463.37	43.	96.32	1.16	1.872E-02	463.37	10.470	PBC<MDA	SB125
468.06	6.	665.16	1.16	1.859E-02	468.06	51.750	PBC<MDA	Ir192
482.00	30.	124.31	1.18	1.820E-02	482.00	80.500	PBC<MDA	HF181
511.86	144.	20.88	2.45	1.742E-02	511.86	20.000	2.296E+01	RH106
569.32	21.	86.90	1.25	1.612E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	8.829E+00	PA234
					569.70	97.740	7.410E-01	BI207
583.10	76.	25.72	1.27	1.584E-02	583.02	84.500	3.164E+00	TL208
609.56	74.	26.64	0.83	1.533E-02	609.31	46.090	5.797E+00	BI214
					610.30	5.750	4.652E+01	RU103
614.27	7.	544.08	1.29	1.524E-02	614.28	89.850	PBC<MDA	AG108M
621.92	15.	261.70	1.30	1.510E-02	621.92	9.930	PBC<MDA	RH106
635.89	15.	121.08	1.31	1.486E-02	635.89	11.310	PBC<MDA	SB125
636.97	23.	77.45	1.31	1.484E-02	636.97	7.170	PBC<MDA	I131
657.76	27.	464.66	1.33	1.449E-02	657.76	94.640	PBC<MDA	AG110M
661.66	7575.	1.21	1.34	1.443E-02	661.66	85.210	3.423E+02	CS137
696.54	11.	201.52	1.36	1.389E-02	696.54	99.000	PBC<MDA	PM144
722.97	18.	114.56	1.39	1.351E-02	722.79	10.810	6.726E+00	SB124
					722.94	90.840	8.005E-01	AG108M
					723.36	20.220	3.598E+00	EU154
727.20	24.	84.28	1.39	1.345E-02	727.17	7.550	PBC<MDA	BI212
735.72	21.	92.28	1.40	1.333E-02	735.72	22.500	PBC<MDA	PM146
766.41	5.	409.55	1.42	1.293E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	PBC<MDA	PA234M
795.87	26.	82.61	1.45	1.257E-02	795.87	85.530	PBC<MDA	CS134
818.50	26.	99.70	1.47	1.231E-02	818.50	100.000	PBC<MDA	Cs136

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
834.85	17.	157.45	1.48	1.213E-02	834.85	99.980	PBC<MDA	MN54
860.56	17.	151.13	1.50	1.185E-02	860.56	12.420	PBC<MDA	TL208
873.23	9.	236.52	1.51	1.172E-02	873.23	12.270	PBC<MDA	EU154
889.28	31.	96.11	1.53	1.156E-02	889.28	99.984	PBC<MDA	Sc46
898.04	18.	141.12	1.53	1.148E-02	898.04	93.700	PBC<MDA	Y88
910.76	32.	87.11	1.55	1.135E-02	911.07	29.000	PBC<MDA	AC228
946.02	32.	85.55	1.57	1.103E-02	946.02	13.400	PBC<MDA	PA234
964.11	5.	574.11	1.59	1.088E-02	964.11	14.605	PBC<MDA	EU152
968.97	30.	75.16	1.59	1.083E-02	968.97	17.460	PBC<MDA	AC228
1004.77	17.	179.17	1.62	1.054E-02	1004.77	18.010	PBC<MDA	EU154
1037.84	29.	87.68	1.65	1.028E-02	1037.84	14.130	PBC<MDA	Co56
1050.36	25.	70.46	1.66	1.019E-02	1050.36	1.560	PBC<MDA	RH106
1063.66	26.	88.80	1.67	1.009E-02	1063.66	74.500	PBC<MDA	BI207
1112.07	17.	142.91	1.71	9.752E-03	1112.07	13.644	PBC<MDA	EU152
1116.93	11.	211.17	1.72	9.697E-03	1120.29	15.100	PBC<MDA	BI214
1121.30	22.	106.17	1.72	9.691E-03	1120.55	99.987	PBC<MDA	Sc46
					1121.30	34.900	3.641E+00	Ta182
1173.27	2193.	2.27	1.79	9.359E-03	1173.24	99.900	1.303E+02	CO60
1221.41	2.	634.67	1.80	9.073E-03	1221.41	27.000	PBC<MDA	Ta182
1238.28	3.	436.26	1.81	8.977E-03	1238.28	66.070	PBC<MDA	Co56
1274.53	4.	150.00	1.84	8.779E-03	1274.53	99.940	PBC<MDA	NA22
					1274.54	35.190	7.193E-01	EU154
1313.00	5.	145.77	1.87	8.579E-03	1313.00	21.000	PBC<MDA	TL210
1332.54	2060.	2.25	1.71	8.481E-03	1332.50	99.980	1.350E+02	CO60
1384.30	7.	89.43	1.93	8.233E-03	1384.30	24.290	PBC<MDA	AG110M
1408.00	5.	121.64	1.94	8.125E-03	1408.00	21.005	PBC<MDA	EU152
1460.08	8.	92.00	1.98	7.894E-03	1460.83	10.670	PBC<MDA	K40
1596.21	6.	96.69	2.09	7.364E-03	1596.21	95.400	PBC<MDA	La140
1764.67	4.	141.05	2.21	6.804E-03	1764.49	15.400	PBC<MDA	BI214
1836.06	1.	600.00	2.26	6.593E-03	1836.06	99.200	PBC<MDA	Y88

********** 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	
128.04	32.14	600.	129.	1.262E+04	34.97	0.809	-	s
145.81	36.58	1086.	272.	2.009E+04	22.43	0.852	-	s
160.82	40.38	1736.	161.	9.788E+03	37.55	0.769	-	sD
167.59	42.07	2047.	132.	7.474E+03	49.18	0.771	-	sD
308.27	76.93	586.	196.	5.219E+03	22.55	1.159	-	s
502.81	125.87	224.	49.	1.152E+03	47.17	0.350	-	s
730.66	182.86	164.	32.	8.932E+02	59.29	0.497	-	s
804.55	201.34	205.	32.	9.434E+02	71.37	0.295	-	sc
1617.61	404.66	134.	36.	1.720E+03	54.13	0.332	-	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: Client_Long_Rev15.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	185.95	46.62	4113.	15211.	8.451	1.13	0.744
TH-227	200.03	50.14	4758.	241.	0.134	48.67	0.778
AM-241	237.91	59.62	3221.	22939.	12.744	0.81	0.763
TH-234	252.59	63.29	939.	24.	0.013	184.47	0.791
Sn-126	256.56	64.28	1122.	47.	0.026	101.65	0.792s
BA-133	323.36	80.99	967.	7.	0.004	741.18	0.807
Np-237	345.35	86.49	2298.	46.	0.026	147.96	0.813
EU-155	345.56	86.54	2344.	46.	0.026	149.38	0.813s
Sn-126	347.15	86.94	2494.	-48.	-0.027	147.50	0.813s
Sn-126	349.67	87.57	2445.	-48.	-0.027	145.95	0.814s
Cd-109	351.55	88.04	2397.	-11.	-0.006	613.74	0.814s
Nd-147	363.79	91.10	2386.	0.	0.000	1000.00	0.817s
TH-234	369.74	92.59	2403.	-17.	-0.010	396.10	0.818
AC-228	372.78	93.35	2324.	48.	0.027	141.37	0.819s
Gd-153	389.37	97.50	912.	7.	0.004	658.04	0.823s
Np-239	397.37	99.50	1196.	-18.	-0.010	280.55	0.825
Gd-153	412.16	103.20	1341.	7.	0.004	793.03	0.828
Np-239	414.16	103.70	1312.	36.	0.020	142.50	0.829
EU-155	420.61	105.31	1217.	41.	0.023	121.61	0.830s
Np-239	423.88	106.13	1322.	44.	0.024	117.85	0.831s
EU-152	486.45	121.78	1381.	-45.	-0.025	117.59	0.846s
CO-57	487.57	122.06	1336.	-36.	-0.020	146.07	0.846s
EU-154	491.73	123.10	1258.	30.	0.017	168.22	0.847
PA-234	524.49	131.29	1634.	19.	0.011	302.06	0.855
HF-181	531.41	133.02	1653.	0.	0.000	1000.00	0.856s
HF-181	544.50	136.30	1653.	0.	0.000	1000.00	0.859s
CO-57	545.20	136.47	1673.	-46.	-0.026	125.34	0.859s
U-235	574.43	143.79	1532.	0.	0.000	1000.00	0.866s
CE-141	581.05	145.44	852.	41.	0.023	100.99	0.868s
Ba-140	649.90	162.66	1206.	-44.	-0.024	113.77	0.884
U-235	652.78	163.38	1251.	-45.	-0.025	126.27	0.885
CE-139	662.67	165.85	995.	40.	0.022	113.75	0.887s
Cf-251	705.64	176.60	580.	-19.	-0.011	226.72	0.897s
U-235	742.10	185.72	951.	6.	0.003	770.91	0.905s
TH-229	773.25	193.51	627.	-6.	-0.003	787.24	0.913s
U-235	820.52	205.33	581.	-10.	-0.006	561.65	0.924s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
TH-229	842.58	210.85	607.	38.	0.021	115.48	0.929s
Cf-251	907.16	227.00	537.	-20.	-0.011	210.82	0.944
TH-227	943.03	235.97	982.	-44.	-0.024	102.69	0.952s
PB-212	953.67	238.63	307.	162.	0.090	17.18	0.954D
PB-214	967.13	242.00	1675.	-32.	-0.018	180.22	0.958
EU-152	977.91	244.69	1534.	42.	0.023	133.37	0.960s
TH-227	1024.08	256.24	450.	-17.	-0.009	223.37	0.971s
Cd-113m	1053.91	263.70	542.	14.	0.008	231.15	0.978s
BI-210M	1062.44	265.83	685.	-40.	-0.022	70.32	0.979s
TL-208	1108.23	277.28	670.	-22.	-0.012	167.75	0.990
Hg-203	1115.89	279.20	717.	-34.	-0.019	112.69	0.992s
I-131	1136.28	284.30	411.	19.	0.010	204.23	0.996s
PB-214	1181.00	295.48	246.	58.	0.032	49.67	2.145s
TL-210	1183.07	296.00	1936.	-40.	-0.022	157.94	1.007s
PB-212	1199.19	300.03	1879.	-41.	-0.023	60.78	1.011s
PA-231	1199.35	300.07	1874.	-40.	-0.022	154.85	1.011s
PA-233	1199.79	300.18	1914.	-40.	-0.022	156.43	1.011s
PA-231	1209.66	302.65	1954.	-23.	-0.013	266.95	1.013s
BA-133	1210.47	302.85	1977.	0.	0.000	1000.00	1.013s
Ba-140	1218.46	304.85	1977.	0.	0.000	1000.00	1.015s
BI-210M	1218.64	304.90	1977.	0.	0.000	1000.00	1.015s
Ir-192	1232.82	308.44	1977.	0.	0.000	1000.00	1.019s
Ir-192	1265.01	316.49	629.	36.	0.020	99.90	1.026s
CR-51	1279.38	320.08	666.	-12.	-0.007	200.75	1.029s
La-140	1314.07	328.76	367.	20.	0.011	177.57	1.037s
Cf-249	1332.79	333.44	433.	-32.	-0.018	124.17	1.041s
AC-228	1352.30	338.32	1144.	-42.	-0.023	115.59	1.046s
Cs-136	1361.30	340.57	1186.	-42.	-0.023	117.42	1.048s
EU-152	1376.16	344.29	1228.	-42.	-0.023	119.05	1.051s
HF-181	1382.33	345.83	1270.	-42.	-0.023	120.88	1.053s
PB-214	1408.11	352.28	269.	107.	0.059	30.78	1.317s
BA-133	1423.00	356.00	877.	-42.	-0.023	101.87	1.062s
BA-133	1534.34	383.84	952.	35.	0.019	125.81	1.087
Cf-249	1550.77	387.95	987.	0.	0.000	1000.00	1.091s
SB-125	1710.44	427.88	429.	-43.	-0.024	102.27	1.127
AG-108M	1734.69	433.94	456.	-33.	-0.018	48.15	1.132s
PM-146	1814.44	453.88	468.	11.	0.006	400.91	1.150s
SB-125	1852.38	463.37	851.	43.	0.024	96.32	1.158s
Ir-192	1871.15	468.06	875.	6.	0.003	665.16	1.163s
HF-181	1926.89	482.00	355.	30.	0.017	124.31	1.175s
La-140	1946.98	487.02	336.	-14.	-0.008	295.24	1.180s
RH-106	2046.35	511.86	380.	144.	0.080	20.88	2.452s
Kr-85	2054.81	513.98	568.	-32.	-0.018	107.88	1.203s
Nd-147	2122.88	531.00	268.	-30.	-0.017	108.39	1.219s
Ba-140	2147.92	537.26	224.	-18.	-0.010	164.49	1.224s
CS-134	2251.82	563.24	172.	-3.	-0.002	857.86	1.247s
CS-134	2276.15	569.32	156.	21.	0.012	86.90	1.252
BI-207	2277.67	569.70	194.	-4.	-0.002	516.17	1.253

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
TL-208	2331.26	583.10	90.	76.	0.042	25.72	1.268
SB-125	2400.86	600.50	776.	-28.	-0.016	141.31	1.280
CS-134	2417.70	604.71	748.	0.	0.000	1000.00	1.284s
BI-214	2436.10	609.31	84.	61.	0.034	25.10	1.287D
RU-103	2440.05	610.30	748.	0.	0.000	1000.00	1.288s
AG-108M	2455.98	614.28	741.	7.	0.004	544.08	1.292s
PM-144	2471.11	618.06	748.	0.	0.000	1000.00	1.295s
RH-106	2486.52	621.92	763.	15.	0.008	261.70	1.299s
SB-125	2542.41	635.89	165.	15.	0.009	121.08	1.311s
I-131	2546.75	636.97	144.	23.	0.013	77.45	1.312s
AG-110M	2629.90	657.76	7830.	27.	0.015	464.66	1.330s
CS-137	2645.48	661.66	156.	7575.	4.208	1.21	1.342
PM-144	2785.03	696.54	108.	11.	0.006	201.52	1.363s
NB-94	2809.38	702.63	130.	-3.	-0.002	777.94	1.368s
SB-124	2890.01	722.79	227.	-13.	-0.007	163.31	1.386s
AG-108M	2890.61	722.94	196.	18.	0.010	114.56	1.386s
EU-154	2892.30	723.36	214.	0.	0.000	1000.00	1.386s
BI-212	2907.54	727.17	188.	24.	0.013	84.28	1.390s
PM-146	2941.74	735.72	82.	21.	0.011	92.28	1.397s
PM-146	2987.51	747.16	147.	-14.	-0.008	174.87	1.407s
ZR-95	3025.79	756.73	134.	-23.	-0.013	85.50	1.415s
AG-110M	3054.64	763.94	170.	-16.	-0.009	121.81	1.421
PA-234M	3064.52	766.41	197.	5.	0.003	409.55	1.423
EU-152	3114.56	778.92	147.	-5.	-0.003	466.58	1.434s
BI-212	3140.56	785.42	156.	-14.	-0.008	184.06	1.440s
CS-134	3182.36	795.87	220.	26.	0.015	82.61	1.448s
TL-210	3197.29	799.60	215.	-7.	-0.004	291.95	1.451s
CS-134	3206.69	801.95	274.	-7.	-0.004	336.55	1.454s
CO-58	3241.99	810.78	308.	-28.	-0.016	90.63	1.461
La-140	3261.97	815.77	336.	0.	0.000	1000.00	1.465s
Cs-136	3272.90	818.50	323.	26.	0.014	99.70	1.467s
MN-54	3338.30	834.85	149.	17.	0.009	157.45	1.481
Co-56	3385.99	846.77	173.	-27.	-0.015	106.31	1.491s
TL-208	3441.18	860.56	140.	17.	0.009	151.13	1.503
NB-94	3483.32	871.10	164.	-10.	-0.006	178.18	1.512s
EU-154	3491.85	873.23	214.	9.	0.005	236.52	1.514s
PA-234	3521.06	880.53	413.	-33.	-0.019	87.75	1.520
PA-234	3531.90	883.24	447.	-33.	-0.019	90.96	1.522s
AG-110M	3537.67	884.68	480.	-4.	-0.002	693.48	1.523s
Sc-46	3556.06	889.28	427.	31.	0.017	96.11	1.527s
Y-88	3591.11	898.04	145.	18.	0.010	141.12	1.534s
AC-228	3643.24	911.07	163.	32.	0.018	87.11	1.545s
AG-110M	3748.95	937.49	219.	-22.	-0.012	142.25	1.567s
PA-234	3783.07	946.02	159.	32.	0.018	85.55	1.574s
EU-152	3855.45	964.11	182.	5.	0.003	574.11	1.589s
AC-228	3874.90	968.97	245.	30.	0.017	75.16	1.593
EU-154	3984.36	996.33	447.	-37.	-0.021	81.90	1.616s
PA-234M	4003.04	1001.00	487.	-40.	-0.022	64.16	1.620s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
EU-154	4018.15	1004.77	463.	17.	0.010	179.17	1.623s
Co-56	4150.45	1037.84	125.	29.	0.016	87.68	1.650s
Cs-136	4191.39	1048.07	135.	-18.	-0.010	94.28	1.658
RH-106	4200.55	1050.36	145.	25.	0.014	70.46	1.661s
BI-207	4253.77	1063.66	106.	26.	0.014	88.80	1.671s
Ga-68	4308.74	1077.40	175.	-35.	-0.019	85.72	1.683
FE-59	4396.18	1099.25	155.	-18.	-0.010	126.20	1.700s
EU-152	4447.49	1112.07	275.	17.	0.009	142.91	1.711s
ZN-65	4461.38	1115.55	292.	0.	0.000	1000.00	1.713s
BI-214	4480.35	1120.29	281.	11.	0.006	211.17	1.717s
Sc-46	4481.41	1120.55	292.	0.	0.000	1000.00	1.717s
Ta-182	4484.41	1121.30	266.	22.	0.012	106.17	1.718s
CO-60	4692.39	1173.27	44.	2193.	1.218	2.27	1.787
Ta-182	4755.52	1189.05	60.	-14.	-0.008	124.54	1.772
Ta-182	4885.02	1221.41	21.	2.	0.001	634.67	1.798s
Co-56	4952.53	1238.28	33.	3.	0.002	436.26	1.812s
NA-22	5097.60	1274.53	16.	4.	0.002	150.00	1.840s
EU-154	5097.64	1274.54	20.	0.	0.000	1000.00	1.840s
FE-59	5165.90	1291.60	32.	-16.	-0.009	81.05	1.854s
TL-210	5251.56	1313.00	11.	5.	0.003	145.77	1.870s
CO-60	5329.78	1332.54	12.	2060.	1.145	2.25	1.709
AG-110M	5536.92	1384.30	5.	7.	0.004	89.43	1.926s
EU-152	5631.79	1408.00	5.	5.	0.003	121.64	1.944s
K-40	5843.25	1460.83	13.	8.	0.004	92.00	1.985s
La-140	6385.15	1596.21	6.	6.	0.004	96.69	2.087s
SB-124	6764.55	1690.98	24.	-10.	-0.006	122.47	2.157s
BI-214	7058.84	1764.49	14.	4.	0.002	141.05	2.211s
Y-88	7345.39	1836.06	6.	1.	0.001	600.00	2.262s

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	Peak Code	Peak MDA Value Bq/Sample	COMMENTS
BE-7	C	-8.6493E-01				5.31E+01	
			477.60	-8.649E-01	%(	3.686E+01 1.27E+03 1.05E+01	G
NA-22	C	2.5329E-01				9.50E+02	
			1274.53	2.533E-01	?(	1.352E+00 1.50E+02 9.99E+01	G
K-40	N	5.3012E+00				4.66E+11	
			1460.83	5.301E+00	?(P	1.285E+01 9.20E+01 1.07E+01	G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

Sc-46    F   1.4878E+00                                     8.38E+01
                          889.28 1.488E+00 ?(  4.759E+00 9.61E+01 1.00E+02 G
                         1120.55 0.000E+00 &   4.719E+00 1.00E+03 1.00E+02 G

CR-51    F  -2.8403E+00                                     2.77E+01
                          320.08-2.840E+00 ?(P 2.821E+01 2.01E+02 9.94E+00 G

MN-54    C   7.6362E-01                                     3.12E+02
                          834.85 7.636E-01 &(  2.733E+00 1.57E+02 1.00E+02 G

FE-59    F  -1.8328E+00                                     4.45E+01
                         1099.25-1.833E+00 &(P 6.075E+00 1.26E+02 5.65E+01 G
                         1291.60-2.390E+00 + P 4.324E+00 8.10E+01 4.32E+01 G

Co-56    C   2.7664E-01                                     7.73E+01
                          846.77-1.235E+00 ?(  2.963E+00 1.06E+02 9.99E+01 G
                         1238.28 2.803E-01 + P 2.762E+00 4.36E+02 6.61E+01 G
                         1037.84 1.097E+01 ?(  2.096E+01 8.77E+01 1.41E+01 G
                         1771.35-3.663E-01 %   1.464E+01 1.10E+03 1.55E+01  A

CO-57    C  -5.4065E-01                                     2.72E+02
                          122.06-5.407E-01  (  2.626E+00 1.46E+02 8.56E+01 G
                          136.47-5.806E+00 +   2.415E+01 1.25E+02 1.07E+01 G

CO-58    C  -1.2615E+00                                     7.09E+01
                          810.78-1.262E+00 &(  3.807E+00 9.06E+01 9.95E+01 G

CO-60    F   1.3263E+02                                     1.93E+03
                         1332.50 1.350E+02  (P 1.229E+00 2.25E+00 1.00E+02 G
                         1173.24 1.303E+02  (P 2.007E+00 2.27E+00 9.99E+01 G

NB-94    I  -1.2338E-01                                     7.41E+06
                          702.63-1.234E-01 &(  2.297E+00 7.78E+02 9.79E+01 G
                          871.10-4.893E-01 &   2.957E+00 1.78E+02 9.99E+01 G

ZR-95    I  -1.8293E+00                                     6.40E+01
                          756.73-1.829E+00 ?(P 4.433E+00 8.55E+01 5.45E+01 G
                          724.20-5.226E-02 & P 6.620E+00 2.72E+03 4.42E+01 G

NB-95    I   7.8878E-02                                     6.40E+01
                          765.79 7.888E-02 &(  2.889E+00 1.07E+03 9.98E+01 G

RU-103   I   6.8693E-02                                     3.93E+01
                          497.05 6.869E-02 %(  2.828E+00 1.67E+03 9.09E+01 G
                          610.30 0.000E+00 -   8.212E+01 1.00E+03 5.75E+00 GA
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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
RH-106	I	1.6747E+01					3.74E+02	
			621.92	5.556E+00	&(	4.869E+01	2.62E+02	9.93E+00 G
			1050.36	8.798E+01	&(	2.054E+02	7.05E+01	1.56E+00 G
			511.86	2.296E+01	?	1.492E+01	2.09E+01	2.00E+01 GA
AG-108M	C	-1.0291E+00					1.53E+05	
			433.94	-1.029E+00	?(P	3.197E+00	4.82E+01	9.05E+01 G
			722.94	8.005E-01	+	3.079E+00	1.15E+02	9.08E+01 G
			614.28	2.877E-01	+	5.256E+00	5.44E+02	8.98E+01 G
AG-110M	F	6.7883E-01					2.50E+02	
			884.68	-2.417E-01	?(P	6.904E+00	6.93E+02	7.27E+01 G
			657.76	1.092E+00	?(	1.681E+01	4.65E+02	9.46E+01 G
			937.49	-3.250E+00	+	1.044E+01	1.42E+02	3.44E+01 G
			1384.30	1.824E+00	?(P	3.780E+00	8.94E+01	2.43E+01 G
			763.94	-2.981E+00	+	1.223E+01	1.22E+02	2.23E+01 G
SN-113	F	1.7401E-01					1.15E+02	
			391.69	1.740E-01	&(P	6.026E+00	1.03E+03	6.40E+01 G
SB-124	F	-8.8600E-03					6.02E+01	
			602.73	-8.860E-03	%(	4.762E+00	1.60E+04	9.83E+01 G
			1690.98	-1.652E+00	+	4.219E+00	1.22E+02	4.78E+01 G
			722.79	-5.037E+00	+	2.775E+01	1.63E+02	1.08E+01 G
SB-125	I	1.2882E+00					1.01E+03	
			427.88	-4.049E+00	&(P	9.397E+00	1.02E+02	2.96E+01 G
			600.50	-5.647E+00	+	2.660E+01	1.41E+02	1.79E+01 G
			635.89	5.069E+00	&(	2.067E+01	1.21E+02	1.13E+01 G
			463.37	1.229E+01	?(	3.929E+01	9.63E+01	1.05E+01 G
I-131	I	1.3519E+00					8.02E+00	
			364.48	4.715E-02	%(P	2.896E+00	2.40E+03	8.17E+01 G
			284.30	6.389E+00	(P	3.323E+01	2.04E+02	6.14E+00 G
			636.97	1.191E+01	?(	3.067E+01	7.74E+01	7.17E+00 G
Gd-153	F	3.2992E-01					2.42E+02	
			97.50	2.857E-01	&(	6.304E+00	6.58E+02	3.00E+01 G
			103.20	3.907E-01	?(	1.036E+01	7.93E+02	2.18E+01 G
Ga-68	C	-6.8526E+01					4.71E-02	
			1077.40	-6.853E+01	&(	1.274E+02	8.57E+01	3.30E+00 G
Tc-99m	I	-8.5682E-02					2.51E-01	
			140.51	-8.568E-02	&(	2.879E+00	1.01E+03	8.93E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
BA-133	F	-1.6472E+00					3.85E+03	
			356.00	-1.647E+00	?(	5.572E+00	1.02E+02	6.20E+01 G
			302.85	0.000E+00	&	2.511E+01	1.00E+03	1.83E+01 G
			383.84	1.015E+01	&	4.248E+01	1.26E+02	8.94E+00 GA
			80.99	2.970E-01	& P	6.200E+00	7.41E+02	3.41E+01 GA
CS-134	I	1.8632E+00					7.54E+02	
			795.87	1.352E+00	&(	3.715E+00	8.26E+01	8.55E+01 G
			604.71	0.000E+00	-	4.804E+00	1.00E+03	9.76E+01 G
			569.32	4.707E+00	?(	1.365E+01	8.69E+01	1.54E+01 G
			801.95	-3.580E+00	+	4.084E+01	3.37E+02	8.69E+00 G
			563.24	-1.229E+00	&	2.614E+01	8.58E+02	8.35E+00 G
CS-137	I	3.4232E+02					1.10E+04	
			661.66	3.423E+02	(	2.753E+00	1.21E+00	8.52E+01 G
CE-139	F	7.1978E-01					1.38E+02	
			165.85	7.198E-01	&(	2.721E+00	1.14E+02	7.99E+01 G
Ba-140	I	-2.4384E+00					1.28E+01	
			537.26	-2.438E+00	?(	9.815E+00	1.64E+02	2.44E+01 G
			162.66	-1.020E+01	&	3.854E+01	1.14E+02	6.22E+00 G
			304.85	0.000E+00	+	1.078E+02	1.00E+03	4.29E+00 G
La-140	I	8.2126E-01					1.28E+01	
			1596.21	5.008E-01	?(	1.092E+00	9.67E+01	9.54E+01 G
			487.02	-9.734E-01	+ P	5.962E+00	2.95E+02	4.55E+01 G
			328.76	2.327E+00	(	1.052E+01	1.78E+02	2.03E+01 G
			815.77	0.000E+00	&	1.704E+01	1.00E+03	2.33E+01 G
CE-141	I	1.1744E+00					3.25E+01	
			145.44	1.174E+00	?(	3.939E+00	1.01E+02	4.82E+01 G
CE-144	I	-4.1934E-02					2.85E+02	
			133.54	-4.193E-02	&(P	2.297E+01	1.63E+04	1.11E+01 G
PM-144	C	4.3101E-01					3.63E+02	
			696.54	4.310E-01	&(	2.069E+00	2.02E+02	9.90E+01 G
			618.06	0.000E+00	-	4.809E+00	1.00E+03	9.91E+01 G
EU-152	F	2.1896E+00					4.94E+03	
			121.78	-2.048E+00	&(	7.993E+00	1.18E+02	2.86E+01 G
			344.29	-3.801E+00	+	1.503E+01	1.19E+02	2.65E+01 G
			1112.07	6.959E+00	?(	3.342E+01	1.43E+02	1.36E+01 G
			778.92	-1.792E+00	+	1.992E+01	4.67E+02	1.29E+01 G
			964.11	1.749E+00	(	2.293E+01	5.74E+02	1.46E+01 G
			244.69	1.043E+01	?(	4.621E+01	1.33E+02	7.58E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			1408.00	1.519E+00	?	4.386E+00	1.22E+02	2.10E+01 GA
EU-154	I	2.4096E+00					3.14E+03	
			123.10	9.568E-01	&(	5.359E+00	1.68E+02	4.08E+01 G
			1274.54	0.000E+00	-	4.235E+00	1.00E+03	3.52E+01 G
			723.36	0.000E+00	-	1.442E+01	1.00E+03	2.02E+01 G
			873.23	3.411E+00	?(	2.736E+01	2.37E+02	1.23E+01 G
			1004.77	5.017E+00	?(	3.014E+01	1.79E+02	1.80E+01 G
			996.33	-1.842E+01	&	5.004E+01	8.19E+01	1.06E+01 G
EU-155	I	2.2481E+00					1.81E+03	
			105.31	2.506E+00	(P	1.012E+01	1.22E+02	2.12E+01 G
			86.54	2.070E+00	&(	1.026E+01	1.49E+02	3.07E+01 G
HF-181	F	1.1379E+00					4.24E+01	
			482.00	1.138E+00	&(	3.433E+00	1.24E+02	8.05E+01 G
			133.02	0.000E+00	-	5.875E+00	1.00E+03	4.33E+01 G
			345.83	-6.715E+00	&	2.696E+01	1.21E+02	1.51E+01 G
			136.30	0.000E+00	-	4.382E+01	1.00E+03	5.85E+00 G
Ta-182	F	3.6413E+00					1.14E+02	
			1121.30	3.641E+00	(	1.293E+01	1.06E+02	3.49E+01 G
			1221.41	3.780E-01	-	5.496E+00	6.35E+02	2.70E+01 G
			1189.05	-5.183E+00	+	1.437E+01	1.25E+02	1.62E+01 G
Hg-203	F	-8.6484E-01					4.66E+01	
			279.20	-8.648E-01	?(	3.243E+00	1.13E+02	8.15E+01 G
TL-208	N	3.5723E+00					6.98E+02	
			583.02	3.164E+00	(P	1.945E+00	2.57E+01	8.45E+01 G
			277.28	-7.190E+00	-	4.030E+01	1.68E+02	6.31E+00 G
			860.56	6.352E+00	(P	2.184E+01	1.51E+02	1.24E+01 G
PM-146	C	1.3383E+00					2.02E+03	
			453.88	4.767E-01	?(P	4.658E+00	4.01E+02	6.50E+01 G
			747.16	-1.777E+00	+	7.348E+00	1.75E+02	3.40E+01 G
			735.72	3.827E+00	&(	8.332E+00	9.23E+01	2.25E+01 G
Y-88	F	5.0370E-01					1.07E+02	
			1836.06	8.494E-02	?(	1.200E+00	6.00E+02	9.92E+01 G
			898.04	9.470E-01	&(	3.035E+00	1.41E+02	9.37E+01 G
Cd-113m		4.7574E+03					5.33E+03	
			263.70	4.757E+03	?(	3.690E+04	2.31E+02	6.00E-03 K
Cd-109	F	-4.0785E+00					4.53E+02	
			88.04	-4.079E+00	?(	8.336E+01	6.14E+02	3.79E+00 G

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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Cf-251	T	-1.6930E+00					3.28E+05	
			176.60	-1.693E+00	(	1.024E+01	2.27E+02	1.70E+01 G
			227.00	-5.607E+00	+	3.155E+01	2.11E+02	6.30E+00 GA
Sn-126		8.3868E+00					3.65E+07	
			87.57	-1.762E+00	-	8.529E+00	1.46E+02	3.75E+01 GA
			64.28	8.387E+00	&(	2.828E+01	1.02E+02	9.70E+00 G
			86.94	-7.326E+00	-	3.585E+01	1.47E+02	9.04E+00 GA
PB-210	N	9.4667E+03					8.14E+03	
			46.54	9.467E+03	(P	1.877E+02	1.13E+00	4.25E+00 G
PB-212	N	6.9682E+00					6.98E+02	
			238.63	6.968E+00	(P	3.622E+00	1.72E+01	4.33E+01 G
			300.03	-2.712E+01	& P	1.360E+02	6.08E+01	3.28E+00 GA
PB-214	N	6.7792E+00					5.84E+05	
			351.93	6.929E+00	*(P	5.132E+00	3.08E+01	3.76E+01 G
			295.09	6.488E+00	(P	8.455E+00	4.97E+01	1.93E+01 G
			242.00	-8.152E+00	-	4.886E+01	1.80E+02	7.43E+00 GA
BI-207	C	1.9246E+00					1.18E+04	
			1063.66	1.925E+00	?(P	3.739E+00	8.88E+01	7.45E+01 G
			569.70	-1.353E-01	-	2.385E+00	5.16E+02	9.77E+01 G
BI-212	N	1.2987E+01					6.98E+02	
			727.17	1.299E+01	?(P	3.646E+01	8.43E+01	7.55E+00 G
			785.42	-4.786E+01	+	2.082E+02	1.84E+02	1.28E+00 GA
BI-214	N	4.6458E+00					5.84E+05	
			609.31	4.758E+00	(P	3.580E+00	2.51E+01	4.61E+01 G
			1120.29	4.303E+00	&(P	3.065E+01	2.11E+02	1.51E+01 G
			1764.49	2.112E+00	- P	1.053E+01	1.41E+02	1.54E+01 G
BI-210M	T	-1.5900E+00					1.10E+09	
			265.83	-1.590E+00	?(P	4.992E+00	7.03E+01	5.00E+01 G
			304.90	0.000E+00	+	1.652E+01	1.00E+03	2.80E+01 G
AC-228	N	6.6977E+00					2.10E+03	
			911.07	5.364E+00	?(	1.051E+01	8.71E+01	2.90E+01 G
			968.97	8.913E+00	(	2.222E+01	7.52E+01	1.75E+01 G
			338.32	-8.242E+00	-	3.165E+01	1.16E+02	1.20E+01 G
			93.35	1.165E+01	&	5.464E+01	1.41E+02	5.56E+00 XA
TH-227	N	3.5612E+01					7.95E+03	
			256.24	-4.741E+00	?(	2.833E+01	2.23E+02	7.00E+00 G
			235.97	-6.545E+00	+	2.231E+01	1.03E+02	1.23E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			50.14	7.092E+01	(	9.552E+01	4.87E+01	8.00E+00 G
TH-229	N	7.6234E+00					2.68E+06	
			193.51	-2.075E+00	(	4.371E+01	7.87E+02	4.40E+00 G
			210.85	2.190E+01	&(	6.711E+01	1.15E+02	2.99E+00 G
TH-234	N	1.9284E+00					1.63E+12	
			92.59	-4.196E+00	?(P	5.550E+01	3.96E+02	5.58E+00 G
			63.29	1.090E+01	(P	6.706E+01	1.84E+02	3.81E+00 G
PA-231	N	-1.7875E+01					1.20E+07	
			302.65	-1.787E+01	&(	1.588E+02	2.67E+02	2.88E+00 G
			300.07	-3.520E+01	&	1.811E+02	1.55E+02	2.46E+00 G
PA-233	C	-2.1030E-02					7.82E+08	
			312.01	-2.103E-02	%(P	1.306E+01	7.35E+03	3.60E+01 G
			300.18	-1.397E+01	&	7.261E+01	1.56E+02	6.20E+00 G
PA-234	N	5.9162E+00					1.63E+12	
			131.29	1.391E+00	?(P	1.400E+01	3.02E+02	1.80E+01 G
			946.02	1.200E+01	&(	2.307E+01	8.56E+01	1.34E+01 G
			569.47	-2.102E-01	%	2.768E+01	3.83E+03	8.20E+00 G
			883.24	-1.667E+01	+	5.039E+01	9.10E+01	9.60E+00 G
			880.53	-2.656E+01	+	7.745E+01	8.77E+01	6.00E+00 GA
PA-234M	N	-2.5019E+02					1.63E+12	
			1001.00	-2.502E+02	&(P	6.629E+02	6.42E+01	8.37E-01 G
			766.41	7.142E+01	+ P	9.964E+02	4.10E+02	2.94E-01 G
AM-241	T	1.2005E+03					1.58E+05	
			59.54	1.200E+03	(	1.398E+01	8.13E-01	3.59E+01 G
Np-237	F	4.8509E+00					2.14E+06	
			86.49	4.851E+00	&(	2.382E+01	1.48E+02	1.31E+01 G
Ir-192	F	7.2251E-01					7.40E+01	
			316.49	9.358E-01	?(	3.107E+00	9.99E+01	8.70E+01 G
			468.06	3.639E-01	?(	8.117E+00	6.65E+02	5.18E+01 G
			308.44	0.000E+00	-	1.469E+01	1.00E+03	3.18E+01 G
Cs-136	F	1.1735E+00					1.30E+01	
			818.50	1.173E+00	?(	3.902E+00	9.97E+01	1.00E+02 G
			1048.07	-1.225E+00	+	3.869E+00	9.43E+01	8.00E+01 G
			340.57	-2.125E+00	+	8.287E+00	1.17E+02	4.69E+01 G
Np-239	T	2.5147E+00					2.36E+00	
			103.70	1.963E+00	&	9.302E+00	1.43E+02	2.40E+01 X
			106.13	2.515E+00	?(	9.840E+00	1.18E+02	2.27E+01 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments
                           99.50-1.531E+00 &   1.434E+01 2.81E+02 1.50E+01 X

Nd-147      -7.5599E+00                                       1.11E+01
                          531.00-7.560E+00 ?(  1.991E+01 1.08E+02 1.30E+01 G
                           91.10 0.000E+00 +   1.098E+01 1.00E+03 2.83E+01 G

TL-210   N  -3.2106E-01                                       5.84E+05
                          799.60-3.211E-01 ?(  3.185E+00 2.92E+02 9.90E+01 G
                          296.00-1.082E+00 +   5.676E+00 1.58E+02 7.90E+01 G
                         1313.00 1.645E+00 ?   5.529E+00 1.46E+02 2.10E+01 GA

Kr-85    I  -2.3558E+02                                       3.92E+03
                          513.98-2.356E+02 ?(  8.462E+02 1.08E+02 4.30E-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

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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********** 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	
Sn-126	64.28	1122.	47.	0.026	101.65	8.387E+00	
BA-133	80.99	967.	7.	0.004	741.18	2.970E-01	P
Np-237	86.49	2298.	46.	0.026	147.96	4.851E+00	
EU-155	86.54	2344.	46.	0.026	149.38	2.070E+00	
Sn-126	86.94	2494.	-48.	-0.027	147.50	-7.326E+00	
Sn-126	87.57	2445.	-48.	-0.027	145.95	-1.762E+00	
Cd-109	88.04	2397.	-11.	-0.006	613.74	-4.079E+00	
Gd-153	97.50	912.	7.	0.004	658.04	2.857E-01	
Gd-153	103.20	1341.	7.	0.004	793.03	3.907E-01	
EU-155	105.31	1217.	41.	0.023	121.61	2.506E+00	P
EU-152	121.78	1381.	-45.	-0.025	117.59	-2.048E+00	
CO-57	122.06	1336.	-36.	-0.020	146.07	-5.407E-01	
EU-154	123.10	1258.	30.	0.017	168.22	9.568E-01	
PA-234	131.29	1634.	19.	0.011	302.06	1.391E+00	P
CO-57	136.47	1673.	-46.	-0.026	125.34	-5.806E+00	
CE-141	145.44	852.	41.	0.023	100.99	1.174E+00	
Ba-140	162.66	1206.	-44.	-0.024	113.77	-1.020E+01	
U-235	163.38	1251.	-45.	-0.025	126.27	-1.307E+01	P
CE-139	165.85	995.	40.	0.022	113.75	7.198E-01	
Cf-251	176.60	580.	-19.	-0.011	226.72	-1.693E+00	
U-235	185.72	951.	6.	0.003	770.91	1.644E-01	
TH-229	193.51	627.	-6.	-0.003	787.24	-2.075E+00	
U-235	205.33	581.	-10.	-0.006	561.65	-3.423E+00	P
TH-229	210.85	607.	38.	0.021	115.48	2.190E+01	
Cf-251	227.00	537.	-20.	-0.011	210.82	-5.607E+00	
EU-152	244.69	1534.	42.	0.023	133.37	1.043E+01	
BI-210M	265.83	685.	-40.	-0.022	70.32	-1.590E+00	P
Hg-203	279.20	717.	-34.	-0.019	112.69	-8.648E-01	
I-131	284.30	411.	19.	0.010	204.23	6.389E+00	P
TL-210	296.00	1936.	-40.	-0.022	157.94	-1.082E+00	
PA-231	300.07	1874.	-40.	-0.022	154.85	-3.520E+01	
PA-233	300.18	1914.	-40.	-0.022	156.43	-1.397E+01	
PA-231	302.65	1954.	-23.	-0.013	266.95	-1.787E+01	
Ir-192	316.49	629.	36.	0.020	99.90	9.358E-01	
CR-51	320.08	666.	-12.	-0.007	200.75	-2.840E+00	P
La-140	328.76	367.	20.	0.011	177.57	2.327E+00	
Cf-249	333.44	433.	-32.	-0.018	124.17	-4.791E+00	
Cs-136	340.57	1186.	-42.	-0.023	117.42	-2.125E+00	
EU-152	344.29	1228.	-42.	-0.023	119.05	-3.801E+00	
HF-181	345.83	1270.	-42.	-0.023	120.88	-6.715E+00	
BA-133	356.00	877.	-42.	-0.023	101.87	-1.647E+00	
BA-133	383.84	952.	35.	0.019	125.81	1.015E+01	
SB-125	427.88	429.	-43.	-0.024	102.27	-4.049E+00	P
PM-146	453.88	468.	11.	0.006	400.91	4.767E-01	P

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
SB-125	463.37	851.	43.	0.024	96.32	1.229E+01		
Ir-192	468.06	875.	6.	0.003	665.16	3.639E-01		
HF-181	482.00	355.	30.	0.017	124.31	1.138E+00		
La-140	487.02	336.	-14.	-0.008	295.24	-9.734E-01		P
RH-106	511.86	380.	144.	0.080	20.88	2.296E+01		
Kr-85	513.98	568.	-32.	-0.018	107.88	-2.356E+02		
Nd-147	531.00	268.	-30.	-0.017	108.39	-7.560E+00		
Ba-140	537.26	224.	-18.	-0.010	164.49	-2.438E+00		
CS-134	563.24	172.	-3.	-0.002	857.86	-1.229E+00		
CS-134	569.32	156.	21.	0.012	86.90	4.707E+00		
BI-207	569.70	194.	-4.	-0.002	516.17	-1.353E-01		
SB-125	600.50	776.	-28.	-0.016	141.31	-5.647E+00		
RH-106	621.92	763.	15.	0.008	261.70	5.556E+00		
SB-125	635.89	165.	15.	0.009	121.08	5.069E+00		
I-131	636.97	144.	23.	0.013	77.45	1.191E+01		
AG-110M	657.76	7830.	27.	0.015	464.66	1.092E+00		
PM-144	696.54	108.	11.	0.006	201.52	4.310E-01		
NB-94	702.63	130.	-3.	-0.002	777.94	-1.234E-01		
SB-124	722.79	227.	-13.	-0.007	163.31	-5.037E+00		
PM-146	735.72	82.	21.	0.011	92.28	3.827E+00		
PM-146	747.16	147.	-14.	-0.008	174.87	-1.777E+00		
ZR-95	756.73	134.	-23.	-0.013	85.50	-1.829E+00		P
AG-110M	763.94	170.	-16.	-0.009	121.81	-2.981E+00		
PA-234M	766.41	197.	5.	0.003	409.55	7.142E+01		P
EU-152	778.92	147.	-5.	-0.003	466.58	-1.792E+00		
CS-134	795.87	220.	26.	0.015	82.61	1.352E+00		
TL-210	799.60	215.	-7.	-0.004	291.95	-3.211E-01		
CS-134	801.95	274.	-7.	-0.004	336.55	-3.580E+00		
CO-58	810.78	308.	-28.	-0.016	90.63	-1.262E+00		
Cs-136	818.50	323.	26.	0.014	99.70	1.173E+00		
MN-54	834.85	149.	17.	0.009	157.45	7.636E-01		
Co-56	846.77	173.	-27.	-0.015	106.31	-1.235E+00		
NB-94	871.10	164.	-10.	-0.006	178.18	-4.893E-01		
EU-154	873.23	214.	9.	0.005	236.52	3.411E+00		
PA-234	880.53	413.	-33.	-0.019	87.75	-2.656E+01		
PA-234	883.24	447.	-33.	-0.019	90.96	-1.667E+01		
AG-110M	884.68	480.	-4.	-0.002	693.48	-2.417E-01		P
Sc-46	889.28	427.	31.	0.017	96.11	1.488E+00		
Y-88	898.04	145.	18.	0.010	141.12	9.470E-01		
AG-110M	937.49	219.	-22.	-0.012	142.25	-3.250E+00		
PA-234	946.02	159.	32.	0.018	85.55	1.200E+01		
EU-152	964.11	182.	5.	0.003	574.11	1.749E+00		
EU-154	996.33	447.	-37.	-0.021	81.90	-1.842E+01		
PA-234M	1001.00	487.	-40.	-0.022	64.16	-2.502E+02		P
EU-154	1004.77	463.	17.	0.010	179.17	5.017E+00		
Co-56	1037.84	125.	29.	0.016	87.68	1.097E+01		
Cs-136	1048.07	135.	-18.	-0.010	94.28	-1.225E+00		
RH-106	1050.36	145.	25.	0.014	70.46	8.798E+01		

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
BI-207	1063.66	106.	26.	0.014	88.80	1.925E+00	P
Ga-68	1077.40	175.	-35.	-0.019	85.72	-6.853E+01	
FE-59	1099.25	155.	-18.	-0.010	126.20	-1.833E+00	P
EU-152	1112.07	275.	17.	0.009	142.91	6.959E+00	
Ta-182	1121.30	266.	22.	0.012	106.17	3.641E+00	
Ta-182	1189.05	60.	-14.	-0.008	124.54	-5.183E+00	
Ta-182	1221.41	21.	2.	0.001	634.67	3.780E-01	
Co-56	1238.28	33.	3.	0.002	436.26	2.803E-01	P
NA-22	1274.53	16.	4.	0.002	150.00	2.533E-01	
FE-59	1291.60	32.	-16.	-0.009	81.05	-2.390E+00	P
TL-210	1313.00	11.	5.	0.003	145.77	1.645E+00	
AG-110M	1384.30	5.	7.	0.004	89.43	1.824E+00	P
EU-152	1408.00	5.	5.	0.003	121.64	1.519E+00	
La-140	1596.21	6.	6.	0.004	96.69	5.008E-01	
SB-124	1690.98	24.	-10.	-0.006	122.47	-1.652E+00	
Y-88	1836.06	6.	1.	0.001	600.00	8.494E-02	

P - Peakbackground subtraction

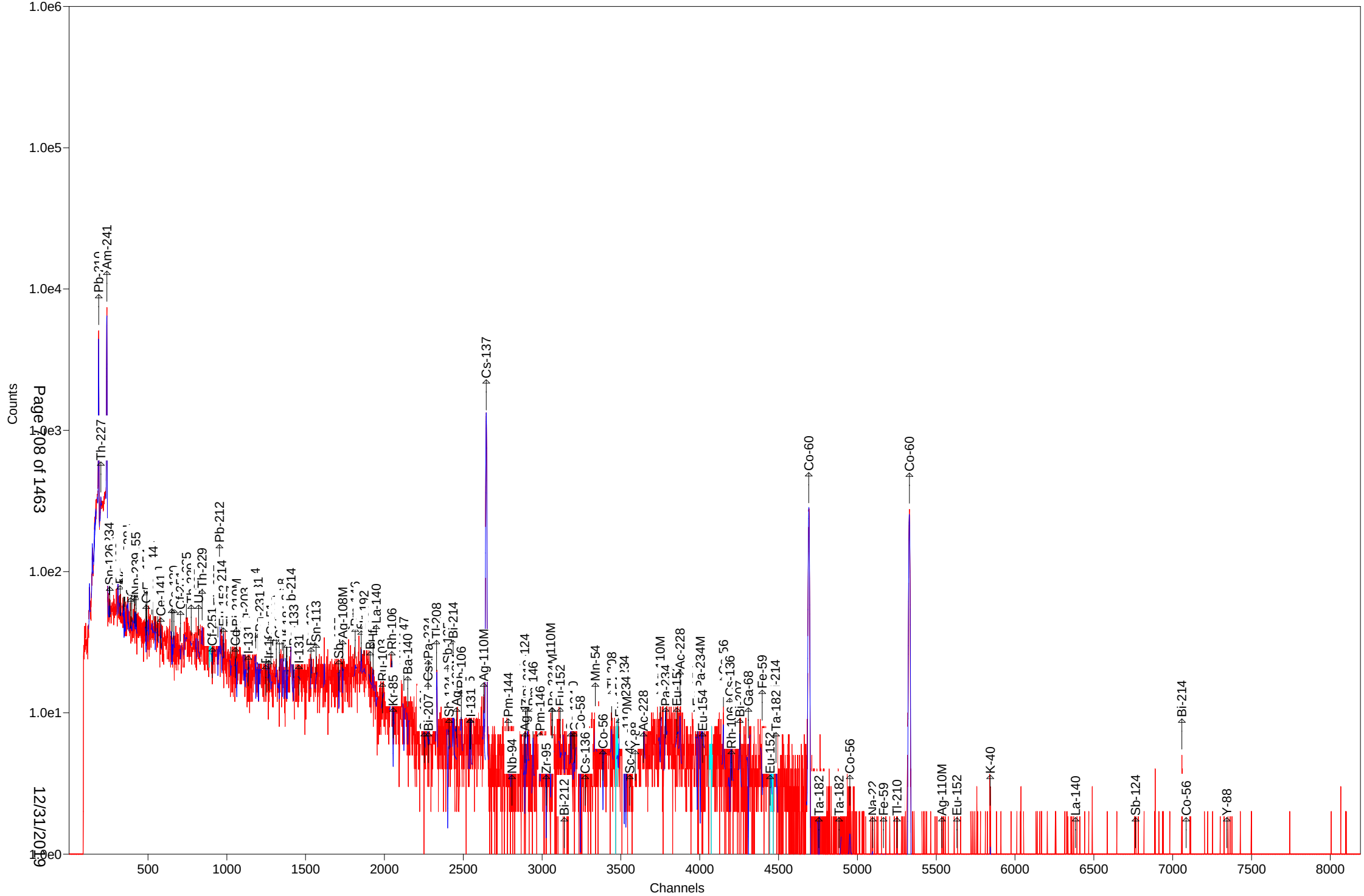
***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide		Time of Count Activity Bq/Sample	Time Corrected Activity Bq/Sample	Uncertainty Counting 1 Sigma	MDA Bq/Sample
BE-7	#A	-8.6492E-01	-8.6493E-01	1.267E+03%	3.69E+01
NA-22	#A	2.5329E-01	2.5329E-01	1.500E+02%	1.35E+00
K-40	#A	5.3012E+00	5.3012E+00	9.200E+01%	1.29E+01
Sc-46	#A	1.4878E+00	1.4878E+00	9.611E+01%	4.76E+00
CR-51	#A	-2.8403E+00	-2.8403E+00	2.008E+02%	2.82E+01
MN-54	#A	7.6362E-01	7.6362E-01	1.575E+02%	2.73E+00
FE-59	#A	-1.8328E+00	-1.8328E+00	1.262E+02%	6.07E+00
Co-56	#A	2.7664E-01	2.7664E-01	6.890E+01%	2.96E+00
CO-57	#A	-5.4065E-01	-5.4065E-01	1.461E+02%	2.63E+00
CO-58	#A	-1.2615E+00	-1.2615E+00	9.063E+01%	3.81E+00
CO-60		1.3263E+02	1.3263E+02	1.597E+00%	1.23E+00
ZN-65	#A	0.0000E+00	0.0000E+00	1.000E+03%	9.29E+00
NB-94	#A	-1.2338E-01	-1.2338E-01	7.779E+02%	2.30E+00
ZR-95	#A	-1.8293E+00	-1.8293E+00	8.550E+01%	4.43E+00
NB-95	#A	7.8877E-02	7.8878E-02	1.069E+03%	2.89E+00
RU-103	#A	6.8692E-02	6.8693E-02	1.674E+03%	2.83E+00
RH-106	#A	1.6747E+01	1.6747E+01	7.046E+01%	4.87E+01
AG-108M	#A	-1.0291E+00	-1.0291E+00	4.815E+01%	3.20E+00
AG-110M	#A	6.7883E-01	6.7883E-01	8.943E+01%	6.90E+00
SN-113	#A	1.7401E-01	1.7401E-01	1.033E+03%	6.03E+00
SB-124	#A	-8.8599E-03	-8.8600E-03	1.597E+04%	4.76E+00
SB-125	#A	1.2882E+00	1.2882E+00	6.182E+01%	9.40E+00
I-131	#A	1.3518E+00	1.3519E+00	7.745E+01%	2.90E+00
Gd-153	#A	3.2992E-01	3.2992E-01	5.152E+02%	6.30E+00

Ga-68	#A	-6.7783E+01	-6.8526E+01	8.572E+01%	1.27E+02
Tc-99m	#A	-8.5507E-02	-8.5682E-02	1.006E+03%	2.88E+00
BA-133	#A	-1.6472E+00	-1.6472E+00	1.019E+02%	5.57E+00
CS-134	#A	1.8631E+00	1.8632E+00	5.995E+01%	3.72E+00
CS-137		3.4232E+02	3.4232E+02	1.210E+00%	2.75E+00
CE-139	#A	7.1978E-01	7.1978E-01	1.138E+02%	2.72E+00
Ba-140	#A	-2.4383E+00	-2.4384E+00	1.645E+02%	9.82E+00
La-140	#A	8.2122E-01	8.2126E-01	9.669E+01%	1.09E+00
CE-141	#A	1.1744E+00	1.1744E+00	1.010E+02%	3.94E+00
CE-144	#A	-4.1933E-02	-4.1934E-02	1.634E+04%	2.30E+01
PM-144	#A	4.3101E-01	4.3101E-01	2.015E+02%	2.07E+00
EU-152	#A	2.1896E+00	2.1896E+00	1.176E+02%	7.99E+00
EU-154	#A	2.4096E+00	2.4096E+00	1.137E+02%	5.36E+00
EU-155	#A	2.2481E+00	2.2481E+00	9.631E+01%	1.01E+01
HF-181	#A	1.1378E+00	1.1379E+00	1.243E+02%	3.43E+00
Ta-182	#A	3.6412E+00	3.6413E+00	1.062E+02%	1.29E+01
Hg-203	#A	-8.6483E-01	-8.6484E-01	1.127E+02%	3.24E+00
TL-208		3.5723E+00	3.5723E+00	2.572E+01%	1.95E+00
PM-146	#A	1.3383E+00	1.3383E+00	9.228E+01%	4.66E+00
Y-88	#A	5.0369E-01	5.0370E-01	1.411E+02%	1.20E+00
Cd-113m	#A	4.7574E+03	4.7574E+03	2.311E+02%	3.69E+04
Cd-109	#A	-4.0785E+00	-4.0785E+00	6.137E+02%	8.34E+01
Cf-251	#A	-1.6930E+00	-1.6930E+00	2.267E+02%	1.02E+01
Cf-249	#A	0.0000E+00	0.0000E+00	1.000E+03%	5.90E+00
Sn-126	#A	8.3868E+00	8.3868E+00	1.017E+02%	2.83E+01
PB-210		9.4667E+03	9.4667E+03	1.130E+00%	1.88E+02
PB-212		6.9682E+00	6.9682E+00	1.718E+01%	3.62E+00
PB-214	#	6.7792E+00	6.7792E+00	2.922E+01%	5.13E+00
BI-207	#A	1.9246E+00	1.9246E+00	8.880E+01%	3.74E+00
BI-212	#A	1.2987E+01	1.2987E+01	8.428E+01%	3.65E+01
U-235	#A	0.0000E+00	0.0000E+00	1.000E+03%	2.30E+01
BI-214		4.6458E+00	4.6458E+00	2.510E+01%	3.58E+00
BI-210M	#A	-1.5900E+00	-1.5900E+00	7.032E+01%	4.99E+00
AC-228	A	6.6977E+00	6.6977E+00	5.752E+01%	1.05E+01
TH-227	C	3.5612E+01	3.5612E+01	4.867E+01%	2.83E+01
TH-229	#A	7.6234E+00	7.6234E+00	1.155E+02%	4.37E+01
TH-234	A	1.9284E+00	1.9284E+00	1.845E+02%	5.55E+01
PA-231	#A	-1.7875E+01	-1.7875E+01	2.670E+02%	1.59E+02
PA-233	#A	-2.1030E-02	-2.1030E-02	7.346E+03%	1.31E+01
PA-234	#A	5.9162E+00	5.9162E+00	8.555E+01%	1.40E+01
PA-234M	#A	-2.5019E+02	-2.5019E+02	6.416E+01%	6.63E+02
AM-241		1.2005E+03	1.2005E+03	8.127E-01%	1.40E+01
Np-237	#A	4.8509E+00	4.8509E+00	1.480E+02%	2.38E+01
Ir-192	#A	7.2251E-01	7.2251E-01	9.990E+01%	3.11E+00
Cs-136	#A	1.1734E+00	1.1735E+00	9.970E+01%	3.90E+00
Np-239	#A	2.5142E+00	2.5147E+00	1.178E+02%	9.84E+00
Nd-147	#A	-7.5595E+00	-7.5599E+00	1.084E+02%	1.99E+01
TL-210	#A	-3.2106E-01	-3.2106E-01	2.919E+02%	3.18E+00
Kr-85	#A	-2.3558E+02	-2.3558E+02	1.079E+02%	8.46E+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 (   25.1 to  1999.5 keV)     1.117E+04  Bq/Sample
Total Decayed Activity (   25.1 to  1999.5 keV) 1.1170853E+04  Bq/Sample
```

452567_Gamma_LCS 160-452567~2-A. 17_Gamma_20192437.spc.



Test America St. Louis Spectrum ID: 16_Gamma_20192288

Sample Description: 452567_Gamma_160-36526-A-1-B
Detector: Detector #16
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-1-B

Decay to Time: 12/25/2019 08:18 Live Time: 1800 sec
Acquisition Time: 12/25/2019 08:19:08 Real Time: 1805 sec
Analysis Time: 12/25/2019 08:49 Dead Time: 0.28 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 16_Soil_TunaCan.Clb
Efficiency Cal Desc: 16_TunaCan_90099_071012
Efficiency Cal Date: 7/13/2012 09:47
Energy Cal Date: 2/28/2012 09:35
Library: Client_Long_Rev15.lib
Bkgd Correction File: 16_2019-12-07_1450.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	-4.919E+00	93.3	4.592E+00	4.599E+00	1.538E+01
NA-22	1.622E-01	256.0	4.152E-01	4.152E-01	1.488E+00
K-40	1.558E+02	6.5	1.018E+01	1.293E+01	1.079E+01
Sc-46	1.436E-01	268.6	3.858E-01	3.858E-01	1.677E+00
CR-51	2.882E+00	251.5	7.250E+00	7.251E+00	2.433E+01
MN-54	-8.609E-01	87.9	7.566E-01	7.579E-01	1.667E+00
FE-59	8.935E-01	87.4	7.813E-01	7.826E-01	2.284E+00
Co-56	1.847E+00	20.4	3.769E-01	3.887E-01	1.130E+00
CO-57	0.000E+00	1.#INF	1.892E-01	1.892E-01	1.182E+00
CO-58	-1.833E-01	301.2	5.522E-01	5.522E-01	1.512E+00
CO-60	4.660E-01	89.1	4.154E-01	4.160E-01	9.051E-01
ZN-65	6.978E-01	242.5	1.692E+00	1.692E+00	5.789E+00
NB-94	-3.860E-02	1215.2	4.691E-01	4.691E-01	1.645E+00
ZR-95	1.093E+00	50.5	5.520E-01	5.549E-01	1.484E+00
NB-95	-1.584E-01	388.2	6.150E-01	6.151E-01	2.119E+00
RU-103	2.683E-01	148.6	3.987E-01	3.990E-01	9.718E-01
RH-106	6.672E+00	108.3	7.226E+00	7.234E+00	3.618E+01
AG-108M	3.850E-02	150.3	5.789E-02	5.792E-02	1.220E+00
AG-110M	4.558E-01	137.9	6.285E-01	6.290E-01	2.252E+00
SN-113	-8.968E-04	114479.3	1.027E+00	1.027E+00	2.507E+00
SB-124	3.265E-01	317.2	1.036E+00	1.036E+00	3.487E+00
SB-125	2.000E+00	71.1	1.423E+00	1.427E+00	3.357E+00
I-131	-5.963E-01	92.8	5.533E-01	5.541E-01	1.357E+00
Gd-153	-1.355E+00	173.4	2.350E+00	2.352E+00	7.813E+00
Ga-68	1.111E+01	156.9	1.744E+01	1.745E+01	3.954E+01
Tc-99m	-4.196E-01	145.6	6.109E-01	6.114E-01	2.035E+00
BA-133	8.126E-01	150.9	1.226E+00	1.227E+00	3.988E+00
CS-134	7.241E-01	79.9	5.785E-01	5.797E-01	1.474E+00
CS-137	-7.929E-01	119.4	9.464E-01	9.473E-01	2.069E+00
CE-139	3.095E-01	128.3	3.972E-01	3.983E-01	1.332E+00
Ba-140	-5.614E-01	110.1	6.181E-01	6.188E-01	4.792E+00
La-140	3.035E-01	70.4	2.136E-01	2.142E-01	1.692E+00
CE-141	3.744E-01	274.0	1.026E+00	1.026E+00	3.435E+00

CE-144	1.881E+00	229.8	4.321E+00	4.322E+00	1.446E+01
PM-144	1.274E-01	271.7	3.462E-01	3.463E-01	1.589E+00
EU-152	6.754E-01	236.5	1.597E+00	1.598E+00	3.508E+00
EU-154	1.374E+00	93.1	1.279E+00	1.281E+00	2.236E+00
EU-155	-1.861E+00	86.9	1.617E+00	1.620E+00	1.020E+01
HF-181	-8.425E-02	101.1	8.517E-02	8.528E-02	2.149E+00
Ta-182	1.588E+00	86.8	1.378E+00	1.380E+00	8.813E+00
Hg-203	-4.979E-01	92.3	4.596E-01	4.605E-01	1.536E+00
TL-208	3.286E+00	15.9	5.240E-01	5.510E-01	9.511E-01
PM-146	7.893E-01	40.4	3.185E-01	3.211E-01	1.428E+00
Y-88	6.113E-01	37.1	2.265E-01	2.293E-01	5.796E-01
Cd-113m	-2.060E+02	2615.3	5.389E+03	5.389E+03	1.857E+04
Cd-109	0.000E+00	1.#INF	1.365E+01	1.365E+01	4.546E+01
Cf-251	8.217E-01	257.8	2.118E+00	2.119E+00	5.459E+00
Cf-249	4.570E-01	152.6	6.974E-01	6.978E-01	2.414E+00
Sn-126	4.359E+00	116.3	5.070E+00	5.076E+00	1.691E+01
PB-210	2.859E+01	40.3	1.152E+01	1.164E+01	2.970E+01
PB-212	8.097E+00	10.3	8.352E-01	9.859E-01	2.119E+00
PB-214	2.422E+01	5.6	1.346E+00	1.843E+00	2.636E+00
BI-207	-2.362E-02	3159.9	7.465E-01	7.465E-01	1.777E+00
BI-212	1.712E+01	23.7	4.050E+00	4.147E+00	7.570E+00
U-235	-3.534E+00	46.3	1.638E+00	1.648E+00	1.581E+01
BI-214	2.530E+01	6.4	1.623E+00	2.089E+00	2.191E+00
BI-210M	7.015E-01	135.0	9.471E-01	9.480E-01	1.779E+00
AC-228	1.101E+01	17.7	1.947E+00	2.026E+00	3.670E+00
TH-227	-5.710E+00	113.2	6.463E+00	6.472E+00	1.581E+01
TH-229	5.226E+00	114.1	5.962E+00	5.976E+00	1.978E+01
TH-234	2.305E+01	27.0	6.228E+00	6.359E+00	1.466E+01
PA-231	9.777E+00	224.0	2.190E+01	2.191E+01	7.357E+01
PA-233	1.349E+00	162.5	2.191E+00	2.193E+00	6.432E+00
PA-234	1.924E+00	94.8	1.824E+00	1.827E+00	8.211E+00
PA-234M	7.843E+00	83.8	6.574E+00	6.586E+00	2.817E+02
AM-241	2.135E+00	42.7	9.113E-01	9.180E-01	2.442E+00
Np-237	-3.543E+00	65.8	2.331E+00	2.339E+00	1.376E+01
Ir-192	4.886E-01	168.3	8.222E-01	8.227E-01	2.721E+00
Cs-136	-1.169E-01	120.2	1.406E-01	1.407E-01	1.593E+00
Np-239	-1.791E+00	164.9	2.954E+00	2.956E+00	9.820E+00
Nd-147	-1.813E+00	187.3	3.397E+00	3.399E+00	8.251E+00
TL-210	4.774E-01	90.1	4.301E-01	4.310E-01	1.452E+00
Kr-85	0.000E+00	1.#INF	1.710E+01	1.710E+01	4.381E+02
Total	3.707E+02				

Analyst: Caleb Quinn

Sample description
452567_Gamma_160-36526-A-1-B

Spectrum Filename: C:\User\SPC\Det16\16_Gamma_20192288.An1

Acquisition information
Start time: 12/25/2019 8:19:08 AM
Live time: 1800
Real time: 1805
Dead time: 0.28 %
Detector ID: 16

Detector system
Ge16 SN/11012217

Calibration
Filename: 16_Soil_TunaCan.Clb
16_TunaCan_90099_071012

Energy Calibration
Created: 2/28/2012 9:35:31 AM
Zero offset: 0.050 keV
Gain: 0.250 keV/channel
Quadratic: -2.285E-08 keV/channel^2

Efficiency Calibration
Created: 7/13/2012 9:47:24 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.01 %
Log(Eff): 1.477416E-02 + (-5.514266E-01*Log(E)) + (-1.443482E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.17 %
Log(Eff): -2.408438E+01 + (8.948554E+00*Log(E)) + (-9.513599E-01*Log(E)^2)

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.06keV)
Stop channel: 8000 (1999.64keV)
Peak rejection level: 1000.000%
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

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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	12/25/2019 8:18:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	16_2019-12-07_1450.PBC 12/7/2019 2:50:17 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 30 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.2074

***** 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
46.52	51.	40.28	1.20	2.352E-02	46.54	4.250	PBC<MDA	PB210
59.96	46.	42.69	1.26	3.327E-02	59.54	35.900	PBC<MDA	AM241
63.29	6.	579.64	0.97	3.561E-02	63.29	3.810	PBC<MDA	TH234
64.33	28.	116.31	0.98	3.619E-02	64.28	9.700	PBC<MDA	Sn126
74.80	166.	14.76	0.99	4.137E-02				
77.12	251.	10.38	0.99	4.228E-02				
87.24	103.	19.27	1.03	4.532E-02	86.49	13.100	PBC<MDA	Np237
					86.54	30.700	4.114E+00	EU155
					86.94	9.040	1.394E+01	Sn126
					87.57	37.500	3.350E+00	Sn126
					88.04	3.790	3.307E+01	Cd109
92.91	138.	20.62	1.25	4.644E-02	92.59	5.584	2.305E+01	TH234
					93.35	5.561	PBC<MDA	AC228
99.38	12.	145.16	1.01	4.728E-02	99.50	15.000	PBC<MDA	Np239
103.58	14.	110.51	1.01	4.758E-02	103.20	21.800	PBC<MDA	Gd153
					103.70	24.000	6.957E-01	Np239
123.10	10.	237.03	1.03	4.721E-02	123.10	40.790	PBC<MDA	EU154
131.29	24.	152.81	1.04	4.639E-02	131.29	18.000	PBC<MDA	PA234
133.02	24.	155.25	1.04	4.618E-02	133.02	43.300	PBC<MDA	HF181
					133.54	11.090	2.631E+00	CE144
133.54	17.	229.75	1.04	4.612E-02	133.02	43.300	PBC<MDA	HF181
					133.54	11.090	1.881E+00	CE144

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
145.39	14.	274.01	1.05	4.440E-02	145.44	48.200	PBC<MDA	CE141
163.49	15.	144.99	1.07	4.123E-02	163.38	5.080	PBC<MDA	U235
165.85	18.	128.31	1.07	4.156E-02	165.85	79.900	PBC<MDA	CE139
176.60	10.	257.78	1.08	3.977E-02	176.60	17.000	PBC<MDA	Cf251
185.88	122.	21.52	1.42	3.839E-02	185.72	54.000	3.270E+00	U235
193.51	20.	114.07	1.09	3.730E-02	193.51	4.400	PBC<MDA	TH229
205.33	52.	39.88	1.11	3.577E-02	205.33	5.010	1.601E+01	U235
210.85	6.	398.26	1.11	3.511E-02	210.85	2.990	PBC<MDA	TH229
235.97	6.	673.21	1.13	3.242E-02	235.97	12.300	PBC<MDA	TH227
238.69	203.	10.29	1.14	3.216E-02	238.63	43.300	8.113E+00	PB212
241.96	131.	13.50	1.14	3.185E-02	242.00	7.430	3.074E+01	PB214
265.83	14.	136.25	1.16	2.979E-02	265.83	50.000	PBC<MDA	BI210M
295.24	246.	8.73	1.36	2.764E-02	295.09	19.300	2.563E+01	PB214
					296.00	79.000	6.275E+00	TL210
300.18	14.	221.16	1.19	2.731E-02	300.03	3.280	PBC<MDA	PB212
					300.07	2.460	1.135E+01	PA231
					300.18	6.200	4.506E+00	PA233
302.65	14.	224.01	1.19	2.715E-02	302.65	2.880	PBC<MDA	PA231
					302.85	18.330	1.537E+00	BA133
302.85	14.	227.19	1.19	2.714E-02	302.65	2.880	PBC<MDA	PA231
					302.85	18.330	1.537E+00	BA133
304.85	14.	230.01	1.20	2.701E-02	304.85	4.290	PBC<MDA	Ba140
					304.90	28.000	1.013E+00	BI210M
304.90	14.	233.15	1.20	2.701E-02	304.85	4.290	PBC<MDA	Ba140
					304.90	28.000	1.013E+00	BI210M
308.44	14.	235.62	1.20	2.678E-02	308.44	31.750	PBC<MDA	Ir192
312.01	14.	238.04	1.20	2.656E-02	312.01	36.000	PBC<MDA	PA233
316.49	14.	240.25	1.21	2.629E-02	316.49	87.040	PBC<MDA	Ir192
320.08	13.	251.53	1.21	2.608E-02	320.08	9.940	PBC<MDA	CR51
328.76	17.	149.86	1.22	2.559E-02	328.76	20.300	PBC<MDA	La140
333.44	17.	152.58	1.22	2.533E-02	333.44	15.510	PBC<MDA	Cf249
338.07	57.	21.51	1.26	2.508E-02	338.32	12.010	PBC<MDA	AC228
340.57	10.	278.58	1.23	2.494E-02	340.57	46.900	PBC<MDA	Cs136
351.85	388.	6.87	1.37	2.437E-02	351.93	37.600	2.350E+01	PB214
356.00	16.	198.67	1.24	2.416E-02	356.00	62.050	PBC<MDA	BA133
427.88	16.	99.70	1.31	2.115E-02	427.88	29.600	PBC<MDA	SB125
463.37	9.	154.62	1.34	1.996E-02	463.37	10.470	PBC<MDA	SB125
487.02	15.	113.78	1.36	1.925E-02	487.02	45.500	PBC<MDA	La140
497.05	8.	148.63	1.37	1.896E-02	497.05	90.900	PBC<MDA	RU103
511.86	96.	16.00	2.63	1.856E-02	511.86	20.000	1.437E+01	RH106
563.24	12.	91.41	1.43	1.730E-02	563.24	8.350	PBC<MDA	CS134
569.32	4.	198.07	1.43	1.717E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	1.710E+00	PA234
					569.70	97.740	PBC<MDA	BI207
569.47	3.	273.18	1.43	1.716E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	1.250E+00	PA234
					569.70	97.740	PBC<MDA	BI207
583.31	84.	15.94	1.81	1.687E-02	583.02	84.500	3.286E+00	TL208

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
600.50	10.	293.68	1.46	1.651E-02	600.50	17.860	PBC<MDA	SB125
602.73	10.	317.17	1.46	1.646E-02	602.73	98.260	PBC<MDA	SB124
604.71	10.	299.56	1.46	1.642E-02	604.71	97.620	PBC<MDA	CS134
609.51	346.	6.41	1.21	1.633E-02	609.31	46.090	2.557E+01	BI214
					610.30	5.750	2.052E+02	RU103
614.28	10.	304.33	1.47	1.623E-02	614.28	89.850	PBC<MDA	AG108M
617.48	10.	304.77	1.47	1.616E-02	618.06	99.100	PBC<MDA	PM144
621.92	9.	347.01	1.48	1.609E-02	621.92	9.930	PBC<MDA	RH106
635.89	10.	71.14	1.49	1.583E-02	635.89	11.310	PBC<MDA	SB125
724.20	9.	107.21	1.57	1.437E-02	724.20	44.150	PBC<MDA	ZR95
727.10	33.	23.66	1.06	1.433E-02	727.17	7.550	1.712E+01	BI212
747.16	20.	40.35	1.59	1.404E-02	747.16	34.000	2.269E+00	PM146
756.73	18.	50.50	1.60	1.391E-02	756.73	54.460	PBC<MDA	ZR95
766.41	14.	90.60	1.60	1.378E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	PBC<MDA	PA234M
785.07	6.	191.49	1.62	1.353E-02	785.42	1.280	PBC<MDA	BI212
795.87	11.	79.89	1.63	1.340E-02	795.87	85.530	PBC<MDA	CS134
799.60	11.	90.11	1.63	1.335E-02	799.60	98.960	PBC<MDA	TL210
801.95	5.	208.58	1.64	1.332E-02	801.95	8.690	PBC<MDA	CS134
815.77	9.	99.74	1.65	1.316E-02	815.77	23.280	PBC<MDA	La140
846.77	7.	161.52	1.67	1.280E-02	846.77	99.935	PBC<MDA	Co56
880.53	10.	84.04	1.70	1.243E-02	880.53	6.000	PBC<MDA	PA234
883.24	10.	94.81	1.71	1.240E-02	883.24	9.600	PBC<MDA	PA234
884.68	1.	698.43	1.71	1.238E-02	884.68	72.680	PBC<MDA	AG110M
898.04	5.	189.88	1.72	1.225E-02	898.04	93.700	PBC<MDA	Y88
910.78	70.	17.67	1.73	1.211E-02	911.07	29.000	1.101E+01	AC228
937.49	9.	137.89	1.75	1.186E-02	937.49	34.360	PBC<MDA	AG110M
946.02	2.	554.15	1.76	1.178E-02	946.02	13.400	PBC<MDA	PA234
968.97	15.	90.46	1.78	1.157E-02	968.97	17.460	PBC<MDA	AC228
1004.77	14.	93.10	1.81	1.126E-02	1004.77	18.010	PBC<MDA	EU154
1037.84	24.	20.41	1.84	1.099E-02	1037.84	14.130	8.589E+00	Co56
1050.36	9.	108.30	1.85	1.089E-02	1050.36	1.560	PBC<MDA	RH106
1077.40	6.	156.94	1.87	1.068E-02	1077.40	3.300	PBC<MDA	Ga68
1099.25	13.	87.45	1.89	1.052E-02	1099.25	56.500	PBC<MDA	FE59
1112.07	7.	236.52	1.90	1.043E-02	1112.07	13.644	PBC<MDA	EU152
1115.55	7.	242.49	1.90	1.041E-02	1115.55	50.600	PBC<MDA	ZN65
1120.55	6.	268.58	1.91	1.037E-02	1120.29	15.100	PBC<MDA	BI214
					1120.55	99.987	3.277E-01	Sc46
					1121.30	34.900	9.394E-01	Ta182
1120.59	103.	12.06	2.61	1.037E-02	1120.29	15.100	3.651E+01	BI214
					1120.55	99.987	PBC<MDA	Sc46
					1121.30	34.900	1.581E+01	Ta182
1173.24	13.	89.14	1.95	1.002E-02	1173.24	99.900	PBC<MDA	CO60
1189.05	12.	86.79	1.96	9.916E-03	1189.05	16.200	PBC<MDA	Ta182
1221.41	10.	86.77	1.99	9.717E-03	1221.41	27.000	PBC<MDA	Ta182
1238.28	31.	35.90	2.00	9.617E-03	1238.28	66.070	2.738E+00	Co56
1274.53	3.	256.01	2.03	9.409E-03	1274.53	99.940	PBC<MDA	NA22
					1274.54	35.190	PBC<MDA	EU154

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
1291.60	4.	221.56	2.05	9.314E-03	1291.60	43.200	PBC<MDA	FE59
1332.50	3.	186.36	2.08	9.097E-03	1332.50	99.980	PBC<MDA	CO60
1408.00	5.	268.33	2.14	8.723E-03	1408.00	21.005	PBC<MDA	EU152
1461.23	254.	6.53	2.20	8.482E-03	1460.83	10.670	1.558E+02	K40
1764.93	50.	15.33	2.43	7.342E-03	1764.49	15.400	2.449E+01	BI214
1836.06	8.	37.06	2.48	7.121E-03	1836.06	99.200	6.113E-01	Y88

********** 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
298.85	74.80	215.	166.	4.005E+03	14.76	0.985	- D
308.13	77.12	214.	251.	5.932E+03	10.38	0.988	- D
1351.56	338.07	28.	57.	2.273E+03	21.51	1.261	- M

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: Client_Long_Rev15.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	185.80	46.52	119.	51.	0.029	40.28	1.201s
TH-227	200.26	50.14	373.	-23.	-0.013	118.49	0.963
AM-241	239.51	59.96	114.	46.	0.025	42.69	1.256s
TH-234	252.82	63.29	510.	6.	0.003	579.64	0.975
Sn-126	256.79	64.28	500.	28.	0.015	116.31	0.976s
BA-133	323.60	80.99	1180.	-35.	-0.019	70.21	0.991s
Np-237	345.59	86.49	952.	-38.	-0.021	65.79	0.996
EU-155	345.80	86.54	914.	-32.	-0.018	134.33	0.996
Sn-126	347.39	86.94	180.	46.	0.025	44.14	0.997D
Sn-126	349.91	87.57	775.	70.	0.039	29.65	0.997D
Cd-109	351.79	88.04	882.	0.	0.000	131.81	0.998A
Nd-147	364.02	91.10	802.	0.	0.000	1000.00	1.001s
TH-234	371.25	92.91	199.	107.	0.060	27.02	1.254s
AC-228	373.02	93.35	1808.	-41.	-0.023	71.78	1.003
Gd-153	389.61	97.50	1767.	-34.	-0.019	173.41	1.007s
Np-239	397.61	99.50	135.	12.	0.006	145.16	1.008D
Gd-153	412.40	103.20	1447.	-33.	-0.018	164.97	1.012s
Np-239	414.40	103.70	118.	14.	0.008	110.51	1.012D

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
EU-155	420.85	105.31	1538.	-34.	-0.019	86.88	1.014
Np-239	424.11	106.13	1638.	-35.	-0.019	164.89	1.014s
EU-152	486.69	121.78	315.	-6.	-0.003	444.69	1.029s
CO-57	487.81	122.06	320.	0.	0.000	1000.00	1.029s
EU-154	491.96	123.10	258.	10.	0.005	237.03	1.030s
PA-234	524.73	131.29	671.	24.	0.013	152.81	1.038s
HF-181	531.64	133.02	695.	24.	0.013	155.25	1.039s
CE-144	533.70	133.54	783.	17.	0.010	229.75	1.040s
HF-181	544.74	136.30	800.	0.	0.000	1000.00	1.042s
CO-57	545.43	136.47	800.	0.	0.000	1000.00	1.042s
Tc-99m	561.57	140.51	910.	-30.	-0.016	145.59	1.046s
U-235	574.67	143.79	859.	-31.	-0.017	46.34	1.049
CE-141	581.29	145.44	774.	14.	0.008	274.01	1.050s
Ba-140	650.14	162.66	239.	-5.	-0.003	439.55	1.066s
U-235	653.01	163.38	229.	15.	0.008	144.99	1.067
CE-139	662.90	165.85	272.	18.	0.010	128.31	1.069
Cf-251	705.88	176.60	187.	10.	0.006	257.78	1.079
U-235	742.99	185.88	126.	122.	0.068	21.52	1.421s
TH-229	773.49	193.51	143.	20.	0.011	114.07	1.094s
U-235	820.76	205.33	106.	52.	0.029	39.88	1.105
TH-229	842.82	210.85	139.	6.	0.003	398.26	1.110s
Cf-251	907.40	227.00	143.	-9.	-0.005	250.80	1.125
TH-227	943.27	235.97	741.	6.	0.003	673.21	1.133s
PB-212	953.91	238.63	117.	203.	0.113	10.31	1.136D
PB-214	967.37	242.00	92.	129.	0.072	13.76	1.139D
EU-152	978.14	244.69	780.	-26.	-0.015	151.36	1.141s
TH-227	1024.32	256.24	156.	-22.	-0.012	113.18	1.152s
BI-210M	1062.67	265.83	93.	14.	0.008	136.25	1.160s
TL-208	1108.46	277.28	113.	-7.	-0.004	280.59	1.171s
Hg-203	1116.13	279.20	177.	-21.	-0.012	92.30	1.173s
I-131	1136.52	284.30	140.	-24.	-0.014	79.07	1.177
PB-214	1180.26	295.24	53.	246.	0.137	8.73	1.362
TL-210	1183.31	296.00	739.	-20.	-0.011	195.52	1.188s
PB-212	1199.42	300.03	719.	-5.	-0.003	707.64	1.191
PA-231	1199.58	300.07	714.	0.	0.000	1000.00	1.192s
PA-233	1200.02	300.18	454.	14.	0.008	221.16	1.192s
PA-231	1209.90	302.65	468.	14.	0.008	224.01	1.194
BA-133	1210.70	302.85	482.	14.	0.008	227.19	1.194
Ba-140	1218.69	304.85	496.	14.	0.008	230.01	1.196s
BI-210M	1218.88	304.90	510.	14.	0.008	233.15	1.196s
Ir-192	1233.05	308.44	523.	14.	0.008	235.62	1.199s
PA-233	1247.34	312.01	537.	14.	0.008	238.04	1.202s
Ir-192	1265.24	316.49	551.	14.	0.008	240.25	1.206
CR-51	1279.62	320.08	565.	13.	0.007	251.53	1.210s
La-140	1314.31	328.76	310.	17.	0.009	149.86	1.217s
Cf-249	1333.02	333.44	327.	17.	0.009	152.58	1.222s
AC-228	1352.54	338.32	349.	13.	0.007	210.62	1.226
Cs-136	1361.54	340.57	361.	10.	0.005	278.58	1.228s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
HF-181	1382.56	345.83	96.	-15.	-0.008	175.04	1.233s
PB-214	1406.64	351.85	76.	388.	0.215	6.87	1.366
BA-133	1423.24	356.00	507.	16.	0.009	198.67	1.242s
I-131	1457.16	364.48	92.	-21.	-0.012	92.79	1.250s
BA-133	1534.57	383.84	175.	-6.	-0.003	484.13	1.267s
Cf-249	1551.01	387.95	179.	0.	0.000	1000.00	1.271
SB-125	1710.67	427.88	57.	16.	0.009	99.70	1.307s
AG-108M	1734.91	433.94	70.	-11.	-0.006	150.34	1.312s
SB-125	1852.61	463.37	101.	9.	0.005	154.62	1.338s
Ir-192	1871.38	468.06	120.	-14.	-0.008	111.41	1.342s
BE-7	1909.51	477.60	135.	-18.	-0.010	93.34	1.351s
HF-181	1927.12	482.00	153.	-14.	-0.008	129.54	1.355s
La-140	1947.21	487.02	137.	15.	0.008	113.78	1.359s
RU-103	1987.33	497.05	35.	8.	0.005	148.63	1.368s
RH-106	2046.57	511.86	70.	96.	0.053	16.00	2.631s
Kr-85	2055.03	513.98	166.	0.	0.000	1000.00	1.383s
Nd-147	2123.10	531.00	48.	-8.	-0.004	187.34	1.398s
Ba-140	2148.14	537.26	56.	-14.	-0.008	110.10	1.404s
CS-134	2252.03	563.24	26.	12.	0.007	91.41	1.427s
CS-134	2276.36	569.32	35.	4.	0.002	198.07	1.432s
PA-234	2276.96	569.47	36.	3.	0.002	273.18	1.432s
BI-207	2277.89	569.70	53.	-12.	-0.006	109.47	1.432s
TL-208	2332.32	583.31	22.	84.	0.047	15.94	1.812s
SB-125	2401.07	600.50	439.	10.	0.006	293.68	1.460s
SB-124	2409.99	602.73	450.	10.	0.005	317.17	1.462s
CS-134	2417.91	604.71	459.	10.	0.006	299.56	1.463s
BI-214	2437.10	609.51	34.	346.	0.192	6.41	1.213
RU-103	2440.26	610.30	469.	10.	0.006	301.83	1.468s
AG-108M	2456.19	614.28	480.	10.	0.006	304.33	1.472s
PM-144	2471.31	618.06	483.	10.	0.006	304.77	1.475
RH-106	2486.73	621.92	473.	9.	0.005	347.01	1.479s
SB-125	2542.62	635.89	22.	10.	0.006	71.14	1.491s
AG-110M	2630.10	657.76	66.	-16.	-0.009	139.74	1.510s
CS-137	2645.69	661.66	98.	-19.	-0.010	119.37	1.513s
PM-144	2785.22	696.54	71.	-3.	-0.001	450.00	1.544s
SB-124	2890.19	722.79	79.	-8.	-0.005	155.07	1.567s
AG-108M	2890.80	722.94	71.	0.	0.000	1000.00	1.567s
EU-154	2892.49	723.36	71.	0.	0.000	1000.00	1.567s
ZR-95	2895.84	724.20	46.	9.	0.005	107.21	1.568s
BI-212	2907.45	727.10	7.	33.	0.019	23.66	1.065s
PM-146	2941.93	735.72	47.	-8.	-0.004	192.44	1.578s
PM-146	2987.69	747.16	9.	20.	0.011	40.35	1.588s
ZR-95	3025.97	756.73	14.	18.	0.010	50.50	1.596s
AG-110M	3054.82	763.94	92.	-22.	-0.012	66.62	1.602s
NB-95	3062.21	765.79	114.	-4.	-0.002	388.18	1.604s
PA-234M	3064.70	766.41	78.	14.	0.008	90.60	1.605s
EU-152	3114.73	778.92	47.	-17.	-0.009	90.33	1.615s
BI-212	3140.74	785.42	28.	6.	0.003	191.49	1.621s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
CS-134	3182.54	795.87	35.	11.	0.006	79.89	1.630
TL-210	3197.46	799.60	47.	11.	0.006	90.11	1.633s
CS-134	3206.86	801.95	59.	5.	0.003	208.58	1.635s
CO-58	3242.16	810.78	50.	-4.	-0.002	301.22	1.643
La-140	3262.14	815.77	39.	9.	0.005	99.74	1.647s
Cs-136	3273.06	818.50	56.	-9.	-0.005	120.25	1.649s
MN-54	3338.46	834.85	60.	-20.	-0.011	87.89	1.663s
Co-56	3386.15	846.77	25.	7.	0.004	161.52	1.674
TL-208	3441.33	860.56	36.	-3.	-0.001	234.20	1.685s
NB-94	3483.47	871.10	38.	-2.	-0.001	441.59	1.695s
EU-154	3492.00	873.23	48.	-6.	-0.004	155.00	1.696s
PA-234	3521.21	880.53	32.	10.	0.006	84.04	1.703s
PA-234	3532.05	883.24	42.	10.	0.006	94.81	1.705s
AG-110M	3537.82	884.68	53.	1.	0.001	698.43	1.706s
Sc-46	3556.21	889.28	55.	-1.	0.000	664.68	1.710s
Y-88	3591.26	898.04	21.	5.	0.003	189.88	1.718s
AC-228	3643.38	911.07	19.	70.	0.039	17.67	1.729s
AG-110M	3749.09	937.49	30.	9.	0.005	137.89	1.751s
PA-234	3783.21	946.02	25.	2.	0.001	554.15	1.759s
AC-228	3875.02	968.97	37.	15.	0.009	90.46	1.778
EU-154	3984.48	996.33	75.	-17.	-0.009	77.73	1.801s
PA-234M	4003.15	1001.00	94.	-10.	-0.006	141.03	1.805s
EU-154	4018.27	1004.77	79.	14.	0.008	93.10	1.808s
Co-56	4150.56	1037.84	0.	24.	0.013	20.41	1.836s
Cs-136	4191.49	1048.07	39.	-8.	-0.004	115.92	1.845s
RH-106	4200.65	1050.36	43.	9.	0.005	108.30	1.847s
Ga-68	4308.84	1077.40	16.	6.	0.003	156.94	1.870s
FE-59	4396.27	1099.25	22.	13.	0.007	87.45	1.888s
EU-152	4447.58	1112.07	119.	7.	0.004	236.52	1.899s
ZN-65	4461.46	1115.55	125.	7.	0.004	242.49	1.901s
BI-214	4481.65	1120.59	10.	103.	0.057	12.06	2.608s
Sc-46	4481.49	1120.55	132.	6.	0.003	268.58	1.906s
CO-60	4692.30	1173.24	23.	13.	0.007	89.14	1.950s
Ta-182	4755.57	1189.05	17.	12.	0.007	86.79	1.963
Ta-182	4885.06	1221.41	11.	10.	0.005	86.77	1.990
Co-56	4952.57	1238.28	18.	31.	0.017	35.90	2.004s
NA-22	5097.62	1274.53	23.	3.	0.002	256.01	2.034s
EU-154	5097.66	1274.54	26.	0.	0.000	1000.00	2.034s
FE-59	5165.91	1291.60	11.	4.	0.002	221.56	2.048s
TL-210	5251.57	1313.00	28.	-11.	-0.006	114.08	2.066
CO-60	5329.61	1332.50	7.	3.	0.002	186.36	2.081s
AG-110M	5536.89	1384.30	24.	-4.	-0.002	300.00	2.124s
EU-152	5631.75	1408.00	30.	5.	0.003	268.33	2.143s
K-40	5844.77	1461.23	10.	254.	0.141	6.53	2.199
La-140	6385.02	1596.21	19.	-9.	-0.005	184.04	2.294s
SB-124	6764.37	1690.98	13.	-3.	-0.002	519.33	2.369s
BI-214	7058.61	1764.49	4.	50.	0.028	15.33	2.427s
Co-56	7086.08	1771.35	54.	0.	0.000	1000.00	2.433s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Y-88	7345.12	1836.06	0.	8.	0.004	37.06	2.483s

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
BE-7	C	-4.9194E+00				5.31E+01	
			477.60	-4.919E+00	&(	1.538E+01	9.33E+01 1.05E+01 G
NA-22	C	1.6217E-01				9.50E+02	
			1274.53	1.622E-01	?(P	1.488E+00	2.56E+02 9.99E+01 G
K-40	N	1.5580E+02				4.66E+11	
			1460.83	1.558E+02	(P	1.079E+01	6.53E+00 1.07E+01 G
Sc-46	F	1.4363E-01				8.38E+01	
			889.28	-4.046E-02	?(P	1.677E+00	6.65E+02 1.00E+02 G
			1120.55	3.277E-01	@(	3.012E+00	2.69E+02 1.00E+02 G
CR-51	F	2.8823E+00				2.77E+01	
			320.08	2.882E+00	?(P	2.433E+01	2.52E+02 9.94E+00 G
MN-54	C	-8.6086E-01				3.12E+02	
			834.85	-8.609E-01	?(	1.667E+00	8.79E+01 1.00E+02 G
FE-59	F	8.9350E-01				4.45E+01	
			1099.25	1.190E+00	?(P	2.284E+00	8.74E+01 5.65E+01 G
			1291.60	5.063E-01	?(	2.540E+00	2.22E+02 4.32E+01 G
Co-56	C	1.8465E+00				7.73E+01	
			846.77	3.041E-01	&(	1.130E+00	1.62E+02 9.99E+01 G
			1238.28	2.738E+00	(P	1.951E+00	3.59E+01 6.61E+01 G
			1037.84	8.589E+00	?(	2.637E+00	2.04E+01 1.41E+01 G
			1771.35	0.000E+00	-	1.812E+01	1.00E+03 1.55E+01 A
CO-58	C	-1.8331E-01				7.09E+01	
			810.78	-1.833E-01	?(P	1.512E+00	3.01E+02 9.95E+01 G
CO-60	F	4.6596E-01				1.93E+03	
			1332.50	1.986E-01	?(P	9.051E-01	1.86E+02 1.00E+02 G
			1173.24	7.336E-01	?(P	1.392E+00	8.91E+01 9.99E+01 G

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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
ZN-65	F	6.9777E-01					2.44E+02	
			1115.55	6.978E-01	?(	5.789E+00	2.42E+02	5.06E+01 G
NB-94	I	-3.8605E-02					7.41E+06	
			702.63	-3.860E-02	%(	1.645E+00	1.22E+03	9.79E+01 G
			871.10	-8.879E-02	+	1.396E+00	4.42E+02	9.99E+01 G
ZR-95	I	1.0931E+00					6.40E+01	
			756.73	1.309E+00	?(P	1.484E+00	5.05E+01	5.45E+01 G
			724.20	8.265E-01	?(	3.019E+00	1.07E+02	4.42E+01 G
NB-95	I	-1.5844E-01					6.40E+01	
			765.79	-1.584E-01	?(	2.119E+00	3.88E+02	9.98E+01 G
RU-103	I	2.6828E-01					3.93E+01	
			497.05	2.683E-01	(P	9.718E-01	1.49E+02	9.09E+01 G
			610.30	6.046E+00	?	6.141E+01	3.02E+02	5.75E+00 GA
RH-106	I	6.6723E+00					3.74E+02	
			621.92	3.096E+00	?(	3.618E+01	3.47E+02	9.93E+00 G
			1050.36	2.944E+01	?(	1.088E+02	1.08E+02	1.56E+00 G
			511.86	1.437E+01	?	6.241E+00	1.60E+01	2.00E+01 GA
AG-108M	C	3.8504E-02					1.53E+05	
			433.94	-3.103E-01	?(P	1.220E+00	1.50E+02	9.05E+01 G
			722.94	0.000E+00	+	1.784E+00	1.00E+03	9.08E+01 G
			614.28	3.897E-01	?(	3.991E+00	3.04E+02	8.98E+01 G
AG-110M	F	4.5585E-01					2.50E+02	
			884.68	9.121E-02	?(	2.252E+00	6.98E+02	7.27E+01 G
			657.76	-6.054E-01	+ P	1.545E+00	1.40E+02	9.46E+01 G
			937.49	1.227E+00	?(	3.850E+00	1.38E+02	3.44E+01 G
			1384.30	-1.035E+00	+	6.610E+00	3.00E+02	2.43E+01 G
			763.94	-3.894E+00	+	8.579E+00	6.66E+01	2.23E+01 G
SN-113	F	-8.9684E-04					1.15E+02	
			391.69	-8.968E-04	&(P	2.507E+00	1.14E+05	6.40E+01 G
SB-124	F	3.2655E-01					6.02E+01	
			602.73	3.265E-01	(P	3.487E+00	3.17E+02	9.83E+01 G
			1690.98	-4.904E-01	+ P	3.010E+00	5.19E+02	4.78E+01 G
			722.79	-2.975E+00	+	1.579E+01	1.55E+02	1.08E+01 G
SB-125	I	2.0002E+00					1.01E+03	
			427.88	1.413E+00	@(P	3.357E+00	9.97E+01	2.96E+01 G
			600.50	1.912E+00	?(	1.891E+01	2.94E+02	1.79E+01 G
			635.89	3.217E+00	?(	7.626E+00	7.11E+01	1.13E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			463.37	2.497E+00	?(P	1.315E+01	1.55E+02	1.05E+01 G
I-131	I	-5.9629E-01					8.02E+00	
			364.48	-5.963E-01	?(	1.357E+00	9.28E+01	8.17E+01 G
			284.30	-7.787E+00	+ P	1.846E+01	7.91E+01	6.14E+00 G
			636.97	-1.544E-02	%	1.523E+01	2.73E+04	7.17E+00 G
Gd-153	F	-1.3553E+00					2.42E+02	
			97.50	-1.355E+00	&(	7.813E+00	1.73E+02	3.00E+01 G
			103.20	-1.757E+00	&	9.643E+00	1.65E+02	2.18E+01 G
Ga-68	C	1.1113E+01					4.71E-02	
			1077.40	1.111E+01	?(	3.954E+01	1.57E+02	3.30E+00 G
Tc-99m	I	-4.1961E-01					2.51E-01	
			140.51	-4.196E-01	?(	2.035E+00	1.46E+02	8.93E+01 G
BA-133	F	8.1256E-01					3.85E+03	
			356.00	5.985E-01	?(	3.988E+00	1.99E+02	6.20E+01 G
			302.85	1.537E+00	?(	1.173E+01	2.27E+02	1.83E+01 G
			383.84	-1.495E+00	+ P	1.745E+01	4.84E+02	8.94E+00 GA
			80.99	-1.306E+00	+ P	6.087E+00	7.02E+01	3.41E+01 GA
CS-134	I	7.2412E-01					7.54E+02	
			795.87	5.494E-01	&(	1.474E+00	7.99E+01	8.55E+01 G
			604.71	3.526E-01	&(	3.555E+00	3.00E+02	9.76E+01 G
			569.32	9.118E-01	?(	6.343E+00	1.98E+02	1.54E+01 G
			801.95	2.548E+00	&(	1.843E+01	2.09E+02	8.69E+00 G
			563.24	4.614E+00	?(	1.018E+01	9.14E+01	8.35E+00 G
CS-137	I	-7.9287E-01					1.10E+04	
			661.66	-7.929E-01	?(P	2.069E+00	1.19E+02	8.52E+01 G
CE-139	F	3.0954E-01					1.38E+02	
			165.85	3.095E-01	&(	1.332E+00	1.28E+02	7.99E+01 G
Ba-140	I	-5.6141E-01					1.28E+01	
			537.26	-1.823E+00	?(	4.792E+00	1.10E+02	2.44E+01 G
			162.66	-1.080E+00	+	1.614E+01	4.40E+02	6.22E+00 G
			304.85	6.609E+00	?(	5.105E+01	2.30E+02	4.29E+00 G
La-140	I	3.0351E-01					1.28E+01	
			1596.21	-6.619E-01	?(P	1.692E+00	1.84E+02	9.54E+01 G
			487.02	9.478E-01	?(	3.632E+00	1.14E+02	4.55E+01 G
			328.76	1.803E+00	*(P	9.072E+00	1.50E+02	2.03E+01 G
			815.77	1.693E+00	?(	5.748E+00	9.97E+01	2.33E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CE-141	I	3.7441E-01					3.25E+01	
			145.44	3.744E-01	?(	3.435E+00	2.74E+02	4.82E+01 G
CE-144	I	1.8809E+00					2.85E+02	
			133.54	1.881E+00	?(	1.446E+01	2.30E+02	1.11E+01 G
PM-144	C	1.2741E-01					3.63E+02	
			696.54	-1.011E-01	?(	1.589E+00	4.50E+02	9.90E+01 G
			618.06	3.557E-01	?(	3.648E+00	3.05E+02	9.91E+01 G
EU-152	F	6.7542E-01					4.94E+03	
			121.78	-2.328E-01	(	3.508E+00	4.45E+02	2.86E+01 G
			344.29	-7.490E-02	& P	7.841E+00	3.02E+03	2.65E+01 G
			1112.07	2.578E+00	?(	2.088E+01	2.37E+02	1.36E+01 G
			778.92	-5.255E+00	+	1.089E+01	9.03E+01	1.29E+01 G
			964.11	3.276E-01	%	1.113E+01	1.48E+03	1.46E+01 G
			244.69	-6.103E+00	+	3.081E+01	1.51E+02	7.58E+00 G
			1408.00	1.516E+00	&	8.560E+00	2.68E+02	2.10E+01 GA
EU-154	I	1.3736E+00					3.14E+03	
			123.10	2.789E-01	&(	2.236E+00	2.37E+02	4.08E+01 G
			1274.54	0.000E+00	-	4.442E+00	1.00E+03	3.52E+01 G
			723.36	0.000E+00	-	8.017E+00	1.00E+03	2.02E+01 G
			873.23	-2.353E+00	+	1.261E+01	1.55E+02	1.23E+01 G
			1004.77	3.853E+00	?(	1.207E+01	9.31E+01	1.80E+01 G
			996.33	-7.666E+00	+	1.988E+01	7.77E+01	1.06E+01 G
EU-155	I	-1.8610E+00					1.81E+03	
			105.31	-1.861E+00	(P	1.020E+01	8.69E+01	2.12E+01 G
			86.54	-1.287E+00	+	5.755E+00	1.34E+02	3.07E+01 G
HF-181	F	-8.4250E-02					4.24E+01	
			482.00	-4.916E-01	&(	2.149E+00	1.30E+02	8.05E+01 G
			133.02	6.730E-01	?(	3.489E+00	1.55E+02	4.33E+01 G
			345.83	-2.282E+00	+ P	7.237E+00	1.75E+02	1.51E+01 G
			136.30	0.000E+00	+	2.792E+01	1.00E+03	5.85E+00 G
Ta-182	F	1.5876E+00					1.14E+02	
			1121.30	5.119E-02	%(	8.813E+00	4.98E+03	3.49E+01 G
			1221.41	2.072E+00	(	3.896E+00	8.68E+01	2.70E+01 G
			1189.05	4.089E+00	(	7.582E+00	8.68E+01	1.62E+01 G
Hg-203	F	-4.9794E-01					4.66E+01	
			279.20	-4.979E-01	?(	1.536E+00	9.23E+01	8.15E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
TL-208	N	3.2864E+00					6.98E+02	
			583.02	3.286E+00	(P	9.511E-01	1.59E+01	8.45E+01 G
			277.28	-2.093E+00	- P	1.591E+01	2.81E+02	6.31E+00 G
			860.56	-8.878E-01	- P	1.078E+01	2.34E+02	1.24E+01 G
PM-146	C	7.8931E-01					2.02E+03	
			453.88	1.511E-02	%(P	1.428E+00	3.79E+03	6.50E+01 G
			747.16	2.269E+00	?(P	1.986E+00	4.04E+01	3.40E+01 G
			735.72	-1.332E+00	+	6.004E+00	1.92E+02	2.25E+01 G
Y-88	F	6.1130E-01					1.07E+02	
			1836.06	6.113E-01	?(P	5.796E-01	3.71E+01	9.92E+01 G
			898.04	2.594E-01	- P	1.156E+00	1.90E+02	9.37E+01 G
Cd-113m		-2.0605E+02					5.33E+03	
			263.70	-2.060E+02	%(	1.857E+04	2.62E+03	6.00E-03 K
Cf-251	T	8.2173E-01					3.28E+05	
			176.60	8.217E-01	(	5.459E+00	2.58E+02	1.70E+01 G
			227.00	-2.382E+00	+	1.546E+01	2.51E+02	6.30E+00 GA
Cf-249	T	4.5704E-01					1.28E+05	
			387.95	0.000E+00	&(	2.414E+00	1.00E+03	6.60E+01 G
			333.44	2.402E+00	&(	1.231E+01	1.53E+02	1.55E+01 G
Sn-126		4.3592E+00					3.65E+07	
			87.57	2.287E+00	}	4.323E+00	2.97E+01	3.75E+01 GA
			64.28	4.359E+00	?(	1.691E+01	1.16E+02	9.70E+00 G
			86.94	6.200E+00		8.863E+00	4.41E+01	9.04E+00 GA
PB-210	N	2.8588E+01					8.14E+03	
			46.54	2.859E+01	*(P	2.970E+01	4.03E+01	4.25E+00 G
PB-212	N	8.0974E+00					6.98E+02	
			238.63	8.097E+00	(P	2.119E+00	1.03E+01	4.33E+01 G
			300.03	-3.329E+00	-	7.917E+01	7.08E+02	3.28E+00 GA
PB-214	N	2.4224E+01					5.84E+05	
			351.93	2.350E+01	(P	2.636E+00	6.87E+00	3.76E+01 G
			295.09	2.563E+01	(P	3.809E+00	8.73E+00	1.93E+01 G
			242.00	3.025E+01	+ P	1.114E+01	1.38E+01	7.43E+00 GA
BI-207	C	-2.3622E-02					1.18E+04	
			1063.66	-2.362E-02	%(P	1.777E+00	3.16E+03	7.45E+01 G
			569.70	-3.837E-01	& P	1.209E+00	1.09E+02	9.77E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
BI-212	N	1.7116E+01					6.98E+02	
			727.17	1.712E+01	(	7.570E+00	2.37E+01	7.55E+00 G
			785.42	1.924E+01	?	8.777E+01	1.91E+02	1.28E+00 GA
U-235	N	-3.5345E+00					2.57E+11	
			143.79	-3.534E+00	?(P	1.581E+01	4.63E+01	1.10E+01 G
			205.33	1.601E+01	+ P	1.574E+01	3.99E+01	5.01E+00 G
			163.38	3.979E+00	+	1.943E+01	1.45E+02	5.08E+00 G
			185.72	3.270E+00	+	1.474E+00	2.15E+01	5.40E+01 GA
BI-214	N	2.5304E+01					5.84E+05	
			609.31	2.557E+01	(P	2.191E+00	6.41E+00	4.61E+01 G
			1120.29	3.651E+01	+ P	6.209E+00	1.21E+01	1.51E+01 G
			1764.49	2.449E+01	?(P	5.996E+00	1.53E+01	1.54E+01 G
BI-210M	T	7.0146E-01					1.10E+09	
			265.83	5.272E-01	?(P	1.779E+00	1.36E+02	5.00E+01 G
			304.90	1.013E+00	?(	7.927E+00	2.33E+02	2.80E+01 G
AC-228	N	1.1014E+01					2.10E+03	
			911.07	1.101E+01	?(P	3.670E+00	1.77E+01	2.90E+01 G
			968.97	4.209E+00	- P	8.548E+00	9.05E+01	1.75E+01 G
			338.32	2.337E+00	- P	1.656E+01	2.11E+02	1.20E+01 G
			93.35	-8.793E+00	- P	4.314E+01	7.18E+01	5.56E+00 XA
TH-227	N	-5.7103E+00					7.95E+03	
			256.24	-5.710E+00	?(	1.581E+01	1.13E+02	7.00E+00 G
			235.97	7.984E-01	+	1.805E+01	6.73E+02	1.23E+01 G
			50.14	-6.149E+00	+	2.435E+01	1.18E+02	8.00E+00 G
TH-229	N	5.2261E+00					2.68E+06	
			193.51	6.771E+00	&(	1.978E+01	1.14E+02	4.40E+00 G
			210.85	2.953E+00	&(P	3.055E+01	3.98E+02	2.99E+00 G
TH-234	N	2.3051E+01					1.63E+12	
			92.59	2.305E+01	*(P	1.466E+01	2.70E+01	5.58E+00 G
			63.29	2.265E+00	- P	4.422E+01	5.80E+02	3.81E+00 G
PA-231	N	9.7770E+00					1.20E+07	
			302.65	9.777E+00	?(	7.357E+01	2.24E+02	2.88E+00 G
			300.07	0.000E+00	-	1.052E+02	1.00E+03	2.46E+00 G
PA-233	C	1.3488E+00					7.82E+08	
			312.01	8.050E-01	&(	6.432E+00	2.38E+02	3.60E+01 G
			300.18	4.506E+00	(	3.348E+01	2.21E+02	6.20E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PA-234	N	1.9239E+00					1.63E+12	
			131.29	1.609E+00	&(	8.211E+00	1.53E+02	1.80E+01 G
			946.02	7.040E-01	?(	9.156E+00	5.54E+02	1.34E+01 G
			569.47	1.250E+00	?(	1.208E+01	2.73E+02	8.20E+00 G
			883.24	4.792E+00	?(	1.540E+01	9.48E+01	9.60E+00 G
			880.53	7.640E+00	?	2.166E+01	8.40E+01	6.00E+00 GA
PA-234M	N	7.8432E+00					1.63E+12	
			1001.00	-5.867E+01	?(P	2.817E+02	1.41E+02	8.37E-01 G
			766.41	1.972E+02	?(P	5.999E+02	9.06E+01	2.94E-01 G
AM-241	T	2.1346E+00					1.58E+05	
			59.54	2.135E+00	(P	2.442E+00	4.27E+01	3.59E+01 G
Np-237	F	-3.5432E+00					2.14E+06	
			86.49	-3.543E+00	(P	1.376E+01	6.58E+01	1.31E+01 G
Ir-192	F	4.8864E-01					7.40E+01	
			316.49	3.375E-01	(	2.721E+00	2.40E+02	8.70E+01 G
			468.06	-7.767E-01	&	2.917E+00	1.11E+02	5.18E+01 G
			308.44	9.029E-01	(	7.141E+00	2.36E+02	3.18E+01 G
Cs-136	F	-1.1688E-01					1.30E+01	
			818.50	-3.881E-01	?(	1.593E+00	1.20E+02	1.00E+02 G
			1048.07	-5.094E-01	+	2.026E+00	1.16E+02	8.00E+01 G
			340.57	4.613E-01	?(	4.335E+00	2.79E+02	4.69E+01 G
Np-239	T	-1.7913E+00					2.36E+00	
			103.70	6.957E-01	+	2.592E+00	1.11E+02	2.40E+01 X
			106.13	-1.791E+00	?(	9.820E+00	1.65E+02	2.27E+01 G
			99.50	9.072E-01		4.462E+00	1.45E+02	1.50E+01 X
Nd-147		-1.8135E+00					1.11E+01	
			531.00	-1.813E+00	?(	8.251E+00	1.87E+02	1.30E+01 G
			91.10	0.000E+00	&	5.732E+00	1.00E+03	2.83E+01 G
TL-210	N	4.7737E-01					5.84E+05	
			799.60	4.774E-01	?(	1.452E+00	9.01E+01	9.90E+01 G
			296.00	-5.047E-01	-	3.299E+00	1.96E+02	7.90E+01 G
			1313.00	-3.259E+00	+	7.913E+00	1.14E+02	2.10E+01 GA

(- 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.

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@ - 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	
TH-227	50.14	373.	-23.	-0.013	118.49	-6.149E+00	
BA-133	80.99	1180.	-35.	-0.019	70.21	-1.306E+00	P
Np-237	86.49	952.	-38.	-0.021	65.79	-3.543E+00	P
EU-155	86.54	914.	-32.	-0.018	134.33	-1.287E+00	
Gd-153	97.50	1767.	-34.	-0.019	173.41	-1.355E+00	
Gd-153	103.20	1447.	-33.	-0.018	164.97	-1.757E+00	
EU-155	105.31	1538.	-34.	-0.019	86.88	-1.861E+00	P
EU-152	121.78	315.	-6.	-0.003	444.69	-2.328E-01	
EU-154	123.10	258.	10.	0.005	237.03	2.789E-01	
PA-234	131.29	671.	24.	0.013	152.81	1.609E+00	
HF-181	133.02	695.	24.	0.013	155.25	6.730E-01	
CE-144	133.54	783.	17.	0.010	229.75	1.881E+00	
Tc-99m	140.51	910.	-30.	-0.016	145.59	-4.196E-01	
Ba-140	162.66	239.	-5.	-0.003	439.55	-1.080E+00	
CE-139	165.85	272.	18.	0.010	128.31	3.095E-01	
TH-229	193.51	143.	20.	0.011	114.07	6.771E+00	
TH-229	210.85	139.	6.	0.003	398.26	2.953E+00	P
TH-227	235.97	741.	6.	0.003	673.21	7.984E-01	
EU-152	244.69	780.	-26.	-0.015	151.36	-6.103E+00	
TH-227	256.24	156.	-22.	-0.012	113.18	-5.710E+00	
BI-210M	265.83	93.	14.	0.008	136.25	5.272E-01	P
Hg-203	279.20	177.	-21.	-0.012	92.30	-4.979E-01	
I-131	284.30	140.	-24.	-0.014	79.07	-7.787E+00	P

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
TL-210	296.00	739.	-20.	-0.011	195.52	-5.047E-01	
PA-233	300.18	454.	14.	0.008	221.16	4.506E+00	
PA-231	302.65	468.	14.	0.008	224.01	9.777E+00	
BA-133	302.85	482.	14.	0.008	227.19	1.537E+00	
Ba-140	304.85	496.	14.	0.008	230.01	6.609E+00	
BI-210M	304.90	510.	14.	0.008	233.15	1.013E+00	
Ir-192	308.44	523.	14.	0.008	235.62	9.029E-01	
PA-233	312.01	537.	14.	0.008	238.04	8.050E-01	
Ir-192	316.49	551.	14.	0.008	240.25	3.375E-01	
CR-51	320.08	565.	13.	0.007	251.53	2.882E+00	P
La-140	328.76	310.	17.	0.009	149.86	1.803E+00	P
Cf-249	333.44	327.	17.	0.009	152.58	2.402E+00	
Cs-136	340.57	361.	10.	0.005	278.58	4.613E-01	
HF-181	345.83	96.	-15.	-0.008	175.04	-2.282E+00	P
BA-133	356.00	507.	16.	0.009	198.67	5.985E-01	
I-131	364.48	92.	-21.	-0.012	92.79	-5.963E-01	
BA-133	383.84	175.	-6.	-0.003	484.13	-1.495E+00	P
SB-125	427.88	57.	16.	0.009	99.70	1.413E+00	P
AG-108M	433.94	70.	-11.	-0.006	150.34	-3.103E-01	P
SB-125	463.37	101.	9.	0.005	154.62	2.497E+00	P
Ir-192	468.06	120.	-14.	-0.008	111.41	-7.767E-01	
BE-7	477.60	135.	-18.	-0.010	93.34	-4.919E+00	
HF-181	482.00	153.	-14.	-0.008	129.54	-4.916E-01	
La-140	487.02	137.	15.	0.008	113.78	9.478E-01	
RU-103	497.05	35.	8.	0.005	148.63	2.683E-01	P
RH-106	511.86	70.	96.	0.053	16.00	1.437E+01	
Nd-147	531.00	48.	-8.	-0.004	187.34	-1.813E+00	
Ba-140	537.26	56.	-14.	-0.008	110.10	-1.823E+00	
CS-134	563.24	26.	12.	0.007	91.41	4.614E+00	
CS-134	569.32	35.	4.	0.002	198.07	9.118E-01	
PA-234	569.47	36.	3.	0.002	273.18	1.250E+00	
BI-207	569.70	53.	-12.	-0.006	109.47	-3.837E-01	P
SB-125	600.50	439.	10.	0.006	293.68	1.912E+00	
SB-124	602.73	450.	10.	0.005	317.17	3.265E-01	P
CS-134	604.71	459.	10.	0.006	299.56	3.526E-01	
RU-103	610.30	469.	10.	0.006	301.83	6.046E+00	
AG-108M	614.28	480.	10.	0.006	304.33	3.897E-01	
RH-106	621.92	473.	9.	0.005	347.01	3.096E+00	
SB-125	635.89	22.	10.	0.006	71.14	3.217E+00	
AG-110M	657.76	66.	-16.	-0.009	139.74	-6.054E-01	P
CS-137	661.66	98.	-19.	-0.010	119.37	-7.929E-01	P
SB-124	722.79	79.	-8.	-0.005	155.07	-2.975E+00	
ZR-95	724.20	46.	9.	0.005	107.21	8.265E-01	
PM-146	735.72	47.	-8.	-0.004	192.44	-1.332E+00	
PM-146	747.16	9.	20.	0.011	40.35	2.269E+00	P
ZR-95	756.73	14.	18.	0.010	50.50	1.309E+00	P
AG-110M	763.94	92.	-22.	-0.012	66.62	-3.894E+00	
NB-95	765.79	114.	-4.	-0.002	388.18	-1.584E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
PA-234M	766.41	78.	14.	0.008	90.60	1.972E+02		P
EU-152	778.92	47.	-17.	-0.009	90.33	-5.255E+00		
CS-134	795.87	35.	11.	0.006	79.89	5.494E-01		
TL-210	799.60	47.	11.	0.006	90.11	4.774E-01		
CS-134	801.95	59.	5.	0.003	208.58	2.548E+00		
CO-58	810.78	50.	-4.	-0.002	301.22	-1.833E-01		P
La-140	815.77	39.	9.	0.005	99.74	1.693E+00		
Cs-136	818.50	56.	-9.	-0.005	120.25	-3.881E-01		
MN-54	834.85	60.	-20.	-0.011	87.89	-8.609E-01		
NB-94	871.10	38.	-2.	-0.001	441.59	-8.879E-02		
EU-154	873.23	48.	-6.	-0.004	155.00	-2.353E+00		
PA-234	880.53	32.	10.	0.006	84.04	7.640E+00		
PA-234	883.24	42.	10.	0.006	94.81	4.792E+00		
AG-110M	884.68	53.	1.	0.001	698.43	9.121E-02		
Sc-46	889.28	55.	-1.	0.000	664.68	-4.046E-02		P
AG-110M	937.49	30.	9.	0.005	137.89	1.227E+00		
PA-234	946.02	25.	2.	0.001	554.15	7.040E-01		
EU-154	996.33	75.	-17.	-0.009	77.73	-7.666E+00		
PA-234M	1001.00	94.	-10.	-0.006	141.03	-5.867E+01		P
EU-154	1004.77	79.	14.	0.008	93.10	3.853E+00		
Cs-136	1048.07	39.	-8.	-0.004	115.92	-5.094E-01		
RH-106	1050.36	43.	9.	0.005	108.30	2.944E+01		
Ga-68	1077.40	16.	6.	0.003	156.94	1.111E+01		
FE-59	1099.25	22.	13.	0.007	87.45	1.190E+00		P
EU-152	1112.07	119.	7.	0.004	236.52	2.578E+00		
ZN-65	1115.55	125.	7.	0.004	242.49	6.978E-01		
Sc-46	1120.55	132.	6.	0.003	268.58	3.277E-01		
CO-60	1173.24	23.	13.	0.007	89.14	7.336E-01		P
Ta-182	1189.05	17.	12.	0.007	86.79	4.089E+00		
Ta-182	1221.41	11.	10.	0.005	86.77	2.072E+00		
NA-22	1274.53	23.	3.	0.002	256.01	1.622E-01		P
FE-59	1291.60	11.	4.	0.002	221.56	5.063E-01		
TL-210	1313.00	28.	-11.	-0.006	114.08	-3.259E+00		
CO-60	1332.50	7.	3.	0.002	186.36	1.986E-01		P
AG-110M	1384.30	24.	-4.	-0.002	300.00	-1.035E+00		
EU-152	1408.00	30.	5.	0.003	268.33	1.516E+00		
La-140	1596.21	19.	-9.	-0.005	184.04	-6.619E-01		P
SB-124	1690.98	13.	-3.	-0.002	519.33	-4.904E-01		P

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
BE-7	#A	-4.9193E+00	-4.9194E+00	9.334E+01%	1.54E+01
NA-22	#A	1.6217E-01	1.6217E-01	2.560E+02%	1.49E+00
K-40		1.5580E+02	1.5580E+02	6.531E+00%	1.08E+01
Sc-46	#A	1.4363E-01	1.4363E-01	2.686E+02%	1.68E+00
CR-51	#A	2.8822E+00	2.8823E+00	2.515E+02%	2.43E+01
MN-54	#A	-8.6086E-01	-8.6086E-01	8.789E+01%	1.67E+00
FE-59	#A	8.9349E-01	8.9350E-01	8.745E+01%	2.28E+00
Co-56	#C	1.8465E+00	1.8465E+00	2.041E+01%	1.13E+00
CO-57	#A	0.0000E+00	0.0000E+00	7.071E+02%	1.18E+00
CO-58	#A	-1.8331E-01	-1.8331E-01	3.012E+02%	1.51E+00
CO-60	#A	4.6596E-01	4.6596E-01	8.914E+01%	9.05E-01
ZN-65	#A	6.9776E-01	6.9777E-01	2.425E+02%	5.79E+00
NB-94	#A	-3.8605E-02	-3.8605E-02	1.215E+03%	1.65E+00
ZR-95	#A	1.0931E+00	1.0931E+00	5.050E+01%	1.48E+00
NB-95	#A	-1.5843E-01	-1.5844E-01	3.882E+02%	2.12E+00
RU-103	#A	2.6828E-01	2.6828E-01	1.486E+02%	9.72E-01
RH-106	#A	6.6723E+00	6.6723E+00	1.083E+02%	3.62E+01
AG-108M	#A	3.8504E-02	3.8504E-02	1.503E+02%	1.22E+00
AG-110M	#A	4.5585E-01	4.5585E-01	1.379E+02%	2.25E+00
SN-113	#A	-8.9684E-04	-8.9684E-04	1.145E+05%	2.51E+00
SB-124	#A	3.2655E-01	3.2655E-01	3.172E+02%	3.49E+00
SB-125	#A	2.0002E+00	2.0002E+00	7.114E+01%	3.36E+00
I-131	#A	-5.9625E-01	-5.9629E-01	9.279E+01%	1.36E+00
Gd-153	#A	-1.3553E+00	-1.3553E+00	1.734E+02%	7.81E+00
Ga-68	#A	1.0985E+01	1.1113E+01	1.569E+02%	3.95E+01
Tc-99m	#A	-4.1870E-01	-4.1961E-01	1.456E+02%	2.04E+00
BA-133	#A	8.1256E-01	8.1256E-01	1.509E+02%	3.99E+00
CS-134	#A	7.2412E-01	7.2412E-01	7.989E+01%	1.47E+00
CS-137	#A	-7.9287E-01	-7.9287E-01	1.194E+02%	2.07E+00
CE-139	#A	3.0954E-01	3.0954E-01	1.283E+02%	1.33E+00
Ba-140	#A	-5.6139E-01	-5.6141E-01	1.101E+02%	4.79E+00
La-140	#A	3.0350E-01	3.0351E-01	7.037E+01%	1.69E+00
CE-141	#A	3.7440E-01	3.7441E-01	2.740E+02%	3.44E+00
CE-144	#A	1.8809E+00	1.8809E+00	2.298E+02%	1.45E+01
PM-144	#A	1.2741E-01	1.2741E-01	2.717E+02%	1.59E+00
EU-152	#A	6.7542E-01	6.7542E-01	2.365E+02%	3.51E+00
EU-154	#A	1.3736E+00	1.3736E+00	9.310E+01%	2.24E+00
EU-155	#A	-1.8610E+00	-1.8610E+00	8.688E+01%	1.02E+01
HF-181	#A	-8.4249E-02	-8.4250E-02	1.011E+02%	2.15E+00
Ta-182	#A	1.5876E+00	1.5876E+00	8.677E+01%	8.81E+00
Hg-203	#A	-4.9793E-01	-4.9794E-01	9.230E+01%	1.54E+00
TL-208		3.2864E+00	3.2864E+00	1.594E+01%	9.51E-01
PM-146	#A	7.8931E-01	7.8931E-01	4.035E+01%	1.43E+00

Y-88 #	6.1130E-01	6.1130E-01	3.706E+01%		5.80E-01
Cd-113m#B	-2.0605E+02	-2.0605E+02	2.615E+03%		1.86E+04
Cd-109 #A	0.0000E+00	0.0000E+00	1.000E+03%		4.55E+01
Cf-251 A	8.2173E-01	8.2173E-01	2.578E+02%		5.46E+00
Cf-249 #A	4.5704E-01	4.5704E-01	1.526E+02%		2.41E+00
Sn-126 A	4.3592E+00	4.3592E+00	1.163E+02%		1.69E+01
PB-210 #A	2.8588E+01	2.8588E+01	4.028E+01%		2.97E+01
PB-212	8.0974E+00	8.0974E+00	1.031E+01%		2.12E+00
PB-214	2.4224E+01	2.4224E+01	5.557E+00%		2.64E+00
BI-207 #A	-2.3622E-02	-2.3622E-02	3.160E+03%		1.78E+00
BI-212	1.7116E+01	1.7116E+01	2.366E+01%		7.57E+00
U-235 A	-3.5345E+00	-3.5345E+00	4.634E+01%		1.58E+01
BI-214	2.5304E+01	2.5304E+01	6.415E+00%		2.19E+00
BI-210M#A	7.0146E-01	7.0146E-01	1.350E+02%		1.78E+00
AC-228	1.1014E+01	1.1014E+01	1.767E+01%		3.67E+00
TH-227 #A	-5.7103E+00	-5.7103E+00	1.132E+02%		1.58E+01
TH-229 #A	5.2261E+00	5.2261E+00	1.141E+02%		1.98E+01
TH-234	2.3051E+01	2.3051E+01	2.702E+01%		1.47E+01
PA-231 #A	9.7770E+00	9.7770E+00	2.240E+02%		7.36E+01
PA-233 #A	1.3488E+00	1.3488E+00	1.625E+02%		6.43E+00
PA-234 #A	1.9239E+00	1.9239E+00	9.481E+01%		8.21E+00
PA-234M#A	7.8432E+00	7.8432E+00	8.381E+01%		2.82E+02
AM-241 A	2.1346E+00	2.1346E+00	4.269E+01%		2.44E+00
Np-237 #A	-3.5432E+00	-3.5432E+00	6.579E+01%		1.38E+01
Ir-192 #A	4.8864E-01	4.8864E-01	1.683E+02%		2.72E+00
Cs-136 #A	-1.1688E-01	-1.1688E-01	1.202E+02%		1.59E+00
Np-239 A	-1.7908E+00	-1.7913E+00	1.649E+02%		9.82E+00
Nd-147 #A	-1.8134E+00	-1.8135E+00	1.873E+02%		8.25E+00
TL-210 #A	4.7737E-01	4.7737E-01	9.011E+01%		1.45E+00
Kr-85 #A	0.0000E+00	0.0000E+00	1.000E+03%		4.38E+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 (25.1 to 1999.6 keV) 2.986E+02 Bq/Sample
Total Decayed Activity (25.1 to 1999.6 keV) 2.9861960E+02 Bq/Sample

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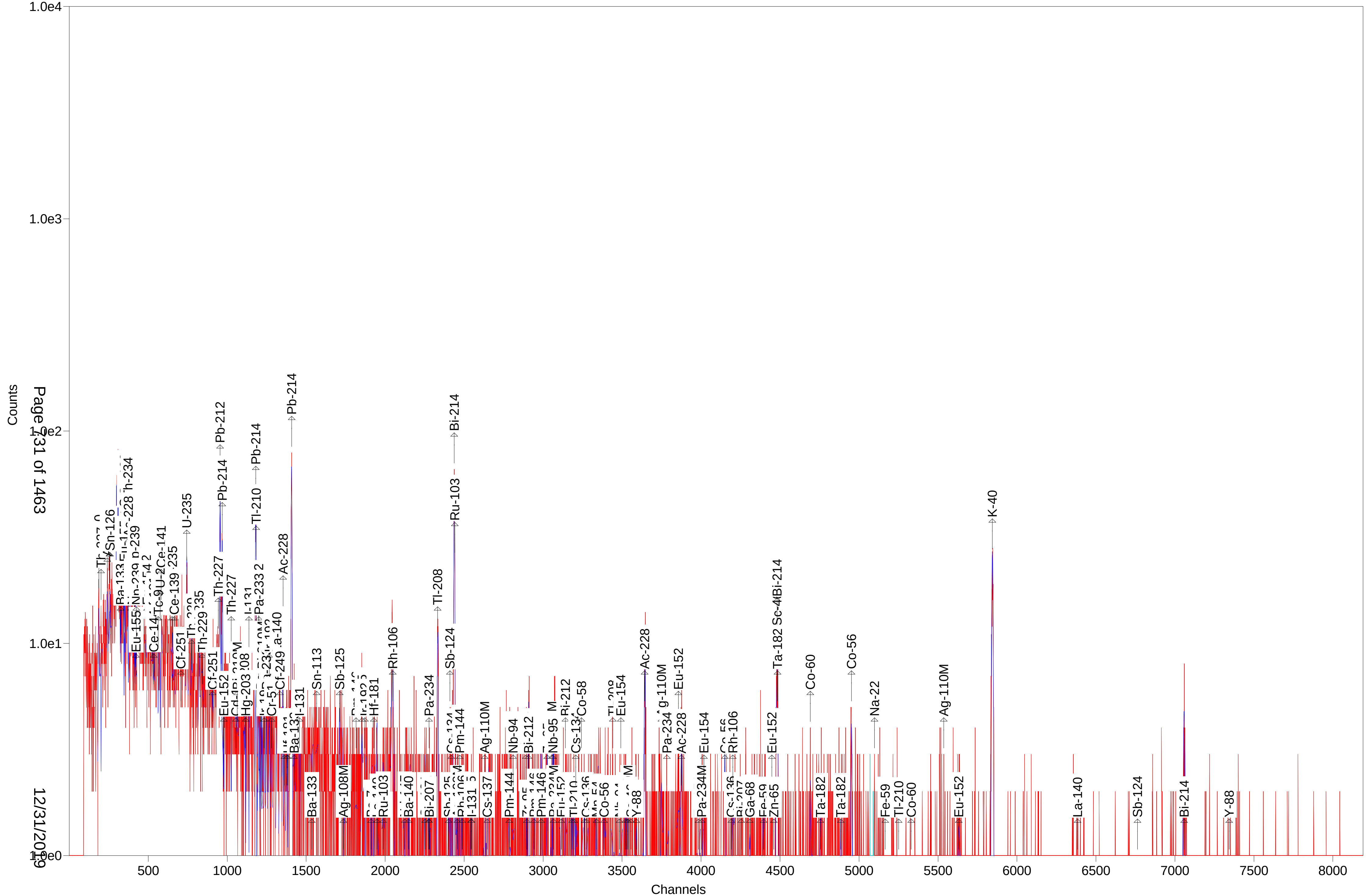
452567_Gamma_160-36526-A-1-B. 16_Gamma_20192288.spc.



Test America St. Louis Spectrum ID: 17_Gamma_20192433

Sample Description: 452567_Gamma_160-36526-A-2-B
Detector: Detector #17
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-2-B

Decay to Time: 12/25/2019 08:19 Live Time: 1800 sec
Acquisition Time: 12/25/2019 08:19:52 Real Time: 1807 sec
Analysis Time: 12/25/2019 08:50 Dead Time: 0.37 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 17_Soil_TunaCan.Clb
Efficiency Cal Desc: 17_TunaCan_90099_032612
Efficiency Cal Date: 4/12/2012 09:28
Energy Cal Date: 2/29/2012 10:33
Library: Client_Long_Rev15.lib
Bkgd Correction File: 17_2019-12-07_1454.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	3.711E+00	89.5	3.323E+00	3.329E+00	1.119E+01
NA-22	-8.443E-02	497.5	4.200E-01	4.201E-01	1.535E+00
K-40	1.825E+02	6.2	1.127E+01	1.464E+01	1.009E+01
Sc-46	5.103E-01	94.6	4.829E-01	4.836E-01	1.635E+00
CR-51	9.082E-01	410.6	3.729E+00	3.729E+00	1.281E+01
MN-54	5.277E-01	93.7	4.946E-01	4.953E-01	1.156E+00
FE-59	4.656E-01	189.5	8.822E-01	8.825E-01	2.095E+00
Co-56	1.146E+00	39.2	4.488E-01	4.526E-01	1.268E+00
CO-57	5.796E-01	96.2	5.576E-01	5.584E-01	1.176E+00
CO-58	0.000E+00	1.#INF	9.011E-02	9.011E-02	1.693E+00
CO-60	8.996E-02	136.5	1.228E-01	1.229E-01	1.406E+00
ZN-65	0.000E+00	1.#INF	4.223E-01	4.223E-01	6.747E+00
NB-94	-2.742E-02	1806.9	4.954E-01	4.954E-01	1.240E+00
ZR-95	-1.159E-01	91.8	1.064E-01	1.066E-01	2.358E+00
NB-95	-8.775E-01	75.5	6.624E-01	6.640E-01	2.203E+00
RU-103	6.526E-01	51.5	3.359E-01	3.376E-01	8.089E-01
RH-106	-8.187E-01	81.6	6.683E-01	6.696E-01	4.605E+01
AG-108M	2.744E-01	146.6	4.023E-01	4.025E-01	1.065E+00
AG-110M	-1.002E+00	80.0	8.019E-01	8.035E-01	2.969E+00
SN-113	4.628E-01	137.7	6.371E-01	6.375E-01	2.160E+00
SB-124	-5.555E-02	40.8	2.268E-02	2.286E-02	4.307E+00
SB-125	4.153E+00	27.7	1.151E+00	1.170E+00	3.196E+00
I-131	4.070E-01	146.1	5.947E-01	5.950E-01	1.248E+00
Gd-153	-7.473E-01	151.7	1.134E+00	1.135E+00	3.806E+00
Ga-68	0.000E+00	1.#INF	4.837E+00	4.837E+00	5.137E+01
Tc-99m	9.343E-02	491.6	4.593E-01	4.593E-01	1.550E+00
BA-133	-3.168E-01	438.7	1.390E+00	1.390E+00	4.673E+00
CS-134	-1.874E-01	65.2	1.221E-01	1.225E-01	2.373E+00
CS-137	4.683E-01	87.6	4.104E-01	4.111E-01	1.387E+00
CE-139	-9.089E-03	4986.0	4.532E-01	4.532E-01	1.542E+00
Ba-140	-4.064E-01	436.7	1.775E+00	1.775E+00	4.555E+00
La-140	2.107E-01	86.2	1.816E-01	1.819E-01	1.455E+00
CE-141	-3.195E-01	265.8	8.490E-01	8.491E-01	2.857E+00

CE-144	-3.302E+00	89.4	2.951E+00	2.956E+00	1.460E+01
PM-144	1.482E-01	311.0	4.608E-01	4.609E-01	1.147E+00
EU-152	-2.319E-01	105.8	2.452E-01	2.455E-01	4.215E+00
EU-154	3.629E+00	22.2	8.047E-01	8.269E-01	2.713E+00
EU-155	1.144E+00	131.9	1.510E+00	1.511E+00	5.062E+00
HF-181	3.305E-01	127.9	4.229E-01	4.232E-01	1.842E+00
Ta-182	1.619E+00	46.9	7.594E-01	7.637E-01	9.794E+00
Hg-203	-8.903E-02	490.3	4.365E-01	4.365E-01	1.499E+00
TL-208	3.669E+00	16.5	6.071E-01	6.362E-01	1.174E+00
PM-146	9.135E-01	51.1	4.665E-01	4.689E-01	1.696E+00
Y-88	-2.232E-02	149.4	3.334E-02	3.337E-02	1.200E+00
Cd-113m	-6.671E+03	98.7	6.584E+03	6.598E+03	2.203E+04
Cd-109	1.027E+01	150.5	1.545E+01	1.546E+01	5.148E+01
Cf-251	-1.604E+00	134.7	2.161E+00	2.165E+00	5.812E+00
Cf-249	3.976E-01	166.6	6.622E-01	6.626E-01	2.250E+00
Sn-126	4.127E+00	122.3	5.046E+00	5.051E+00	1.687E+01
PB-210	3.816E+01	34.1	1.301E+01	1.320E+01	3.446E+01
PB-212	1.017E+01	8.4	8.593E-01	1.082E+00	1.917E+00
PB-214	3.110E+01	4.7	1.471E+00	2.185E+00	2.371E+00
BI-207	-9.305E-01	99.0	9.209E-01	9.221E-01	2.394E+00
BI-212	5.681E+00	91.5	5.200E+00	5.209E+00	1.759E+01
U-235	2.723E+00	124.9	3.401E+00	3.404E+00	1.138E+01
BI-214	3.098E+01	5.7	1.767E+00	2.390E+00	2.250E+00
BI-210M	-7.716E-01	104.1	8.030E-01	8.042E-01	2.784E+00
AC-228	1.210E+01	11.9	1.444E+00	1.570E+00	3.025E+00
TH-227	4.792E-01	127.4	6.107E-01	6.114E-01	1.479E+01
TH-229	7.345E+00	104.8	7.701E+00	7.723E+00	2.070E+01
TH-234	1.380E+01	39.5	5.447E+00	5.501E+00	1.815E+01
PA-231	0.000E+00	1.#INF	3.404E+00	3.404E+00	8.973E+01
PA-233	9.224E-01	233.6	2.154E+00	2.155E+00	7.222E+00
PA-234	7.985E-01	63.0	5.028E-01	5.045E-01	8.576E+00
PA-234M	3.358E+01	122.3	4.107E+01	4.111E+01	2.502E+02
AM-241	1.047E-01	1256.0	1.315E+00	1.315E+00	3.776E+00
Np-237	-3.148E+00	169.2	5.326E+00	5.329E+00	1.773E+01
Ir-192	4.071E-01	103.4	4.209E-01	4.216E-01	1.415E+00
Cs-136	2.303E-01	127.6	2.939E-01	2.942E-01	1.031E+00
Np-239	-1.449E+00	117.0	1.694E+00	1.697E+00	5.657E+00
Nd-147	-4.134E+00	95.7	3.956E+00	3.963E+00	9.779E+00
TL-210	-5.627E-01	118.0	6.638E-01	6.646E-01	2.245E+00
Kr-85	8.555E+01	163.3	1.397E+02	1.398E+02	4.728E+02
Total	4.976E+02				

Analyst: Caleb Quinn

Sample description
452567_Gamma_160-36526-A-2-B

Spectrum Filename: C:\User\SPC\Det17\17_Gamma_20192433.An1

Acquisition information
Start time: 12/25/2019 8:19:52 AM
Live time: 1800
Real time: 1807
Dead time: 0.37 %
Detector ID: 17

Detector system
Ge17 SN/11080671

Calibration
Filename: 17_Soil_TunaCan.Clb
17_TunaCan_90099_032612

Energy Calibration
Created: 2/29/2012 10:33:23 AM
Zero offset: 0.108 keV
Gain: 0.250 keV/channel
Quadratic: -2.584E-08 keV/channel^2

Efficiency Calibration
Created: 4/12/2012 9:28:42 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.91 %
Log(Eff): -5.264190E-01 + (-4.024164E-01*Log(E)) + (-2.604461E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.00 %
Log(Eff): -2.343889E+01 + (8.582715E+00*Log(E)) + (-9.075430E-01*Log(E)^2)

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.12keV)
Stop channel: 8000 (1999.54keV)
Peak rejection level: 1000.000%
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

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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	12/25/2019 8:19:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	17_2019-12-07_1454.PBC 12/7/2019 2:54:46 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 30 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.0959

***** 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
46.76	89.	22.53	0.58	2.116E-02	46.54	4.250	3.816E+01	PB210
63.45	77.	31.30	0.91	3.173E-02	63.29	3.810	PBC<MDA	TH234
					64.28	9.700	1.371E+01	Sn126
74.76	212.	11.79	0.80	3.675E-02				
77.29	273.	9.11	0.80	3.764E-02				
87.12	125.	16.52	0.81	4.040E-02	86.49	13.100	1.320E+01	Np237
					86.54	30.700	5.631E+00	EU155
					86.94	9.040	1.908E+01	Sn126
					87.57	37.500	4.584E+00	Sn126
88.04	28.	150.46	0.81	4.060E-02	88.04	3.790	PBC<MDA	Cd109
89.81	58.	30.01	0.82	4.095E-02				
91.10	11.	403.16	0.82	4.119E-02	91.10	28.300	PBC<MDA	Nd147
92.45	30.	77.03	0.82	4.144E-02	92.59	5.584	PBC<MDA	TH234
93.21	29.	147.24	0.82	4.156E-02	93.35	5.561	PBC<MDA	AC228
99.50	10.	269.43	0.82	4.234E-02	99.50	15.000	PBC<MDA	Np239
103.70	22.	113.45	0.83	4.269E-02	103.70	24.000	PBC<MDA	Np239
104.41	19.	131.91	0.83	4.278E-02	105.31	21.200	PBC<MDA	EU155
122.06	17.	133.42	0.85	4.276E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	2.624E-01	CO57
136.47	25.	138.62	0.86	4.163E-02	136.30	5.850	PBC<MDA	HF181
					136.47	10.680	3.123E+00	CO57
140.51	6.	491.60	0.86	4.119E-02	140.51	89.300	PBC<MDA	Tc99m

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
143.79	22.	124.90	0.87	4.080E-02	143.79	10.960	PBC<MDA	U235
185.70	116.	19.24	1.19	3.542E-02	185.72	54.000	3.355E+00	U235
193.51	20.	104.84	0.91	3.448E-02	193.51	4.400	PBC<MDA	TH229
227.00	17.	101.98	0.94	3.093E-02	227.00	6.300	PBC<MDA	Cf251
235.97	18.	202.85	0.95	3.012E-02	235.97	12.300	PBC<MDA	TH227
238.49	244.	8.11	0.95	2.991E-02	238.63	43.300	1.013E+01	PB212
241.98	146.	11.90	0.96	2.961E-02	242.00	7.430	3.678E+01	PB214
244.69	14.	279.02	0.96	2.938E-02	244.69	7.580	PBC<MDA	EU152
277.28	16.	96.24	0.99	2.694E-02	277.28	6.310	PBC<MDA	TL208
284.30	12.	146.09	1.00	2.648E-02	284.30	6.140	PBC<MDA	I131
295.01	274.	7.78	0.80	2.580E-02	295.09	19.300	3.053E+01	PB214
					296.00	79.000	7.476E+00	TL210
300.23	37.	33.90	0.75	2.550E-02	300.03	3.280	2.453E+01	PB212
					300.07	2.460	3.270E+01	PA231
					300.18	6.200	PBC<MDA	PA233
312.01	15.	233.55	1.02	2.481E-02	312.01	36.000	PBC<MDA	PA233
316.49	16.	103.38	1.03	2.456E-02	316.49	87.040	PBC<MDA	Ir192
320.08	4.	410.56	1.03	2.437E-02	320.08	9.940	PBC<MDA	CR51
338.16	68.	25.54	0.91	2.344E-02	338.32	12.010	1.336E+01	AC228
345.83	17.	127.94	1.05	2.308E-02	345.83	15.070	PBC<MDA	HF181
351.84	484.	5.39	1.09	2.280E-02	351.93	37.600	3.139E+01	PB214
364.48	4.	365.83	1.07	2.223E-02	364.48	81.700	PBC<MDA	I131
383.84	14.	117.98	1.09	2.143E-02	383.84	8.940	PBC<MDA	BA133
388.26	10.	166.57	1.09	2.127E-02	387.95	66.000	PBC<MDA	Cf249
391.69	11.	137.66	1.09	2.112E-02	391.69	64.000	PBC<MDA	SN113
427.88	13.	98.58	1.13	1.983E-02	427.88	29.600	PBC<MDA	SB125
433.94	9.	146.63	1.13	1.963E-02	433.94	90.480	PBC<MDA	AG108M
463.37	44.	27.70	1.16	1.872E-02	463.37	10.470	1.238E+01	SB125
477.60	13.	89.54	1.17	1.832E-02	477.60	10.520	PBC<MDA	BE7
487.02	2.	919.14	1.18	1.806E-02	487.02	45.500	PBC<MDA	La140
497.05	19.	51.48	1.19	1.779E-02	497.05	90.900	PBC<MDA	RU103
511.86	95.	17.19	2.45	1.742E-02	511.86	20.000	1.520E+01	RH106
513.98	12.	163.26	1.20	1.737E-02	513.98	0.430	PBC<MDA	Kr85
569.47	8.	131.27	1.25	1.611E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	3.504E+00	PA234
					569.70	97.740	2.940E-01	BI207
569.70	3.	359.69	1.25	1.611E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	1.121E+00	PA234
					569.70	97.740	9.409E-02	BI207
583.06	86.	16.55	1.50	1.584E-02	583.02	84.500	3.565E+00	TL208
609.30	394.	5.70	1.14	1.533E-02	609.31	46.090	3.098E+01	BI214
					610.30	5.750	2.486E+02	RU103
657.76	2.	403.15	1.33	1.449E-02	657.76	94.640	PBC<MDA	AG110M
661.66	10.	87.64	1.33	1.443E-02	661.66	85.210	PBC<MDA	CS137
696.54	4.	311.02	1.36	1.389E-02	696.54	99.000	PBC<MDA	PM144
724.20	6.	147.73	1.39	1.349E-02	724.20	44.150	PBC<MDA	ZR95
727.19	10.	91.54	1.39	1.345E-02	727.17	7.550	PBC<MDA	BI212
735.72	7.	134.72	1.40	1.333E-02	735.72	22.500	PBC<MDA	PM146

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
747.16	19.	51.07	1.41	1.318E-02	747.16	34.000	PBC<MDA	PM146
766.41	12.	122.31	1.42	1.293E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	PBC<MDA	PA234M
785.42	10.	90.59	1.44	1.270E-02	785.42	1.280	PBC<MDA	BI212
801.95	13.	103.73	1.45	1.250E-02	801.95	8.690	PBC<MDA	CS134
815.77	9.	86.18	1.47	1.234E-02	815.77	23.280	PBC<MDA	La140
818.50	5.	127.64	1.47	1.231E-02	818.50	100.000	PBC<MDA	Cs136
834.85	12.	93.73	1.48	1.213E-02	834.85	99.980	PBC<MDA	MN54
846.77	5.	228.91	1.49	1.200E-02	846.77	99.935	PBC<MDA	Co56
873.23	9.	107.30	1.51	1.172E-02	873.23	12.270	PBC<MDA	EU154
880.53	4.	156.59	1.52	1.165E-02	880.53	6.000	PBC<MDA	PA234
883.24	7.	101.26	1.52	1.162E-02	883.24	9.600	PBC<MDA	PA234
889.28	11.	94.62	1.53	1.156E-02	889.28	99.984	PBC<MDA	Sc46
898.04	4.	216.89	1.53	1.148E-02	898.04	93.700	PBC<MDA	Y88
911.19	71.	16.52	2.03	1.135E-02	911.07	29.000	1.204E+01	AC228
969.06	39.	18.85	2.31	1.083E-02	968.97	17.460	1.136E+01	AC228
996.33	41.	22.18	1.62	1.061E-02	996.33	10.600	2.009E+01	EU154
1001.00	-2.	501.18	1.62	1.057E-02	1001.00	0.837	PBC<MDA	PA234M
1050.36	12.	81.63	1.66	1.019E-02	1050.36	1.560	PBC<MDA	RH106
1099.25	5.	189.47	1.70	9.840E-03	1099.25	56.500	PBC<MDA	FE59
1120.40	98.	13.24	1.74	9.697E-03	1120.29	15.100	3.731E+01	BI214
					1120.55	99.987	PBC<MDA	Sc46
1173.24	7.	136.51	1.76	9.359E-03	1173.24	99.900	PBC<MDA	CO60
1189.05	13.	46.90	1.77	9.263E-03	1189.05	16.200	PBC<MDA	Ta182
1238.28	27.	39.17	1.81	8.977E-03	1238.28	66.070	2.528E+00	Co56
1384.30	5.	236.76	1.93	8.233E-03	1384.30	24.290	PBC<MDA	AG110M
1460.81	277.	6.18	2.28	7.894E-03	1460.83	10.670	1.825E+02	K40
1690.98	6.	40.82	2.16	7.037E-03	1690.98	47.790	PBC<MDA	SB124
1764.71	78.	11.86	1.11	6.804E-03	1764.49	15.400	4.151E+01	BI214

********** 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	
298.47	74.67	206.	212.	5.768E+03	11.79	0.802	-	sD
308.56	77.19	174.	273.	7.265E+03	9.11	0.804	-	D
358.01	89.79	134.	79.	1.926E+03	23.63	0.816	-	sD
742.04	185.99	121.	116.	3.264E+03	19.24	1.194	-	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: Client_Long_Rev15.lib

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********** 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	186.50	46.76	128.	61.	0.034	34.08	0.579s
TH-227	200.03	50.14	201.	-16.	-0.009	151.23	0.778s
TH-234	252.59	63.29	177.	51.	0.028	39.47	0.791D
Sn-126	256.56	64.28	390.	23.	0.013	122.28	0.792s
BA-133	323.36	80.99	319.	-30.	-0.017	67.94	0.807s
Np-237	345.35	86.49	1263.	-30.	-0.017	169.21	0.813s
EU-155	345.56	86.54	1233.	-30.	-0.017	167.17	0.813
Sn-126	347.15	86.94	1203.	-30.	-0.017	165.11	0.813
Sn-126	349.67	87.57	1056.	-30.	-0.017	154.67	0.814s
Cd-109	351.55	88.04	901.	28.	0.016	150.46	0.814s
Nd-147	363.79	91.10	929.	11.	0.006	403.16	0.817
TH-234	369.74	92.59	245.	30.	0.017	77.03	0.818D
AC-228	372.78	93.35	873.	29.	0.016	147.24	0.819s
Gd-153	389.37	97.50	324.	-17.	-0.009	151.69	0.823s
Np-239	397.37	99.50	334.	10.	0.005	269.43	0.825s
Gd-153	412.16	103.20	460.	-26.	-0.014	119.46	0.828s
Np-239	414.16	103.70	309.	22.	0.012	113.45	0.829s
EU-155	420.61	105.31	294.	19.	0.010	131.91	0.830s
Np-239	423.88	106.13	427.	-25.	-0.014	116.97	0.831
EU-152	486.45	121.78	373.	-26.	-0.015	105.77	0.846s
CO-57	487.57	122.06	257.	17.	0.010	133.42	0.846s
EU-154	491.73	123.10	312.	-18.	-0.010	138.31	0.847s
PA-234	524.49	131.29	602.	-27.	-0.015	90.55	0.855s
HF-181	531.41	133.02	629.	-27.	-0.015	131.49	0.856s
CE-144	533.46	133.54	657.	-28.	-0.015	89.36	0.857s
HF-181	544.50	136.30	684.	-27.	-0.015	136.44	0.859s
CO-57	545.20	136.47	587.	25.	0.014	138.62	0.859s
Tc-99m	561.34	140.51	432.	6.	0.003	491.60	0.863
U-235	574.43	143.79	364.	22.	0.012	124.90	0.866
CE-141	581.05	145.44	441.	-11.	-0.006	265.76	0.868
Ba-140	649.90	162.66	318.	-19.	-0.011	134.70	0.884s
Cf-251	705.64	176.60	180.	-18.	-0.010	134.72	0.897s
U-235	742.10	185.72	368.	-25.	-0.014	110.40	0.905s
TH-229	773.25	193.51	133.	20.	0.011	104.84	0.913s
TH-229	842.58	210.85	190.	-24.	-0.014	102.66	0.929
Cf-251	907.16	227.00	90.	17.	0.009	101.98	0.944s
TH-227	943.03	235.97	689.	18.	0.010	202.85	0.952s
PB-212	953.67	238.63	81.	237.	0.132	8.45	0.954D
PB-214	967.13	242.00	82.	149.	0.083	11.83	0.957D
EU-152	977.91	244.69	715.	14.	0.008	279.02	0.960s
TH-227	1024.08	256.24	117.	-13.	-0.007	154.32	0.971s
Cd-113m	1053.91	263.70	187.	-20.	-0.011	98.69	0.978s
BI-210M	1062.44	265.83	205.	-19.	-0.011	104.06	0.979s
TL-208	1108.23	277.28	104.	16.	0.009	96.24	0.990

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Hg-203	1115.89	279.20	146.	-4.	-0.002	490.31	0.992s
I-131	1136.28	284.30	85.	12.	0.007	146.09	0.996s
PB-214	1179.13	295.01	44.	274.	0.152	7.78	0.801
TL-210	1183.07	296.00	647.	-16.	-0.009	225.70	1.007s
PB-212	1199.97	300.23	33.	37.	0.021	33.90	0.752s
PA-231	1199.35	300.07	631.	-16.	-0.009	222.12	1.011s
PA-233	1199.79	300.18	615.	-4.	-0.002	837.80	1.011s
PA-231	1209.66	302.65	611.	0.	0.000	1000.00	1.013s
BA-133	1210.47	302.85	611.	0.	0.000	1000.00	1.013s
Ba-140	1218.46	304.85	611.	0.	0.000	1000.00	1.015s
BI-210M	1218.64	304.90	611.	0.	0.000	1000.00	1.015s
Ir-192	1232.82	308.44	611.	0.	0.000	1000.00	1.019s
PA-233	1247.10	312.01	592.	15.	0.008	233.55	1.022s
Ir-192	1265.01	316.49	123.	16.	0.009	103.38	1.026s
CR-51	1279.38	320.08	130.	4.	0.002	410.56	1.029s
Cf-249	1332.79	333.44	81.	-8.	-0.004	222.12	1.041s
AC-228	1351.67	338.16	53.	68.	0.038	25.54	0.915s
Cs-136	1361.30	340.57	268.	-18.	-0.010	129.22	1.048s
EU-152	1376.16	344.29	303.	-20.	-0.011	122.96	1.051s
HF-181	1382.33	345.83	222.	17.	0.009	127.94	1.053s
PB-214	1406.37	351.84	53.	484.	0.269	5.39	1.093
BA-133	1423.00	356.00	612.	-8.	-0.004	438.75	1.062s
I-131	1456.93	364.48	67.	4.	0.002	365.83	1.070
BA-133	1534.34	383.84	122.	14.	0.008	117.98	1.087s
Cf-249	1550.77	387.95	135.	10.	0.006	166.57	1.091s
SN-113	1565.73	391.69	114.	11.	0.006	137.66	1.094
SB-125	1710.44	427.88	44.	13.	0.007	98.58	1.127
AG-108M	1734.69	433.94	45.	9.	0.005	146.63	1.132s
SB-125	1852.38	463.37	51.	44.	0.024	27.70	1.158s
Ir-192	1871.15	468.06	108.	-12.	-0.007	124.67	1.163
BE-7	1909.29	477.59	60.	13.	0.007	89.54	1.171s
HF-181	1926.89	482.00	97.	-3.	-0.002	488.06	1.175s
La-140	1946.98	487.02	56.	2.	0.001	919.14	1.180s
RU-103	1987.11	497.05	20.	19.	0.011	51.48	1.188s
RH-106	2046.35	511.86	87.	95.	0.053	17.19	2.452s
Kr-85	2054.81	513.98	170.	12.	0.006	163.26	1.203
Nd-147	2122.88	531.00	60.	-16.	-0.009	95.68	1.219s
Ba-140	2147.92	537.26	44.	-3.	-0.002	436.74	1.224
CS-134	2251.82	563.24	32.	-4.	-0.002	281.37	1.247s
CS-134	2276.15	569.32	48.	-14.	-0.008	74.91	1.252s
PA-234	2276.75	569.47	56.	8.	0.005	131.27	1.253s
BI-207	2277.67	569.70	45.	3.	0.001	359.69	1.253s
TL-208	2331.11	583.06	30.	86.	0.048	16.55	1.502
SB-125	2400.86	600.50	625.	-15.	-0.009	230.78	1.280s
SB-124	2409.78	602.73	609.	-15.	-0.009	227.61	1.282s
CS-134	2417.70	604.71	594.	-15.	-0.009	224.44	1.284s
BI-214	2436.06	609.30	31.	394.	0.219	5.70	1.140
RU-103	2440.05	610.30	579.	-7.	-0.004	522.42	1.288s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
AG-108M	2455.98	614.28	572.	0.	0.000	1000.00	1.292s
PM-144	2471.11	618.06	605.	-17.	-0.010	200.92	1.295s
RH-106	2486.52	621.92	681.	-20.	-0.011	188.88	1.299s
I-131	2546.75	636.97	48.	-8.	-0.005	173.21	1.312
AG-110M	2629.90	657.76	28.	2.	0.001	403.15	1.330s
CS-137	2645.49	661.66	36.	10.	0.006	87.64	1.333s
PM-144	2785.03	696.54	30.	4.	0.002	311.02	1.363s
SB-124	2890.01	722.79	65.	-4.	-0.002	289.40	1.386
AG-108M	2890.61	722.94	61.	0.	0.000	1000.00	1.386
EU-154	2892.30	723.36	61.	0.	0.000	1000.00	1.386s
ZR-95	2895.66	724.20	40.	6.	0.003	147.73	1.387s
BI-212	2907.54	727.17	40.	10.	0.006	91.54	1.390s
PM-146	2941.74	735.72	22.	7.	0.004	134.72	1.397s
PM-146	2987.51	747.16	17.	19.	0.010	51.07	1.407s
ZR-95	3025.79	756.73	35.	-9.	-0.005	108.94	1.415s
AG-110M	3054.64	763.94	40.	-15.	-0.008	66.04	1.421s
NB-95	3062.03	765.79	108.	-20.	-0.011	75.49	1.423s
PA-234M	3064.52	766.41	99.	12.	0.007	122.31	1.423s
BI-212	3140.56	785.42	17.	10.	0.006	90.59	1.440
CS-134	3182.36	795.87	86.	-17.	-0.010	78.91	1.448s
TL-210	3197.29	799.60	103.	-13.	-0.007	117.97	1.451s
CS-134	3206.69	801.95	90.	13.	0.007	103.73	1.454s
CO-58	3241.99	810.78	56.	0.	0.000	1000.00	1.461s
La-140	3261.97	815.77	24.	9.	0.005	86.18	1.465s
Cs-136	3272.90	818.50	19.	5.	0.003	127.64	1.467s
MN-54	3338.30	834.85	23.	12.	0.006	93.73	1.481s
Co-56	3385.99	846.77	28.	5.	0.003	228.91	1.491s
NB-94	3483.32	871.10	40.	-10.	-0.005	97.59	1.512s
EU-154	3491.85	873.23	40.	9.	0.005	107.30	1.514s
PA-234	3521.06	880.53	21.	4.	0.002	156.59	1.520s
PA-234	3531.90	883.24	25.	7.	0.004	101.26	1.522s
AG-110M	3537.67	884.68	83.	-15.	-0.008	80.04	1.523s
Sc-46	3556.06	889.28	45.	11.	0.006	94.62	1.527s
Y-88	3591.11	898.04	19.	4.	0.002	216.89	1.534s
AC-228	3643.74	911.19	11.	71.	0.040	16.52	2.027s
AG-110M	3748.95	937.49	61.	-20.	-0.011	87.05	1.567s
PA-234	3783.07	946.02	23.	-4.	-0.002	241.30	1.574s
EU-152	3855.45	964.11	92.	-15.	-0.008	96.54	1.589s
AC-228	3875.26	969.06	3.	39.	0.021	18.85	2.313s
EU-154	3984.36	996.33	20.	41.	0.023	22.18	1.616s
PA-234M	4003.04	1001.00	63.	-2.	-0.001	501.18	1.620s
EU-154	4018.15	1004.77	93.	-13.	-0.007	111.76	1.623
Co-56	4150.45	1037.84	35.	-7.	-0.004	189.61	1.650s
Cs-136	4191.39	1048.07	35.	-12.	-0.007	75.46	1.658s
RH-106	4200.55	1050.36	39.	12.	0.006	81.63	1.661s
BI-207	4253.77	1063.66	41.	-13.	-0.007	98.97	1.671s
Ga-68	4308.74	1077.40	25.	0.	0.000	1000.00	1.683s
FE-59	4396.18	1099.25	15.	5.	0.003	189.47	1.700s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
EU-152	4447.49	1112.07	158.	-8.	-0.005	216.33	1.711s
ZN-65	4461.38	1115.55	150.	0.	0.000	1000.00	1.713
BI-214	4480.80	1120.40	14.	98.	0.055	13.24	1.737s
Sc-46	4481.41	1120.55	150.	0.	0.000	1000.00	1.717s
CO-60	4692.24	1173.24	15.	7.	0.004	136.51	1.760s
Ta-182	4755.52	1189.05	5.	13.	0.007	46.90	1.772
Ta-182	4885.02	1221.41	21.	-3.	-0.002	319.69	1.798
Co-56	4952.53	1238.28	17.	27.	0.015	39.17	1.812
NA-22	5097.60	1274.53	21.	-1.	-0.001	497.49	1.840s
EU-154	5097.64	1274.54	23.	0.	0.000	1000.00	1.840s
FE-59	5165.90	1291.60	38.	-13.	-0.007	83.65	1.854s
TL-210	5251.56	1313.00	21.	-2.	-0.001	454.68	1.870s
CO-60	5329.61	1332.50	16.	-3.	-0.002	333.13	1.886s
AG-110M	5536.92	1384.30	21.	5.	0.003	236.76	1.926s
K-40	5843.15	1460.81	7.	277.	0.154	6.18	2.282
La-140	6385.15	1596.21	11.	-1.	-0.001	598.44	2.087s
SB-124	6764.55	1690.98	0.	6.	0.003	40.82	2.157s
BI-214	7059.72	1764.71	4.	78.	0.043	11.86	1.110s
Co-56	7086.31	1771.35	82.	0.	0.000	1000.00	2.216s
Y-88	7345.39	1836.06	6.	-3.	-0.002	205.48	2.262s

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
BE-7	C	3.7114E+00				5.31E+01	
			477.60	3.711E+00	&(	1.119E+01 8.95E+01 1.05E+01	G
NA-22	C	-8.4429E-02				9.50E+02	
			1274.53	-8.443E-02	?(	1.535E+00 4.97E+02 9.99E+01	G
K-40	N	1.8250E+02				4.66E+11	
			1460.83	1.825E+02	(P	1.009E+01 6.18E+00 1.07E+01	G
Sc-46	F	5.1032E-01				8.38E+01	
			889.28	5.103E-01	?(	1.635E+00 9.46E+01 1.00E+02	G
			1120.55	0.000E+00	-	3.426E+00 1.00E+03 1.00E+02	G
CR-51	F	9.0819E-01				2.77E+01	
			320.08	9.082E-01	?(P	1.281E+01 4.11E+02 9.94E+00	G

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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
MN-54	C	5.2766E-01					3.12E+02	
			834.85	5.277E-01	?(	1.156E+00	9.37E+01	1.00E+02 G
FE-59	F	4.6562E-01					4.45E+01	
			1099.25	4.656E-01	?(P	2.095E+00	1.89E+02	5.65E+01 G
			1291.60	-1.878E+00	+ P	4.635E+00	8.36E+01	4.32E+01 G
Co-56	C	1.1457E+00					7.73E+01	
			846.77	2.317E-01	?(	1.268E+00	2.29E+02	9.99E+01 G
			1238.28	2.528E+00	?(P	2.054E+00	3.92E+01	6.61E+01 G
			1037.84	-2.677E+00	+	1.158E+01	1.90E+02	1.41E+01 G
			1771.35	0.000E+00	-	2.376E+01	1.00E+03	1.55E+01 A
CO-57	C	5.7964E-01					2.72E+02	
			122.06	2.624E-01	?(	1.176E+00	1.33E+02	8.56E+01 G
			136.47	3.123E+00	?(	1.445E+01	1.39E+02	1.07E+01 G
CO-60	F	8.9964E-02					1.93E+03	
			1332.50	-2.092E-01	?(P	1.406E+00	3.33E+02	1.00E+02 G
			1173.24	3.894E-01	?(P	1.249E+00	1.37E+02	9.99E+01 G
NB-94	I	-2.7418E-02					7.41E+06	
			702.63	-2.742E-02	%(	1.240E+00	1.81E+03	9.79E+01 G
			871.10	-4.577E-01	+	1.518E+00	9.76E+01	9.99E+01 G
ZR-95	I	-1.1594E-01					6.40E+01	
			756.73	-6.833E-01	?(P	2.358E+00	1.09E+02	5.45E+01 G
			724.20	5.839E-01	?(P	2.987E+00	1.48E+02	4.42E+01 G
NB-95	I	-8.7745E-01					6.40E+01	
			765.79	-8.775E-01	?(	2.203E+00	7.55E+01	9.98E+01 G
RU-103	I	6.5258E-01					3.93E+01	
			497.05	6.526E-01	&(	8.089E-01	5.15E+01	9.09E+01 G
			610.30	-4.119E+00	-	7.242E+01	5.22E+02	5.75E+00 GA
RH-106	I	-8.1866E-01					3.74E+02	
			621.92	-7.289E+00	?(	4.605E+01	1.89E+02	9.93E+00 G
			1050.36	4.037E+01	?(	1.108E+02	8.16E+01	1.56E+00 G
			511.86	1.520E+01	?	7.350E+00	1.72E+01	2.00E+01 GA
AG-108M	C	2.7435E-01					1.53E+05	
			433.94	2.744E-01	?(P	1.065E+00	1.47E+02	9.05E+01 G
			722.94	0.000E+00	-	1.770E+00	1.00E+03	9.08E+01 G
			614.28	0.000E+00	-	4.631E+00	1.00E+03	8.98E+01 G

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
AG-110M	F -1.0018E+00					2.50E+02	
		884.68	-1.002E+00	&(P	2.969E+00	8.00E+01	7.27E+01 G
		657.76	7.645E-02	+	1.109E+00	4.03E+02	9.46E+01 G
		937.49	-2.860E+00	+	5.677E+00	8.71E+01	3.44E+01 G
		1384.30	1.259E+00	+ P	6.751E+00	2.37E+02	2.43E+01 G
		763.94	-2.851E+00	+	6.226E+00	6.60E+01	2.23E+01 G
SN-113	F 4.6278E-01					1.15E+02	
		391.69	4.628E-01	&(P	2.160E+00	1.38E+02	6.40E+01 G
SB-124	F -5.5547E-02					6.02E+01	
		602.73	-5.646E-01	*(	4.307E+00	2.28E+02	9.83E+01 G
		1690.98	9.912E-01	?(	1.218E+00	4.08E+01	4.78E+01 G
		722.79	-1.522E+00	+	1.532E+01	2.89E+02	1.08E+01 G
SB-125	I 4.1535E+00					1.01E+03	
		427.88	1.245E+00	?(P	3.196E+00	9.86E+01	2.96E+01 G
		600.50	-3.093E+00	+	2.392E+01	2.31E+02	1.79E+01 G
		635.89	-1.102E-01	%	1.031E+01	2.60E+03	1.13E+01 G
		463.37	1.238E+01	&(	1.023E+01	2.77E+01	1.05E+01 G
I-131	I 4.0704E-01					8.02E+00	
		364.48	1.287E-01	&(P	1.248E+00	3.66E+02	8.17E+01 G
		284.30	4.111E+00	?(P	1.561E+01	1.46E+02	6.14E+00 G
		636.97	-4.352E+00	&	1.827E+01	1.73E+02	7.17E+00 G
Gd-153	F -7.4731E-01					2.42E+02	
		97.50	-7.473E-01	?(	3.806E+00	1.52E+02	3.00E+01 G
		103.20	-1.538E+00	&	6.134E+00	1.19E+02	2.18E+01 G
Tc-99m	I 9.3429E-02					2.51E-01	
		140.51	9.343E-02	(	1.550E+00	4.92E+02	8.93E+01 G
BA-133	F -3.1684E-01					3.85E+03	
		356.00	-3.168E-01	?(	4.673E+00	4.39E+02	6.20E+01 G
		302.85	0.000E+00	&	1.411E+01	1.00E+03	1.83E+01 G
		383.84	3.950E+00	?	1.573E+01	1.18E+02	8.94E+00 GA
		80.99	-1.252E+00	+ P	3.609E+00	6.79E+01	3.41E+01 GA
CS-134	I -1.8738E-01					7.54E+02	
		795.87	-9.012E-01	?(	2.373E+00	7.89E+01	8.55E+01 G
		604.71	-5.705E-01	+	4.292E+00	2.24E+02	9.76E+01 G
		569.32	-3.138E+00	+	7.843E+00	7.49E+01	1.54E+01 G
		801.95	6.839E+00	?(	2.393E+01	1.04E+02	8.69E+00 G
		563.24	-1.638E+00	+	1.191E+01	2.81E+02	8.35E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CS-137	I	4.6826E-01					1.10E+04	
			661.66	4.683E-01	@(	1.387E+00	8.76E+01	8.52E+01 G
CE-139	F	-9.0888E-03					1.38E+02	
			165.85	-9.089E-03	%(	1.542E+00	4.99E+03	7.99E+01 G
Ba-140	I	-4.0640E-01					1.28E+01	
			537.26	-4.064E-01	?(	4.555E+00	4.37E+02	2.44E+01 G
			162.66	-4.450E+00	+	2.010E+01	1.35E+02	6.22E+00 G
			304.85	0.000E+00	&	6.055E+01	1.00E+03	4.29E+00 G
La-140	I	2.1073E-01					1.28E+01	
			1596.21	-1.054E-01	?(	1.455E+00	5.98E+02	9.54E+01 G
			487.02	1.084E-01	?(P	2.549E+00	9.19E+02	4.55E+01 G
			328.76	-1.144E-01	&	5.616E+00	1.86E+03	2.03E+01 G
			815.77	1.706E+00	&(	4.985E+00	8.62E+01	2.33E+01 G
CE-141	I	-3.1946E-01					3.25E+01	
			145.44	-3.195E-01	?(	2.857E+00	2.66E+02	4.82E+01 G
CE-144	I	-3.3025E+00					2.85E+02	
			133.54	-3.302E+00	?(P	1.460E+01	8.94E+01	1.11E+01 G
PM-144	C	1.4816E-01					3.63E+02	
			696.54	1.482E-01	?(	1.147E+00	3.11E+02	9.90E+01 G
			618.06	-6.443E-01	+	4.335E+00	2.01E+02	9.91E+01 G
EU-152	F	-2.3186E-01					4.94E+03	
			121.78	-1.195E+00	?(	4.215E+00	1.06E+02	2.86E+01 G
			344.29	-1.842E+00	+	7.587E+00	1.23E+02	2.65E+01 G
			1112.07	-3.479E+00	&	2.561E+01	2.16E+02	1.36E+01 G
			778.92	-4.481E-01	%	1.122E+01	1.01E+03	1.29E+01 G
			964.11	-5.114E+00	+	1.661E+01	9.65E+01	1.46E+01 G
			244.69	3.398E+00	?(	3.177E+01	2.79E+02	7.58E+00 G
			1408.00	2.170E-01	%	7.889E+00	1.58E+03	2.10E+01 GA
EU-154	I	3.6285E+00					3.14E+03	
			123.10	-5.847E-01	?(	2.713E+00	1.38E+02	4.08E+01 G
			1274.54	0.000E+00	+	4.477E+00	1.00E+03	3.52E+01 G
			723.36	0.000E+00	+	7.957E+00	1.00E+03	2.02E+01 G
			873.23	3.411E+00	&(	1.250E+01	1.07E+02	1.23E+01 G
			1004.77	-3.694E+00	+	1.396E+01	1.12E+02	1.80E+01 G
			996.33	2.009E+01	?(	1.172E+01	2.22E+01	1.06E+01 G
EU-155	I	1.1444E+00					1.81E+03	
			105.31	1.144E+00	&(P	5.062E+00	1.32E+02	2.12E+01 G
			86.54	-1.343E+00	+	7.476E+00	1.67E+02	3.07E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
HF-181	F	3.3053E-01					4.24E+01	
			482.00	-1.090E-01	&(	1.842E+00	4.88E+02	8.05E+01 G
			133.02	-8.337E-01	&	3.656E+00	1.31E+02	4.33E+01 G
			345.83	2.678E+00	?(	1.152E+01	1.28E+02	1.51E+01 G
			136.30	-6.242E+00	+	2.840E+01	1.36E+02	5.85E+00 G
Ta-182	F	1.6193E+00					1.14E+02	
			1121.30	1.369E-01	%(	9.794E+00	2.08E+03	3.49E+01 G
			1221.41	-7.560E-01	+	5.496E+00	3.20E+02	2.70E+01 G
			1189.05	4.813E+00	(	4.861E+00	4.69E+01	1.62E+01 G
Hg-203	F	-8.9027E-02					4.66E+01	
			279.20	-8.903E-02	?(	1.499E+00	4.90E+02	8.15E+01 G
TL-208	N	3.6692E+00					6.98E+02	
			583.02	3.565E+00	(P	1.174E+00	1.65E+01	8.45E+01 G
			277.28	5.065E+00	(	1.638E+01	9.62E+01	6.31E+00 G
			860.56	6.323E-02	% P	1.110E+01	7.25E+03	1.24E+01 G
PM-146	C	9.1347E-01					2.02E+03	
			453.88	2.693E-02	&(P	1.696E+00	2.46E+03	6.50E+01 G
			747.16	2.314E+00	(	2.741E+00	5.11E+01	3.40E+01 G
			735.72	1.358E+00	?(	4.519E+00	1.35E+02	2.25E+01 G
Y-88	F	-2.2320E-02					1.07E+02	
			1836.06	-2.548E-01	?(	1.200E+00	2.05E+02	9.92E+01 G
			898.04	2.238E-01	?(	1.180E+00	2.17E+02	9.37E+01 G
Cd-113m		-6.6712E+03					5.33E+03	
			263.70	-6.671E+03	?(	2.203E+04	9.87E+01	6.00E-03 K
Cd-109	F	1.0266E+01					4.53E+02	
			88.04	1.027E+01	?(	5.148E+01	1.50E+02	3.79E+00 G
Cf-251	T	-1.6039E+00					3.28E+05	
			176.60	-1.604E+00	?(	5.812E+00	1.35E+02	1.70E+01 G
			227.00	4.858E+00	*	1.338E+01	1.02E+02	6.30E+00 GA
Cf-249	T	3.9758E-01					1.28E+05	
			387.95	3.976E-01	?(	2.250E+00	1.67E+02	6.60E+01 G
			333.44	-1.160E+00	&	6.742E+00	2.22E+02	1.55E+01 G
Sn-126		4.1267E+00					3.65E+07	
			87.57	-1.095E+00	-	5.639E+00	1.55E+02	3.75E+01 GA
			64.28	4.127E+00	?(	1.687E+01	1.22E+02	9.70E+00 G
			86.94	-4.553E+00	+	2.503E+01	1.65E+02	9.04E+00 GA

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PB-210	N	3.8164E+01					8.14E+03	
			46.54	3.816E+01	@(P	3.446E+01	3.41E+01	4.25E+00 G
PB-212	N	1.0172E+01					6.98E+02	
			238.63	1.017E+01	(P	1.917E+00	8.45E+00	4.33E+01 G
			300.03	2.453E+01	+ P	1.960E+01	3.39E+01	3.28E+00 GA
PB-214	N	3.1100E+01					5.84E+05	
			351.93	3.139E+01	(P	2.371E+00	5.39E+00	3.76E+01 G
			295.09	3.053E+01	(P	3.765E+00	7.78E+00	1.93E+01 G
			242.00	3.774E+01	+	1.132E+01	1.18E+01	7.43E+00 GA
BI-207	C	-9.3054E-01					1.18E+04	
			1063.66	-9.305E-01	?(P	2.394E+00	9.90E+01	7.45E+01 G
			569.70	9.409E-02	+	1.195E+00	3.60E+02	9.77E+01 G
BI-212	N	5.6806E+00					6.98E+02	
			727.17	5.681E+00	?(P	1.759E+01	9.15E+01	7.55E+00 G
			785.42	3.422E+01		7.558E+01	9.06E+01	1.28E+00 GA
U-235	N	2.7231E+00					2.57E+11	
			143.79	2.723E+00	(	1.138E+01	1.25E+02	1.10E+01 G
			205.33	-1.863E-01	% P	2.152E+01	4.22E+03	5.01E+00 G
			163.38	-5.356E-01	% P	2.545E+01	1.33E+03	5.08E+00 G
			185.72	-7.248E-01	-	2.672E+00	1.10E+02	5.40E+01 GA
BI-214	N	3.0979E+01					5.84E+05	
			609.31	3.098E+01	(P	2.250E+00	5.70E+00	4.61E+01 G
			1120.29	3.731E+01	+ P	7.562E+00	1.32E+01	1.51E+01 G
			1764.49	4.151E+01	+ P	6.195E+00	1.19E+01	1.54E+01 G
BI-210M	T	-7.7164E-01					1.10E+09	
			265.83	-7.716E-01	?(P	2.784E+00	1.04E+02	5.00E+01 G
			304.90	0.000E+00	+	9.278E+00	1.00E+03	2.80E+01 G
AC-228	N	1.2104E+01					2.10E+03	
			911.07	1.204E+01	(	3.025E+00	1.65E+01	2.90E+01 G
			968.97	1.136E+01	(	3.294E+00	1.88E+01	1.75E+01 G
			338.32	1.336E+01	(	7.252E+00	2.55E+01	1.20E+01 G
			93.35	6.876E+00	-	3.374E+01	1.47E+02	5.56E+00 XA
TH-227	N	4.7919E-01					7.95E+03	
			256.24	-3.533E+00	?(	1.479E+01	1.54E+02	7.00E+00 G
			235.97	2.762E+00	?(	1.875E+01	2.03E+02	1.23E+01 G
			50.14	-4.715E+00	+	2.027E+01	1.51E+02	8.00E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
TH-229	N	7.3451E+00					2.68E+06	
			193.51	7.345E+00	&(	2.070E+01	1.05E+02	4.40E+00 G
			210.85	-1.392E+01	+	3.824E+01	1.03E+02	2.99E+00 G
TH-234	N	1.3802E+01					1.63E+12	
			92.59	7.131E+00	(P	1.815E+01	7.70E+01	5.58E+00 G
			63.29	2.358E+01	(P	2.979E+01	3.95E+01	3.81E+00 G
PA-233	C	9.2237E-01					7.82E+08	
			312.01	9.224E-01	*(P	7.222E+00	2.34E+02	3.60E+01 G
			300.18	-1.474E+00	+	4.158E+01	8.38E+02	6.20E+00 G
PA-234	N	7.9848E-01					1.63E+12	
			131.29	-1.996E+00	&(P	8.576E+00	9.06E+01	1.80E+01 G
			946.02	-1.628E+00	+	9.476E+00	2.41E+02	1.34E+01 G
			569.47	3.504E+00	?(	1.576E+01	1.31E+02	8.20E+00 G
			883.24	3.727E+00	(	1.295E+01	1.01E+02	9.60E+00 G
			880.53	3.429E+00	?	1.899E+01	1.57E+02	6.00E+00 GA
PA-234M	N	3.3584E+01					1.63E+12	
			1001.00	-1.554E+01	(P	2.502E+02	5.01E+02	8.37E-01 G
			766.41	1.734E+02	?(P	7.171E+02	1.22E+02	2.94E-01 G
AM-241	T	1.0467E-01					1.58E+05	
			59.54	1.047E-01	%(	3.776E+00	1.26E+03	3.59E+01 G
Np-237	F	-3.1477E+00					2.14E+06	
			86.49	-3.148E+00	&(	1.773E+01	1.69E+02	1.31E+01 G
Ir-192	F	4.0711E-01					7.40E+01	
			316.49	4.071E-01	?(	1.415E+00	1.03E+02	8.70E+01 G
			468.06	-7.003E-01	+	2.956E+00	1.25E+02	5.18E+01 G
			308.44	0.000E+00	-	8.248E+00	1.00E+03	3.18E+01 G
Cs-136	F	2.3029E-01					1.30E+01	
			818.50	2.303E-01	?(	1.031E+00	1.28E+02	1.00E+02 G
			1048.07	-8.166E-01	+	2.060E+00	7.55E+01	8.00E+01 G
			340.57	-9.247E-01	+	4.009E+00	1.29E+02	4.69E+01 G
Np-239	T	-1.4487E+00					2.36E+00	
			103.70	1.210E+00	&	4.591E+00	1.13E+02	2.40E+01 X
			106.13	-1.449E+00	?(	5.657E+00	1.17E+02	2.27E+01 G
			99.50	8.457E-01	&	7.692E+00	2.69E+02	1.50E+01 X
Nd-147		-4.1343E+00					1.11E+01	
			531.00	-4.134E+00	?(	9.779E+00	9.57E+01	1.30E+01 G
			91.10	5.111E-01	+	6.900E+00	4.03E+02	2.83E+01 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

TL-210   N  -5.6271E-01                                      5.84E+05
                          799.60-5.627E-01  (  2.245E+00 1.18E+02 9.90E+01 G
                          296.00-4.382E-01 +   3.313E+00 2.26E+02 7.90E+01 G
                         1313.00-7.196E-01 +   7.473E+00 4.55E+02 2.10E+01 GA

Kr-85    I   8.5554E+01                                      3.92E+03
                          513.98 8.555E+01  (  4.728E+02 1.63E+02 4.30E-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

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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********** 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	
TH-227	50.14	201.	-16.	-0.009	151.23	-4.715E+00	
BA-133	80.99	319.	-30.	-0.017	67.94	-1.252E+00	P
Np-237	86.49	1263.	-30.	-0.017	169.21	-3.148E+00	
Cd-109	88.04	901.	28.	0.016	150.46	1.027E+01	
Gd-153	97.50	324.	-17.	-0.009	151.69	-7.473E-01	
Np-239	99.50	334.	10.	0.005	269.43	8.457E-01	
Gd-153	103.20	460.	-26.	-0.014	119.46	-1.538E+00	

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Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Np-239	103.70	309.	22.	0.012	113.45	1.210E+00	
Np-239	106.13	427.	-25.	-0.014	116.97	-1.449E+00	
EU-152	121.78	373.	-26.	-0.015	105.77	-1.195E+00	
CO-57	122.06	257.	17.	0.010	133.42	2.624E-01	
PA-234	131.29	602.	-27.	-0.015	90.55	-1.996E+00	P
HF-181	133.02	629.	-27.	-0.015	131.49	-8.337E-01	
CE-144	133.54	657.	-28.	-0.015	89.36	-3.302E+00	P
HF-181	136.30	684.	-27.	-0.015	136.44	-6.242E+00	
CO-57	136.47	587.	25.	0.014	138.62	3.123E+00	
U-235	143.79	364.	22.	0.012	124.90	2.723E+00	
CE-141	145.44	441.	-11.	-0.006	265.76	-3.195E-01	
Ba-140	162.66	318.	-19.	-0.011	134.70	-4.450E+00	
Cf-251	176.60	180.	-18.	-0.010	134.72	-1.604E+00	
U-235	185.72	368.	-25.	-0.014	110.40	-7.248E-01	
TH-229	193.51	133.	20.	0.011	104.84	7.345E+00	
TH-229	210.85	190.	-24.	-0.014	102.66	-1.392E+01	
Cf-251	227.00	90.	17.	0.009	101.98	4.858E+00	
TH-227	235.97	689.	18.	0.010	202.85	2.762E+00	
EU-152	244.69	715.	14.	0.008	279.02	3.398E+00	
TH-227	256.24	117.	-13.	-0.007	154.32	-3.533E+00	
Cd-113m	263.70	187.	-20.	-0.011	98.69	-6.671E+03	
BI-210M	265.83	205.	-19.	-0.011	104.06	-7.716E-01	P
Hg-203	279.20	146.	-4.	-0.002	490.31	-8.903E-02	
I-131	284.30	85.	12.	0.007	146.09	4.111E+00	P
TL-210	296.00	647.	-16.	-0.009	225.70	-4.382E-01	
PA-231	300.07	631.	-16.	-0.009	222.12	-1.426E+01	
PA-233	300.18	615.	-4.	-0.002	837.80	-1.474E+00	
PA-233	312.01	592.	15.	0.008	233.55	9.224E-01	P
Ir-192	316.49	123.	16.	0.009	103.38	4.071E-01	
CR-51	320.08	130.	4.	0.002	410.56	9.082E-01	P
Cs-136	340.57	268.	-18.	-0.010	129.22	-9.247E-01	
EU-152	344.29	303.	-20.	-0.011	122.96	-1.842E+00	
HF-181	345.83	222.	17.	0.009	127.94	2.678E+00	
BA-133	356.00	612.	-8.	-0.004	438.75	-3.168E-01	
I-131	364.48	67.	4.	0.002	365.83	1.287E-01	P
BA-133	383.84	122.	14.	0.008	117.98	3.950E+00	
SN-113	391.69	114.	11.	0.006	137.66	4.628E-01	P
AG-108M	433.94	45.	9.	0.005	146.63	2.744E-01	P
Ir-192	468.06	108.	-12.	-0.007	124.67	-7.003E-01	
BE-7	477.59	60.	13.	0.007	89.54	3.711E+00	
HF-181	482.00	97.	-3.	-0.002	488.06	-1.090E-01	
La-140	487.02	56.	2.	0.001	919.14	1.084E-01	P
RU-103	497.05	20.	19.	0.011	51.48	6.526E-01	
RH-106	511.86	87.	95.	0.053	17.19	1.520E+01	
Kr-85	513.98	170.	12.	0.006	163.26	8.555E+01	
Ba-140	537.26	44.	-3.	-0.002	436.74	-4.064E-01	
CS-134	563.24	32.	-4.	-0.002	281.37	-1.638E+00	
CS-134	569.32	48.	-14.	-0.008	74.91	-3.138E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
PA-234	569.47	56.	8.	0.005	131.27	3.504E+00	
BI-207	569.70	45.	3.	0.001	359.69	9.409E-02	
SB-124	602.73	609.	-15.	-0.009	227.61	-5.646E-01	
CS-134	604.71	594.	-15.	-0.009	224.44	-5.705E-01	
RU-103	610.30	579.	-7.	-0.004	522.42	-4.119E+00	
PM-144	618.06	605.	-17.	-0.010	200.92	-6.443E-01	
RH-106	621.92	681.	-20.	-0.011	188.88	-7.289E+00	
I-131	636.97	48.	-8.	-0.005	173.21	-4.352E+00	
AG-110M	657.76	28.	2.	0.001	403.15	7.645E-02	
CS-137	661.66	36.	10.	0.006	87.64	4.683E-01	
PM-144	696.54	30.	4.	0.002	311.02	1.482E-01	
SB-124	722.79	65.	-4.	-0.002	289.40	-1.522E+00	
ZR-95	724.20	40.	6.	0.003	147.73	5.839E-01	P
PM-146	735.72	22.	7.	0.004	134.72	1.358E+00	
PM-146	747.16	17.	19.	0.010	51.07	2.314E+00	
ZR-95	756.73	35.	-9.	-0.005	108.94	-6.833E-01	P
AG-110M	763.94	40.	-15.	-0.008	66.04	-2.851E+00	
NB-95	765.79	108.	-20.	-0.011	75.49	-8.775E-01	
PA-234M	766.41	99.	12.	0.007	122.31	1.734E+02	P
CS-134	795.87	86.	-17.	-0.010	78.91	-9.012E-01	
TL-210	799.60	103.	-13.	-0.007	117.97	-5.627E-01	
CS-134	801.95	90.	13.	0.007	103.73	6.839E+00	
La-140	815.77	24.	9.	0.005	86.18	1.706E+00	
Cs-136	818.50	19.	5.	0.003	127.64	2.303E-01	
MN-54	834.85	23.	12.	0.006	93.73	5.277E-01	
Co-56	846.77	28.	5.	0.003	228.91	2.317E-01	
NB-94	871.10	40.	-10.	-0.005	97.59	-4.577E-01	
PA-234	880.53	21.	4.	0.002	156.59	3.429E+00	
PA-234	883.24	25.	7.	0.004	101.26	3.727E+00	
AG-110M	884.68	83.	-15.	-0.008	80.04	-1.002E+00	P
Sc-46	889.28	45.	11.	0.006	94.62	5.103E-01	
Y-88	898.04	19.	4.	0.002	216.89	2.238E-01	
AG-110M	937.49	61.	-20.	-0.011	87.05	-2.860E+00	
PA-234	946.02	23.	-4.	-0.002	241.30	-1.628E+00	
EU-152	964.11	92.	-15.	-0.008	96.54	-5.114E+00	
PA-234M	1001.00	63.	-2.	-0.001	501.18	-1.554E+01	P
Co-56	1037.84	35.	-7.	-0.004	189.61	-2.677E+00	
Cs-136	1048.07	35.	-12.	-0.007	75.46	-8.166E-01	
RH-106	1050.36	39.	12.	0.006	81.63	4.037E+01	
BI-207	1063.66	41.	-13.	-0.007	98.97	-9.305E-01	P
FE-59	1099.25	15.	5.	0.003	189.47	4.656E-01	P
EU-152	1112.07	158.	-8.	-0.005	216.33	-3.479E+00	
CO-60	1173.24	15.	7.	0.004	136.51	3.894E-01	P
Ta-182	1189.05	5.	13.	0.007	46.90	4.813E+00	
Ta-182	1221.41	21.	-3.	-0.002	319.69	-7.560E-01	
Co-56	1238.28	17.	27.	0.015	39.17	2.528E+00	P
NA-22	1274.53	21.	-1.	-0.001	497.49	-8.443E-02	
FE-59	1291.60	38.	-13.	-0.007	83.65	-1.878E+00	P

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
TL-210	1313.00	21.	-2.	-0.001	454.68	-7.196E-01		
CO-60	1332.50	16.	-3.	-0.002	333.13	-2.092E-01		P
AG-110M	1384.30	21.	5.	0.003	236.76	1.259E+00		P
La-140	1596.21	11.	-1.	-0.001	598.44	-1.054E-01		
SB-124	1690.98	0.	6.	0.003	40.82	9.912E-01		
Y-88	1836.06	6.	-3.	-0.002	205.48	-2.548E-01		

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 Counting 1 Sigma	MDA Bq/Sample
BE-7	#A	3.7114E+00	3.7114E+00	8.954E+01%	1.12E+01
NA-22	#A	-8.4429E-02	-8.4429E-02	4.975E+02%	1.53E+00
K-40		1.8250E+02	1.8250E+02	6.177E+00%	1.01E+01
Sc-46	#A	5.1031E-01	5.1032E-01	9.462E+01%	1.64E+00
CR-51	#A	9.0818E-01	9.0819E-01	4.106E+02%	1.28E+01
MN-54	#A	5.2766E-01	5.2766E-01	9.373E+01%	1.16E+00
FE-59	#A	4.6562E-01	4.6562E-01	1.895E+02%	2.09E+00
Co-56	#A	1.1457E+00	1.1457E+00	3.917E+01%	1.27E+00
CO-57	#A	5.7964E-01	5.7964E-01	9.620E+01%	1.18E+00
CO-58	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.69E+00
CO-60	#A	8.9964E-02	8.9964E-02	1.365E+02%	1.41E+00
ZN-65	#A	0.0000E+00	0.0000E+00	1.000E+03%	6.75E+00
NB-94	#A	-2.7418E-02	-2.7418E-02	1.807E+03%	1.24E+00
ZR-95	#A	-1.1594E-01	-1.1594E-01	9.178E+01%	2.36E+00
NB-95	#A	-8.7745E-01	-8.7745E-01	7.549E+01%	2.20E+00
RU-103	#A	6.5258E-01	6.5258E-01	5.148E+01%	8.09E-01
RH-106	#A	-8.1866E-01	-8.1866E-01	8.163E+01%	4.60E+01
AG-108M	#A	2.7435E-01	2.7435E-01	1.466E+02%	1.07E+00
AG-110M	#A	-1.0018E+00	-1.0018E+00	8.004E+01%	2.97E+00
SN-113	#A	4.6278E-01	4.6278E-01	1.377E+02%	2.16E+00
SB-124	#A	-5.5546E-02	-5.5547E-02	4.082E+01%	4.31E+00
SB-125	#C	4.1535E+00	4.1535E+00	2.770E+01%	3.20E+00
I-131	#A	4.0702E-01	4.0704E-01	1.461E+02%	1.25E+00
Gd-153	#A	-7.4731E-01	-7.4731E-01	1.517E+02%	3.81E+00
Ga-68	#A	0.0000E+00	0.0000E+00	1.000E+03%	5.14E+01
Tc-99m	A	9.3274E-02	9.3429E-02	4.916E+02%	1.55E+00
BA-133	#A	-3.1684E-01	-3.1684E-01	4.387E+02%	4.67E+00
CS-134	#A	-1.8738E-01	-1.8738E-01	6.517E+01%	2.37E+00
CS-137	#A	4.6826E-01	4.6826E-01	8.764E+01%	1.39E+00
CE-139	#A	-9.0888E-03	-9.0888E-03	4.986E+03%	1.54E+00
Ba-140	#A	-4.0639E-01	-4.0640E-01	4.367E+02%	4.55E+00
La-140	#A	2.1073E-01	2.1073E-01	8.618E+01%	1.45E+00
CE-141	#A	-3.1945E-01	-3.1946E-01	2.658E+02%	2.86E+00
CE-144	#A	-3.3025E+00	-3.3025E+00	8.936E+01%	1.46E+01

PM-144 #A	1.4816E-01	1.4816E-01	3.110E+02%	1.15E+00
EU-152 #A	-2.3186E-01	-2.3186E-01	1.058E+02%	4.22E+00
EU-154 #C	3.6285E+00	3.6285E+00	2.218E+01%	2.71E+00
EU-155 #A	1.1444E+00	1.1444E+00	1.319E+02%	5.06E+00
HF-181 #A	3.3053E-01	3.3053E-01	1.279E+02%	1.84E+00
Ta-182 #A	1.6193E+00	1.6193E+00	4.690E+01%	9.79E+00
Hg-203 #A	-8.9026E-02	-8.9027E-02	4.903E+02%	1.50E+00
TL-208	3.6692E+00	3.6692E+00	1.655E+01%	1.17E+00
PM-146 #A	9.1347E-01	9.1347E-01	5.107E+01%	1.70E+00
Y-88 #A	-2.2320E-02	-2.2320E-02	1.494E+02%	1.20E+00
Cd-113m#A	-6.6712E+03	-6.6712E+03	9.869E+01%	2.20E+04
Cd-109 #A	1.0266E+01	1.0266E+01	1.505E+02%	5.15E+01
Cf-251 #A	-1.6039E+00	-1.6039E+00	1.347E+02%	5.81E+00
Cf-249 #A	3.9758E-01	3.9758E-01	1.666E+02%	2.25E+00
Sn-126 #A	4.1267E+00	4.1267E+00	1.223E+02%	1.69E+01
PB-210 #	3.8164E+01	3.8164E+01	3.408E+01%	3.45E+01
PB-212	1.0172E+01	1.0172E+01	8.447E+00%	1.92E+00
PB-214	3.1100E+01	3.1100E+01	4.731E+00%	2.37E+00
BI-207 #A	-9.3054E-01	-9.3054E-01	9.897E+01%	2.39E+00
BI-212 A	5.6806E+00	5.6806E+00	9.154E+01%	1.76E+01
U-235 #A	2.7231E+00	2.7231E+00	1.249E+02%	1.14E+01
BI-214	3.0979E+01	3.0979E+01	5.705E+00%	2.25E+00
BI-210M#A	-7.7164E-01	-7.7164E-01	1.041E+02%	2.78E+00
AC-228	1.2104E+01	1.2104E+01	1.193E+01%	3.03E+00
TH-227 #A	4.7919E-01	4.7919E-01	1.274E+02%	1.48E+01
TH-229 #A	7.3451E+00	7.3451E+00	1.048E+02%	2.07E+01
TH-234 A	1.3802E+01	1.3802E+01	3.947E+01%	1.82E+01
PA-231 #A	0.0000E+00	0.0000E+00	1.000E+03%	8.97E+01
PA-233 #A	9.2237E-01	9.2237E-01	2.336E+02%	7.22E+00
PA-234 #A	7.9848E-01	7.9848E-01	6.297E+01%	8.58E+00
PA-234M#A	3.3584E+01	3.3584E+01	1.223E+02%	2.50E+02
AM-241 #A	1.0467E-01	1.0467E-01	1.256E+03%	3.78E+00
Np-237 #A	-3.1477E+00	-3.1477E+00	1.692E+02%	1.77E+01
Ir-192 #A	4.0711E-01	4.0711E-01	1.034E+02%	1.42E+00
Cs-136 #A	2.3029E-01	2.3029E-01	1.276E+02%	1.03E+00
Np-239 #A	-1.4484E+00	-1.4487E+00	1.170E+02%	5.66E+00
Nd-147 A	-4.1342E+00	-4.1343E+00	9.568E+01%	9.78E+00
TL-210 #A	-5.6271E-01	-5.6271E-01	1.180E+02%	2.25E+00
Kr-85 #A	8.5554E+01	8.5554E+01	1.633E+02%	4.73E+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

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-----------------------------   S U M M A R Y   -----------------------------
Total Activity (   25.1 to  1999.5 keV)     3.087E+02  Bq/Sample
Total Decayed Activity (   25.1 to  1999.5 keV) 3.0869016E+02  Bq/Sample
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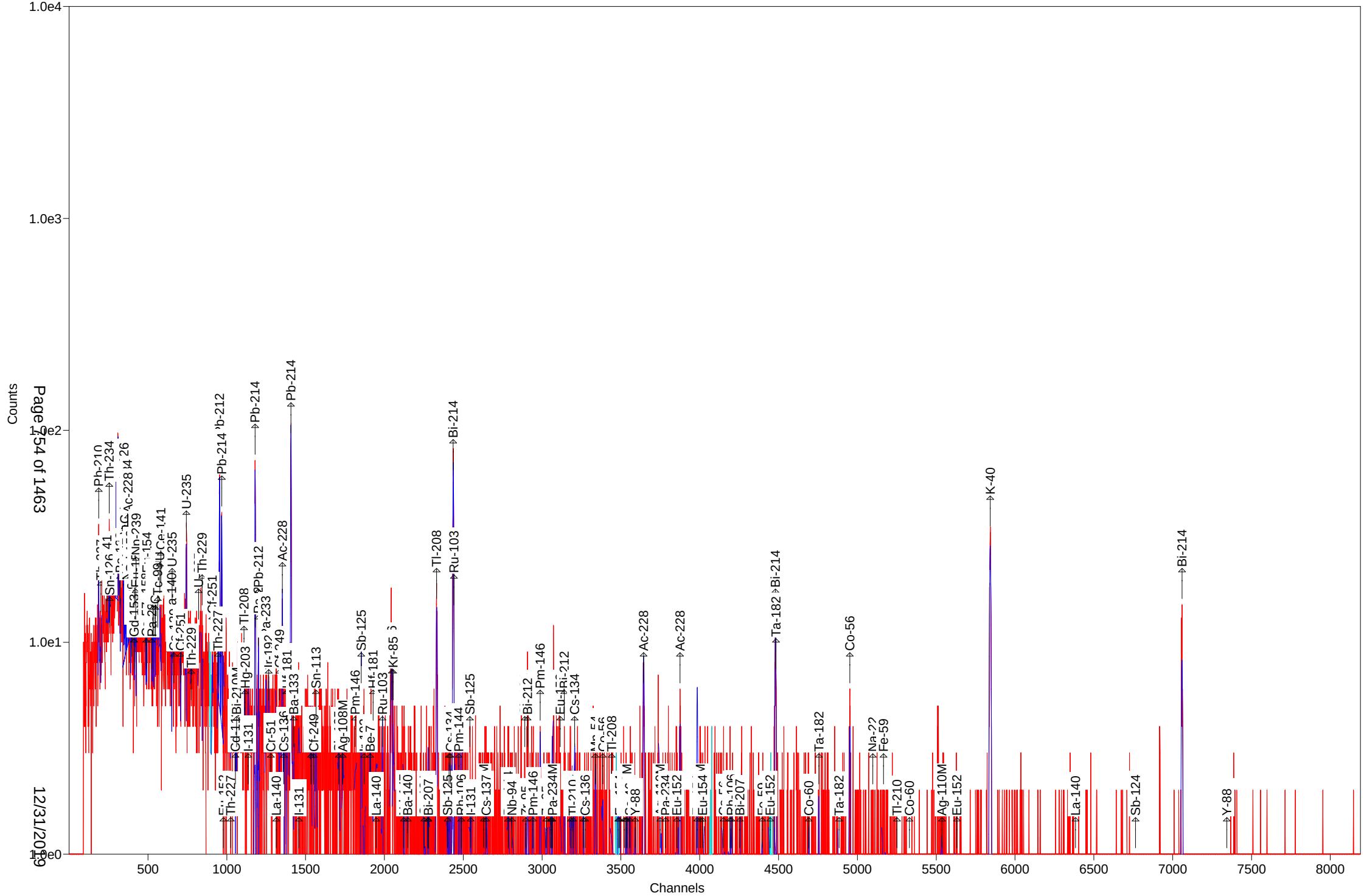
452567_Gamma_160-36526-A-2-B. 17_Gamma_20192433.spc.



Sample Description: 452567_Gamma_160-36526-A-3-B
Detector: Detector # 5
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-3-B

Decay to Time: 12/25/2019 08:20 Live Time: 1800 sec
Acquisition Time: 12/25/2019 08:20:41 Real Time: 1806 sec
Analysis Time: 12/25/2019 08:51 Dead Time: 0.31 %
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_Long_Rev15.lib
Bkgd Correction File: 5_2019-12-07_1448.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	-6.439E-01	793.9	5.112E+00	5.113E+00	1.580E+01
NA-22	-1.632E+00	56.9	9.287E-01	9.323E-01	3.028E+00
K-40	2.165E+02	7.0	1.507E+01	1.870E+01	1.076E+01
Sc-46	-1.223E+00	102.7	1.255E+00	1.257E+00	4.214E+00
CR-51	-1.806E+00	517.9	9.352E+00	9.352E+00	1.564E+01
MN-54	-1.346E-01	399.0	5.371E-01	5.371E-01	2.005E+00
FE-59	9.099E-01	147.7	1.344E+00	1.344E+00	3.148E+00
Co-56	5.918E-01	72.4	4.287E-01	4.297E-01	1.897E+00
CO-57	-2.436E-02	80.1	1.951E-02	1.955E-02	1.280E+00
CO-58	-3.540E-01	147.9	5.233E-01	5.237E-01	2.364E+00
CO-60	2.434E-01	274.1	6.671E-01	6.673E-01	1.857E+00
ZN-65	0.000E+00	1.#INF	5.422E-01	5.422E-01	6.756E+00
NB-94	4.015E-01	86.9	3.490E-01	3.496E-01	1.710E+00
ZR-95	4.217E-01	237.6	1.002E+00	1.002E+00	2.543E+00
NB-95	5.992E-01	150.7	9.033E-01	9.039E-01	3.078E+00
RU-103	2.658E-01	194.7	5.177E-01	5.178E-01	1.338E+00
RH-106	3.127E+00	143.5	4.489E+00	4.492E+00	1.306E+01
AG-108M	2.143E-01	229.5	4.919E-01	4.920E-01	1.266E+00
AG-110M	-1.104E+00	131.2	1.449E+00	1.450E+00	4.914E+00
SN-113	7.652E-01	116.4	8.904E-01	8.912E-01	3.006E+00
SB-124	5.278E-01	132.8	7.008E-01	7.014E-01	4.923E+00
SB-125	7.456E-01	133.3	9.941E-01	9.949E-01	4.419E+00
I-131	6.089E-01	84.7	5.156E-01	5.165E-01	1.553E+00
Gd-153	6.470E-01	118.9	7.690E-01	7.700E-01	3.939E+00
Ga-68	-2.987E+00	1103.8	3.297E+01	3.297E+01	7.768E+01
Tc-99m	-1.566E-01	311.8	4.883E-01	4.884E-01	1.650E+00
BA-133	6.771E-01	226.9	1.536E+00	1.537E+00	5.169E+00
CS-134	1.188E+00	78.7	9.349E-01	9.369E-01	2.031E+00
CS-137	-1.180E+00	99.5	1.173E+00	1.175E+00	2.703E+00
CE-139	-4.792E-01	107.9	5.171E-01	5.191E-01	1.730E+00
Ba-140	-2.667E+00	93.5	2.493E+00	2.497E+00	6.207E+00
La-140	8.232E-01	47.5	3.911E-01	3.935E-01	9.063E-01
CE-141	0.000E+00	1.#INF	4.615E-01	4.615E-01	3.056E+00

CE-144	0.000E+00	1.#INF	1.613E+00	1.613E+00	1.355E+01
PM-144	-7.870E-02	847.6	6.671E-01	6.671E-01	1.675E+00
EU-152	1.423E+00	83.2	1.184E+00	1.186E+00	3.875E+00
EU-154	5.886E-01	144.2	8.490E-01	8.495E-01	2.754E+00
EU-155	1.328E+00	156.8	2.083E+00	2.084E+00	6.982E+00
HF-181	6.873E-01	133.1	9.148E-01	9.155E-01	2.134E+00
Ta-182	-3.344E+00	109.3	3.655E+00	3.659E+00	1.234E+01
Hg-203	-1.443E-01	396.5	5.720E-01	5.721E-01	1.962E+00
TL-208	4.609E+00	16.5	7.619E-01	7.986E-01	1.295E+00
PM-146	1.191E+00	53.0	6.312E-01	6.341E-01	1.734E+00
Y-88	6.291E-01	48.8	3.067E-01	3.088E-01	9.809E-01
Cd-113m	3.180E+03	202.6	6.442E+03	6.446E+03	2.205E+04
Cd-109	0.000E+00	1.#INF	7.487E+00	7.487E+00	5.372E+01
Cf-251	1.758E+00	124.4	2.186E+00	2.192E+00	5.906E+00
Cf-249	0.000E+00	1.#INF	4.346E-01	4.346E-01	3.289E+00
Sn-126	-4.849E+00	109.8	5.324E+00	5.330E+00	1.779E+01
PB-210	2.913E+01	41.2	1.201E+01	1.213E+01	3.323E+01
PB-212	9.233E+00	9.9	9.116E-01	1.090E+00	2.009E+00
PB-214	2.804E+01	6.6	1.861E+00	2.364E+00	2.869E+00
BI-207	2.930E-01	274.9	8.053E-01	8.054E-01	1.983E+00
BI-212	6.126E+00	137.7	8.433E+00	8.439E+00	2.897E+01
U-235	1.931E+00	121.3	2.342E+00	2.344E+00	1.336E+01
BI-214	3.119E+01	6.5	2.014E+00	2.585E+00	2.318E+00
BI-210M	-1.397E-01	561.2	7.841E-01	7.841E-01	2.710E+00
AC-228	1.115E+01	15.5	1.729E+00	1.820E+00	4.424E+00
TH-227	4.235E+00	150.1	6.358E+00	6.364E+00	1.652E+01
TH-229	3.912E+00	199.6	7.809E+00	7.815E+00	2.428E+01
TH-234	1.370E+01	47.6	6.526E+00	6.570E+00	1.806E+01
PA-231	-1.758E+01	195.9	3.442E+01	3.444E+01	1.153E+02
PA-233	1.367E+00	184.9	2.527E+00	2.528E+00	8.478E+00
PA-234	-1.865E+00	128.3	2.392E+00	2.394E+00	8.008E+00
PA-234M	8.658E+01	79.2	6.855E+01	6.869E+01	3.271E+02
AM-241	1.166E-01	1149.1	1.340E+00	1.340E+00	3.878E+00
Np-237	2.964E+00	153.2	4.543E+00	4.546E+00	1.517E+01
Ir-192	3.115E-01	100.8	3.140E-01	3.145E-01	1.747E+00
Cs-136	5.626E-01	69.1	3.888E-01	3.901E-01	2.675E+00
Np-239	4.632E-01	422.8	1.959E+00	1.959E+00	6.610E+00
Nd-147	1.196E+00	153.2	1.831E+00	1.833E+00	9.151E+00
TL-210	5.907E-01	98.9	5.843E-01	5.853E-01	1.991E+00
Kr-85	-6.676E+01	248.2	1.657E+02	1.657E+02	5.674E+02
Total	3.655E+03				

Analyst: Caleb Quinn

Sample description
452567_Gamma_160-36526-A-3-B

Spectrum Filename: C:\User\SPC\Det5\5_Gamma_20193363.An1

Acquisition information
Start time: 12/25/2019 8:20:41 AM
Live time: 1800
Real time: 1806
Dead time: 0.31 %
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_Long_Rev15.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/(1.0000E+00* 1.0000E+00) = 1.0000E+00
Detection limit method: Reg. Guide 4.16 Method

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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	12/25/2019 8:20:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	5_2019-12-07_1448.PBC 12/7/2019 2:48:46 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 22 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1159

***** 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
46.83	52.	30.42	0.67	1.807E-02	46.54	4.250	PBC<MDA	PB210
63.29	44.	55.04	0.80	2.712E-02	63.29	3.810	PBC<MDA	TH234
74.68	168.	13.12	0.81	3.147E-02				
77.08	258.	8.41	0.81	3.218E-02				
87.06	79.	28.04	0.61	3.445E-02	86.49	13.100	9.753E+00	Np237
					86.54	30.700	4.161E+00	EU155
					86.94	9.040	1.410E+01	Sn126
					87.57	37.500	3.388E+00	Sn126
91.10	22.	153.18	0.83	3.508E-02	91.10	28.300	PBC<MDA	Nd147
92.39	25.	77.75	0.83	3.527E-02	92.59	5.584	PBC<MDA	TH234
93.15	22.	152.30	0.83	3.536E-02	93.35	5.561	PBC<MDA	AC228
97.50	3.	744.61	0.84	3.577E-02	97.50	30.000	PBC<MDA	Gd153
99.50	18.	108.25	0.84	3.592E-02	99.50	15.000	PBC<MDA	Np239
103.20	19.	118.86	0.84	3.612E-02	103.20	21.800	PBC<MDA	Gd153
103.70	7.	323.19	0.84	3.614E-02	103.70	24.000	PBC<MDA	Np239
105.31	18.	156.81	0.84	3.618E-02	105.31	21.200	PBC<MDA	EU155
106.13	7.	422.79	0.84	3.620E-02	106.13	22.700	PBC<MDA	Np239
121.78	20.	106.18	0.86	3.584E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	3.640E-01	CO57
136.47	20.	128.79	0.88	3.457E-02	136.30	5.850	PBC<MDA	HF181
					136.47	10.680	3.007E+00	CO57
162.66	10.	218.63	0.90	3.113E-02	162.66	6.220	PBC<MDA	Ba140

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
176.60	16.	124.37	0.92	2.975E-02	176.60	17.000	PBC<MDA	Cf251
186.29	111.	18.62	0.93	2.846E-02	185.72	54.000	3.996E+00	U235
193.51	4.	446.15	0.93	2.758E-02	193.51	4.400	PBC<MDA	TH229
205.33	15.	121.27	0.94	2.626E-02	205.33	5.010	PBC<MDA	U235
210.85	9.	199.62	0.95	2.569E-02	210.85	2.990	PBC<MDA	TH229
227.00	3.	647.59	0.97	2.417E-02	227.00	6.300	PBC<MDA	Cf251
238.66	164.	12.54	0.80	2.319E-02	238.63	43.300	9.082E+00	PB212
241.97	80.	16.19	0.98	2.293E-02	242.00	7.430	2.614E+01	PB214
256.24	12.	150.14	1.00	2.186E-02	256.24	7.000	PBC<MDA	TH227
263.70	7.	202.57	1.00	2.135E-02	263.70	0.006	PBC<MDA	Cd113m
295.28	223.	9.29	0.65	1.944E-02	295.09	19.300	3.301E+01	PB214
					296.00	79.000	8.085E+00	TL210
299.96	37.	29.37	2.04	1.918E-02	300.03	3.280	3.246E+01	PB212
					300.07	2.460	4.329E+01	PA231
					300.18	6.200	PBC<MDA	PA233
312.01	16.	184.94	1.05	1.857E-02	312.01	36.000	PBC<MDA	PA233
328.76	17.	99.70	1.07	1.778E-02	328.76	20.300	PBC<MDA	La140
338.44	14.	124.68	1.07	1.736E-02	338.32	12.010	PBC<MDA	AC228
340.57	15.	123.05	1.08	1.727E-02	340.57	46.900	PBC<MDA	Cs136
344.29	15.	128.15	1.08	1.711E-02	344.29	26.500	PBC<MDA	EU152
345.83	14.	133.11	1.08	1.705E-02	345.83	15.070	PBC<MDA	HF181
351.91	319.	6.64	0.99	1.680E-02	351.93	37.600	2.804E+01	PB214
356.00	13.	226.92	1.09	1.664E-02	356.00	62.050	PBC<MDA	BA133
391.69	14.	116.36	1.12	1.537E-02	391.69	64.000	PBC<MDA	SN113
433.94	5.	229.51	1.16	1.411E-02	433.94	90.480	PBC<MDA	AG108M
453.88	22.	53.01	1.18	1.360E-02	453.88	65.000	PBC<MDA	PM146
463.37	6.	198.10	1.19	1.336E-02	463.37	10.470	PBC<MDA	SB125
468.06	12.	100.80	1.20	1.325E-02	468.06	51.750	PBC<MDA	Ir192
482.00	5.	230.65	1.21	1.293E-02	482.00	80.500	PBC<MDA	HF181
487.02	5.	199.87	1.21	1.282E-02	487.02	45.500	PBC<MDA	La140
497.05	5.	194.74	1.22	1.260E-02	497.05	90.900	PBC<MDA	RU103
511.86	93.	12.40	2.48	1.230E-02	511.86	20.000	2.101E+01	RH106
531.00	3.	324.89	1.25	1.193E-02	531.00	13.000	PBC<MDA	Nd147
569.32	4.	183.71	1.29	1.125E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	2.409E+00	PA234
					569.70	97.740	2.022E-01	BI207
583.24	77.	16.53	1.38	1.103E-02	583.02	84.500	4.609E+00	TL208
600.50	3.	882.29	1.31	1.076E-02	600.50	17.860	PBC<MDA	SB125
609.27	272.	6.46	1.34	1.063E-02	609.31	46.090	3.078E+01	BI214
					610.30	5.750	2.471E+02	RU103
635.89	6.	133.33	1.34	1.026E-02	635.89	11.310	PBC<MDA	SB125
636.97	9.	84.67	1.34	1.025E-02	636.97	7.170	PBC<MDA	I131
657.76	9.	99.45	1.36	9.974E-03	657.76	94.640	PBC<MDA	AG110M
702.63	5.	254.02	1.40	9.438E-03	702.63	97.900	PBC<MDA	NB94
722.82	8.	132.77	1.42	9.217E-03	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	5.199E-01	AG108M
					723.36	20.220	2.337E+00	EU154
723.36	7.	144.22	1.42	9.211E-03	722.79	10.810	PBC<MDA	SB124

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
					722.94	90.840	4.756E-01	AG108M
					723.36	20.220	2.138E+00	EU154
727.17	8.	137.67	1.42	9.170E-03	727.17	7.550	PBC<MDA	BI212
735.72	3.	324.52	1.43	9.081E-03	735.72	22.500	PBC<MDA	PM146
756.73	4.	237.58	1.45	8.869E-03	756.73	54.460	PBC<MDA	ZR95
765.79	9.	150.75	1.45	8.781E-03	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	2.035E+02	PA234M
766.41	16.	79.18	1.45	8.776E-03	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	3.440E+02	PA234M
795.87	8.	95.67	1.48	8.503E-03	795.87	85.530	PBC<MDA	CS134
799.60	9.	98.91	1.48	8.469E-03	799.60	98.960	PBC<MDA	TL210
801.95	9.	113.44	1.48	8.448E-03	801.95	8.690	PBC<MDA	CS134
818.50	2.	570.09	1.50	8.305E-03	818.50	100.000	PBC<MDA	Cs136
871.10	8.	86.92	1.54	7.882E-03	871.10	99.890	PBC<MDA	NB94
910.80	40.	22.54	1.50	7.591E-03	911.07	29.000	1.006E+01	AC228
968.78	29.	21.32	1.75	7.209E-03	968.97	17.460	1.295E+01	AC228
1037.84	6.	171.75	1.66	6.805E-03	1037.84	14.130	PBC<MDA	Co56
1048.07	8.	69.10	1.67	6.749E-03	1048.07	80.000	PBC<MDA	Cs136
1050.36	5.	143.54	1.67	6.736E-03	1050.36	1.560	PBC<MDA	RH106
1063.66	3.	274.90	1.68	6.666E-03	1063.66	74.500	PBC<MDA	BI207
1099.25	6.	147.67	1.71	6.484E-03	1099.25	56.500	PBC<MDA	FE59
1120.13	59.	13.62	1.88	6.381E-03	1120.29	15.100	3.414E+01	BI214
					1120.55	99.987	PBC<MDA	Sc46
1173.24	4.	281.93	1.76	6.138E-03	1173.24	99.900	PBC<MDA	CO60
1238.28	13.	102.72	1.80	5.866E-03	1238.28	66.070	PBC<MDA	Co56
1313.00	3.	308.52	1.85	5.583E-03	1313.00	21.000	PBC<MDA	TL210
1332.50	2.	470.22	1.87	5.514E-03	1332.50	99.980	PBC<MDA	CO60
1408.00	13.	50.07	1.91	5.264E-03	1408.00	21.005	PBC<MDA	EU152
1460.57	212.	6.96	1.76	5.104E-03	1460.83	10.670	2.165E+02	K40
1596.21	5.	47.51	2.02	4.736E-03	1596.21	95.400	PBC<MDA	La140
1764.57	36.	21.53	2.11	4.351E-03	1764.49	15.400	2.951E+01	BI214
1836.06	5.	48.75	2.15	4.208E-03	1836.06	99.200	PBC<MDA	Y88

********** 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	
298.35	74.68	158.	168.	5.330E+03	13.12	0.812	-	D
307.94	77.08	106.	258.	8.019E+03	8.41	0.815	-	D
348.25	87.06	123.	70.	2.029E+03	25.42	0.825	-	sD
745.13	186.29	82.	111.	3.894E+03	18.62	0.928	-	s

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

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This section based on library: Client_Long_Rev15.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	186.87	46.83	84.	40.	0.022	41.22	0.665
TH-234	252.74	63.29	193.	44.	0.024	55.04	0.801
Sn-126	256.71	64.28	317.	-23.	-0.013	109.79	0.802
BA-133	323.61	80.99	280.	-26.	-0.015	82.01	0.819s
Np-237	345.63	86.49	665.	24.	0.013	153.25	0.825s
EU-155	345.84	86.54	331.	-24.	-0.013	108.27	0.825s
Sn-126	347.43	86.94	371.	-27.	-0.015	104.11	0.825
Sn-126	349.95	87.57	723.	-13.	-0.007	286.91	0.826
Cd-109	351.83	88.04	710.	0.	0.000	1000.00	0.826
Nd-147	364.08	91.10	575.	22.	0.012	153.18	0.829s
TH-234	370.05	92.59	173.	25.	0.014	77.75	0.831D
AC-228	373.09	93.35	543.	22.	0.012	152.30	0.832s
Gd-153	389.70	97.50	248.	3.	0.002	744.61	0.836s
Np-239	397.71	99.50	180.	18.	0.010	108.25	0.838s
Gd-153	412.52	103.20	239.	19.	0.010	118.86	0.842s
Np-239	414.52	103.70	258.	7.	0.004	323.19	0.842s
EU-155	420.98	105.31	404.	18.	0.010	156.81	0.844s
Np-239	424.25	106.13	416.	7.	0.004	422.79	0.845s
EU-152	486.90	121.78	218.	20.	0.011	106.18	0.861s
CO-57	488.03	122.06	213.	-22.	-0.012	95.20	0.861s
EU-154	492.18	123.10	223.	-5.	-0.003	451.06	0.862s
PA-234	524.99	131.29	359.	-21.	-0.012	128.30	0.871s
HF-181	531.91	133.02	381.	-6.	-0.003	451.69	0.872s
CE-144	533.97	133.54	387.	0.	0.000	1000.00	0.873
HF-181	545.02	136.30	387.	0.	0.000	1000.00	0.876s
CO-57	545.72	136.47	321.	20.	0.011	128.79	0.876s
Tc-99m	561.88	140.51	333.	-8.	-0.005	311.77	0.880
U-235	574.99	143.79	342.	0.	0.000	1000.00	0.883s
CE-141	581.61	145.44	342.	0.	0.000	1000.00	0.885s
Ba-140	650.54	162.66	234.	10.	0.006	218.63	0.902s
CE-139	663.32	165.85	261.	-22.	-0.012	107.90	0.905s
Cf-251	706.34	176.60	120.	16.	0.009	124.37	0.916s
U-235	742.85	185.72	251.	-18.	-0.010	127.81	0.925
TH-229	774.03	193.51	117.	4.	0.002	446.15	0.933s
U-235	821.35	205.33	94.	15.	0.008	121.27	0.945s
TH-229	843.44	210.85	107.	9.	0.005	199.62	0.950s
Cf-251	908.08	227.00	93.	3.	0.001	647.59	0.966s
TH-227	943.98	235.97	536.	-18.	-0.010	180.75	0.975s
PB-212	954.64	238.63	52.	167.	0.093	9.87	0.978D
PB-214	968.10	242.00	44.	80.	0.045	16.19	0.981D
EU-152	978.89	244.69	589.	-21.	-0.012	166.32	0.984s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
TH-227	1025.11	256.24	84.	12.	0.006	150.14	0.995s
Cd-113m	1054.97	263.70	107.	7.	0.004	202.57	1.002
BI-210M	1063.50	265.83	111.	-3.	-0.001	561.25	1.005s
TL-208	1109.33	277.28	103.	-19.	-0.010	37.79	1.016
Hg-203	1117.00	279.20	144.	-4.	-0.002	396.47	1.017
PB-214	1181.35	295.28	50.	223.	0.124	9.29	0.649s
TL-210	1184.24	296.00	621.	-17.	-0.010	205.74	1.034s
PB-212	1200.08	299.96	19.	37.	0.020	29.37	2.037s
PA-231	1200.53	300.07	603.	-17.	-0.010	202.11	1.038s
PA-233	1200.97	300.18	586.	-17.	-0.010	199.23	1.038s
PA-231	1210.86	302.65	569.	-17.	-0.010	195.86	1.040s
BA-133	1211.66	302.85	551.	-17.	-0.010	192.85	1.040s
Ba-140	1219.66	304.85	534.	-17.	-0.010	189.49	1.042s
BI-210M	1219.85	304.90	517.	-17.	-0.010	186.43	1.042s
Ir-192	1234.03	308.44	499.	-11.	-0.006	280.83	1.046
PA-233	1248.32	312.01	454.	16.	0.009	184.94	1.049s
Ir-192	1266.25	316.49	104.	-2.	-0.001	724.57	1.053s
CR-51	1280.63	320.08	107.	-6.	-0.003	517.90	1.057s
La-140	1315.35	328.76	77.	17.	0.009	99.70	1.065s
Cf-249	1334.08	333.44	73.	-6.	-0.004	256.06	1.070s
AC-228	1353.61	338.32	138.	14.	0.008	124.68	1.074
Cs-136	1362.62	340.57	152.	15.	0.008	123.05	1.077s
EU-152	1377.49	344.29	166.	15.	0.008	128.15	1.080s
HF-181	1383.66	345.83	156.	14.	0.008	133.11	1.082s
PB-214	1408.00	351.91	41.	319.	0.177	6.64	0.991
BA-133	1424.36	356.00	402.	13.	0.007	226.92	1.091s
BA-133	1535.78	383.84	143.	-12.	-0.006	183.68	1.117s
Cf-249	1552.22	387.95	154.	0.	0.000	1000.00	1.121s
SN-113	1567.19	391.69	118.	14.	0.008	116.36	1.125s
SB-125	1711.99	427.88	44.	-6.	-0.003	220.27	1.158s
AG-108M	1736.25	433.94	32.	5.	0.003	229.51	1.164s
PM-146	1816.05	453.88	28.	22.	0.012	53.01	1.182s
SB-125	1854.01	463.37	76.	6.	0.004	198.10	1.191s
Ir-192	1872.79	468.06	64.	12.	0.007	100.80	1.195
BE-7	1910.94	477.59	61.	-2.	-0.001	793.93	1.204s
HF-181	1928.56	482.00	64.	5.	0.003	230.65	1.208
La-140	1948.65	487.02	29.	5.	0.003	199.87	1.212s
RU-103	1988.80	497.05	29.	5.	0.003	194.74	1.221s
RH-106	2048.06	511.86	20.	93.	0.052	12.40	2.485
Kr-85	2056.53	513.98	120.	-6.	-0.004	248.15	1.237s
Nd-147	2124.62	531.00	24.	3.	0.002	324.89	1.252s
Ba-140	2149.67	537.26	40.	-14.	-0.008	93.50	1.258s
CS-134	2253.60	563.24	24.	-4.	-0.002	244.95	1.280s
CS-134	2277.94	569.32	25.	4.	0.002	183.71	1.286s
PA-234	2278.54	569.47	29.	0.	0.000	1000.00	1.286s
BI-207	2279.47	569.70	29.	0.	0.000	1000.00	1.286s
TL-208	2333.62	583.24	17.	77.	0.043	16.53	1.377
SB-125	2402.69	600.50	378.	3.	0.002	882.29	1.313s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
CS-134	2419.53	604.71	381.	0.	0.000	1000.00	1.317s
BI-214	2437.79	609.27	14.	272.	0.151	6.46	1.339
RU-103	2441.89	610.30	381.	0.	0.000	1000.00	1.322s
AG-108M	2457.82	614.28	381.	0.	0.000	1000.00	1.325s
SB-125	2544.26	635.89	29.	6.	0.003	133.33	1.344s
I-131	2548.61	636.97	27.	9.	0.005	84.67	1.345s
AG-110M	2631.76	657.76	34.	9.	0.005	99.45	1.362s
CS-137	2647.36	661.66	68.	-18.	-0.010	99.45	1.366s
PM-144	2786.90	696.54	30.	-1.	-0.001	847.61	1.395s
NB-94	2811.25	702.63	30.	5.	0.003	254.02	1.400
SB-124	2891.88	722.79	50.	8.	0.004	132.77	1.417s
AG-108M	2892.48	722.94	58.	0.	0.000	1000.00	1.417s
EU-154	2894.17	723.36	50.	7.	0.004	144.22	1.418s
BI-212	2909.41	727.17	51.	8.	0.004	137.67	1.421s
PM-146	2943.61	735.72	17.	3.	0.001	324.52	1.428s
PM-146	2989.37	747.16	39.	-15.	-0.008	69.22	1.437s
ZR-95	3027.65	756.73	17.	4.	0.002	237.58	1.445s
AG-110M	3056.50	763.94	112.	-23.	-0.013	68.00	1.451s
NB-95	3063.89	765.79	97.	9.	0.005	150.75	1.453s
PA-234M	3066.38	766.41	72.	16.	0.009	79.18	1.453s
EU-152	3116.41	778.92	23.	-3.	-0.002	312.25	1.463s
CS-134	3184.20	795.87	26.	8.	0.005	95.67	1.477s
TL-210	3199.12	799.60	34.	9.	0.005	98.91	1.480s
CS-134	3208.53	801.95	44.	9.	0.005	113.44	1.482s
CO-58	3243.82	810.78	49.	-5.	-0.003	147.85	1.489s
La-140	3263.80	815.77	54.	0.	0.000	1000.00	1.493
Cs-136	3274.72	818.50	64.	2.	0.001	570.09	1.495s
MN-54	3340.10	834.85	33.	-2.	-0.001	399.05	1.508s
Co-56	3387.78	846.77	28.	-9.	-0.005	84.63	1.518s
TL-208	3442.95	860.56	33.	-5.	-0.003	165.43	1.529s
NB-94	3485.08	871.10	18.	8.	0.004	86.92	1.537s
EU-154	3493.61	873.23	38.	-10.	-0.006	90.26	1.539s
PA-234	3522.80	880.53	72.	-14.	-0.008	88.74	1.544s
PA-234	3533.64	883.24	87.	-14.	-0.008	96.22	1.547s
AG-110M	3539.41	884.68	103.	-11.	-0.006	131.19	1.547s
Sc-46	3557.79	889.28	145.	-17.	-0.009	102.65	1.551s
Y-88	3592.83	898.04	25.	-9.	-0.005	88.28	1.558s
AC-228	3643.85	910.80	10.	40.	0.022	22.54	1.503s
AG-110M	3750.60	937.49	33.	-10.	-0.005	129.48	1.589
PA-234	3784.70	946.02	33.	-6.	-0.003	218.04	1.595s
EU-152	3857.05	964.11	59.	-2.	-0.001	654.52	1.609s
AC-228	3875.70	968.78	3.	29.	0.016	21.32	1.751
EU-154	3985.88	996.33	41.	-6.	-0.003	164.60	1.633s
EU-154	4019.65	1004.77	20.	-5.	-0.003	201.66	1.639s
Co-56	4151.87	1037.84	20.	6.	0.003	171.75	1.664s
Cs-136	4192.77	1048.07	12.	8.	0.005	69.10	1.671s
RH-106	4201.93	1050.36	21.	5.	0.003	143.54	1.673s
BI-207	4255.11	1063.66	10.	3.	0.001	274.90	1.682s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
FE-59	4397.41	1099.25	15.	6.	0.003	147.67	1.708s
ZN-65	4462.56	1115.55	62.	0.	0.000	1000.00	1.720s
BI-214	4480.90	1120.13	3.	59.	0.033	13.62	1.876
Sc-46	4482.57	1120.55	79.	-6.	-0.003	225.30	1.723
Ta-182	4485.56	1121.30	100.	-13.	-0.007	109.32	1.724s
CO-60	4693.21	1173.24	20.	4.	0.002	281.93	1.760s
Ta-182	4756.42	1189.05	20.	-8.	-0.004	127.88	1.771
Ta-182	4885.79	1221.41	27.	-6.	-0.003	211.36	1.793
Co-56	4953.23	1238.28	32.	13.	0.007	102.72	1.804
NA-22	5098.13	1274.53	37.	-17.	-0.009	56.91	1.828s
EU-154	5098.17	1274.54	54.	-3.	-0.001	416.57	1.828s
FE-59	5166.35	1291.60	32.	-16.	-0.009	85.94	1.840s
TL-210	5251.91	1313.00	16.	3.	0.002	308.52	1.854s
CO-60	5329.85	1332.50	11.	2.	0.001	470.22	1.866s
AG-110M	5536.88	1384.30	37.	-17.	-0.010	83.10	1.899
EU-152	5631.62	1408.00	5.	13.	0.007	50.07	1.914s
K-40	5841.69	1460.57	3.	212.	0.118	6.96	1.755
La-140	6383.73	1596.21	0.	5.	0.003	47.51	2.024s
SB-124	6762.39	1690.98	6.	-2.	-0.001	343.80	2.076s
BI-214	7056.06	1764.49	11.	36.	0.020	21.53	2.114s
Co-56	7083.46	1771.35	49.	-1.	-0.001	750.00	2.117s
Y-88	7341.96	1836.06	0.	5.	0.003	48.75	2.149s

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	Peak Code	Peak MDA Value Bq/Sample	COMMENTS
BE-7	C	-6.4394E-01				5.31E+01	
			477.60	-6.439E-01	?(P	1.580E+01 7.94E+02 1.05E+01	G
NA-22	C	-1.6319E+00				9.50E+02	
			1274.53	-1.632E+00	?(	3.028E+00 5.69E+01 9.99E+01	G
K-40	N	2.1648E+02				4.66E+11	
			1460.83	2.165E+02	(P	1.076E+01 6.96E+00 1.07E+01	G
Sc-46	F	-1.2230E+00				8.38E+01	
			889.28	-1.223E+00	?(	4.214E+00 1.03E+02 1.00E+02	G
			1120.55	-4.935E-01	+	3.836E+00 2.25E+02 1.00E+02	G
CR-51	F	-1.8057E+00				2.77E+01	
			320.08	-1.806E+00	(P	1.564E+01 5.18E+02 9.94E+00	G

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Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
MN-54	C -1.3460E-01					3.12E+02	
		834.85	-1.346E-01	?(P	2.005E+00	3.99E+02	1.00E+02 G
FE-59	F 9.0994E-01					4.45E+01	
		1099.25	9.099E-01	?(	3.148E+00	1.48E+02	5.65E+01 G
		1291.60	-3.556E+00	+	6.604E+00	8.59E+01	4.32E+01 G
Co-56	C 5.9185E-01					7.73E+01	
		846.77	-6.476E-01	?(P	1.897E+00	8.46E+01	9.99E+01 G
		1238.28	1.864E+00	?(	4.167E+00	1.03E+02	6.61E+01 G
		1037.84	3.412E+00	?(P	1.364E+01	1.72E+02	1.41E+01 G
		1771.35	-1.103E+00	+	2.933E+01	7.50E+02	1.55E+01 A
CO-57	C -2.4361E-02					2.72E+02	
		122.06	-4.026E-01	(	1.280E+00	9.52E+01	8.56E+01 G
		136.47	3.007E+00	?(	1.298E+01	1.29E+02	1.07E+01 G
CO-58	C -3.5397E-01					7.09E+01	
		810.78	-3.540E-01	?(P	2.364E+00	1.48E+02	9.95E+01 G
CO-60	F 2.4337E-01					1.93E+03	
		1332.50	1.635E-01	?(P	1.857E+00	4.70E+02	1.00E+02 G
		1173.24	3.233E-01	&(P	2.154E+00	2.82E+02	9.99E+01 G
NB-94	I 4.0152E-01					7.41E+06	
		702.63	2.713E-01	&(P	1.710E+00	2.54E+02	9.79E+01 G
		871.10	5.292E-01	?(	1.567E+00	8.69E+01	9.99E+01 G
ZR-95	I 4.2172E-01					6.40E+01	
		756.73	4.217E-01	?(	2.543E+00	2.38E+02	5.45E+01 G
		724.20	-2.336E-02	% P	5.189E+00	6.72E+03	4.42E+01 G
NB-95	I 5.9923E-01					6.40E+01	
		765.79	5.992E-01	?(	3.078E+00	1.51E+02	9.98E+01 G
RU-103	I 2.6582E-01					3.93E+01	
		497.05	2.658E-01	?(P	1.338E+00	1.95E+02	9.09E+01 G
		610.30	0.000E+00	-	8.523E+01	1.00E+03	5.75E+00 GA
RH-106	I 3.1274E+00					3.74E+02	
		621.92	-3.568E-01	%(	1.306E+01	1.43E+03	9.93E+00 G
		1050.36	2.531E+01	?(	1.278E+02	1.44E+02	1.56E+00 G
		511.86	2.101E+01	?	5.319E+00	1.24E+01	2.00E+01 GA
AG-108M	C 2.1432E-01					1.53E+05	
		433.94	2.143E-01	(P	1.266E+00	2.30E+02	9.05E+01 G
		722.94	0.000E+00	-	2.535E+00	1.00E+03	9.08E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			614.28	0.000E+00	-	5.484E+00	1.00E+03	8.98E+01 G
AG-110M	F	-1.1042E+00					2.50E+02	
			884.68	-1.104E+00	?(	4.914E+00	1.31E+02	7.27E+01 G
			657.76	5.199E-01	&	1.763E+00	9.94E+01	9.46E+01 G
			937.49	-2.109E+00	+	6.402E+00	1.29E+02	3.44E+01 G
			1384.30	-7.475E+00	+	1.336E+01	8.31E+01	2.43E+01 G
			763.94	-6.551E+00	+	1.474E+01	6.80E+01	2.23E+01 G
SN-113	F	7.6521E-01					1.15E+02	
			391.69	7.652E-01	?(	3.006E+00	1.16E+02	6.40E+01 G
SB-124	F	5.2784E-01					6.02E+01	
			602.73	1.054E-01	%(	4.923E+00	1.38E+03	9.83E+01 G
			1690.98	-4.295E-01	+	3.557E+00	3.44E+02	4.78E+01 G
			722.79	4.368E+00	?(	1.991E+01	1.33E+02	1.08E+01 G
SB-125	I	7.4561E-01					1.01E+03	
			427.88	-7.886E-01	?(	4.419E+00	2.20E+02	2.96E+01 G
			600.50	9.025E-01	?(P	2.696E+01	8.82E+02	1.79E+01 G
			635.89	2.873E+00	&(	1.331E+01	1.33E+02	1.13E+01 G
			463.37	2.518E+00	&(P	1.717E+01	1.98E+02	1.05E+01 G
I-131	I	6.0890E-01					8.02E+00	
			364.48	4.167E-02	%(	1.553E+00	1.39E+03	8.17E+01 G
			284.30	3.007E-01	&	2.053E+01	2.58E+03	6.14E+00 G
			636.97	7.072E+00	(	2.025E+01	8.47E+01	7.17E+00 G
Gd-153	F	6.4697E-01					2.42E+02	
			97.50	1.553E-01	*(	3.939E+00	7.45E+02	3.00E+01 G
			103.20	1.324E+00	?(	5.276E+00	1.19E+02	2.18E+01 G
Ga-68	C	-2.9867E+00					4.71E-02	
			1077.40	-2.987E+00	%(	7.768E+01	1.10E+03	3.30E+00 G
Tc-99m	I	-1.5663E-01					2.51E-01	
			140.51	-1.566E-01	&(	1.650E+00	3.12E+02	8.93E+01 G
BA-133	F	6.7709E-01					3.85E+03	
			356.00	6.771E-01	?(	5.169E+00	2.27E+02	6.20E+01 G
			302.85	-2.764E+00	+	1.786E+01	1.93E+02	1.83E+01 G
			383.84	-4.582E+00	+ P	2.319E+01	1.84E+02	8.94E+00 GA
			80.99	-1.301E+00	+ P	3.967E+00	8.20E+01	3.41E+01 GA
CS-134	I	1.1876E+00					7.54E+02	
			795.87	6.224E-01	?(P	2.031E+00	9.57E+01	8.55E+01 G
			604.71	0.000E+00	&	4.982E+00	1.00E+03	9.76E+01 G
			569.32	1.284E+00	&(	8.349E+00	1.84E+02	1.54E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			801.95	6.580E+00	?(	2.552E+01	1.13E+02	8.69E+00 G
			563.24	-2.344E+00	+	1.497E+01	2.45E+02	8.35E+00 G
CS-137	I	-1.1798E+00					1.10E+04	
			661.66	-1.180E+00	?(P	2.703E+00	9.95E+01	8.52E+01 G
CE-139	F	-4.7925E-01					1.38E+02	
			165.85	-4.792E-01	&(	1.730E+00	1.08E+02	7.99E+01 G
Ba-140	I	-2.6669E+00					1.28E+01	
			537.26	-2.667E+00	?(	6.207E+00	9.35E+01	2.44E+01 G
			162.66	2.869E+00	&	2.123E+01	2.19E+02	6.22E+00 G
			304.85	-1.189E+01	+	7.553E+01	1.89E+02	4.29E+00 G
La-140	I	8.2316E-01					1.28E+01	
			1596.21	5.921E-01	?(P	9.063E-01	4.75E+01	9.54E+01 G
			487.02	5.090E-01	(P	2.634E+00	2.00E+02	4.55E+01 G
			328.76	2.613E+00	&(	6.711E+00	9.97E+01	2.03E+01 G
			815.77	0.000E+00	&	1.059E+01	1.00E+03	2.33E+01 G
PM-144	C	-7.8704E-02					3.63E+02	
			696.54	-7.870E-02	?(	1.675E+00	8.48E+02	9.90E+01 G
			618.06	-3.490E-02	% P	5.002E+00	2.69E+03	9.91E+01 G
EU-152	F	1.4230E+00					4.94E+03	
			121.78	1.090E+00	?(	3.875E+00	1.06E+02	2.86E+01 G
			344.29	1.782E+00	(	7.699E+00	1.28E+02	2.65E+01 G
			1112.07	-2.801E-01	% P	2.507E+01	1.65E+03	1.36E+01 G
			778.92	-1.653E+00	+	1.251E+01	3.12E+02	1.29E+01 G
			964.11	-8.758E-01	-	2.018E+01	6.55E+02	1.46E+01 G
			244.69	-6.717E+00	+	3.736E+01	1.66E+02	7.58E+00 G
			1408.00	6.364E+00	?	6.769E+00	5.01E+01	2.10E+01 GA
EU-154	I	5.8864E-01					3.14E+03	
			123.10	-1.793E-01	&(	2.754E+00	4.51E+02	4.08E+01 G
			1274.54	-6.969E-01	+	1.020E+01	4.17E+02	3.52E+01 G
			723.36	2.138E+00	?(	1.062E+01	1.44E+02	2.02E+01 G
			873.23	-5.948E+00	+	1.817E+01	9.03E+01	1.23E+01 G
			1004.77	-2.206E+00	+	1.039E+01	2.02E+02	1.80E+01 G
			996.33	-4.217E+00	+	2.413E+01	1.65E+02	1.06E+01 G
EU-155	I	1.3281E+00					1.81E+03	
			105.31	1.328E+00	?(	6.982E+00	1.57E+02	2.12E+01 G
			86.54	-1.274E+00	+	4.605E+00	1.08E+02	3.07E+01 G
HF-181	F	6.8726E-01					4.24E+01	
			482.00	2.669E-01	(	2.134E+00	2.31E+02	8.05E+01 G
			133.02	-2.253E-01	+	3.439E+00	4.52E+02	4.33E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			345.83	2.933E+00	?(	1.318E+01	1.33E+02	1.51E+01 G
			136.30	0.000E+00	-	2.591E+01	1.00E+03	5.85E+00 G
Ta-182	F	-3.3438E+00					1.14E+02	
			1121.30	-3.344E+00	?(	1.234E+01	1.09E+02	3.49E+01 G
			1221.41	-1.965E+00	+	9.284E+00	2.11E+02	2.70E+01 G
			1189.05	-4.520E+00	+	1.331E+01	1.28E+02	1.62E+01 G
Hg-203	F	-1.4428E-01					4.66E+01	
			279.20	-1.443E-01	(	1.962E+00	3.96E+02	8.15E+01 G
TL-208	N	4.6089E+00					6.98E+02	
			583.02	4.609E+00	(	1.295E+00	1.65E+01	8.45E+01 G
			277.28	-8.082E+00	- P	2.147E+01	3.78E+01	6.31E+00 G
			860.56	-2.712E+00	- P	1.652E+01	1.65E+02	1.24E+01 G
PM-146	C	1.1906E+00					2.02E+03	
			453.88	1.352E+00	(P	1.734E+00	5.30E+01	6.50E+01 G
			747.16	-2.776E+00	& P	5.815E+00	6.92E+01	3.40E+01 G
			735.72	7.251E-01	?(	6.012E+00	3.25E+02	2.25E+01 G
Y-88	F	6.2909E-01					1.07E+02	
			1836.06	6.291E-01	?(P	9.809E-01	4.88E+01	9.92E+01 G
			898.04	-7.231E-01	- P	2.020E+00	8.83E+01	9.37E+01 G
Cd-113m		3.1803E+03					5.33E+03	
			263.70	3.180E+03	(	2.205E+04	2.03E+02	6.00E-03 K
Cf-251	T	1.7577E+00					3.28E+05	
			176.60	1.758E+00	&(	5.906E+00	1.24E+02	1.70E+01 G
			227.00	9.728E-01	?	1.741E+01	6.48E+02	6.30E+00 GA
Sn-126		-4.8494E+00					3.65E+07	
			87.57	-5.712E-01	+	5.492E+00	2.87E+02	3.75E+01 GA
			64.28	-4.849E+00	(	1.779E+01	1.10E+02	9.70E+00 G
			86.94	-4.752E+00	+	1.650E+01	1.04E+02	9.04E+00 GA
PB-210	N	2.9132E+01					8.14E+03	
			46.54	2.913E+01	(P	3.323E+01	4.12E+01	4.25E+00 G
PB-212	N	9.2332E+00					6.98E+02	
			238.63	9.233E+00	(P	2.009E+00	9.87E+00	4.33E+01 G
			300.03	3.246E+01	+ P	2.044E+01	2.94E+01	3.28E+00 GA
PB-214	N	2.8036E+01					5.84E+05	
			351.93	2.804E+01	(P	2.869E+00	6.64E+00	3.76E+01 G
			295.09	3.301E+01	+ P	5.277E+00	9.29E+00	1.93E+01 G
			242.00	2.614E+01	P	1.095E+01	1.62E+01	7.43E+00 GA

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
BI-207	C	2.9295E-01					1.18E+04	
			1063.66	2.930E-01	?(P	1.983E+00	2.75E+02	7.45E+01 G
			569.70	0.000E+00	&	1.405E+00	1.00E+03	9.77E+01 G
BI-212	N	6.1257E+00					6.98E+02	
			727.17	6.126E+00	(P	2.897E+01	1.38E+02	7.55E+00 G
			785.42	1.586E+00	% P	1.282E+02	3.28E+03	1.28E+00 GA
U-235	N	1.9309E+00					2.57E+11	
			143.79	0.000E+00	(	1.336E+01	1.00E+03	1.10E+01 G
			205.33	6.155E+00	?(P	2.026E+01	1.21E+02	5.01E+00 G
			163.38	-4.128E-01	% P	2.668E+01	1.66E+03	5.08E+00 G
			185.72	-6.429E-01	+	2.759E+00	1.28E+02	5.40E+01 GA
BI-214	N	3.1189E+01					5.84E+05	
			609.31	3.078E+01	(P	2.318E+00	6.46E+00	4.61E+01 G
			1120.29	3.414E+01	(P	6.045E+00	1.36E+01	1.51E+01 G
			1764.49	2.951E+01	?(P	1.529E+01	2.15E+01	1.54E+01 G
BI-210M	T	-1.3971E-01					1.10E+09	
			265.83	-1.397E-01	?(	2.710E+00	5.61E+02	5.00E+01 G
			304.90	-1.823E+00	+	1.139E+01	1.86E+02	2.80E+01 G
AC-228	N	1.1148E+01					2.10E+03	
			911.07	1.006E+01	@(P	4.424E+00	2.25E+01	2.90E+01 G
			968.97	1.295E+01	(	4.555E+00	2.13E+01	1.75E+01 G
			338.32	3.642E+00	- P	1.532E+01	1.25E+02	1.20E+01 G
			93.35	6.172E+00	-	3.143E+01	1.52E+02	5.56E+00 XA
TH-227	N	4.2349E+00					7.95E+03	
			256.24	4.235E+00	&(	1.652E+01	1.50E+02	7.00E+00 G
			235.97	-3.525E+00	+	2.134E+01	1.81E+02	1.23E+01 G
			50.14	-4.563E-01	& P	1.944E+01	1.24E+03	8.00E+00 G
TH-229	N	3.9118E+00					2.68E+06	
			193.51	1.984E+00	*(	2.428E+01	4.46E+02	4.40E+00 G
			210.85	6.749E+00	?(	3.676E+01	2.00E+02	2.99E+00 G
TH-234	N	1.3702E+01					1.63E+12	
			92.59	7.007E+00	(P	1.806E+01	7.78E+01	5.58E+00 G
			63.29	2.351E+01	(P	3.628E+01	5.50E+01	3.81E+00 G
PA-231	N	-1.7575E+01					1.20E+07	
			302.65	-1.758E+01	?(	1.153E+02	1.96E+02	2.88E+00 G
			300.07	-2.038E+01	&	1.380E+02	2.02E+02	2.46E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PA-233	C	1.3666E+00					7.82E+08	
			312.01	1.367E+00	?(P	8.478E+00	1.85E+02	3.60E+01 G
			300.18	-8.090E+00	&	5.399E+01	1.99E+02	6.20E+00 G
PA-234	N	-1.8648E+00					1.63E+12	
			131.29	-1.865E+00	?(	8.008E+00	1.28E+02	1.80E+01 G
			946.02	-3.194E+00	+	1.654E+01	2.18E+02	1.34E+01 G
			569.47	0.000E+00	&	1.674E+01	1.00E+03	8.20E+00 G
			883.24	-1.056E+01	+	3.421E+01	9.62E+01	9.60E+00 G
			880.53	-1.684E+01	+	5.019E+01	8.87E+01	6.00E+00 GA
PA-234M	N	8.6576E+01					1.63E+12	
			1001.00	-3.832E+00	%(P	3.271E+02	2.23E+03	8.37E-01 G
			766.41	3.440E+02	?(	9.098E+02	7.92E+01	2.94E-01 G
AM-241	T	1.1657E-01					1.58E+05	
			59.54	1.166E-01	&(P	3.878E+00	1.15E+03	3.59E+01 G
Np-237	F	2.9642E+00					2.14E+06	
			86.49	2.964E+00	&(	1.517E+01	1.53E+02	1.31E+01 G
Ir-192	F	3.1151E-01					7.40E+01	
			316.49	-6.956E-02	?(	1.747E+00	7.25E+02	8.70E+01 G
			468.06	9.524E-01	&(	3.248E+00	1.01E+02	5.18E+01 G
			308.44	-1.056E+00	+	9.972E+00	2.81E+02	3.18E+01 G
Cs-136	F	5.6260E-01					1.30E+01	
			818.50	1.338E-01	?(	2.675E+00	5.70E+02	1.00E+02 G
			1048.07	8.451E-01	&(	1.940E+00	6.91E+01	8.00E+01 G
			340.57	9.949E-01	?(	4.127E+00	1.23E+02	4.69E+01 G
Np-239	T	4.6325E-01					2.36E+00	
			103.70	4.533E-01	?	4.969E+00	3.23E+02	2.40E+01 X
			106.13	4.632E-01	?(	6.610E+00	4.23E+02	2.27E+01 G
			99.50	1.854E+00	?	6.733E+00	1.08E+02	1.50E+01 X
Nd-147		1.1955E+00					1.11E+01	
			531.00	1.075E+00	?(	9.151E+00	3.25E+02	1.30E+01 G
			91.10	1.251E+00	?(	6.405E+00	1.53E+02	2.83E+01 G
TL-210	N	5.9070E-01					5.84E+05	
			799.60	5.907E-01	?(	1.991E+00	9.89E+01	9.90E+01 G
			296.00	-6.251E-01	+	4.307E+00	2.06E+02	7.90E+01 G
			1313.00	1.421E+00	?	1.012E+01	3.09E+02	2.10E+01 GA

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

Kr-85    I  -6.6764E+01                                      3.92E+03
                            513.98-6.676E+01 ?(  5.674E+02 2.48E+02 4.30E-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 ***************
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Nuclide	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	Uncert 1 Sigma %	Activity	
Sn-126	64.28	317.	-23.	-0.013	109.79	-4.849E+00	
BA-133	80.99	280.	-26.	-0.015	82.01	-1.301E+00	P
EU-155	86.54	331.	-24.	-0.013	108.27	-1.274E+00	
Sn-126	86.94	371.	-27.	-0.015	104.11	-4.752E+00	
Sn-126	87.57	723.	-13.	-0.007	286.91	-5.712E-01	
Nd-147	91.10	575.	22.	0.012	153.18	1.251E+00	
Gd-153	97.50	248.	3.	0.002	744.61	1.553E-01	
Np-239	99.50	180.	18.	0.010	108.25	1.854E+00	
Gd-153	103.20	239.	19.	0.010	118.86	1.324E+00	
Np-239	103.70	258.	7.	0.004	323.19	4.533E-01	
EU-155	105.31	404.	18.	0.010	156.81	1.328E+00	
Np-239	106.13	416.	7.	0.004	422.79	4.632E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
EU-152	121.78	218.	20.	0.011	106.18	1.090E+00		
CO-57	122.06	213.	-22.	-0.012	95.20	-4.026E-01		
EU-154	123.10	223.	-5.	-0.003	451.06	-1.793E-01		
PA-234	131.29	359.	-21.	-0.012	128.30	-1.865E+00		
HF-181	133.02	381.	-6.	-0.003	451.69	-2.253E-01		
CO-57	136.47	321.	20.	0.011	128.79	3.007E+00		
Tc-99m	140.51	333.	-8.	-0.005	311.77	-1.566E-01		
Ba-140	162.66	234.	10.	0.006	218.63	2.869E+00		
CE-139	165.85	261.	-22.	-0.012	107.90	-4.792E-01		
Cf-251	176.60	120.	16.	0.009	124.37	1.758E+00		
U-235	185.72	251.	-18.	-0.010	127.81	-6.429E-01		
TH-229	193.51	117.	4.	0.002	446.15	1.984E+00		
U-235	205.33	94.	15.	0.008	121.27	6.155E+00		P
TH-229	210.85	107.	9.	0.005	199.62	6.749E+00		
Cf-251	227.00	93.	3.	0.001	647.59	9.728E-01		
TH-227	235.97	536.	-18.	-0.010	180.75	-3.525E+00		
EU-152	244.69	589.	-21.	-0.012	166.32	-6.717E+00		
TH-227	256.24	84.	12.	0.006	150.14	4.235E+00		
Cd-113m	263.70	107.	7.	0.004	202.57	3.180E+03		
BI-210M	265.83	111.	-3.	-0.001	561.25	-1.397E-01		
Hg-203	279.20	144.	-4.	-0.002	396.47	-1.443E-01		
TL-210	296.00	621.	-17.	-0.010	205.74	-6.251E-01		
PA-231	300.07	603.	-17.	-0.010	202.11	-2.038E+01		
PA-233	300.18	586.	-17.	-0.010	199.23	-8.090E+00		
PA-231	302.65	569.	-17.	-0.010	195.86	-1.758E+01		
BA-133	302.85	551.	-17.	-0.010	192.85	-2.764E+00		
Ba-140	304.85	534.	-17.	-0.010	189.49	-1.189E+01		
BI-210M	304.90	517.	-17.	-0.010	186.43	-1.823E+00		
Ir-192	308.44	499.	-11.	-0.006	280.83	-1.056E+00		
PA-233	312.01	454.	16.	0.009	184.94	1.367E+00		P
Ir-192	316.49	104.	-2.	-0.001	724.57	-6.956E-02		
CR-51	320.08	107.	-6.	-0.003	517.90	-1.806E+00		P
La-140	328.76	77.	17.	0.009	99.70	2.613E+00		
Cf-249	333.44	73.	-6.	-0.004	256.06	-1.291E+00		
Cs-136	340.57	152.	15.	0.008	123.05	9.949E-01		
EU-152	344.29	166.	15.	0.008	128.15	1.782E+00		
HF-181	345.83	156.	14.	0.008	133.11	2.933E+00		
BA-133	356.00	402.	13.	0.007	226.92	6.771E-01		
BA-133	383.84	143.	-12.	-0.006	183.68	-4.582E+00		P
SN-113	391.69	118.	14.	0.008	116.36	7.652E-01		
SB-125	427.88	44.	-6.	-0.003	220.27	-7.886E-01		
AG-108M	433.94	32.	5.	0.003	229.51	2.143E-01		P
PM-146	453.88	28.	22.	0.012	53.01	1.352E+00		P
SB-125	463.37	76.	6.	0.004	198.10	2.518E+00		P
Ir-192	468.06	64.	12.	0.007	100.80	9.524E-01		
BE-7	477.59	61.	-2.	-0.001	793.93	-6.439E-01		P
HF-181	482.00	64.	5.	0.003	230.65	2.669E-01		
La-140	487.02	29.	5.	0.003	199.87	5.090E-01		P

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
RU-103	497.05	29.	5.	0.003	194.74	2.658E-01	P
RH-106	511.86	20.	93.	0.052	12.40	2.101E+01	
Kr-85	513.98	120.	-6.	-0.004	248.15	-6.676E+01	
Nd-147	531.00	24.	3.	0.002	324.89	1.075E+00	
Ba-140	537.26	40.	-14.	-0.008	93.50	-2.667E+00	
CS-134	563.24	24.	-4.	-0.002	244.95	-2.344E+00	
CS-134	569.32	25.	4.	0.002	183.71	1.284E+00	
SB-125	600.50	378.	3.	0.002	882.29	9.025E-01	P
SB-125	635.89	29.	6.	0.003	133.33	2.873E+00	
I-131	636.97	27.	9.	0.005	84.67	7.072E+00	
AG-110M	657.76	34.	9.	0.005	99.45	5.199E-01	
CS-137	661.66	68.	-18.	-0.010	99.45	-1.180E+00	P
PM-144	696.54	30.	-1.	-0.001	847.61	-7.870E-02	
NB-94	702.63	30.	5.	0.003	254.02	2.713E-01	P
EU-154	723.36	50.	7.	0.004	144.22	2.138E+00	
BI-212	727.17	51.	8.	0.004	137.67	6.126E+00	P
PM-146	735.72	17.	3.	0.001	324.52	7.251E-01	
PM-146	747.16	39.	-15.	-0.008	69.22	-2.776E+00	P
ZR-95	756.73	17.	4.	0.002	237.58	4.217E-01	
AG-110M	763.94	112.	-23.	-0.013	68.00	-6.551E+00	
NB-95	765.79	97.	9.	0.005	150.75	5.992E-01	
PA-234M	766.41	72.	16.	0.009	79.18	3.440E+02	
EU-152	778.92	23.	-3.	-0.002	312.25	-1.653E+00	
CS-134	795.87	26.	8.	0.005	95.67	6.224E-01	P
TL-210	799.60	34.	9.	0.005	98.91	5.907E-01	
CS-134	801.95	44.	9.	0.005	113.44	6.580E+00	
CO-58	810.78	49.	-5.	-0.003	147.85	-3.540E-01	P
Cs-136	818.50	64.	2.	0.001	570.09	1.338E-01	
MN-54	834.85	33.	-2.	-0.001	399.05	-1.346E-01	P
Co-56	846.77	28.	-9.	-0.005	84.63	-6.476E-01	P
NB-94	871.10	18.	8.	0.004	86.92	5.292E-01	
EU-154	873.23	38.	-10.	-0.006	90.26	-5.948E+00	
PA-234	880.53	72.	-14.	-0.008	88.74	-1.684E+01	
PA-234	883.24	87.	-14.	-0.008	96.22	-1.056E+01	
AG-110M	884.68	103.	-11.	-0.006	131.19	-1.104E+00	
Sc-46	889.28	145.	-17.	-0.009	102.65	-1.223E+00	
Y-88	898.04	25.	-9.	-0.005	88.28	-7.231E-01	P
AG-110M	937.49	33.	-10.	-0.005	129.48	-2.109E+00	
PA-234	946.02	33.	-6.	-0.003	218.04	-3.194E+00	
EU-152	964.11	59.	-2.	-0.001	654.52	-8.758E-01	
EU-154	996.33	41.	-6.	-0.003	164.60	-4.217E+00	
EU-154	1004.77	20.	-5.	-0.003	201.66	-2.206E+00	
Co-56	1037.84	20.	6.	0.003	171.75	3.412E+00	P
Cs-136	1048.07	12.	8.	0.005	69.10	8.451E-01	
RH-106	1050.36	21.	5.	0.003	143.54	2.531E+01	
BI-207	1063.66	10.	3.	0.001	274.90	2.930E-01	P
FE-59	1099.25	15.	6.	0.003	147.67	9.099E-01	
Sc-46	1120.55	79.	-6.	-0.003	225.30	-4.935E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
Ta-182	1121.30	100.	-13.	-0.007	109.32	-3.344E+00		
CO-60	1173.24	20.	4.	0.002	281.93	3.233E-01		P
Ta-182	1189.05	20.	-8.	-0.004	127.88	-4.520E+00		
Ta-182	1221.41	27.	-6.	-0.003	211.36	-1.965E+00		
Co-56	1238.28	32.	13.	0.007	102.72	1.864E+00		
NA-22	1274.53	37.	-17.	-0.009	56.91	-1.632E+00		
EU-154	1274.54	54.	-3.	-0.001	416.57	-6.969E-01		
FE-59	1291.60	32.	-16.	-0.009	85.94	-3.556E+00		
TL-210	1313.00	16.	3.	0.002	308.52	1.421E+00		
CO-60	1332.50	11.	2.	0.001	470.22	1.635E-01		P
AG-110M	1384.30	37.	-17.	-0.010	83.10	-7.475E+00		
EU-152	1408.00	5.	13.	0.007	50.07	6.364E+00		
La-140	1596.21	0.	5.	0.003	47.51	5.921E-01		P
Co-56	1771.35	49.	-1.	-0.001	750.00	-1.103E+00		
Y-88	1836.06	0.	5.	0.003	48.75	6.291E-01		P

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 Counting 1 Sigma	MDA Bq/Sample
BE-7	#A	-6.4394E-01	-6.4394E-01	7.939E+02%	1.58E+01
NA-22	#A	-1.6319E+00	-1.6319E+00	5.691E+01%	3.03E+00
K-40		2.1648E+02	2.1648E+02	6.960E+00%	1.08E+01
Sc-46	#A	-1.2230E+00	-1.2230E+00	1.027E+02%	4.21E+00
CR-51	#A	-1.8057E+00	-1.8057E+00	5.179E+02%	1.56E+01
MN-54	#A	-1.3460E-01	-1.3460E-01	3.990E+02%	2.00E+00
FE-59	#A	9.0993E-01	9.0994E-01	1.477E+02%	3.15E+00
Co-56	#A	5.9185E-01	5.9185E-01	7.243E+01%	1.90E+00
CO-57	#A	-2.4361E-02	-2.4361E-02	8.008E+01%	1.28E+00
CO-58	#A	-3.5397E-01	-3.5397E-01	1.479E+02%	2.36E+00
CO-60	#A	2.4337E-01	2.4337E-01	2.741E+02%	1.86E+00
ZN-65	#A	0.0000E+00	0.0000E+00	1.000E+03%	6.76E+00
NB-94	#A	4.0152E-01	4.0152E-01	8.692E+01%	1.71E+00
ZR-95	#A	4.2172E-01	4.2172E-01	2.376E+02%	2.54E+00
NB-95	#A	5.9923E-01	5.9923E-01	1.507E+02%	3.08E+00
RU-103	#A	2.6582E-01	2.6582E-01	1.947E+02%	1.34E+00
RH-106	#A	3.1274E+00	3.1274E+00	1.435E+02%	1.31E+01
AG-108M	#A	2.1432E-01	2.1432E-01	2.295E+02%	1.27E+00
AG-110M	#A	-1.1042E+00	-1.1042E+00	1.312E+02%	4.91E+00
SN-113	#A	7.6520E-01	7.6521E-01	1.164E+02%	3.01E+00
SB-124	#A	5.2784E-01	5.2784E-01	1.328E+02%	4.92E+00
SB-125	#A	7.4561E-01	7.4561E-01	1.333E+02%	4.42E+00
I-131	#A	6.0887E-01	6.0890E-01	8.467E+01%	1.55E+00
Gd-153	#A	6.4697E-01	6.4697E-01	1.189E+02%	3.94E+00
Ga-68	#A	-2.9659E+00	-2.9867E+00	1.104E+03%	7.77E+01

Tc-99m #A	-1.5642E-01	-1.5663E-01	3.118E+02%	1.65E+00
BA-133 #A	6.7709E-01	6.7709E-01	2.269E+02%	5.17E+00
CS-134 #A	1.1876E+00	1.1876E+00	7.872E+01%	2.03E+00
CS-137 #A	-1.1798E+00	-1.1798E+00	9.945E+01%	2.70E+00
CE-139 #A	-4.7925E-01	-4.7925E-01	1.079E+02%	1.73E+00
Ba-140 #A	-2.6668E+00	-2.6669E+00	9.350E+01%	6.21E+00
La-140 #A	8.2314E-01	8.2316E-01	4.751E+01%	9.06E-01
CE-141 #A	0.0000E+00	0.0000E+00	1.000E+03%	3.06E+00
CE-144 #A	0.0000E+00	0.0000E+00	1.000E+03%	1.36E+01
PM-144 #A	-7.8704E-02	-7.8704E-02	8.476E+02%	1.67E+00
EU-152 #A	1.4230E+00	1.4230E+00	8.321E+01%	3.87E+00
EU-154 #A	5.8864E-01	5.8864E-01	1.442E+02%	2.75E+00
EU-155 #A	1.3281E+00	1.3281E+00	1.568E+02%	6.98E+00
HF-181 #A	6.8726E-01	6.8726E-01	1.331E+02%	2.13E+00
Ta-182 #A	-3.3438E+00	-3.3438E+00	1.093E+02%	1.23E+01
Hg-203 #A	-1.4428E-01	-1.4428E-01	3.965E+02%	1.96E+00
TL-208	4.6089E+00	4.6089E+00	1.653E+01%	1.30E+00
PM-146 #A	1.1906E+00	1.1906E+00	5.301E+01%	1.73E+00
Y-88 #A	6.2909E-01	6.2909E-01	4.875E+01%	9.81E-01
Cd-113m#A	3.1803E+03	3.1803E+03	2.026E+02%	2.20E+04
Cd-109 #A	0.0000E+00	0.0000E+00	1.000E+03%	5.37E+01
Cf-251 #A	1.7577E+00	1.7577E+00	1.244E+02%	5.91E+00
Cf-249 #A	0.0000E+00	0.0000E+00	1.000E+03%	3.29E+00
Sn-126 #A	-4.8494E+00	-4.8494E+00	1.098E+02%	1.78E+01
PB-210 A	2.9132E+01	2.9132E+01	4.122E+01%	3.32E+01
PB-212	9.2331E+00	9.2332E+00	9.873E+00%	2.01E+00
PB-214	2.8036E+01	2.8036E+01	6.639E+00%	2.87E+00
BI-207 #A	2.9295E-01	2.9295E-01	2.749E+02%	1.98E+00
BI-212 #A	6.1257E+00	6.1257E+00	1.377E+02%	2.90E+01
U-235 #A	1.9309E+00	1.9309E+00	1.213E+02%	1.34E+01
BI-214	3.1189E+01	3.1189E+01	6.458E+00%	2.32E+00
BI-210M#A	-1.3971E-01	-1.3971E-01	5.612E+02%	2.71E+00
AC-228	1.1148E+01	1.1148E+01	1.551E+01%	4.42E+00
TH-227 #A	4.2349E+00	4.2349E+00	1.501E+02%	1.65E+01
TH-229 #A	3.9118E+00	3.9118E+00	1.996E+02%	2.43E+01
TH-234 A	1.3702E+01	1.3702E+01	4.763E+01%	1.81E+01
PA-231 #A	-1.7575E+01	-1.7575E+01	1.959E+02%	1.15E+02
PA-233 #A	1.3666E+00	1.3666E+00	1.849E+02%	8.48E+00
PA-234 #A	-1.8648E+00	-1.8648E+00	1.283E+02%	8.01E+00
PA-234M#A	8.6576E+01	8.6576E+01	7.918E+01%	3.27E+02
AM-241 #A	1.1657E-01	1.1657E-01	1.149E+03%	3.88E+00
Np-237 #A	2.9642E+00	2.9642E+00	1.532E+02%	1.52E+01
Ir-192 #A	3.1151E-01	3.1151E-01	1.008E+02%	1.75E+00
Cs-136 #A	5.6258E-01	5.6260E-01	6.910E+01%	2.68E+00
Np-239 #A	4.6318E-01	4.6325E-01	4.228E+02%	6.61E+00
Nd-147 #A	1.1955E+00	1.1955E+00	1.532E+02%	9.15E+00
TL-210 #A	5.9070E-01	5.9070E-01	9.891E+01%	1.99E+00
Kr-85 #A	-6.6764E+01	-6.6764E+01	2.482E+02%	5.67E+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  2000.8 keV)     3.298E+02  Bq/Sample
Total Decayed Activity (   37.6 to  2000.8 keV) 3.2982297E+02  Bq/Sample
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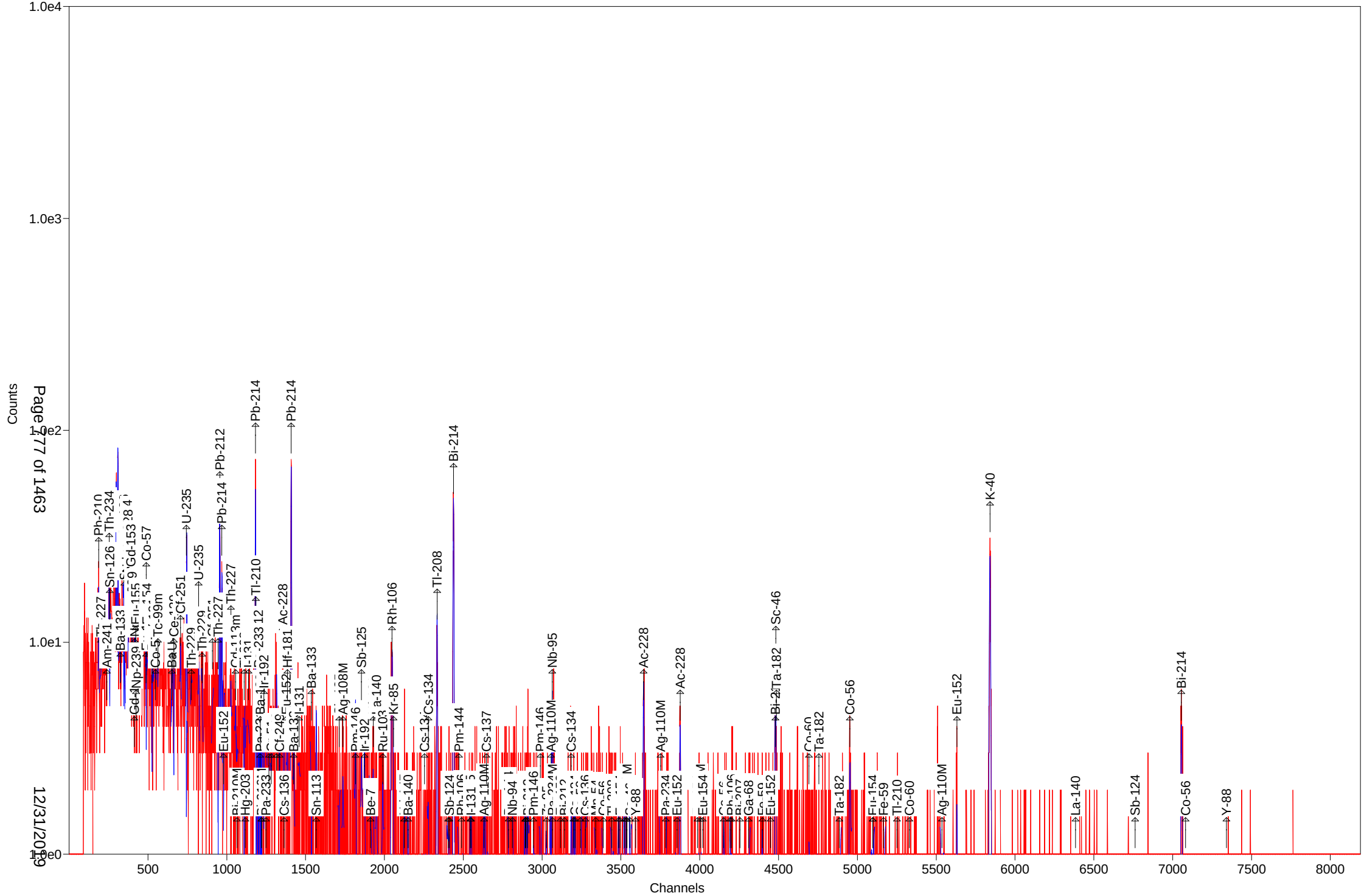
452567_Gamma_160-36526-A-3-B. 5_Gamma_20193363.spc.



Test America St. Louis Spectrum ID: 16_Gamma_20192289

Sample Description: 452567_Gamma_160-36526-A-4-B
Detector: Detector #16
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-4-B

Decay to Time: 12/25/2019 09:01 Live Time: 1800 sec
Acquisition Time: 12/25/2019 09:01:30 Real Time: 1804 sec
Analysis Time: 12/25/2019 09:32 Dead Time: 0.25 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 16_Soil_TunaCan.Clb
Efficiency Cal Desc: 16_TunaCan_90099_071012
Efficiency Cal Date: 7/13/2012 09:47
Energy Cal Date: 2/28/2012 09:35
Library: Client_Long_Rev15.lib
Bkgd Correction File: 16_2019-12-07_1450.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	4.017E+00	102.5	4.116E+00	4.121E+00	1.385E+01
NA-22	-3.696E-01	227.9	8.424E-01	8.426E-01	1.488E+00
K-40	2.264E+02	5.4	1.212E+01	1.676E+01	1.079E+01
Sc-46	4.400E-01	95.2	4.187E-01	4.193E-01	1.420E+00
CR-51	-1.058E-01	4013.7	4.246E+00	4.246E+00	2.613E+01
MN-54	-6.875E-01	100.3	6.897E-01	6.906E-01	1.532E+00
FE-59	1.190E+00	87.4	1.040E+00	1.042E+00	2.284E+00
Co-56	2.604E-01	62.7	1.631E-01	1.637E-01	1.476E+00
CO-57	0.000E+00	1.#INF	3.880E-01	3.880E-01	1.652E+01
CO-58	-1.833E-01	374.7	6.868E-01	6.869E-01	1.644E+00
CO-60	-2.087E-01	419.8	8.761E-01	8.761E-01	1.709E+00
ZN-65	-1.560E+00	104.6	1.632E+00	1.633E+00	5.493E+00
NB-94	4.582E-01	65.3	2.991E-01	3.000E-01	1.893E+00
ZR-95	-7.928E-01	97.7	7.744E-01	7.755E-01	2.536E+00
NB-95	-4.441E-01	153.7	6.823E-01	6.827E-01	2.314E+00
RU-103	-4.086E-01	104.7	4.277E-01	4.282E-01	1.257E+00
RH-106	-6.923E+00	159.8	1.106E+01	1.107E+01	3.703E+01
AG-108M	2.522E-01	119.6	3.017E-01	3.020E-01	9.357E-01
AG-110M	3.284E-01	101.6	3.336E-01	3.340E-01	2.160E+00
SN-113	3.712E-01	173.1	6.427E-01	6.429E-01	2.184E+00
SB-124	3.462E-03	57.7	1.997E-03	2.005E-03	3.531E+00
SB-125	8.228E-01	171.9	1.415E+00	1.415E+00	3.236E+00
I-131	6.747E-01	97.1	6.554E-01	6.564E-01	1.145E+00
Gd-153	-1.376E+00	172.8	2.378E+00	2.380E+00	7.905E+00
Ga-68	-1.472E+01	164.6	2.423E+01	2.424E+01	5.349E+01
Tc-99m	0.000E+00	1.#INF	8.975E-02	8.975E-02	2.061E+00
BA-133	-2.532E-01	435.7	1.103E+00	1.103E+00	3.722E+00
CS-134	1.527E+00	23.8	3.635E-01	3.720E-01	6.105E-01
CS-137	-2.789E-01	164.3	4.581E-01	4.584E-01	1.776E+00
CE-139	-4.350E-01	97.6	4.246E-01	4.266E-01	1.416E+00
Ba-140	1.060E+00	172.6	1.829E+00	1.830E+00	4.436E+00
La-140	5.872E-01	76.4	4.483E-01	4.494E-01	1.061E+00
CE-141	-8.423E-01	144.3	1.216E+00	1.216E+00	4.046E+00

CE-144	-2.685E+00	173.8	4.666E+00	4.668E+00	1.557E+01
PM-144	-7.339E-01	81.6	5.986E-01	5.998E-01	1.997E+00
EU-152	1.981E+00	108.8	2.156E+00	2.158E+00	7.314E+00
EU-154	1.142E+00	57.0	6.515E-01	6.543E-01	1.318E+00
EU-155	-1.940E+00	87.1	1.691E+00	1.694E+00	1.146E+01
HF-181	2.426E-01	233.4	5.662E-01	5.664E-01	1.937E+00
Ta-182	1.641E+00	86.1	1.413E+00	1.415E+00	6.995E+00
Hg-203	4.321E-01	90.1	3.894E-01	3.902E-01	1.303E+00
TL-208	4.003E+00	15.2	6.080E-01	6.424E-01	1.111E+00
PM-146	3.315E-01	180.3	5.977E-01	5.979E-01	1.293E+00
Y-88	2.443E-01	220.6	5.390E-01	5.391E-01	1.175E+00
Cd-113m	-1.391E+03	397.2	5.524E+03	5.525E+03	1.891E+04
Cd-109	0.000E+00	1.#INF	1.943E+01	1.943E+01	6.461E+01
Cf-251	1.452E+00	127.2	1.847E+00	1.852E+00	4.743E+00
Cf-249	1.236E-01	518.5	6.407E-01	6.407E-01	2.200E+00
Sn-126	4.457E+00	115.8	5.161E+00	5.167E+00	1.721E+01
PB-210	3.026E+01	42.8	1.294E+01	1.306E+01	3.253E+01
PB-212	1.218E+01	7.2	8.777E-01	1.179E+00	1.860E+00
PB-214	1.959E+01	6.2	1.214E+00	1.584E+00	2.183E+00
BI-207	-2.541E-01	91.7	2.329E-01	2.333E-01	1.942E+00
BI-212	4.279E-01	1513.9	6.478E+00	6.478E+00	2.268E+01
U-235	4.145E+00	93.9	3.893E+00	3.898E+00	1.674E+01
BI-214	2.023E+01	7.3	1.479E+00	1.814E+00	2.009E+00
BI-210M	-5.235E-01	114.8	6.009E-01	6.017E-01	2.368E+00
AC-228	1.334E+01	14.0	1.869E+00	1.989E+00	3.712E+00
TH-227	2.289E+00	187.4	4.291E+00	4.293E+00	1.327E+01
TH-229	-4.514E+00	186.2	8.406E+00	8.413E+00	2.163E+01
TH-234	-1.402E+01	31.9	4.476E+00	4.544E+00	4.305E+01
PA-231	-1.532E+01	180.8	2.770E+01	2.771E+01	9.255E+01
PA-233	0.000E+00	1.#INF	5.196E-01	5.196E-01	7.081E+00
PA-234	-1.904E+00	150.3	2.862E+00	2.864E+00	9.538E+00
PA-234M	9.084E+01	83.3	7.567E+01	7.581E+01	2.511E+02
AM-241	1.096E+00	153.0	1.676E+00	1.677E+00	5.595E+00
Np-237	-3.454E+00	52.2	1.805E+00	1.815E+00	1.791E+01
Ir-192	3.367E-02	637.9	2.148E-01	2.148E-01	2.959E+00
Cs-136	6.364E-01	84.4	5.371E-01	5.383E-01	1.658E+00
Np-239	-1.863E+00	177.3	3.302E+00	3.304E+00	1.097E+01
Nd-147	3.154E-01	1060.5	3.345E+00	3.345E+00	8.251E+00
TL-210	-2.102E-02	2092.8	4.399E-01	4.399E-01	1.560E+00
Kr-85	9.077E+01	129.4	1.175E+02	1.176E+02	3.970E+02
Total	5.406E+02				

Analyst: Caleb Quinn

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Sample description
452567_Gamma_160-36526-A-4-B

Spectrum Filename: C:\User\SPC\Det16\16_Gamma_20192289.An1

Acquisition information

Start time:	12/25/2019 9:01:30 AM
Live time:	1800
Real time:	1804
Dead time:	0.25 %
Detector ID:	16

Detector system
Ge16 SN/11012217

Calibration

Filename:	16_Soil_TunaCan.Clb

16_TunaCan_90099_071012

Energy Calibration

Created:	2/28/2012 9:35:31 AM
Zero offset:	0.050 keV
Gain:	0.250 keV/channel
Quadratic:	-2.285E-08 keV/channel^2

Efficiency Calibration

Created:	7/13/2012 9:47:24 AM
Knee Energy:	165.85 keV
Above the Knee:	Quadratic Uncertainty = 1.01 %
Log(Eff):	1.477416E-02 + (-5.514266E-01*Log(E)) + (-1.443482E-02*Log(E)^2)
Below the Knee:	Quadratic Uncertainty = 1.17 %
Log(Eff):	-2.408438E+01 + (8.948554E+00*Log(E)) + (-9.513599E-01*Log(E)^2)

Library Files

Main analysis library:	Client_Long_Rev15.lib
Library Match Width:	0.500
Peak stripping:	Library based

Analysis parameters

Analysis engine:	Env32 G800W064
Start channel:	100 (25.06keV)
Stop channel:	8000 (1999.64keV)
Peak rejection level:	1000.000%
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

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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	12/25/2019 9:01:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	16_2019-12-07_1450.PBC 12/7/2019 2:50:17 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 27 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1674

***** 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
46.53	54.	42.76	1.10	2.352E-02	46.54	4.250	PBC<MDA	PB210
50.14	7.	405.33	0.96	2.644E-02	50.14	8.000	PBC<MDA	TH227
59.54	24.	152.97	0.97	3.327E-02	59.54	35.900	PBC<MDA	AM241
63.29	4.	746.81	0.97	3.561E-02	63.29	3.810	PBC<MDA	TH234
64.33	28.	115.80	0.98	3.619E-02	64.28	9.700	PBC<MDA	Sn126
74.49	171.	15.13	0.99	4.123E-02				
77.23	294.	8.80	0.99	4.231E-02				
87.58	69.	28.99	1.00	4.540E-02	87.57	37.500	PBC<MDA	Sn126
92.91	123.	24.90	1.49	4.651E-02	92.59	5.584	PBC<MDA	TH234
					93.35	5.561	2.650E+01	AC228
121.81	9.	170.24	1.03	4.731E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	1.296E-01	CO57
123.13	20.	78.53	0.32	4.721E-02	123.10	40.790	PBC<MDA	EU154
142.96	27.	161.46	1.05	4.466E-02	143.79	10.960	PBC<MDA	U235
176.60	18.	127.24	1.08	3.977E-02	176.60	17.000	PBC<MDA	Cf251
185.59	116.	23.70	0.37	3.841E-02	185.72	54.000	3.122E+00	U235
206.26	21.	95.96	1.11	3.577E-02	205.33	5.010	PBC<MDA	U235
227.00	16.	125.16	1.13	3.332E-02	227.00	6.300	PBC<MDA	Cf251
235.97	4.	849.94	1.13	3.242E-02	235.97	12.300	PBC<MDA	TH227
238.60	308.	8.05	1.07	3.217E-02	238.63	43.300	1.229E+01	PB212
241.97	87.	18.53	1.14	3.185E-02	242.00	7.430	2.034E+01	PB214
244.66	21.	180.90	1.14	3.160E-02	244.69	7.580	PBC<MDA	EU152

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
256.24	11.	187.41	1.15	3.058E-02	256.24	7.000	PBC<MDA	TH227
277.28	19.	88.04	1.17	2.890E-02	277.28	6.310	PBC<MDA	TL208
279.20	18.	90.12	1.17	2.876E-02	279.20	81.460	PBC<MDA	Hg203
284.30	15.	101.88	1.18	2.839E-02	284.30	6.140	PBC<MDA	I131
295.27	193.	10.27	1.10	2.763E-02	295.09	19.300	2.006E+01	PB214
					296.00	79.000	4.911E+00	TL210
299.48	43.	34.93	1.53	2.732E-02	300.03	3.280	2.687E+01	PB212
					300.07	2.460	3.582E+01	PA231
					300.18	6.200	1.422E+01	PA233
338.23	71.	22.87	1.20	2.507E-02	338.32	12.010	1.303E+01	AC228
340.57	18.	142.38	1.23	2.494E-02	340.57	46.900	PBC<MDA	Cs136
344.37	17.	153.43	1.23	2.475E-02	344.29	26.500	PBC<MDA	EU152
351.82	319.	6.95	1.25	2.437E-02	351.93	37.600	1.935E+01	PB214
364.48	8.	198.96	1.25	2.375E-02	364.48	81.700	PBC<MDA	I131
383.84	2.	744.27	1.27	2.288E-02	383.84	8.940	PBC<MDA	BA133
388.02	3.	518.46	1.27	2.271E-02	387.95	66.000	PBC<MDA	Cf249
391.69	10.	173.12	1.27	2.255E-02	391.69	64.000	PBC<MDA	SN113
427.88	8.	199.04	1.31	2.115E-02	427.88	29.600	PBC<MDA	SB125
433.94	3.	505.54	1.31	2.093E-02	433.94	90.480	PBC<MDA	AG108M
453.88	4.	305.69	1.33	2.026E-02	453.88	65.000	PBC<MDA	PM146
463.37	5.	280.39	1.34	1.996E-02	463.37	10.470	PBC<MDA	SB125
468.06	2.	792.21	1.34	1.981E-02	468.06	51.750	PBC<MDA	Ir192
477.60	15.	102.47	1.35	1.952E-02	477.60	10.520	PBC<MDA	BE7
482.00	7.	233.40	1.35	1.939E-02	482.00	80.500	PBC<MDA	HF181
487.02	12.	113.94	1.36	1.925E-02	487.02	45.500	PBC<MDA	La140
511.86	65.	23.68	2.63	1.856E-02	511.86	20.000	9.728E+00	RH106
513.98	13.	129.40	1.38	1.850E-02	513.98	0.430	PBC<MDA	Kr85
537.26	8.	172.63	1.40	1.791E-02	537.26	24.390	PBC<MDA	Ba140
569.38	-3.	321.07	1.43	1.716E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	PBC<MDA	PA234
					569.70	97.740	PBC<MDA	BI207
569.46	1.	770.03	1.43	1.717E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	2.782E-01	PA234
					569.70	97.740	PBC<MDA	BI207
583.16	99.	15.19	1.87	1.687E-02	583.02	84.500	3.871E+00	TL208
609.50	265.	7.31	1.48	1.633E-02	609.31	46.090	1.958E+01	BI214
					610.30	5.750	1.572E+02	RU103
636.97	4.	187.00	1.49	1.581E-02	636.97	7.170	PBC<MDA	I131
657.76	10.	101.59	1.51	1.543E-02	657.76	94.640	PBC<MDA	AG110M
702.63	16.	90.51	1.55	1.470E-02	702.63	97.900	PBC<MDA	NB94
722.79	15.	76.28	1.57	1.439E-02	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	6.546E-01	AG108M
					723.36	20.220	2.942E+00	EU154
722.94	10.	119.64	1.57	1.439E-02	722.79	10.810	3.605E+00	SB124
					722.94	90.840	4.290E-01	AG108M
					723.36	20.220	1.928E+00	EU154
747.16	6.	191.30	1.59	1.404E-02	747.16	34.000	PBC<MDA	PM146
766.41	19.	83.30	1.60	1.378E-02	765.79	99.790	PBC<MDA	NB95

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
					766.41	0.294	PBC<MDA	PA234M
778.42	5.	224.40	1.62	1.362E-02	778.92	12.940	PBC<MDA	EU152
785.42	10.	116.62	1.62	1.353E-02	785.42	1.280	PBC<MDA	BI212
795.53	32.	23.81	1.77	1.340E-02	795.87	85.530	1.527E+00	CS134
801.95	8.	128.88	1.64	1.332E-02	801.95	8.690	PBC<MDA	CS134
818.50	13.	90.66	1.65	1.312E-02	818.50	100.000	PBC<MDA	Cs136
860.36	14.	91.39	1.69	1.264E-02	860.56	12.420	PBC<MDA	TL208
871.10	7.	94.07	1.69	1.253E-02	871.10	99.890	PBC<MDA	NB94
872.48	8.	82.77	1.70	1.251E-02	873.23	12.270	PBC<MDA	EU154
880.53	5.	178.54	1.70	1.243E-02	880.53	6.000	PBC<MDA	PA234
889.28	10.	95.15	1.71	1.234E-02	889.28	99.984	PBC<MDA	Sc46
911.42	85.	16.19	1.47	1.211E-02	911.07	29.000	1.346E+01	AC228
946.02	2.	554.15	1.76	1.178E-02	946.02	13.400	PBC<MDA	PA234
967.12	29.	45.58	1.78	1.157E-02	968.97	17.460	PBC<MDA	AC228
1001.00	5.	250.94	1.81	1.129E-02	1001.00	0.837	PBC<MDA	PA234M
1037.84	9.	125.81	1.84	1.099E-02	1037.84	14.130	PBC<MDA	Co56
1099.25	13.	87.45	1.89	1.052E-02	1099.25	56.500	PBC<MDA	FE59
1120.81	63.	15.55	2.49	1.037E-02	1120.29	15.100	2.220E+01	BI214
					1120.55	99.987	PBC<MDA	Sc46
					1121.30	34.900	9.612E+00	Ta182
1121.37	8.	177.14	1.91	1.037E-02	1120.29	15.100	PBC<MDA	BI214
					1120.55	99.987	4.018E-01	Sc46
					1121.30	34.900	1.152E+00	Ta182
1189.05	14.	86.13	1.96	9.916E-03	1189.05	16.200	PBC<MDA	Ta182
1221.41	2.	687.39	1.99	9.717E-03	1221.41	27.000	PBC<MDA	Ta182
1238.28	13.	106.75	2.00	9.617E-03	1238.28	66.070	PBC<MDA	Co56
1274.54	7.	57.08	2.03	9.409E-03	1274.53	99.940	PBC<MDA	NA22
					1274.54	35.190	1.142E+00	EU154
1384.30	4.	215.06	2.12	8.837E-03	1384.30	24.290	PBC<MDA	AG110M
1407.81	11.	85.14	2.14	8.723E-03	1408.00	21.005	PBC<MDA	EU152
1461.25	369.	5.35	3.14	8.482E-03	1460.83	10.670	2.264E+02	K40
1596.21	7.	101.68	2.29	7.928E-03	1596.21	95.400	PBC<MDA	La140
1765.14	8.	97.47	2.43	7.342E-03	1764.49	15.400	PBC<MDA	BI214
1771.35	7.	149.00	2.43	7.320E-03	1771.35	15.480	PBC<MDA	Co56
1836.06	3.	220.62	2.48	7.121E-03	1836.06	99.200	PBC<MDA	Y88

********** 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
297.60	74.45	247.	171.	4.136E+03	15.13	0.985	- D
308.55	77.18	187.	294.	6.943E+03	8.80	0.988	- D

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

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This section based on library: Client_Long_Rev15.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	185.82	46.53	144.	54.	0.030	42.76	1.096
TH-227	200.26	50.14	380.	7.	0.004	405.33	0.963s
AM-241	237.83	59.54	636.	24.	0.013	152.97	0.971
TH-234	252.82	63.29	475.	4.	0.002	746.81	0.975s
Sn-126	256.79	64.28	518.	28.	0.016	115.80	0.976s
BA-133	323.60	80.99	1223.	-21.	-0.012	144.66	0.991s
Np-237	345.59	86.49	1626.	-37.	-0.020	52.24	0.996s
EU-155	345.80	86.54	1872.	-35.	-0.019	177.53	0.996s
Sn-126	347.39	86.94	1837.	-35.	-0.019	175.86	0.997
Sn-126	349.91	87.57	1705.	69.	0.038	28.99	0.997D
Cd-109	351.79	88.04	1802.	0.	0.000	174.01	0.998A
Nd-147	364.02	91.10	1740.	-35.	-0.019	170.51	1.001s
TH-234	369.98	92.59	1805.	-65.	-0.036	31.93	1.002s
AC-228	371.26	92.91	208.	123.	0.069	24.90	1.490s
Gd-153	389.61	97.50	1809.	-35.	-0.019	172.82	1.007s
Np-239	397.61	99.50	1844.	-35.	-0.019	174.15	1.008s
Gd-153	412.40	103.20	1879.	-35.	-0.020	175.22	1.012s
Np-239	414.40	103.70	1914.	-35.	-0.020	176.76	1.012s
EU-155	420.85	105.31	1950.	-35.	-0.020	87.14	1.014
Np-239	424.11	106.13	2052.	-36.	-0.020	177.29	1.014s
EU-152	486.69	121.78	339.	9.	0.005	170.24	1.029D
CO-57	487.81	122.06	386.	0.	0.000	100.40	1.029A
EU-154	491.96	123.10	85.	20.	0.011	78.53	0.322D
PA-234	524.73	131.29	911.	-29.	-0.016	150.31	1.038s
HF-181	531.64	133.02	882.	-29.	-0.016	147.74	1.039s
CE-144	533.70	133.54	910.	-25.	-0.014	173.79	1.040s
HF-181	544.74	136.30	935.	0.	0.000	1000.00	1.042s
CO-57	545.43	136.47	935.	0.	0.000	1000.00	1.042A
Tc-99m	561.57	140.51	935.	0.	0.000	1000.00	1.046s
U-235	574.67	143.79	966.	27.	0.015	161.46	1.049s
CE-141	581.29	145.44	1080.	-32.	-0.018	144.32	1.050s
Ba-140	650.14	162.66	306.	-12.	-0.006	216.96	1.066s
U-235	653.01	163.38	317.	0.	0.000	1000.00	1.067
CE-139	662.90	165.85	309.	-26.	-0.014	97.60	1.069s
Cf-251	705.88	176.60	139.	18.	0.010	127.24	1.079s
U-235	741.83	185.59	144.	116.	0.065	23.70	0.370s
TH-229	773.49	193.51	172.	-13.	-0.007	186.22	1.094s
U-235	820.76	205.33	106.	21.	0.011	95.96	1.105s
TH-229	842.82	210.85	161.	-4.	-0.002	449.20	1.110s
Cf-251	907.40	227.00	110.	16.	0.009	125.16	1.125s
TH-227	943.27	235.97	664.	4.	0.002	849.94	1.133s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
PB-212	953.91	238.63	89.	305.	0.170	7.21	1.136D
PB-214	967.37	242.00	85.	87.	0.048	18.53	1.139D
EU-152	978.14	244.69	693.	21.	0.012	180.90	1.141s
TH-227	1024.32	256.24	108.	11.	0.006	187.41	1.152s
Cd-113m	1054.15	263.70	158.	-4.	-0.002	397.21	1.158s
BI-210M	1062.67	265.83	170.	-14.	-0.008	114.78	1.160s
TL-208	1108.46	277.28	129.	19.	0.010	88.04	1.171
Hg-203	1116.13	279.20	126.	18.	0.010	90.12	1.173s
I-131	1136.52	284.30	60.	15.	0.009	101.88	1.177s
PB-214	1180.39	295.27	54.	193.	0.107	10.27	1.104s
TL-210	1183.31	296.00	814.	-21.	-0.012	189.31	1.188s
PB-212	1197.22	299.48	51.	43.	0.024	34.93	1.528s
PA-231	1199.58	300.07	792.	-22.	-0.012	186.23	1.192s
PA-233	1200.02	300.18	771.	-22.	-0.012	183.72	1.192s
PA-231	1209.90	302.65	749.	-22.	-0.012	180.83	1.194s
BA-133	1210.70	302.85	669.	-15.	-0.008	251.47	1.194s
Ba-140	1218.69	304.85	654.	0.	0.000	1000.00	1.196s
BI-210M	1218.88	304.90	654.	0.	0.000	1000.00	1.196s
Ir-192	1233.05	308.44	654.	0.	0.000	1000.00	1.199s
PA-233	1247.34	312.01	654.	0.	0.000	1000.00	1.202
Ir-192	1265.24	316.49	654.	0.	0.000	1000.00	1.206s
La-140	1314.31	328.76	402.	-15.	-0.008	131.60	1.217s
Cf-249	1333.02	333.44	387.	0.	0.000	1000.00	1.222s
AC-228	1352.16	338.23	49.	71.	0.039	22.87	1.199
Cs-136	1361.54	340.57	305.	18.	0.010	142.38	1.228s
EU-152	1376.40	344.29	322.	17.	0.009	153.43	1.231s
HF-181	1382.56	345.83	421.	-20.	-0.011	129.27	1.233s
PB-214	1406.54	351.82	51.	319.	0.177	6.95	1.254
BA-133	1423.24	356.00	440.	-7.	-0.004	435.72	1.242s
I-131	1457.16	364.48	64.	8.	0.004	198.96	1.250s
BA-133	1534.57	383.84	149.	2.	0.001	744.27	1.267s
Cf-249	1551.01	387.95	148.	3.	0.002	518.46	1.271s
SN-113	1565.96	391.69	134.	10.	0.005	173.12	1.274s
SB-125	1710.67	427.88	52.	8.	0.004	199.04	1.307s
AG-108M	1734.91	433.94	39.	3.	0.001	505.54	1.312s
PM-146	1814.67	453.88	36.	4.	0.002	305.69	1.330s
SB-125	1852.61	463.37	85.	5.	0.003	280.39	1.338s
Ir-192	1871.38	468.06	86.	2.	0.001	792.21	1.342s
BE-7	1909.51	477.60	108.	15.	0.008	102.47	1.351s
HF-181	1927.12	482.00	123.	7.	0.004	233.40	1.355
La-140	1947.21	487.02	95.	12.	0.007	113.94	1.359s
RU-103	1987.33	497.05	61.	-13.	-0.007	104.69	1.368s
RH-106	2046.57	511.86	86.	65.	0.036	23.68	2.631s
Kr-85	2055.03	513.98	135.	13.	0.007	129.40	1.383s
Ba-140	2148.14	537.26	48.	8.	0.005	172.63	1.404s
CS-134	2252.03	563.24	52.	-4.	-0.002	371.37	1.427s
CS-134	2276.36	569.32	35.	1.	0.000	770.03	1.432D
BI-207	2277.89	569.70	45.	-3.	-0.002	321.07	1.432s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
TL-208	2331.73	583.16	31.	99.	0.055	15.19	1.872s
SB-124	2409.99	602.73	461.	-18.	-0.010	86.54	1.462s
CS-134	2417.91	604.71	444.	-17.	-0.009	178.29	1.463s
BI-214	2437.08	609.50	28.	265.	0.147	7.31	1.483
RU-103	2440.26	610.30	427.	-5.	-0.003	573.54	1.468s
AG-108M	2456.19	614.28	422.	0.	0.000	1000.00	1.472s
PM-144	2471.31	618.06	422.	0.	0.000	1000.00	1.475s
RH-106	2486.73	621.92	496.	-20.	-0.011	159.75	1.479s
SB-125	2542.62	635.89	33.	-4.	-0.002	209.17	1.491s
I-131	2546.96	636.97	31.	4.	0.002	187.00	1.492s
AG-110M	2630.10	657.76	52.	10.	0.006	101.59	1.510s
CS-137	2645.69	661.66	71.	-7.	-0.004	164.28	1.513s
PM-144	2785.22	696.54	115.	-19.	-0.011	81.55	1.544s
NB-94	2809.57	702.63	99.	16.	0.009	90.51	1.549s
SB-124	2890.19	722.79	61.	15.	0.009	76.28	1.567s
AG-108M	2890.80	722.94	68.	10.	0.006	119.64	1.567s
EU-154	2892.49	723.36	78.	0.	0.000	663.32	1.567D
ZR-95	2895.84	724.20	78.	0.	0.000	1000.00	1.568s
PM-146	2941.93	735.72	70.	-21.	-0.012	86.31	1.578s
PM-146	2987.69	747.16	23.	6.	0.003	191.30	1.588s
ZR-95	3025.97	756.73	47.	-11.	-0.006	97.69	1.596s
AG-110M	3054.82	763.94	91.	-21.	-0.011	68.77	1.602s
NB-95	3062.21	765.79	137.	-11.	-0.006	153.65	1.604s
PA-234M	3064.70	766.41	122.	19.	0.011	83.30	1.605s
EU-152	3114.73	778.92	23.	5.	0.003	224.40	1.615s
BI-212	3140.74	785.42	28.	10.	0.006	116.62	1.621s
CS-134	3181.18	795.53	4.	32.	0.018	23.81	1.771
CS-134	3206.86	801.95	50.	8.	0.004	128.88	1.635
CO-58	3242.16	810.78	60.	-4.	-0.002	374.69	1.643s
La-140	3262.14	815.77	62.	-6.	-0.004	180.72	1.647s
Cs-136	3273.06	818.50	61.	13.	0.007	90.66	1.649s
MN-54	3338.46	834.85	50.	-16.	-0.009	100.32	1.663s
Co-56	3386.15	846.77	45.	-17.	-0.009	90.08	1.674s
TL-208	3441.33	860.56	31.	14.	0.008	91.39	1.685s
NB-94	3483.47	871.10	16.	7.	0.004	94.07	1.695s
EU-154	3492.00	873.23	20.	8.	0.005	82.77	1.696s
PA-234	3521.21	880.53	43.	5.	0.003	178.54	1.703s
PA-234	3532.05	883.24	48.	0.	0.000	1000.00	1.705s
AG-110M	3537.82	884.68	48.	0.	0.000	1000.00	1.706s
Sc-46	3556.21	889.28	38.	10.	0.005	95.15	1.710s
AC-228	3644.78	911.42	20.	85.	0.047	16.19	1.467
PA-234	3783.21	946.02	25.	2.	0.001	554.15	1.759s
EU-152	3855.58	964.11	107.	-24.	-0.013	64.28	1.774
AC-228	3875.02	968.97	74.	29.	0.016	45.58	1.778s
EU-154	3984.48	996.33	107.	-20.	-0.011	77.09	1.801
PA-234M	4003.15	1001.00	74.	5.	0.003	250.94	1.805s
EU-154	4018.27	1004.77	122.	-20.	-0.011	81.69	1.808
Co-56	4150.56	1037.84	21.	9.	0.005	125.81	1.836s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
RH-106	4200.65	1050.36	48.	-15.	-0.009	106.18	1.847s
BI-207	4253.86	1063.66	30.	-4.	-0.002	91.68	1.858s
Ga-68	4308.84	1077.40	32.	-8.	-0.004	164.57	1.870s
FE-59	4396.27	1099.25	22.	13.	0.007	87.45	1.888s
ZN-65	4461.46	1115.55	112.	-15.	-0.008	104.57	1.901s
BI-214	4482.52	1120.81	8.	63.	0.035	15.55	2.493s
Sc-46	4481.49	1120.55	97.	-5.	-0.003	262.98	1.906s
Ta-182	4484.49	1121.30	84.	8.	0.004	177.14	1.906
CO-60	4692.30	1173.24	51.	-9.	-0.005	104.68	1.950s
Ta-182	4755.57	1189.05	23.	14.	0.008	86.13	1.963
Ta-182	4885.06	1221.41	34.	2.	0.001	687.39	1.990
Co-56	4952.57	1238.28	35.	13.	0.007	106.75	2.004s
NA-22	5097.62	1274.53	23.	-6.	-0.003	227.93	2.034s
EU-154	5097.66	1274.54	28.	7.	0.004	57.08	2.034A
FE-59	5165.91	1291.60	28.	-6.	-0.004	201.07	2.048
TL-210	5251.57	1313.00	28.	-9.	-0.005	137.70	2.066s
CO-60	5329.61	1332.50	29.	-3.	-0.002	419.84	2.081s
AG-110M	5536.89	1384.30	12.	4.	0.002	215.06	2.124s
EU-152	5631.75	1408.00	12.	11.	0.006	85.14	2.143s
K-40	5844.86	1461.25	10.	369.	0.205	5.35	3.136s
La-140	6385.02	1596.21	6.	7.	0.004	101.68	2.294s
BI-214	7058.61	1764.49	25.	8.	0.004	97.47	2.427s
Co-56	7086.08	1771.35	44.	7.	0.004	149.00	2.433s
Y-88	7345.12	1836.06	7.	3.	0.002	220.62	2.483s

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
BE-7	C	4.0166E+00				5.31E+01	
			477.60	4.017E+00	?(	1.385E+01 1.02E+02 1.05E+01	G
NA-22	C	-3.6957E-01				9.50E+02	
			1274.53	-3.696E-01	?(P	1.488E+00 2.28E+02 9.99E+01	G
K-40	N	2.2640E+02				4.66E+11	
			1460.83	2.264E+02	(P	1.079E+01 5.35E+00 1.07E+01	G
Sc-46	F	4.3999E-01				8.38E+01	
			889.28	4.400E-01	?(P	1.420E+00 9.52E+01 1.00E+02	G
			1120.55	-2.882E-01	-	2.609E+00 2.63E+02 1.00E+02	G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CR-51	F	-1.0580E-01					2.77E+01	
			320.08	-1.058E-01	%(P	2.613E+01	4.01E+03	9.94E+00 G
MN-54	C	-6.8751E-01					3.12E+02	
			834.85	-6.875E-01	?(	1.532E+00	1.00E+02	1.00E+02 G
FE-59	F	1.1896E+00					4.45E+01	
			1099.25	1.190E+00	?(P	2.284E+00	8.74E+01	5.65E+01 G
			1291.60	-8.744E-01	-	3.799E+00	2.01E+02	4.32E+01 G
Co-56	C	2.6035E-01					7.73E+01	
			846.77	-7.386E-01	?(	1.476E+00	9.01E+01	9.99E+01 G
			1238.28	1.164E+00	&(P	2.637E+00	1.07E+02	6.61E+01 G
			1037.84	3.101E+00	?(	8.672E+00	1.26E+02	1.41E+01 G
			1771.35	3.215E+00	?	1.656E+01	1.49E+02	1.55E+01 A
CO-58	C	-1.8331E-01					7.09E+01	
			810.78	-1.833E-01	?(P	1.644E+00	3.75E+02	9.95E+01 G
CO-60	F	-2.0866E-01					1.93E+03	
			1332.50	-2.087E-01	?(P	1.709E+00	4.20E+02	1.00E+02 G
			1173.24	-5.190E-01	+ P	2.004E+00	1.05E+02	9.99E+01 G
ZN-65	F	-1.5602E+00					2.44E+02	
			1115.55	-1.560E+00	?(	5.493E+00	1.05E+02	5.06E+01 G
NB-94	I	4.5819E-01					7.41E+06	
			702.63	6.237E-01	?(	1.893E+00	9.05E+01	9.79E+01 G
			871.10	2.960E-01	?(	9.564E-01	9.41E+01	9.99E+01 G
ZR-95	I	-7.9276E-01					6.40E+01	
			756.73	-7.928E-01	?(P	2.536E+00	9.77E+01	5.45E+01 G
			724.20	0.000E+00	+	3.840E+00	1.00E+03	4.42E+01 G
NB-95	I	-4.4408E-01					6.40E+01	
			765.79	-4.441E-01	&(	2.314E+00	1.54E+02	9.98E+01 G
RU-103	I	-4.0857E-01					3.93E+01	
			497.05	-4.086E-01	?(P	1.257E+00	1.05E+02	9.09E+01 G
			610.30	-3.027E+00	+	5.865E+01	5.74E+02	5.75E+00 GA
RH-106	I	-6.9230E+00					3.74E+02	
			621.92	-6.923E+00	?(	3.703E+01	1.60E+02	9.93E+00 G
			1050.36	-5.015E+01	+	1.148E+02	1.06E+02	1.56E+00 G
			511.86	9.728E+00	?	6.874E+00	2.37E+01	2.00E+01 GA

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
AG-108M C	2.5221E-01					1.53E+05	
		433.94	7.471E-02	?(P	9.357E-01	5.06E+02	9.05E+01 G
		722.94	4.290E-01	?(	1.747E+00	1.20E+02	9.08E+01 G
		614.28	0.000E+00	-	3.749E+00	1.00E+03	8.98E+01 G
AG-110M F	3.2840E-01					2.50E+02	
		884.68	0.000E+00	?(	2.160E+00	1.00E+03	7.27E+01 G
		657.76	3.992E-01	?(P	1.375E+00	1.02E+02	9.46E+01 G
		937.49	1.363E-01	%	4.129E+00	1.30E+03	3.44E+01 G
		1384.30	1.035E+00	?(	4.880E+00	2.15E+02	2.43E+01 G
		763.94	-3.730E+00	&	8.498E+00	6.88E+01	2.23E+01 G
SN-113 F	3.7123E-01					1.15E+02	
		391.69	3.712E-01	&(P	2.184E+00	1.73E+02	6.40E+01 G
SB-124 F	3.4623E-03					6.02E+01	
		602.73	-6.012E-01	?(P	3.531E+00	8.65E+01	9.83E+01 G
		1690.98	-8.176E-02	% P	1.130E+00	1.29E+03	4.78E+01 G
		722.79	5.500E+00	?(	1.400E+01	7.63E+01	1.08E+01 G
SB-125 I	8.2276E-01					1.01E+03	
		427.88	6.694E-01	?(P	3.236E+00	1.99E+02	2.96E+01 G
		600.50	-3.455E-01	%	1.897E+01	1.62E+03	1.79E+01 G
		635.89	-1.242E+00	+	9.150E+00	2.09E+02	1.13E+01 G
		463.37	1.256E+00	?(P	1.216E+01	2.80E+02	1.05E+01 G
I-131 I	6.7470E-01					8.02E+00	
		364.48	2.290E-01	?(	1.145E+00	1.99E+02	8.17E+01 G
		284.30	4.912E+00	&(P	1.241E+01	1.02E+02	6.14E+00 G
		636.97	2.124E+00	?(	1.398E+01	1.87E+02	7.17E+00 G
Gd-153 F	-1.3761E+00					2.42E+02	
		97.50	-1.376E+00	?(	7.905E+00	1.73E+02	3.00E+01 G
		103.20	-1.884E+00	&	1.097E+01	1.75E+02	2.18E+01 G
Ga-68 C	-1.4721E+01					4.71E-02	
		1077.40	-1.472E+01	?(	5.349E+01	1.65E+02	3.30E+00 G
BA-133 F	-2.5323E-01					3.85E+03	
		356.00	-2.532E-01	?(	3.722E+00	4.36E+02	6.20E+01 G
		302.85	-1.633E+00	+	1.376E+01	2.51E+02	1.83E+01 G
		383.84	6.320E-01	? P	1.617E+01	7.44E+02	8.94E+00 GA
		80.99	-8.003E-01	+ P	6.197E+00	1.45E+02	3.41E+01 GA
CS-134 I	1.5268E+00					7.54E+02	
		795.87	1.527E+00	(	6.105E-01	2.38E+01	8.55E+01 G
		604.71	-5.847E-01	-	3.497E+00	1.78E+02	9.76E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			569.32	1.483E-01	}	6.385E+00	7.70E+02	1.54E+01 G
			801.95	3.857E+00	+	1.706E+01	1.29E+02	8.69E+00 G
			563.24	-1.538E+00	&	1.396E+01	3.71E+02	8.35E+00 G
CS-137	I	-2.7887E-01					1.10E+04	
			661.66	-2.789E-01	?(P	1.776E+00	1.64E+02	8.52E+01 G
CE-139	F	-4.3503E-01					1.38E+02	
			165.85	-4.350E-01	?(	1.416E+00	9.76E+01	7.99E+01 G
Ba-140	I	1.0597E+00					1.28E+01	
			537.26	1.060E+00	?(	4.436E+00	1.73E+02	2.44E+01 G
			162.66	-2.483E+00	+	1.817E+01	2.17E+02	6.22E+00 G
			304.85	0.000E+00	-	5.844E+01	1.00E+03	4.29E+00 G
La-140	I	5.8716E-01					1.28E+01	
			1596.21	4.890E-01	?(P	1.061E+00	1.02E+02	9.54E+01 G
			487.02	7.930E-01	&(	3.056E+00	1.14E+02	4.55E+01 G
			328.76	-1.612E+00	+ P	1.028E+01	1.32E+02	2.03E+01 G
			815.77	-1.149E+00	+	7.165E+00	1.81E+02	2.33E+01 G
CE-141	I	-8.4232E-01					3.25E+01	
			145.44	-8.423E-01	(	4.046E+00	1.44E+02	4.82E+01 G
CE-144	I	-2.6848E+00					2.85E+02	
			133.54	-2.685E+00	&(	1.557E+01	1.74E+02	1.11E+01 G
PM-144	C	-7.3394E-01					3.63E+02	
			696.54	-7.339E-01	?(	1.997E+00	8.16E+01	9.90E+01 G
			618.06	0.000E+00	+	3.415E+00	1.00E+03	9.91E+01 G
EU-152	F	1.9805E+00					4.94E+03	
			121.78	3.881E-01	}	3.636E+00	1.70E+02	2.86E+01 G
			344.29	1.420E+00	?(P	7.314E+00	1.53E+02	2.65E+01 G
			1112.07	5.205E-01	%	1.922E+01	1.06E+03	1.36E+01 G
			778.92	1.471E+00	?(	7.952E+00	2.24E+02	1.29E+01 G
			964.11	-7.862E+00	+	1.668E+01	6.43E+01	1.46E+01 G
			244.69	4.810E+00	?(	2.909E+01	1.81E+02	7.58E+00 G
			1408.00	3.196E+00	?	5.716E+00	8.51E+01	2.10E+01 GA
EU-154	I	1.1420E+00					3.14E+03	
			123.10	5.770E-01	(	1.318E+00	7.85E+01	4.08E+01 G
			1274.54	1.142E+00	}	4.617E+00	5.71E+01	3.52E+01 G
			723.36	0.000E+00	}	8.378E+00	6.63E+02	2.02E+01 G
			873.23	3.020E+00	?(	8.464E+00	8.28E+01	1.23E+01 G
			1004.77	-5.449E+00	-	1.485E+01	8.17E+01	1.80E+01 G
			996.33	-9.163E+00	-	2.352E+01	7.71E+01	1.06E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
EU-155	I	-1.9401E+00					1.81E+03	
			105.31	-1.940E+00	(P	1.146E+01	8.71E+01	2.12E+01 G
			86.54	-1.387E+00	&	8.188E+00	1.78E+02	3.07E+01 G
HF-181	F	2.4261E-01					4.24E+01	
			482.00	2.426E-01	&(	1.937E+00	2.33E+02	8.05E+01 G
			133.02	-7.963E-01	+	3.921E+00	1.48E+02	4.33E+01 G
			345.83	-2.975E+00	+ P	1.469E+01	1.29E+02	1.51E+01 G
			136.30	0.000E+00	-	3.014E+01	1.00E+03	5.85E+00 G
Ta-182	F	1.6406E+00					1.14E+02	
			1121.30	1.152E+00	(	6.995E+00	1.77E+02	3.49E+01 G
			1221.41	4.235E-01	(	6.328E+00	6.87E+02	2.70E+01 G
			1189.05	4.722E+00	(	8.610E+00	8.61E+01	1.62E+01 G
Hg-203	F	4.3212E-01					4.66E+01	
			279.20	4.321E-01	?(	1.303E+00	9.01E+01	8.15E+01 G
TL-208	N	4.0027E+00					6.98E+02	
			583.02	3.871E+00	@(P	1.111E+00	1.52E+01	8.45E+01 G
			277.28	5.750E+00	+ P	1.692E+01	8.80E+01	6.31E+00 G
			860.56	4.899E+00	?(P	1.007E+01	9.14E+01	1.24E+01 G
PM-146	C	3.3148E-01					2.02E+03	
			453.88	1.698E-01	?(P	1.293E+00	3.06E+02	6.50E+01 G
			747.16	6.406E-01	?(P	2.943E+00	1.91E+02	3.40E+01 G
			735.72	-3.692E+00	+	7.247E+00	8.63E+01	2.25E+01 G
Y-88	F	2.4429E-01					1.07E+02	
			1836.06	2.443E-01	?(P	1.175E+00	2.21E+02	9.92E+01 G
			898.04	1.736E-02	% P	1.380E+00	3.38E+03	9.37E+01 G
Cd-113m		-1.3908E+03					5.33E+03	
			263.70	-1.391E+03	&(	1.891E+04	3.97E+02	6.00E-03 K
Cf-251	T	1.4517E+00					3.28E+05	
			176.60	1.452E+00	&(	4.743E+00	1.27E+02	1.70E+01 G
			227.00	4.234E+00	&	1.365E+01	1.25E+02	6.30E+00 GA
Cf-249	T	1.2357E-01					1.28E+05	
			387.95	1.236E-01	?(	2.200E+00	5.18E+02	6.60E+01 G
			333.44	0.000E+00	-	1.335E+01	1.00E+03	1.55E+01 G
Sn-126		4.4572E+00					3.65E+07	
			87.57	2.254E+00	}	6.368E+00	2.90E+01	3.75E+01 GA
			64.28	4.457E+00	?(	1.721E+01	1.16E+02	9.70E+00 G
			86.94	-4.703E+00	+	2.749E+01	1.76E+02	9.04E+00 GA

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

PB-210   N   3.0255E+01                                      8.14E+03
                          46.54 3.026E+01  (P 3.253E+01 4.28E+01 4.25E+00 G

PB-212   N   1.2176E+01                                      6.98E+02
                         238.63 1.218E+01  (P 1.860E+00 7.21E+00 4.33E+01 G
                         300.03 2.687E+01 +   2.224E+01 3.49E+01 3.28E+00 GA

PB-214   N   1.9589E+01                                      5.84E+05
                         351.93 1.935E+01  (P 2.183E+00 6.95E+00 3.76E+01 G
                         295.09 2.006E+01 @(P 3.859E+00 1.03E+01 1.93E+01 G
                         242.00 2.034E+01   P 1.072E+01 1.85E+01 7.43E+00 GA

BI-207   C  -2.5408E-01                                      1.18E+04
                        1063.66-2.541E-01 ?(P 1.942E+00 9.17E+01 7.45E+01 G
                         569.70-9.662E-02 } P 1.124E+00 3.21E+02 9.77E+01 G

BI-212   N   4.2790E-01                                      6.98E+02
                         727.17 4.279E-01 %(  2.268E+01 1.51E+03 7.55E+00 G
                         785.42 3.207E+01     8.777E+01 1.17E+02 1.28E+00 GA

U-235    N   4.1451E+00                                      2.57E+11
                         143.79 3.111E+00 &(P 1.674E+01 1.61E+02 1.10E+01 G
                         205.33 6.407E+00 &(P 1.574E+01 9.60E+01 5.01E+00 G
                         163.38 0.000E+00 -   2.273E+01 1.00E+03 5.08E+00 G
                         185.72 3.122E+00 *   1.569E+00 2.37E+01 5.40E+01 GA

BI-214   N   2.0230E+01                                      5.84E+05
                         609.31 1.958E+01  (P 2.009E+00 7.31E+00 4.61E+01 G
                        1120.29 2.220E+01  (P 5.755E+00 1.55E+01 1.51E+01 G
                        1764.49 3.829E+00 - P 1.274E+01 9.75E+01 1.54E+01 G

BI-210M  T  -5.2350E-01                                      1.10E+09
                         265.83-5.235E-01 &(P 2.368E+00 1.15E+02 5.00E+01 G
                         304.90 0.000E+00 +   8.954E+00 1.00E+03 2.80E+01 G

AC-228   N   1.3338E+01                                      2.10E+03
                         911.07 1.346E+01  (P 3.712E+00 1.62E+01 2.90E+01 G
                         968.97 8.041E+00 & P 1.178E+01 4.56E+01 1.75E+01 G
                         338.32 1.303E+01  (P 6.544E+00 2.29E+01 1.20E+01 G
                          93.35 2.650E+01 + P 1.501E+01 2.49E+01 5.56E+00 XA

TH-227   N   2.2895E+00                                      7.95E+03
                         256.24 2.855E+00  (  1.327E+01 1.87E+02 7.00E+00 G
                         235.97 5.982E-01 &   1.710E+01 8.50E+02 1.23E+01 G
                          50.14 1.795E+00 &(  2.457E+01 4.05E+02 8.00E+00 G
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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
TH-229	N	-4.5138E+00					2.68E+06	
			193.51	-4.514E+00	?(	2.163E+01	1.86E+02	4.40E+00 G
			210.85	-2.339E+00	& P	3.277E+01	4.49E+02	2.99E+00 G
TH-234	N	-1.4017E+01					1.63E+12	
			92.59	-1.402E+01	(P	4.305E+01	3.19E+01	5.58E+00 G
			63.29	1.695E+00	+ P	4.268E+01	7.47E+02	3.81E+00 G
PA-231	N	-1.5318E+01					1.20E+07	
			302.65	-1.532E+01	(	9.255E+01	1.81E+02	2.88E+00 G
			300.07	-1.779E+01	+	1.107E+02	1.86E+02	2.46E+00 G
PA-234	N	-1.9040E+00					1.63E+12	
			131.29	-1.904E+00	?(	9.538E+00	1.50E+02	1.80E+01 G
			946.02	7.040E-01	+	9.156E+00	5.54E+02	1.34E+01 G
			569.47	-1.316E-01	%	1.290E+01	2.73E+03	8.20E+00 G
			883.24	0.000E+00	&	1.633E+01	1.00E+03	9.60E+00 G
			880.53	3.974E+00	?	2.470E+01	1.79E+02	6.00E+00 GA
PA-234M	N	9.0838E+01					1.63E+12	
			1001.00	2.895E+01	?(P	2.511E+02	2.51E+02	8.37E-01 G
			766.41	2.670E+02	?(P	7.421E+02	8.33E+01	2.94E-01 G
AM-241	T	1.0957E+00					1.58E+05	
			59.54	1.096E+00	(P	5.595E+00	1.53E+02	3.59E+01 G
Np-237	F	-3.4542E+00					2.14E+06	
			86.49	-3.454E+00	&(P	1.791E+01	5.22E+01	1.31E+01 G
Ir-192	F	3.3673E-02					7.40E+01	
			316.49	0.000E+00	*(	2.959E+00	1.00E+03	8.70E+01 G
			468.06	9.031E-02	?(	2.493E+00	7.92E+02	5.18E+01 G
			308.44	0.000E+00	-	7.962E+00	1.00E+03	3.18E+01 G
Cs-136	F	6.3637E-01					1.30E+01	
			818.50	5.428E-01	?(	1.658E+00	9.07E+01	1.00E+02 G
			1048.07	2.122E-02	%	1.705E+00	2.20E+03	8.00E+01 G
			340.57	8.358E-01	?(	3.995E+00	1.42E+02	4.69E+01 G
Np-239	T	-1.8627E+00					2.36E+00	
			103.70	-1.711E+00	&	1.005E+01	1.77E+02	2.40E+01 X
			106.13	-1.863E+00	&(	1.097E+01	1.77E+02	2.27E+01 G
			99.50	-2.745E+00	+	1.589E+01	1.74E+02	1.50E+01 X
Nd-147		3.1538E-01					1.11E+01	
			531.00	3.154E-01	%(	8.251E+00	1.06E+03	1.30E+01 G
			91.10	-1.480E+00	+	8.388E+00	1.71E+02	2.83E+01 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

TL-210   N  -2.1020E-02                                      5.84E+05
                          799.60-2.102E-02 %(  1.560E+00 2.09E+03 9.90E+01 G
                          296.00-5.468E-01 +   3.458E+00 1.89E+02 7.90E+01 G
                         1313.00-2.684E+00 +   7.913E+00 1.38E+02 2.10E+01 GA

Kr-85    I   9.0770E+01                                      3.92E+03
                          513.98 9.077E+01 ?(  3.970E+02 1.29E+02 4.30E-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

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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********** 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	
TH-227	50.14	380.	7.	0.004	405.33	1.795E+00	
AM-241	59.54	636.	24.	0.013	152.97	1.096E+00	P
TH-234	63.29	475.	4.	0.002	746.81	1.695E+00	P
BA-133	80.99	1223.	-21.	-0.012	144.66	-8.003E-01	P
Np-237	86.49	1626.	-37.	-0.020	52.24	-3.454E+00	P
EU-155	86.54	1872.	-35.	-0.019	177.53	-1.387E+00	
Nd-147	91.10	1740.	-35.	-0.019	170.51	-1.480E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
TH-234	92.59	1805.	-65.	-0.036	31.93	-1.402E+01	P
Gd-153	97.50	1809.	-35.	-0.019	172.82	-1.376E+00	
Np-239	99.50	1844.	-35.	-0.019	174.15	-2.745E+00	
Gd-153	103.20	1879.	-35.	-0.020	175.22	-1.884E+00	
Np-239	103.70	1914.	-35.	-0.020	176.76	-1.711E+00	
EU-155	105.31	1950.	-35.	-0.020	87.14	-1.940E+00	P
Np-239	106.13	2052.	-36.	-0.020	177.29	-1.863E+00	
PA-234	131.29	911.	-29.	-0.016	150.31	-1.904E+00	
HF-181	133.02	882.	-29.	-0.016	147.74	-7.963E-01	
CE-144	133.54	910.	-25.	-0.014	173.79	-2.685E+00	
CE-141	145.44	1080.	-32.	-0.018	144.32	-8.423E-01	
Ba-140	162.66	306.	-12.	-0.006	216.96	-2.483E+00	
CE-139	165.85	309.	-26.	-0.014	97.60	-4.350E-01	
Cf-251	176.60	139.	18.	0.010	127.24	1.452E+00	
TH-229	193.51	172.	-13.	-0.007	186.22	-4.514E+00	
TH-229	210.85	161.	-4.	-0.002	449.20	-2.339E+00	P
Cf-251	227.00	110.	16.	0.009	125.16	4.234E+00	
TH-227	235.97	664.	4.	0.002	849.94	5.982E-01	
TH-227	256.24	108.	11.	0.006	187.41	2.855E+00	
Cd-113m	263.70	158.	-4.	-0.002	397.21	-1.391E+03	
BI-210M	265.83	170.	-14.	-0.008	114.78	-5.235E-01	P
Hg-203	279.20	126.	18.	0.010	90.12	4.321E-01	
I-131	284.30	60.	15.	0.009	101.88	4.912E+00	P
TL-210	296.00	814.	-21.	-0.012	189.31	-5.468E-01	
PA-231	300.07	792.	-22.	-0.012	186.23	-1.779E+01	
PA-233	300.18	771.	-22.	-0.012	183.72	-7.060E+00	
PA-231	302.65	749.	-22.	-0.012	180.83	-1.532E+01	
BA-133	302.85	669.	-15.	-0.008	251.47	-1.633E+00	
La-140	328.76	402.	-15.	-0.008	131.60	-1.612E+00	P
Cs-136	340.57	305.	18.	0.010	142.38	8.358E-01	
HF-181	345.83	421.	-20.	-0.011	129.27	-2.975E+00	P
BA-133	356.00	440.	-7.	-0.004	435.72	-2.532E-01	
I-131	364.48	64.	8.	0.004	198.96	2.290E-01	
BA-133	383.84	149.	2.	0.001	744.27	6.320E-01	P
SN-113	391.69	134.	10.	0.005	173.12	3.712E-01	P
SB-125	427.88	52.	8.	0.004	199.04	6.694E-01	P
AG-108M	433.94	39.	3.	0.001	505.54	7.471E-02	P
PM-146	453.88	36.	4.	0.002	305.69	1.698E-01	P
SB-125	463.37	85.	5.	0.003	280.39	1.256E+00	P
Ir-192	468.06	86.	2.	0.001	792.21	9.031E-02	
BE-7	477.60	108.	15.	0.008	102.47	4.017E+00	
HF-181	482.00	123.	7.	0.004	233.40	2.426E-01	
La-140	487.02	95.	12.	0.007	113.94	7.930E-01	
RU-103	497.05	61.	-13.	-0.007	104.69	-4.086E-01	P
RH-106	511.86	86.	65.	0.036	23.68	9.728E+00	
Kr-85	513.98	135.	13.	0.007	129.40	9.077E+01	
Ba-140	537.26	48.	8.	0.005	172.63	1.060E+00	
BI-207	569.70	45.	-3.	-0.002	321.07	-9.662E-02	P

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
SB-124	602.73	461.	-18.	-0.010	86.54	-6.012E-01	P
RU-103	610.30	427.	-5.	-0.003	573.54	-3.027E+00	
RH-106	621.92	496.	-20.	-0.011	159.75	-6.923E+00	
SB-125	635.89	33.	-4.	-0.002	209.17	-1.242E+00	
I-131	636.97	31.	4.	0.002	187.00	2.124E+00	
AG-110M	657.76	52.	10.	0.006	101.59	3.992E-01	P
CS-137	661.66	71.	-7.	-0.004	164.28	-2.789E-01	P
PM-144	696.54	115.	-19.	-0.011	81.55	-7.339E-01	
NB-94	702.63	99.	16.	0.009	90.51	6.237E-01	
SB-124	722.79	61.	15.	0.009	76.28	5.500E+00	
AG-108M	722.94	68.	10.	0.006	119.64	4.290E-01	
PM-146	735.72	70.	-21.	-0.012	86.31	-3.692E+00	
PM-146	747.16	23.	6.	0.003	191.30	6.406E-01	P
ZR-95	756.73	47.	-11.	-0.006	97.69	-7.928E-01	P
AG-110M	763.94	91.	-21.	-0.011	68.77	-3.730E+00	
NB-95	765.79	137.	-11.	-0.006	153.65	-4.441E-01	
PA-234M	766.41	122.	19.	0.011	83.30	2.670E+02	P
BI-212	785.42	28.	10.	0.006	116.62	3.207E+01	
CO-58	810.78	60.	-4.	-0.002	374.69	-1.833E-01	P
La-140	815.77	62.	-6.	-0.004	180.72	-1.149E+00	
Cs-136	818.50	61.	13.	0.007	90.66	5.428E-01	
MN-54	834.85	50.	-16.	-0.009	100.32	-6.875E-01	
Co-56	846.77	45.	-17.	-0.009	90.08	-7.386E-01	
NB-94	871.10	16.	7.	0.004	94.07	2.960E-01	
PA-234	880.53	43.	5.	0.003	178.54	3.974E+00	
Sc-46	889.28	38.	10.	0.005	95.15	4.400E-01	P
PA-234	946.02	25.	2.	0.001	554.15	7.040E-01	
PA-234M	1001.00	74.	5.	0.003	250.94	2.895E+01	P
Co-56	1037.84	21.	9.	0.005	125.81	3.101E+00	
RH-106	1050.36	48.	-15.	-0.009	106.18	-5.015E+01	
BI-207	1063.66	30.	-4.	-0.002	91.68	-2.541E-01	P
Ga-68	1077.40	32.	-8.	-0.004	164.57	-1.472E+01	
FE-59	1099.25	22.	13.	0.007	87.45	1.190E+00	P
ZN-65	1115.55	112.	-15.	-0.008	104.57	-1.560E+00	
Sc-46	1120.55	97.	-5.	-0.003	262.98	-2.882E-01	
Ta-182	1121.30	84.	8.	0.004	177.14	1.152E+00	
CO-60	1173.24	51.	-9.	-0.005	104.68	-5.190E-01	P
Ta-182	1189.05	23.	14.	0.008	86.13	4.722E+00	
Ta-182	1221.41	34.	2.	0.001	687.39	4.235E-01	
Co-56	1238.28	35.	13.	0.007	106.75	1.164E+00	P
NA-22	1274.53	23.	-6.	-0.003	227.93	-3.696E-01	P
FE-59	1291.60	28.	-6.	-0.004	201.07	-8.744E-01	
TL-210	1313.00	28.	-9.	-0.005	137.70	-2.684E+00	
CO-60	1332.50	29.	-3.	-0.002	419.84	-2.087E-01	P
AG-110M	1384.30	12.	4.	0.002	215.06	1.035E+00	
La-140	1596.21	6.	7.	0.004	101.68	4.890E-01	P
Co-56	1771.35	44.	7.	0.004	149.00	3.215E+00	
Y-88	1836.06	7.	3.	0.002	220.62	2.443E-01	P

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
BE-7	#A	4.0166E+00	4.0166E+00	1.025E+02%	1.39E+01
NA-22	#A	-3.6957E-01	-3.6957E-01	2.279E+02%	1.49E+00
K-40		2.2640E+02	2.2640E+02	5.353E+00%	1.08E+01
Sc-46	#A	4.3998E-01	4.3999E-01	9.515E+01%	1.42E+00
CR-51	#A	-1.0580E-01	-1.0580E-01	4.014E+03%	2.61E+01
MN-54	#A	-6.8751E-01	-6.8751E-01	1.003E+02%	1.53E+00
FE-59	#A	1.1896E+00	1.1896E+00	8.745E+01%	2.28E+00
Co-56	#A	2.6035E-01	2.6035E-01	6.266E+01%	1.48E+00
CO-57	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.65E+01
CO-58	#A	-1.8331E-01	-1.8331E-01	3.747E+02%	1.64E+00
CO-60	#A	-2.0866E-01	-2.0866E-01	4.198E+02%	1.71E+00
ZN-65	#A	-1.5602E+00	-1.5602E+00	1.046E+02%	5.49E+00
NB-94	#A	4.5819E-01	4.5819E-01	6.527E+01%	1.89E+00
ZR-95	#A	-7.9276E-01	-7.9276E-01	9.769E+01%	2.54E+00
NB-95	#A	-4.4408E-01	-4.4408E-01	1.537E+02%	2.31E+00
RU-103	#A	-4.0857E-01	-4.0857E-01	1.047E+02%	1.26E+00
RH-106	#A	-6.9230E+00	-6.9230E+00	1.598E+02%	3.70E+01
AG-108M	#A	2.5221E-01	2.5221E-01	1.196E+02%	9.36E-01
AG-110M	#A	3.2840E-01	3.2840E-01	1.016E+02%	2.16E+00
SN-113	#A	3.7123E-01	3.7123E-01	1.731E+02%	2.18E+00
SB-124	#A	3.4623E-03	3.4623E-03	5.768E+01%	3.53E+00
SB-125	#A	8.2276E-01	8.2276E-01	1.719E+02%	3.24E+00
I-131	#A	6.7468E-01	6.7470E-01	9.714E+01%	1.14E+00
Gd-153	#A	-1.3761E+00	-1.3761E+00	1.728E+02%	7.91E+00
Ga-68	#A	-1.4646E+01	-1.4721E+01	1.646E+02%	5.35E+01
Tc-99m	#A	0.0000E+00	0.0000E+00	1.000E+03%	2.06E+00
BA-133	#A	-2.5323E-01	-2.5323E-01	4.357E+02%	3.72E+00
CS-134		1.5268E+00	1.5268E+00	2.381E+01%	6.11E-01
CS-137	#A	-2.7887E-01	-2.7887E-01	1.643E+02%	1.78E+00
CE-139	#A	-4.3503E-01	-4.3503E-01	9.760E+01%	1.42E+00
Ba-140	#A	1.0597E+00	1.0597E+00	1.726E+02%	4.44E+00
La-140	#A	5.8715E-01	5.8716E-01	7.636E+01%	1.06E+00
CE-141	#A	-8.4231E-01	-8.4232E-01	1.443E+02%	4.05E+00
CE-144	#A	-2.6848E+00	-2.6848E+00	1.738E+02%	1.56E+01
PM-144	#A	-7.3393E-01	-7.3394E-01	8.155E+01%	2.00E+00
EU-152	#A	1.9805E+00	1.9805E+00	1.088E+02%	7.31E+00
EU-154	A	1.1420E+00	1.1420E+00	5.705E+01%	1.32E+00
EU-155	#A	-1.9401E+00	-1.9401E+00	8.714E+01%	1.15E+01
HF-181	#A	2.4261E-01	2.4261E-01	2.334E+02%	1.94E+00
Ta-182	#A	1.6406E+00	1.6406E+00	8.613E+01%	6.99E+00
Hg-203	#A	4.3212E-01	4.3212E-01	9.012E+01%	1.30E+00

TL-208	4.0027E+00	4.0027E+00	1.519E+01%	1.11E+00
PM-146 #A	3.3148E-01	3.3148E-01	1.803E+02%	1.29E+00
Y-88 #A	2.4429E-01	2.4429E-01	2.206E+02%	1.18E+00
Cd-113m#A	-1.3908E+03	-1.3908E+03	3.972E+02%	1.89E+04
Cd-109 #A	0.0000E+00	0.0000E+00	1.000E+03%	6.46E+01
Cf-251 #A	1.4517E+00	1.4517E+00	1.272E+02%	4.74E+00
Cf-249 #A	1.2357E-01	1.2357E-01	5.185E+02%	2.20E+00
Sn-126 #A	4.4572E+00	4.4572E+00	1.158E+02%	1.72E+01
PB-210 A	3.0255E+01	3.0255E+01	4.276E+01%	3.25E+01
PB-212	1.2176E+01	1.2176E+01	7.209E+00%	1.86E+00
PB-214	1.9589E+01	1.9589E+01	6.197E+00%	2.18E+00
BI-207 #A	-2.5408E-01	-2.5408E-01	9.168E+01%	1.94E+00
BI-212 #A	4.2790E-01	4.2790E-01	1.514E+03%	2.27E+01
U-235 A	4.1451E+00	4.1451E+00	9.391E+01%	1.67E+01
BI-214	2.0230E+01	2.0230E+01	7.311E+00%	2.01E+00
BI-210M#A	-5.2350E-01	-5.2350E-01	1.148E+02%	2.37E+00
AC-228	1.3338E+01	1.3338E+01	1.401E+01%	3.71E+00
TH-227 #A	2.2895E+00	2.2895E+00	1.874E+02%	1.33E+01
TH-229 #A	-4.5138E+00	-4.5138E+00	1.862E+02%	2.16E+01
TH-234 #A	-1.4017E+01	-1.4017E+01	3.193E+01%	4.30E+01
PA-231 #A	-1.5318E+01	-1.5318E+01	1.808E+02%	9.25E+01
PA-233 #A	0.0000E+00	0.0000E+00	1.000E+03%	7.08E+00
PA-234 #A	-1.9040E+00	-1.9040E+00	1.503E+02%	9.54E+00
PA-234M#A	9.0838E+01	9.0838E+01	8.330E+01%	2.51E+02
AM-241 #A	1.0957E+00	1.0957E+00	1.530E+02%	5.59E+00
Np-237 #A	-3.4542E+00	-3.4542E+00	5.224E+01%	1.79E+01
Ir-192 #A	3.3673E-02	3.3673E-02	6.379E+02%	2.96E+00
Cs-136 #A	6.3636E-01	6.3637E-01	8.440E+01%	1.66E+00
Np-239 #A	-1.8625E+00	-1.8627E+00	1.773E+02%	1.10E+01
Nd-147 #A	3.1537E-01	3.1538E-01	1.061E+03%	8.25E+00
TL-210 #A	-2.1020E-02	-2.1020E-02	2.093E+03%	1.56E+00
Kr-85 #A	9.0770E+01	9.0770E+01	1.294E+02%	3.97E+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 (25.1 to 1999.6 keV) 3.275E+02 Bq/Sample
Total Decayed Activity (25.1 to 1999.6 keV) 3.2751340E+02 Bq/Sample

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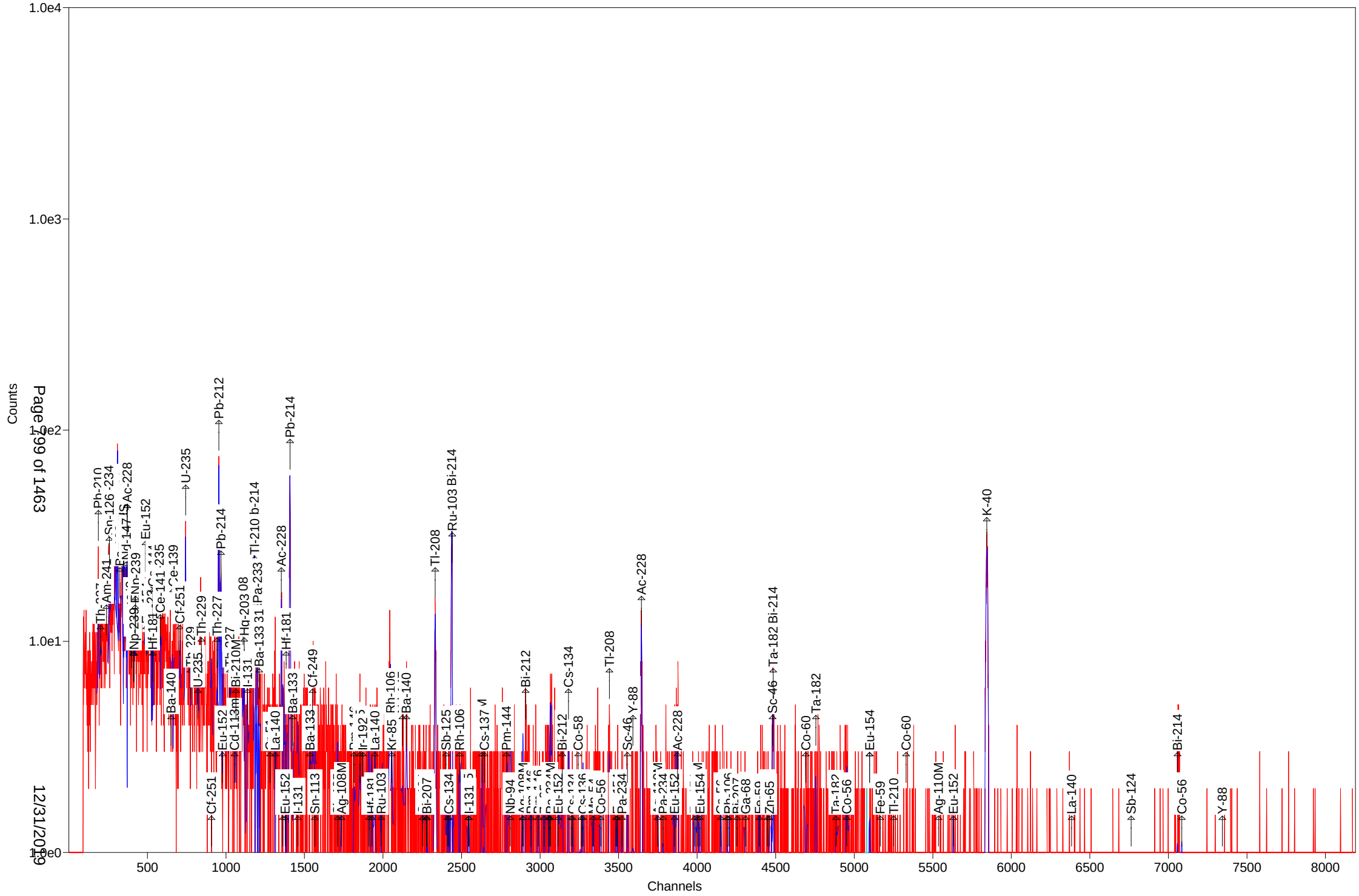
452567_Gamma_160-36526-A-4-B. 16_Gamma_20192289.spc.



Test America St. Louis Spectrum ID: 17_Gamma_20192434

Sample Description: 452567_Gamma_160-36526-A-5-B
Detector: Detector #17
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-5-B

Decay to Time: 12/25/2019 09:02 Live Time: 1800 sec
Acquisition Time: 12/25/2019 09:02:47 Real Time: 1807 sec
Analysis Time: 12/25/2019 09:33 Dead Time: 0.36 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 17_Soil_TunaCan.Clb
Efficiency Cal Desc: 17_TunaCan_90099_032612
Efficiency Cal Date: 4/12/2012 09:28
Energy Cal Date: 2/29/2012 10:33
Library: Client_Long_Rev15.lib
Bkgd Correction File: 17_2019-12-07_1454.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	-3.219E+00	105.8	3.405E+00	3.409E+00	1.154E+01
NA-22	-1.689E-01	280.6	4.739E-01	4.739E-01	1.695E+00
K-40	1.508E+02	6.8	1.031E+01	1.288E+01	1.009E+01
Sc-46	4.004E-02	1520.3	6.088E-01	6.088E-01	2.131E+00
CR-51	-8.571E-02	3695.6	3.167E+00	3.167E+00	1.333E+01
MN-54	8.553E-01	41.7	3.569E-01	3.596E-01	7.764E-01
FE-59	1.565E+00	40.7	6.368E-01	6.416E-01	1.347E+00
Co-56	1.223E+00	39.6	4.846E-01	4.887E-01	1.525E+00
CO-57	-1.013E-01	379.4	3.844E-01	3.845E-01	1.301E+00
CO-58	-4.505E-02	1063.0	4.789E-01	4.789E-01	1.693E+00
CO-60	-5.636E-02	1663.9	9.378E-01	9.378E-01	1.184E+00
ZN-65	0.000E+00	1.#INF	2.257E-01	2.257E-01	6.185E+00
NB-94	-3.016E-01	186.9	5.637E-01	5.640E-01	1.373E+00
ZR-95	1.609E+00	30.3	4.875E-01	4.946E-01	9.765E-01
NB-95	-9.517E-01	75.9	7.219E-01	7.236E-01	2.400E+00
RU-103	-5.309E-01	98.1	5.210E-01	5.217E-01	1.291E+00
RH-106	-5.288E+00	228.1	1.206E+01	1.206E+01	4.047E+01
AG-108M	1.179E-01	335.9	3.962E-01	3.962E-01	1.065E+00
AG-110M	9.264E-02	246.0	2.279E-01	2.280E-01	2.904E+00
SN-113	-6.946E-01	89.1	6.188E-01	6.198E-01	2.190E+00
SB-124	-3.903E-01	244.8	9.554E-01	9.557E-01	4.019E+00
SB-125	1.133E+00	99.3	1.125E+00	1.127E+00	2.943E+00
I-131	1.491E-01	307.6	4.586E-01	4.587E-01	1.215E+00
Gd-153	2.931E-01	373.2	1.094E+00	1.094E+00	2.967E+00
Ga-68	3.354E+01	47.5	1.595E+01	1.606E+01	3.442E+01
Tc-99m	1.523E-01	293.1	4.464E-01	4.465E-01	1.504E+00
BA-133	-7.161E-01	199.0	1.425E+00	1.426E+00	4.771E+00
CS-134	4.044E-01	114.5	4.630E-01	4.635E-01	1.516E+00
CS-137	-2.636E-01	201.0	5.299E-01	5.301E-01	1.831E+00
CE-139	-2.798E-01	154.3	4.318E-01	4.326E-01	1.452E+00
Ba-140	2.026E+00	74.1	1.502E+00	1.505E+00	3.460E+00
La-140	-1.122E-01	145.2	1.629E-01	1.630E-01	1.969E+00
CE-141	-9.917E-02	803.0	7.964E-01	7.964E-01	2.695E+00

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CE-144	-2.043E-01	1310.5	2.677E+00	2.677E+00	1.219E+01
PM-144	1.347E-01	364.7	4.912E-01	4.913E-01	1.218E+00
EU-152	1.254E+00	53.0	6.644E-01	6.677E-01	3.755E+00
EU-154	3.597E-01	78.7	2.830E-01	2.836E-01	2.800E+00
EU-155	1.140E+00	120.1	1.369E+00	1.370E+00	4.590E+00
HF-181	1.960E-01	250.5	4.909E-01	4.910E-01	1.695E+00
Ta-182	1.473E+00	86.6	1.276E+00	1.278E+00	8.576E+00
Hg-203	-2.012E-02	2538.6	5.108E-01	5.108E-01	1.750E+00
TL-208	4.174E+00	14.0	5.828E-01	6.217E-01	1.008E+00
PM-146	9.824E-01	52.4	5.143E-01	5.168E-01	1.518E+00
Y-88	9.344E-01	30.2	2.817E-01	2.868E-01	6.260E-01
Cd-113m	-4.979E+03	122.0	6.075E+03	6.083E+03	2.046E+04
Cd-109	0.000E+00	1.#INF	1.510E+01	1.510E+01	5.033E+01
Cf-251	-2.970E-02	6612.9	1.964E+00	1.964E+00	5.383E+00
Cf-249	3.426E-01	167.0	5.721E-01	5.724E-01	1.661E+00
Sn-126	-4.826E+00	109.9	5.304E+00	5.310E+00	1.769E+01
PB-210	2.738E+01	42.6	1.166E+01	1.177E+01	3.155E+01
PB-212	9.665E+00	8.4	8.105E-01	1.024E+00	1.727E+00
PB-214	3.077E+01	5.8	1.787E+00	2.398E+00	2.654E+00
BI-207	-2.654E-01	169.9	4.509E-01	4.511E-01	2.105E+00
BI-212	2.870E+00	226.3	6.494E+00	6.496E+00	2.247E+01
U-235	3.963E+00	71.4	2.830E+00	2.837E+00	1.166E+01
BI-214	2.884E+01	5.6	1.611E+00	2.200E+00	1.683E+00
BI-210M	6.248E-01	104.7	6.540E-01	6.550E-01	2.198E+00
AC-228	1.288E+01	13.1	1.683E+00	1.807E+00	3.854E+00
TH-227	-2.231E+00	246.2	5.494E+00	5.495E+00	1.499E+01
TH-229	-8.881E-01	251.0	2.229E+00	2.230E+00	2.166E+01
TH-234	1.912E+01	25.3	4.843E+00	4.959E+00	1.547E+01
PA-231	0.000E+00	1.#INF	3.229E+00	3.229E+00	8.726E+01
PA-233	-1.054E+00	81.2	8.562E-01	8.581E-01	7.233E+00
PA-234	-1.873E+00	87.5	1.639E+00	1.642E+00	8.062E+00
PA-234M	1.124E+02	34.5	3.873E+01	3.914E+01	8.652E+01
AM-241	2.617E-01	507.0	1.327E+00	1.327E+00	3.800E+00
Np-237	0.000E+00	1.#INF	4.747E+00	4.747E+00	1.582E+01
Ir-192	2.534E-01	196.1	4.968E-01	4.970E-01	1.493E+00
Cs-136	3.070E-01	82.2	2.524E-01	2.530E-01	9.093E-01
Np-239	9.626E-01	116.5	1.121E+00	1.123E+00	3.768E+00
Nd-147	2.520E-01	1242.3	3.131E+00	3.131E+00	8.110E+00
TL-210	0.000E+00	1.#INF	1.901E-01	1.901E-01	1.409E+00
Kr-85	-9.843E+01	150.3	1.479E+02	1.480E+02	4.994E+02
Total	4.555E+02				

Analyst: Caleb Quinn

Sample description
452567_Gamma_160-36526-A-5-B

Spectrum Filename: C:\User\SPC\Det17\17_Gamma_20192434.An1

Acquisition information
Start time: 12/25/2019 9:02:47 AM
Live time: 1800
Real time: 1807
Dead time: 0.36 %
Detector ID: 17

Detector system
Ge17 SN/11080671

Calibration
Filename: 17_Soil_TunaCan.Clb
17_TunaCan_90099_032612

Energy Calibration
Created: 2/29/2012 10:33:23 AM
Zero offset: 0.108 keV
Gain: 0.250 keV/channel
Quadratic: -2.584E-08 keV/channel^2

Efficiency Calibration
Created: 4/12/2012 9:28:42 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.91 %
Log(Eff): -5.264190E-01 + (-4.024164E-01*Log(E)) + (-2.604461E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.00 %
Log(Eff): -2.343889E+01 + (8.582715E+00*Log(E)) + (-9.075430E-01*Log(E)^2)

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.12keV)
Stop channel: 8000 (1999.54keV)
Peak rejection level: 1000.000%
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

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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	12/25/2019 9:02:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	17_2019-12-07_1454.PBC 12/7/2019 2:54:46 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 28 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.2023

***** 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
46.54	44.	42.59	0.80	2.100E-02	46.54	4.250	PBC<MDA	PB210
59.54	5.	506.95	0.79	2.957E-02	59.54	35.900	PBC<MDA	AM241
63.45	99.	20.06	0.96	3.173E-02	63.29	3.810	3.456E+01	TH234
74.85	165.	13.82	0.80	3.681E-02				
77.22	262.	9.54	0.80	3.764E-02				
87.22	116.	16.63	0.81	4.044E-02	86.49	13.100	1.225E+01	Np237
					86.54	30.700	5.225E+00	EU155
					86.94	9.040	1.771E+01	Sn126
					87.57	37.500	4.254E+00	Sn126
90.03	61.	28.40	0.82	4.101E-02				
92.64	47.	42.32	0.82	4.144E-02	92.59	5.584	PBC<MDA	TH234
93.50	24.	153.25	0.82	4.156E-02	93.35	5.561	PBC<MDA	AC228
97.50	7.	373.16	0.82	4.213E-02	97.50	30.000	PBC<MDA	Gd153
99.50	17.	136.21	0.82	4.234E-02	99.50	15.000	PBC<MDA	Np239
104.80	19.	120.12	0.83	4.278E-02	105.31	21.200	PBC<MDA	EU155
106.13	17.	116.48	0.83	4.282E-02	106.13	22.700	PBC<MDA	Np239
140.65	10.	293.07	0.86	4.119E-02	140.51	89.300	PBC<MDA	Tc99m
143.74	36.	42.63	0.37	4.080E-02	143.79	10.960	4.432E+00	U235
162.66	19.	111.97	0.88	3.813E-02	162.66	6.220	PBC<MDA	Ba140
163.38	17.	129.50	0.88	3.802E-02	163.38	5.080	PBC<MDA	U235
186.12	174.	14.96	1.50	3.545E-02	185.72	54.000	5.059E+00	U235
205.33	17.	111.47	0.92	3.312E-02	205.33	5.010	PBC<MDA	U235

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
210.85	4.	482.47	0.93	3.253E-02	210.85	2.990	PBC<MDA	TH229
227.00	18.	101.79	0.94	3.093E-02	227.00	6.300	PBC<MDA	Cf251
238.50	225.	8.39	0.95	2.990E-02	238.63	43.300	9.664E+00	PB212
241.70	108.	15.63	0.96	2.963E-02	242.00	7.430	2.717E+01	PB214
265.83	16.	104.66	0.98	2.774E-02	265.83	50.000	PBC<MDA	BI210M
295.10	245.	9.06	1.10	2.580E-02	295.09	19.300	2.732E+01	PB214
					296.00	79.000	6.688E+00	TL210
308.44	17.	196.07	1.02	2.501E-02	308.44	31.750	PBC<MDA	Ir192
328.76	10.	157.78	1.04	2.391E-02	328.76	20.300	PBC<MDA	La140
333.44	6.	229.72	1.04	2.368E-02	333.44	15.510	PBC<MDA	Cf249
351.89	475.	5.81	1.03	2.279E-02	351.93	37.600	3.077E+01	PB214
364.48	5.	307.59	1.07	2.223E-02	364.48	81.700	PBC<MDA	I131
387.95	5.	242.49	1.09	2.127E-02	387.95	66.000	PBC<MDA	Cf249
427.88	12.	99.29	1.13	1.983E-02	427.88	29.600	PBC<MDA	SB125
433.94	4.	335.88	1.13	1.963E-02	433.94	90.480	PBC<MDA	AG108M
453.88	7.	201.17	1.15	1.900E-02	453.88	65.000	PBC<MDA	PM146
482.00	5.	250.49	1.18	1.820E-02	482.00	80.500	PBC<MDA	HF181
510.94	77.	22.73	1.02	1.744E-02	511.86	20.000	1.223E+01	RH106
537.26	10.	97.09	1.22	1.682E-02	537.26	24.390	PBC<MDA	Ba140
569.32	5.	166.13	1.25	1.612E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	2.102E+00	PA234
					569.70	97.740	1.764E-01	BI207
583.28	101.	13.96	1.60	1.584E-02	583.02	84.500	4.174E+00	TL208
609.27	367.	5.59	1.47	1.533E-02	609.31	46.090	2.884E+01	BI214
					610.30	5.750	2.315E+02	RU103
657.76	4.	246.03	1.33	1.449E-02	657.76	94.640	PBC<MDA	AG110M
696.54	3.	364.69	1.36	1.389E-02	696.54	99.000	PBC<MDA	PM144
722.79	1.	902.08	1.39	1.351E-02	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	6.036E-02	AG108M
					723.36	20.220	2.713E-01	EU154
727.17	5.	226.27	1.39	1.345E-02	727.17	7.550	PBC<MDA	BI212
735.72	16.	52.35	1.40	1.333E-02	735.72	22.500	PBC<MDA	PM146
756.73	21.	30.30	1.41	1.306E-02	756.73	54.460	1.609E+00	ZR95
766.32	8.	158.02	1.42	1.293E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	PBC<MDA	PA234M
778.92	9.	91.77	1.43	1.278E-02	778.92	12.940	PBC<MDA	EU152
795.87	5.	157.62	1.45	1.257E-02	795.87	85.530	PBC<MDA	CS134
818.50	7.	82.24	1.47	1.231E-02	818.50	100.000	PBC<MDA	Cs136
834.85	19.	41.73	1.48	1.213E-02	834.85	99.980	8.553E-01	MN54
860.42	21.	36.23	2.36	1.185E-02	860.56	12.420	7.736E+00	TL208
873.23	9.	78.68	1.51	1.172E-02	873.23	12.270	PBC<MDA	EU154
911.07	71.	17.47	1.55	1.135E-02	911.07	29.000	1.204E+01	AC228
964.11	12.	74.90	1.59	1.088E-02	964.11	14.605	PBC<MDA	EU152
968.87	49.	19.43	1.59	1.083E-02	968.97	17.460	1.428E+01	AC228
1000.41	17.	34.47	2.68	1.057E-02	1001.00	0.837	1.090E+02	PA234M
1004.77	3.	368.27	1.62	1.054E-02	1004.77	18.010	PBC<MDA	EU154
1037.84	8.	92.58	1.65	1.028E-02	1037.84	14.130	PBC<MDA	Co56
1048.07	4.	194.73	1.66	1.021E-02	1048.07	80.000	PBC<MDA	Cs136

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
1077.40	17.	47.55	1.68	9.992E-03	1077.40	3.300	PBC<MDA	Ga68
1099.25	16.	40.69	1.70	9.840E-03	1099.25	56.500	1.565E+00	FE59
1119.95	97.	12.75	1.30	9.697E-03	1120.29	15.100	3.687E+01	BI214
					1120.55	99.987	PBC<MDA	Sc46
1121.42	8.	181.08	1.72	9.691E-03	1121.30	34.900	PBC<MDA	Ta182
1189.05	9.	86.63	1.77	9.263E-03	1189.05	16.200	PBC<MDA	Ta182
1221.41	2.	507.29	1.80	9.073E-03	1221.41	27.000	PBC<MDA	Ta182
1238.28	36.	39.63	1.81	8.977E-03	1238.28	66.070	3.371E+00	Co56
1408.00	22.	21.32	1.94	8.125E-03	1408.00	21.005	7.162E+00	EU152
1460.82	229.	6.83	1.47	7.894E-03	1460.83	10.670	1.508E+02	K40
1764.25	64.	13.22	1.43	6.804E-03	1764.49	15.400	3.409E+01	BI214
1836.06	11.	30.15	2.26	6.593E-03	1836.06	99.200	9.344E-01	Y88

********** 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	
298.80	74.83	201.	165.	4.472E+03	14.47	0.802	-	D
308.28	77.20	178.	266.	7.060E+03	9.39	0.804	-	D
360.06	90.12	116.	54.	1.321E+03	31.20	0.816	-	D
2042.65	510.94	70.	77.	4.396E+03	22.73	1.016	-	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: Client_Long_Rev15.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	185.61	46.54	106.	44.	0.024	42.59	0.799s
TH-227	200.03	50.14	171.	-20.	-0.011	110.06	0.778s
AM-241	237.59	59.54	225.	5.	0.003	506.95	0.787s
TH-234	252.59	63.29	135.	66.	0.037	27.84	0.791D
Sn-126	256.56	64.28	430.	-27.	-0.015	109.91	0.792s
BA-133	323.36	80.99	253.	-20.	-0.011	92.65	0.807s
Np-237	345.35	86.49	1001.	0.	0.000	161.23	0.813A
EU-155	345.56	86.54	973.	16.	0.009	131.34	0.813D
Sn-126	347.15	86.94	167.	57.	0.032	31.62	0.813D
Sn-126	349.67	87.57	888.	-28.	-0.016	151.75	0.814D
Cd-109	351.55	88.04	860.	0.	0.000	149.29	0.814A
Nd-147	363.79	91.10	832.	-15.	-0.008	270.33	0.817s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
TH-234	369.74	92.59	176.	47.	0.026	42.32	0.818D
AC-228	372.78	93.35	682.	24.	0.014	153.25	0.819
Gd-153	389.37	97.50	193.	7.	0.004	373.16	0.823s
Np-239	397.37	99.50	249.	17.	0.009	136.21	0.825
Gd-153	412.16	103.20	270.	-22.	-0.012	107.76	0.828s
Np-239	414.16	103.70	264.	0.	0.000	1000.00	0.829s
EU-155	420.61	105.31	240.	19.	0.010	120.12	0.830
Np-239	423.88	106.13	184.	17.	0.009	116.48	0.831
EU-152	486.45	121.78	294.	-23.	-0.013	106.00	0.846s
CO-57	487.57	122.06	317.	-7.	-0.004	379.41	0.846s
EU-154	491.73	123.10	333.	-25.	-0.014	106.76	0.847s
PA-234	524.49	131.29	530.	-26.	-0.014	87.49	0.855s
HF-181	531.41	133.02	556.	-26.	-0.014	131.76	0.856
CO-57	545.20	136.47	510.	0.	0.000	1000.00	0.859s
Tc-99m	561.34	140.51	406.	10.	0.005	293.07	0.863s
U-235	574.43	143.79	382.	22.	0.012	129.20	0.866s
CE-141	581.05	145.44	391.	-3.	-0.002	803.05	0.868s
Ba-140	649.90	162.66	215.	19.	0.011	111.97	0.884s
U-235	652.78	163.38	236.	17.	0.009	129.50	0.885
CE-139	662.67	165.85	274.	-15.	-0.009	154.33	0.887s
U-235	743.68	186.12	117.	174.	0.097	14.96	1.500s
TH-229	773.25	193.51	147.	-9.	-0.005	250.97	0.913s
U-235	820.52	205.33	111.	17.	0.010	111.47	0.924
TH-229	842.58	210.85	137.	4.	0.002	482.47	0.929s
Cf-251	907.16	227.00	103.	18.	0.010	101.79	0.944s
TH-227	943.03	235.97	664.	-6.	-0.003	589.24	0.952s
PB-212	953.67	238.63	65.	225.	0.125	8.39	0.954D
PB-214	967.13	242.00	91.	108.	0.060	15.77	0.957D
TH-227	1024.08	256.24	120.	-8.	-0.004	246.22	0.971s
Cd-113m	1053.91	263.70	160.	-15.	-0.008	122.02	0.978s
BI-210M	1062.44	265.83	125.	16.	0.009	104.66	0.979s
TL-208	1108.23	277.28	196.	-21.	-0.012	95.92	0.990
I-131	1136.28	284.30	118.	-20.	-0.011	80.99	0.996
PB-214	1179.46	295.10	63.	245.	0.136	9.06	1.105
TL-210	1183.07	296.00	643.	-17.	-0.010	210.51	1.007s
PB-212	1199.19	300.03	588.	-11.	-0.006	125.57	1.011s
PA-231	1199.35	300.07	577.	0.	0.000	1000.00	1.011s
PA-233	1199.79	300.18	577.	0.	0.000	1000.00	1.011s
PA-231	1209.66	302.65	577.	0.	0.000	1000.00	1.013s
BA-133	1210.47	302.85	577.	0.	0.000	1000.00	1.013s
Ba-140	1218.46	304.85	577.	0.	0.000	1000.00	1.015s
BI-210M	1218.64	304.90	577.	0.	0.000	1000.00	1.015s
Ir-192	1232.82	308.44	522.	17.	0.009	196.07	1.019
PA-233	1247.10	312.01	594.	-17.	-0.009	81.25	1.022s
Ir-192	1265.01	316.49	138.	-3.	-0.002	556.78	1.026
La-140	1314.07	328.76	62.	10.	0.005	157.78	1.037s
Cf-249	1332.79	333.44	59.	6.	0.004	229.72	1.041s
Cs-136	1361.30	340.57	204.	0.	0.000	1000.00	1.048s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
EU-152	1376.16	344.29	242.	-23.	-0.013	99.90	1.051s
HF-181	1382.33	345.83	303.	-23.	-0.013	109.80	1.053
PB-214	1406.58	351.89	67.	475.	0.264	5.81	1.029
BA-133	1423.00	356.00	638.	-18.	-0.010	199.04	1.062
I-131	1456.93	364.48	63.	5.	0.003	307.59	1.070s
Cf-249	1550.77	387.95	71.	5.	0.003	242.49	1.091s
SN-113	1565.73	391.69	118.	-17.	-0.009	89.09	1.094s
SB-125	1710.44	427.88	37.	12.	0.007	99.29	1.127s
AG-108M	1734.69	433.94	45.	4.	0.002	335.88	1.132s
PM-146	1814.44	453.88	44.	7.	0.004	201.17	1.150s
SB-125	1852.38	463.37	113.	-17.	-0.009	93.95	1.158s
Ir-192	1871.15	468.06	160.	-18.	-0.010	101.71	1.163s
BE-7	1909.29	477.59	64.	-11.	-0.006	105.77	1.171s
HF-181	1926.89	482.00	81.	5.	0.003	250.49	1.175s
RU-103	1987.11	497.05	56.	-15.	-0.009	98.14	1.188s
RH-106	2046.35	511.86	207.	-26.	-0.014	81.97	2.452s
Kr-85	2054.81	513.98	191.	-13.	-0.007	150.30	1.203s
Ba-140	2147.92	537.26	24.	10.	0.006	97.09	1.224s
CS-134	2251.82	563.24	44.	-2.	-0.001	653.20	1.247s
CS-134	2276.15	569.32	32.	5.	0.003	166.13	1.252s
PA-234	2276.75	569.47	42.	-2.	-0.001	374.17	1.253s
BI-207	2277.67	569.70	50.	-8.	-0.005	127.55	1.253s
TL-208	2331.98	583.28	21.	101.	0.056	13.96	1.605s
SB-125	2400.86	600.50	542.	-13.	-0.007	248.23	1.280
SB-124	2409.78	602.73	529.	-13.	-0.007	244.82	1.282s
CS-134	2417.70	604.71	515.	-9.	-0.005	341.24	1.284s
BI-214	2435.93	609.27	16.	367.	0.204	5.59	1.468s
RU-103	2440.05	610.30	506.	0.	0.000	1000.00	1.288s
AG-108M	2455.98	614.28	506.	0.	0.000	1000.00	1.292s
PM-144	2471.11	618.06	506.	0.	0.000	1000.00	1.295s
RH-106	2486.52	621.92	523.	-14.	-0.008	228.06	1.299s
SB-125	2542.41	635.89	48.	-2.	-0.001	426.42	1.311s
I-131	2546.75	636.97	59.	-3.	-0.001	439.70	1.312s
AG-110M	2629.90	657.76	55.	4.	0.002	246.03	1.330s
CS-137	2645.49	661.66	66.	-6.	-0.003	201.02	1.333
PM-144	2785.03	696.54	35.	3.	0.002	364.69	1.363s
NB-94	2809.38	702.63	43.	-7.	-0.004	186.92	1.368s
SB-124	2890.01	722.79	72.	1.	0.001	902.08	1.386s
AG-108M	2890.61	722.94	73.	0.	0.000	1000.00	1.386s
EU-154	2892.30	723.36	73.	0.	0.000	1000.00	1.386s
BI-212	2907.54	727.17	68.	5.	0.003	226.27	1.390s
PM-146	2941.74	735.72	13.	16.	0.009	52.35	1.397s
PM-146	2987.51	747.16	56.	-17.	-0.010	91.59	1.407s
ZR-95	3025.79	756.73	4.	21.	0.011	30.30	1.415s
AG-110M	3054.64	763.94	94.	-20.	-0.011	70.91	1.421s
NB-95	3062.03	765.79	130.	-22.	-0.012	75.85	1.423s
PA-234M	3064.52	766.41	82.	8.	0.005	158.02	1.423s
EU-152	3114.56	778.92	13.	9.	0.005	91.77	1.434s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
BI-212	3140.56	785.42	39.	-12.	-0.007	110.08	1.440s
CS-134	3182.36	795.87	33.	5.	0.003	157.62	1.448s
TL-210	3197.29	799.60	38.	0.	0.000	1000.00	1.451s
CS-134	3206.69	801.95	48.	-8.	-0.004	129.87	1.454s
La-140	3261.97	815.77	57.	0.	0.000	1000.00	1.465s
Cs-136	3272.90	818.50	14.	7.	0.004	82.24	1.467s
MN-54	3338.30	834.85	9.	19.	0.010	41.73	1.481s
Co-56	3385.99	846.77	42.	-10.	-0.006	141.07	1.491s
TL-208	3440.60	860.42	7.	21.	0.011	36.23	2.362s
NB-94	3483.32	871.10	40.	-3.	-0.001	339.58	1.512s
EU-154	3491.85	873.23	21.	9.	0.005	78.68	1.514s
PA-234	3521.06	880.53	72.	-6.	-0.004	194.02	1.520s
PA-234	3531.90	883.24	79.	0.	0.000	1000.00	1.522s
Y-88	3591.11	898.04	33.	-3.	-0.001	458.77	1.534
AC-228	3643.24	911.07	19.	71.	0.040	17.47	1.545
AG-110M	3748.95	937.49	75.	-22.	-0.012	86.76	1.567s
PA-234	3783.07	946.02	42.	-16.	-0.009	89.49	1.574s
EU-152	3855.45	964.11	37.	12.	0.007	74.90	1.589s
AC-228	3874.90	968.97	20.	49.	0.027	19.43	1.593s
EU-154	3984.36	996.33	71.	-13.	-0.007	98.72	1.616s
PA-234M	4000.68	1000.41	6.	17.	0.010	34.47	2.681s
EU-154	4018.15	1004.77	49.	3.	0.002	368.27	1.623
Co-56	4150.45	1037.84	10.	8.	0.005	92.58	1.650s
Cs-136	4191.39	1048.07	31.	4.	0.002	194.73	1.658s
RH-106	4200.55	1050.36	44.	-5.	-0.003	187.15	1.661s
BI-207	4253.77	1063.66	31.	-4.	-0.002	169.88	1.671s
Ga-68	4308.74	1077.40	10.	17.	0.009	47.55	1.683s
FE-59	4396.18	1099.25	5.	16.	0.009	40.69	1.700s
EU-152	4447.49	1112.07	135.	-10.	-0.006	167.33	1.711s
ZN-65	4461.38	1115.55	125.	0.	0.000	1000.00	1.713s
BI-214	4479.01	1119.95	10.	97.	0.054	12.75	1.299s
Sc-46	4481.41	1120.55	125.	0.	0.000	1000.00	1.717s
Ta-182	4484.41	1121.30	113.	8.	0.005	181.08	1.718
CO-60	4692.24	1173.24	35.	-1.	-0.001	859.44	1.760s
Ta-182	4755.52	1189.05	10.	9.	0.005	86.63	1.772
Ta-182	4885.02	1221.41	27.	2.	0.001	507.29	1.798
Co-56	4952.53	1238.28	33.	36.	0.020	39.63	1.812s
NA-22	5097.60	1274.53	27.	-3.	-0.001	280.62	1.840s
EU-154	5097.64	1274.54	29.	0.	0.000	1000.00	1.840s
FE-59	5165.90	1291.60	32.	-15.	-0.009	93.09	1.854s
TL-210	5251.56	1313.00	37.	-17.	-0.010	84.20	1.870s
AG-110M	5536.92	1384.30	21.	-7.	-0.004	191.83	1.926s
EU-152	5631.79	1408.00	0.	22.	0.012	21.32	1.944
K-40	5843.19	1460.82	7.	229.	0.127	6.83	1.471s
La-140	6385.15	1596.21	23.	-5.	-0.003	243.70	2.087s
SB-124	6764.55	1690.98	12.	-6.	-0.003	145.30	2.157s
BI-214	7057.90	1764.25	4.	64.	0.036	13.22	1.430s
Co-56	7086.31	1771.35	79.	-5.	-0.003	272.74	2.216s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Y-88	7345.39	1836.06	0.	11.	0.006	30.15	2.262s

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
BE-7	C	-3.2195E+00				5.31E+01	
			477.60	-3.219E+00	(	1.154E+01 1.06E+02 1.05E+01	G
NA-22	C	-1.6886E-01				9.50E+02	
			1274.53	-1.689E-01	?(	1.695E+00 2.81E+02 9.99E+01	G
K-40	N	1.5084E+02				4.66E+11	
			1460.83	1.508E+02	(P	1.009E+01 6.83E+00 1.07E+01	G
Sc-46	F	4.0043E-02				8.38E+01	
			889.28	4.004E-02	%(	2.131E+00 1.52E+03 1.00E+02	G
			1120.55	0.000E+00	-	3.141E+00 1.00E+03 1.00E+02	G
CR-51	F	-8.5709E-02				2.77E+01	
			320.08	-8.571E-02	&(P	1.333E+01 3.70E+03 9.94E+00	G
MN-54	C	8.5526E-01				3.12E+02	
			834.85	8.553E-01	?(	7.764E-01 4.17E+01 1.00E+02	G
FE-59	F	1.5649E+00				4.45E+01	
			1099.25	1.565E+00	?(P	1.347E+00 4.07E+01 5.65E+01	G
			1291.60	-2.273E+00	- P	4.324E+00 9.31E+01 4.32E+01	G
Co-56	C	1.2229E+00				7.73E+01	
			846.77	-4.633E-01	(	1.525E+00 1.41E+02 9.99E+01	G
			1238.28	3.371E+00	*(P	2.762E+00 3.96E+01 6.61E+01	G
			1037.84	3.103E+00	?(	6.671E+00 9.26E+01 1.41E+01	G
			1771.35	-2.469E+00	+	2.330E+01 2.73E+02 1.55E+01	A
CO-57	C	-1.0132E-01				2.72E+02	
			122.06	-1.013E-01	(	1.301E+00 3.79E+02 8.56E+01	G
			136.47	0.000E+00	&	1.348E+01 1.00E+03 1.07E+01	G
CO-58	C	-4.5055E-02				7.09E+01	
			810.78	-4.505E-02	%(	1.693E+00 1.06E+03 9.95E+01	G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

CO-60    F  -5.6359E-02                                     1.93E+03
                         1332.50-5.636E-02 %(P 1.184E+00 1.66E+03 1.00E+02 G
                         1173.24-8.596E-02 & P 1.810E+00 8.59E+02 9.99E+01 G

NB-94    I  -3.0159E-01                                     7.41E+06
                          702.63-3.016E-01  (  1.373E+00 1.87E+02 9.79E+01 G
                          871.10-1.263E-01 &   1.518E+00 3.40E+02 9.99E+01 G

ZR-95    I   1.6087E+00                                     6.40E+01
                          756.73 1.609E+00 &(P 9.765E-01 3.03E+01 5.45E+01 G
                          724.20-5.226E-02 % P 3.981E+00 3.66E+03 4.42E+01 G

NB-95    I  -9.5173E-01                                     6.40E+01
                          765.79-9.517E-01 ?(  2.400E+00 7.59E+01 9.98E+01 G

RU-103   I  -5.3091E-01                                     3.93E+01
                          497.05-5.309E-01  (  1.291E+00 9.81E+01 9.09E+01 G
                          610.30 0.000E+00 +   6.784E+01 1.00E+03 5.75E+00 GA

RH-106   I  -5.2882E+00                                     3.74E+02
                          621.92-5.288E+00 &(  4.047E+01 2.28E+02 9.93E+00 G
                         1050.36-1.806E+01 +   1.177E+02 1.87E+02 1.56E+00 G
                          511.86-4.077E+00 +   1.112E+01 8.20E+01 2.00E+01 GA

AG-108M  C   1.1794E-01                                     1.53E+05
                          433.94 1.179E-01 ?(P 1.065E+00 3.36E+02 9.05E+01 G
                          722.94 0.000E+00 -   1.925E+00 1.00E+03 9.08E+01 G
                          614.28 0.000E+00 -   4.362E+00 1.00E+03 8.98E+01 G

AG-110M  F   9.2637E-02                                     2.50E+02
                          884.68-1.532E-02 %(P 2.904E+00 3.21E+03 7.27E+01 G
                          657.76 1.755E-01 ?(  1.506E+00 2.46E+02 9.46E+01 G
                          937.49-3.173E+00 +   6.254E+00 8.68E+01 3.44E+01 G
                         1384.30-2.075E+00 + P 6.751E+00 1.92E+02 2.43E+01 G
                          763.94-3.919E+00 +   9.220E+00 7.09E+01 2.23E+01 G

SN-113   F  -6.9459E-01                                     1.15E+02
                          391.69-6.946E-01 ?(P 2.190E+00 8.91E+01 6.40E+01 G

SB-124   F  -3.9026E-01                                     6.02E+01
                          602.73-4.890E-01 &(  4.019E+00 2.45E+02 9.83E+01 G
                         1690.98-9.912E-01 +   3.114E+00 1.45E+02 4.78E+01 G
                          722.79 5.072E-01 ?(  1.604E+01 9.02E+02 1.08E+01 G

SB-125   I   1.1332E+00                                     1.01E+03
                          427.88 1.133E+00 &(P 2.943E+00 9.93E+01 2.96E+01 G
                          600.50-2.679E+00 +   2.232E+01 2.48E+02 1.79E+01 G
```

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			635.89	-7.714E-01	-	1.161E+01	4.26E+02	1.13E+01 G
			463.37	-4.705E+00	+	1.483E+01	9.39E+01	1.05E+01 G
I-131	I	1.4911E-01					8.02E+00	
			364.48	1.491E-01	?(P	1.215E+00	3.08E+02	8.17E+01 G
			284.30	-6.913E+00	+ P	1.822E+01	8.10E+01	6.14E+00 G
			636.97	-1.305E+00	+	2.013E+01	4.40E+02	7.17E+00 G
Gd-153	F	2.9306E-01					2.42E+02	
			97.50	2.931E-01	(	2.967E+00	3.73E+02	3.00E+01 G
			103.20	-1.314E+00	+	4.737E+00	1.08E+02	2.18E+01 G
Ga-68	C	3.3544E+01					4.71E-02	
			1077.40	3.354E+01	?(	3.442E+01	4.75E+01	3.30E+00 G
Tc-99m	I	1.5233E-01					2.51E-01	
			140.51	1.523E-01	&(	1.504E+00	2.93E+02	8.93E+01 G
BA-133	F	-7.1606E-01					3.85E+03	
			356.00	-7.161E-01	&(	4.771E+00	1.99E+02	6.20E+01 G
			302.85	0.000E+00	+	1.372E+01	1.00E+03	1.83E+01 G
			383.84	2.900E-01	%	1.678E+01	1.68E+03	8.94E+00 GA
			80.99	-8.370E-01	+ P	3.226E+00	9.26E+01	3.41E+01 GA
CS-134	I	4.0436E-01					7.54E+02	
			795.87	2.756E-01	(	1.516E+00	1.58E+02	8.55E+01 G
			604.71	-3.489E-01	+	4.005E+00	3.41E+02	9.76E+01 G
			569.32	1.121E+00	?(	6.515E+00	1.66E+02	1.54E+01 G
			801.95	-4.006E+00	+	1.787E+01	1.30E+02	8.69E+00 G
			563.24	-8.192E-01	+	1.377E+01	6.53E+02	8.35E+00 G
CS-137	I	-2.6361E-01					1.10E+04	
			661.66	-2.636E-01	?(	1.831E+00	2.01E+02	8.52E+01 G
CE-139	F	-2.7976E-01					1.38E+02	
			165.85	-2.798E-01	?(	1.452E+00	1.54E+02	7.99E+01 G
Ba-140	I	2.0265E+00					1.28E+01	
			537.26	1.412E+00	?(	3.460E+00	9.71E+01	2.44E+01 G
			162.66	4.436E+00	(	1.665E+01	1.12E+02	6.22E+00 G
			304.85	0.000E+00	-	5.888E+01	1.00E+03	4.29E+00 G
La-140	I	-1.1224E-01					1.28E+01	
			1596.21	-3.690E-01	?(	1.969E+00	2.44E+02	9.54E+01 G
			487.02	-2.682E-02	% P	2.283E+00	3.36E+03	4.55E+01 G
			328.76	1.095E+00	?(	4.521E+00	1.58E+02	2.03E+01 G
			815.77	0.000E+00	+	7.328E+00	1.00E+03	2.33E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CE-141	I	-9.9173E-02					3.25E+01	
			145.44	-9.917E-02	?(	2.695E+00	8.03E+02	4.82E+01 G
CE-144	I	-2.0429E-01					2.85E+02	
			133.54	-2.043E-01	%(P	1.219E+01	1.31E+03	1.11E+01 G
PM-144	C	1.3469E-01					3.63E+02	
			696.54	1.347E-01	?(	1.218E+00	3.65E+02	9.90E+01 G
			618.06	0.000E+00	-	3.973E+00	1.00E+03	9.91E+01 G
EU-152	F	1.2539E+00					4.94E+03	
			121.78	-1.060E+00	?(	3.755E+00	1.06E+02	2.86E+01 G
			344.29	-2.040E+00	+	6.809E+00	9.99E+01	2.65E+01 G
			1112.07	-4.175E+00	+	2.374E+01	1.67E+02	1.36E+01 G
			778.92	2.902E+00	?(	6.557E+00	9.18E+01	1.29E+01 G
			964.11	4.322E+00	?(	1.082E+01	7.49E+01	1.46E+01 G
			244.69	3.327E-01	&	3.024E+01	2.70E+03	7.58E+00 G
			1408.00	7.162E+00	?	2.399E+00	2.13E+01	2.10E+01 GA
EU-154	I	3.5969E-01					3.14E+03	
			123.10	-7.855E-01	&(	2.800E+00	1.07E+02	4.08E+01 G
			1274.54	0.000E+00	+	5.026E+00	1.00E+03	3.52E+01 G
			723.36	0.000E+00	+	8.653E+00	1.00E+03	2.02E+01 G
			873.23	3.521E+00	?(	9.327E+00	7.87E+01	1.23E+01 G
			1004.77	7.998E-01	?(	1.037E+01	3.68E+02	1.80E+01 G
			996.33	-6.209E+00	+	2.069E+01	9.87E+01	1.06E+01 G
EU-155	I	1.1395E+00					1.81E+03	
			105.31	1.140E+00	&(P	4.590E+00	1.20E+02	2.12E+01 G
			86.54	7.351E-01	}	6.655E+00	1.31E+02	3.07E+01 G
HF-181	F	1.9596E-01					4.24E+01	
			482.00	1.960E-01	?(	1.695E+00	2.50E+02	8.05E+01 G
			133.02	-7.825E-01	+	3.442E+00	1.32E+02	4.33E+01 G
			345.83	-3.650E+00	+	1.340E+01	1.10E+02	1.51E+01 G
			136.30	1.520E-01	&	2.462E+01	4.79E+03	5.85E+00 G
Ta-182	F	1.4727E+00					1.14E+02	
			1121.30	1.388E+00	(	8.576E+00	1.81E+02	3.49E+01 G
			1221.41	5.292E-01	(	6.072E+00	5.07E+02	2.70E+01 G
			1189.05	3.228E+00	(	6.459E+00	8.66E+01	1.62E+01 G
Hg-203	F	-2.0120E-02					4.66E+01	
			279.20	-2.012E-02	&(	1.750E+00	2.54E+03	8.15E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
TL-208	N	4.1737E+00					6.98E+02	
			583.02	4.174E+00	(P	1.008E+00	1.40E+01	8.45E+01 G
			277.28	-6.931E+00	-	2.222E+01	9.59E+01	6.31E+00 G
			860.56	7.736E+00	+ P	5.838E+00	3.62E+01	1.24E+01 G
PM-146	C	9.8238E-01					2.02E+03	
			453.88	2.968E-01	&(P	1.518E+00	2.01E+02	6.50E+01 G
			747.16	-2.149E+00	+	4.672E+00	9.16E+01	3.40E+01 G
			735.72	2.963E+00	?(	3.613E+00	5.24E+01	2.25E+01 G
Y-88	F	9.3439E-01					1.07E+02	
			1836.06	9.344E-01	?(	6.260E-01	3.02E+01	9.92E+01 G
			898.04	-1.377E-01	-	1.516E+00	4.59E+02	9.37E+01 G
Cd-113m		-4.9787E+03					5.33E+03	
			263.70	-4.979E+03	*(	2.046E+04	1.22E+02	6.00E-03 K
Cf-251	T	-2.9702E-02					3.28E+05	
			176.60	-2.970E-02	%(	5.383E+00	6.61E+03	1.70E+01 G
			227.00	5.206E+00	&	1.428E+01	1.02E+02	6.30E+00 GA
Cf-249	T	3.4256E-01					1.28E+05	
			387.95	1.979E-01	?(	1.661E+00	2.42E+02	6.60E+01 G
			333.44	9.581E-01	?(	5.810E+00	2.30E+02	1.55E+01 G
Sn-126		-4.8255E+00					3.65E+07	
			87.57	-1.024E+00	}	5.180E+00	1.52E+02	3.75E+01 GA
			64.28	-4.826E+00	?(	1.769E+01	1.10E+02	9.70E+00 G
			86.94	8.754E+00	}	9.594E+00	3.16E+01	9.04E+00 GA
PB-210	N	2.7376E+01					8.14E+03	
			46.54	2.738E+01	@(P	3.155E+01	4.26E+01	4.25E+00 G
PB-212	N	9.6651E+00					6.98E+02	
			238.63	9.665E+00	(P	1.727E+00	8.39E+00	4.33E+01 G
			300.03	-7.260E+00	& P	7.685E+01	1.26E+02	3.28E+00 GA
PB-214	N	3.0775E+01					5.84E+05	
			351.93	3.077E+01	(P	2.654E+00	5.81E+00	3.76E+01 G
			295.09	2.732E+01	- P	4.436E+00	9.06E+00	1.93E+01 G
			242.00	2.727E+01	-	1.192E+01	1.58E+01	7.43E+00 GA
BI-207	C	-2.6544E-01					1.18E+04	
			1063.66	-2.654E-01	&(P	2.105E+00	1.70E+02	7.45E+01 G
			569.70	-2.882E-01	+	1.260E+00	1.28E+02	9.77E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
BI-212	N	2.8701E+00					6.98E+02	
			727.17	2.870E+00	&(P	2.247E+01	2.26E+02	7.55E+00 G
			785.42	-4.102E+01	+	1.087E+02	1.10E+02	1.28E+00 GA
U-235	N	3.9627E+00					2.57E+11	
			143.79	2.697E+00	?(	1.166E+01	1.29E+02	1.10E+01 G
			205.33	5.765E+00	(P	1.736E+01	1.11E+02	5.01E+00 G
			163.38	4.916E+00	(P	2.138E+01	1.29E+02	5.08E+00 G
			185.72	5.059E+00	*	1.539E+00	1.50E+01	5.40E+01 GA
BI-214	N	2.8843E+01					5.84E+05	
			609.31	2.884E+01	@(P	1.683E+00	5.59E+00	4.61E+01 G
			1120.29	3.687E+01	+ P	6.570E+00	1.28E+01	1.51E+01 G
			1764.49	3.409E+01	+ P	6.195E+00	1.32E+01	1.54E+01 G
BI-210M	T	6.2482E-01					1.10E+09	
			265.83	6.248E-01	&(P	2.198E+00	1.05E+02	5.00E+01 G
			304.90	0.000E+00	-	9.022E+00	1.00E+03	2.80E+01 G
AC-228	N	1.2881E+01					2.10E+03	
			911.07	1.204E+01	(	3.854E+00	1.75E+01	2.90E+01 G
			968.97	1.428E+01	?(	6.971E+00	1.94E+01	1.75E+01 G
			338.32	-2.303E-01	%	1.365E+01	1.73E+03	1.20E+01 G
			93.35	5.845E+00	-	2.991E+01	1.53E+02	5.56E+00 XA
TH-227	N	-2.2312E+00					7.95E+03	
			256.24	-2.231E+00	?(	1.499E+01	2.46E+02	7.00E+00 G
			235.97	-9.297E-01	+	1.842E+01	5.89E+02	1.23E+01 G
			50.14	-6.016E+00	+	1.876E+01	1.10E+02	8.00E+00 G
TH-229	N	-8.8807E-01					2.68E+06	
			193.51	-3.173E+00	&(	2.166E+01	2.51E+02	4.40E+00 G
			210.85	2.475E+00	?(	3.266E+01	4.82E+02	2.99E+00 G
TH-234	N	1.9121E+01					1.63E+12	
			92.59	1.139E+01	(P	1.547E+01	4.23E+01	5.58E+00 G
			63.29	3.046E+01	(P	2.615E+01	2.78E+01	3.81E+00 G
PA-233	C	-1.0539E+00					7.82E+08	
			312.01	-1.054E+00	?(P	7.233E+00	8.12E+01	3.60E+01 G
			300.18	0.000E+00	+	4.030E+01	1.00E+03	6.20E+00 G
PA-234	N	-1.8731E+00					1.63E+12	
			131.29	-1.873E+00	(P	8.062E+00	8.75E+01	1.80E+01 G
			946.02	-6.012E+00	+	1.237E+01	8.95E+01	1.34E+01 G
			569.47	-1.051E+00	+	1.391E+01	3.74E+02	8.20E+00 G
			883.24	0.000E+00	+	2.193E+01	1.00E+03	9.60E+00 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments
                          880.53-5.034E+00 &   3.365E+01 1.94E+02 6.00E+00 GA

PA-234M  N   1.1236E+02                                     1.63E+12
                         1001.00 1.090E+02  (P 8.652E+01 3.45E+01 8.37E-01 G
                          766.41 1.219E+02 ?(P 6.572E+02 1.58E+02 2.94E-01 G

AM-241   T   2.6167E-01                                     1.58E+05
                           59.54 2.617E-01 ?(  3.800E+00 5.07E+02 3.59E+01 G

Ir-192   F   2.5337E-01                                     7.40E+01
                          316.49-7.796E-02 &(  1.493E+00 5.57E+02 8.70E+01 G
                          468.06-1.044E+00 +   3.561E+00 1.02E+02 5.18E+01 G
                          308.44 1.162E+00 ?(  7.636E+00 1.96E+02 3.18E+01 G

Cs-136   F   3.0695E-01                                     1.30E+01
                          818.50 3.257E-01 ?(  9.093E-01 8.22E+01 1.00E+02 G
                         1048.07 2.835E-01 ?(  1.945E+00 1.95E+02 8.00E+01 G
                          340.57 0.000E+00 -   3.520E+00 1.00E+03 4.69E+01 G

Np-239   T   9.6263E-01                                     2.36E+00
                          103.70 0.000E+00 -   4.254E+00 1.00E+03 2.40E+01 X
                          106.13 9.626E-01  (  3.768E+00 1.16E+02 2.27E+01 G
                           99.50 1.458E+00     6.674E+00 1.36E+02 1.50E+01 X

Nd-147       2.5199E-01                                     1.11E+01
                          531.00 2.520E-01 %(  8.110E+00 1.24E+03 1.30E+01 G
                           91.10-7.225E-01 +   6.536E+00 2.70E+02 2.83E+01 G

Kr-85    I  -9.8425E+01                                     3.92E+03
                          513.98-9.843E+01 ?(  4.994E+02 1.50E+02 4.30E-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
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	
TH-227	50.14	171.	-20.	-0.011	110.06	-6.016E+00	
AM-241	59.54	225.	5.	0.003	506.95	2.617E-01	
BA-133	80.99	253.	-20.	-0.011	92.65	-8.370E-01	P
Nd-147	91.10	832.	-15.	-0.008	270.33	-7.225E-01	
Gd-153	97.50	193.	7.	0.004	373.16	2.931E-01	
Gd-153	103.20	270.	-22.	-0.012	107.76	-1.314E+00	
EU-152	121.78	294.	-23.	-0.013	106.00	-1.060E+00	
CO-57	122.06	317.	-7.	-0.004	379.41	-1.013E-01	
EU-154	123.10	333.	-25.	-0.014	106.76	-7.855E-01	
PA-234	131.29	530.	-26.	-0.014	87.49	-1.873E+00	P
HF-181	133.02	556.	-26.	-0.014	131.76	-7.825E-01	
CE-141	145.44	391.	-3.	-0.002	803.05	-9.917E-02	
Ba-140	162.66	215.	19.	0.011	111.97	4.436E+00	
CE-139	165.85	274.	-15.	-0.009	154.33	-2.798E-01	
TH-229	193.51	147.	-9.	-0.005	250.97	-3.173E+00	
TH-229	210.85	137.	4.	0.002	482.47	2.475E+00	
Cf-251	227.00	103.	18.	0.010	101.79	5.206E+00	
TH-227	235.97	664.	-6.	-0.003	589.24	-9.297E-01	
TH-227	256.24	120.	-8.	-0.004	246.22	-2.231E+00	
Cd-113m	263.70	160.	-15.	-0.008	122.02	-4.979E+03	
BI-210M	265.83	125.	16.	0.009	104.66	6.248E-01	P
I-131	284.30	118.	-20.	-0.011	80.99	-6.913E+00	P
TL-210	296.00	643.	-17.	-0.010	210.51	-4.685E-01	
Ir-192	308.44	522.	17.	0.009	196.07	1.162E+00	
PA-233	312.01	594.	-17.	-0.009	81.25	-1.054E+00	P
Ir-192	316.49	138.	-3.	-0.002	556.78	-7.796E-02	
La-140	328.76	62.	10.	0.005	157.78	1.095E+00	
Cf-249	333.44	59.	6.	0.004	229.72	9.581E-01	
EU-152	344.29	242.	-23.	-0.013	99.90	-2.040E+00	
HF-181	345.83	303.	-23.	-0.013	109.80	-3.650E+00	
BA-133	356.00	638.	-18.	-0.010	199.04	-7.161E-01	
I-131	364.48	63.	5.	0.003	307.59	1.491E-01	P
Cf-249	387.95	71.	5.	0.003	242.49	1.979E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
SN-113	391.69	118.	-17.	-0.009	89.09	-6.946E-01	P
SB-125	427.88	37.	12.	0.007	99.29	1.133E+00	P
AG-108M	433.94	45.	4.	0.002	335.88	1.179E-01	P
PM-146	453.88	44.	7.	0.004	201.17	2.968E-01	P
SB-125	463.37	113.	-17.	-0.009	93.95	-4.705E+00	
Ir-192	468.06	160.	-18.	-0.010	101.71	-1.044E+00	
BE-7	477.59	64.	-11.	-0.006	105.77	-3.219E+00	
HF-181	482.00	81.	5.	0.003	250.49	1.960E-01	
RU-103	497.05	56.	-15.	-0.009	98.14	-5.309E-01	
RH-106	511.86	207.	-26.	-0.014	81.97	-4.077E+00	
Kr-85	513.98	191.	-13.	-0.007	150.30	-9.843E+01	
Ba-140	537.26	24.	10.	0.006	97.09	1.412E+00	
CS-134	563.24	44.	-2.	-0.001	653.20	-8.192E-01	
CS-134	569.32	32.	5.	0.003	166.13	1.121E+00	
PA-234	569.47	42.	-2.	-0.001	374.17	-1.051E+00	
BI-207	569.70	50.	-8.	-0.005	127.55	-2.882E-01	
SB-125	600.50	542.	-13.	-0.007	248.23	-2.679E+00	
SB-124	602.73	529.	-13.	-0.007	244.82	-4.890E-01	
CS-134	604.71	515.	-9.	-0.005	341.24	-3.489E-01	
RH-106	621.92	523.	-14.	-0.008	228.06	-5.288E+00	
SB-125	635.89	48.	-2.	-0.001	426.42	-7.714E-01	
I-131	636.97	59.	-3.	-0.001	439.70	-1.305E+00	
AG-110M	657.76	55.	4.	0.002	246.03	1.755E-01	
CS-137	661.66	66.	-6.	-0.003	201.02	-2.636E-01	
PM-144	696.54	35.	3.	0.002	364.69	1.347E-01	
NB-94	702.63	43.	-7.	-0.004	186.92	-3.016E-01	
SB-124	722.79	72.	1.	0.001	902.08	5.072E-01	
BI-212	727.17	68.	5.	0.003	226.27	2.870E+00	P
PM-146	735.72	13.	16.	0.009	52.35	2.963E+00	
PM-146	747.16	56.	-17.	-0.010	91.59	-2.149E+00	
AG-110M	763.94	94.	-20.	-0.011	70.91	-3.919E+00	
NB-95	765.79	130.	-22.	-0.012	75.85	-9.517E-01	
EU-152	778.92	13.	9.	0.005	91.77	2.902E+00	
BI-212	785.42	39.	-12.	-0.007	110.08	-4.102E+01	
CS-134	795.87	33.	5.	0.003	157.62	2.756E-01	
CS-134	801.95	48.	-8.	-0.004	129.87	-4.006E+00	
Cs-136	818.50	14.	7.	0.004	82.24	3.257E-01	
Co-56	846.77	42.	-10.	-0.006	141.07	-4.633E-01	
NB-94	871.10	40.	-3.	-0.001	339.58	-1.263E-01	
EU-154	873.23	21.	9.	0.005	78.68	3.521E+00	
PA-234	880.53	72.	-6.	-0.004	194.02	-5.034E+00	
AG-110M	937.49	75.	-22.	-0.012	86.76	-3.173E+00	
PA-234	946.02	42.	-16.	-0.009	89.49	-6.012E+00	
EU-152	964.11	37.	12.	0.007	74.90	4.322E+00	
EU-154	996.33	71.	-13.	-0.007	98.72	-6.209E+00	
EU-154	1004.77	49.	3.	0.002	368.27	7.998E-01	
Co-56	1037.84	10.	8.	0.005	92.58	3.103E+00	
Cs-136	1048.07	31.	4.	0.002	194.73	2.835E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
RH-106	1050.36	44.	-5.	-0.003	187.15	-1.806E+01		
BI-207	1063.66	31.	-4.	-0.002	169.88	-2.654E-01		P
Ga-68	1077.40	10.	17.	0.009	47.55	3.354E+01		
EU-152	1112.07	135.	-10.	-0.006	167.33	-4.175E+00		
Ta-182	1121.30	113.	8.	0.005	181.08	1.388E+00		
CO-60	1173.24	35.	-1.	-0.001	859.44	-8.596E-02		P
Ta-182	1189.05	10.	9.	0.005	86.63	3.228E+00		
Ta-182	1221.41	27.	2.	0.001	507.29	5.292E-01		
Co-56	1238.28	33.	36.	0.020	39.63	3.371E+00		P
NA-22	1274.53	27.	-3.	-0.001	280.62	-1.689E-01		
TL-210	1313.00	37.	-17.	-0.010	84.20	-5.309E+00		
AG-110M	1384.30	21.	-7.	-0.004	191.83	-2.075E+00		P
EU-152	1408.00	0.	22.	0.012	21.32	7.162E+00		
La-140	1596.21	23.	-5.	-0.003	243.70	-3.690E-01		
SB-124	1690.98	12.	-6.	-0.003	145.30	-9.912E-01		
Co-56	1771.35	79.	-5.	-0.003	272.74	-2.469E+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 Counting	1 Sigma	MDA Bq/Sample
BE-7	#A	-3.2194E+00	-3.2195E+00	1.058E+02%		1.15E+01
NA-22	#A	-1.6886E-01	-1.6886E-01	2.806E+02%		1.70E+00
K-40		1.5084E+02	1.5084E+02	6.832E+00%		1.01E+01
Sc-46	#A	4.0043E-02	4.0043E-02	1.520E+03%		2.13E+00
CR-51	#A	-8.5708E-02	-8.5709E-02	3.696E+03%		1.33E+01
MN-54	#	8.5525E-01	8.5526E-01	4.173E+01%		7.76E-01
FE-59	#	1.5649E+00	1.5649E+00	4.069E+01%		1.35E+00
Co-56	#A	1.2229E+00	1.2229E+00	3.963E+01%		1.52E+00
CO-57	#A	-1.0132E-01	-1.0132E-01	3.794E+02%		1.30E+00
CO-58	#A	-4.5054E-02	-4.5055E-02	1.063E+03%		1.69E+00
CO-60	#A	-5.6359E-02	-5.6359E-02	1.664E+03%		1.18E+00
ZN-65	#A	0.0000E+00	0.0000E+00	1.000E+03%		6.19E+00
NB-94	#A	-3.0159E-01	-3.0159E-01	1.869E+02%		1.37E+00
ZR-95	#	1.6087E+00	1.6087E+00	3.030E+01%		9.77E-01
NB-95	#A	-9.5172E-01	-9.5173E-01	7.585E+01%		2.40E+00
RU-103	#A	-5.3091E-01	-5.3091E-01	9.814E+01%		1.29E+00
RH-106	#A	-5.2882E+00	-5.2882E+00	2.281E+02%		4.05E+01
AG-108M	#A	1.1794E-01	1.1794E-01	3.359E+02%		1.07E+00
AG-110M	#A	9.2637E-02	9.2637E-02	2.460E+02%		2.90E+00
SN-113	#A	-6.9459E-01	-6.9459E-01	8.909E+01%		2.19E+00
SB-124	#A	-3.9026E-01	-3.9026E-01	2.448E+02%		4.02E+00
SB-125	#A	1.1332E+00	1.1332E+00	9.929E+01%		2.94E+00
I-131	#A	1.4910E-01	1.4911E-01	3.076E+02%		1.22E+00
Gd-153	#A	2.9306E-01	2.9306E-01	3.732E+02%		2.97E+00

Ga-68	#A	3.3276E+01	3.3544E+01	4.755E+01%	3.44E+01
Tc-99m	A	1.5210E-01	1.5233E-01	2.931E+02%	1.50E+00
BA-133	#A	-7.1606E-01	-7.1606E-01	1.990E+02%	4.77E+00
CS-134	#A	4.0436E-01	4.0436E-01	1.145E+02%	1.52E+00
CS-137	#A	-2.6361E-01	-2.6361E-01	2.010E+02%	1.83E+00
CE-139	#A	-2.7976E-01	-2.7976E-01	1.543E+02%	1.45E+00
Ba-140	#A	2.0264E+00	2.0265E+00	7.410E+01%	3.46E+00
La-140	#A	-1.1224E-01	-1.1224E-01	1.452E+02%	1.97E+00
CE-141	#A	-9.9172E-02	-9.9173E-02	8.030E+02%	2.70E+00
CE-144	#A	-2.0429E-01	-2.0429E-01	1.310E+03%	1.22E+01
PM-144	#A	1.3469E-01	1.3469E-01	3.647E+02%	1.22E+00
EU-152	#A	1.2539E+00	1.2539E+00	5.299E+01%	3.75E+00
EU-154	#A	3.5969E-01	3.5969E-01	7.868E+01%	2.80E+00
EU-155	A	1.1395E+00	1.1395E+00	1.201E+02%	4.59E+00
HF-181	#A	1.9596E-01	1.9596E-01	2.505E+02%	1.70E+00
Ta-182	#A	1.4727E+00	1.4727E+00	8.663E+01%	8.58E+00
Hg-203	#A	-2.0120E-02	-2.0120E-02	2.539E+03%	1.75E+00
TL-208		4.1737E+00	4.1737E+00	1.396E+01%	1.01E+00
PM-146	#A	9.8238E-01	9.8238E-01	5.235E+01%	1.52E+00
Y-88	#	9.3439E-01	9.3439E-01	3.015E+01%	6.26E-01
Cd-113m	#A	-4.9787E+03	-4.9787E+03	1.220E+02%	2.05E+04
Cd-109	#A	0.0000E+00	0.0000E+00	1.000E+03%	5.03E+01
Cf-251	#A	-2.9702E-02	-2.9702E-02	6.613E+03%	5.38E+00
Cf-249	#A	3.4256E-01	3.4256E-01	1.670E+02%	1.66E+00
Sn-126	A	-4.8255E+00	-4.8255E+00	1.099E+02%	1.77E+01
PB-210	#A	2.7376E+01	2.7376E+01	4.259E+01%	3.15E+01
PB-212		9.6651E+00	9.6651E+00	8.386E+00%	1.73E+00
PB-214		3.0775E+01	3.0775E+01	5.805E+00%	2.65E+00
BI-207	#A	-2.6544E-01	-2.6544E-01	1.699E+02%	2.10E+00
BI-212	#A	2.8701E+00	2.8701E+00	2.263E+02%	2.25E+01
U-235	A	3.9627E+00	3.9627E+00	7.140E+01%	1.17E+01
BI-214		2.8843E+01	2.8843E+01	5.586E+00%	1.68E+00
BI-210M	#A	6.2482E-01	6.2482E-01	1.047E+02%	2.20E+00
AC-228	#	1.2881E+01	1.2881E+01	1.307E+01%	3.85E+00
TH-227	#A	-2.2312E+00	-2.2312E+00	2.462E+02%	1.50E+01
TH-229	#A	-8.8807E-01	-8.8807E-01	2.510E+02%	2.17E+01
TH-234		1.9121E+01	1.9121E+01	2.533E+01%	1.55E+01
PA-231	#A	0.0000E+00	0.0000E+00	7.071E+02%	8.73E+01
PA-233	#A	-1.0539E+00	-1.0539E+00	8.125E+01%	7.23E+00
PA-234	#A	-1.8731E+00	-1.8731E+00	8.749E+01%	8.06E+00
PA-234M	#	1.1236E+02	1.1236E+02	3.447E+01%	8.65E+01
AM-241	#A	2.6167E-01	2.6167E-01	5.070E+02%	3.80E+00
Np-237	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.58E+01
Ir-192	#A	2.5337E-01	2.5337E-01	1.961E+02%	1.49E+00
Cs-136	#A	3.0694E-01	3.0695E-01	8.224E+01%	9.09E-01
Np-239	A	9.6248E-01	9.6263E-01	1.165E+02%	3.77E+00
Nd-147	#A	2.5198E-01	2.5199E-01	1.242E+03%	8.11E+00
TL-210	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.41E+00
Kr-85	#A	-9.8425E+01	-9.8425E+01	1.503E+02%	4.99E+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 (   25.1 to  1999.5 keV)     3.832E+02  Bq/Sample
Total Decayed Activity (   25.1 to  1999.5 keV) 3.8315363E+02  Bq/Sample
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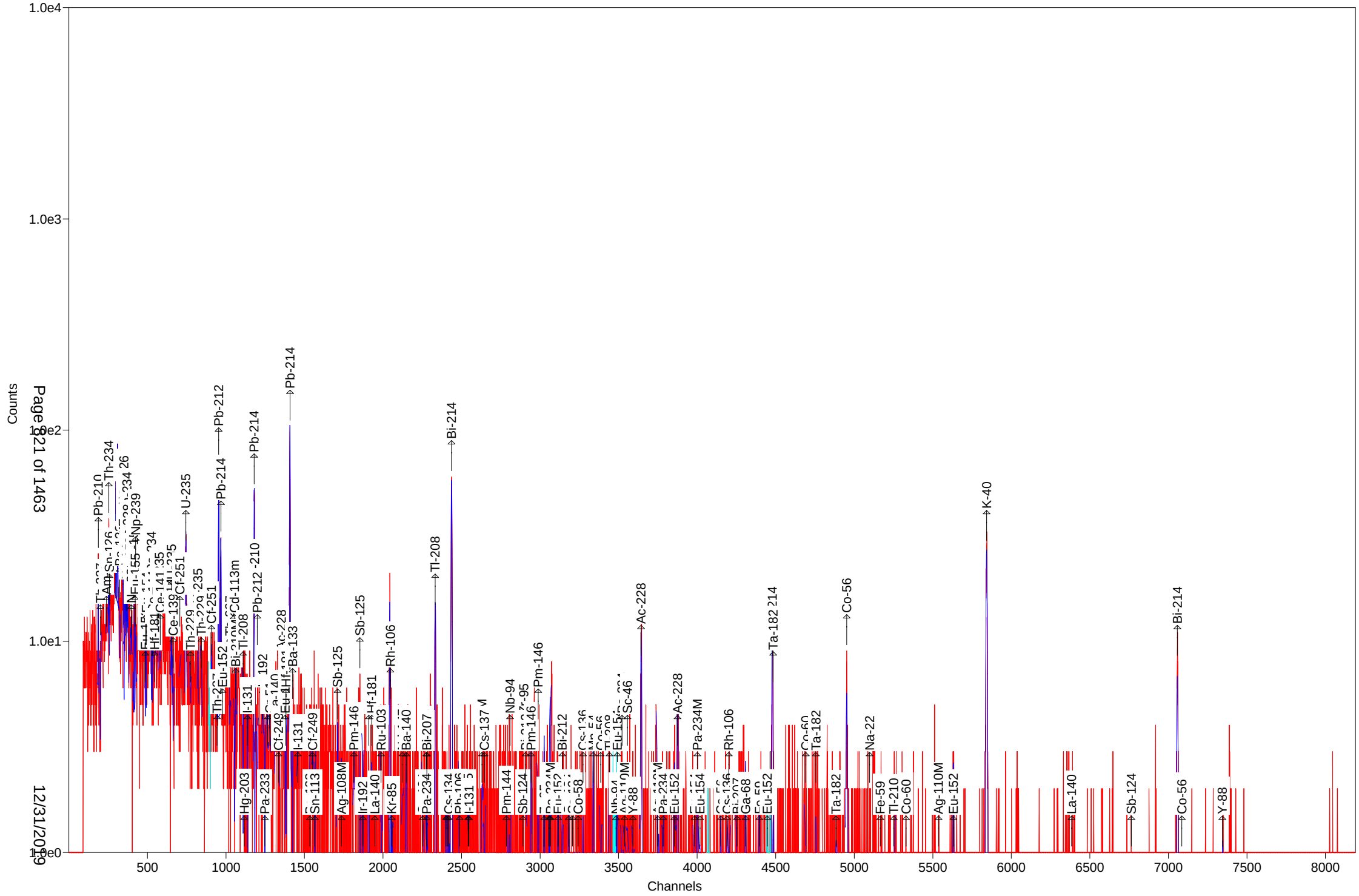
452567_Gamma_160-36526-A-5-B. 17_Gamma_20192434.spc.



Test America St. Louis Spectrum ID: 5_Gamma_20193364

Sample Description: 452567_Gamma_160-36526-A-6-B
Detector: Detector # 5
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-6-B

Decay to Time: 12/25/2019 09:03 Live Time: 1800 sec
Acquisition Time: 12/25/2019 09:03:19 Real Time: 1806 sec
Analysis Time: 12/25/2019 09:33 Dead Time: 0.31 %
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_Long_Rev15.lib
Bkgd Correction File: 5_2019-12-07_1448.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	-2.941E+00	155.0	4.558E+00	4.560E+00	1.715E+01
NA-22	3.237E-02	1396.4	4.520E-01	4.520E-01	1.741E+00
K-40	1.940E+02	7.4	1.429E+01	1.740E+01	1.076E+01
Sc-46	-1.160E+00	103.8	1.204E+00	1.206E+00	4.047E+00
CR-51	3.379E+00	110.2	3.722E+00	3.726E+00	1.262E+01
MN-54	-1.356E+00	47.3	6.408E-01	6.446E-01	2.753E+00
FE-59	-1.972E+00	103.8	2.047E+00	2.049E+00	4.592E+00
Co-56	1.187E+00	43.0	5.107E-01	5.143E-01	1.897E+00
CO-57	2.225E-01	271.8	6.046E-01	6.047E-01	1.188E+00
CO-58	-9.973E-01	62.7	6.256E-01	6.277E-01	2.921E+00
CO-60	6.546E-01	49.3	3.226E-01	3.242E-01	7.427E-01
ZN-65	2.510E+00	89.9	2.256E+00	2.260E+00	7.579E+00
NB-94	5.533E-01	66.8	3.698E-01	3.709E-01	1.335E+00
ZR-95	-4.601E-01	265.0	1.219E+00	1.219E+00	3.045E+00
NB-95	-2.451E-01	359.2	8.803E-01	8.804E-01	3.043E+00
RU-103	-3.646E-01	114.4	4.171E-01	4.176E-01	1.420E+00
RH-106	-6.557E+00	91.4	5.991E+00	6.000E+00	2.020E+01
AG-108M	3.883E-01	128.6	4.995E-01	4.999E-01	1.266E+00
AG-110M	-5.506E-01	146.8	8.082E-01	8.087E-01	4.862E+00
SN-113	4.939E-01	128.2	6.330E-01	6.335E-01	2.165E+00
SB-124	-3.646E-01	393.9	1.436E+00	1.436E+00	4.853E+00
SB-125	1.127E+00	75.3	8.485E-01	8.504E-01	4.773E+00
I-131	7.715E-01	79.0	6.097E-01	6.110E-01	1.097E+00
Gd-153	-3.710E-01	316.2	1.173E+00	1.173E+00	3.979E+00
Ga-68	-1.785E+01	187.7	3.351E+01	3.353E+01	7.739E+01
Tc-99m	3.544E-01	125.8	4.459E-01	4.463E-01	1.495E+00
BA-133	2.242E-01	740.4	1.660E+00	1.660E+00	5.603E+00
CS-134	1.486E-01	91.0	1.353E-01	1.355E-01	2.768E+00
CS-137	-5.494E-01	94.2	5.176E-01	5.184E-01	2.608E+00
CE-139	4.309E-01	116.5	5.021E-01	5.037E-01	1.683E+00
Ba-140	2.066E+00	94.6	1.955E+00	1.957E+00	4.925E+00
La-140	7.570E-01	33.7	2.548E-01	2.579E-01	2.278E+00
CE-141	-7.414E-01	125.9	9.334E-01	9.341E-01	3.123E+00

CE-144	-3.176E+00	123.7	3.928E+00	3.932E+00	1.314E+01
PM-144	1.942E-01	90.1	1.750E-01	1.753E-01	1.440E+00
EU-152	3.773E+00	81.0	3.056E+00	3.062E+00	3.387E+00
EU-154	1.204E+00	89.9	1.082E+00	1.084E+00	2.365E+00
EU-155	1.265E+00	179.9	2.275E+00	2.276E+00	7.627E+00
HF-181	9.069E-01	88.6	8.038E-01	8.051E-01	1.880E+00
Ta-182	2.565E+00	90.7	2.328E+00	2.331E+00	1.044E+01
Hg-203	-6.159E-01	93.8	5.776E-01	5.787E-01	1.934E+00
TL-208	4.331E+00	15.7	6.807E-01	7.168E-01	1.176E+00
PM-146	6.979E-02	282.2	1.970E-01	1.970E-01	2.125E+00
Y-88	7.622E-01	43.9	3.343E-01	3.372E-01	9.809E-01
Cd-113m	2.747E+03	216.3	5.941E+03	5.944E+03	2.042E+04
Cd-109	1.615E-06	964604389.8	1.558E+01	1.558E+01	5.249E+01
Cf-251	1.318E+00	143.6	1.893E+00	1.897E+00	5.154E+00
Cf-249	5.605E-01	119.2	6.682E-01	6.688E-01	2.272E+00
Sn-126	-4.303E+00	127.8	5.497E+00	5.502E+00	1.841E+01
PB-210	2.462E+01	56.1	1.381E+01	1.388E+01	3.627E+01
PB-212	1.002E+01	9.0	9.025E-01	1.111E+00	1.825E+00
PB-214	3.181E+01	5.8	1.843E+00	2.476E+00	2.993E+00
BI-207	7.405E-01	135.1	1.001E+00	1.001E+00	2.348E+00
BI-212	-4.272E-01	1700.2	7.263E+00	7.263E+00	2.713E+01
U-235	1.773E+00	206.7	3.665E+00	3.666E+00	1.236E+01
BI-214	2.710E+01	7.2	1.949E+00	2.404E+00	2.669E+00
BI-210M	-8.969E-01	97.4	8.732E-01	8.748E-01	2.929E+00
AC-228	1.233E+01	15.4	1.899E+00	2.000E+00	3.256E+00
TH-227	-7.643E+00	105.8	8.083E+00	8.097E+00	2.069E+01
TH-229	-1.526E-01	5429.5	8.284E+00	8.284E+00	2.292E+01
TH-234	1.473E+01	32.3	4.754E+00	4.825E+00	1.548E+01
PA-231	4.634E+00	350.3	1.623E+01	1.623E+01	1.031E+02
PA-233	1.070E+00	227.0	2.429E+00	2.430E+00	8.169E+00
PA-234	2.992E+00	75.9	2.273E+00	2.278E+00	7.848E+00
PA-234M	1.170E+02	71.7	8.381E+01	8.402E+01	1.978E+02
AM-241	4.831E-01	300.1	1.450E+00	1.450E+00	4.162E+00
Np-237	-3.149E+00	156.6	4.930E+00	4.933E+00	1.645E+01
Ir-192	4.227E-01	102.5	4.332E-01	4.340E-01	1.465E+00
Cs-136	6.509E-01	80.0	5.204E-01	5.218E-01	2.943E+00
Np-239	-1.526E+00	148.3	2.263E+00	2.265E+00	7.566E+00
Nd-147	-3.941E+00	111.0	4.374E+00	4.379E+00	1.099E+01
TL-210	2.165E-01	216.3	4.682E-01	4.684E-01	2.512E+00
Kr-85	1.014E+02	151.4	1.535E+02	1.536E+02	5.227E+02
Total	3.325E+03				

Analyst: Caleb Quinn

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Sample description
452567_Gamma_160-36526-A-6-B

Spectrum Filename: C:\User\SPC\Det5\5_Gamma_20193364.An1

Acquisition information
Start time: 12/25/2019 9:03:19 AM
Live time: 1800
Real time: 1806
Dead time: 0.31 %
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_Long_Rev15.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/(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:	YES	12/25/2019 9:03:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	5_2019-12-07_1448.PBC 12/7/2019 2:48:46 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 21 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.0717

***** 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
46.51	34.	56.07	0.64	1.786E-02	46.54	4.250	PBC<MDA	PB210
50.14	18.	111.06	0.79	2.012E-02	50.14	8.000	PBC<MDA	TH227
59.54	8.	300.13	0.80	2.533E-02	59.54	35.900	PBC<MDA	AM241
63.22	39.	44.77	0.80	2.712E-02	63.29	3.810	PBC<MDA	TH234
74.80	160.	12.80	0.81	3.150E-02				
77.09	268.	8.53	0.81	3.218E-02				
87.07	122.	14.66	1.14	3.445E-02	86.49	13.100	1.506E+01	Np237
					86.54	30.700	6.425E+00	EU155
					86.94	9.040	2.178E+01	Sn126
					87.57	37.500	5.233E+00	Sn126
91.10	21.	135.35	0.83	3.508E-02	91.10	28.300	PBC<MDA	Nd147
92.41	37.	46.51	0.83	3.527E-02	92.59	5.584	PBC<MDA	TH234
93.17	21.	140.57	0.83	3.536E-02	93.35	5.561	PBC<MDA	AC228
99.50	16.	131.29	0.84	3.592E-02	99.50	15.000	PBC<MDA	Np239
105.31	17.	179.87	0.84	3.618E-02	105.31	21.200	PBC<MDA	EU155
121.78	17.	106.53	0.86	3.584E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	3.164E-01	CO57
122.06	3.	598.10	0.86	3.582E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	5.802E-02	CO57
131.29	18.	145.10	0.87	3.509E-02	131.29	18.000	PBC<MDA	PA234
136.47	10.	271.76	0.88	3.457E-02	136.30	5.850	PBC<MDA	HF181
					136.47	10.680	1.541E+00	CO57

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
140.51	19.	125.79	0.88	3.411E-02	140.51	89.300	PBC<MDA	Tc99m
143.79	12.	206.66	0.88	3.371E-02	143.79	10.960	PBC<MDA	U235
165.85	19.	116.51	0.91	3.133E-02	165.85	79.900	PBC<MDA	CE139
176.60	12.	143.61	0.92	2.975E-02	176.60	17.000	PBC<MDA	Cf251
186.03	92.	21.31	1.36	2.850E-02	185.72	54.000	3.324E+00	U235
227.00	9.	179.96	0.97	2.417E-02	227.00	6.300	PBC<MDA	Cf251
238.60	181.	9.01	0.98	2.319E-02	238.63	43.300	1.002E+01	PB212
241.88	87.	16.55	0.98	2.293E-02	242.00	7.430	2.851E+01	PB214
244.69	16.	201.27	0.98	2.272E-02	244.69	7.580	PBC<MDA	EU152
263.70	6.	216.30	1.00	2.135E-02	263.70	0.006	PBC<MDA	Cd113m
284.30	14.	104.17	1.02	2.006E-02	284.30	6.140	PBC<MDA	I131
295.19	201.	9.82	0.89	1.944E-02	295.09	19.300	2.973E+01	PB214
					296.00	79.000	7.281E+00	TL210
300.03	13.	222.82	1.04	1.918E-02	300.03	3.280	PBC<MDA	PB212
					300.07	2.460	PBC<MDA	PA231
					300.18	6.200	PBC<MDA	PA233
300.07	9.	350.25	1.04	1.918E-02	300.03	3.280	PBC<MDA	PB212
					300.07	2.460	1.006E+01	PA231
					300.18	6.200	3.993E+00	PA233
312.01	13.	226.98	1.05	1.857E-02	312.01	36.000	PBC<MDA	PA233
316.49	12.	102.50	1.05	1.835E-02	316.49	87.040	PBC<MDA	Ir192
320.08	11.	110.15	1.06	1.818E-02	320.08	9.940	PBC<MDA	CR51
328.76	13.	100.50	1.07	1.778E-02	328.76	20.300	PBC<MDA	La140
338.27	64.	23.92	1.26	1.736E-02	338.32	12.010	1.697E+01	AC228
340.57	12.	166.02	1.08	1.727E-02	340.57	46.900	PBC<MDA	Cs136
345.83	13.	145.79	1.08	1.705E-02	345.83	15.070	PBC<MDA	HF181
351.89	374.	6.15	0.90	1.680E-02	351.93	37.600	3.287E+01	PB214
356.00	4.	740.44	1.09	1.664E-02	356.00	62.050	PBC<MDA	BA133
364.48	8.	118.89	1.10	1.632E-02	364.48	81.700	PBC<MDA	I131
383.84	4.	297.14	1.12	1.563E-02	383.84	8.940	PBC<MDA	BA133
387.95	10.	119.21	1.12	1.549E-02	387.95	66.000	PBC<MDA	Cf249
391.69	9.	128.16	1.12	1.537E-02	391.69	64.000	PBC<MDA	SN113
433.94	9.	128.63	1.16	1.411E-02	433.94	90.480	PBC<MDA	AG108M
463.37	9.	124.17	1.19	1.336E-02	463.37	10.470	PBC<MDA	SB125
482.00	10.	100.82	1.21	1.293E-02	482.00	80.500	PBC<MDA	HF181
487.02	25.	33.66	1.21	1.282E-02	487.02	45.500	2.414E+00	La140
511.86	67.	16.37	2.48	1.230E-02	511.86	20.000	1.514E+01	RH106
513.98	10.	151.40	1.24	1.226E-02	513.98	0.430	PBC<MDA	Kr85
537.26	11.	94.62	1.26	1.181E-02	537.26	24.390	PBC<MDA	Ba140
569.47	10.	75.94	1.29	1.125E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	6.022E+00	PA234
					569.70	97.740	5.054E-01	BI207
569.70	1.	645.85	1.29	1.125E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	7.029E-01	PA234
					569.70	97.740	5.899E-02	BI207
583.23	73.	15.72	1.09	1.103E-02	583.02	84.500	4.331E+00	TL208
604.71	4.	758.35	1.32	1.070E-02	604.71	97.620	PBC<MDA	CS134
609.24	239.	7.19	1.38	1.063E-02	609.31	46.090	2.710E+01	BI214

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
					610.30	5.750	2.175E+02	RU103
618.06	8.	90.11	1.33	1.051E-02	618.06	99.100	PBC<MDA	PM144
635.89	8.	75.27	1.34	1.026E-02	635.89	11.310	PBC<MDA	SB125
702.63	8.	119.19	1.40	9.438E-03	702.63	97.900	PBC<MDA	NB94
735.72	3.	324.52	1.43	9.081E-03	735.72	22.500	PBC<MDA	PM146
766.41	14.	87.69	1.45	8.776E-03	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	3.076E+02	PA234M
785.42	22.	42.70	1.47	8.597E-03	785.42	1.280	1.093E+02	BI212
801.95	9.	118.28	1.48	8.448E-03	801.95	8.690	PBC<MDA	CS134
818.50	12.	111.71	1.50	8.305E-03	818.50	100.000	PBC<MDA	Cs136
871.10	9.	66.84	1.54	7.882E-03	871.10	99.890	PBC<MDA	NB94
873.23	5.	148.57	1.54	7.866E-03	873.23	12.270	PBC<MDA	EU154
898.04	1.	858.71	1.56	7.684E-03	898.04	93.700	PBC<MDA	Y88
911.22	41.	19.42	0.77	7.591E-03	911.07	29.000	1.040E+01	AC228
937.49	1.	692.82	1.59	7.411E-03	937.49	34.360	PBC<MDA	AG110M
969.00	10.	79.39	1.61	7.209E-03	968.97	17.460	PBC<MDA	AC228
996.33	6.	89.86	1.63	7.042E-03	996.33	10.600	PBC<MDA	EU154
1001.00	5.	113.35	1.64	7.014E-03	1001.00	0.837	PBC<MDA	PA234M
1048.07	4.	132.29	1.67	6.749E-03	1048.07	80.000	PBC<MDA	Cs136
1063.66	7.	135.12	1.68	6.666E-03	1063.66	74.500	PBC<MDA	BI207
1112.07	14.	84.79	1.72	6.421E-03	1112.07	13.644	PBC<MDA	EU152
1115.55	15.	89.91	1.72	6.404E-03	1115.55	50.600	PBC<MDA	ZN65
1119.90	68.	12.13	1.48	6.383E-03	1120.29	15.100	3.760E+01	BI214
					1120.55	99.987	5.922E+00	Sc46
					1121.30	34.900	1.698E+01	Ta182
1173.24	9.	105.70	1.76	6.138E-03	1173.24	99.900	PBC<MDA	CO60
1189.05	3.	289.64	1.77	6.069E-03	1189.05	16.200	PBC<MDA	Ta182
1221.41	9.	90.75	1.79	5.934E-03	1221.41	27.000	PBC<MDA	Ta182
1238.28	24.	43.03	1.80	5.866E-03	1238.28	66.070	3.441E+00	Co56
1313.00	6.	40.82	1.85	5.583E-03	1313.00	21.000	PBC<MDA	TL210
1332.50	5.	49.28	1.87	5.514E-03	1332.50	99.980	PBC<MDA	CO60
1384.30	2.	324.35	1.90	5.340E-03	1384.30	24.290	PBC<MDA	AG110M
1460.61	190.	7.36	1.91	5.103E-03	1460.83	10.670	1.940E+02	K40
1764.32	7.	95.57	2.11	4.351E-03	1764.49	15.400	PBC<MDA	BI214
1771.35	10.	88.44	2.12	4.337E-03	1771.35	15.480	PBC<MDA	Co56
1836.06	6.	43.86	2.15	4.208E-03	1836.06	99.200	PBC<MDA	Y88

********** 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
298.82	74.79	130.	160.	5.086E+03	12.80	0.813	- D
307.98	77.08	127.	268.	8.320E+03	8.53	0.815	- D
744.08	186.03	92.	92.	3.235E+03	21.31	1.357	- s

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s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: Client_Long_Rev15.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	185.55	46.51	101.	34.	0.019	56.07	0.636
TH-227	200.11	50.14	132.	18.	0.010	111.06	0.787s
AM-241	237.72	59.54	197.	8.	0.004	300.13	0.797s
TH-234	252.74	63.29	135.	39.	0.022	44.77	0.801D
Sn-126	256.71	64.28	340.	-21.	-0.012	127.75	0.802s
BA-133	323.61	80.99	267.	-26.	-0.014	88.48	0.819
Np-237	345.63	86.49	784.	-26.	-0.014	156.55	0.825s
EU-155	345.84	86.54	759.	-26.	-0.014	154.03	0.825s
Sn-126	347.43	86.94	733.	-26.	-0.014	151.41	0.825
Sn-126	349.95	87.57	678.	12.	0.006	163.46	0.826D
Nd-147	364.08	91.10	409.	21.	0.012	135.35	0.829s
TH-234	370.05	92.59	125.	37.	0.020	46.51	0.831D
AC-228	373.09	93.35	412.	21.	0.011	140.57	0.832
Gd-153	389.70	97.50	253.	-7.	-0.004	316.19	0.836
Np-239	397.71	99.50	217.	16.	0.009	131.29	0.838s
Gd-153	412.52	103.20	338.	-22.	-0.012	118.50	0.842s
Np-239	414.52	103.70	361.	-22.	-0.012	122.15	0.842s
EU-155	420.98	105.31	485.	17.	0.010	179.87	0.844s
Np-239	424.25	106.13	549.	-23.	-0.013	148.29	0.845s
EU-152	486.90	121.78	164.	17.	0.010	106.53	0.861s
CO-57	488.03	122.06	182.	3.	0.002	598.10	0.861s
EU-154	492.18	123.10	162.	-3.	-0.002	543.32	0.862
PA-234	524.99	131.29	345.	18.	0.010	145.10	0.871s
HF-181	531.91	133.02	363.	0.	0.000	1000.00	0.872s
CE-144	533.97	133.54	363.	-22.	-0.012	123.69	0.873s
HF-181	545.02	136.30	377.	-23.	-0.013	122.27	0.876
CO-57	545.72	136.47	382.	10.	0.006	271.76	0.876
Tc-99m	561.88	140.51	272.	19.	0.010	125.79	0.880s
U-235	574.99	143.79	291.	12.	0.007	206.66	0.883s
CE-141	581.61	145.44	357.	-22.	-0.012	125.89	0.885s
Ba-140	650.54	162.66	288.	-22.	-0.012	112.41	0.902
U-235	653.42	163.38	311.	-23.	-0.013	74.48	0.903s
CE-139	663.32	165.85	246.	19.	0.011	116.51	0.905s
Cf-251	706.34	176.60	90.	12.	0.007	143.61	0.916s
U-235	742.85	185.72	264.	-21.	-0.012	109.69	0.925s
U-235	821.35	205.33	121.	-5.	-0.003	387.52	0.945s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
TH-229	843.44	210.85	157.	-23.	-0.013	100.50	0.950s
Cf-251	908.08	227.00	80.	9.	0.005	179.96	0.966s
TH-227	943.98	235.97	566.	-19.	-0.010	182.54	0.975s
PB-212	954.64	238.63	42.	181.	0.101	9.01	0.978D
PB-214	968.10	242.00	59.	86.	0.048	16.59	0.981D
EU-152	978.89	244.69	485.	16.	0.009	201.27	0.984s
TH-227	1025.11	256.24	136.	-21.	-0.012	105.76	0.995s
Cd-113m	1054.97	263.70	91.	6.	0.004	216.30	1.002
BI-210M	1063.50	265.83	130.	-17.	-0.010	97.36	1.005s
TL-208	1109.33	277.28	95.	-5.	-0.003	310.74	1.016
Hg-203	1117.00	279.20	140.	-18.	-0.010	93.77	1.017s
I-131	1137.41	284.30	59.	14.	0.008	104.17	1.022
PB-214	1181.01	295.19	49.	201.	0.112	9.82	0.889
TL-210	1184.24	296.00	416.	13.	0.007	216.26	1.034s
PB-212	1200.37	300.03	430.	13.	0.007	222.82	1.038
PA-231	1200.53	300.07	443.	9.	0.005	350.25	1.038s
PA-233	1200.97	300.18	452.	0.	0.000	1000.00	1.038s
PA-231	1210.86	302.65	452.	0.	0.000	1000.00	1.040s
BA-133	1211.66	302.85	452.	0.	0.000	1000.00	1.040s
Ba-140	1219.66	304.85	452.	0.	0.000	1000.00	1.042s
BI-210M	1219.85	304.90	452.	0.	0.000	1000.00	1.042s
Ir-192	1234.03	308.44	460.	-15.	-0.008	210.19	1.046s
PA-233	1248.32	312.01	421.	13.	0.007	226.98	1.049s
Ir-192	1266.25	316.49	72.	12.	0.007	102.50	1.053
CR-51	1280.63	320.08	68.	11.	0.006	110.15	1.057s
La-140	1315.35	328.76	48.	13.	0.007	100.50	1.065s
Cf-249	1334.08	333.44	66.	0.	0.000	1000.00	1.070s
AC-228	1353.43	338.27	35.	64.	0.035	23.92	1.257
Cs-136	1362.62	340.57	176.	12.	0.006	166.02	1.077s
EU-152	1377.49	344.29	190.	-14.	-0.008	141.37	1.080s
HF-181	1383.66	345.83	174.	13.	0.007	145.79	1.082s
PB-214	1407.91	351.89	45.	374.	0.208	6.15	0.900
BA-133	1424.36	356.00	474.	4.	0.002	740.44	1.091s
I-131	1458.32	364.48	26.	8.	0.005	118.89	1.099s
BA-133	1535.78	383.84	67.	4.	0.002	297.14	1.117s
Cf-249	1552.22	387.95	70.	10.	0.006	119.21	1.121s
SN-113	1567.19	391.69	58.	9.	0.005	128.16	1.125s
SB-125	1711.99	427.88	52.	-6.	-0.003	238.82	1.158
AG-108M	1736.25	433.94	32.	9.	0.005	128.63	1.164
PM-146	1816.05	453.88	44.	-2.	-0.001	461.82	1.182s
SB-125	1854.01	463.37	58.	9.	0.005	124.17	1.191s
Ir-192	1872.79	468.06	81.	-13.	-0.007	100.88	1.195s
BE-7	1910.94	477.59	72.	-7.	-0.004	154.99	1.204s
HF-181	1928.56	482.00	49.	10.	0.006	100.82	1.208s
La-140	1948.65	487.02	13.	25.	0.014	33.66	1.212s
RU-103	1988.80	497.05	33.	-8.	-0.004	114.41	1.221s
RH-106	2048.06	511.86	27.	67.	0.037	16.37	2.485s
Kr-85	2056.53	513.98	101.	10.	0.005	151.40	1.237s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Nd-147	2124.62	531.00	36.	-11.	-0.006	110.97	1.252s
Ba-140	2149.67	537.26	24.	11.	0.006	94.62	1.258s
CS-134	2253.60	563.24	36.	-7.	-0.004	172.02	1.280s
CS-134	2277.94	569.32	32.	-3.	-0.002	272.85	1.286s
PA-234	2278.54	569.47	24.	10.	0.006	75.94	1.286s
BI-207	2279.47	569.70	28.	1.	0.001	645.85	1.286s
TL-208	2333.61	583.23	13.	73.	0.040	15.72	1.091
SB-125	2402.69	600.50	380.	-12.	-0.007	69.56	1.313s
SB-124	2411.61	602.73	368.	-7.	-0.004	393.86	1.315s
CS-134	2419.53	604.71	350.	4.	0.002	758.35	1.317s
BI-214	2437.63	609.24	20.	239.	0.133	7.19	1.383
PM-144	2472.94	618.06	22.	8.	0.004	90.11	1.328s
RH-106	2488.37	621.92	56.	-12.	-0.007	91.36	1.332s
SB-125	2544.26	635.89	14.	8.	0.004	75.27	1.344s
AG-110M	2631.76	657.76	48.	-4.	-0.002	260.22	1.362s
CS-137	2647.36	661.66	63.	-8.	-0.005	94.22	1.366
NB-94	2811.25	702.63	17.	8.	0.004	119.19	1.400s
SB-124	2891.88	722.79	43.	-1.	-0.001	932.74	1.417s
AG-108M	2892.48	722.94	44.	0.	0.000	1000.00	1.417s
EU-154	2894.17	723.36	44.	0.	0.000	1000.00	1.418s
PM-146	2943.61	735.72	17.	3.	0.001	324.52	1.428s
ZR-95	3027.65	756.73	26.	-4.	-0.002	264.97	1.445s
AG-110M	3056.50	763.94	91.	-21.	-0.012	68.35	1.451s
NB-95	3063.89	765.79	94.	-4.	-0.002	359.16	1.453s
PA-234M	3066.38	766.41	71.	14.	0.008	87.69	1.453s
EU-152	3116.41	778.92	23.	-3.	-0.002	312.25	1.463s
BI-212	3142.41	785.42	14.	22.	0.012	42.70	1.468s
CS-134	3184.20	795.87	52.	-7.	-0.004	138.36	1.477s
TL-210	3199.12	799.60	57.	0.	0.000	1000.00	1.480s
CS-134	3208.53	801.95	50.	9.	0.005	118.28	1.482s
CO-58	3243.82	810.78	78.	-15.	-0.008	62.73	1.489s
La-140	3263.80	815.77	92.	-15.	-0.008	96.00	1.493s
Cs-136	3274.72	818.50	78.	12.	0.006	111.71	1.495s
MN-54	3340.10	834.85	66.	-20.	-0.011	47.27	1.508s
Co-56	3387.78	846.77	28.	-4.	-0.002	215.10	1.518s
TL-208	3442.95	860.56	28.	-5.	-0.003	183.99	1.529s
NB-94	3485.08	871.10	14.	9.	0.005	66.84	1.537
EU-154	3493.61	873.23	28.	5.	0.003	148.57	1.539s
PA-234	3522.80	880.53	72.	-14.	-0.008	88.74	1.544s
PA-234	3533.64	883.24	87.	-14.	-0.008	96.22	1.547s
AG-110M	3539.41	884.68	101.	-10.	-0.006	146.77	1.547s
Sc-46	3557.79	889.28	133.	-16.	-0.009	103.78	1.551s
Y-88	3592.83	898.04	16.	1.	0.001	858.71	1.558s
AC-228	3645.52	911.22	5.	41.	0.023	19.42	0.766s
AG-110M	3750.60	937.49	19.	1.	0.001	692.82	1.589s
PA-234	3784.70	946.02	23.	-4.	-0.002	241.30	1.595
EU-152	3857.05	964.11	57.	-1.	-0.001	807.77	1.609s
AC-228	3876.48	968.97	25.	10.	0.005	79.39	1.612s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
EU-154	3985.88	996.33	10.	6.	0.003	89.86	1.633s
PA-234M	4004.55	1001.00	15.	5.	0.003	113.35	1.636s
EU-154	4019.65	1004.77	43.	-10.	-0.005	99.60	1.639s
Co-56	4151.87	1037.84	15.	-5.	-0.003	118.05	1.664s
Cs-136	4192.77	1048.07	12.	4.	0.002	132.29	1.671s
RH-106	4201.93	1050.36	36.	-13.	-0.007	71.34	1.673s
BI-207	4255.11	1063.66	15.	7.	0.004	135.12	1.682s
Ga-68	4310.04	1077.40	25.	-6.	-0.003	187.70	1.692s
FE-59	4397.41	1099.25	35.	-13.	-0.007	103.82	1.708s
EU-152	4448.68	1112.07	65.	14.	0.008	84.79	1.717s
ZN-65	4462.56	1115.55	79.	15.	0.008	89.91	1.720s
BI-214	4481.51	1120.29	96.	5.	0.003	283.11	1.723s
Ta-182	4485.56	1121.30	70.	10.	0.006	118.59	1.724s
CO-60	4693.21	1173.24	15.	9.	0.005	105.70	1.760s
Ta-182	4756.42	1189.05	15.	3.	0.002	289.64	1.771
Ta-182	4885.79	1221.41	11.	9.	0.005	90.75	1.793
Co-56	4953.23	1238.28	16.	24.	0.013	43.03	1.804
EU-154	5098.17	1274.54	11.	0.	0.000	1000.00	1.828
FE-59	5166.35	1291.60	21.	-11.	-0.006	97.28	1.840s
TL-210	5251.91	1313.00	0.	6.	0.003	40.82	1.854s
CO-60	5329.85	1332.50	1.	5.	0.003	49.28	1.866s
AG-110M	5536.88	1384.30	5.	2.	0.001	324.35	1.899s
EU-152	5631.62	1408.00	16.	-3.	-0.002	308.52	1.914s
K-40	5841.87	1460.61	3.	190.	0.106	7.36	1.911
La-140	6383.73	1596.21	12.	-3.	-0.001	556.63	2.024s
SB-124	6762.39	1690.98	17.	-10.	-0.006	101.73	2.076s
BI-214	7056.06	1764.49	20.	7.	0.004	95.57	2.114
Co-56	7083.46	1771.35	31.	10.	0.005	88.44	2.117s
Y-88	7341.96	1836.06	0.	6.	0.003	43.86	2.149s

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
BE-7	C	-2.9406E+00				5.31E+01	
			477.60	-2.941E+00	&(P	1.715E+01 1.55E+02 1.05E+01	G
NA-22	C	3.2367E-02				9.50E+02	
			1274.53	3.237E-02	%(	1.741E+00 1.40E+03 9.99E+01	G
K-40	N	1.9403E+02				4.66E+11	
			1460.83	1.940E+02	(P	1.076E+01 7.36E+00 1.07E+01	G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

Sc-46    F  -1.1602E+00                                     8.38E+01
                          889.28-1.160E+00 ?(  4.047E+00 1.04E+02 1.00E+02 G
                         1120.55-3.322E-07 %   4.315E+00 3.73E+08 1.00E+02 G

CR-51    F   3.3786E+00                                     2.77E+01
                          320.08 3.379E+00 ?(P 1.262E+01 1.10E+02 9.94E+00 G

MN-54    C  -1.3557E+00                                     3.12E+02
                          834.85-1.356E+00 ?(P 2.753E+00 4.73E+01 1.00E+02 G

FE-59    F  -1.9715E+00                                     4.45E+01
                         1099.25-1.972E+00 &(  4.592E+00 1.04E+02 5.65E+01 G
                         1291.60-2.575E+00 +   5.505E+00 9.73E+01 4.32E+01 G

Co-56    C   1.1867E+00                                     7.73E+01
                          846.77-3.033E-01 ?(P 1.897E+00 2.15E+02 9.99E+01 G
                         1238.28 3.441E+00 ?(  3.061E+00 4.30E+01 6.61E+01 G
                         1037.84-2.944E+00 + P 1.203E+01 1.18E+02 1.41E+01 G
                         1771.35 7.960E+00 ?   2.384E+01 8.84E+01 1.55E+01  A

CO-57    C   2.2248E-01                                     2.72E+02
                          122.06 5.802E-02 ?(  1.188E+00 5.98E+02 8.56E+01 G
                          136.47 1.541E+00 &(  1.411E+01 2.72E+02 1.07E+01 G

CO-58    C  -9.9728E-01                                     7.09E+01
                          810.78-9.973E-01 ?(P 2.921E+00 6.27E+01 9.95E+01 G

CO-60    F   6.5459E-01                                     1.93E+03
                         1332.50 5.330E-01 ?(P 7.427E-01 4.93E+01 1.00E+02 G
                         1173.24 7.763E-01 ?(P 1.904E+00 1.06E+02 9.99E+01 G

ZN-65    F   2.5096E+00                                     2.44E+02
                         1115.55 2.510E+00 ?(  7.579E+00 8.99E+01 5.06E+01 G

NB-94    I   5.5329E-01                                     7.41E+06
                          702.63 4.516E-01 ?(P 1.335E+00 1.19E+02 9.79E+01 G
                          871.10 6.529E-01 ?(  1.443E+00 6.68E+01 9.99E+01 G

ZR-95    I  -4.6006E-01                                     6.40E+01
                          756.73-4.601E-01 ?(  3.045E+00 2.65E+02 5.45E+01 G
                          724.20-2.336E-02 % P 4.606E+00 5.26E+03 4.42E+01 G

NB-95    I  -2.4510E-01                                     6.40E+01
                          765.79-2.451E-01 ?(  3.043E+00 3.59E+02 9.98E+01 G
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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
RU-103	I	-3.6459E-01					3.93E+01	
			497.05	-3.646E-01	?(P	1.420E+00	1.14E+02	9.09E+01 G
			610.30	-1.388E-05	%	8.225E+01	1.74E+08	5.75E+00 GA
RH-106	I	-6.5568E+00					3.74E+02	
			621.92	-6.557E+00	?(	2.020E+01	9.14E+01	9.93E+00 G
			1050.36	-6.872E+01	+	1.632E+02	7.13E+01	1.56E+00 G
			511.86	1.514E+01	?	6.047E+00	1.64E+01	2.00E+01 GA
AG-108M	C	3.8834E-01					1.53E+05	
			433.94	3.883E-01	(P	1.266E+00	1.29E+02	9.05E+01 G
			722.94	0.000E+00	-	2.231E+00	1.00E+03	9.08E+01 G
			614.28	8.934E-07	%	5.292E+00	1.74E+08	8.98E+01 G
AG-110M	F	-5.5065E-01					2.50E+02	
			884.68	-9.732E-01	?(	4.862E+00	1.47E+02	7.27E+01 G
			657.76	-2.256E-01	+	2.056E+00	2.60E+02	9.46E+01 G
			937.49	2.909E-01	&	4.984E+00	6.93E+02	3.44E+01 G
			1384.30	7.138E-01	?(	5.770E+00	3.24E+02	2.43E+01 G
			763.94	-5.894E+00	+	1.334E+01	6.84E+01	2.23E+01 G
SN-113	F	4.9394E-01					1.15E+02	
			391.69	4.939E-01	?(	2.165E+00	1.28E+02	6.40E+01 G
SB-124	F	-3.6463E-01					6.02E+01	
			602.73	-3.646E-01	&(	4.853E+00	3.94E+02	9.83E+01 G
			1690.98	-2.577E+00	+	5.650E+00	1.02E+02	4.78E+01 G
			722.79	-5.576E-01	+	1.855E+01	9.33E+02	1.08E+01 G
SB-125	I	1.1273E+00					1.01E+03	
			427.88	-7.886E-01	&(	4.773E+00	2.39E+02	2.96E+01 G
			600.50	-3.600E+00	+ P	2.705E+01	6.96E+01	1.79E+01 G
			635.89	3.874E+00	?(	9.793E+00	7.53E+01	1.13E+01 G
			463.37	3.577E+00	?(P	1.517E+01	1.24E+02	1.05E+01 G
I-131	I	7.7147E-01					8.02E+00	
			364.48	3.472E-01	?(	1.097E+00	1.19E+02	8.17E+01 G
			284.30	6.416E+00	?(	1.732E+01	1.04E+02	6.14E+00 G
			636.97	3.089E-01	%	1.917E+01	1.69E+03	7.17E+00 G
Gd-153	F	-3.7099E-01					2.42E+02	
			97.50	-3.710E-01	?(	3.979E+00	3.16E+02	3.00E+01 G
			103.20	-1.574E+00	+	6.239E+00	1.19E+02	2.18E+01 G
Ga-68	C	-1.7853E+01					4.71E-02	
			1077.40	-1.785E+01	?(	7.739E+01	1.88E+02	3.30E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Tc-99m	I	3.5444E-01					2.51E-01	
			140.51	3.544E-01	?(	1.495E+00	1.26E+02	8.93E+01 G
BA-133	F	2.2417E-01					3.85E+03	
			356.00	2.242E-01	?(	5.603E+00	7.40E+02	6.20E+01 G
			302.85	0.000E+00	-	1.621E+01	1.00E+03	1.83E+01 G
			383.84	1.567E+00	@ P	1.619E+01	2.97E+02	8.94E+00 GA
			80.99	-1.270E+00	+ P	3.874E+00	8.85E+01	3.41E+01 GA
CS-134	I	1.4862E-01					7.54E+02	
			795.87	-5.154E-01	?(P	2.768E+00	1.38E+02	8.55E+01 G
			604.71	1.862E-01	+	4.784E+00	7.58E+02	9.76E+01 G
			569.32	-9.630E-01	+	9.332E+00	2.73E+02	1.54E+01 G
			801.95	6.684E+00	&(	2.703E+01	1.18E+02	8.69E+00 G
			563.24	-4.102E+00	+	1.797E+01	1.72E+02	8.35E+00 G
CS-137	I	-5.4937E-01					1.10E+04	
			661.66	-5.494E-01	?(P	2.608E+00	9.42E+01	8.52E+01 G
CE-139	F	4.3093E-01					1.38E+02	
			165.85	4.309E-01	?(	1.683E+00	1.17E+02	7.99E+01 G
Ba-140	I	2.0657E+00					1.28E+01	
			537.26	2.066E+00	&(	4.925E+00	9.46E+01	2.44E+01 G
			162.66	-6.241E+00	+	2.347E+01	1.12E+02	6.22E+00 G
			304.85	0.000E+00	-	6.963E+01	1.00E+03	4.29E+00 G
La-140	I	7.5699E-01					1.28E+01	
			1596.21	-3.097E-01	?(P	2.278E+00	5.57E+02	9.54E+01 G
			487.02	2.414E+00	?(P	1.837E+00	3.37E+01	4.55E+01 G
			328.76	2.056E+00	?(	5.369E+00	1.00E+02	2.03E+01 G
			815.77	-4.207E+00	+	1.358E+01	9.60E+01	2.33E+01 G
CE-141	I	-7.4138E-01					3.25E+01	
			145.44	-7.414E-01	?(	3.123E+00	1.26E+02	4.82E+01 G
CE-144	I	-3.1758E+00					2.85E+02	
			133.54	-3.176E+00	?(	1.314E+01	1.24E+02	1.11E+01 G
PM-144	C	1.9421E-01					3.63E+02	
			696.54	-3.935E-02	%(	1.440E+00	1.43E+03	9.90E+01 G
			618.06	4.275E-01	?(P	1.311E+00	9.01E+01	9.91E+01 G
EU-152	F	3.7725E+00					4.94E+03	
			121.78	9.473E-01	?(	3.387E+00	1.07E+02	2.86E+01 G
			344.29	-1.722E+00	&	8.209E+00	1.41E+02	2.65E+01 G
			1112.07	8.989E+00	&(P	2.556E+01	8.48E+01	1.36E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			778.92	-1.653E+00	-	1.251E+01	3.12E+02	1.29E+01 G
			964.11	-7.006E-01	-	1.996E+01	8.08E+02	1.46E+01 G
			244.69	5.035E+00	?(	3.400E+01	2.01E+02	7.58E+00 G
			1408.00	-1.507E+00	-	1.073E+01	3.09E+02	2.10E+01 GA
EU-154	I	1.2040E+00					3.14E+03	
			123.10	-1.270E-01	&(	2.365E+00	5.43E+02	4.08E+01 G
			1274.54	0.000E+00	+	5.010E+00	1.00E+03	3.52E+01 G
			723.36	0.000E+00	+	1.003E+01	1.00E+03	2.02E+01 G
			873.23	3.020E+00	?(	1.569E+01	1.49E+02	1.23E+01 G
			1004.77	-4.353E+00	+	1.473E+01	9.96E+01	1.80E+01 G
			996.33	4.224E+00	?(	1.308E+01	8.99E+01	1.06E+01 G
EU-155	I	1.2650E+00					1.81E+03	
			105.31	1.265E+00	?(	7.627E+00	1.80E+02	2.12E+01 G
			86.54	-1.343E+00	&	6.904E+00	1.54E+02	3.07E+01 G
HF-181	F	9.0691E-01					4.24E+01	
			482.00	5.492E-01	?(	1.880E+00	1.01E+02	8.05E+01 G
			133.02	0.000E+00	-	3.361E+00	1.00E+03	4.33E+01 G
			345.83	2.818E+00	?(	1.388E+01	1.46E+02	1.51E+01 G
			136.30	-6.260E+00	&	2.559E+01	1.22E+02	5.85E+00 G
Ta-182	F	2.5652E+00					1.14E+02	
			1121.30	2.590E+00	?(	1.044E+01	1.19E+02	3.49E+01 G
			1221.41	3.055E+00	(	6.217E+00	9.07E+01	2.70E+01 G
			1189.05	1.695E+00	(	1.173E+01	2.90E+02	1.62E+01 G
Hg-203	F	-6.1594E-01					4.66E+01	
			279.20	-6.159E-01	&(	1.934E+00	9.38E+01	8.15E+01 G
TL-208	N	4.3307E+00					6.98E+02	
			583.02	4.331E+00	(	1.176E+00	1.57E+01	8.45E+01 G
			277.28	-1.981E+00	- P	2.065E+01	3.11E+02	6.31E+00 G
			860.56	-2.900E+00	- P	1.541E+01	1.84E+02	1.24E+01 G
PM-146	C	6.9789E-02					2.02E+03	
			453.88	-1.570E-01	&(P	2.125E+00	4.62E+02	6.50E+01 G
			747.16	-1.654E-01	% P	4.470E+00	1.00E+03	3.40E+01 G
			735.72	7.251E-01	?(	6.012E+00	3.25E+02	2.25E+01 G
Y-88	F	7.6219E-01					1.07E+02	
			1836.06	7.622E-01	?(P	9.809E-01	4.39E+01	9.92E+01 G
			898.04	7.427E-02	- P	1.649E+00	8.59E+02	9.37E+01 G
Cd-113m		2.7466E+03					5.33E+03	
			263.70	2.747E+03	?(	2.042E+04	2.16E+02	6.00E-03 K

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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Cd-109	F	1.6153E-06						4.53E+02
								Derived Ave Activity
			88.04	1.615E-06	}(	5.249E+01	9.65E+08	3.79E+00 G
Cf-251	T	1.3183E+00						3.28E+05
			176.60	1.318E+00	?(	5.154E+00	1.44E+02	1.70E+01 G
			227.00	3.283E+00	&	1.619E+01	1.80E+02	6.30E+00 GA
Cf-249	T	5.6047E-01						1.28E+05
			387.95	5.605E-01	&(	2.272E+00	1.19E+02	6.60E+01 G
			333.44	0.000E+00	-	8.269E+00	1.00E+03	1.55E+01 G
Sn-126		-4.3032E+00						3.65E+07
			87.57	4.954E-01	}	5.319E+00	1.63E+02	3.75E+01 GA
			64.28	-4.303E+00	?(	1.841E+01	1.28E+02	9.70E+00 G
			86.94	-4.554E+00	+	2.301E+01	1.51E+02	9.04E+00 GA
PB-210	N	2.4624E+01						8.14E+03
			46.54	2.462E+01	(P	3.627E+01	5.61E+01	4.25E+00 G
PB-212	N	1.0017E+01						6.98E+02
			238.63	1.002E+01	(P	1.825E+00	9.01E+00	4.33E+01 G
			300.03	1.171E+01	P	8.773E+01	2.23E+02	3.28E+00 GA
PB-214	N	3.1806E+01						5.84E+05
			351.93	3.287E+01	(P	2.993E+00	6.15E+00	3.76E+01 G
			295.09	2.973E+01	(P	5.236E+00	9.82E+00	1.93E+01 G
			242.00	2.811E+01	- P	1.254E+01	1.66E+01	7.43E+00 GA
BI-207	C	7.4045E-01						1.18E+04
			1063.66	7.405E-01	?(P	2.348E+00	1.35E+02	7.45E+01 G
			569.70	5.899E-02	-	1.379E+00	6.46E+02	9.77E+01 G
BI-212	N	-4.2722E-01						6.98E+02
			727.17	-4.272E-01	%(P	2.713E+01	1.70E+03	7.55E+00 G
			785.42	1.093E+02	? P	1.028E+02	4.27E+01	1.28E+00 GA
U-235	N	1.7734E+00						2.57E+11
			143.79	1.773E+00	(	1.236E+01	2.07E+02	1.10E+01 G
			205.33	-2.148E+00	+ P	2.279E+01	3.88E+02	5.01E+00 G
			163.38	-8.085E+00	& P	2.992E+01	7.45E+01	5.08E+00 G
			185.72	-7.699E-01	+	2.826E+00	1.10E+02	5.40E+01 GA
BI-214	N	2.7096E+01						5.84E+05
			609.31	2.710E+01	(P	2.669E+00	7.19E+00	4.61E+01 G
			1120.29	2.861E+00	- P	2.789E+01	2.83E+02	1.51E+01 G
			1764.49	5.925E+00	- P	1.934E+01	9.56E+01	1.54E+01 G

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
BI-210M	T -8.9690E-01					1.10E+09	
		265.83	-8.969E-01	?(	2.929E+00	9.74E+01	5.00E+01 G
		304.90	0.000E+00	+	1.067E+01	1.00E+03	2.80E+01 G
AC-228	N 1.2325E+01					2.10E+03	
		911.07	1.040E+01	(P	3.256E+00	1.94E+01	2.90E+01 G
		968.97	4.284E+00	-	1.145E+01	7.94E+01	1.75E+01 G
		338.32	1.697E+01	(P	8.099E+00	2.39E+01	1.20E+01 G
		93.35	5.838E+00	-	2.747E+01	1.41E+02	5.56E+00 XA
TH-227	N -7.6428E+00					7.95E+03	
		256.24	-7.643E+00	?(	2.069E+01	1.06E+02	7.00E+00 G
		235.97	-3.585E+00	+	2.191E+01	1.83E+02	1.23E+01 G
		50.14	6.159E+00	& P	1.944E+01	1.11E+02	8.00E+00 G
TH-229	N -1.5258E-01					2.68E+06	
		193.51	-1.526E-01	%(	2.292E+01	5.43E+03	4.40E+00 G
		210.85	-1.639E+01	+	4.414E+01	1.00E+02	2.99E+00 G
TH-234	N 1.4729E+01					1.63E+12	
		92.59	1.031E+01	(P	1.548E+01	4.65E+01	5.58E+00 G
		63.29	2.121E+01	(P	3.061E+01	4.48E+01	3.81E+00 G
PA-231	N 4.6341E+00					1.20E+07	
		302.65	0.000E+00	?(	1.031E+02	1.00E+03	2.88E+00 G
		300.07	1.006E+01	*(	1.187E+02	3.50E+02	2.46E+00 G
PA-233	C 1.0703E+00					7.82E+08	
		312.01	1.070E+00	?(P	8.169E+00	2.27E+02	3.60E+01 G
		300.18	0.000E+00	-	4.756E+01	1.00E+03	6.20E+00 G
PA-234	N 2.9925E+00					1.63E+12	
		131.29	1.613E+00	&(	7.848E+00	1.45E+02	1.80E+01 G
		946.02	-2.443E+00	+	1.422E+01	2.41E+02	1.34E+01 G
		569.47	6.022E+00	?(	1.533E+01	7.59E+01	8.20E+00 G
		883.24	-1.056E+01	+	3.421E+01	9.62E+01	9.60E+00 G
		880.53	-1.684E+01	+	5.019E+01	8.87E+01	6.00E+00 GA
PA-234M	N 1.1696E+02					1.63E+12	
		1001.00	4.999E+01	?(P	1.978E+02	1.13E+02	8.37E-01 G
		766.41	3.076E+02	?(	9.059E+02	8.77E+01	2.94E-01 G
AM-241	T 4.8309E-01					1.58E+05	
		59.54	4.831E-01	?(P	4.162E+00	3.00E+02	3.59E+01 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

Np-237   F  -3.1490E+00                                      2.14E+06
                          86.49-3.149E+00 &(  1.645E+01 1.57E+02 1.31E+01 G

Ir-192   F   4.2267E-01                                      7.40E+01
                         316.49 4.227E-01 ?(  1.465E+00 1.03E+02 8.70E+01 G
                         468.06-1.065E+00 +   3.624E+00 1.01E+02 5.18E+01 G
                         308.44-1.358E+00 +   9.585E+00 2.10E+02 3.18E+01 G

Cs-136   F   6.5088E-01                                      1.30E+01
                         818.50 7.775E-01 ?(  2.943E+00 1.12E+02 1.00E+02 G
                        1048.07 4.116E-01 ?(  1.940E+00 1.32E+02 8.00E+01 G
                         340.57 7.890E-01 ?(  4.433E+00 1.66E+02 4.69E+01 G

Np-239   T  -1.5263E+00                                      2.36E+00
                         103.70-1.430E+00 +   5.843E+00 1.22E+02 2.40E+01 X
                         106.13-1.526E+00 ?(  7.566E+00 1.48E+02 2.27E+01 G
                          99.50 1.667E+00 &   7.360E+00 1.31E+02 1.50E+01 X

Nd-147      -3.9413E+00                                      1.11E+01
                         531.00-3.941E+00 ?(  1.099E+01 1.11E+02 1.30E+01 G
                          91.10 1.198E+00 +   5.425E+00 1.35E+02 2.83E+01 G

TL-210   N   2.1649E-01                                      5.84E+05
                         799.60 0.000E+00 ?(  2.512E+00 1.00E+03 9.90E+01 G
                         296.00 4.877E-01 ?(  3.546E+00 2.16E+02 7.90E+01 G
                        1313.00 2.843E+00 ?   3.492E+00 4.08E+01 2.10E+01 GA

Kr-85    I   1.0138E+02                                      3.92E+03
                         513.98 1.014E+02 ?(  5.227E+02 1.51E+02 4.30E-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
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} - 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	
TH-227	50.14	132.	18.	0.010	111.06	6.159E+00	P
AM-241	59.54	197.	8.	0.004	300.13	4.831E-01	P
BA-133	80.99	267.	-26.	-0.014	88.48	-1.270E+00	P
Np-237	86.49	784.	-26.	-0.014	156.55	-3.149E+00	
EU-155	86.54	759.	-26.	-0.014	154.03	-1.343E+00	
Nd-147	91.10	409.	21.	0.012	135.35	1.198E+00	
Gd-153	97.50	253.	-7.	-0.004	316.19	-3.710E-01	
Np-239	99.50	217.	16.	0.009	131.29	1.667E+00	
Gd-153	103.20	338.	-22.	-0.012	118.50	-1.574E+00	
Np-239	103.70	361.	-22.	-0.012	122.15	-1.430E+00	
EU-155	105.31	485.	17.	0.010	179.87	1.265E+00	
Np-239	106.13	549.	-23.	-0.013	148.29	-1.526E+00	
CO-57	122.06	182.	3.	0.002	598.10	5.802E-02	
EU-154	123.10	162.	-3.	-0.002	543.32	-1.270E-01	
PA-234	131.29	345.	18.	0.010	145.10	1.613E+00	
CE-144	133.54	363.	-22.	-0.012	123.69	-3.176E+00	
HF-181	136.30	377.	-23.	-0.013	122.27	-6.260E+00	
CO-57	136.47	382.	10.	0.006	271.76	1.541E+00	
Tc-99m	140.51	272.	19.	0.010	125.79	3.544E-01	
U-235	143.79	291.	12.	0.007	206.66	1.773E+00	
CE-141	145.44	357.	-22.	-0.012	125.89	-7.414E-01	
Ba-140	162.66	288.	-22.	-0.012	112.41	-6.241E+00	
U-235	163.38	311.	-23.	-0.013	74.48	-8.085E+00	P
CE-139	165.85	246.	19.	0.011	116.51	4.309E-01	
Cf-251	176.60	90.	12.	0.007	143.61	1.318E+00	
U-235	185.72	264.	-21.	-0.012	109.69	-7.699E-01	
U-235	205.33	121.	-5.	-0.003	387.52	-2.148E+00	P
TH-229	210.85	157.	-23.	-0.013	100.50	-1.639E+01	
Cf-251	227.00	80.	9.	0.005	179.96	3.283E+00	
TH-227	235.97	566.	-19.	-0.010	182.54	-3.585E+00	
TH-227	256.24	136.	-21.	-0.012	105.76	-7.643E+00	
Cd-113m	263.70	91.	6.	0.004	216.30	2.747E+03	
BI-210M	265.83	130.	-17.	-0.010	97.36	-8.969E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
Hg-203	279.20	140.	-18.	-0.010	93.77	-6.159E-01		
I-131	284.30	59.	14.	0.008	104.17	6.416E+00		
TL-210	296.00	416.	13.	0.007	216.26	4.877E-01		
PA-231	300.07	443.	9.	0.005	350.25	1.006E+01		
Ir-192	308.44	460.	-15.	-0.008	210.19	-1.358E+00		
PA-233	312.01	421.	13.	0.007	226.98	1.070E+00		P
Ir-192	316.49	72.	12.	0.007	102.50	4.227E-01		
CR-51	320.08	68.	11.	0.006	110.15	3.379E+00		P
La-140	328.76	48.	13.	0.007	100.50	2.056E+00		
Cs-136	340.57	176.	12.	0.006	166.02	7.890E-01		
HF-181	345.83	174.	13.	0.007	145.79	2.818E+00		
BA-133	356.00	474.	4.	0.002	740.44	2.242E-01		
I-131	364.48	26.	8.	0.005	118.89	3.472E-01		
BA-133	383.84	67.	4.	0.002	297.14	1.567E+00		P
Cf-249	387.95	70.	10.	0.006	119.21	5.605E-01		
SN-113	391.69	58.	9.	0.005	128.16	4.939E-01		
SB-125	427.88	52.	-6.	-0.003	238.82	-7.886E-01		
AG-108M	433.94	32.	9.	0.005	128.63	3.883E-01		P
PM-146	453.88	44.	-2.	-0.001	461.82	-1.570E-01		P
SB-125	463.37	58.	9.	0.005	124.17	3.577E+00		P
Ir-192	468.06	81.	-13.	-0.007	100.88	-1.065E+00		
BE-7	477.59	72.	-7.	-0.004	154.99	-2.941E+00		P
HF-181	482.00	49.	10.	0.006	100.82	5.492E-01		
La-140	487.02	13.	25.	0.014	33.66	2.414E+00		P
RU-103	497.05	33.	-8.	-0.004	114.41	-3.646E-01		P
RH-106	511.86	27.	67.	0.037	16.37	1.514E+01		
Kr-85	513.98	101.	10.	0.005	151.40	1.014E+02		
Nd-147	531.00	36.	-11.	-0.006	110.97	-3.941E+00		
Ba-140	537.26	24.	11.	0.006	94.62	2.066E+00		
CS-134	563.24	36.	-7.	-0.004	172.02	-4.102E+00		
CS-134	569.32	32.	-3.	-0.002	272.85	-9.630E-01		
PA-234	569.47	24.	10.	0.006	75.94	6.022E+00		
BI-207	569.70	28.	1.	0.001	645.85	5.899E-02		
SB-125	600.50	380.	-12.	-0.007	69.56	-3.600E+00		P
SB-124	602.73	368.	-7.	-0.004	393.86	-3.646E-01		
CS-134	604.71	350.	4.	0.002	758.35	1.862E-01		
PM-144	618.06	22.	8.	0.004	90.11	4.275E-01		P
RH-106	621.92	56.	-12.	-0.007	91.36	-6.557E+00		
SB-125	635.89	14.	8.	0.004	75.27	3.874E+00		
AG-110M	657.76	48.	-4.	-0.002	260.22	-2.256E-01		
CS-137	661.66	63.	-8.	-0.005	94.22	-5.494E-01		P
NB-94	702.63	17.	8.	0.004	119.19	4.516E-01		P
SB-124	722.79	43.	-1.	-0.001	932.74	-5.576E-01		
PM-146	735.72	17.	3.	0.001	324.52	7.251E-01		
ZR-95	756.73	26.	-4.	-0.002	264.97	-4.601E-01		
AG-110M	763.94	91.	-21.	-0.012	68.35	-5.894E+00		
NB-95	765.79	94.	-4.	-0.002	359.16	-2.451E-01		
PA-234M	766.41	71.	14.	0.008	87.69	3.076E+02		

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
BI-212	785.42	14.	22.	0.012	42.70	1.093E+02	P
CS-134	795.87	52.	-7.	-0.004	138.36	-5.154E-01	P
CS-134	801.95	50.	9.	0.005	118.28	6.684E+00	
CO-58	810.78	78.	-15.	-0.008	62.73	-9.973E-01	P
La-140	815.77	92.	-15.	-0.008	96.00	-4.207E+00	
Cs-136	818.50	78.	12.	0.006	111.71	7.775E-01	
MN-54	834.85	66.	-20.	-0.011	47.27	-1.356E+00	P
Co-56	846.77	28.	-4.	-0.002	215.10	-3.033E-01	P
NB-94	871.10	14.	9.	0.005	66.84	6.529E-01	
EU-154	873.23	28.	5.	0.003	148.57	3.020E+00	
PA-234	880.53	72.	-14.	-0.008	88.74	-1.684E+01	
PA-234	883.24	87.	-14.	-0.008	96.22	-1.056E+01	
AG-110M	884.68	101.	-10.	-0.006	146.77	-9.732E-01	
Sc-46	889.28	133.	-16.	-0.009	103.78	-1.160E+00	
Y-88	898.04	16.	1.	0.001	858.71	7.427E-02	P
AG-110M	937.49	19.	1.	0.001	692.82	2.909E-01	
PA-234	946.02	23.	-4.	-0.002	241.30	-2.443E+00	
EU-154	996.33	10.	6.	0.003	89.86	4.224E+00	
PA-234M	1001.00	15.	5.	0.003	113.35	4.999E+01	P
EU-154	1004.77	43.	-10.	-0.005	99.60	-4.353E+00	
Co-56	1037.84	15.	-5.	-0.003	118.05	-2.944E+00	P
Cs-136	1048.07	12.	4.	0.002	132.29	4.116E-01	
RH-106	1050.36	36.	-13.	-0.007	71.34	-6.872E+01	
BI-207	1063.66	15.	7.	0.004	135.12	7.405E-01	P
Ga-68	1077.40	25.	-6.	-0.003	187.70	-1.785E+01	
FE-59	1099.25	35.	-13.	-0.007	103.82	-1.972E+00	
ZN-65	1115.55	79.	15.	0.008	89.91	2.510E+00	
Ta-182	1121.30	70.	10.	0.006	118.59	2.590E+00	
CO-60	1173.24	15.	9.	0.005	105.70	7.763E-01	P
Ta-182	1189.05	15.	3.	0.002	289.64	1.695E+00	
Ta-182	1221.41	11.	9.	0.005	90.75	3.055E+00	
Co-56	1238.28	16.	24.	0.013	43.03	3.441E+00	
FE-59	1291.60	21.	-11.	-0.006	97.28	-2.575E+00	
TL-210	1313.00	0.	6.	0.003	40.82	2.843E+00	
CO-60	1332.50	1.	5.	0.003	49.28	5.330E-01	P
AG-110M	1384.30	5.	2.	0.001	324.35	7.138E-01	
La-140	1596.21	12.	-3.	-0.001	556.63	-3.097E-01	P
SB-124	1690.98	17.	-10.	-0.006	101.73	-2.577E+00	
Co-56	1771.35	31.	10.	0.005	88.44	7.960E+00	
Y-88	1836.06	0.	6.	0.003	43.86	7.622E-01	P

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
BE-7	#A	-2.9406E+00	-2.9406E+00	1.550E+02%	1.72E+01
NA-22	#A	3.2367E-02	3.2367E-02	1.396E+03%	1.74E+00
K-40		1.9403E+02	1.9403E+02	7.363E+00%	1.08E+01
Sc-46	#A	-1.1602E+00	-1.1602E+00	1.038E+02%	4.05E+00
CR-51	#A	3.3786E+00	3.3786E+00	1.102E+02%	1.26E+01
MN-54	#A	-1.3557E+00	-1.3557E+00	4.727E+01%	2.75E+00
FE-59	#A	-1.9715E+00	-1.9715E+00	1.038E+02%	4.59E+00
Co-56	#A	1.1867E+00	1.1867E+00	4.303E+01%	1.90E+00
CO-57	#A	2.2248E-01	2.2248E-01	2.718E+02%	1.19E+00
CO-58	#A	-9.9728E-01	-9.9728E-01	6.273E+01%	2.92E+00
CO-60	#A	6.5459E-01	6.5459E-01	4.928E+01%	7.43E-01
ZN-65	#A	2.5096E+00	2.5096E+00	8.991E+01%	7.58E+00
NB-94	#A	5.5329E-01	5.5329E-01	6.684E+01%	1.33E+00
ZR-95	#A	-4.6006E-01	-4.6006E-01	2.650E+02%	3.04E+00
NB-95	#A	-2.4510E-01	-2.4510E-01	3.592E+02%	3.04E+00
RU-103	#A	-3.6459E-01	-3.6459E-01	1.144E+02%	1.42E+00
RH-106	#A	-6.5568E+00	-6.5568E+00	9.136E+01%	2.02E+01
AG-108M	#A	3.8834E-01	3.8834E-01	1.286E+02%	1.27E+00
AG-110M	#A	-5.5065E-01	-5.5065E-01	1.468E+02%	4.86E+00
SN-113	#A	4.9394E-01	4.9394E-01	1.282E+02%	2.17E+00
SB-124	#A	-3.6463E-01	-3.6463E-01	3.939E+02%	4.85E+00
SB-125	#A	1.1273E+00	1.1273E+00	7.527E+01%	4.77E+00
I-131	#A	7.7145E-01	7.7147E-01	7.904E+01%	1.10E+00
Gd-153	#A	-3.7099E-01	-3.7099E-01	3.162E+02%	3.98E+00
Ga-68	#A	-1.7795E+01	-1.7853E+01	1.877E+02%	7.74E+01
Tc-99m	#A	3.5422E-01	3.5444E-01	1.258E+02%	1.50E+00
BA-133	#A	2.2417E-01	2.2417E-01	7.404E+02%	5.60E+00
CS-134	#A	1.4862E-01	1.4862E-01	9.101E+01%	2.77E+00
CS-137	#A	-5.4937E-01	-5.4937E-01	9.422E+01%	2.61E+00
CE-139	#A	4.3093E-01	4.3093E-01	1.165E+02%	1.68E+00
Ba-140	#A	2.0657E+00	2.0657E+00	9.462E+01%	4.93E+00
La-140	#A	7.5698E-01	7.5699E-01	3.366E+01%	2.28E+00
CE-141	#A	-7.4137E-01	-7.4138E-01	1.259E+02%	3.12E+00
CE-144	#A	-3.1758E+00	-3.1758E+00	1.237E+02%	1.31E+01
PM-144	#A	1.9421E-01	1.9421E-01	9.011E+01%	1.44E+00
EU-152	#C	3.7725E+00	3.7725E+00	8.100E+01%	3.39E+00
EU-154	#A	1.2040E+00	1.2040E+00	8.986E+01%	2.37E+00
EU-155	#A	1.2650E+00	1.2650E+00	1.799E+02%	7.63E+00
HF-181	#A	9.0690E-01	9.0691E-01	8.863E+01%	1.88E+00
Ta-182	#A	2.5652E+00	2.5652E+00	9.075E+01%	1.04E+01
Hg-203	#A	-6.1594E-01	-6.1594E-01	9.377E+01%	1.93E+00
TL-208		4.3307E+00	4.3307E+00	1.572E+01%	1.18E+00
PM-146	#A	6.9789E-02	6.9789E-02	2.822E+02%	2.12E+00

Y-88 #A	7.6219E-01	7.6219E-01	4.386E+01%		9.81E-01
Cd-113m#A	2.7466E+03	2.7466E+03	2.163E+02%		2.04E+04
Cd-109 #A	1.6153E-06	1.6153E-06	9.646E+08%		5.25E+01
Cf-251 #A	1.3183E+00	1.3183E+00	1.436E+02%		5.15E+00
Cf-249 #A	5.6047E-01	5.6047E-01	1.192E+02%		2.27E+00
Sn-126 #A	-4.3032E+00	-4.3032E+00	1.278E+02%		1.84E+01
PB-210 A	2.4624E+01	2.4624E+01	5.607E+01%		3.63E+01
PB-212	1.0017E+01	1.0017E+01	9.010E+00%		1.83E+00
PB-214	3.1806E+01	3.1806E+01	5.795E+00%		2.99E+00
BI-207 #A	7.4045E-01	7.4045E-01	1.351E+02%		2.35E+00
BI-212 #A	-4.2722E-01	-4.2722E-01	1.700E+03%		2.71E+01
U-235 #A	1.7734E+00	1.7734E+00	2.067E+02%		1.24E+01
BI-214	2.7096E+01	2.7096E+01	7.193E+00%		2.67E+00
BI-210M#A	-8.9690E-01	-8.9690E-01	9.736E+01%		2.93E+00
AC-228	1.2325E+01	1.2325E+01	1.541E+01%		3.26E+00
TH-227 #A	-7.6428E+00	-7.6428E+00	1.058E+02%		2.07E+01
TH-229 #A	-1.5258E-01	-1.5258E-01	5.430E+03%		2.29E+01
TH-234 #A	1.4729E+01	1.4729E+01	3.228E+01%		1.55E+01
PA-231 #A	4.6341E+00	4.6341E+00	3.503E+02%		1.03E+02
PA-233 #A	1.0703E+00	1.0703E+00	2.270E+02%		8.17E+00
PA-234 #A	2.9925E+00	2.9925E+00	7.594E+01%		7.85E+00
PA-234M#A	1.1696E+02	1.1696E+02	7.166E+01%		1.98E+02
AM-241 #A	4.8309E-01	4.8309E-01	3.001E+02%		4.16E+00
Np-237 #A	-3.1490E+00	-3.1490E+00	1.566E+02%		1.64E+01
Ir-192 #A	4.2267E-01	4.2267E-01	1.025E+02%		1.46E+00
Cs-136 #A	6.5087E-01	6.5088E-01	7.996E+01%		2.94E+00
Np-239 #A	-1.5262E+00	-1.5263E+00	1.483E+02%		7.57E+00
Nd-147 #A	-3.9413E+00	-3.9413E+00	1.110E+02%		1.10E+01
TL-210 #A	2.1649E-01	2.1649E-01	2.163E+02%		2.51E+00
Kr-85 #A	1.0138E+02	1.0138E+02	1.514E+02%		5.23E+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 2000.8 keV) 3.190E+02 Bq/Sample
Total Decayed Activity (37.6 to 2000.8 keV) 3.1895868E+02 Bq/Sample

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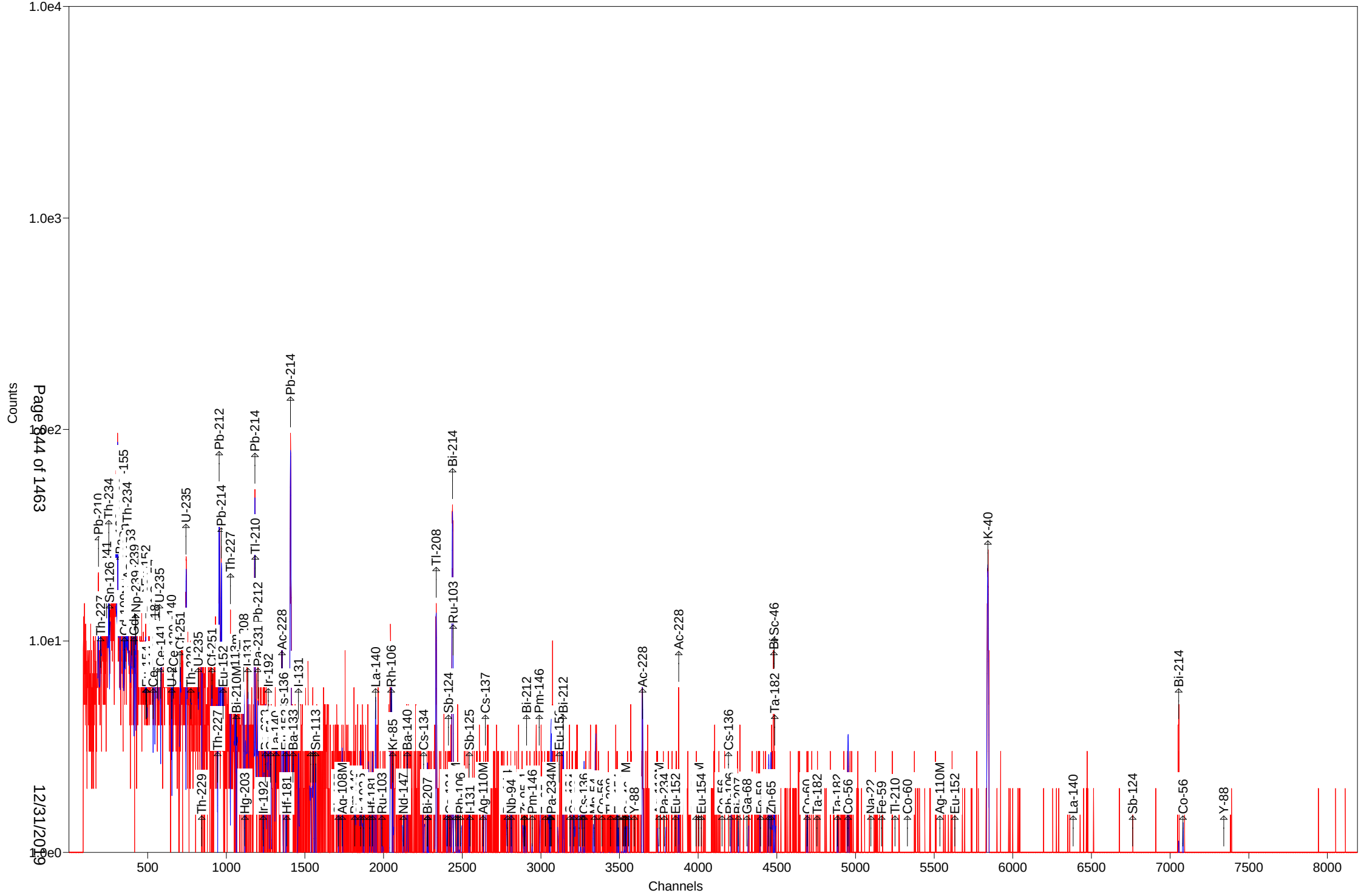
452567_Gamma_160-36526-A-6-B. 5_Gamma_20193364.spc.



Test America St. Louis Spectrum ID: 9_Gamma_20193838

Sample Description: 452567_Gamma_160-36526-A-7-B
Detector: Detector # 9
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-7-B

Decay to Time: 12/25/2019 09:34 Live Time: 1800 sec
Acquisition Time: 12/25/2019 09:34:27 Real Time: 1802 sec
Analysis Time: 12/25/2019 10:04 Dead Time: 0.12 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 9_Soil_TunaCan.Clb
Efficiency Cal Desc: 9_Soil_TunaCan_90099_050312
Efficiency Cal Date: 6/14/2012 10:19
Energy Cal Date: 3/1/2012 13:57
Library: Client_Long_Rev15.lib
Bkgd Correction File: 9_2019-12-07_1444.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	3.684E+00	100.8	3.712E+00	3.717E+00	1.247E+01
NA-22	4.597E-01	72.9	3.349E-01	3.357E-01	1.120E+00
K-40	2.079E+02	5.2	1.075E+01	1.512E+01	8.406E+00
Sc-46	5.664E-01	81.9	4.637E-01	4.646E-01	1.553E+00
CR-51	-2.354E-01	1901.9	4.478E+00	4.478E+00	2.855E+01
MN-54	-3.798E-01	127.6	4.846E-01	4.850E-01	1.369E+00
FE-59	7.717E-01	47.1	3.632E-01	3.652E-01	2.346E+00
Co-56	9.899E-01	44.1	4.369E-01	4.398E-01	1.325E+00
CO-57	3.406E-01	92.8	3.162E-01	3.167E-01	1.053E+00
CO-58	-1.800E-01	240.8	4.335E-01	4.336E-01	1.501E+00
CO-60	1.587E-01	327.4	5.198E-01	5.199E-01	1.160E+00
ZN-65	0.000E+00	1.#INF	3.629E-01	3.629E-01	6.225E+00
NB-94	4.866E-01	92.2	4.487E-01	4.494E-01	1.507E+00
ZR-95	4.049E-01	118.6	4.801E-01	4.806E-01	2.008E+00
NB-95	7.295E-01	76.0	5.546E-01	5.559E-01	1.845E+00
RU-103	1.823E-01	205.2	3.741E-01	3.742E-01	9.127E-01
RH-106	3.738E+00	322.4	1.205E+01	1.205E+01	4.036E+01
AG-108M	4.227E-01	93.5	3.950E-01	3.956E-01	9.384E-01
AG-110M	1.155E-01	63.7	7.361E-02	7.384E-02	2.007E+00
SN-113	6.178E-01	107.5	6.639E-01	6.646E-01	2.225E+00
SB-124	-5.682E-01	220.1	1.250E+00	1.251E+00	4.177E+00
SB-125	-5.526E-01	255.3	1.410E+00	1.411E+00	3.390E+00
I-131	1.079E+00	62.4	6.730E-01	6.753E-01	1.002E+00
Gd-153	4.922E-01	426.7	2.100E+00	2.101E+00	7.003E+00
Ga-68	-1.211E+01	197.0	2.385E+01	2.386E+01	5.234E+01
Tc-99m	0.000E+00	1.#INF	1.726E-01	1.726E-01	1.978E+00
BA-133	-8.577E-01	168.1	1.442E+00	1.442E+00	4.805E+00
CS-134	7.396E-01	73.9	5.462E-01	5.476E-01	1.861E+00
CS-137	2.522E-01	184.6	4.655E-01	4.657E-01	1.599E+00
CE-139	4.706E-01	98.5	4.633E-01	4.655E-01	1.542E+00
Ba-140	1.022E-01	1800.8	1.841E+00	1.841E+00	4.498E+00
La-140	6.072E-01	91.7	5.569E-01	5.578E-01	1.211E+00
CE-141	7.408E-01	138.7	1.027E+00	1.028E+00	3.420E+00

CE-144	0.000E+00	1.#INF	1.182E+00	1.182E+00	1.517E+01
PM-144	-5.490E-01	167.9	9.220E-01	9.225E-01	1.698E+00
EU-152	1.693E+00	77.1	1.305E+00	1.308E+00	3.050E+00
EU-154	-3.500E-02	374.4	1.310E-01	1.310E-01	2.314E+00
EU-155	1.500E+00	99.6	1.495E+00	1.497E+00	4.976E+00
HF-181	-7.509E-02	81.8	6.143E-02	6.155E-02	2.022E+00
Ta-182	-2.470E+00	115.5	2.853E+00	2.856E+00	9.569E+00
Hg-203	-5.080E-02	830.9	4.221E-01	4.221E-01	1.442E+00
TL-208	3.933E+00	15.6	6.145E-01	6.475E-01	1.073E+00
PM-146	6.580E-01	89.2	5.870E-01	5.880E-01	1.534E+00
Y-88	4.466E-01	46.0	2.053E-01	2.069E-01	5.109E-01
Cd-113m	-7.840E+03	83.8	6.570E+03	6.589E+03	2.184E+04
Cd-109	0.000E+00	1.#INF	1.823E+01	1.823E+01	6.057E+01
Cf-251	2.114E+00	93.7	1.982E+00	1.991E+00	5.035E+00
Cf-249	8.769E-01	62.2	5.452E-01	5.470E-01	2.042E+00
Sn-126	1.281E+00	408.3	5.230E+00	5.230E+00	1.756E+01
PB-210	3.786E+01	20.5	7.755E+00	8.068E+00	2.244E+01
PB-212	1.014E+01	7.9	8.007E-01	1.035E+00	1.870E+00
PB-214	4.047E+01	3.4	1.364E+00	2.507E+00	2.108E+00
BI-207	1.325E+00	39.4	5.223E-01	5.265E-01	1.064E+00
BI-212	2.430E+01	26.3	6.403E+00	6.526E+00	1.101E+01
U-235	0.000E+00	1.#INF	1.526E+00	1.526E+00	1.581E+01
BI-214	4.092E+01	4.4	1.791E+00	2.780E+00	1.803E+00
BI-210M	7.792E-01	89.0	6.938E-01	6.953E-01	2.312E+00
AC-228	1.029E+01	15.0	1.541E+00	1.627E+00	5.320E+00
TH-227	2.926E+00	131.4	3.845E+00	3.849E+00	1.325E+01
TH-229	7.994E+00	99.4	7.949E+00	7.975E+00	2.078E+01
TH-234	1.569E+01	30.4	4.772E+00	4.852E+00	1.516E+01
PA-231	0.000E+00	1.#INF	6.134E+00	6.134E+00	9.475E+01
PA-233	0.000E+00	1.#INF	4.707E-01	4.708E-01	7.741E+00
PA-234	-1.972E+00	138.8	2.737E+00	2.739E+00	9.109E+00
PA-234M	5.407E+01	72.8	3.937E+01	3.947E+01	2.030E+02
AM-241	-6.974E-01	220.2	1.535E+00	1.536E+00	5.142E+00
Np-237	0.000E+00	1.#INF	5.768E+00	5.768E+00	1.916E+01
Ir-192	0.000E+00	1.#INF	1.658E-01	1.658E-01	3.233E+00
Cs-136	0.000E+00	1.#INF	3.018E-01	3.018E-01	1.453E+00
Np-239	1.370E+00	99.0	1.357E+00	1.359E+00	4.518E+00
Nd-147	-4.596E+00	87.5	4.022E+00	4.031E+00	9.461E+00
TL-210	3.819E-01	69.0	2.634E-01	2.643E-01	6.587E-01
Kr-85	0.000E+00	1.#INF	3.650E+01	3.650E+01	3.883E+02
Total	4.870E+02				

Analyst: Caleb Quinn

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Sample description
452567_Gamma_160-36526-A-7-B

Spectrum Filename: C:\User\SPC\Det9\9_Gamma_20193838.An1

Acquisition information
Start time: 12/25/2019 9:34:27 AM
Live time: 1800
Real time: 1802
Dead time: 0.12 %
Detector ID: 9

Detector system
Ge9 S/N09363993

Calibration
Filename: 9_Soil_TunaCan.Clb
9_Soil_TunaCan_90099_050312

Energy Calibration
Created: 3/1/2012 1:57:17 PM
Zero offset: 0.074 keV
Gain: 0.250 keV/channel
Quadratic: -2.269E-08 keV/channel^2

Efficiency Calibration
Created: 6/14/2012 10:19:51 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.30 %
Log(Eff): -8.079856E-01 + (-2.367265E-01*Log(E)) + (-3.950640E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.42 %
Log(Eff): -2.387916E+01 + (8.875647E+00*Log(E)) + (-9.401100E-01*Log(E)^2)

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.08keV)
Stop channel: 8000 (1999.34keV)
Peak rejection level: 1000.000%
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

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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	12/25/2019 9:34:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	9_2019-12-07_1444.PBC 12/7/2019 2:44:35 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 29 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1864

***** 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
46.62	75.	21.22	1.00	2.604E-02	46.54	4.250	3.759E+01	PB210
49.69	38.	40.63	1.00	2.879E-02	50.14	8.000	PBC<MDA	TH227
63.51	19.	190.32	1.01	3.921E-02	63.29	3.810	PBC<MDA	TH234
64.50	9.	408.32	1.02	3.987E-02	64.28	9.700	PBC<MDA	Sn126
75.11	256.	11.58	1.03	4.586E-02				
77.12	470.	6.98	1.03	4.676E-02				
79.42	65.	37.35	1.03	4.770E-02				
87.24	184.	12.92	1.04	5.029E-02	86.49	13.100	1.558E+01	Np237
					86.54	30.700	6.646E+00	EU155
					86.94	9.040	2.252E+01	Sn126
					87.57	37.500	5.410E+00	Sn126
					88.04	3.790	5.340E+01	Cd109
89.85	88.	25.29	1.04	5.096E-02				
93.06	98.	23.49	1.04	5.165E-02	92.59	5.584	1.887E+01	TH234
					93.35	5.561	PBC<MDA	AC228
97.52	14.	426.73	1.05	5.240E-02	97.50	30.000	PBC<MDA	Gd153
105.31	30.	99.65	1.05	5.318E-02	105.31	21.200	PBC<MDA	EU155
106.13	30.	99.04	1.05	5.323E-02	106.13	22.700	PBC<MDA	Np239
121.78	21.	117.02	1.07	5.305E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	2.601E-01	CO57
122.06	28.	92.83	1.07	5.303E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	3.406E-01	CO57

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pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
145.44	32.	138.67	1.09	5.012E-02	145.44	48.200	PBC<MDA	CE141
165.50	32.	98.46	1.11	4.736E-02	165.85	79.900	PBC<MDA	CE139
176.60	29.	93.73	1.12	4.549E-02	176.60	17.000	PBC<MDA	Cf251
186.30	175.	18.02	1.27	4.394E-02	185.72	54.000	4.089E+00	U235
193.51	15.	191.79	1.14	4.287E-02	193.51	4.400	PBC<MDA	TH229
210.85	29.	99.43	1.15	4.052E-02	210.85	2.990	PBC<MDA	TH229
227.00	10.	264.58	1.17	3.858E-02	227.00	6.300	PBC<MDA	Cf251
235.97	26.	169.84	1.18	3.760E-02	235.97	12.300	PBC<MDA	TH227
238.48	295.	7.89	1.18	3.734E-02	238.63	43.300	1.014E+01	PB212
241.83	225.	9.02	1.18	3.699E-02	242.00	7.430	4.557E+01	PB214
256.24	12.	200.58	1.20	3.558E-02	256.24	7.000	PBC<MDA	TH227
265.83	24.	89.03	1.20	3.470E-02	265.83	50.000	PBC<MDA	BI210M
277.28	13.	140.50	1.21	3.372E-02	277.28	6.310	PBC<MDA	TL208
284.30	16.	144.88	1.22	3.315E-02	284.30	6.140	PBC<MDA	I131
295.03	470.	5.16	1.23	3.232E-02	295.09	19.300	4.186E+01	PB214
					296.00	79.000	1.025E+01	TL210
299.52	32.	34.36	1.23	3.199E-02	300.03	3.280	1.678E+01	PB212
					300.07	2.460	2.238E+01	PA231
					300.18	6.200	8.880E+00	PA233
333.46	17.	70.15	1.27	2.970E-02	333.44	15.510	PBC<MDA	Cf249
338.34	77.	18.36	1.27	2.940E-02	338.32	12.010	1.204E+01	AC228
345.83	23.	133.44	1.28	2.896E-02	345.83	15.070	PBC<MDA	HF181
351.84	776.	4.19	1.17	2.861E-02	351.93	37.600	4.009E+01	PB214
364.48	19.	90.16	1.29	2.791E-02	364.48	81.700	PBC<MDA	I131
383.84	16.	127.48	1.31	2.691E-02	383.84	8.940	PBC<MDA	BA133
387.90	19.	102.67	1.31	2.671E-02	387.95	66.000	PBC<MDA	Cf249
391.69	19.	107.45	1.32	2.653E-02	391.69	64.000	PBC<MDA	SN113
433.94	17.	93.45	1.35	2.466E-02	433.94	90.480	PBC<MDA	AG108M
453.88	6.	306.82	1.37	2.388E-02	453.88	65.000	PBC<MDA	PM146
477.60	16.	100.76	1.39	2.301E-02	477.60	10.520	PBC<MDA	BE7
487.02	9.	214.92	1.40	2.269E-02	487.02	45.500	PBC<MDA	La140
497.05	7.	205.24	1.41	2.236E-02	497.05	90.900	PBC<MDA	RU103
511.86	70.	24.49	2.67	2.188E-02	511.86	20.000	8.885E+00	RH106
563.24	14.	99.09	1.47	2.040E-02	563.24	8.350	PBC<MDA	CS134
569.32	15.	73.85	1.47	2.024E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	4.910E+00	PA234
					569.70	97.740	4.121E-01	BI207
583.10	120.	15.62	1.25	1.989E-02	583.02	84.500	3.977E+00	TL208
609.21	653.	4.38	1.31	1.925E-02	609.31	46.090	4.087E+01	BI214
					610.30	5.750	3.280E+02	RU103
618.06	5.	868.15	1.51	1.904E-02	618.06	99.100	PBC<MDA	PM144
621.92	13.	322.37	1.51	1.896E-02	621.92	9.930	PBC<MDA	RH106
636.97	13.	76.75	1.53	1.862E-02	636.97	7.170	PBC<MDA	I131
661.66	7.	184.61	1.55	1.810E-02	661.66	85.210	PBC<MDA	CS137
702.63	15.	92.21	1.58	1.730E-02	702.63	97.900	PBC<MDA	NB94
724.20	11.	118.57	1.60	1.691E-02	724.20	44.150	PBC<MDA	ZR95
727.66	56.	26.35	1.67	1.686E-02	727.17	7.550	2.430E+01	BI212
735.72	13.	89.21	1.61	1.671E-02	735.72	22.500	PBC<MDA	PM146

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
765.79	21.	76.03	1.63	1.621E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	2.478E+02	PA234M
766.41	18.	72.83	1.63	1.620E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	2.095E+02	PA234M
785.42	16.	83.13	1.65	1.590E-02	785.42	1.280	PBC<MDA	BI212
800.25	11.	68.96	2.13	1.568E-02	799.60	98.960	PBC<MDA	TL210
815.77	10.	117.47	1.67	1.544E-02	815.77	23.280	PBC<MDA	La140
871.10	3.	264.58	1.71	1.468E-02	871.10	99.890	PBC<MDA	NB94
873.23	1.	630.48	1.72	1.465E-02	873.23	12.270	PBC<MDA	EU154
889.28	15.	81.87	1.73	1.445E-02	889.28	99.984	PBC<MDA	Sc46
898.04	13.	85.87	1.74	1.434E-02	898.04	93.700	PBC<MDA	Y88
911.12	51.	36.39	1.75	1.418E-02	911.07	29.000	6.898E+00	AC228
964.11	12.	100.36	1.79	1.357E-02	964.11	14.605	PBC<MDA	EU152
969.15	62.	18.91	1.79	1.352E-02	968.97	17.460	1.471E+01	AC228
1063.66	22.	39.40	1.86	1.257E-02	1063.66	74.500	1.325E+00	BI207
1120.07	134.	12.94	2.26	1.206E-02	1120.29	15.100	4.079E+01	BI214
					1120.55	99.987	PBC<MDA	Sc46
					1121.30	34.900	1.766E+01	Ta182
1221.41	4.	235.32	1.97	1.126E-02	1221.41	27.000	PBC<MDA	Ta182
1238.28	36.	44.13	1.98	1.114E-02	1238.28	66.070	2.730E+00	Co56
1274.53	9.	72.86	2.01	1.088E-02	1274.53	99.940	PBC<MDA	NA22
					1274.54	35.190	1.306E+00	EU154
1291.60	14.	47.06	2.02	1.077E-02	1291.60	43.200	1.712E+00	FE59
1332.50	3.	327.45	2.05	1.050E-02	1332.50	99.980	PBC<MDA	CO60
1384.30	10.	83.18	2.08	1.018E-02	1384.30	24.290	PBC<MDA	AG110M
1408.00	13.	81.52	2.10	1.004E-02	1408.00	21.005	PBC<MDA	EU152
1460.62	389.	5.17	1.99	9.749E-03	1460.83	10.670	2.079E+02	K40
1596.21	7.	125.36	2.22	9.069E-03	1596.21	95.400	PBC<MDA	La140
1764.29	95.	10.65	2.06	8.350E-03	1764.49	15.400	4.119E+01	BI214
1836.06	5.	45.97	2.35	8.079E-03	1836.06	99.200	PBC<MDA	Y88

********** 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	
199.28	49.90	86.	40.	1.376E+03	36.78	1.001	-	sD
300.05	75.09	313.	256.	5.589E+03	11.58	1.025	-	D
308.08	77.09	303.	470.	1.005E+04	6.98	1.027	-	D
317.27	79.39	262.	65.	1.362E+03	37.35	1.030	-	sD
359.02	89.84	200.	90.	1.767E+03	24.59	1.039	-	sD
744.68	186.30	182.	175.	3.983E+03	18.02	1.270	-	s

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

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This section based on library: Client_Long_Rev15.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	185.80	46.54	79.	75.	0.041	20.49	0.998D
TH-227	200.20	50.14	592.	-32.	-0.018	47.26	1.001s
AM-241	237.77	59.54	650.	-16.	-0.009	220.15	1.010s
TH-234	252.77	63.29	615.	19.	0.010	190.32	1.014
Sn-126	256.74	64.28	658.	9.	0.005	408.32	1.015s
BA-133	323.56	80.99	1894.	-42.	-0.023	36.63	1.031s
Np-237	345.55	86.49	2302.	0.	0.000	183.70	1.036A
EU-155	345.76	86.54	2126.	-36.	-0.020	180.02	1.036D
Sn-126	347.35	86.94	1990.	10.	0.006	258.12	1.037D
Sn-126	349.87	87.57	1810.	44.	0.024	61.62	1.037D
Cd-109	351.75	88.04	1954.	0.	0.000	172.39	1.038A
TH-234	369.94	92.59	265.	81.	0.045	30.41	1.042D
AC-228	372.98	93.35	1744.	36.	0.020	165.75	1.043s
Gd-153	389.58	97.50	1759.	14.	0.008	426.73	1.047s
Gd-153	412.37	103.20	1503.	-38.	-0.021	143.88	1.052
Np-239	414.37	103.70	1542.	-38.	-0.021	145.62	1.053s
EU-155	420.82	105.31	445.	30.	0.017	99.65	1.054s
Np-239	424.09	106.13	420.	30.	0.017	99.04	1.055s
EU-152	486.67	121.78	299.	21.	0.012	117.02	1.070
CO-57	487.80	122.06	320.	28.	0.015	92.83	1.070s
EU-154	491.95	123.10	351.	-7.	-0.004	403.80	1.071s
PA-234	524.72	131.29	1053.	-33.	-0.019	138.79	1.079s
HF-181	531.64	133.02	1087.	-12.	-0.007	389.47	1.081s
CE-144	533.69	133.54	1099.	0.	0.000	1000.00	1.081s
HF-181	544.74	136.30	1099.	0.	0.000	1000.00	1.084s
CO-57	545.43	136.47	1099.	0.	0.000	1000.00	1.084s
Tc-99m	561.57	140.51	1099.	0.	0.000	1000.00	1.088s
U-235	574.67	143.79	1099.	0.	0.000	1000.00	1.091s
CE-141	581.29	145.44	981.	32.	0.018	138.67	1.092
Ba-140	650.15	162.66	490.	-34.	-0.019	175.35	1.108s
U-235	653.03	163.38	400.	-34.	-0.019	84.31	1.109s
CE-139	662.92	165.85	482.	32.	0.018	98.46	1.111
Cf-251	705.90	176.60	209.	29.	0.016	93.73	1.122s
U-235	742.37	185.72	422.	-10.	-0.006	278.56	1.130
TH-229	773.52	193.51	212.	15.	0.008	191.79	1.137s
U-235	820.80	205.33	232.	-4.	-0.002	742.09	1.148
TH-229	842.87	210.85	208.	29.	0.016	99.43	1.153s
Cf-251	907.45	227.00	180.	10.	0.006	264.58	1.168s
TH-227	943.33	235.97	928.	26.	0.014	169.84	1.176s
PB-212	953.97	238.63	123.	295.	0.164	7.90	1.179D
PB-214	967.43	242.00	94.	225.	0.125	9.03	1.182D

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
EU-152	978.21	244.69	1022.	-29.	-0.016	159.62	1.185s
TH-227	1024.39	256.24	148.	12.	0.007	200.58	1.195s
Cd-113m	1054.23	263.70	292.	-30.	-0.016	83.80	1.202s
BI-210M	1062.75	265.83	222.	24.	0.014	89.03	1.204s
TL-208	1108.55	277.28	156.	13.	0.007	140.50	1.215
Hg-203	1116.22	279.20	214.	-2.	-0.001	830.90	1.216s
I-131	1136.61	284.30	136.	16.	0.009	144.88	1.221
PB-214	1179.77	295.09	66.	463.	0.257	5.28	1.231D
PB-212	1199.52	300.03	1059.	23.	0.013	203.64	1.235s
PA-233	1200.12	300.18	1082.	0.	0.000	1000.00	1.235s
PA-231	1210.00	302.65	1082.	0.	0.000	1000.00	1.237
BA-133	1210.81	302.85	1082.	0.	0.000	1000.00	1.238
Ba-140	1218.80	304.85	1082.	0.	0.000	1000.00	1.240
BI-210M	1218.99	304.90	1082.	0.	0.000	1000.00	1.240
Ir-192	1233.16	308.44	1082.	0.	0.000	1000.00	1.243s
PA-233	1247.44	312.01	1082.	0.	0.000	1000.00	1.246s
Ir-192	1265.35	316.49	1082.	0.	0.000	1000.00	1.250s
La-140	1314.43	328.76	517.	-23.	-0.013	142.72	1.261s
Cf-249	1333.15	333.44	65.	17.	0.010	70.15	1.265D
AC-228	1352.66	338.32	59.	77.	0.043	18.36	1.270D
Cs-136	1361.66	340.57	494.	-8.	-0.005	386.85	1.272s
EU-152	1376.53	344.29	502.	-24.	-0.013	132.15	1.275s
HF-181	1382.70	345.83	462.	23.	0.013	133.44	1.276s
PB-214	1406.76	351.84	67.	776.	0.431	4.19	1.173
BA-133	1423.37	356.00	1030.	-27.	-0.015	168.10	1.285s
I-131	1457.31	364.48	68.	19.	0.010	90.16	1.293s
BA-133	1534.73	383.84	200.	16.	0.009	127.48	1.310s
Cf-249	1551.17	387.95	178.	19.	0.010	102.67	1.314s
SN-113	1566.12	391.69	196.	19.	0.010	107.45	1.317
SB-125	1710.86	427.88	82.	-7.	-0.004	255.25	1.349
AG-108M	1735.10	433.94	56.	17.	0.009	93.45	1.354s
PM-146	1814.87	453.88	74.	6.	0.003	306.82	1.372s
SB-125	1852.82	463.37	136.	-7.	-0.004	238.62	1.380
BE-7	1909.73	477.60	123.	16.	0.009	100.76	1.392s
HF-181	1927.34	482.00	190.	-21.	-0.012	94.72	1.396s
La-140	1947.43	487.02	163.	9.	0.005	214.92	1.400s
RU-103	1987.56	497.05	43.	7.	0.004	205.24	1.409s
RH-106	2046.81	511.86	112.	70.	0.039	24.49	2.672
Kr-85	2055.27	513.98	182.	0.	0.000	1000.00	1.424s
Nd-147	2123.35	531.00	91.	-23.	-0.013	87.51	1.438s
CS-134	2252.30	563.24	43.	14.	0.008	99.09	1.466s
CS-134	2276.64	569.32	51.	15.	0.008	73.85	1.471s
PA-234	2277.24	569.47	66.	0.	0.000	1000.00	1.471s
TL-208	2331.76	583.10	41.	120.	0.067	15.62	1.247
SB-125	2401.36	600.50	930.	-19.	-0.011	222.66	1.497s
SB-124	2410.29	602.73	911.	-19.	-0.011	220.07	1.499s
CS-134	2418.21	604.71	891.	-20.	-0.011	217.48	1.500s
BI-214	2436.20	609.21	31.	653.	0.363	4.38	1.309

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
RU-103	2440.56	610.30	872.	-20.	-0.011	214.43	1.505s
AG-108M	2456.49	614.28	852.	-8.	-0.005	501.10	1.508s
PM-144	2471.62	618.06	818.	5.	0.003	868.15	1.512s
RH-106	2487.04	621.92	827.	13.	0.007	322.37	1.515s
SB-125	2542.94	635.89	58.	-11.	-0.006	99.83	1.526s
I-131	2547.28	636.97	43.	13.	0.007	76.75	1.527s
AG-110M	2630.43	657.76	75.	-14.	-0.008	91.47	1.544
CS-137	2646.03	661.66	80.	7.	0.004	184.61	1.548s
PM-144	2785.58	696.54	115.	-17.	-0.009	167.95	1.576s
NB-94	2809.93	702.63	86.	15.	0.008	92.21	1.581s
SB-124	2890.57	722.79	111.	-10.	-0.005	157.23	1.598s
AG-108M	2891.17	722.94	101.	0.	0.000	1000.00	1.598s
EU-154	2892.86	723.36	101.	0.	0.000	1000.00	1.598s
ZR-95	2896.22	724.20	81.	11.	0.006	118.57	1.599s
BI-212	2910.08	727.66	23.	56.	0.031	26.35	1.666s
PM-146	2942.31	735.72	28.	13.	0.007	89.21	1.608s
PM-146	2988.08	747.16	51.	-9.	-0.005	126.51	1.617s
AG-110M	3055.23	763.94	180.	-31.	-0.017	63.67	1.631s
NB-95	3062.61	765.79	120.	21.	0.012	76.03	1.632s
PA-234M	3065.10	766.41	76.	18.	0.010	72.83	1.633s
EU-152	3115.14	778.92	50.	-4.	-0.002	391.84	1.643s
BI-212	3141.15	785.42	79.	16.	0.009	83.13	1.648
TL-210	3200.47	800.25	11.	11.	0.006	68.96	2.132s
CS-134	3207.29	801.95	79.	-20.	-0.011	66.69	1.661s
CO-58	3242.59	810.78	70.	-5.	-0.003	240.83	1.668s
La-140	3262.58	815.77	64.	10.	0.006	117.47	1.672s
Cs-136	3273.50	818.50	65.	0.	0.000	1000.00	1.674s
MN-54	3338.91	834.85	55.	-10.	-0.006	127.62	1.687s
Co-56	3386.61	846.77	50.	-4.	-0.002	305.76	1.696s
TL-208	3441.80	860.56	46.	-1.	-0.001	654.51	1.707s
NB-94	3483.94	871.10	30.	3.	0.002	264.58	1.715s
EU-154	3492.47	873.23	35.	1.	0.001	630.48	1.717s
PA-234	3532.53	883.24	75.	0.	0.000	1000.00	1.724s
AG-110M	3538.30	884.68	58.	-12.	-0.006	96.60	1.725s
Sc-46	3556.69	889.28	65.	15.	0.008	81.87	1.729s
Y-88	3591.74	898.04	25.	13.	0.007	85.87	1.736s
AC-228	3643.88	911.07	62.	51.	0.028	36.39	1.746s
AG-110M	3749.60	937.49	60.	-18.	-0.010	97.50	1.766s
PA-234	3783.72	946.02	40.	-3.	-0.002	467.06	1.772
EU-152	3856.11	964.11	72.	12.	0.007	100.36	1.786s
AC-228	3875.56	968.97	39.	62.	0.035	18.91	1.790s
EU-154	4018.82	1004.77	48.	-17.	-0.009	95.76	1.816s
Co-56	4151.13	1037.84	53.	-20.	-0.011	84.95	1.841s
Cs-136	4192.07	1048.07	60.	-16.	-0.009	72.89	1.848s
RH-106	4201.23	1050.36	84.	-7.	-0.004	180.91	1.850s
BI-207	4254.46	1063.66	11.	22.	0.012	39.40	1.860s
Ga-68	4309.44	1077.40	43.	-8.	-0.004	197.00	1.870s
EU-152	4448.20	1112.07	205.	-5.	-0.003	436.01	1.895

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
ZN-65	4462.09	1115.55	200.	0.	0.000	1000.00	1.897s
BI-214	4480.21	1120.07	26.	134.	0.074	12.94	2.255
Sc-46	4482.12	1120.55	200.	0.	0.000	1000.00	1.901
Ta-182	4485.12	1121.30	224.	-19.	-0.010	115.50	1.901
CO-60	4692.96	1173.24	54.	-4.	-0.002	472.84	1.938s
Ta-182	4756.25	1189.05	45.	-3.	-0.002	476.86	1.949
Ta-182	4885.75	1221.41	17.	4.	0.002	235.32	1.972
Co-56	4953.27	1238.28	40.	36.	0.020	44.13	1.984s
NA-22	5098.35	1274.53	17.	9.	0.005	72.86	2.008s
EU-154	5098.39	1274.54	26.	0.	0.000	1000.00	2.008s
FE-59	5166.65	1291.60	6.	14.	0.008	47.06	2.020s
CO-60	5330.37	1332.50	17.	3.	0.002	327.45	2.047s
AG-110M	5537.69	1384.30	11.	10.	0.006	83.18	2.082s
EU-152	5632.56	1408.00	17.	13.	0.007	81.52	2.097s
K-40	5843.18	1460.62	8.	389.	0.216	5.17	1.994
La-140	6385.95	1596.21	12.	7.	0.004	125.36	2.215s
SB-124	6765.35	1690.98	19.	-3.	-0.002	365.40	2.272s
BI-214	7058.85	1764.29	4.	95.	0.053	10.65	2.061
Co-56	7087.11	1771.35	99.	0.	0.000	1000.00	2.318s
Y-88	7346.20	1836.06	0.	5.	0.003	45.97	2.354s

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
BE-7	C	3.6842E+00					5.31E+01	
			477.60	3.684E+00	?(	1.247E+01	1.01E+02	1.05E+01 G
NA-22	C	4.5969E-01					9.50E+02	
			1274.53	4.597E-01	&(	1.120E+00	7.29E+01	9.99E+01 G
K-40	N	2.0786E+02					4.66E+11	
			1460.83	2.079E+02	(P	8.406E+00	5.17E+00	1.07E+01 G
Sc-46	F	5.6637E-01					8.38E+01	
			889.28	5.664E-01	&(	1.553E+00	8.19E+01	1.00E+02 G
			1120.55	0.000E+00	-	3.161E+00	1.00E+03	1.00E+02 G
CR-51	F	-2.3545E-01					2.77E+01	
			320.08	-2.354E-01	%(P	2.855E+01	1.90E+03	9.94E+00 G

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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
MN-54	C	-3.7975E-01					3.12E+02	
			834.85	-3.798E-01	?(P	1.369E+00	1.28E+02	1.00E+02 G
FE-59	F	7.7167E-01					4.45E+01	
			1099.25	5.282E-02	%(P	2.346E+00	1.96E+03	5.65E+01 G
			1291.60	1.712E+00	?(	1.648E+00	4.71E+01	4.32E+01 G
Co-56	C	9.8988E-01					7.73E+01	
			846.77	-1.608E-01	&(P	1.325E+00	3.06E+02	9.99E+01 G
			1238.28	2.730E+00	?(P	2.425E+00	4.41E+01	6.61E+01 G
			1037.84	-6.214E+00	+	1.128E+01	8.50E+01	1.41E+01 G
			1771.35	0.000E+00	-	2.116E+01	1.00E+03	1.55E+01 A
CO-57	C	3.4065E-01					2.72E+02	
			122.06	3.406E-01	?(	1.053E+00	9.28E+01	8.56E+01 G
			136.47	0.000E+00	-	1.588E+01	1.00E+03	1.07E+01 G
CO-58	C	-1.8001E-01					7.09E+01	
			810.78	-1.800E-01	&(	1.501E+00	2.41E+02	9.95E+01 G
CO-60	F	1.5874E-01					1.93E+03	
			1332.50	1.587E-01	&(	1.160E+00	3.27E+02	1.00E+02 G
			1173.24	-1.753E-01	+ P	1.762E+00	4.73E+02	9.99E+01 G
NB-94	I	4.8661E-01					7.41E+06	
			702.63	4.866E-01	(P	1.507E+00	9.22E+01	9.79E+01 G
			871.10	1.136E-01	-	1.070E+00	2.65E+02	9.99E+01 G
ZR-95	I	4.0490E-01					6.40E+01	
			756.73	6.238E-02	&(	2.008E+00	1.39E+03	5.45E+01 G
			724.20	8.274E-01	&(	3.329E+00	1.19E+02	4.42E+01 G
NB-95	I	7.2953E-01					6.40E+01	
			765.79	7.295E-01	?(	1.845E+00	7.60E+01	9.98E+01 G
RU-103	I	1.8225E-01					3.93E+01	
			497.05	1.823E-01	?(	9.127E-01	2.05E+02	9.09E+01 G
			610.30	-9.842E+00	+	7.052E+01	2.14E+02	5.75E+00 GA
RH-106	I	3.7384E+00					3.74E+02	
			621.92	3.738E+00	?(	4.036E+01	3.22E+02	9.93E+00 G
			1050.36	-2.058E+01	&	1.277E+02	1.81E+02	1.56E+00 G
			511.86	8.885E+00	&	6.604E+00	2.45E+01	2.00E+01 GA
AG-108M	C	4.2271E-01					1.53E+05	
			433.94	4.227E-01	?(	9.384E-01	9.35E+01	9.05E+01 G
			722.94	0.000E+00	-	1.790E+00	1.00E+03	9.08E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			614.28	-2.669E-01	-	4.484E+00	5.01E+02	8.98E+01 G
AG-110M	F	1.1549E-01					2.50E+02	
			884.68	-6.147E-01	?(	2.007E+00	9.66E+01	7.27E+01 G
			657.76	-4.521E-01	+	1.391E+00	9.15E+01	9.46E+01 G
			937.49	-2.098E+00	+	4.524E+00	9.75E+01	3.44E+01 G
			1384.30	2.300E+00	?(	4.132E+00	8.32E+01	2.43E+01 G
			763.94	-4.770E+00	+	1.002E+01	6.37E+01	2.23E+01 G
SN-113	F	6.1782E-01					1.15E+02	
			391.69	6.178E-01	(	2.225E+00	1.07E+02	6.40E+01 G
SB-124	F	-5.6816E-01					6.02E+01	
			602.73	-5.682E-01	&(	4.177E+00	2.20E+02	9.83E+01 G
			1690.98	-4.032E-01	+	3.094E+00	3.65E+02	4.78E+01 G
			722.79	-2.934E+00	+	1.570E+01	1.57E+02	1.08E+01 G
SB-125	I	-5.5256E-01					1.01E+03	
			427.88	-5.526E-01	?(	3.390E+00	2.55E+02	2.96E+01 G
			600.50	-3.113E+00	+	2.316E+01	2.23E+02	1.79E+01 G
			635.89	-2.986E+00	+	1.009E+01	9.98E+01	1.13E+01 G
			463.37	-1.579E+00	&	1.287E+01	2.39E+02	1.05E+01 G
I-131	I	1.0790E+00					8.02E+00	
			364.48	4.515E-01	(	1.002E+00	9.02E+01	8.17E+01 G
			284.30	4.367E+00	?(	1.557E+01	1.45E+02	6.14E+00 G
			636.97	5.413E+00	&(	1.389E+01	7.68E+01	7.17E+00 G
Gd-153	F	4.9220E-01					2.42E+02	
			97.50	4.922E-01	?(	7.003E+00	4.27E+02	3.00E+01 G
			103.20	-1.843E+00	+	8.813E+00	1.44E+02	2.18E+01 G
Ga-68	C	-1.2106E+01					4.71E-02	
			1077.40	-1.211E+01	?(	5.234E+01	1.97E+02	3.30E+00 G
BA-133	F	-8.5766E-01					3.85E+03	
			356.00	-8.577E-01	?(	4.805E+00	1.68E+02	6.20E+01 G
			302.85	0.000E+00	&	1.489E+01	1.00E+03	1.83E+01 G
			383.84	3.695E+00	?	1.585E+01	1.27E+02	8.94E+00 GA
			80.99	-1.418E+00	+ P	6.940E+00	3.66E+01	3.41E+01 GA
CS-134	I	7.3958E-01					7.54E+02	
			795.87	1.376E-02	%(	1.861E+00	3.86E+03	8.55E+01 G
			604.71	-5.739E-01	&	4.170E+00	2.17E+02	9.76E+01 G
			569.32	2.618E+00	?(	6.442E+00	7.39E+01	1.54E+01 G
			801.95	-8.175E+00	+	1.803E+01	6.67E+01	8.69E+00 G
			563.24	4.715E+00	&(P	1.083E+01	9.91E+01	8.35E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CS-137	I	2.5217E-01					1.10E+04	
			661.66	2.522E-01	&(	1.599E+00	1.85E+02	8.52E+01 G
CE-139	F	4.7059E-01					1.38E+02	
			165.85	4.706E-01	?(P	1.542E+00	9.85E+01	7.99E+01 G
Ba-140	I	1.0224E-01					1.28E+01	
			537.26	1.022E-01	%(P	4.498E+00	1.80E+03	2.44E+01 G
			162.66	-6.450E+00	+ P	2.016E+01	1.75E+02	6.22E+00 G
			304.85	0.000E+00	-	6.392E+01	1.00E+03	4.29E+00 G
La-140	I	6.0716E-01					1.28E+01	
			1596.21	4.495E-01	?(	1.211E+00	1.25E+02	9.54E+01 G
			487.02	4.576E-01	&(P	3.344E+00	2.15E+02	4.55E+01 G
			328.76	-2.078E+00	&	9.915E+00	1.43E+02	2.03E+01 G
			815.77	1.545E+00	?(	6.180E+00	1.17E+02	2.33E+01 G
CE-141	I	7.4080E-01					3.25E+01	
			145.44	7.408E-01	?(	3.420E+00	1.39E+02	4.82E+01 G
PM-144	C	-5.4901E-01					3.63E+02	
			696.54	-5.490E-01	&(P	1.698E+00	1.68E+02	9.90E+01 G
			618.06	1.374E-01	&	4.004E+00	8.68E+02	9.91E+01 G
EU-152	F	1.6929E+00					4.94E+03	
			121.78	7.788E-01	&(	3.050E+00	1.17E+02	2.86E+01 G
			344.29	-1.752E+00	+	7.735E+00	1.32E+02	2.65E+01 G
			1112.07	-1.566E+00	+	2.329E+01	4.36E+02	1.36E+01 G
			778.92	-1.073E+00	+	9.571E+00	3.92E+02	1.29E+01 G
			964.11	3.482E+00	?(	1.180E+01	1.00E+02	1.46E+01 G
			244.69	-5.697E+00	+	3.030E+01	1.60E+02	7.58E+00 G
			1408.00	3.328E+00	?	5.773E+00	8.15E+01	2.10E+01 GA
EU-154	I	-3.4998E-02					3.14E+03	
			123.10	-1.694E-01	(	2.314E+00	4.04E+02	4.08E+01 G
			1274.54	0.000E+00	&	3.840E+00	1.00E+03	3.52E+01 G
			723.36	0.000E+00	+	8.044E+00	1.00E+03	2.02E+01 G
			873.23	4.120E-01	?(	9.315E+00	6.30E+02	1.23E+01 G
			1004.77	-3.991E+00	+	8.215E+00	9.58E+01	1.80E+01 G
			996.33	-3.962E-01	%	1.585E+01	1.14E+03	1.06E+01 G
EU-155	I	1.4998E+00					1.81E+03	
			105.31	1.500E+00	*(	4.976E+00	9.96E+01	2.12E+01 G
			86.54	-1.314E+00	-	7.859E+00	1.80E+02	3.07E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
HF-181	F	-7.5086E-02					4.24E+01	
			482.00	-6.387E-01	?(	2.022E+00	9.47E+01	8.05E+01 G
			133.02	-2.964E-01	+	3.861E+00	3.89E+02	4.33E+01 G
			345.83	2.935E+00	?(	1.309E+01	1.33E+02	1.51E+01 G
			136.30	0.000E+00	+	2.897E+01	1.00E+03	5.85E+00 G
Ta-182	F	-2.4705E+00					1.14E+02	
			1121.30	-2.470E+00	(	9.569E+00	1.15E+02	3.49E+01 G
			1221.41	7.675E-01	+	4.006E+00	2.35E+02	2.70E+01 G
			1189.05	-9.937E-01	+	1.016E+01	4.77E+02	1.62E+01 G
Hg-203	F	-5.0799E-02					4.66E+01	
			279.20	-5.080E-02	&(	1.442E+00	8.31E+02	8.15E+01 G
TL-208	N	3.9333E+00					6.98E+02	
			583.02	3.977E+00	(P	1.073E+00	1.56E+01	8.45E+01 G
			277.28	3.352E+00	(P	1.591E+01	1.41E+02	6.31E+00 G
			860.56	-3.004E-01	& P	1.036E+01	6.55E+02	1.24E+01 G
PM-146	C	6.5803E-01					2.02E+03	
			453.88	2.068E-01	?(P	1.534E+00	3.07E+02	6.50E+01 G
			747.16	-9.272E-01	+ P	3.573E+00	1.27E+02	3.40E+01 G
			735.72	1.962E+00	?(P	4.072E+00	8.92E+01	2.25E+01 G
Y-88	F	4.4662E-01					1.07E+02	
			1836.06	3.414E-01	?(P	5.109E-01	4.60E+01	9.92E+01 G
			898.04	5.581E-01	*(	1.075E+00	8.59E+01	9.37E+01 G
Cd-113m		-7.8398E+03					5.33E+03	
			263.70	-7.840E+03	*(	2.184E+04	8.38E+01	6.00E-03 K
Cf-251	T	2.1143E+00					3.28E+05	
			176.60	2.114E+00	(	5.035E+00	9.37E+01	1.70E+01 G
			227.00	2.285E+00	?	1.491E+01	2.65E+02	6.30E+00 GA
Cf-249	T	8.7686E-01					1.28E+05	
			387.95	5.935E-01	?(	2.042E+00	1.03E+02	6.60E+01 G
			333.44	2.082E+00	(	4.848E+00	7.02E+01	1.55E+01 G
Sn-126		1.2808E+00					3.65E+07	
			87.57	1.281E+00	}	5.909E+00	6.16E+01	3.75E+01 GA
			64.28	1.281E+00	?(	1.756E+01	4.08E+02	9.70E+00 G
			86.94	1.281E+00	}	2.578E+01	2.58E+02	9.04E+00 GA
PB-210	N	3.7856E+01					8.14E+03	
			46.54	3.786E+01	(P	2.244E+01	2.05E+01	4.25E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PB-212	N	1.0142E+01					6.98E+02	
			238.63	1.014E+01	(P	1.870E+00	7.90E+00	4.33E+01 G
			300.03	1.204E+01 ?		8.183E+01	2.04E+02	3.28E+00 GA
PB-214	N	4.0471E+01					5.84E+05	
			351.93	4.009E+01	(P	2.108E+00	4.19E+00	3.76E+01 G
			295.09	4.120E+01	(P	3.624E+00	5.28E+00	1.93E+01 G
			242.00	4.554E+01 +		9.686E+00	9.03E+00	7.43E+00 GA
BI-207	C	1.3254E+00					1.18E+04	
			1063.66	1.325E+00 ?(		1.064E+00	3.94E+01	7.45E+01 G
			569.70	4.683E-03 %		1.155E+00	6.99E+03	9.77E+01 G
BI-212	N	2.4301E+01					6.98E+02	
			727.17	2.430E+01 *(		1.101E+01	2.63E+01	7.55E+00 G
			785.42	4.333E+01	P	1.205E+02	8.31E+01	1.28E+00 GA
BI-214	N	4.0921E+01					5.84E+05	
			609.31	4.087E+01	(P	1.803E+00	4.38E+00	4.61E+01 G
			1120.29	4.079E+01	(P	8.114E+00	1.29E+01	1.51E+01 G
			1764.49	4.119E+01	(P	5.021E+00	1.06E+01	1.54E+01 G
BI-210M	T	7.7923E-01					1.10E+09	
			265.83	7.792E-01 &(P		2.312E+00	8.90E+01	5.00E+01 G
			304.90	0.000E+00 -		9.795E+00	1.00E+03	2.80E+01 G
AC-228	N	1.0286E+01					2.10E+03	
			911.07	6.898E+00 ?(P		5.320E+00	3.64E+01	2.90E+01 G
			968.97	1.471E+01 ?(P		7.445E+00	1.89E+01	1.75E+01 G
			338.32	1.204E+01	(P	6.082E+00	1.84E+01	1.20E+01 G
			93.35	6.920E+00 ? P		3.813E+01	1.66E+02	5.56E+00 XA
TH-227	N	2.9260E+00					7.95E+03	
			256.24	2.677E+00	(	1.325E+01	2.01E+02	7.00E+00 G
			235.97	3.068E+00 ?(		1.738E+01	1.70E+02	1.23E+01 G
			50.14	-7.774E+00 + P		2.781E+01	4.73E+01	8.00E+00 G
TH-229	N	7.9944E+00					2.68E+06	
			193.51	4.418E+00 &(		2.078E+01	1.92E+02	4.40E+00 G
			210.85	1.326E+01 &(		3.206E+01	9.94E+01	2.99E+00 G
TH-234	N	1.5692E+01					1.63E+12	
			92.59	1.569E+01	(P	1.516E+01	3.04E+01	5.58E+00 G
			63.29	6.906E+00 -		4.400E+01	1.90E+02	3.81E+00 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

PA-234   N  -1.9722E+00                                      1.63E+12
                          131.29-1.972E+00 &(  9.109E+00 1.39E+02 1.80E+01 G
                          946.02-9.031E-01 +   9.688E+00 4.67E+02 1.34E+01 G
                          569.47 0.000E+00 +   1.358E+01 1.00E+03 8.20E+00 G
                          883.24 0.000E+00 +   1.716E+01 1.00E+03 9.60E+00 G
                          880.53 2.120E-01 %   2.733E+01 3.67E+03 6.00E+00 GA

PA-234M  N   5.4066E+01                                      1.63E+12
                         1001.00-5.150E-01 %(P 2.030E+02 1.16E+04 8.37E-01 G
                          766.41 2.095E+02 ?(  5.071E+02 7.28E+01 2.94E-01 G

AM-241   T  -6.9735E-01                                      1.58E+05
                           59.54-6.974E-01 &(  5.142E+00 2.20E+02 3.59E+01 G

Np-239   T   1.3698E+00                                      2.36E+00
                          103.70-1.674E+00 +   8.100E+00 1.46E+02 2.40E+01 X
                          106.13 1.370E+00 &(  4.518E+00 9.90E+01 2.27E+01 G
                           99.50 2.683E-07 &   1.399E+01 1.56E+09 1.50E+01 X

Nd-147      -4.5965E+00                                      1.11E+01
                          531.00-4.596E+00 ?(  9.461E+00 8.75E+01 1.30E+01 G
                           91.10-1.531E-02 %   7.622E+00 1.49E+04 2.83E+01 G

TL-210   N   3.8189E-01                                      5.84E+05
                          799.60 3.819E-01  (  6.587E-01 6.90E+01 9.90E+01 G
                          296.00-2.206E-03 %   3.402E+00 4.60E+04 7.90E+01 G
                         1313.00-8.298E-02 %   6.850E+00 3.75E+03 2.10E+01 GA
   ( - 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:
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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

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	
TH-227	50.14	592.	-32.	-0.018	47.26	-7.774E+00	P
AM-241	59.54	650.	-16.	-0.009	220.15	-6.974E-01	
BA-133	80.99	1894.	-42.	-0.023	36.63	-1.418E+00	P
EU-155	86.54	2126.	-36.	-0.020	180.02	-1.314E+00	
Np-239	103.70	1542.	-38.	-0.021	145.62	-1.674E+00	
EU-155	105.31	445.	30.	0.017	99.65	1.500E+00	
Np-239	106.13	420.	30.	0.017	99.04	1.370E+00	
EU-152	121.78	299.	21.	0.012	117.02	7.788E-01	
CO-57	122.06	320.	28.	0.015	92.83	3.406E-01	
EU-154	123.10	351.	-7.	-0.004	403.80	-1.694E-01	
PA-234	131.29	1053.	-33.	-0.019	138.79	-1.972E+00	
HF-181	133.02	1087.	-12.	-0.007	389.47	-2.964E-01	
CE-141	145.44	981.	32.	0.018	138.67	7.408E-01	
Ba-140	162.66	490.	-34.	-0.019	175.35	-6.450E+00	P
U-235	163.38	400.	-34.	-0.019	84.31	-8.014E+00	
Cf-251	176.60	209.	29.	0.016	93.73	2.114E+00	
U-235	185.72	422.	-10.	-0.006	278.56	-2.454E-01	
TH-229	193.51	212.	15.	0.008	191.79	4.418E+00	
U-235	205.33	232.	-4.	-0.002	742.09	-1.144E+00	P
TH-229	210.85	208.	29.	0.016	99.43	1.326E+01	
Cf-251	227.00	180.	10.	0.006	264.58	2.285E+00	
TH-227	235.97	928.	26.	0.014	169.84	3.068E+00	
EU-152	244.69	1022.	-29.	-0.016	159.62	-5.697E+00	
TH-227	256.24	148.	12.	0.007	200.58	2.677E+00	
Cd-113m	263.70	292.	-30.	-0.016	83.80	-7.840E+03	
BI-210M	265.83	222.	24.	0.014	89.03	7.792E-01	P
Hg-203	279.20	214.	-2.	-0.001	830.90	-5.080E-02	
La-140	328.76	517.	-23.	-0.013	142.72	-2.078E+00	
Cs-136	340.57	494.	-8.	-0.005	386.85	-3.303E-01	
EU-152	344.29	502.	-24.	-0.013	132.15	-1.752E+00	
HF-181	345.83	462.	23.	0.013	133.44	2.935E+00	
BA-133	356.00	1030.	-27.	-0.015	168.10	-8.577E-01	
BA-133	383.84	200.	16.	0.009	127.48	3.695E+00	
SN-113	391.69	196.	19.	0.010	107.45	6.178E-01	
SB-125	427.88	82.	-7.	-0.004	255.25	-5.526E-01	
AG-108M	433.94	56.	17.	0.009	93.45	4.227E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
PM-146	453.88	74.	6.	0.003	306.82	2.068E-01	P
SB-125	463.37	136.	-7.	-0.004	238.62	-1.579E+00	
BE-7	477.60	123.	16.	0.009	100.76	3.684E+00	
HF-181	482.00	190.	-21.	-0.012	94.72	-6.387E-01	
La-140	487.02	163.	9.	0.005	214.92	4.576E-01	P
RU-103	497.05	43.	7.	0.004	205.24	1.823E-01	
RH-106	511.86	112.	70.	0.039	24.49	8.885E+00	
Nd-147	531.00	91.	-23.	-0.013	87.51	-4.596E+00	
CS-134	563.24	43.	14.	0.008	99.09	4.715E+00	P
CS-134	569.32	51.	15.	0.008	73.85	2.618E+00	
SB-125	600.50	930.	-19.	-0.011	222.66	-3.113E+00	
SB-124	602.73	911.	-19.	-0.011	220.07	-5.682E-01	
CS-134	604.71	891.	-20.	-0.011	217.48	-5.739E-01	
RU-103	610.30	872.	-20.	-0.011	214.43	-9.842E+00	
AG-108M	614.28	852.	-8.	-0.005	501.10	-2.669E-01	
PM-144	618.06	818.	5.	0.003	868.15	1.374E-01	
RH-106	621.92	827.	13.	0.007	322.37	3.738E+00	
SB-125	635.89	58.	-11.	-0.006	99.83	-2.986E+00	
AG-110M	657.76	75.	-14.	-0.008	91.47	-4.521E-01	
CS-137	661.66	80.	7.	0.004	184.61	2.522E-01	
PM-144	696.54	115.	-17.	-0.009	167.95	-5.490E-01	P
NB-94	702.63	86.	15.	0.008	92.21	4.866E-01	P
SB-124	722.79	111.	-10.	-0.005	157.23	-2.934E+00	
ZR-95	724.20	81.	11.	0.006	118.57	8.274E-01	
PM-146	735.72	28.	13.	0.007	89.21	1.962E+00	P
PM-146	747.16	51.	-9.	-0.005	126.51	-9.272E-01	P
AG-110M	763.94	180.	-31.	-0.017	63.67	-4.770E+00	
NB-95	765.79	120.	21.	0.012	76.03	7.295E-01	
PA-234M	766.41	76.	18.	0.010	72.83	2.095E+02	
EU-152	778.92	50.	-4.	-0.002	391.84	-1.073E+00	
CS-134	801.95	79.	-20.	-0.011	66.69	-8.175E+00	
CO-58	810.78	70.	-5.	-0.003	240.83	-1.800E-01	
La-140	815.77	64.	10.	0.006	117.47	1.545E+00	
MN-54	834.85	55.	-10.	-0.006	127.62	-3.798E-01	P
Co-56	846.77	50.	-4.	-0.002	305.76	-1.608E-01	P
NB-94	871.10	30.	3.	0.002	264.58	1.136E-01	
EU-154	873.23	35.	1.	0.001	630.48	4.120E-01	
AG-110M	884.68	58.	-12.	-0.006	96.60	-6.147E-01	
Sc-46	889.28	65.	15.	0.008	81.87	5.664E-01	
Y-88	898.04	25.	13.	0.007	85.87	5.581E-01	
AG-110M	937.49	60.	-18.	-0.010	97.50	-2.098E+00	
PA-234	946.02	40.	-3.	-0.002	467.06	-9.031E-01	
EU-152	964.11	72.	12.	0.007	100.36	3.482E+00	
EU-154	1004.77	48.	-17.	-0.009	95.76	-3.991E+00	
Co-56	1037.84	53.	-20.	-0.011	84.95	-6.214E+00	
Cs-136	1048.07	60.	-16.	-0.009	72.89	-8.741E-01	
RH-106	1050.36	84.	-7.	-0.004	180.91	-2.058E+01	
Ga-68	1077.40	43.	-8.	-0.004	197.00	-1.211E+01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
EU-152	1112.07	205.	-5.	-0.003	436.01	-1.566E+00		
Ta-182	1121.30	224.	-19.	-0.010	115.50	-2.470E+00		
CO-60	1173.24	54.	-4.	-0.002	472.84	-1.753E-01		P
Ta-182	1189.05	45.	-3.	-0.002	476.86	-9.937E-01		
Ta-182	1221.41	17.	4.	0.002	235.32	7.675E-01		
Co-56	1238.28	40.	36.	0.020	44.13	2.730E+00		P
NA-22	1274.53	17.	9.	0.005	72.86	4.597E-01		
FE-59	1291.60	6.	14.	0.008	47.06	1.712E+00		
CO-60	1332.50	17.	3.	0.002	327.45	1.587E-01		
AG-110M	1384.30	11.	10.	0.006	83.18	2.300E+00		
EU-152	1408.00	17.	13.	0.007	81.52	3.328E+00		
La-140	1596.21	12.	7.	0.004	125.36	4.495E-01		
SB-124	1690.98	19.	-3.	-0.002	365.40	-4.032E-01		
Y-88	1836.06	0.	5.	0.003	45.97	3.414E-01		P

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 Counting 1 Sigma	MDA Bq/Sample
BE-7	#A	3.6842E+00	3.6842E+00	1.008E+02%	1.25E+01
NA-22	#A	4.5969E-01	4.5969E-01	7.286E+01%	1.12E+00
K-40		2.0786E+02	2.0786E+02	5.173E+00%	8.41E+00
Sc-46	#A	5.6637E-01	5.6637E-01	8.187E+01%	1.55E+00
CR-51	#A	-2.3545E-01	-2.3545E-01	1.902E+03%	2.86E+01
MN-54	#A	-3.7975E-01	-3.7975E-01	1.276E+02%	1.37E+00
FE-59	#A	7.7166E-01	7.7167E-01	4.706E+01%	2.35E+00
Co-56	#A	9.8988E-01	9.8988E-01	4.413E+01%	1.33E+00
CO-57	#A	3.4065E-01	3.4065E-01	9.283E+01%	1.05E+00
CO-58	#A	-1.8001E-01	-1.8001E-01	2.408E+02%	1.50E+00
CO-60	#A	1.5874E-01	1.5874E-01	3.274E+02%	1.16E+00
ZN-65	#A	0.0000E+00	0.0000E+00	1.000E+03%	6.22E+00
NB-94	#A	4.8661E-01	4.8661E-01	9.221E+01%	1.51E+00
ZR-95	#A	4.0490E-01	4.0490E-01	1.186E+02%	2.01E+00
NB-95	#A	7.2953E-01	7.2953E-01	7.603E+01%	1.84E+00
RU-103	#A	1.8225E-01	1.8225E-01	2.052E+02%	9.13E-01
RH-106	#A	3.7384E+00	3.7384E+00	3.224E+02%	4.04E+01
AG-108M	#A	4.2271E-01	4.2271E-01	9.345E+01%	9.38E-01
AG-110M	#A	1.1549E-01	1.1549E-01	6.374E+01%	2.01E+00
SN-113	#A	6.1782E-01	6.1782E-01	1.075E+02%	2.23E+00
SB-124	#A	-5.6816E-01	-5.6816E-01	2.201E+02%	4.18E+00
SB-125	#A	-5.5256E-01	-5.5256E-01	2.553E+02%	3.39E+00
I-131	#C	1.0790E+00	1.0790E+00	6.237E+01%	1.00E+00
Gd-153	#A	4.9220E-01	4.9220E-01	4.267E+02%	7.00E+00
Ga-68	#A	-1.2051E+01	-1.2106E+01	1.970E+02%	5.23E+01
Tc-99m	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.98E+00

BA-133 #A	-8.5766E-01	-8.5766E-01	1.681E+02%	4.81E+00
CS-134 #A	7.3958E-01	7.3958E-01	7.385E+01%	1.86E+00
CS-137 #A	2.5217E-01	2.5217E-01	1.846E+02%	1.60E+00
CE-139 #A	4.7059E-01	4.7059E-01	9.846E+01%	1.54E+00
Ba-140 #A	1.0223E-01	1.0224E-01	1.801E+03%	4.50E+00
La-140 #A	6.0715E-01	6.0716E-01	9.171E+01%	1.21E+00
CE-141 #A	7.4079E-01	7.4080E-01	1.387E+02%	3.42E+00
CE-144 #A	0.0000E+00	0.0000E+00	1.000E+03%	1.52E+01
PM-144 #A	-5.4901E-01	-5.4901E-01	1.679E+02%	1.70E+00
EU-152 #A	1.6929E+00	1.6929E+00	7.708E+01%	3.05E+00
EU-154 #A	-3.4998E-02	-3.4998E-02	3.744E+02%	2.31E+00
EU-155 #A	1.4998E+00	1.4998E+00	9.965E+01%	4.98E+00
HF-181 #A	-7.5085E-02	-7.5086E-02	8.182E+01%	2.02E+00
Ta-182 #A	-2.4705E+00	-2.4705E+00	1.155E+02%	9.57E+00
Hg-203 #A	-5.0798E-02	-5.0799E-02	8.309E+02%	1.44E+00
TL-208	3.9333E+00	3.9333E+00	1.562E+01%	1.07E+00
PM-146 #A	6.5803E-01	6.5803E-01	8.921E+01%	1.53E+00
Y-88 #A	4.4662E-01	4.4662E-01	4.597E+01%	5.11E-01
Cd-113m#A	-7.8398E+03	-7.8398E+03	8.380E+01%	2.18E+04
Cd-109 #A	0.0000E+00	0.0000E+00	1.000E+03%	6.06E+01
Cf-251 #A	2.1143E+00	2.1143E+00	9.373E+01%	5.03E+00
Cf-249 #A	8.7686E-01	8.7686E-01	6.217E+01%	2.04E+00
Sn-126 #A	1.2808E+00	1.2808E+00	4.083E+02%	1.76E+01
PB-210	3.7856E+01	3.7856E+01	2.049E+01%	2.24E+01
PB-212	1.0142E+01	1.0142E+01	7.895E+00%	1.87E+00
PB-214	4.0471E+01	4.0471E+01	3.371E+00%	2.11E+00
BI-207 #	1.3254E+00	1.3254E+00	3.940E+01%	1.06E+00
BI-212	2.4301E+01	2.4301E+01	2.635E+01%	1.10E+01
U-235 #A	0.0000E+00	0.0000E+00	1.000E+03%	1.58E+01
BI-214	4.0921E+01	4.0921E+01	4.377E+00%	1.80E+00
BI-210M#A	7.7923E-01	7.7923E-01	8.903E+01%	2.31E+00
AC-228 #	1.0286E+01	1.0286E+01	1.498E+01%	5.32E+00
TH-227 #A	2.9260E+00	2.9260E+00	1.314E+02%	1.33E+01
TH-229 #A	7.9944E+00	7.9944E+00	9.943E+01%	2.08E+01
TH-234	1.5692E+01	1.5692E+01	3.041E+01%	1.52E+01
PA-231 #A	0.0000E+00	0.0000E+00	1.000E+03%	9.47E+01
PA-233 #A	0.0000E+00	0.0000E+00	7.071E+02%	7.74E+00
PA-234 #A	-1.9722E+00	-1.9722E+00	1.388E+02%	9.11E+00
PA-234M#A	5.4066E+01	5.4066E+01	7.283E+01%	2.03E+02
AM-241 #A	-6.9735E-01	-6.9735E-01	2.202E+02%	5.14E+00
Np-237 #A	0.0000E+00	0.0000E+00	1.000E+03%	1.92E+01
Ir-192 #A	0.0000E+00	0.0000E+00	7.071E+02%	3.23E+00
Cs-136 #A	0.0000E+00	0.0000E+00	1.000E+03%	1.45E+00
Np-239 #A	1.3697E+00	1.3698E+00	9.904E+01%	4.52E+00
Nd-147 #A	-4.5964E+00	-4.5965E+00	8.751E+01%	9.46E+00
TL-210 A	3.8189E-01	3.8189E-01	6.896E+01%	6.59E-01
Kr-85 #A	0.0000E+00	0.0000E+00	1.000E+03%	3.88E+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 (   25.1 to  1999.3 keV)     3.918E+02  Bq/Sample
Total Decayed Activity (   25.1 to  1999.3 keV) 3.9184384E+02  Bq/Sample
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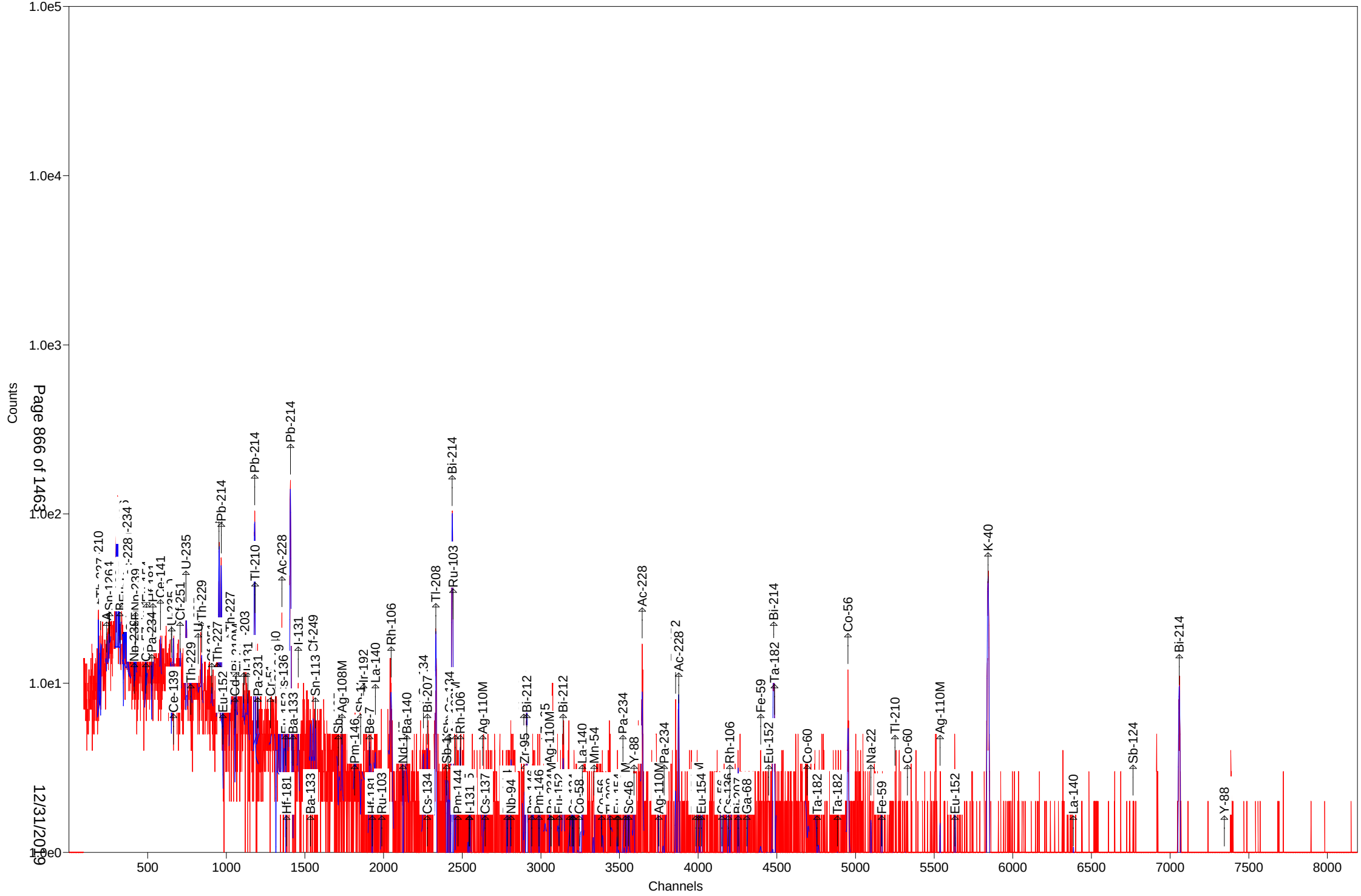
452567_Gamma_160-36526-A-7-B. 9_Gamma_20193838.spc.



Test America St. Louis Spectrum ID: 12_Gamma_20193694

Sample Description: 452567_Gamma_160-36526-A-8-B
Detector: Detector #12
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-8-B

Decay to Time: 12/25/2019 09:34 Live Time: 1800 sec
Acquisition Time: 12/25/2019 09:35:00 Real Time: 1802 sec
Analysis Time: 12/25/2019 10:05 Dead Time: 0.10 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 12_Soil_TunaCan.Clb
Efficiency Cal Desc: 12_TunaCan_108513
Efficiency Cal Date: 4/20/2018 11:53
Energy Cal Date: 4/20/2018 11:13
Library: Client_Long_Rev15.lib
Bkgd Correction File: 12_2019-12-07_1443.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	4.081E+00	108.4	4.422E+00	4.427E+00	1.495E+01
NA-22	3.044E-01	162.6	4.950E-01	4.953E-01	1.749E+00
K-40	2.639E+02	5.5	1.457E+01	1.975E+01	9.985E+00
Sc-46	0.000E+00	1.#INF	2.013E-01	2.013E-01	2.983E+00
CR-51	1.888E-01	2599.9	4.909E+00	4.909E+00	1.290E+01
MN-54	5.313E-01	143.6	7.631E-01	7.636E-01	1.776E+00
FE-59	7.411E-02	2086.9	1.547E+00	1.547E+00	3.466E+00
Co-56	1.693E+00	36.1	6.108E-01	6.168E-01	1.467E+00
CO-57	0.000E+00	1.#INF	2.218E-01	2.218E-01	1.479E+00
CO-58	-8.864E-01	82.2	7.289E-01	7.303E-01	2.435E+00
CO-60	7.337E-01	84.3	6.184E-01	6.195E-01	1.337E+00
ZN-65	0.000E+00	1.#INF	2.510E-01	2.510E-01	8.076E+00
NB-94	3.929E-01	113.4	4.457E-01	4.462E-01	1.059E+00
ZR-95	-5.568E-01	243.2	1.354E+00	1.355E+00	3.174E+00
NB-95	-1.306E+00	72.8	9.509E-01	9.532E-01	3.153E+00
RU-103	4.938E-01	91.2	4.502E-01	4.508E-01	1.124E+00
RH-106	6.181E+00	234.0	1.447E+01	1.447E+01	4.851E+01
AG-108M	-3.507E-02	1302.6	4.568E-01	4.568E-01	1.179E+00
AG-110M	6.998E-01	80.3	5.616E-01	5.628E-01	4.042E+00
SN-113	3.821E-01	277.6	1.060E+00	1.061E+00	3.591E+00
SB-124	1.721E-02	77.1	1.326E-02	1.329E-02	5.301E+00
SB-125	2.311E+00	72.0	1.663E+00	1.667E+00	4.115E+00
I-131	4.144E-01	171.9	7.123E-01	7.126E-01	1.398E+00
Gd-153	-1.403E+00	145.2	2.036E+00	2.038E+00	6.789E+00
Ga-68	-7.334E-01	3154.4	2.313E+01	2.313E+01	5.332E+01
Tc-99m	0.000E+00	1.#INF	2.491E-01	2.491E-01	2.467E+00
BA-133	-8.692E-01	207.8	1.806E+00	1.807E+00	6.036E+00
CS-134	-5.324E-01	61.2	3.260E-01	3.271E-01	3.001E+00
CS-137	-6.300E-01	103.3	6.510E-01	6.518E-01	2.200E+00
CE-139	-2.577E-01	208.4	5.371E-01	5.373E-01	1.809E+00
Ba-140	1.880E+00	102.0	1.917E+00	1.920E+00	4.861E+00
La-140	1.953E+00	21.8	4.261E-01	4.380E-01	6.487E-01
CE-141	-5.947E-01	231.3	1.376E+00	1.376E+00	4.597E+00

CE-144	3.159E+00	182.8	5.774E+00	5.777E+00	1.927E+01
PM-144	-5.466E-01	135.4	7.401E-01	7.406E-01	1.712E+00
EU-152	1.163E+00	112.1	1.303E+00	1.305E+00	4.318E+00
EU-154	3.991E-01	60.5	2.416E-01	2.424E-01	3.051E+00
EU-155	1.125E+00	263.2	2.962E+00	2.963E+00	9.908E+00
HF-181	5.388E-01	115.1	6.201E-01	6.207E-01	2.097E+00
Ta-182	2.322E+00	87.0	2.020E+00	2.023E+00	1.146E+01
Hg-203	-1.373E-01	392.7	5.391E-01	5.391E-01	1.840E+00
TL-208	6.141E+00	11.1	6.844E-01	7.522E-01	1.040E+00
PM-146	3.628E-01	224.4	8.141E-01	8.143E-01	1.960E+00
Y-88	2.763E-01	94.3	2.606E-01	2.611E-01	1.407E+00
Cd-113m	-8.421E+03	92.9	7.819E+03	7.834E+03	2.610E+04
Cd-109	5.852E+00	488.4	2.858E+01	2.858E+01	9.514E+01
Cf-251	-2.726E+00	106.6	2.905E+00	2.908E+00	7.387E+00
Cf-249	-2.002E-01	91.1	1.823E-01	1.826E-01	3.397E+00
Sn-126	5.352E+00	126.5	6.772E+00	6.778E+00	2.258E+01
PB-210	6.054E+01	30.1	1.820E+01	1.859E+01	4.510E+01
PB-212	1.312E+01	7.7	1.005E+00	1.216E+00	2.201E+00
PB-214	4.716E+01	4.2	1.985E+00	3.108E+00	2.595E+00
BI-207	-1.339E-01	215.0	2.878E-01	2.879E-01	2.727E+00
BI-212	-1.006E+01	90.2	9.077E+00	9.091E+00	3.043E+01
U-235	7.359E-02	97.6	7.185E-02	7.195E-02	1.890E+01
BI-214	4.430E+01	5.1	2.260E+00	3.193E+00	2.580E+00
BI-210M	8.473E-01	94.6	8.019E-01	8.031E-01	2.684E+00
AC-228	1.611E+01	10.1	1.633E+00	1.826E+00	1.391E+00
TH-227	-2.942E+00	245.1	7.211E+00	7.213E+00	1.863E+01
TH-229	7.386E+00	105.1	7.762E+00	7.771E+00	2.569E+01
TH-234	1.442E+01	39.3	5.673E+00	5.730E+00	1.820E+01
PA-231	-1.852E+01	209.2	3.875E+01	3.876E+01	1.293E+02
PA-233	-1.529E+00	196.4	3.004E+00	3.005E+00	1.003E+01
PA-234	9.551E-01	220.6	2.107E+00	2.107E+00	9.612E+00
PA-234M	6.919E+01	96.3	6.663E+01	6.672E+01	3.187E+02
AM-241	1.521E+00	123.0	1.871E+00	1.873E+00	6.241E+00
Np-237	3.382E-01	2463.2	8.330E+00	8.330E+00	2.776E+01
Ir-192	3.482E-02	659.0	2.295E-01	2.295E-01	4.095E+00
Cs-136	1.241E-01	79.9	9.923E-02	9.948E-02	2.913E+00
Np-239	1.690E+00	143.2	2.421E+00	2.423E+00	8.079E+00
Nd-147	-2.937E+00	133.7	3.926E+00	3.930E+00	9.488E+00
TL-210	-3.374E-01	244.0	8.232E-01	8.234E-01	2.815E+00
Kr-85	0.000E+00	1.#INF	6.046E+01	6.046E+01	4.817E+02
Total	5.907E+02				

Analyst: Caleb Quinn

Sample description
452567_Gamma_160-36526-A-8-B

Spectrum Filename: C:\User\SPC\Det12\12_Gamma_20193694.An1

Acquisition information

Start time:	12/25/2019 9:35:00 AM
Live time:	1800
Real time:	1802
Dead time:	0.10 %
Detector ID:	12

Detector system
Ge12 S/N10034336

Calibration

Filename:	12_Soil_TunaCan.Clb

12_TunaCan_108513

Energy Calibration

Created:	4/20/2018 11:13:27 AM
Zero offset:	0.059 keV
Gain:	0.250 keV/channel
Quadratic:	-3.735E-08 keV/channel^2

Efficiency Calibration

Created:	4/20/2018 11:53:09 AM
Type:	Polynomial
Uncertainty:	1.020 %
Coefficients:	-0.363508 -4.707999 0.462125
	-0.051256 0.002384 -0.000043

Library Files

Main analysis library:	Client_Long_Rev15.lib
Library Match Width:	0.500
Peak stripping:	Library based

Analysis parameters

Analysis engine:	Env32 G800W064
Start channel:	100 (25.08keV)
Stop channel:	8000 (1999.13keV)
Peak rejection level:	1000.000%
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

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Activity range factor: 2.000
Min. step backg. energy 0.000
Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	YES	12/25/2019 9:34:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	12_2019-12-07_1443.PBC 12/7/2019 2:43:53 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 25 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.0889

***** 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
46.37	91.	29.73	0.59	1.798E-02	46.54	4.250	6.609E+01	PB210
59.54	28.	123.00	0.86	2.817E-02	59.54	35.900	PBC<MDA	AM241
63.84	4.	845.98	0.87	2.978E-02	63.29	3.810	PBC<MDA	TH234
64.28	28.	126.52	0.87	3.015E-02	64.28	9.700	PBC<MDA	Sn126
74.85	221.	11.75	0.88	3.332E-02				
77.17	423.	6.73	0.88	3.386E-02				
79.27	55.	31.68	0.88	3.431E-02				
83.97	72.	27.96	0.89	3.519E-02				
87.08	127.	17.03	0.89	3.568E-02	86.49	13.100	1.512E+01	Np237
					86.54	30.700	6.451E+00	EU155
					86.94	9.040	2.187E+01	Sn126
					87.57	37.500	5.259E+00	Sn126
88.03	14.	488.36	0.89	3.582E-02	88.04	3.790	PBC<MDA	Cd109
89.99	76.	24.57	0.90	3.607E-02				
92.58	53.	39.34	0.90	3.637E-02	92.59	5.584	PBC<MDA	TH234
105.37	16.	263.24	0.91	3.726E-02	105.31	21.200	PBC<MDA	EU155
106.13	26.	143.24	0.91	3.729E-02	106.13	22.700	PBC<MDA	Np239
121.78	16.	153.86	0.93	3.725E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	2.788E-01	CO57
133.54	23.	182.79	0.94	3.670E-02	133.54	11.090	PBC<MDA	CE144
162.66	24.	102.02	0.97	3.435E-02	162.66	6.220	PBC<MDA	Ba140
163.38	24.	105.93	0.97	3.428E-02	163.38	5.080	PBC<MDA	U235
186.02	168.	17.72	0.97	3.212E-02	185.72	54.000	4.796E+00	U235
193.51	24.	105.09	1.00	3.140E-02	193.51	4.400	PBC<MDA	TH229
205.33	3.	923.02	1.01	3.030E-02	205.33	5.010	PBC<MDA	U235
210.85	7.	381.94	1.02	2.980E-02	210.85	2.990	PBC<MDA	TH229
227.00	9.	235.75	1.03	2.839E-02	227.00	6.300	PBC<MDA	Cf251

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
238.58	270.	8.04	1.05	2.744E-02	238.63	43.300	1.265E+01	PB212
241.93	159.	11.77	1.05	2.717E-02	242.00	7.430	4.381E+01	PB214
265.83	19.	94.64	1.07	2.539E-02	265.83	50.000	PBC<MDA	BI210M
277.28	20.	78.37	1.08	2.462E-02	277.28	6.310	PBC<MDA	TL208
284.30	11.	171.89	1.09	2.416E-02	284.30	6.140	PBC<MDA	I131
295.00	386.	7.07	0.87	2.350E-02	295.09	19.300	4.734E+01	PB214
					296.00	79.000	1.159E+01	TL210
299.87	47.	32.06	1.32	2.321E-02	300.03	3.280	3.430E+01	PB212
					300.07	2.460	4.574E+01	PA231
					300.18	6.200	1.815E+01	PA233
328.76	19.	88.35	1.13	2.165E-02	328.76	20.300	PBC<MDA	La140
333.44	15.	134.41	1.14	2.142E-02	333.44	15.510	PBC<MDA	Cf249
338.18	79.	17.04	1.29	2.118E-02	338.32	12.010	1.718E+01	AC228
340.57	16.	132.56	1.15	2.108E-02	340.57	46.900	PBC<MDA	Cs136
344.29	10.	229.62	1.15	2.090E-02	344.29	26.500	PBC<MDA	EU152
351.70	645.	4.67	1.24	2.056E-02	351.93	37.600	4.637E+01	PB214
364.48	4.	406.71	1.17	2.001E-02	364.48	81.700	PBC<MDA	I131
391.69	8.	277.56	1.20	1.893E-02	391.69	64.000	PBC<MDA	SN113
428.17	14.	111.57	1.23	1.770E-02	427.88	29.600	PBC<MDA	SB125
453.88	3.	508.81	1.26	1.692E-02	453.88	65.000	PBC<MDA	PM146
463.37	15.	90.88	1.27	1.666E-02	463.37	10.470	PBC<MDA	SB125
468.06	2.	659.01	1.27	1.653E-02	468.06	51.750	PBC<MDA	Ir192
477.60	13.	108.38	1.28	1.628E-02	477.60	10.520	PBC<MDA	BE7
482.00	13.	115.10	1.28	1.617E-02	482.00	80.500	PBC<MDA	HF181
487.02	12.	121.36	1.29	1.604E-02	487.02	45.500	PBC<MDA	La140
497.05	13.	91.16	1.30	1.580E-02	497.05	90.900	PBC<MDA	RU103
511.86	75.	18.62	2.56	1.546E-02	511.86	20.000	1.348E+01	RH106
537.26	5.	258.84	1.34	1.491E-02	537.26	24.390	PBC<MDA	Ba140
563.24	13.	94.10	1.36	1.439E-02	563.24	8.350	PBC<MDA	CS134
569.70	3.	338.30	1.37	1.427E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	1.424E+00	PA234
					569.70	97.740	1.195E-01	BI207
583.20	130.	11.14	1.00	1.403E-02	583.02	84.500	6.068E+00	TL208
609.39	492.	5.10	1.39	1.358E-02	609.31	46.090	4.366E+01	BI214
					610.30	5.750	3.504E+02	RU103
621.92	15.	234.03	1.42	1.338E-02	621.92	9.930	PBC<MDA	RH106
657.76	12.	80.25	1.45	1.284E-02	657.76	94.640	PBC<MDA	AG110M
702.63	8.	113.45	1.49	1.224E-02	702.63	97.900	PBC<MDA	NB94
722.79	16.	77.09	1.51	1.199E-02	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	8.042E-01	AG108M
					723.36	20.220	3.614E+00	EU154
735.72	5.	224.40	1.52	1.184E-02	735.72	22.500	PBC<MDA	PM146
766.41	16.	96.30	1.55	1.150E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	2.662E+02	PA234M
778.92	6.	191.49	1.56	1.136E-02	778.92	12.940	PBC<MDA	EU152
785.42	14.	98.62	1.57	1.129E-02	785.42	1.280	PBC<MDA	BI212
834.85	10.	143.65	1.61	1.081E-02	834.85	99.980	PBC<MDA	MN54
846.77	3.	405.52	1.63	1.070E-02	846.77	99.935	PBC<MDA	Co56

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
860.68	27.	36.94	1.64	1.057E-02	860.56	12.420	1.142E+01	TL208
873.23	11.	76.37	1.65	1.046E-02	873.23	12.270	PBC<MDA	EU154
898.04	11.	94.33	1.67	1.025E-02	898.04	93.700	PBC<MDA	Y88
911.06	83.	10.98	1.19	1.015E-02	911.07	29.000	1.567E+01	AC228
937.49	4.	305.16	1.71	9.939E-03	937.49	34.360	PBC<MDA	AG110M
946.02	6.	220.58	1.72	9.873E-03	946.02	13.400	PBC<MDA	PA234
969.16	16.	74.23	1.74	9.703E-03	968.97	17.460	PBC<MDA	AC228
1048.07	6.	110.55	1.81	9.162E-03	1048.07	80.000	PBC<MDA	Cs136
1120.35	123.	11.00	2.02	8.722E-03	1120.29	15.100	5.188E+01	BI214
					1120.55	99.987	7.837E+00	Sc46
					1121.30	34.900	2.246E+01	Ta182
1189.05	5.	229.68	1.93	8.342E-03	1189.05	16.200	PBC<MDA	Ta182
1221.41	12.	87.00	1.96	8.175E-03	1221.41	27.000	PBC<MDA	Ta182
1238.28	39.	36.07	1.97	8.090E-03	1238.28	66.070	4.019E+00	Co56
1274.53	4.	162.63	2.00	7.914E-03	1274.53	99.940	PBC<MDA	NA22
					1274.54	35.190	8.645E-01	EU154
1313.00	10.	84.92	2.04	7.735E-03	1313.00	21.000	PBC<MDA	TL210
1332.50	10.	84.28	2.05	7.647E-03	1332.50	99.980	PBC<MDA	CO60
1384.30	11.	92.93	2.10	7.423E-03	1384.30	24.290	PBC<MDA	AG110M
1460.76	360.	5.52	1.64	7.112E-03	1460.83	10.670	2.639E+02	K40
1596.21	21.	21.82	2.27	6.616E-03	1596.21	95.400	1.848E+00	La140
1690.98	1.	945.38	2.35	6.302E-03	1690.98	47.790	PBC<MDA	SB124
1764.66	78.	12.73	2.40	6.075E-03	1764.49	15.400	4.622E+01	BI214

********** 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	
298.97	74.82	226.	221.	6.632E+03	11.75	0.880	-	sD
308.24	77.14	192.	423.	1.248E+04	6.73	0.883	-	D
316.65	79.24	128.	54.	1.575E+03	32.59	0.885	-	sD
335.33	83.96	175.	72.	2.039E+03	28.64	0.889	-	sD
347.74	87.07	181.	122.	3.426E+03	18.00	0.893	-	sD
359.41	89.98	137.	74.	2.056E+03	25.18	0.896	-	sD
743.39	186.04	154.	168.	5.231E+03	17.72	0.972	-	

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: Client_Long_Rev15.lib

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********** 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	185.43	46.45	163.	84.	0.046	30.06	0.587s
TH-227	200.18	50.14	512.	-24.	-0.013	134.22	0.855s
AM-241	237.74	59.54	566.	28.	0.015	123.00	0.865s
TH-234	252.74	63.29	559.	4.	0.002	845.98	0.868s
Sn-126	256.71	64.28	621.	28.	0.016	126.52	0.869
BA-133	323.50	80.99	2455.	-10.	-0.006	702.19	0.887s
EU-155	345.70	86.54	2445.	22.	0.012	107.45	0.892D
Sn-126	347.29	86.94	2445.	0.	0.000	1000.00	0.892
Sn-126	349.81	87.57	2445.	0.	0.000	1000.00	0.893D
Cd-109	351.68	88.04	2431.	14.	0.008	488.36	0.894s
Nd-147	363.92	91.10	2576.	-31.	-0.017	234.63	0.897s
TH-234	369.87	92.59	188.	53.	0.029	39.34	0.898D
AC-228	372.91	93.35	2457.	-24.	-0.013	298.54	0.899s
Gd-153	389.50	97.50	806.	-28.	-0.015	145.16	0.903s
Np-239	397.50	99.50	802.	-28.	-0.016	144.51	0.905s
Gd-153	412.29	103.20	830.	-28.	-0.016	146.35	0.909
Np-239	414.29	103.70	858.	-5.	-0.003	816.74	0.909
EU-155	420.73	105.31	879.	16.	0.009	263.24	0.911s
Np-239	424.00	106.13	667.	26.	0.014	143.24	0.912s
EU-152	486.56	121.78	295.	16.	0.009	153.86	0.928s
CO-57	487.69	122.06	311.	0.	0.000	1000.00	0.928s
EU-154	491.84	123.10	299.	-27.	-0.015	93.92	0.929s
HF-181	531.51	133.02	1055.	-29.	-0.016	161.45	0.939s
CE-144	533.57	133.54	883.	23.	0.013	182.79	0.940s
HF-181	544.61	136.30	860.	0.	0.000	1000.00	0.943
CO-57	545.30	136.47	860.	0.	0.000	1000.00	0.943
Tc-99m	561.44	140.51	860.	0.	0.000	1000.00	0.947s
U-235	574.53	143.79	796.	-24.	-0.014	164.05	0.950s
CE-141	581.15	145.44	906.	-18.	-0.010	231.33	0.952s
Ba-140	649.99	162.66	289.	24.	0.013	102.02	0.969s
U-235	652.87	163.38	313.	24.	0.013	105.93	0.970
CE-139	662.76	165.85	340.	-13.	-0.007	208.41	0.973s
Cf-251	705.72	176.60	238.	-28.	-0.015	106.56	0.983s
U-235	742.18	185.72	405.	-36.	-0.020	59.56	0.992
TH-229	773.32	193.51	172.	24.	0.013	105.09	1.000
U-235	820.59	205.33	172.	3.	0.001	923.02	1.012s
TH-229	842.65	210.85	183.	7.	0.004	381.94	1.018
Cf-251	907.22	227.00	136.	9.	0.005	235.75	1.034
TH-227	943.09	235.97	872.	-24.	-0.013	174.93	1.043s
PB-212	953.73	238.63	91.	280.	0.156	7.66	1.045D
PB-214	967.18	242.00	96.	159.	0.088	11.80	1.049D
EU-152	977.96	244.69	852.	-21.	-0.012	195.42	1.051s
TH-227	1024.13	256.24	158.	-10.	-0.005	245.13	1.063s
Cd-113m	1053.96	263.70	221.	-23.	-0.013	92.85	1.070s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
BI-210M	1062.48	265.83	158.	19.	0.011	94.64	1.072s
TL-208	1108.27	277.28	112.	20.	0.011	78.37	1.084
Hg-203	1115.93	279.20	185.	-5.	-0.003	392.69	1.086s
I-131	1136.32	284.30	99.	11.	0.006	171.89	1.091s
PB-214	1179.12	295.00	84.	386.	0.215	7.07	0.874
TL-210	1183.11	296.00	1128.	-22.	-0.012	216.82	1.102s
PB-212	1198.59	299.87	45.	47.	0.026	32.06	1.324
PA-231	1199.38	300.07	1105.	-22.	-0.012	213.95	1.106
PA-233	1199.82	300.18	1083.	-22.	-0.012	211.78	1.107
PA-231	1209.70	302.65	1061.	-22.	-0.012	209.16	1.109s
BA-133	1210.50	302.85	1039.	-22.	-0.012	206.95	1.109s
Ba-140	1218.49	304.85	1017.	-22.	-0.012	204.44	1.111s
BI-210M	1218.68	304.90	995.	-22.	-0.012	202.17	1.111
Ir-192	1232.85	308.44	973.	-22.	-0.012	199.31	1.115s
PA-233	1247.13	312.01	950.	-22.	-0.012	196.44	1.118s
La-140	1314.10	328.76	136.	19.	0.011	88.35	1.135s
Cf-249	1332.81	333.44	187.	15.	0.008	134.41	1.139s
AC-228	1351.75	338.18	30.	79.	0.044	17.04	1.289
Cs-136	1361.32	340.57	229.	16.	0.009	132.56	1.146
EU-152	1376.18	344.29	245.	10.	0.005	229.62	1.150s
HF-181	1382.35	345.83	270.	-16.	-0.009	142.84	1.151s
PB-214	1405.84	351.70	51.	655.	0.364	4.57	1.241s
BA-133	1423.02	356.00	835.	-20.	-0.011	207.82	1.162s
I-131	1456.95	364.48	68.	4.	0.002	406.71	1.170s
BA-133	1534.35	383.84	233.	-21.	-0.011	106.87	1.189s
Cf-249	1550.79	387.95	254.	-19.	-0.010	122.88	1.193s
SN-113	1565.74	391.69	263.	8.	0.005	277.56	1.196s
SB-125	1710.45	427.88	60.	14.	0.008	111.57	1.232s
PM-146	1814.45	453.88	60.	3.	0.002	508.81	1.257s
SB-125	1852.39	463.37	81.	15.	0.008	90.88	1.266
Ir-192	1871.16	468.06	108.	2.	0.001	659.01	1.271s
BE-7	1909.29	477.60	87.	13.	0.007	108.38	1.280s
HF-181	1926.90	482.00	99.	13.	0.007	115.10	1.284
La-140	1946.98	487.02	98.	12.	0.007	121.36	1.289
RU-103	1987.11	497.05	32.	13.	0.007	91.16	1.298s
RH-106	2046.35	511.86	60.	75.	0.042	18.62	2.563s
Kr-85	2054.81	513.98	138.	0.	0.000	1000.00	1.315s
Nd-147	2122.88	531.00	43.	-10.	-0.006	133.71	1.331s
Ba-140	2147.92	537.26	39.	5.	0.003	258.84	1.337
CS-134	2251.82	563.24	30.	13.	0.007	94.10	1.362s
CS-134	2276.15	569.32	43.	-8.	-0.005	116.96	1.367s
BI-207	2277.68	569.70	50.	3.	0.002	338.30	1.368s
TL-208	2331.67	583.20	18.	130.	0.072	11.14	1.003s
SB-125	2400.87	600.50	745.	-18.	-0.010	221.68	1.397s
SB-124	2409.79	602.73	727.	-18.	-0.010	218.76	1.399s
CS-134	2417.71	604.71	710.	-18.	-0.010	215.84	1.401s
BI-214	2436.42	609.39	32.	492.	0.273	5.10	1.389
RU-103	2440.06	610.30	692.	-18.	-0.010	212.40	1.406s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
AG-108M	2455.99	614.28	675.	-7.	-0.004	558.87	1.410s
PM-144	2471.12	618.06	668.	0.	0.000	1000.00	1.414s
RH-106	2486.54	621.92	591.	15.	0.008	234.03	1.417s
SB-125	2542.43	635.89	35.	-3.	-0.001	318.20	1.430
I-131	2546.77	636.97	75.	-19.	-0.010	69.73	1.432s
AG-110M	2629.92	657.76	43.	12.	0.007	80.25	1.451s
CS-137	2645.51	661.66	75.	-12.	-0.007	103.33	1.455s
PM-144	2785.05	696.54	56.	-12.	-0.007	135.40	1.487s
NB-94	2809.41	702.63	19.	8.	0.005	113.45	1.493s
SB-124	2890.04	722.79	66.	16.	0.009	77.09	1.512s
EU-154	2892.34	723.36	82.	0.	0.000	1000.00	1.512s
ZR-95	2895.69	724.20	82.	0.	0.000	1000.00	1.513s
BI-212	2907.58	727.17	100.	-16.	-0.009	90.19	1.516
PM-146	2941.78	735.72	23.	5.	0.003	224.40	1.524s
PM-146	2987.55	747.16	56.	-18.	-0.010	91.29	1.535s
ZR-95	3025.83	756.73	51.	-6.	-0.004	243.25	1.543s
AG-110M	3054.69	763.94	175.	-30.	-0.016	65.99	1.550s
NB-95	3062.08	765.79	180.	-27.	-0.015	72.83	1.552
PA-234M	3064.57	766.41	113.	16.	0.009	96.30	1.552s
EU-152	3114.61	778.92	28.	6.	0.003	191.49	1.564s
BI-212	3140.62	785.42	37.	14.	0.008	98.62	1.570s
CS-134	3182.43	795.87	110.	-20.	-0.011	78.37	1.579
TL-210	3197.35	799.60	130.	-7.	-0.004	244.01	1.583s
CS-134	3206.76	801.95	150.	-10.	-0.006	173.32	1.585s
CO-58	3242.06	810.78	95.	-18.	-0.010	82.24	1.593s
La-140	3262.05	815.77	113.	-12.	-0.007	123.46	1.598s
Cs-136	3272.97	818.50	138.	-10.	-0.006	166.49	1.600s
MN-54	3338.38	834.85	47.	10.	0.006	143.65	1.615s
Co-56	3386.08	846.77	30.	3.	0.002	405.52	1.626s
TL-208	3441.27	860.56	15.	27.	0.015	36.94	1.638s
NB-94	3483.41	871.10	55.	-7.	-0.004	161.55	1.648s
EU-154	3491.95	873.23	33.	11.	0.006	76.37	1.650s
PA-234	3521.16	880.53	94.	-17.	-0.010	83.10	1.657
PA-234	3532.00	883.24	112.	-13.	-0.007	116.42	1.659s
AG-110M	3537.78	884.68	125.	0.	0.000	1000.00	1.660s
Sc-46	3556.17	889.28	128.	0.	0.000	1000.00	1.664s
Y-88	3591.22	898.04	20.	11.	0.006	94.33	1.672s
AC-228	3643.30	911.06	0.	83.	0.046	10.98	1.187s
AG-110M	3749.09	937.49	30.	4.	0.002	305.16	1.708s
PA-234	3783.21	946.02	35.	6.	0.003	220.58	1.716s
EU-152	3855.60	964.11	115.	-5.	-0.003	297.02	1.732s
AC-228	3875.05	968.97	62.	16.	0.009	74.23	1.736s
EU-154	3984.54	996.33	71.	-13.	-0.007	94.71	1.761s
PA-234M	4003.22	1001.00	84.	0.	0.000	1000.00	1.765s
EU-154	4018.33	1004.77	97.	-11.	-0.006	132.22	1.768s
Co-56	4150.66	1037.84	27.	-9.	-0.005	139.63	1.798s
Cs-136	4191.60	1048.07	19.	6.	0.003	110.55	1.807s
BI-207	4253.99	1063.66	43.	-6.	-0.003	265.36	1.820

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
EU-152	4447.76	1112.07	178.	-3.	-0.002	631.58	1.863s
ZN-65	4461.66	1115.55	175.	0.	0.000	1000.00	1.866s
BI-214	4480.90	1120.35	12.	123.	0.068	11.00	2.021
Sc-46	4481.68	1120.55	175.	0.	0.000	1000.00	1.870
Ta-182	4484.69	1121.30	166.	11.	0.006	168.37	1.871
CO-60	4692.57	1173.24	27.	-2.	-0.001	708.52	1.916s
Ta-182	4755.86	1189.05	21.	5.	0.003	229.68	1.930
Ta-182	4885.39	1221.41	17.	12.	0.007	87.00	1.957
Co-56	4952.92	1238.28	28.	39.	0.021	36.07	1.972s
NA-22	5098.03	1274.53	23.	4.	0.002	162.63	2.003s
EU-154	5098.08	1274.54	27.	0.	0.000	1000.00	2.003s
FE-59	5166.35	1291.60	28.	-5.	-0.003	238.03	2.017s
TL-210	5252.04	1313.00	11.	10.	0.006	84.92	2.036s
CO-60	5330.11	1332.50	11.	10.	0.006	84.28	2.052s
AG-110M	5537.48	1384.30	17.	11.	0.006	92.93	2.096s
K-40	5843.63	1460.76	6.	360.	0.200	5.52	1.643s
La-140	6386.02	1596.21	0.	21.	0.012	21.82	2.269s
SB-124	6765.58	1690.98	6.	1.	0.000	945.38	2.345s
BI-214	7060.00	1764.49	10.	78.	0.043	12.73	2.403s
Y-88	7346.69	1836.06	7.	-1.	0.000	994.99	2.459s

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
BE-7	C	4.0805E+00					5.31E+01	
			477.60	4.081E+00	?(	1.495E+01	1.08E+02	1.05E+01 G
NA-22	C	3.0438E-01					9.50E+02	
			1274.53	3.044E-01	?(	1.749E+00	1.63E+02	9.99E+01 G
K-40	N	2.6391E+02					4.66E+11	
			1460.83	2.639E+02	(	9.985E+00	5.52E+00	1.07E+01 G
CR-51	F	1.8882E-01					2.77E+01	
			320.08	1.888E-01	%(	1.290E+01	2.60E+03	9.94E+00 G
MN-54	C	5.3126E-01					3.12E+02	
			834.85	5.313E-01	?(	1.776E+00	1.44E+02	1.00E+02 G
FE-59	F	7.4108E-02					4.45E+01	
			1099.25	7.411E-02	%(	3.466E+00	2.09E+03	5.65E+01 G
			1291.60	-8.756E-01	+	4.517E+00	2.38E+02	4.32E+01 G

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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Co-56	C	1.6934E+00					7.73E+01	
			846.77	1.559E-01	?(	1.467E+00	4.06E+02	9.99E+01 G
			1238.28	4.019E+00	?(	2.860E+00	3.61E+01	6.61E+01 G
			1037.84	-3.692E+00	+	1.141E+01	1.40E+02	1.41E+01 G
			1771.35	-3.952E-01	%	2.762E+01	2.00E+03	1.55E+01 A
CO-58	C	-8.8639E-01					7.09E+01	
			810.78	-8.864E-01	?(	2.435E+00	8.22E+01	9.95E+01 G
CO-60	F	7.3373E-01					1.93E+03	
			1332.50	7.337E-01	?(	1.337E+00	8.43E+01	1.00E+02 G
			1173.24	-1.100E-01	-	1.767E+00	7.09E+02	9.99E+01 G
NB-94	I	3.9291E-01					7.41E+06	
			702.63	3.929E-01	?(	1.059E+00	1.13E+02	9.79E+01 G
			871.10	-3.537E-01	+	1.972E+00	1.62E+02	9.99E+01 G
ZR-95	I	-5.5684E-01					6.40E+01	
			756.73	-5.568E-01	?(	3.174E+00	2.43E+02	5.45E+01 G
			724.20	0.000E+00	+	4.718E+00	1.00E+03	4.42E+01 G
NB-95	I	-1.3056E+00					6.40E+01	
			765.79	-1.306E+00	(	3.153E+00	7.28E+01	9.98E+01 G
RU-103	I	4.9380E-01					3.93E+01	
			497.05	4.938E-01	?(	1.124E+00	9.12E+01	9.09E+01 G
			610.30	-1.255E+01	+	8.924E+01	2.12E+02	5.75E+00 GA
RH-106	I	6.1812E+00					3.74E+02	
			621.92	6.181E+00	?(	4.851E+01	2.34E+02	9.93E+00 G
			1050.36	1.947E+00	%	1.039E+02	1.46E+03	1.56E+00 G
			511.86	1.348E+01	?	6.974E+00	1.86E+01	2.00E+01 GA
AG-108M	C	-3.5068E-02					1.53E+05	
			433.94	-3.507E-02	%(	1.179E+00	1.30E+03	9.05E+01 G
			722.94	1.176E-02	%	2.287E+00	5.55E+03	9.08E+01 G
			614.28	-3.017E-01	+	5.666E+00	5.59E+02	8.98E+01 G
AG-110M	F	6.9984E-01					2.50E+02	
			884.68	0.000E+00	?(	4.042E+00	1.00E+03	7.27E+01 G
			657.76	5.648E-01	(	1.520E+00	8.03E+01	9.46E+01 G
			937.49	6.507E-01	?(	4.593E+00	3.05E+02	3.44E+01 G
			1384.30	3.390E+00	?(	6.756E+00	9.29E+01	2.43E+01 G
			763.94	-6.388E+00	+	1.393E+01	6.60E+01	2.23E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
SN-113	F	3.8206E-01					1.15E+02	
			391.69	3.821E-01	?(	3.591E+00	2.78E+02	6.40E+01 G
SB-124	F	1.7207E-02					6.02E+01	
			602.73	-7.243E-01	?(	5.301E+00	2.19E+02	9.83E+01 G
			1690.98	1.230E-01	+	2.663E+00	9.45E+02	4.78E+01 G
			722.79	6.757E+00	?(	1.738E+01	7.71E+01	1.08E+01 G
SB-125	I	2.3114E+00					1.01E+03	
			427.88	1.485E+00	?(	4.115E+00	1.12E+02	2.96E+01 G
			600.50	-3.968E+00	+	2.943E+01	2.22E+02	1.79E+01 G
			635.89	-9.949E-01	-	1.125E+01	3.18E+02	1.13E+01 G
			463.37	4.649E+00	(	1.419E+01	9.09E+01	1.05E+01 G
I-131	I	4.1438E-01					8.02E+00	
			364.48	1.360E-01	?(	1.398E+00	4.07E+02	8.17E+01 G
			284.30	4.119E+00	*(	1.838E+01	1.72E+02	6.14E+00 G
			636.97	-1.097E+01	+	2.538E+01	6.97E+01	7.17E+00 G
Gd-153	F	-1.4028E+00					2.42E+02	
			97.50	-1.403E+00	?(	6.789E+00	1.45E+02	3.00E+01 G
			103.20	-1.924E+00	+	9.388E+00	1.46E+02	2.18E+01 G
Ga-68	C	-7.3337E-01					4.71E-02	
			1077.40	-7.334E-01	%(	5.332E+01	3.15E+03	3.30E+00 G
BA-133	F	-8.6915E-01					3.85E+03	
			356.00	-8.692E-01	?(	6.036E+00	2.08E+02	6.20E+01 G
			302.85	-2.913E+00	+	2.011E+01	2.07E+02	1.83E+01 G
			383.84	-6.676E+00	&	2.388E+01	1.07E+02	8.94E+00 GA
			80.99	-4.701E-01	+	1.099E+01	7.02E+02	3.41E+01 GA
CS-134	I	-5.3238E-01					7.54E+02	
			795.87	-1.150E+00	&(	3.001E+00	7.84E+01	8.55E+01 G
			604.71	-7.318E-01	&	5.285E+00	2.16E+02	9.76E+01 G
			569.32	-2.108E+00	+	8.445E+00	1.17E+02	1.54E+01 G
			801.95	-5.842E+00	+	3.437E+01	1.73E+02	8.69E+00 G
			563.24	5.789E+00	?(	1.312E+01	9.41E+01	8.35E+00 G
CS-137	I	-6.3000E-01					1.10E+04	
			661.66	-6.300E-01	&(	2.200E+00	1.03E+02	8.52E+01 G
CE-139	F	-2.5771E-01					1.38E+02	
			165.85	-2.577E-01	(	1.809E+00	2.08E+02	7.99E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Ba-140	I	1.8795E+00					1.28E+01	
			537.26	7.640E-01	(	4.861E+00	2.59E+02	2.44E+01 G
			162.66	6.254E+00	?(	2.130E+01	1.02E+02	6.22E+00 G
			304.85	-1.253E+01	&	8.546E+01	2.04E+02	4.29E+00 G
La-140	I	1.9526E+00					1.28E+01	
			1596.21	1.848E+00	&(	6.487E-01	2.18E+01	9.54E+01 G
			487.02	9.021E-01	-	3.709E+00	1.21E+02	4.55E+01 G
			328.76	2.442E+00	(	7.212E+00	8.83E+01	2.03E+01 G
			815.77	-2.711E+00	-	1.132E+01	1.23E+02	2.33E+01 G
CE-141	I	-5.9470E-01					3.25E+01	
			145.44	-5.947E-01	?(	4.597E+00	2.31E+02	4.82E+01 G
CE-144	I	3.1590E+00					2.85E+02	
			133.54	3.159E+00	*(	1.927E+01	1.83E+02	1.11E+01 G
PM-144	C	-5.4658E-01					3.63E+02	
			696.54	-5.466E-01	?(	1.712E+00	1.35E+02	9.90E+01 G
			618.06	0.000E+00	+	5.136E+00	1.00E+03	9.91E+01 G
EU-152	F	1.1627E+00					4.94E+03	
			121.78	8.350E-01	?(	4.318E+00	1.54E+02	2.86E+01 G
			344.29	9.770E-01	?(	7.592E+00	2.30E+02	2.65E+01 G
			1112.07	-1.393E+00	+	3.012E+01	6.32E+02	1.36E+01 G
			778.92	2.267E+00	&(	1.034E+01	1.91E+02	1.29E+01 G
			964.11	-2.018E+00	+	2.059E+01	2.97E+02	1.46E+01 G
			244.69	-5.781E+00	+	3.773E+01	1.95E+02	7.58E+00 G
			1408.00	-3.611E-01	%	1.020E+01	1.33E+03	2.10E+01 GA
EU-154	I	3.9913E-01					3.14E+03	
			123.10	-9.747E-01	&(	3.051E+00	9.39E+01	4.08E+01 G
			1274.54	0.000E+00	+	5.371E+00	1.00E+03	3.52E+01 G
			723.36	0.000E+00	&	1.029E+01	1.00E+03	2.02E+01 G
			873.23	4.966E+00	?(	1.270E+01	7.64E+01	1.23E+01 G
			1004.77	-3.536E+00	+	1.588E+01	1.32E+02	1.80E+01 G
			996.33	-7.258E+00	+	2.316E+01	9.47E+01	1.06E+01 G
EU-155	I	1.1253E+00					1.81E+03	
			105.31	1.125E+00	?(	9.908E+00	2.63E+02	2.12E+01 G
			86.54	1.125E+00	}	1.185E+01	1.07E+02	3.07E+01 G
HF-181	F	5.3878E-01					4.24E+01	
			482.00	5.388E-01	?(	2.097E+00	1.15E+02	8.05E+01 G
			133.02	-1.001E+00	+	5.382E+00	1.61E+02	4.33E+01 G
			345.83	-2.920E+00	&	1.402E+01	1.43E+02	1.51E+01 G
			136.30	0.000E+00	-	3.624E+01	1.00E+03	5.85E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Ta-182	F	2.3220E+00					1.14E+02	
			1121.30	2.009E+00	(	1.146E+01	1.68E+02	3.49E+01 G
			1221.41	2.969E+00	(	5.518E+00	8.70E+01	2.70E+01 G
			1189.05	1.918E+00	(	9.962E+00	2.30E+02	1.62E+01 G
Hg-203	F	-1.3728E-01					4.66E+01	
			279.20	-1.373E-01	?(	1.840E+00	3.93E+02	8.15E+01 G
TL-208	N	6.1414E+00					6.98E+02	
			583.02	6.068E+00	(	1.040E+00	1.11E+01	8.45E+01 G
			277.28	7.128E+00	(	1.861E+01	7.84E+01	6.31E+00 G
			860.56	1.142E+01	+	8.781E+00	3.69E+01	1.24E+01 G
PM-146	C	3.6279E-01					2.02E+03	
			453.88	1.515E-01	?(	1.960E+00	5.09E+02	6.50E+01 G
			747.16	-2.512E+00	&	5.244E+00	9.13E+01	3.40E+01 G
			735.72	9.731E-01	?(	5.259E+00	2.24E+02	2.25E+01 G
Y-88	F	2.7625E-01					1.07E+02	
			1836.06	-6.365E-02	?(	1.407E+00	9.95E+02	9.92E+01 G
			898.04	6.361E-01	&(	1.362E+00	9.43E+01	9.37E+01 G
Cd-113m		-8.4210E+03					5.33E+03	
			263.70	-8.421E+03	(	2.610E+04	9.29E+01	6.00E-03 K
Cd-109	F	5.8519E+00					4.53E+02	
			88.04	5.852E+00	?(	9.514E+01	4.88E+02	3.79E+00 G
Cf-251	T	-2.7259E+00					3.28E+05	
			176.60	-2.726E+00	*(	7.387E+00	1.07E+02	1.70E+01 G
			227.00	2.900E+00	?	1.770E+01	2.36E+02	6.30E+00 GA
Cf-249	T	-2.0024E-01					1.28E+05	
			387.95	-8.242E-01	&(	3.397E+00	1.23E+02	6.60E+01 G
			333.44	2.455E+00	?(	1.112E+01	1.34E+02	1.55E+01 G
Sn-126		5.3520E+00					3.65E+07	
			87.57	0.000E+00	-	9.661E+00	1.00E+03	3.75E+01 GA
			64.28	5.352E+00	(	2.258E+01	1.27E+02	9.70E+00 G
			86.94	0.000E+00	-	4.018E+01	1.00E+03	9.04E+00 GA
PB-210	N	6.0538E+01					8.14E+03	
			46.54	6.054E+01	(P	4.510E+01	3.01E+01	4.25E+00 G
PB-212	N	1.3119E+01					6.98E+02	
			238.63	1.312E+01	(	2.201E+00	7.66E+00	4.33E+01 G
			300.03	3.430E+01	+	2.479E+01	3.21E+01	3.28E+00 GA

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PB-214	N	4.7159E+01					5.84E+05	
			351.93	4.707E+01	@(	2.595E+00	4.57E+00	3.76E+01 G
			295.09	4.734E+01	(P	5.548E+00	7.07E+00	1.93E+01 G
			242.00	4.373E+01		1.333E+01	1.18E+01	7.43E+00 GA
BI-207	C	-1.3388E-01					1.18E+04	
			1063.66	-4.663E-01	?(	2.727E+00	2.65E+02	7.45E+01 G
			569.70	1.195E-01	?(	1.420E+00	3.38E+02	9.77E+01 G
BI-212	N	-1.0064E+01					6.98E+02	
			727.17	-1.006E+01	&(	3.043E+01	9.02E+01	7.55E+00 G
			785.42	5.252E+01		1.198E+02	9.86E+01	1.28E+00 GA
U-235	N	7.3588E-02					2.57E+11	
			143.79	-3.451E+00	(	1.890E+01	1.64E+02	1.10E+01 G
			205.33	9.760E-01	&	2.338E+01	9.23E+02	5.01E+00 G
			163.38	7.678E+00	(	2.716E+01	1.06E+02	5.08E+00 G
			185.72	-1.167E+00	+ P	3.090E+00	5.96E+01	5.40E+01 GA
BI-214	N	4.4298E+01					5.84E+05	
			609.31	4.366E+01	(P	2.580E+00	5.10E+00	4.61E+01 G
			1120.29	5.188E+01	+	7.953E+00	1.10E+01	1.51E+01 G
			1764.49	4.622E+01	?(	1.043E+01	1.27E+01	1.54E+01 G
BI-210M	T	8.4733E-01					1.10E+09	
			265.83	8.473E-01	?(	2.684E+00	9.46E+01	5.00E+01 G
			304.90	-1.920E+00	&	1.295E+01	2.02E+02	2.80E+01 G
AC-228	N	1.6112E+01					2.10E+03	
			911.07	1.567E+01	(	1.391E+00	1.10E+01	2.90E+01 G
			968.97	5.239E+00	-	1.295E+01	7.42E+01	1.75E+01 G
			338.32	1.718E+01	(	6.197E+00	1.70E+01	1.20E+01 G
			93.35	-6.450E+00	-	6.404E+01	2.99E+02	5.56E+00 XA
TH-227	N	-2.9418E+00					7.95E+03	
			256.24	-2.942E+00	?(	1.863E+01	2.45E+02	7.00E+00 G
			235.97	-3.927E+00	+	2.293E+01	1.75E+02	1.23E+01 G
			50.14	-7.639E+00	+	3.425E+01	1.34E+02	8.00E+00 G
TH-229	N	7.3859E+00					2.68E+06	
			193.51	9.580E+00	(	2.569E+01	1.05E+02	4.40E+00 G
			210.85	4.157E+00	&(	4.104E+01	3.82E+02	2.99E+00 G
TH-234	N	1.4420E+01					1.63E+12	
			92.59	1.442E+01	(P	1.820E+01	3.93E+01	5.58E+00 G
			63.29	1.943E+00	& P	5.530E+01	8.46E+02	3.81E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PA-231	N	-1.8525E+01					1.20E+07	
			302.65	-1.852E+01	?(	1.293E+02	2.09E+02	2.88E+00 G
			300.07	-2.149E+01	+	1.534E+02	2.14E+02	2.46E+00 G
PA-233	C	-1.5291E+00					7.82E+08	
			312.01	-1.529E+00	?(	1.003E+01	1.96E+02	3.60E+01 G
			300.18	-8.533E+00	+	6.029E+01	2.12E+02	6.20E+00 G
PA-234	N	9.5507E-01					1.63E+12	
			131.29	-2.095E-01	%(	9.612E+00	1.36E+03	1.80E+01 G
			946.02	2.519E+00	?(	1.271E+01	2.21E+02	1.34E+01 G
			569.47	1.582E-01	%	1.743E+01	3.10E+03	8.20E+00 G
			883.24	-7.371E+00	+	2.899E+01	1.16E+02	9.60E+00 G
			880.53	-1.539E+01	&	4.274E+01	8.31E+01	6.00E+00 GA
PA-234M	N	6.9187E+01					1.63E+12	
			1001.00	0.000E+00	&(	3.187E+02	1.00E+03	8.37E-01 G
			766.41	2.662E+02	?(	8.605E+02	9.63E+01	2.94E-01 G
AM-241	T	1.5213E+00					1.58E+05	
			59.54	1.521E+00	&(	6.241E+00	1.23E+02	3.59E+01 G
Np-237	F	3.3817E-01					2.14E+06	
							Derived Ave Activity	
			86.49	3.382E-01	}(	2.776E+01	2.46E+03	1.31E+01 G
Ir-192	F	3.4823E-02					7.40E+01	
			316.49	-3.092E-02	%(	4.095E+00	3.94E+03	8.70E+01 G
			468.06	1.454E-01	&(	3.317E+00	6.59E+02	5.18E+01 G
			308.44	-1.713E+00	+	1.140E+01	1.99E+02	3.18E+01 G
Cs-136	F	1.2413E-01					1.30E+01	
			818.50	-5.152E-01	?(	2.913E+00	1.66E+02	1.00E+02 G
			1048.07	4.548E-01	&(	1.745E+00	1.11E+02	8.00E+01 G
			340.57	9.233E-01	?(	4.115E+00	1.33E+02	4.69E+01 G
Np-239	T	1.6901E+00					2.36E+00	
			103.70	-3.162E-01	&	8.665E+00	8.17E+02	2.40E+01 X
			106.13	1.690E+00	?(	8.079E+00	1.43E+02	2.27E+01 G
			99.50	-2.801E+00	+	1.349E+01	1.45E+02	1.50E+01 X
Nd-147		-2.9365E+00					1.11E+01	
			531.00	-2.937E+00	?(	9.488E+00	1.34E+02	1.30E+01 G
			91.10	-1.664E+00	+	1.297E+01	2.35E+02	2.83E+01 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

TL-210   N  -3.3736E-01                                      5.84E+05
                          799.60-3.374E-01 ?(  2.815E+00 2.44E+02 9.90E+01 G
                          296.00-6.601E-01 +   4.775E+00 2.17E+02 7.90E+01 G
                         1313.00 3.426E+00 ?   6.293E+00 8.49E+01 2.10E+01 GA
   ( - 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

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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********** 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
TH-227	50.14	512.	-24.	-0.013	134.22	-7.639E+00
AM-241	59.54	566.	28.	0.015	123.00	1.521E+00
BA-133	80.99	2455.	-10.	-0.006	702.19	-4.701E-01
Nd-147	91.10	2576.	-31.	-0.017	234.63	-1.664E+00
Gd-153	97.50	806.	-28.	-0.015	145.16	-1.403E+00
Np-239	99.50	802.	-28.	-0.016	144.51	-2.801E+00
Gd-153	103.20	830.	-28.	-0.016	146.35	-1.924E+00
Np-239	103.70	858.	-5.	-0.003	816.74	-3.162E-01
Np-239	106.13	667.	26.	0.014	143.24	1.690E+00
EU-152	121.78	295.	16.	0.009	153.86	8.350E-01

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
EU-154	123.10	299.	-27.	-0.015	93.92	-9.747E-01	
HF-181	133.02	1055.	-29.	-0.016	161.45	-1.001E+00	
CE-144	133.54	883.	23.	0.013	182.79	3.159E+00	
U-235	143.79	796.	-24.	-0.014	164.05	-3.451E+00	
CE-141	145.44	906.	-18.	-0.010	231.33	-5.947E-01	
Ba-140	162.66	289.	24.	0.013	102.02	6.254E+00	
U-235	163.38	313.	24.	0.013	105.93	7.678E+00	
CE-139	165.85	340.	-13.	-0.007	208.41	-2.577E-01	
Cf-251	176.60	238.	-28.	-0.015	106.56	-2.726E+00	
U-235	185.72	405.	-36.	-0.020	59.56	-1.167E+00	P
TH-229	193.51	172.	24.	0.013	105.09	9.580E+00	
U-235	205.33	172.	3.	0.001	923.02	9.760E-01	
TH-229	210.85	183.	7.	0.004	381.94	4.157E+00	
Cf-251	227.00	136.	9.	0.005	235.75	2.900E+00	
TH-227	235.97	872.	-24.	-0.013	174.93	-3.927E+00	
EU-152	244.69	852.	-21.	-0.012	195.42	-5.781E+00	
TH-227	256.24	158.	-10.	-0.005	245.13	-2.942E+00	
Cd-113m	263.70	221.	-23.	-0.013	92.85	-8.421E+03	
BI-210M	265.83	158.	19.	0.011	94.64	8.473E-01	
Hg-203	279.20	185.	-5.	-0.003	392.69	-1.373E-01	
I-131	284.30	99.	11.	0.006	171.89	4.119E+00	
TL-210	296.00	1128.	-22.	-0.012	216.82	-6.601E-01	
PA-231	300.07	1105.	-22.	-0.012	213.95	-2.149E+01	
PA-233	300.18	1083.	-22.	-0.012	211.78	-8.533E+00	
PA-231	302.65	1061.	-22.	-0.012	209.16	-1.852E+01	
BA-133	302.85	1039.	-22.	-0.012	206.95	-2.913E+00	
Ba-140	304.85	1017.	-22.	-0.012	204.44	-1.253E+01	
BI-210M	304.90	995.	-22.	-0.012	202.17	-1.920E+00	
Ir-192	308.44	973.	-22.	-0.012	199.31	-1.713E+00	
PA-233	312.01	950.	-22.	-0.012	196.44	-1.529E+00	
Cf-249	333.44	187.	15.	0.008	134.41	2.455E+00	
Cs-136	340.57	229.	16.	0.009	132.56	9.233E-01	
EU-152	344.29	245.	10.	0.005	229.62	9.770E-01	
HF-181	345.83	270.	-16.	-0.009	142.84	-2.920E+00	
BA-133	356.00	835.	-20.	-0.011	207.82	-8.692E-01	
I-131	364.48	68.	4.	0.002	406.71	1.360E-01	
BA-133	383.84	233.	-21.	-0.011	106.87	-6.676E+00	
Cf-249	387.95	254.	-19.	-0.010	122.88	-8.242E-01	
SN-113	391.69	263.	8.	0.005	277.56	3.821E-01	
PM-146	453.88	60.	3.	0.002	508.81	1.515E-01	
Ir-192	468.06	108.	2.	0.001	659.01	1.454E-01	
BE-7	477.60	87.	13.	0.007	108.38	4.081E+00	
HF-181	482.00	99.	13.	0.007	115.10	5.388E-01	
RU-103	497.05	32.	13.	0.007	91.16	4.938E-01	
RH-106	511.86	60.	75.	0.042	18.62	1.348E+01	
Nd-147	531.00	43.	-10.	-0.006	133.71	-2.937E+00	
Ba-140	537.26	39.	5.	0.003	258.84	7.640E-01	
CS-134	563.24	30.	13.	0.007	94.10	5.789E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
CS-134	569.32	43.	-8.	-0.005	116.96	-2.108E+00	
BI-207	569.70	50.	3.	0.002	338.30	1.195E-01	
SB-124	602.73	727.	-18.	-0.010	218.76	-7.243E-01	
CS-134	604.71	710.	-18.	-0.010	215.84	-7.318E-01	
RU-103	610.30	692.	-18.	-0.010	212.40	-1.255E+01	
AG-108M	614.28	675.	-7.	-0.004	558.87	-3.017E-01	
RH-106	621.92	591.	15.	0.008	234.03	6.181E+00	
I-131	636.97	75.	-19.	-0.010	69.73	-1.097E+01	
AG-110M	657.76	43.	12.	0.007	80.25	5.648E-01	
CS-137	661.66	75.	-12.	-0.007	103.33	-6.300E-01	
PM-144	696.54	56.	-12.	-0.007	135.40	-5.466E-01	
NB-94	702.63	19.	8.	0.005	113.45	3.929E-01	
SB-124	722.79	66.	16.	0.009	77.09	6.757E+00	
BI-212	727.17	100.	-16.	-0.009	90.19	-1.006E+01	
PM-146	735.72	23.	5.	0.003	224.40	9.731E-01	
PM-146	747.16	56.	-18.	-0.010	91.29	-2.512E+00	
ZR-95	756.73	51.	-6.	-0.004	243.25	-5.568E-01	
AG-110M	763.94	175.	-30.	-0.016	65.99	-6.388E+00	
NB-95	765.79	180.	-27.	-0.015	72.83	-1.306E+00	
PA-234M	766.41	113.	16.	0.009	96.30	2.662E+02	
EU-152	778.92	28.	6.	0.003	191.49	2.267E+00	
BI-212	785.42	37.	14.	0.008	98.62	5.252E+01	
CS-134	795.87	110.	-20.	-0.011	78.37	-1.150E+00	
TL-210	799.60	130.	-7.	-0.004	244.01	-3.374E-01	
CS-134	801.95	150.	-10.	-0.006	173.32	-5.842E+00	
CO-58	810.78	95.	-18.	-0.010	82.24	-8.864E-01	
Cs-136	818.50	138.	-10.	-0.006	166.49	-5.152E-01	
MN-54	834.85	47.	10.	0.006	143.65	5.313E-01	
NB-94	871.10	55.	-7.	-0.004	161.55	-3.537E-01	
EU-154	873.23	33.	11.	0.006	76.37	4.966E+00	
PA-234	880.53	94.	-17.	-0.010	83.10	-1.539E+01	
PA-234	883.24	112.	-13.	-0.007	116.42	-7.371E+00	
Y-88	898.04	20.	11.	0.006	94.33	6.361E-01	
AG-110M	937.49	30.	4.	0.002	305.16	6.507E-01	
PA-234	946.02	35.	6.	0.003	220.58	2.519E+00	
EU-152	964.11	115.	-5.	-0.003	297.02	-2.018E+00	
EU-154	996.33	71.	-13.	-0.007	94.71	-7.258E+00	
EU-154	1004.77	97.	-11.	-0.006	132.22	-3.536E+00	
Cs-136	1048.07	19.	6.	0.003	110.55	4.548E-01	
BI-207	1063.66	43.	-6.	-0.003	265.36	-4.663E-01	
EU-152	1112.07	178.	-3.	-0.002	631.58	-1.393E+00	
Ta-182	1121.30	166.	11.	0.006	168.37	2.009E+00	
CO-60	1173.24	27.	-2.	-0.001	708.52	-1.100E-01	
Ta-182	1189.05	21.	5.	0.003	229.68	1.918E+00	
Ta-182	1221.41	17.	12.	0.007	87.00	2.969E+00	
NA-22	1274.53	23.	4.	0.002	162.63	3.044E-01	
FE-59	1291.60	28.	-5.	-0.003	238.03	-8.756E-01	
TL-210	1313.00	11.	10.	0.006	84.92	3.426E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
CO-60	1332.50	11.	10.	0.006	84.28	7.337E-01	
AG-110M	1384.30	17.	11.	0.006	92.93	3.390E+00	
SB-124	1690.98	6.	1.	0.000	945.38	1.230E-01	
Y-88	1836.06	7.	-1.	0.000	994.99	-6.365E-02	

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 *****

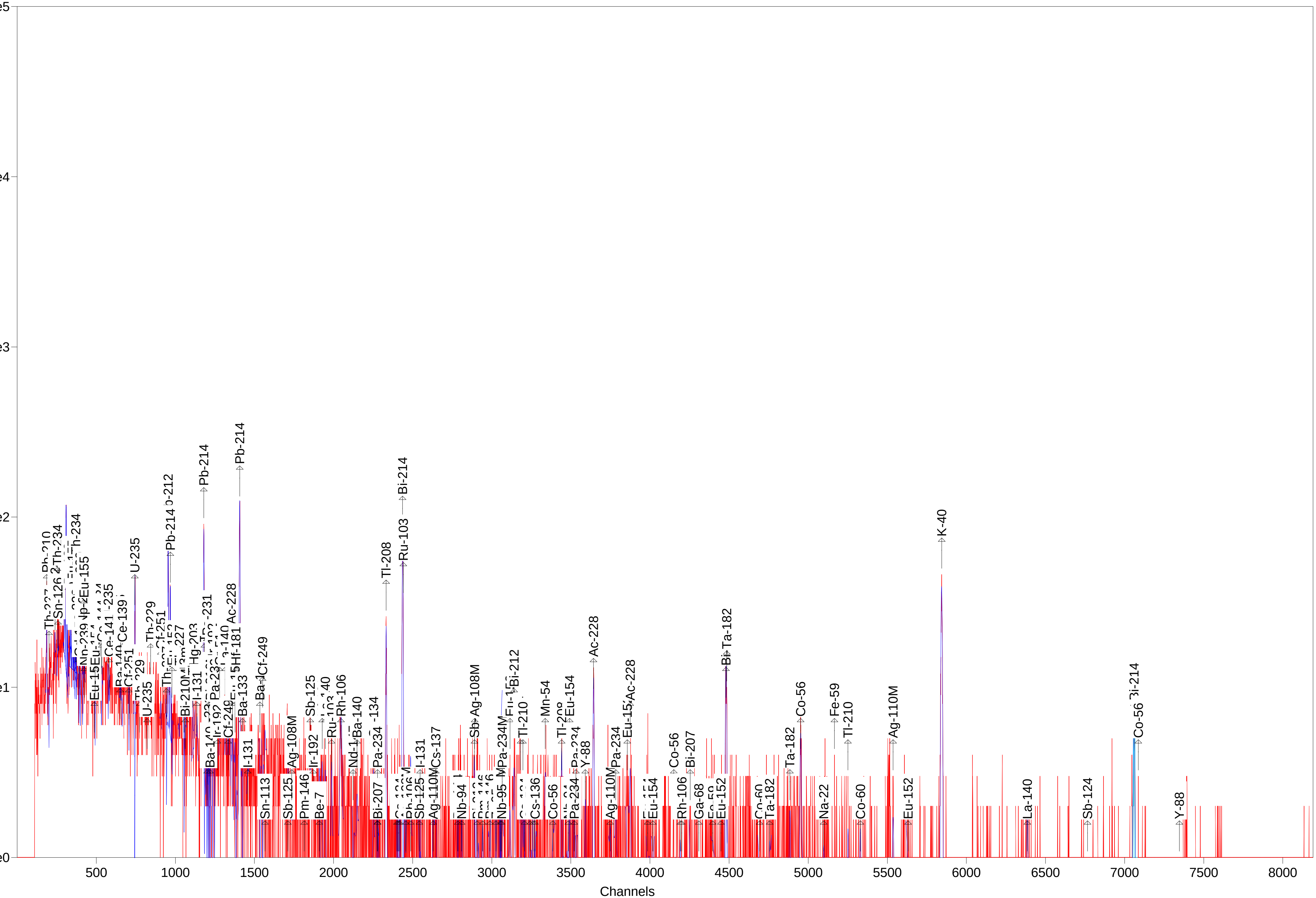
Nuclide		Time of Count Activity Bq/Sample	Time Corrected Activity Bq/Sample	Uncertainty Counting 1 Sigma	MDA Bq/Sample
BE-7	#A	4.0805E+00	4.0805E+00	1.084E+02%	1.49E+01
NA-22	#A	3.0438E-01	3.0438E-01	1.626E+02%	1.75E+00
K-40		2.6391E+02	2.6391E+02	5.522E+00%	9.98E+00
Sc-46	#A	0.0000E+00	0.0000E+00	7.071E+02%	2.98E+00
CR-51	#A	1.8881E-01	1.8882E-01	2.600E+03%	1.29E+01
MN-54	#A	5.3126E-01	5.3126E-01	1.436E+02%	1.78E+00
FE-59	#A	7.4107E-02	7.4108E-02	2.087E+03%	3.47E+00
Co-56	#C	1.6934E+00	1.6934E+00	3.607E+01%	1.47E+00
CO-57	#A	0.0000E+00	0.0000E+00	7.071E+02%	1.48E+00
CO-58	#A	-8.8638E-01	-8.8639E-01	8.224E+01%	2.44E+00
CO-60	#A	7.3373E-01	7.3373E-01	8.428E+01%	1.34E+00
ZN-65	#A	0.0000E+00	0.0000E+00	1.000E+03%	8.08E+00
NB-94	#A	3.9291E-01	3.9291E-01	1.134E+02%	1.06E+00
ZR-95	#A	-5.5684E-01	-5.5684E-01	2.432E+02%	3.17E+00
NB-95	#A	-1.3056E+00	-1.3056E+00	7.283E+01%	3.15E+00
RU-103	#A	4.9380E-01	4.9380E-01	9.116E+01%	1.12E+00
RH-106	#A	6.1812E+00	6.1812E+00	2.340E+02%	4.85E+01
AG-108M	#A	-3.5068E-02	-3.5068E-02	1.303E+03%	1.18E+00
AG-110M	#A	6.9984E-01	6.9984E-01	8.025E+01%	4.04E+00
SN-113	#A	3.8206E-01	3.8206E-01	2.776E+02%	3.59E+00
SB-124	#A	1.7207E-02	1.7207E-02	7.709E+01%	5.30E+00
SB-125	A	2.3114E+00	2.3114E+00	7.195E+01%	4.12E+00
I-131	#A	4.1435E-01	4.1438E-01	1.719E+02%	1.40E+00
Gd-153	#A	-1.4028E+00	-1.4028E+00	1.452E+02%	6.79E+00
Ga-68	#A	-7.2591E-01	-7.3337E-01	3.154E+03%	5.33E+01
Tc-99m	#A	0.0000E+00	0.0000E+00	1.000E+03%	2.47E+00
BA-133	#A	-8.6915E-01	-8.6915E-01	2.078E+02%	6.04E+00
CS-134	#A	-5.3238E-01	-5.3238E-01	6.123E+01%	3.00E+00
CS-137	#A	-6.3000E-01	-6.3000E-01	1.033E+02%	2.20E+00
CE-139	#A	-2.5771E-01	-2.5771E-01	2.084E+02%	1.81E+00
Ba-140	#A	1.8795E+00	1.8795E+00	1.020E+02%	4.86E+00
La-140	#	1.9526E+00	1.9526E+00	2.182E+01%	6.49E-01
CE-141	#A	-5.9469E-01	-5.9470E-01	2.313E+02%	4.60E+00
CE-144	#A	3.1590E+00	3.1590E+00	1.828E+02%	1.93E+01
PM-144	#A	-5.4658E-01	-5.4658E-01	1.354E+02%	1.71E+00
EU-152	#A	1.1627E+00	1.1627E+00	1.121E+02%	4.32E+00

EU-154 #A	3.9913E-01	3.9913E-01	6.052E+01%		3.05E+00
EU-155 #A	1.1253E+00	1.1253E+00	2.632E+02%		9.91E+00
HF-181 #A	5.3878E-01	5.3878E-01	1.151E+02%		2.10E+00
Ta-182 #A	2.3220E+00	2.3220E+00	8.700E+01%		1.15E+01
Hg-203 #A	-1.3728E-01	-1.3728E-01	3.927E+02%		1.84E+00
TL-208	6.1414E+00	6.1414E+00	1.114E+01%		1.04E+00
PM-146 #A	3.6279E-01	3.6279E-01	2.244E+02%		1.96E+00
Y-88 #A	2.7625E-01	2.7625E-01	9.433E+01%		1.41E+00
Cd-113m#A	-8.4210E+03	-8.4210E+03	9.285E+01%		2.61E+04
Cd-109 #A	5.8519E+00	5.8519E+00	4.884E+02%		9.51E+01
Cf-251 #A	-2.7259E+00	-2.7259E+00	1.066E+02%		7.39E+00
Cf-249 #A	-2.0024E-01	-2.0024E-01	9.105E+01%		3.40E+00
Sn-126 A	5.3520E+00	5.3520E+00	1.265E+02%		2.26E+01
PB-210	6.0538E+01	6.0538E+01	3.006E+01%		4.51E+01
PB-212	1.3119E+01	1.3119E+01	7.660E+00%		2.20E+00
PB-214	4.7159E+01	4.7159E+01	4.210E+00%		2.60E+00
BI-207 #A	-1.3388E-01	-1.3388E-01	2.150E+02%		2.73E+00
BI-212 #A	-1.0064E+01	-1.0064E+01	9.019E+01%		3.04E+01
U-235 #A	7.3588E-02	7.3588E-02	9.764E+01%		1.89E+01
BI-214	4.4298E+01	4.4298E+01	5.101E+00%		2.58E+00
BI-210M#A	8.4733E-01	8.4733E-01	9.464E+01%		2.68E+00
AC-228	1.6112E+01	1.6112E+01	1.014E+01%		1.39E+00
TH-227 #A	-2.9418E+00	-2.9418E+00	2.451E+02%		1.86E+01
TH-229 #A	7.3859E+00	7.3859E+00	1.051E+02%		2.57E+01
TH-234 A	1.4420E+01	1.4420E+01	3.934E+01%		1.82E+01
PA-231 #A	-1.8525E+01	-1.8525E+01	2.092E+02%		1.29E+02
PA-233 #A	-1.5291E+00	-1.5291E+00	1.964E+02%		1.00E+01
PA-234 #A	9.5507E-01	9.5507E-01	2.206E+02%		9.61E+00
PA-234M#A	6.9187E+01	6.9187E+01	9.630E+01%		3.19E+02
AM-241 #A	1.5213E+00	1.5213E+00	1.230E+02%		6.24E+00
Np-237 #A	3.3817E-01	3.3817E-01	2.463E+03%		2.78E+01
Ir-192 #A	3.4823E-02	3.4823E-02	6.590E+02%		4.09E+00
Cs-136 #A	1.2412E-01	1.2413E-01	7.994E+01%		2.91E+00
Np-239 #A	1.6897E+00	1.6901E+00	1.432E+02%		8.08E+00
Nd-147 #A	-2.9364E+00	-2.9365E+00	1.337E+02%		9.49E+00
TL-210 #A	-3.3736E-01	-3.3736E-01	2.440E+02%		2.81E+00
Kr-85 #A	0.0000E+00	0.0000E+00	1.000E+03%		4.82E+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 (   25.1 to  1999.1 keV)     4.657E+02  Bq/Sample
Total Decayed Activity (   25.1 to  1999.1 keV) 4.6570285E+02  Bq/Sample
```

452567_Gamma_160-36526-A-8-B. 12_Gamma_20193694.spc.



Test America St. Louis Spectrum ID: 14_Gamma_20192821

Sample Description: 452567_Gamma_160-36526-A-9-B
Detector: Detector #14
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-9-B

Decay to Time: 12/25/2019 09:35 Live Time: 1800 sec
Acquisition Time: 12/25/2019 09:35:34 Real Time: 1801 sec
Analysis Time: 12/25/2019 10:06 Dead Time: 0.06 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 14_Soil_TunaCan.Clb
Efficiency Cal Desc: 14_TunaCan_90099_042312
Efficiency Cal Date: 4/23/2012 11:29
Energy Cal Date: 2/28/2012 10:48
Library: Client_Long_Rev15.lib
Bkgd Correction File: 14_2019-12-07_1445.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	-3.410E+00	123.0	4.193E+00	4.197E+00	1.424E+01
NA-22	-4.572E-01	110.5	5.053E-01	5.058E-01	1.749E+00
K-40	2.143E+02	6.0	1.287E+01	1.691E+01	8.032E+00
Sc-46	4.060E-01	123.6	5.019E-01	5.023E-01	1.726E+00
CR-51	-1.544E+00	261.8	4.042E+00	4.042E+00	1.381E+01
MN-54	-1.860E-01	84.3	1.568E-01	1.571E-01	1.598E+00
FE-59	1.002E-01	794.1	7.959E-01	7.959E-01	1.982E+00
Co-56	5.526E-01	123.0	6.798E-01	6.804E-01	1.303E+00
CO-57	0.000E+00	1.#INF	1.540E-01	1.540E-01	1.055E+00
CO-58	-6.783E-01	89.4	6.067E-01	6.077E-01	2.040E+00
CO-60	2.495E-01	229.3	5.723E-01	5.724E-01	1.342E+00
ZN-65	0.000E+00	1.#INF	3.130E-01	3.130E-01	6.448E+00
NB-94	4.384E-01	120.7	5.290E-01	5.295E-01	1.287E+00
ZR-95	4.152E-02	264.4	1.098E-01	1.098E-01	2.124E+00
NB-95	5.087E-01	104.1	5.297E-01	5.303E-01	1.797E+00
RU-103	0.000E+00	1.#INF	7.406E-02	7.406E-02	1.013E+00
RH-106	3.513E+00	103.8	3.646E+00	3.650E+00	8.963E+00
AG-108M	1.790E-01	97.9	1.753E-01	1.755E-01	1.212E+00
AG-110M	5.284E-01	88.2	4.658E-01	4.665E-01	3.063E+00
SN-113	5.743E-01	117.4	6.740E-01	6.747E-01	2.277E+00
SB-124	6.541E-01	86.8	5.678E-01	5.688E-01	3.526E+00
SB-125	-7.479E-02	70.5	5.273E-02	5.287E-02	3.523E+00
I-131	-1.290E-01	314.2	4.054E-01	4.054E-01	1.084E+00
Gd-153	-9.417E-01	101.7	9.579E-01	9.597E-01	3.202E+00
Ga-68	1.334E+01	122.9	1.639E+01	1.641E+01	3.880E+01
Tc-99m	-3.112E-01	130.8	4.069E-01	4.072E-01	1.363E+00
BA-133	-5.096E-01	225.1	1.147E+00	1.148E+00	3.863E+00
CS-134	2.028E-01	72.9	1.478E-01	1.482E-01	2.199E+00
CS-137	-7.689E-01	89.0	6.846E-01	6.858E-01	2.297E+00
CE-139	2.979E-01	122.1	3.639E-01	3.650E-01	1.223E+00
Ba-140	-4.405E-01	373.7	1.646E+00	1.646E+00	4.268E+00
La-140	7.767E-02	83.8	6.509E-02	6.522E-02	1.998E+00
CE-141	7.536E-02	1017.8	7.670E-01	7.670E-01	2.599E+00

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CE-144	-2.793E+00	137.8	3.848E+00	3.851E+00	1.286E+01
PM-144	-3.414E-01	160.9	5.493E-01	5.496E-01	1.343E+00
EU-152	1.188E+00	226.1	2.685E+00	2.686E+00	3.150E+00
EU-154	1.277E+00	59.5	7.599E-01	7.629E-01	1.929E+00
EU-155	1.091E-01	1161.6	1.267E+00	1.267E+00	4.329E+00
HF-181	-6.121E-01	101.8	6.229E-01	6.237E-01	2.096E+00
Ta-182	-6.126E-02	104.1	6.380E-02	6.388E-02	9.929E+00
Hg-203	3.244E-01	106.0	3.439E-01	3.444E-01	1.163E+00
TL-208	4.217E+00	13.7	5.760E-01	6.161E-01	9.982E-01
PM-146	4.110E-01	108.8	4.473E-01	4.478E-01	1.146E+00
Y-88	0.000E+00	1.#INF	9.849E-02	9.849E-02	7.259E-01
Cd-113m	-5.272E+03	86.0	4.533E+03	4.545E+03	1.519E+04
Cd-109	4.182E+00	301.9	1.263E+01	1.263E+01	4.236E+01
Cf-251	-1.900E+00	108.1	2.055E+00	2.062E+00	5.512E+00
Cf-249	-7.459E-01	109.2	8.142E-01	8.151E-01	2.733E+00
Sn-126	-4.015E+00	114.4	4.594E+00	4.599E+00	1.535E+01
PB-210	2.171E+01	55.7	1.209E+01	1.216E+01	3.262E+01
PB-212	2.842E-01	514.0	1.461E+00	1.461E+00	4.915E+00
PB-214	6.408E+00	25.8	1.651E+00	1.684E+00	5.163E+00
BI-207	-4.173E-01	244.9	1.022E+00	1.022E+00	2.357E+00
BI-212	4.031E-01	1652.3	6.660E+00	6.660E+00	2.352E+01
U-235	-3.116E+00	79.3	2.471E+00	2.476E+00	1.068E+01
BI-214	1.890E+01	7.5	1.409E+00	1.717E+00	1.704E+00
BI-210M	4.118E-01	143.6	5.914E-01	5.919E-01	2.011E+00
AC-228	1.644E+01	8.5	1.401E+00	1.633E+00	1.444E+00
TH-227	8.673E-01	143.4	1.243E+00	1.244E+00	1.274E+01
TH-229	5.732E+00	107.0	6.131E+00	6.148E+00	1.659E+01
TH-234	1.893E+01	22.1	4.180E+00	4.311E+00	1.471E+01
PA-231	-7.756E+00	311.6	2.417E+01	2.417E+01	8.137E+01
PA-233	0.000E+00	1.#INF	3.040E-01	3.040E-01	6.597E+00
PA-234	-1.707E+00	131.9	2.251E+00	2.253E+00	7.522E+00
PA-234M	6.266E+01	89.6	5.614E+01	5.623E+01	1.825E+02
AM-241	-1.172E+00	112.1	1.314E+00	1.316E+00	3.713E+00
Np-237	-2.997E+00	120.1	3.600E+00	3.604E+00	1.200E+01
Ir-192	-2.186E-02	74.1	1.619E-02	1.624E-02	1.476E+00
Cs-136	4.823E-01	82.9	3.999E-01	4.009E-01	2.301E+00
Np-239	6.389E-01	190.2	1.215E+00	1.216E+00	4.106E+00
Nd-147	1.192E+00	105.5	1.257E+00	1.259E+00	5.826E+00
TL-210	-2.945E-01	206.8	6.088E-01	6.090E-01	2.101E+00
Kr-85	1.725E+02	53.8	9.288E+01	9.340E+01	3.021E+02
Total	5.754E+02				

Analyst: Caleb Quinn

Sample description
452567_Gamma_160-36526-A-9-B

Spectrum Filename: C:\User\SPC\Det14\14_Gamma_20192821.An1

Acquisition information
Start time: 12/25/2019 9:35:34 AM
Live time: 1800
Real time: 1801
Dead time: 0.06 %
Detector ID: 14

Detector system
Ge14 SN/11080670

Calibration
Filename: 14_Soil_TunaCan.Clb
14_TunaCan_90099_042312

Energy Calibration
Created: 2/28/2012 10:48:23 AM
Zero offset: 0.130 keV
Gain: 0.250 keV/channel
Quadratic: -2.050E-08 keV/channel^2

Efficiency Calibration
Created: 4/23/2012 11:29:47 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.02 %
Log(Eff): 2.101260E-01 + (-5.951973E-01*Log(E)) + (-1.605331E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.28 %
Log(Eff): -2.391492E+01 + (8.828985E+00*Log(E)) + (-9.371496E-01*Log(E)^2)

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.14keV)
Stop channel: 8000 (1999.51keV)
Peak rejection level: 1000.000%
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:	YES	12/25/2019 9:35:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	14_2019-12-07_1445.PBC 12/7/2019 2:45:57 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 25 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.2049

***** 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
46.73	54.	36.26	0.82	2.185E-02	46.54	4.250	PBC<MDA	PB210
50.14	9.	219.10	0.75	2.439E-02	50.14	8.000	PBC<MDA	TH227
63.23	73.	31.36	0.55	3.277E-02	63.29	3.810	3.228E+01	TH234
74.88	173.	12.52	0.78	3.814E-02				
77.26	288.	8.30	0.78	3.900E-02				
86.93	58.	31.64	0.79	4.173E-02	86.54	30.700	PBC<MDA	EU155
					86.94	9.040	8.601E+00	Sn126
88.04	12.	301.91	0.79	4.196E-02	88.04	3.790	PBC<MDA	Cd109
91.10	21.	160.66	0.79	4.255E-02	91.10	28.300	PBC<MDA	Nd147
93.01	160.	15.21	1.21	4.286E-02	92.59	5.584	3.148E+01	TH234
					93.35	5.561	3.713E+01	AC228
99.50	21.	112.55	0.80	4.365E-02	99.50	15.000	PBC<MDA	Np239
106.13	12.	190.21	0.81	4.406E-02	106.13	22.700	PBC<MDA	Np239
123.10	18.	101.49	0.83	4.372E-02	123.10	40.790	PBC<MDA	EU154
165.85	17.	122.14	0.87	3.872E-02	165.85	79.900	PBC<MDA	CE139
185.75	74.	24.42	0.39	3.552E-02	185.72	54.000	PBC<MDA	U235
193.51	16.	106.96	0.90	3.443E-02	193.51	4.400	PBC<MDA	TH229
208.77	27.	40.66	0.46	3.249E-02				
235.97	14.	229.76	0.94	2.957E-02	235.97	12.300	PBC<MDA	TH227
238.22	266.	7.16	0.94	2.935E-02	238.63	43.300	1.129E+01	PB212
241.50	95.	15.14	0.95	2.904E-02	242.00	7.430	2.460E+01	PB214
244.69	15.	228.32	0.95	2.875E-02	244.69	7.580	PBC<MDA	EU152

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
265.83	10.	143.60	0.97	2.697E-02	265.83	50.000	PBC<MDA	BI210M
277.33	14.	96.79	0.98	2.610E-02	277.28	6.310	PBC<MDA	TL208
279.20	12.	106.01	0.99	2.596E-02	279.20	81.460	PBC<MDA	Hg203
294.92	189.	10.34	0.99	2.488E-02	295.09	19.300	2.192E+01	PB214
328.76	15.	120.01	1.03	2.286E-02	328.76	20.300	PBC<MDA	La140
337.90	74.	18.82	1.06	2.237E-02	338.32	12.010	1.531E+01	AC228
351.49	289.	6.71	1.27	2.169E-02	351.93	37.600	1.927E+01	PB214
383.84	11.	116.59	1.09	2.025E-02	383.84	8.940	PBC<MDA	BA133
391.72	13.	117.36	1.09	1.993E-02	391.69	64.000	PBC<MDA	SN113
453.88	9.	108.83	1.15	1.774E-02	453.88	65.000	PBC<MDA	PM146
463.37	12.	101.09	1.16	1.745E-02	463.37	10.470	PBC<MDA	SB125
468.06	11.	107.44	1.17	1.731E-02	468.06	51.750	PBC<MDA	Ir192
487.02	9.	145.48	1.18	1.677E-02	487.02	45.500	PBC<MDA	La140
511.86	23.	41.69	2.46	1.612E-02	511.86	20.000	PBC<MDA	RH106
513.98	21.	53.83	1.21	1.607E-02	513.98	0.430	PBC<MDA	Kr85
531.00	6.	136.76	1.23	1.566E-02	531.00	13.000	PBC<MDA	Nd147
563.24	2.	729.96	1.25	1.494E-02	563.24	8.350	PBC<MDA	CS134
569.32	9.	72.86	1.26	1.481E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	4.009E+00	PA234
					569.70	97.740	PBC<MDA	BI207
582.68	94.	13.66	1.55	1.453E-02	583.02	84.500	4.241E+00	TL208
602.73	7.	376.07	1.29	1.415E-02	602.73	98.260	PBC<MDA	SB124
609.06	216.	7.45	1.28	1.403E-02	609.31	46.090	1.860E+01	BI214
					610.30	5.750	1.493E+02	RU103
621.92	9.	103.77	1.31	1.380E-02	621.92	9.930	PBC<MDA	RH106
702.63	10.	120.67	1.38	1.251E-02	702.63	97.900	PBC<MDA	NB94
722.79	10.	86.81	1.40	1.223E-02	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	4.856E-01	AG108M
					723.36	20.220	2.183E+00	EU154
722.94	10.	97.94	1.40	1.223E-02	722.79	10.810	4.081E+00	SB124
					722.94	90.840	4.857E-01	AG108M
					723.36	20.220	2.183E+00	EU154
723.36	10.	107.25	1.40	1.222E-02	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	4.858E-01	AG108M
					723.36	20.220	2.184E+00	EU154
724.20	2.	587.89	1.40	1.221E-02	724.20	44.150	PBC<MDA	ZR95
765.79	11.	104.11	1.43	1.167E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	1.728E+02	PA234M
766.41	7.	130.80	1.43	1.167E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	1.188E+02	PA234M
801.95	10.	106.18	1.46	1.124E-02	801.95	8.690	PBC<MDA	CS134
818.50	8.	178.14	1.48	1.106E-02	818.50	100.000	PBC<MDA	Cs136
846.77	9.	123.02	1.50	1.076E-02	846.77	99.935	PBC<MDA	Co56
860.44	9.	96.25	1.51	1.062E-02	860.56	12.420	PBC<MDA	TL208
889.28	8.	123.61	1.54	1.034E-02	889.28	99.984	PBC<MDA	Sc46
910.82	80.	11.35	0.50	1.014E-02	911.07	29.000	1.509E+01	AC228
964.11	6.	226.08	1.60	9.682E-03	964.11	14.605	PBC<MDA	EU152
968.92	59.	13.02	1.44	9.642E-03	968.97	17.460	1.947E+01	AC228

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
1001.00	6.	122.46	1.63	9.389E-03	1001.00	0.837	PBC<MDA	PA234M
1004.77	6.	100.37	1.63	9.360E-03	1004.77	18.010	PBC<MDA	EU154
1037.84	3.	289.64	1.65	9.116E-03	1037.84	14.130	PBC<MDA	Co56
1048.07	8.	82.92	1.66	9.043E-03	1048.07	80.000	PBC<MDA	Cs136
1077.40	6.	122.85	1.69	8.841E-03	1077.40	3.300	PBC<MDA	Ga68
1099.25	1.	794.12	1.70	8.697E-03	1099.25	56.500	PBC<MDA	FE59
1112.07	2.	786.98	1.71	8.614E-03	1112.07	13.644	PBC<MDA	EU152
1119.67	58.	20.04	1.18	8.562E-03	1120.29	15.100	2.511E+01	BI214
1221.41	8.	119.02	1.79	7.975E-03	1221.41	27.000	PBC<MDA	Ta182
1313.00	5.	145.77	1.86	7.514E-03	1313.00	21.000	PBC<MDA	TL210
1332.50	3.	229.35	1.87	7.423E-03	1332.50	99.980	PBC<MDA	CO60
1384.30	7.	88.15	1.91	7.192E-03	1384.30	24.290	PBC<MDA	AG110M
1408.00	9.	88.34	1.92	7.092E-03	1408.00	21.005	PBC<MDA	EU152
1460.85	283.	6.01	1.96	6.879E-03	1460.83	10.670	2.143E+02	K40
1764.32	32.	19.08	2.14	5.878E-03	1764.49	15.400	1.981E+01	BI214

********** 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
298.90	74.85	149.	173.	4.547E+03	12.52	0.777	- sD
308.42	77.23	142.	288.	7.395E+03	8.30	0.780	- sD
742.27	185.75	74.	85.	2.402E+03	20.92	0.392	- sM
834.31	208.77	33.	27.	8.311E+02	40.66	0.456	- sM
951.91	238.22	49.	265.	9.045E+03	7.17	0.944	- D
1404.29	351.24	152.	192.	8.828E+03	11.62	1.056	- D

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: Client_Long_Rev15.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	186.34	46.73	122.	36.	0.020	55.72	0.818s
TH-227	199.98	50.14	126.	9.	0.005	219.10	0.751s
AM-241	237.55	59.54	231.	-23.	-0.013	112.12	0.761s
TH-234	252.55	63.29	108.	61.	0.034	27.47	0.765D
Sn-126	256.52	64.28	346.	-23.	-0.013	114.43	0.766s
BA-133	323.33	80.99	219.	-10.	-0.006	251.10	0.784s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Np-237	345.33	86.49	610.	-29.	-0.016	120.11	0.789
EU-155	345.54	86.54	323.	-16.	-0.009	163.55	0.790s
Sn-126	347.13	86.94	142.	58.	0.032	31.64	0.790D
Sn-126	349.65	87.57	450.	-29.	-0.016	103.93	0.791
Cd-109	351.53	88.04	647.	12.	0.007	301.91	0.791A
Nd-147	363.77	91.10	579.	21.	0.012	160.66	0.794s
TH-234	369.72	92.59	169.	58.	0.032	34.56	0.796D
AC-228	372.76	93.35	593.	22.	0.012	158.15	0.797s
Gd-153	389.36	97.50	242.	-22.	-0.012	101.73	0.801s
Np-239	397.36	99.50	256.	21.	0.011	112.55	0.803s
Gd-153	412.15	103.20	283.	-5.	-0.003	448.43	0.807s
Np-239	414.15	103.70	289.	0.	0.000	1000.00	0.807s
Np-239	423.87	106.13	234.	12.	0.006	190.21	0.810s
CO-57	487.58	122.06	216.	0.	0.000	1000.00	0.826
EU-154	491.73	123.10	161.	18.	0.010	101.49	0.828s
PA-234	524.50	131.29	480.	-24.	-0.013	131.89	0.836s
HF-181	531.42	133.02	504.	-24.	-0.013	134.80	0.838s
CE-144	533.47	133.54	528.	-24.	-0.013	137.79	0.838s
HF-181	544.52	136.30	552.	-24.	-0.013	140.29	0.841
CO-57	545.21	136.47	502.	-23.	-0.013	140.34	0.841
Tc-99m	561.35	140.51	344.	-20.	-0.011	130.75	0.845s
U-235	574.45	143.79	330.	-26.	-0.014	79.31	0.849
Ba-140	649.93	162.66	252.	-20.	-0.011	117.01	0.868s
U-235	652.81	163.38	273.	-14.	-0.008	146.32	0.869s
CE-139	662.70	165.85	197.	17.	0.009	122.14	0.871s
Cf-251	705.68	176.60	163.	-21.	-0.012	108.11	0.882
U-235	742.15	185.72	240.	-31.	-0.017	67.00	0.892s
TH-229	773.30	193.51	83.	16.	0.009	106.96	0.899
U-235	820.58	205.33	234.	-18.	-0.010	117.66	0.912s
TH-229	842.65	210.85	220.	-10.	-0.005	218.91	0.917s
Cf-251	907.23	227.00	107.	-7.	-0.004	278.39	0.933
TH-227	943.11	235.97	531.	14.	0.008	229.76	0.942s
PB-212	953.75	238.63	553.	6.	0.004	513.97	0.945
PB-214	967.21	242.00	53.	85.	0.047	16.31	0.948D
EU-152	977.99	244.69	562.	15.	0.008	228.32	0.951s
TH-227	1024.17	256.24	81.	-12.	-0.006	290.10	0.962
Cd-113m	1054.01	263.70	80.	-15.	-0.009	85.98	0.970s
BI-210M	1062.53	265.83	98.	10.	0.006	143.60	0.972s
TL-208	1108.33	277.28	90.	14.	0.008	96.79	0.983s
Hg-203	1115.99	279.20	80.	12.	0.007	106.01	0.985
PB-214	1178.87	294.92	49.	189.	0.105	10.34	0.994s
TL-210	1183.18	296.00	527.	-16.	-0.009	200.37	1.002s
PB-212	1199.30	300.03	511.	-17.	-0.009	117.31	1.006
PA-231	1199.46	300.07	495.	-16.	-0.009	193.39	1.006s
PA-233	1199.90	300.18	478.	-16.	-0.009	190.17	1.006s
PA-231	1209.78	302.65	462.	-10.	-0.005	311.63	1.008
Ba-140	1218.57	304.85	452.	0.	0.000	1000.00	1.011s
BI-210M	1218.76	304.90	452.	0.	0.000	1000.00	1.011s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Ir-192	1232.94	308.44	452.	0.	0.000	1000.00	1.014s
PA-233	1247.22	312.01	452.	0.	0.000	1000.00	1.018s
Ir-192	1265.13	316.49	123.	-16.	-0.009	102.00	1.022s
CR-51	1279.51	320.08	139.	-6.	-0.004	261.80	1.026s
La-140	1314.21	328.76	84.	15.	0.008	120.01	1.034s
Cf-249	1332.92	333.44	66.	-8.	-0.004	193.25	1.039s
AC-228	1350.76	337.90	30.	74.	0.041	18.84	1.056
Cs-136	1361.44	340.57	200.	-14.	-0.008	149.58	1.045s
EU-152	1376.30	344.29	187.	-3.	-0.001	536.50	1.049s
HF-181	1382.47	345.83	184.	0.	0.000	1000.00	1.050
PB-214	1406.88	351.93	246.	94.	0.052	25.76	1.057D
BA-133	1423.15	356.00	373.	-12.	-0.007	225.14	1.060s
I-131	1457.08	364.48	44.	-4.	-0.002	314.25	1.069s
BA-133	1534.50	383.84	72.	11.	0.006	116.59	1.087s
Cf-249	1550.94	387.95	180.	-18.	-0.010	109.16	1.091s
SN-113	1565.90	391.69	113.	13.	0.007	117.36	1.095s
SB-125	1710.63	427.88	48.	-14.	-0.008	98.31	1.129s
AG-108M	1734.87	433.94	52.	-4.	-0.002	627.76	1.135s
PM-146	1814.64	453.88	20.	9.	0.005	108.83	1.154s
SB-125	1852.59	463.37	66.	12.	0.007	101.09	1.163s
Ir-192	1871.36	468.06	61.	11.	0.006	107.44	1.167s
BE-7	1909.50	477.60	86.	-11.	-0.006	122.98	1.176s
HF-181	1927.10	482.00	109.	-15.	-0.008	101.76	1.180s
La-140	1947.19	487.02	40.	9.	0.005	145.48	1.185s
RU-103	1987.33	497.05	28.	0.	0.000	1000.00	1.194s
RH-106	2046.57	511.86	33.	23.	0.013	41.69	2.458s
Kr-85	2055.03	513.98	56.	21.	0.012	53.83	1.210s
Nd-147	2123.11	531.00	16.	6.	0.003	136.76	1.225s
Ba-140	2148.15	537.26	32.	-3.	-0.002	373.67	1.231
CS-134	2252.06	563.24	44.	2.	0.001	729.96	1.255s
CS-134	2276.40	569.32	16.	9.	0.005	72.86	1.260
PA-234	2276.99	569.47	30.	-4.	-0.002	220.32	1.261s
BI-207	2277.92	569.70	38.	-9.	-0.005	147.97	1.261s
TL-208	2329.82	582.68	17.	94.	0.052	13.66	1.549s
SB-125	2401.12	600.50	388.	-13.	-0.007	209.15	1.289s
SB-124	2410.04	602.73	337.	7.	0.004	376.07	1.291s
CS-134	2417.96	604.71	344.	0.	0.000	1000.00	1.292s
BI-214	2435.38	609.06	14.	216.	0.120	7.45	1.282
RU-103	2440.31	610.30	344.	0.	0.000	1000.00	1.297s
AG-108M	2456.25	614.28	344.	0.	0.000	1000.00	1.301s
RH-106	2486.79	621.92	17.	9.	0.005	103.77	1.308s
SB-125	2542.69	635.89	24.	-2.	-0.001	281.42	1.320s
I-131	2547.03	636.97	33.	-4.	-0.002	60.58	1.321s
AG-110M	2630.18	657.76	53.	-10.	-0.006	104.68	1.339s
CS-137	2645.77	661.66	87.	-15.	-0.009	89.04	1.343s
PM-144	2785.32	696.54	35.	-8.	-0.004	160.87	1.374s
NB-94	2809.67	702.63	30.	10.	0.005	120.67	1.379
SB-124	2890.31	722.79	31.	10.	0.005	86.81	1.396s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
AG-108M	2890.91	722.94	40.	10.	0.005	97.94	1.397s
EU-154	2892.60	723.36	49.	10.	0.005	107.25	1.397s
ZR-95	2895.96	724.20	59.	2.	0.001	587.89	1.398s
PM-146	2942.05	735.72	26.	-8.	-0.004	28.57	1.408s
PM-146	2987.81	747.16	30.	-7.	-0.004	157.69	1.417s
ZR-95	3026.09	756.73	22.	-1.	-0.001	264.40	1.426
AG-110M	3054.96	763.94	55.	-11.	-0.006	23.06	1.432s
NB-95	3062.34	765.79	56.	11.	0.006	104.11	1.433s
PA-234M	3064.83	766.41	42.	7.	0.004	130.80	1.434s
EU-152	3114.87	778.92	52.	-18.	-0.010	15.50	1.444s
BI-212	3140.88	785.42	43.	-5.	-0.003	255.64	1.450s
CS-134	3182.68	795.87	58.	-13.	-0.007	84.98	1.459s
TL-210	3197.61	799.60	72.	-6.	-0.003	206.76	1.462s
CS-134	3207.01	801.95	53.	10.	0.006	106.18	1.464s
CO-58	3242.31	810.77	66.	-14.	-0.008	89.43	1.471s
La-140	3262.30	815.77	80.	-13.	-0.007	21.89	1.475s
Cs-136	3273.22	818.50	86.	8.	0.004	178.14	1.478s
MN-54	3338.63	834.85	38.	-4.	-0.002	84.32	1.492s
Co-56	3386.32	846.77	23.	9.	0.005	123.02	1.501s
TL-208	3441.51	860.56	14.	9.	0.005	96.25	1.513s
NB-94	3483.65	871.10	23.	-4.	-0.002	225.34	1.522s
EU-154	3492.19	873.23	34.	-5.	-0.003	159.83	1.523s
PA-234	3521.39	880.53	51.	-12.	-0.007	71.85	1.529s
PA-234	3532.24	883.24	63.	-7.	-0.004	118.55	1.531s
Sc-46	3556.40	889.28	40.	8.	0.004	123.61	1.536s
Y-88	3591.45	898.04	33.	-10.	-0.005	129.48	1.543s
AC-228	3642.57	910.82	1.	80.	0.044	11.35	0.500s
AG-110M	3749.30	937.49	47.	-17.	-0.010	87.03	1.576s
PA-234	3783.42	946.02	37.	-6.	-0.004	142.13	1.582s
EU-152	3855.80	964.11	89.	6.	0.003	226.08	1.597
AC-228	3875.03	968.92	0.	59.	0.033	13.02	1.437
PA-234M	4003.39	1001.00	25.	6.	0.003	122.46	1.626s
EU-154	4018.51	1004.77	13.	6.	0.003	100.37	1.629s
Co-56	4150.81	1037.84	15.	3.	0.002	289.64	1.655s
Cs-136	4191.74	1048.07	18.	8.	0.004	82.92	1.663s
RH-106	4200.91	1050.36	47.	-14.	-0.008	73.35	1.665s
BI-207	4254.12	1063.66	30.	-5.	-0.003	244.95	1.675s
Ga-68	4309.10	1077.40	10.	6.	0.003	122.85	1.685
FE-59	4396.54	1099.25	10.	1.	0.000	794.12	1.702s
EU-152	4447.85	1112.07	103.	2.	0.001	786.98	1.712s
ZN-65	4461.74	1115.55	105.	0.	0.000	1000.00	1.714s
BI-214	4478.24	1119.67	16.	58.	0.032	20.04	1.175s
Sc-46	4481.77	1120.55	105.	0.	0.000	1000.00	1.718s
Ta-182	4484.77	1121.30	118.	-9.	-0.005	170.93	1.719
CO-60	4692.60	1173.24	25.	-7.	-0.004	161.52	1.757s
Ta-182	4885.38	1221.41	16.	8.	0.004	119.02	1.792
NA-22	5097.96	1274.53	21.	-6.	-0.004	110.53	1.831s
EU-154	5098.00	1274.54	28.	0.	0.000	1000.00	1.831s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
FE-59	5166.25	1291.60	43.	-17.	-0.009	92.39	1.843s
TL-210	5251.92	1313.00	11.	5.	0.003	145.77	1.858s
CO-60	5329.96	1332.50	11.	3.	0.002	229.35	1.871s
AG-110M	5537.26	1384.30	5.	7.	0.004	88.15	1.907s
EU-152	5632.13	1408.00	11.	9.	0.005	88.34	1.923s
K-40	5843.65	1460.85	3.	283.	0.157	6.01	1.957
La-140	6385.44	1596.21	17.	-6.	-0.003	166.25	2.044s
SB-124	6764.81	1690.98	6.	-4.	-0.002	160.96	2.102s
BI-214	7059.07	1764.49	3.	32.	0.018	19.08	2.145s
Co-56	7086.53	1771.35	35.	0.	0.000	1000.00	2.149s
Y-88	7345.59	1836.06	0.	0.	0.000	1000.00	2.185s

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
BE-7	C	-3.4098E+00				5.31E+01	
			477.60	-3.410E+00	?(	1.424E+01 1.23E+02 1.05E+01	G
NA-22	C	-4.5721E-01				9.50E+02	
			1274.53	-4.572E-01	?(	1.749E+00 1.11E+02 9.99E+01	G
K-40	N	2.1430E+02				4.66E+11	
			1460.83	2.143E+02	(P	8.032E+00 6.01E+00 1.07E+01	G
Sc-46	F	4.0600E-01				8.38E+01	
			889.28	4.060E-01	?(	1.726E+00 1.24E+02 1.00E+02	G
			1120.55	0.000E+00	-	3.275E+00 1.00E+03 1.00E+02	G
CR-51	F	-1.5438E+00				2.77E+01	
			320.08	-1.544E+00	?(	1.381E+01 2.62E+02 9.94E+00	G
MN-54	C	-1.8601E-01				3.12E+02	
			834.85	-1.860E-01	?(P	1.598E+00 8.43E+01 1.00E+02	G
FE-59	F	1.0022E-01				4.45E+01	
			1099.25	1.002E-01	(P	1.982E+00 7.94E+02 5.65E+01	G
			1291.60	-2.814E+00	+	5.597E+00 9.24E+01 4.32E+01	G
Co-56	C	5.5259E-01				7.73E+01	
			846.77	4.478E-01	?(	1.303E+00 1.23E+02 9.99E+01	G
			1238.28	1.556E-01	% P	3.568E+00 1.03E+03 6.61E+01	G
			1037.84	1.294E+00	?(	8.953E+00 2.90E+02 1.41E+01	G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments
                         1771.35 0.000E+00 -   1.855E+01 1.00E+03 1.55E+01  A

CO-58    C  -6.7834E-01                                     7.09E+01
                          810.78-6.783E-01 ?(  2.040E+00 8.94E+01 9.95E+01 G

CO-60    F   2.4953E-01                                     1.93E+03
                         1332.50 2.495E-01 ?(  1.342E+00 2.29E+02 1.00E+02 G
                         1173.24-4.722E-01 +   1.755E+00 1.62E+02 9.99E+01 G

NB-94    I   4.3841E-01                                     7.41E+06
                          702.63 4.384E-01  (  1.287E+00 1.21E+02 9.79E+01 G
                          871.10-2.004E-01 - P 1.320E+00 2.25E+02 9.99E+01 G

ZR-95    I   4.1519E-02                                     6.40E+01
                          756.73-8.057E-02 ?(P 2.124E+00 2.64E+02 5.45E+01 G
                          724.20 1.921E-01  (  3.972E+00 5.88E+02 4.42E+01 G

NB-95    I   5.0874E-01                                     6.40E+01
                          765.79 5.087E-01 ?(  1.797E+00 1.04E+02 9.98E+01 G

RH-106   I   3.5132E+00                                     3.74E+02
                          621.92 3.513E+00 ?(  8.963E+00 1.04E+02 9.93E+00 G
                         1050.36-5.594E+01 +   1.367E+02 7.34E+01 1.56E+00 G
                          511.86 3.906E+00 ?   5.102E+00 4.17E+01 2.00E+01 GA

AG-108M  C   1.7897E-01                                     1.53E+05
                          433.94-1.290E-01 ?(P 1.212E+00 6.28E+02 9.05E+01 G
                          722.94 4.857E-01 &(  1.616E+00 9.79E+01 9.08E+01 G
                          614.28 0.000E+00 -   3.954E+00 1.00E+03 8.98E+01 G

AG-110M  F   5.2836E-01                                     2.50E+02
                          884.68 1.404E-07 %(  3.063E+00 6.19E+08 7.27E+01 G
                          657.76-4.597E-01 +   1.635E+00 1.05E+02 9.46E+01 G
                          937.49-2.828E+00 +   5.639E+00 8.70E+01 3.44E+01 G
                         1384.30 2.109E+00 ?(  4.284E+00 8.82E+01 2.43E+01 G
                          763.94-2.394E+00 + P 7.961E+00 2.31E+01 2.23E+01 G

SN-113   F   5.7431E-01                                     1.15E+02
                          391.69 5.743E-01 ?(  2.277E+00 1.17E+02 6.40E+01 G

SB-124   F   6.5414E-01                                     6.02E+01
                          602.73 2.772E-01 ?(  3.526E+00 3.76E+02 9.83E+01 G
                         1690.98-6.998E-01 +   2.634E+00 1.61E+02 4.78E+01 G
                          722.79 4.080E+00 ?(  1.198E+01 8.68E+01 1.08E+01 G

SB-125   I  -7.4791E-02                                     1.01E+03
                          427.88-1.380E+00 &(  3.523E+00 9.83E+01 2.96E+01 G
                          600.50-2.945E+00 +   2.072E+01 2.09E+02 1.79E+01 G
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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			635.89	-9.058E-01	&	9.166E+00	2.81E+02	1.13E+01 G
			463.37	3.616E+00	&(P	1.236E+01	1.01E+02	1.05E+01 G
I-131	I	-1.2900E-01					8.02E+00	
			364.48	-1.290E-01	?(	1.084E+00	3.14E+02	8.17E+01 G
			284.30	3.994E-01	% P	1.097E+01	1.01E+03	6.14E+00 G
			636.97	-2.106E+00	+ P	1.680E+01	6.06E+01	7.17E+00 G
Gd-153	F	-9.4165E-01					2.42E+02	
			97.50	-9.417E-01	?(	3.202E+00	1.02E+02	3.00E+01 G
			103.20	-3.094E-01	+	4.708E+00	4.48E+02	2.18E+01 G
Ga-68	C	1.3345E+01					4.71E-02	
			1077.40	1.334E+01	?(	3.880E+01	1.23E+02	3.30E+00 G
Tc-99m	I	-3.1116E-01					2.51E-01	
			140.51	-3.112E-01	?(	1.363E+00	1.31E+02	8.93E+01 G
BA-133	F	-5.0959E-01					3.85E+03	
			356.00	-5.096E-01	?(	3.863E+00	2.25E+02	6.20E+01 G
			302.85	-9.488E-07	%	1.266E+01	3.94E+08	1.83E+01 G
			383.84	3.281E+00	?	1.300E+01	1.17E+02	8.94E+00 GA
			80.99	-4.058E-01	+	2.908E+00	2.51E+02	3.41E+01 GA
CS-134	I	2.0284E-01					7.54E+02	
			795.87	-7.705E-01	?(	2.199E+00	8.50E+01	8.55E+01 G
			604.71	0.000E+00	+	3.594E+00	1.00E+03	9.76E+01 G
			569.32	2.137E+00	?(	5.206E+00	7.29E+01	1.54E+01 G
			801.95	5.788E+00	&(	2.089E+01	1.06E+02	8.69E+00 G
			563.24	7.978E-01	&(P	1.500E+01	7.30E+02	8.35E+00 G
CS-137	I	-7.6891E-01					1.10E+04	
			661.66	-7.689E-01	?(	2.297E+00	8.90E+01	8.52E+01 G
CE-139	F	2.9790E-01					1.38E+02	
			165.85	2.979E-01	&(	1.223E+00	1.22E+02	7.99E+01 G
Ba-140	I	-4.4047E-01					1.28E+01	
			537.26	-4.405E-01	?(	4.268E+00	3.74E+02	2.44E+01 G
			162.66	-4.533E+00	+	1.778E+01	1.17E+02	6.22E+00 G
			304.85	0.000E+00	&	5.436E+01	1.00E+03	4.29E+00 G
La-140	I	7.7668E-02					1.28E+01	
			1596.21	-5.468E-01	?(	1.998E+00	1.66E+02	9.54E+01 G
			487.02	6.381E-01	?(P	2.349E+00	1.45E+02	4.55E+01 G
			328.76	1.756E+00	?(	5.448E+00	1.20E+02	2.03E+01 G
			815.77	-2.886E+00	+ P	9.579E+00	2.19E+01	2.33E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CE-141	I	7.5362E-02					3.25E+01	
			145.44	7.536E-02	%(	2.599E+00	1.02E+03	4.82E+01 G
CE-144	I	-2.7926E+00					2.85E+02	
			133.54	-2.793E+00	?(	1.286E+01	1.38E+02	1.11E+01 G
PM-144	C	-3.4144E-01					3.63E+02	
			696.54	-3.414E-01	?(	1.343E+00	1.61E+02	9.90E+01 G
			618.06	-5.703E-04	% P	3.603E+00	1.14E+05	9.91E+01 G
EU-152	F	1.1879E+00					4.94E+03	
			121.78	5.917E-02	%(	3.150E+00	1.56E+03	2.86E+01 G
			344.29	-2.475E-01	& P	6.310E+00	5.37E+02	2.65E+01 G
			1112.07	8.666E-01	?(	2.365E+01	7.87E+02	1.36E+01 G
			778.92	-6.617E+00	+ P	1.358E+01	1.55E+01	1.29E+01 G
			964.11	2.357E+00	(	1.834E+01	2.26E+02	1.46E+01 G
			244.69	3.768E+00	?(	2.886E+01	2.28E+02	7.58E+00 G
			1408.00	3.397E+00	? P	6.746E+00	8.83E+01	2.10E+01 GA
EU-154	I	1.2769E+00					3.14E+03	
			123.10	5.667E-01	?(	1.929E+00	1.01E+02	4.08E+01 G
			1274.54	0.000E+00	-	5.581E+00	1.00E+03	3.52E+01 G
			723.36	2.184E+00	&(	7.973E+00	1.07E+02	2.02E+01 G
			873.23	-2.301E+00	&	1.283E+01	1.60E+02	1.23E+01 G
			1004.77	1.867E+00	?(	6.501E+00	1.00E+02	1.80E+01 G
			996.33	-4.634E-01	%	1.998E+01	1.21E+03	1.06E+01 G
EU-155	I	1.0912E-01					1.81E+03	
			105.31	1.091E-01	%(	4.329E+00	1.16E+03	2.12E+01 G
			86.54	-6.833E-01	&	3.756E+00	1.64E+02	3.07E+01 G
HF-181	F	-6.1207E-01					4.24E+01	
			482.00	-6.121E-01	&(	2.096E+00	1.02E+02	8.05E+01 G
			133.02	-7.139E-01	+	3.215E+00	1.35E+02	4.33E+01 G
			345.83	0.000E+00	+	1.106E+01	1.00E+03	1.51E+01 G
			136.30	-5.353E+00	+	2.509E+01	1.40E+02	5.85E+00 G
Ta-182	F	-6.1265E-02					1.14E+02	
			1121.30	-1.705E+00	(	9.929E+00	1.71E+02	3.49E+01 G
			1221.41	2.064E+00	(	5.508E+00	1.19E+02	2.70E+01 G
			1189.05	-4.206E-01	%	1.094E+01	1.10E+03	1.62E+01 G
Hg-203	F	3.2439E-01					4.66E+01	
			279.20	3.244E-01	&(	1.163E+00	1.06E+02	8.15E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
TL-208	N	4.2168E+00					6.98E+02	
			583.02	4.241E+00	(P	9.982E-01	1.37E+01	8.45E+01 G
			277.28	4.864E+00	?(P	1.583E+01	9.68E+01	6.31E+00 G
			860.56	3.726E+00	?(P	8.555E+00	9.63E+01	1.24E+01 G
PM-146	C	4.1104E-01					2.02E+03	
			453.88	4.110E-01	?(P	1.146E+00	1.09E+02	6.50E+01 G
			747.16	-1.006E+00	+	3.894E+00	1.58E+02	3.40E+01 G
			735.72	-1.657E+00	+ P	5.430E+00	2.86E+01	2.25E+01 G
Cd-113m		-5.2716E+03					5.33E+03	
			263.70	-5.272E+03	?(	1.519E+04	8.60E+01	6.00E-03 K
Cd-109	F	4.1819E+00					4.53E+02	
								Derived Ave Activity
			88.04	4.182E+00	}(	4.236E+01	3.02E+02	3.79E+00 G
Cf-251	T	-1.9005E+00					3.28E+05	
			176.60	-1.900E+00	?(	5.512E+00	1.08E+02	1.70E+01 G
			227.00	-1.930E+00	+	1.472E+01	2.78E+02	6.30E+00 GA
Cf-249	T	-7.4593E-01					1.28E+05	
			387.95	-7.459E-01	?(	2.733E+00	1.09E+02	6.60E+01 G
			333.44	-1.267E+00	+	6.427E+00	1.93E+02	1.55E+01 G
Sn-126		-4.0147E+00					3.65E+07	
			87.57	-1.038E+00	}	3.595E+00	1.04E+02	3.75E+01 GA
			64.28	-4.015E+00	?(	1.535E+01	1.14E+02	9.70E+00 G
			86.94	8.601E+00		8.565E+00	3.16E+01	9.04E+00 GA
PB-210	N	2.1706E+01					8.14E+03	
			46.54	2.171E+01	@(P	3.262E+01	5.57E+01	4.25E+00 G
PB-212	N	2.8417E-01					6.98E+02	
			238.63	2.842E-01	(P	4.915E+00	5.14E+02	4.33E+01 G
			300.03	-1.154E+01	+ P	7.457E+01	1.17E+02	3.28E+00 GA
PB-214	N	6.4079E+00					5.84E+05	
			351.93	6.408E+00	(P	5.163E+00	2.58E+01	3.76E+01 G
			295.09	2.192E+01	+ P	4.075E+00	1.03E+01	1.93E+01 G
			242.00	2.186E+01	+	9.465E+00	1.63E+01	7.43E+00 GA
BI-207	C	-4.1733E-01					1.18E+04	
			1063.66	-4.173E-01	?(	2.357E+00	2.45E+02	7.45E+01 G
			569.70	-3.450E-01	+ P	1.207E+00	1.48E+02	9.77E+01 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

BI-212   N   4.0306E-01                                     6.98E+02
                         727.17 4.031E-01 %(  2.352E+01 1.65E+03 7.55E+00 G
                         785.42-2.024E+01 +   1.267E+02 2.56E+02 1.28E+00 GA

U-235    N  -3.1160E+00                                     2.57E+11
                         143.79-3.116E+00 &(P 1.068E+01 7.93E+01 1.10E+01 G
                         205.33-5.991E+00 + P 2.493E+01 1.18E+02 5.01E+00 G
                         163.38-3.953E+00 + P 2.270E+01 1.46E+02 5.08E+00 G
                         185.72-9.031E-01 + P 2.167E+00 6.70E+01 5.40E+01 GA

BI-214   N   1.8903E+01                                     5.84E+05
                         609.31 1.860E+01  (P 1.704E+00 7.45E+00 4.61E+01 G
                        1120.29 2.511E+01 + P 9.065E+00 2.00E+01 1.51E+01 G
                        1764.49 1.981E+01 ?(P 6.380E+00 1.91E+01 1.54E+01 G

BI-210M  T   4.1183E-01                                     1.10E+09
                         265.83 4.118E-01 ?(P 2.011E+00 1.44E+02 5.00E+01 G
                         304.90 0.000E+00 &   8.330E+00 1.00E+03 2.80E+01 G

AC-228   N   1.6444E+01                                     2.10E+03
                         911.07 1.509E+01  (P 1.444E+00 1.14E+01 2.90E+01 G
                         968.97 1.947E+01  (  2.432E+00 1.30E+01 1.75E+01 G
                         338.32 1.531E+01  (P 5.846E+00 1.88E+01 1.20E+01 G
                          93.35 5.117E+00 -   2.705E+01 1.58E+02 5.56E+00 XA

TH-227   N   8.6728E-01                                     7.95E+03
                         256.24-3.293E+00  (P 1.274E+01 2.90E+02 7.00E+00 G
                         235.97 2.181E+00 ?(  1.681E+01 2.30E+02 1.23E+01 G
                          50.14 2.488E+00 &(P 1.568E+01 2.19E+02 8.00E+00 G

TH-229   N   5.7322E+00                                     2.68E+06
                         193.51 5.732E+00 ?(  1.659E+01 1.07E+02 4.40E+00 G
                         210.85-5.512E+00 + P 4.136E+01 2.19E+02 2.99E+00 G

TH-234   N   1.8934E+01                                     1.63E+12
                          92.59 1.344E+01  (P 1.471E+01 3.46E+01 5.58E+00 G
                          63.29 2.699E+01  (P 2.268E+01 2.75E+01 3.81E+00 G

PA-231   N  -7.7561E+00                                     1.20E+07
                         302.65-7.756E+00 &(  8.137E+01 3.12E+02 2.88E+00 G
                         300.07-1.509E+01 +   9.784E+01 1.93E+02 2.46E+00 G

PA-234   N  -1.7068E+00                                     1.63E+12
                         131.29-1.707E+00 &(  7.522E+00 1.32E+02 1.80E+01 G
                         946.02-2.694E+00 + P 1.316E+01 1.42E+02 1.34E+01 G
                         569.47-1.645E+00 +   1.284E+01 2.20E+02 8.20E+00 G
                         883.24-4.034E+00 + P 2.210E+01 1.19E+02 9.60E+00 G
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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments
                          880.53-1.057E+01 + P 3.192E+01 7.18E+01 6.00E+00 GA

PA-234M  N   6.2664E+01                                     1.63E+12
                         1001.00 4.295E+01 &(P 1.825E+02 1.22E+02 8.37E-01 G
                          766.41 1.188E+02 ?(  5.351E+02 1.31E+02 2.94E-01 G

AM-241   T  -1.1723E+00                                     1.58E+05
                           59.54-1.172E+00 ?(  3.713E+00 1.12E+02 3.59E+01 G

Np-237   F  -2.9974E+00                                     2.14E+06
                           86.49-2.997E+00  (  1.200E+01 1.20E+02 1.31E+01 G

Ir-192   F  -2.1855E-02                                     7.40E+01
                          316.49-4.306E-01 ?(  1.476E+00 1.02E+02 8.70E+01 G
                          468.06 6.656E-01 ?(  2.427E+00 1.07E+02 5.18E+01 G
                          308.44 0.000E+00 +   7.413E+00 1.00E+03 3.18E+01 G

Cs-136   F   4.8234E-01                                     1.30E+01
                          818.50 3.767E-01 ?(  2.301E+00 1.78E+02 1.00E+02 G
                         1048.07 6.144E-01 ?(  1.726E+00 8.29E+01 8.00E+01 G
                          340.57-7.243E-01 +   3.655E+00 1.50E+02 4.69E+01 G

Np-239   T   6.3885E-01                                     2.36E+00
                          103.70 0.000E+00 -   4.313E+00 1.00E+03 2.40E+01 X
                          106.13 6.389E-01 ?(  4.106E+00 1.90E+02 2.27E+01 G
                           99.50 1.740E+00 &   6.559E+00 1.13E+02 1.50E+01 X

Nd-147       1.1915E+00                                     1.11E+01
                          531.00 1.637E+00 ?(  5.826E+00 1.37E+02 1.30E+01 G
                           91.10 9.867E-01 ?(  5.301E+00 1.61E+02 2.83E+01 G

TL-210   N  -2.9446E-01                                     5.84E+05
                          799.60-2.945E-01 ?(  2.101E+00 2.07E+02 9.90E+01 G
                          296.00-4.630E-01 +   3.110E+00 2.00E+02 7.90E+01 G
                         1313.00 1.878E+00 ?   6.313E+00 1.46E+02 2.10E+01 GA

Kr-85    I   1.7253E+02                                     3.92E+03
                          513.98 1.725E+02 ?(  3.021E+02 5.38E+01 4.30E-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
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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

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********** 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	
TH-227	50.14	126.	9.	0.005	219.10	2.488E+00	P
AM-241	59.54	231.	-23.	-0.013	112.12	-1.172E+00	
BA-133	80.99	219.	-10.	-0.006	251.10	-4.058E-01	
Np-237	86.49	610.	-29.	-0.016	120.11	-2.997E+00	
EU-155	86.54	323.	-16.	-0.009	163.55	-6.833E-01	
Nd-147	91.10	579.	21.	0.012	160.66	9.867E-01	
Gd-153	97.50	242.	-22.	-0.012	101.73	-9.417E-01	
Np-239	99.50	256.	21.	0.011	112.55	1.740E+00	
Gd-153	103.20	283.	-5.	-0.003	448.43	-3.094E-01	
Np-239	106.13	234.	12.	0.006	190.21	6.389E-01	
EU-154	123.10	161.	18.	0.010	101.49	5.667E-01	
PA-234	131.29	480.	-24.	-0.013	131.89	-1.707E+00	
HF-181	133.02	504.	-24.	-0.013	134.80	-7.139E-01	
CE-144	133.54	528.	-24.	-0.013	137.79	-2.793E+00	
HF-181	136.30	552.	-24.	-0.013	140.29	-5.353E+00	
CO-57	136.47	502.	-23.	-0.013	140.34	-2.799E+00	
Tc-99m	140.51	344.	-20.	-0.011	130.75	-3.112E-01	
U-235	143.79	330.	-26.	-0.014	79.31	-3.116E+00	P
Ba-140	162.66	252.	-20.	-0.011	117.01	-4.533E+00	
U-235	163.38	273.	-14.	-0.008	146.32	-3.953E+00	P
CE-139	165.85	197.	17.	0.009	122.14	2.979E-01	
Cf-251	176.60	163.	-21.	-0.012	108.11	-1.900E+00	
U-235	185.72	240.	-31.	-0.017	67.00	-9.031E-01	P
TH-229	193.51	83.	16.	0.009	106.96	5.732E+00	
U-235	205.33	234.	-18.	-0.010	117.66	-5.991E+00	P
TH-229	210.85	220.	-10.	-0.005	218.91	-5.512E+00	P

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Cf-251	227.00	107.	-7.	-0.004	278.39	-1.930E+00	
TH-227	235.97	531.	14.	0.008	229.76	2.181E+00	
EU-152	244.69	562.	15.	0.008	228.32	3.768E+00	
TH-227	256.24	81.	-12.	-0.006	290.10	-3.293E+00	P
Cd-113m	263.70	80.	-15.	-0.009	85.98	-5.272E+03	
BI-210M	265.83	98.	10.	0.006	143.60	4.118E-01	P
Hg-203	279.20	80.	12.	0.007	106.01	3.244E-01	
TL-210	296.00	527.	-16.	-0.009	200.37	-4.630E-01	
PA-231	300.07	495.	-16.	-0.009	193.39	-1.509E+01	
PA-233	300.18	478.	-16.	-0.009	190.17	-5.989E+00	
PA-231	302.65	462.	-10.	-0.005	311.63	-7.756E+00	
Ir-192	316.49	123.	-16.	-0.009	102.00	-4.306E-01	
CR-51	320.08	139.	-6.	-0.004	261.80	-1.544E+00	
La-140	328.76	84.	15.	0.008	120.01	1.756E+00	
Cf-249	333.44	66.	-8.	-0.004	193.25	-1.267E+00	
Cs-136	340.57	200.	-14.	-0.008	149.58	-7.243E-01	
EU-152	344.29	187.	-3.	-0.001	536.50	-2.475E-01	P
BA-133	356.00	373.	-12.	-0.007	225.14	-5.096E-01	
I-131	364.48	44.	-4.	-0.002	314.25	-1.290E-01	
BA-133	383.84	72.	11.	0.006	116.59	3.281E+00	
Cf-249	387.95	180.	-18.	-0.010	109.16	-7.459E-01	
SB-125	427.88	48.	-14.	-0.008	98.31	-1.380E+00	
AG-108M	433.94	52.	-4.	-0.002	627.76	-1.290E-01	P
PM-146	453.88	20.	9.	0.005	108.83	4.110E-01	P
SB-125	463.37	66.	12.	0.007	101.09	3.616E+00	P
Ir-192	468.06	61.	11.	0.006	107.44	6.656E-01	
BE-7	477.60	86.	-11.	-0.006	122.98	-3.410E+00	
HF-181	482.00	109.	-15.	-0.008	101.76	-6.121E-01	
La-140	487.02	40.	9.	0.005	145.48	6.381E-01	P
RH-106	511.86	33.	23.	0.013	41.69	3.906E+00	
Kr-85	513.98	56.	21.	0.012	53.83	1.725E+02	
Nd-147	531.00	16.	6.	0.003	136.76	1.637E+00	
Ba-140	537.26	32.	-3.	-0.002	373.67	-4.405E-01	
CS-134	563.24	44.	2.	0.001	729.96	7.978E-01	P
CS-134	569.32	16.	9.	0.005	72.86	2.137E+00	
PA-234	569.47	30.	-4.	-0.002	220.32	-1.645E+00	
BI-207	569.70	38.	-9.	-0.005	147.97	-3.450E-01	P
SB-125	600.50	388.	-13.	-0.007	209.15	-2.945E+00	
SB-124	602.73	337.	7.	0.004	376.07	2.772E-01	
RH-106	621.92	17.	9.	0.005	103.77	3.513E+00	
SB-125	635.89	24.	-2.	-0.001	281.42	-9.058E-01	
I-131	636.97	33.	-4.	-0.002	60.58	-2.106E+00	P
AG-110M	657.76	53.	-10.	-0.006	104.68	-4.597E-01	
CS-137	661.66	87.	-15.	-0.009	89.04	-7.689E-01	
PM-144	696.54	35.	-8.	-0.004	160.87	-3.414E-01	
NB-94	702.63	30.	10.	0.005	120.67	4.384E-01	
SB-124	722.79	31.	10.	0.005	86.81	4.080E+00	
AG-108M	722.94	40.	10.	0.005	97.94	4.857E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
EU-154	723.36	49.	10.	0.005	107.25	2.184E+00		
ZR-95	724.20	59.	2.	0.001	587.89	1.921E-01		
PM-146	735.72	26.	-8.	-0.004	28.57	-1.657E+00		P
PM-146	747.16	30.	-7.	-0.004	157.69	-1.006E+00		
ZR-95	756.73	22.	-1.	-0.001	264.40	-8.057E-02		P
AG-110M	763.94	55.	-11.	-0.006	23.06	-2.394E+00		P
NB-95	765.79	56.	11.	0.006	104.11	5.087E-01		
PA-234M	766.41	42.	7.	0.004	130.80	1.188E+02		
EU-152	778.92	52.	-18.	-0.010	15.50	-6.617E+00		P
BI-212	785.42	43.	-5.	-0.003	255.64	-2.024E+01		
CS-134	795.87	58.	-13.	-0.007	84.98	-7.705E-01		
TL-210	799.60	72.	-6.	-0.003	206.76	-2.945E-01		
CS-134	801.95	53.	10.	0.006	106.18	5.788E+00		
CO-58	810.77	66.	-14.	-0.008	89.43	-6.783E-01		
La-140	815.77	80.	-13.	-0.007	21.89	-2.886E+00		P
Cs-136	818.50	86.	8.	0.004	178.14	3.767E-01		
MN-54	834.85	38.	-4.	-0.002	84.32	-1.860E-01		P
Co-56	846.77	23.	9.	0.005	123.02	4.478E-01		
NB-94	871.10	23.	-4.	-0.002	225.34	-2.004E-01		P
EU-154	873.23	34.	-5.	-0.003	159.83	-2.301E+00		
PA-234	880.53	51.	-12.	-0.007	71.85	-1.057E+01		P
PA-234	883.24	63.	-7.	-0.004	118.55	-4.034E+00		P
Sc-46	889.28	40.	8.	0.004	123.61	4.060E-01		
Y-88	898.04	33.	-10.	-0.005	129.48	-5.587E-01		
AG-110M	937.49	47.	-17.	-0.010	87.03	-2.828E+00		
PA-234	946.02	37.	-6.	-0.004	142.13	-2.694E+00		P
EU-152	964.11	89.	6.	0.003	226.08	2.357E+00		
PA-234M	1001.00	25.	6.	0.003	122.46	4.295E+01		P
EU-154	1004.77	13.	6.	0.003	100.37	1.867E+00		
Co-56	1037.84	15.	3.	0.002	289.64	1.294E+00		
Cs-136	1048.07	18.	8.	0.004	82.92	6.144E-01		
RH-106	1050.36	47.	-14.	-0.008	73.35	-5.594E+01		
BI-207	1063.66	30.	-5.	-0.003	244.95	-4.173E-01		
Ga-68	1077.40	10.	6.	0.003	122.85	1.334E+01		
FE-59	1099.25	10.	1.	0.000	794.12	1.002E-01		P
EU-152	1112.07	103.	2.	0.001	786.98	8.666E-01		
Ta-182	1121.30	118.	-9.	-0.005	170.93	-1.705E+00		
CO-60	1173.24	25.	-7.	-0.004	161.52	-4.722E-01		
Ta-182	1221.41	16.	8.	0.004	119.02	2.064E+00		
NA-22	1274.53	21.	-6.	-0.004	110.53	-4.572E-01		
FE-59	1291.60	43.	-17.	-0.009	92.39	-2.814E+00		
TL-210	1313.00	11.	5.	0.003	145.77	1.878E+00		
CO-60	1332.50	11.	3.	0.002	229.35	2.495E-01		
AG-110M	1384.30	5.	7.	0.004	88.15	2.109E+00		
EU-152	1408.00	11.	9.	0.005	88.34	3.397E+00		P
La-140	1596.21	17.	-6.	-0.003	166.25	-5.468E-01		
SB-124	1690.98	6.	-4.	-0.002	160.96	-6.998E-01		

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
BE-7	#A	-3.4097E+00	-3.4098E+00	1.230E+02%	1.42E+01
NA-22	#A	-4.5721E-01	-4.5721E-01	1.105E+02%	1.75E+00
K-40		2.1430E+02	2.1430E+02	6.007E+00%	8.03E+00
Sc-46	#A	4.0600E-01	4.0600E-01	1.236E+02%	1.73E+00
CR-51	#A	-1.5438E+00	-1.5438E+00	2.618E+02%	1.38E+01
MN-54	#A	-1.8601E-01	-1.8601E-01	8.432E+01%	1.60E+00
FE-59	#A	1.0022E-01	1.0022E-01	7.941E+02%	1.98E+00
Co-56	#A	5.5259E-01	5.5259E-01	1.230E+02%	1.30E+00
CO-57	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.06E+00
CO-58	#A	-6.7834E-01	-6.7834E-01	8.943E+01%	2.04E+00
CO-60	#A	2.4953E-01	2.4953E-01	2.293E+02%	1.34E+00
ZN-65	#A	0.0000E+00	0.0000E+00	1.000E+03%	6.45E+00
NB-94	#A	4.3841E-01	4.3841E-01	1.207E+02%	1.29E+00
ZR-95	#A	4.1519E-02	4.1519E-02	2.644E+02%	2.12E+00
NB-95	#A	5.0874E-01	5.0874E-01	1.041E+02%	1.80E+00
RU-103	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.01E+00
RH-106	#A	3.5132E+00	3.5132E+00	1.038E+02%	8.96E+00
AG-108M	#A	1.7897E-01	1.7897E-01	9.794E+01%	1.21E+00
AG-110M	#A	5.2836E-01	5.2836E-01	8.815E+01%	3.06E+00
SN-113	#A	5.7431E-01	5.7431E-01	1.174E+02%	2.28E+00
SB-124	#A	6.5414E-01	6.5414E-01	8.681E+01%	3.53E+00
SB-125	#A	-7.4791E-02	-7.4791E-02	7.050E+01%	3.52E+00
I-131	#A	-1.2900E-01	-1.2900E-01	3.142E+02%	1.08E+00
Gd-153	#A	-9.4165E-01	-9.4165E-01	1.017E+02%	3.20E+00
Ga-68	#A	1.3268E+01	1.3345E+01	1.229E+02%	3.88E+01
Tc-99m	#A	-3.1082E-01	-3.1116E-01	1.308E+02%	1.36E+00
BA-133	#A	-5.0959E-01	-5.0959E-01	2.251E+02%	3.86E+00
CS-134	#A	2.0284E-01	2.0284E-01	7.286E+01%	2.20E+00
CS-137	#A	-7.6891E-01	-7.6891E-01	8.904E+01%	2.30E+00
CE-139	#A	2.9790E-01	2.9790E-01	1.221E+02%	1.22E+00
Ba-140	#A	-4.4046E-01	-4.4047E-01	3.737E+02%	4.27E+00
La-140	#A	7.7666E-02	7.7668E-02	8.380E+01%	2.00E+00
CE-141	#A	7.5361E-02	7.5362E-02	1.018E+03%	2.60E+00
CE-144	#A	-2.7926E+00	-2.7926E+00	1.378E+02%	1.29E+01
PM-144	#A	-3.4144E-01	-3.4144E-01	1.609E+02%	1.34E+00
EU-152	#A	1.1879E+00	1.1879E+00	2.261E+02%	3.15E+00
EU-154	#A	1.2769E+00	1.2769E+00	5.951E+01%	1.93E+00
EU-155	#A	1.0912E-01	1.0912E-01	1.162E+03%	4.33E+00
HF-181	#A	-6.1207E-01	-6.1207E-01	1.018E+02%	2.10E+00
Ta-182	#A	-6.1265E-02	-6.1265E-02	1.041E+02%	9.93E+00
Hg-203	#A	3.2439E-01	3.2439E-01	1.060E+02%	1.16E+00
TL-208		4.2168E+00	4.2168E+00	1.366E+01%	9.98E-01
PM-146	#A	4.1104E-01	4.1104E-01	1.088E+02%	1.15E+00

Y-88 #A	0.0000E+00	0.0000E+00	1.000E+03%		7.26E-01
Cd-113m#A	-5.2716E+03	-5.2716E+03	8.598E+01%		1.52E+04
Cd-109 #A	4.1819E+00	4.1819E+00	3.019E+02%		4.24E+01
Cf-251 #A	-1.9005E+00	-1.9005E+00	1.081E+02%		5.51E+00
Cf-249 #A	-7.4593E-01	-7.4593E-01	1.092E+02%		2.73E+00
Sn-126 #A	-4.0147E+00	-4.0147E+00	1.144E+02%		1.54E+01
PB-210 #A	2.1706E+01	2.1706E+01	5.572E+01%		3.26E+01
PB-212 A	2.8417E-01	2.8417E-01	5.140E+02%		4.91E+00
PB-214	6.4079E+00	6.4079E+00	2.576E+01%		5.16E+00
BI-207 #A	-4.1733E-01	-4.1733E-01	2.449E+02%		2.36E+00
BI-212 #A	4.0306E-01	4.0306E-01	1.652E+03%		2.35E+01
U-235 #A	-3.1160E+00	-3.1160E+00	7.931E+01%		1.07E+01
BI-214	1.8903E+01	1.8903E+01	7.453E+00%		1.70E+00
BI-210M#A	4.1183E-01	4.1183E-01	1.436E+02%		2.01E+00
AC-228	1.6444E+01	1.6444E+01	8.521E+00%		1.44E+00
TH-227 #A	8.6728E-01	8.6728E-01	1.434E+02%		1.27E+01
TH-229 #A	5.7322E+00	5.7322E+00	1.070E+02%		1.66E+01
TH-234	1.8934E+01	1.8934E+01	2.208E+01%		1.47E+01
PA-231 #A	-7.7561E+00	-7.7561E+00	3.116E+02%		8.14E+01
PA-233 #A	0.0000E+00	0.0000E+00	1.000E+03%		6.60E+00
PA-234 #A	-1.7068E+00	-1.7068E+00	1.319E+02%		7.52E+00
PA-234M#A	6.2664E+01	6.2664E+01	8.959E+01%		1.83E+02
AM-241 #A	-1.1723E+00	-1.1723E+00	1.121E+02%		3.71E+00
Np-237 #A	-2.9974E+00	-2.9974E+00	1.201E+02%		1.20E+01
Ir-192 #A	-2.1855E-02	-2.1855E-02	7.407E+01%		1.48E+00
Cs-136 #A	4.8233E-01	4.8234E-01	8.292E+01%		2.30E+00
Np-239 #A	6.3878E-01	6.3885E-01	1.902E+02%		4.11E+00
Nd-147 #A	1.1915E+00	1.1915E+00	1.055E+02%		5.83E+00
TL-210 #A	-2.9446E-01	-2.9446E-01	2.068E+02%		2.10E+00
Kr-85 #A	1.7253E+02	1.7253E+02	5.383E+01%		3.02E+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 (25.1 to 1999.5 keV) 3.009E+02 Bq/Sample
Total Decayed Activity (25.1 to 1999.5 keV) 3.0091534E+02 Bq/Sample

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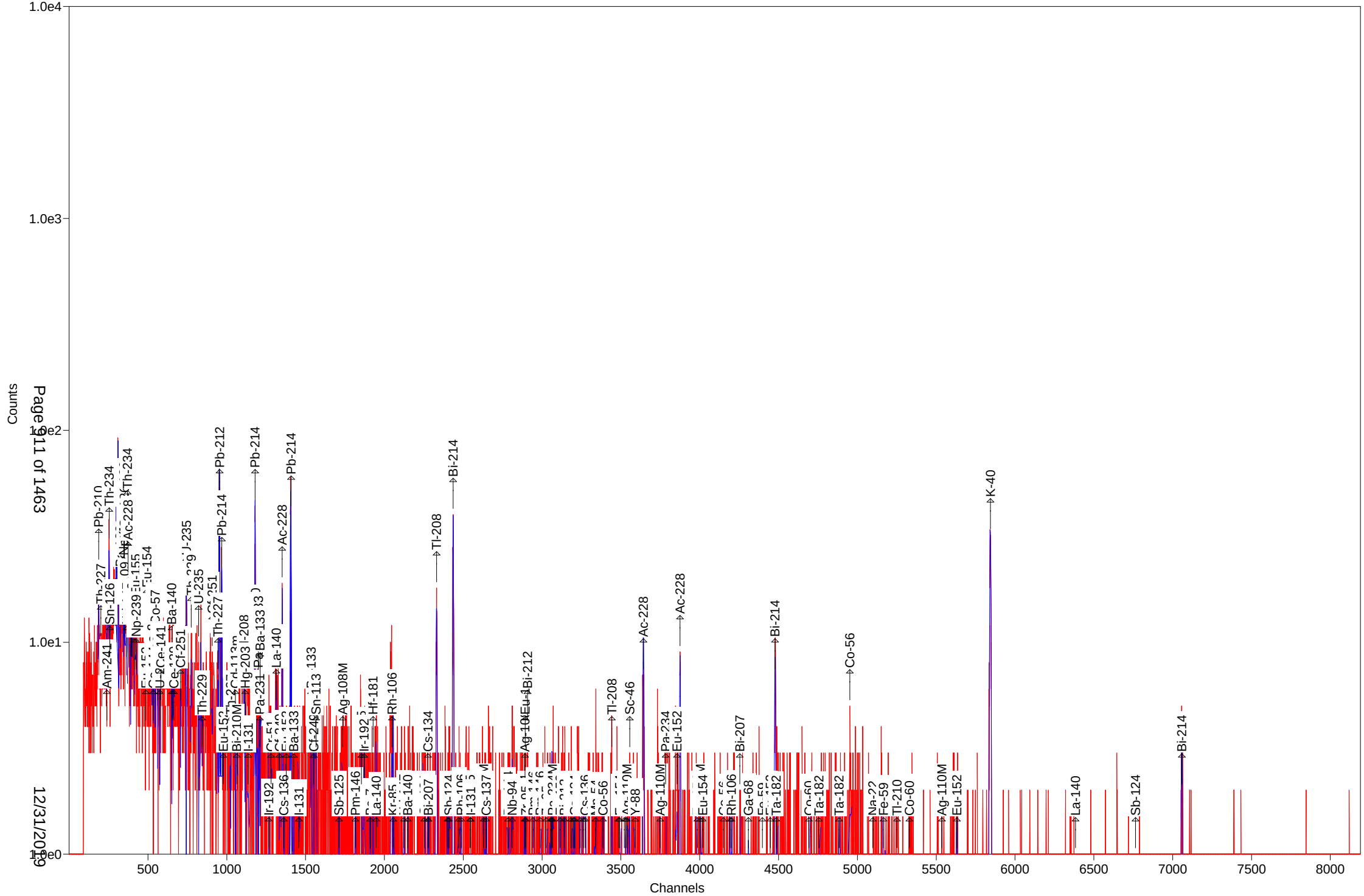
452567_Gamma_160-36526-A-9-B. 14_Gamma_20192821.spc.



Test America St. Louis Spectrum ID: 16_Gamma_20192290

Sample Description: 452567_Gamma_160-36526-A-10-B
Detector: Detector #16
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-10-B

Decay to Time: 12/25/2019 09:35 Live Time: 1800 sec
Acquisition Time: 12/25/2019 09:36:09 Real Time: 1805 sec
Analysis Time: 12/25/2019 10:06 Dead Time: 0.25 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 16_Soil_TunaCan.Clb
Efficiency Cal Desc: 16_TunaCan_90099_071012
Efficiency Cal Date: 7/13/2012 09:47
Energy Cal Date: 2/28/2012 09:35
Library: Client_Long_Rev15.lib
Bkgd Correction File: 16_2019-12-07_1450.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	-3.832E+00	112.2	4.298E+00	4.303E+00	1.449E+01
NA-22	-1.332E-01	505.1	6.731E-01	6.731E-01	1.488E+00
K-40	1.165E+02	7.6	8.912E+00	1.072E+01	1.079E+01
Sc-46	4.325E-01	108.2	4.679E-01	4.684E-01	1.592E+00
CR-51	-1.058E-01	4983.8	5.273E+00	5.273E+00	2.599E+01
MN-54	1.719E-01	305.2	5.245E-01	5.246E-01	1.213E+00
FE-59	1.805E-01	614.1	1.108E+00	1.108E+00	2.519E+00
Co-56	1.290E+00	34.0	4.387E-01	4.437E-01	1.130E+00
CO-57	5.947E-02	483.9	2.878E-01	2.878E-01	9.808E-01
CO-58	-4.932E-01	123.6	6.098E-01	6.103E-01	1.711E+00
CO-60	1.764E-01	117.3	2.070E-01	2.072E-01	1.376E+00
ZN-65	6.397E-01	252.3	1.614E+00	1.614E+00	5.534E+00
NB-94	5.093E-01	91.0	4.636E-01	4.643E-01	1.561E+00
ZR-95	-1.573E-01	490.1	7.709E-01	7.710E-01	2.011E+00
NB-95	-1.032E+00	71.7	7.396E-01	7.415E-01	2.452E+00
RU-103	2.790E-01	134.4	3.749E-01	3.752E-01	9.147E-01
RH-106	-1.556E+00	121.0	1.882E+00	1.884E+00	3.424E+01
AG-108M	7.102E-02	637.0	4.524E-01	4.524E-01	1.108E+00
AG-110M	3.242E-01	173.2	5.615E-01	5.617E-01	2.370E+00
SN-113	1.727E-01	388.6	6.710E-01	6.711E-01	2.298E+00
SB-124	8.131E-01	91.8	7.467E-01	7.479E-01	3.218E+00
SB-125	1.046E+00	211.6	2.213E+00	2.213E+00	3.236E+00
I-131	1.718E-01	220.3	3.784E-01	3.785E-01	9.625E-01
Gd-153	2.013E-01	1017.9	2.049E+00	2.049E+00	6.853E+00
Ga-68	-9.262E+00	261.0	2.418E+01	2.418E+01	5.385E+01
Tc-99m	-4.067E-01	140.8	5.727E-01	5.732E-01	1.909E+00
BA-133	-7.330E-01	160.3	1.175E+00	1.175E+00	3.933E+00
CS-134	-2.924E-01	59.8	1.747E-01	1.754E-01	2.030E+00
CS-137	-6.530E-01	152.2	9.938E-01	9.943E-01	2.019E+00
CE-139	4.029E-01	96.2	3.878E-01	3.897E-01	1.294E+00
Ba-140	1.060E+00	148.3	1.572E+00	1.573E+00	3.834E+00
La-140	-7.598E-01	140.4	1.067E+00	1.068E+00	1.922E+00
CE-141	-7.582E-01	143.7	1.090E+00	1.090E+00	3.631E+00

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CE-144	0.000E+00	1.#INF	6.517E-01	6.517E-01	1.455E+01
PM-144	-4.741E-01	104.8	4.967E-01	4.973E-01	1.679E+00
EU-152	1.175E+00	122.6	1.441E+00	1.442E+00	3.238E+00
EU-154	1.280E+00	71.9	9.198E-01	9.222E-01	2.055E+00
EU-155	-3.221E-03	90535.9	2.916E+00	2.916E+00	6.262E+00
HF-181	8.897E-02	614.7	5.469E-01	5.469E-01	1.889E+00
Ta-182	-2.277E+00	125.0	2.846E+00	2.849E+00	9.590E+00
Hg-203	-4.070E-01	133.3	5.427E-01	5.432E-01	1.335E+00
TL-208	2.273E+00	29.3	6.661E-01	6.764E-01	1.509E+00
PM-146	-7.723E-01	84.8	6.550E-01	6.562E-01	1.865E+00
Y-88	2.443E-01	220.6	5.390E-01	5.391E-01	1.175E+00
Cd-113m	-4.224E+03	130.3	5.503E+03	5.510E+03	1.857E+04
Cd-109	0.000E+00	1.#INF	1.717E+01	1.717E+01	5.716E+01
Cf-251	1.643E-01	1203.6	1.978E+00	1.978E+00	5.141E+00
Cf-249	5.177E-01	106.6	5.520E-01	5.526E-01	1.861E+00
Sn-126	4.457E+00	119.2	5.314E+00	5.320E+00	1.772E+01
PB-210	2.507E+01	46.6	1.169E+01	1.178E+01	3.033E+01
PB-212	1.002E+01	8.3	8.274E-01	1.051E+00	1.860E+00
PB-214	2.052E+01	6.8	1.404E+00	1.763E+00	2.136E+00
BI-207	6.856E-02	958.5	6.572E-01	6.572E-01	1.592E+00
BI-212	4.279E-01	1465.6	6.271E+00	6.271E+00	2.200E+01
U-235	-1.546E+00	154.3	2.386E+00	2.387E+00	1.510E+01
BI-214	1.828E+01	9.4	1.723E+00	1.968E+00	2.616E+00
BI-210M	-2.002E-01	296.6	5.938E-01	5.939E-01	2.318E+00
AC-228	1.108E+01	11.1	1.233E+00	1.357E+00	3.670E+00
TH-227	3.029E+00	121.7	3.688E+00	3.693E+00	1.350E+01
TH-229	1.806E+00	472.2	8.525E+00	8.526E+00	2.206E+01
TH-234	1.446E+01	30.7	4.446E+00	4.518E+00	1.475E+01
PA-231	0.000E+00	1.#INF	3.891E+00	3.892E+00	8.614E+01
PA-233	0.000E+00	1.#INF	6.417E-01	6.417E-01	7.043E+00
PA-234	1.478E+00	139.1	2.055E+00	2.057E+00	8.783E+00
PA-234M	6.240E+01	107.7	6.722E+01	6.730E+01	1.381E+02
AM-241	-3.437E-01	229.8	7.898E-01	7.900E-01	5.100E+00
Np-237	0.000E+00	1.#INF	5.002E+00	5.002E+00	1.664E+01
Ir-192	0.000E+00	1.#INF	1.139E-01	1.139E-01	2.943E+00
Cs-136	-7.283E-01	86.8	6.320E-01	6.334E-01	2.115E+00
Np-239	-1.378E+00	118.9	1.638E+00	1.640E+00	5.465E+00
Nd-147	-2.444E+00	133.7	3.268E+00	3.271E+00	7.897E+00
TL-210	-1.109E-01	503.0	5.578E-01	5.578E-01	1.938E+00
Kr-85	0.000E+00	1.#INF	4.416E+01	4.416E+01	4.174E+02
Total	3.034E+02				

Analyst: Caleb Quinn

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Sample description
452567_Gamma_160-36526-A-10-B

Spectrum Filename: C:\User\SPC\Det16\16_Gamma_20192290.An1

Acquisition information
Start time: 12/25/2019 9:36:09 AM
Live time: 1800
Real time: 1805
Dead time: 0.25 %
Detector ID: 16

Detector system
Ge16 SN/11012217

Calibration
Filename: 16_Soil_TunaCan.Clb
16_TunaCan_90099_071012

Energy Calibration
Created: 2/28/2012 9:35:31 AM
Zero offset: 0.050 keV
Gain: 0.250 keV/channel
Quadratic: -2.285E-08 keV/channel^2

Efficiency Calibration
Created: 7/13/2012 9:47:24 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.01 %
Log(Eff): 1.477416E-02 + (-5.514266E-01*Log(E)) + (-1.443482E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.17 %
Log(Eff): -2.408438E+01 + (8.948554E+00*Log(E)) + (-9.513599E-01*Log(E)^2)

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.06keV)
Stop channel: 8000 (1999.64keV)
Peak rejection level: 1000.000%
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

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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	12/25/2019 9:35:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	16_2019-12-07_1450.PBC 12/7/2019 2:50:17 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 21 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1308

***** 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
46.76	81.	24.80	0.86	2.371E-02	46.54	4.250	PBC<MDA	PB210
62.96	33.	63.59	0.97	3.561E-02	63.29	3.810	PBC<MDA	TH234
63.96	28.	119.23	0.98	3.619E-02	64.28	9.700	PBC<MDA	Sn126
74.46	138.	18.21	0.99	4.123E-02				
77.16	240.	10.90	0.99	4.230E-02				
86.49	0.	157.83	1.00	4.514E-02	86.49	13.100	PBC<MDA	Np237
					86.54	30.700	PBC<MDA	EU155
					86.94	9.040	PBC<MDA	Sn126
87.58	69.	28.10	1.00	4.540E-02	87.57	37.500	PBC<MDA	Sn126
					88.04	3.790	2.226E+01	Cd109
92.62	71.	30.75	1.00	4.638E-02	92.59	5.584	1.521E+01	TH234
93.38	24.	219.53	1.00	4.651E-02	93.35	5.561	PBC<MDA	AC228
99.50	25.	131.86	1.01	4.728E-02	99.50	15.000	PBC<MDA	Np239
121.78	9.	249.59	1.03	4.731E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	1.281E-01	CO57
122.06	4.	483.88	1.03	4.729E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	5.947E-02	CO57
123.10	19.	112.78	1.03	4.721E-02	123.10	40.790	PBC<MDA	EU154
131.85	23.	171.89	1.04	4.639E-02	131.29	18.000	PBC<MDA	PA234
165.85	24.	96.24	1.07	4.156E-02	165.85	79.900	PBC<MDA	CE139
186.11	100.	26.66	0.88	3.833E-02	185.72	54.000	2.672E+00	U235
193.51	5.	472.17	1.09	3.730E-02	193.51	4.400	PBC<MDA	TH229

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
205.33	8.	253.79	1.11	3.577E-02	205.33	5.010	PBC<MDA	U235
227.00	10.	186.06	1.13	3.332E-02	227.00	6.300	PBC<MDA	Cf251
235.97	18.	198.84	1.13	3.242E-02	235.97	12.300	PBC<MDA	TH227
238.41	254.	10.93	0.89	3.218E-02	238.63	43.300	1.012E+01	PB212
241.97	89.	17.73	1.14	3.185E-02	242.00	7.430	2.101E+01	PB214
256.24	15.	140.53	1.15	3.058E-02	256.24	7.000	PBC<MDA	TH227
295.17	197.	12.46	1.10	2.764E-02	295.09	19.300	2.053E+01	PB214
					296.00	79.000	5.026E+00	TL210
299.93	26.	36.53	0.30	2.732E-02	300.03	3.280	1.591E+01	PB212
					300.07	2.460	2.122E+01	PA231
338.44	64.	19.67	1.23	2.506E-02	338.32	12.010	1.190E+01	AC228
342.69	12.	39.09	0.37	2.483E-02				
351.93	338.	6.84	1.76	2.436E-02	351.93	37.600	2.052E+01	PB214
364.48	6.	220.27	1.25	2.375E-02	364.48	81.700	PBC<MDA	I131
383.84	7.	207.01	1.27	2.288E-02	383.84	8.940	PBC<MDA	BA133
387.95	14.	106.61	1.27	2.271E-02	387.95	66.000	PBC<MDA	Cf249
391.69	4.	388.62	1.27	2.255E-02	391.69	64.000	PBC<MDA	SN113
427.88	4.	419.94	1.31	2.115E-02	427.88	29.600	PBC<MDA	SB125
433.94	2.	636.98	1.31	2.093E-02	433.94	90.480	PBC<MDA	AG108M
463.37	3.	421.98	1.34	1.996E-02	463.37	10.470	PBC<MDA	SB125
482.00	2.	614.71	1.35	1.939E-02	482.00	80.500	PBC<MDA	HF181
497.05	9.	134.38	1.37	1.896E-02	497.05	90.900	PBC<MDA	RU103
511.86	80.	18.54	2.63	1.856E-02	511.86	20.000	1.197E+01	RH106
537.26	8.	148.32	1.40	1.791E-02	537.26	24.390	PBC<MDA	Ba140
563.24	12.	90.35	1.43	1.730E-02	563.24	8.350	PBC<MDA	CS134
583.02	58.	29.30	1.44	1.687E-02	583.02	84.500	2.273E+00	TL208
600.50	12.	220.17	1.46	1.651E-02	600.50	17.860	PBC<MDA	SB125
602.73	12.	236.03	1.46	1.646E-02	602.73	98.260	PBC<MDA	SB124
609.35	248.	9.43	1.60	1.633E-02	609.31	46.090	1.828E+01	BI214
702.63	13.	91.03	1.55	1.470E-02	702.63	97.900	PBC<MDA	NB94
722.79	13.	91.84	1.57	1.439E-02	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	5.382E-01	AG108M
					723.36	20.220	2.419E+00	EU154
723.36	8.	150.06	1.57	1.439E-02	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	3.329E-01	AG108M
					723.36	20.220	1.496E+00	EU154
747.16	5.	232.70	1.59	1.404E-02	747.16	34.000	PBC<MDA	PM146
766.41	13.	107.74	1.60	1.378E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	PBC<MDA	PA234M
778.92	5.	148.85	1.62	1.362E-02	778.92	12.940	PBC<MDA	EU152
785.42	10.	82.72	1.62	1.353E-02	785.42	1.280	PBC<MDA	BI212
834.85	4.	305.16	1.66	1.293E-02	834.85	99.980	PBC<MDA	MN54
846.77	5.	224.35	1.67	1.280E-02	846.77	99.935	PBC<MDA	Co56
860.56	27.	40.74	1.69	1.264E-02	860.56	12.420	9.727E+00	TL208
889.28	10.	108.18	1.71	1.234E-02	889.28	99.984	PBC<MDA	Sc46
911.32	63.	20.32	1.14	1.211E-02	911.07	29.000	9.907E+00	AC228
946.56	4.	218.66	1.76	1.178E-02	946.02	13.400	PBC<MDA	PA234
969.24	45.	17.77	1.68	1.157E-02	968.97	17.460	1.245E+01	AC228

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
996.33	8.	106.07	1.80	1.133E-02	996.33	10.600	PBC<MDA	EU154
1001.00	3.	194.31	1.81	1.129E-02	1001.00	0.837	PBC<MDA	PA234M
1048.07	3.	247.21	1.84	1.091E-02	1048.07	80.000	PBC<MDA	Cs136
1050.36	6.	122.47	1.85	1.089E-02	1050.36	1.560	PBC<MDA	RH106
1063.66	1.	958.47	1.86	1.079E-02	1063.66	74.500	PBC<MDA	BI207
1099.25	2.	614.13	1.89	1.052E-02	1099.25	56.500	PBC<MDA	FE59
1112.07	7.	225.26	1.90	1.043E-02	1112.07	13.644	PBC<MDA	EU152
1115.55	6.	252.26	1.90	1.041E-02	1115.55	50.600	PBC<MDA	ZN65
1120.75	91.	11.00	1.50	1.037E-02	1120.29	15.100	3.225E+01	BI214
					1120.55	99.987	4.871E+00	Sc46
					1121.30	34.900	1.396E+01	Ta182
1173.24	9.	117.31	1.95	1.002E-02	1173.24	99.900	PBC<MDA	CO60
1238.28	33.	34.01	2.00	9.617E-03	1238.28	66.070	2.912E+00	Co56
1313.00	3.	327.45	2.07	9.199E-03	1313.00	21.000	PBC<MDA	TL210
1384.30	5.	173.21	2.12	8.837E-03	1384.30	24.290	PBC<MDA	AG110M
1408.00	5.	209.76	2.14	8.723E-03	1408.00	21.005	PBC<MDA	EU152
1461.20	190.	7.65	2.38	8.482E-03	1460.83	10.670	1.165E+02	K40
1764.87	10.	85.92	2.43	7.342E-03	1764.49	15.400	PBC<MDA	BI214
1771.35	12.	76.83	2.43	7.320E-03	1771.35	15.480	PBC<MDA	Co56
1836.06	3.	220.62	2.48	7.121E-03	1836.06	99.200	PBC<MDA	Y88

********** 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
297.47	74.46	245.	138.	3.339E+03	18.21	0.985	- D
308.28	77.16	221.	240.	5.668E+03	10.90	0.988	- D
743.89	186.11	150.	100.	2.601E+03	26.66	0.879	-
1370.47	342.69	14.	15.	5.897E+02	44.42	1.230	- sD

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: Client_Long_Rev15.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	186.75	46.76	124.	45.	0.025	46.64	0.862
TH-227	200.26	50.14	353.	-23.	-0.013	116.52	0.963s
AM-241	237.83	59.54	526.	-7.	-0.004	229.76	0.971s
TH-234	252.82	63.29	198.	33.	0.018	63.59	0.975D

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Sn-126	256.79	64.28	550.	28.	0.016	119.23	0.976s
BA-133	323.60	80.99	1137.	-25.	-0.014	84.75	0.991s
Np-237	345.59	86.49	1401.	0.	0.000	157.83	0.996A
EU-155	345.80	86.54	1538.	-31.	-0.017	182.28	0.996
Sn-126	349.91	87.57	1343.	69.	0.038	28.10	0.997D
Cd-109	351.79	88.04	1406.	0.	0.000	174.11	0.998A
Nd-147	364.02	91.10	1339.	-10.	-0.005	528.01	1.001s
TH-234	369.98	92.59	201.	71.	0.039	30.75	1.002D
AC-228	373.02	93.35	1392.	24.	0.013	219.53	1.003s
Np-239	397.61	99.50	542.	25.	0.014	131.86	1.008s
Np-239	414.40	103.70	569.	0.	0.000	1000.00	1.012s
Np-239	424.11	106.13	496.	-27.	-0.015	118.87	1.014s
EU-152	486.69	121.78	267.	9.	0.005	249.59	1.029
CO-57	487.81	122.06	218.	4.	0.002	483.88	1.029
EU-154	491.96	123.10	216.	19.	0.010	112.78	1.030s
PA-234	524.73	131.29	770.	23.	0.013	171.89	1.038s
HF-181	531.64	133.02	793.	0.	0.000	1000.00	1.039s
CE-144	533.70	133.54	793.	0.	0.000	1000.00	1.040s
HF-181	544.74	136.30	793.	0.	0.000	1000.00	1.042s
CO-57	545.43	136.47	793.	0.	0.000	1000.00	1.042s
Tc-99m	561.57	140.51	798.	-29.	-0.016	140.81	1.046s
U-235	574.67	143.79	782.	-30.	-0.017	175.55	1.049s
CE-141	581.29	145.44	866.	-29.	-0.016	143.73	1.050s
Ba-140	650.14	162.66	318.	-12.	-0.006	221.44	1.066s
U-235	653.01	163.38	330.	0.	0.000	1000.00	1.067s
CE-139	662.90	165.85	256.	24.	0.013	96.24	1.069s
U-235	742.34	185.72	315.	-20.	-0.011	127.48	1.087
TH-229	773.49	193.51	180.	5.	0.003	472.17	1.094s
U-235	820.76	205.33	125.	8.	0.005	253.79	1.105s
TH-229	842.82	210.85	198.	-18.	-0.010	116.77	1.110s
Cf-251	907.40	227.00	103.	10.	0.006	186.06	1.125s
TH-227	943.27	235.97	647.	18.	0.010	198.84	1.133s
PB-212	953.91	238.63	89.	251.	0.140	8.26	1.136D
PB-214	967.37	242.00	81.	89.	0.050	17.73	1.139D
EU-152	978.14	244.69	675.	-22.	-0.012	167.79	1.141s
TH-227	1024.32	256.24	112.	15.	0.008	140.53	1.152s
Cd-113m	1054.15	263.70	152.	-14.	-0.008	130.28	1.158
BI-210M	1062.67	265.83	163.	-5.	-0.003	296.59	1.160s
Hg-203	1116.13	279.20	132.	-17.	-0.010	133.32	1.173s
I-131	1136.52	284.30	100.	-11.	-0.006	166.83	1.177
PB-214	1179.98	295.17	80.	197.	0.110	12.46	1.105
TL-210	1183.31	296.00	702.	-19.	-0.011	194.86	1.188s
PB-212	1199.02	299.93	23.	26.	0.014	36.53	0.299s
PA-231	1199.58	300.07	683.	-19.	-0.011	191.57	1.192s
PA-233	1200.02	300.18	663.	-16.	-0.009	225.98	1.192s
PA-231	1209.90	302.65	647.	0.	0.000	1000.00	1.194s
BA-133	1210.70	302.85	647.	0.	0.000	1000.00	1.194s
Ba-140	1218.69	304.85	647.	0.	0.000	1000.00	1.196s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
BI-210M	1218.88	304.90	647.	0.	0.000	1000.00	1.196s
Ir-192	1233.05	308.44	647.	0.	0.000	1000.00	1.199s
PA-233	1247.34	312.01	647.	0.	0.000	1000.00	1.202s
Ir-192	1265.24	316.49	647.	0.	0.000	1000.00	1.206s
La-140	1314.31	328.76	416.	-19.	-0.011	126.52	1.217s
Cf-249	1333.02	333.44	397.	-19.	-0.011	146.52	1.222s
AC-228	1352.54	338.32	48.	64.	0.036	19.67	1.226D
Cs-136	1361.54	340.57	377.	-7.	-0.004	384.60	1.228
HF-181	1382.56	345.83	394.	-21.	-0.012	61.53	1.233
PB-214	1406.96	351.93	49.	338.	0.188	6.84	1.756s
BA-133	1423.24	356.00	492.	-20.	-0.011	160.25	1.242s
I-131	1457.16	364.48	44.	6.	0.003	220.27	1.250s
BA-133	1534.57	383.84	97.	7.	0.004	207.01	1.267s
Cf-249	1551.01	387.95	104.	14.	0.008	106.61	1.271
SN-113	1565.96	391.69	150.	4.	0.002	388.62	1.274
SB-125	1710.67	427.88	52.	4.	0.002	419.94	1.307s
AG-108M	1734.91	433.94	57.	2.	0.001	636.98	1.312
PM-146	1814.67	453.88	79.	-18.	-0.010	84.81	1.330s
SB-125	1852.61	463.37	101.	3.	0.002	421.98	1.338
Ir-192	1871.38	468.06	107.	-6.	-0.003	247.21	1.342
BE-7	1909.51	477.60	119.	-14.	-0.008	112.17	1.351s
HF-181	1927.12	482.00	117.	2.	0.001	614.71	1.355s
La-140	1947.21	487.02	127.	-2.	-0.001	873.01	1.359s
RU-103	1987.33	497.05	30.	9.	0.005	134.38	1.368s
RH-106	2046.57	511.86	70.	80.	0.044	18.54	2.631s
Kr-85	2055.03	513.98	150.	0.	0.000	1000.00	1.383s
Nd-147	2123.10	531.00	43.	-10.	-0.006	133.71	1.398s
Ba-140	2148.14	537.26	35.	8.	0.005	148.32	1.404s
CS-134	2252.03	563.24	26.	12.	0.007	90.35	1.427s
CS-134	2276.36	569.32	35.	-5.	-0.003	184.34	1.432s
BI-207	2277.89	569.70	44.	-3.	-0.002	350.06	1.432s
TL-208	2331.16	583.02	60.	58.	0.032	29.30	1.444s
SB-125	2401.07	600.50	368.	12.	0.007	220.17	1.460s
SB-124	2409.99	602.73	381.	12.	0.007	236.03	1.462s
CS-134	2417.91	604.71	466.	-16.	-0.009	191.42	1.463s
BI-214	2436.48	609.35	49.	248.	0.138	9.43	1.596s
RU-103	2440.26	610.30	450.	-16.	-0.009	187.53	1.468s
AG-108M	2456.19	614.28	434.	-16.	-0.009	183.76	1.472s
PM-144	2471.31	618.06	439.	-18.	-0.010	168.43	1.475s
RH-106	2486.73	621.92	422.	-14.	-0.008	208.62	1.479s
SB-125	2542.62	635.89	50.	-4.	-0.002	289.26	1.491s
AG-110M	2630.10	657.76	88.	-18.	-0.010	127.29	1.510s
CS-137	2645.69	661.66	93.	-15.	-0.009	152.19	1.513s
PM-144	2785.22	696.54	80.	-12.	-0.007	104.77	1.544s
NB-94	2809.57	702.63	66.	13.	0.007	91.03	1.549s
SB-124	2890.19	722.79	61.	13.	0.007	91.84	1.567s
AG-108M	2890.80	722.94	74.	0.	0.000	1000.00	1.567s
EU-154	2892.49	723.36	65.	8.	0.004	150.06	1.567s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
ZR-95	2895.84	724.20	73.	0.	0.000	1000.00	1.568s
PM-146	2941.93	735.72	37.	-7.	-0.004	180.56	1.578s
PM-146	2987.69	747.16	23.	5.	0.003	232.70	1.588
ZR-95	3025.97	756.73	28.	-2.	-0.001	490.12	1.596s
AG-110M	3054.82	763.94	130.	-26.	-0.014	66.07	1.602s
NB-95	3062.21	765.79	155.	-26.	-0.014	71.69	1.604s
PA-234M	3064.70	766.41	97.	13.	0.007	107.74	1.605s
EU-152	3114.73	778.92	9.	5.	0.003	148.85	1.615s
BI-212	3140.74	785.42	14.	10.	0.006	82.72	1.621s
CS-134	3182.54	795.87	71.	-16.	-0.009	78.26	1.630s
TL-210	3197.46	799.60	87.	-3.	-0.001	503.02	1.633s
CS-134	3206.86	801.95	109.	-18.	-0.010	85.33	1.635s
CO-58	3242.16	810.78	66.	-12.	-0.006	123.63	1.643s
La-140	3262.14	815.77	77.	0.	0.000	1000.00	1.647s
Cs-136	3273.06	818.50	103.	-17.	-0.010	86.77	1.649s
MN-54	3338.46	834.85	30.	4.	0.002	305.16	1.663s
Co-56	3386.15	846.77	25.	5.	0.003	224.35	1.674s
TL-208	3441.33	860.56	21.	27.	0.015	40.74	1.685s
NB-94	3483.47	871.10	33.	-8.	-0.004	107.53	1.695s
EU-154	3492.00	873.23	60.	-11.	-0.006	104.05	1.696s
PA-234	3521.21	880.53	53.	-5.	-0.003	198.43	1.703
PA-234	3532.05	883.24	59.	0.	0.000	1000.00	1.705
AG-110M	3537.82	884.68	59.	0.	0.000	1000.00	1.706s
Sc-46	3556.21	889.28	49.	10.	0.005	108.18	1.710s
AC-228	3644.39	911.32	19.	63.	0.035	20.32	1.141s
AG-110M	3749.09	937.49	40.	-4.	-0.002	351.19	1.751s
PA-234	3783.21	946.02	15.	4.	0.002	218.66	1.759s
EU-152	3855.58	964.11	94.	-15.	-0.008	94.47	1.774s
AC-228	3876.08	969.24	5.	45.	0.025	17.77	1.678
EU-154	3984.48	996.33	32.	8.	0.004	106.07	1.801s
PA-234M	4003.15	1001.00	20.	3.	0.002	194.31	1.805s
EU-154	4018.27	1004.77	58.	-13.	-0.007	90.35	1.808s
Co-56	4150.56	1037.84	37.	-17.	-0.009	85.72	1.836s
Cs-136	4191.49	1048.07	26.	3.	0.002	247.21	1.845s
RH-106	4200.65	1050.36	24.	6.	0.003	122.47	1.847s
BI-207	4253.86	1063.66	19.	1.	0.001	958.47	1.858s
Ga-68	4308.84	1077.40	32.	-5.	-0.003	261.02	1.870s
FE-59	4396.27	1099.25	27.	2.	0.001	614.13	1.888s
EU-152	4447.58	1112.07	107.	7.	0.004	225.26	1.899s
ZN-65	4461.46	1115.55	114.	6.	0.003	252.26	1.901s
BI-214	4482.30	1120.75	4.	91.	0.051	11.00	1.500
Sc-46	4481.49	1120.55	120.	0.	0.000	1000.00	1.906s
Ta-182	4484.49	1121.30	164.	-15.	-0.008	125.02	1.906
CO-60	4692.30	1173.24	17.	9.	0.005	117.31	1.950s
Ta-182	4885.06	1221.41	28.	-1.	-0.001	940.25	1.990
Co-56	4952.57	1238.28	18.	33.	0.019	34.01	2.004s
NA-22	5097.62	1274.53	23.	-2.	-0.001	505.14	2.034s
FE-59	5165.91	1291.60	17.	-1.	-0.001	972.11	2.048s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
TL-210	5251.57	1313.00	17.	3.	0.002	327.45	2.066s
CO-60	5329.61	1332.50	18.	-2.	-0.001	552.05	2.081s
AG-110M	5536.89	1384.30	12.	5.	0.003	173.21	2.124s
EU-152	5631.75	1408.00	18.	5.	0.003	209.76	2.143s
K-40	5844.67	1461.20	10.	190.	0.105	7.65	2.376s
La-140	6385.02	1596.21	25.	-10.	-0.006	140.43	2.294s
SB-124	6764.37	1690.98	13.	-4.	-0.002	346.82	2.369s
BI-214	7058.61	1764.49	35.	10.	0.006	85.92	2.427s
Co-56	7086.08	1771.35	36.	12.	0.007	76.83	2.433s
Y-88	7345.12	1836.06	7.	3.	0.002	220.62	2.483s

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
BE-7	C	-3.8320E+00				5.31E+01	
			477.60	-3.832E+00	&(	1.449E+01 1.12E+02 1.05E+01	G
NA-22	C	-1.3324E-01				9.50E+02	
			1274.53	-1.332E-01	?(P	1.488E+00 5.05E+02 9.99E+01	G
K-40	N	1.1652E+02				4.66E+11	
			1460.83	1.165E+02	(P	1.079E+01 7.65E+00 1.07E+01	G
Sc-46	F	4.3248E-01				8.38E+01	
			889.28	4.325E-01	?(P	1.592E+00 1.08E+02 1.00E+02	G
			1120.55	0.000E+00	-	2.880E+00 1.00E+03 1.00E+02	G
CR-51	F	-1.0580E-01				2.77E+01	
			320.08	-1.058E-01	%(P	2.599E+01 4.98E+03 9.94E+00	G
MN-54	C	1.7188E-01				3.12E+02	
			834.85	1.719E-01	?(	1.213E+00 3.05E+02 1.00E+02	G
FE-59	F	1.8048E-01				4.45E+01	
			1099.25	1.805E-01	?(P	2.519E+00 6.14E+02 5.65E+01	G
			1291.60	-1.381E-01	+	3.027E+00 9.72E+02 4.32E+01	G
Co-56	C	1.2899E+00				7.73E+01	
			846.77	2.172E-01	?(	1.130E+00 2.24E+02 9.99E+01	G
			1238.28	2.912E+00	?(P	1.951E+00 3.40E+01 6.61E+01	G
			1037.84	-6.047E+00	+	1.116E+01 8.57E+01 1.41E+01	G
			1771.35	5.868E+00	?	1.509E+01 7.68E+01 1.55E+01	A

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Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CO-57	C 5.9474E-02					2.72E+02	
		122.06	5.947E-02	?(	9.808E-01	4.84E+02	8.56E+01 G
		136.47	0.000E+00	-	1.523E+01	1.00E+03	1.07E+01 G
CO-58	C -4.9324E-01					7.09E+01	
		810.78	-4.932E-01	?(P	1.711E+00	1.24E+02	9.95E+01 G
CO-60	F 1.7643E-01					1.93E+03	
		1332.50	-1.272E-01	?(P	1.376E+00	5.52E+02	1.00E+02 G
		1173.24	4.803E-01	&(P	1.228E+00	1.17E+02	9.99E+01 G
ZN-65	F 6.3974E-01					2.44E+02	
		1115.55	6.397E-01	?(	5.534E+00	2.52E+02	5.06E+01 G
NB-94	I 5.0927E-01					7.41E+06	
		702.63	5.093E-01	?(	1.561E+00	9.10E+01	9.79E+01 G
		871.10	-3.552E-01	-	1.309E+00	1.08E+02	9.99E+01 G
ZR-95	I -1.5730E-01					6.40E+01	
		756.73	-1.573E-01	&(P	2.011E+00	4.90E+02	5.45E+01 G
		724.20	0.000E+00	+	3.723E+00	1.00E+03	4.42E+01 G
NB-95	I -1.0316E+00					6.40E+01	
		765.79	-1.032E+00	?(	2.452E+00	7.17E+01	9.98E+01 G
RU-103	I 2.7903E-01					3.93E+01	
		497.05	2.790E-01	&(P	9.147E-01	1.34E+02	9.09E+01 G
		610.30	-9.560E+00	+	6.016E+01	1.88E+02	5.75E+00 GA
RH-106	I -1.5561E+00					3.74E+02	
		621.92	-4.884E+00	&(	3.424E+01	2.09E+02	9.93E+00 G
		1050.36	1.962E+01	?(	8.353E+01	1.22E+02	1.56E+00 G
		511.86	1.197E+01	?	6.241E+00	1.85E+01	2.00E+01 GA
AG-108M	C 7.1022E-02					1.53E+05	
		433.94	7.102E-02	?(P	1.108E+00	6.37E+02	9.05E+01 G
		722.94	0.000E+00	-	1.819E+00	1.00E+03	9.08E+01 G
		614.28	-6.162E-01	+	3.800E+00	1.84E+02	8.98E+01 G
AG-110M	F 3.2417E-01					2.50E+02	
		884.68	0.000E+00	&(	2.370E+00	1.00E+03	7.27E+01 G
		657.76	-6.980E-01	+ P	1.767E+00	1.27E+02	9.46E+01 G
		937.49	-5.454E-01	+	4.388E+00	3.51E+02	3.44E+01 G
		1384.30	1.294E+00	?(	4.880E+00	1.73E+02	2.43E+01 G
		763.94	-4.608E+00	+	1.006E+01	6.61E+01	2.23E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
SN-113	F	1.7267E-01					1.15E+02	
			391.69	1.727E-01	&(P	2.298E+00	3.89E+02	6.40E+01 G
SB-124	F	8.1306E-01					6.02E+01	
			602.73	4.050E-01	*(P	3.218E+00	2.36E+02	9.83E+01 G
			1690.98	-6.437E-01	+ P	3.010E+00	3.47E+02	4.78E+01 G
			722.79	4.522E+00	?(	1.400E+01	9.18E+01	1.08E+01 G
SB-125	I	1.0457E+00					1.01E+03	
			427.88	3.145E-01	&(P	3.236E+00	4.20E+02	2.96E+01 G
			600.50	2.342E+00	?(	1.736E+01	2.20E+02	1.79E+01 G
			635.89	-1.086E+00	&	1.102E+01	2.89E+02	1.13E+01 G
			463.37	9.018E-01	&(P	1.315E+01	4.22E+02	1.05E+01 G
I-131	I	1.7177E-01					8.02E+00	
			364.48	1.718E-01	?(	9.625E-01	2.20E+02	8.17E+01 G
			284.30	-3.644E+00	+ P	1.575E+01	1.67E+02	6.14E+00 G
			636.97	-2.451E-01	&	1.772E+01	2.03E+03	7.17E+00 G
Gd-153	F	2.0133E-01					2.42E+02	
			97.50	2.013E-01	%(	6.853E+00	1.02E+03	3.00E+01 G
			103.20	6.868E-02	%	6.096E+00	2.63E+03	2.18E+01 G
Ga-68	C	-9.2618E+00					4.71E-02	
			1077.40	-9.262E+00	?(	5.385E+01	2.61E+02	3.30E+00 G
Tc-99m	I	-4.0671E-01					2.51E-01	
			140.51	-4.067E-01	?(	1.909E+00	1.41E+02	8.93E+01 G
BA-133	F	-7.3301E-01					3.85E+03	
			356.00	-7.330E-01	?(	3.933E+00	1.60E+02	6.20E+01 G
			302.85	0.000E+00	+	1.354E+01	1.00E+03	1.83E+01 G
			383.84	1.861E+00	? P	1.320E+01	2.07E+02	8.94E+00 GA
			80.99	-9.184E-01	& P	5.977E+00	8.47E+01	3.41E+01 GA
CS-134	I	-2.9237E-01					7.54E+02	
			795.87	-7.769E-01	?(	2.030E+00	7.83E+01	8.55E+01 G
			604.71	-5.574E-01	+	3.580E+00	1.91E+02	9.76E+01 G
			569.32	-9.819E-01	+	6.343E+00	1.84E+02	1.54E+01 G
			801.95	-8.626E+00	+	2.461E+01	8.53E+01	8.69E+00 G
			563.24	4.671E+00	(	1.018E+01	9.04E+01	8.35E+00 G
CS-137	I	-6.5298E-01					1.10E+04	
			661.66	-6.530E-01	?(P	2.019E+00	1.52E+02	8.52E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CE-139	F	4.0293E-01					1.38E+02	
			165.85	4.029E-01	&(	1.294E+00	9.62E+01	7.99E+01 G
Ba-140	I	1.0597E+00					1.28E+01	
			537.26	1.060E+00	*(	3.834E+00	1.48E+02	2.44E+01 G
			162.66	-2.483E+00	&	1.854E+01	2.21E+02	6.22E+00 G
			304.85	0.000E+00	-	5.813E+01	1.00E+03	4.29E+00 G
La-140	I	-7.5983E-01					1.28E+01	
			1596.21	-7.598E-01	?(P	1.922E+00	1.40E+02	9.54E+01 G
			487.02	-1.163E-01	+	3.506E+00	8.73E+02	4.55E+01 G
			328.76	-2.081E+00	+ P	1.046E+01	1.27E+02	2.03E+01 G
			815.77	0.000E+00	+	7.893E+00	1.00E+03	2.33E+01 G
CE-141	I	-7.5816E-01					3.25E+01	
			145.44	-7.582E-01	?(	3.631E+00	1.44E+02	4.82E+01 G
PM-144	C	-4.7413E-01					3.63E+02	
			696.54	-4.741E-01	?(	1.679E+00	1.05E+02	9.90E+01 G
			618.06	-6.162E-01	&	3.480E+00	1.68E+02	9.91E+01 G
EU-152	F	1.1754E+00					4.94E+03	
			121.78	3.835E-01	&(	3.238E+00	2.50E+02	2.86E+01 G
			344.29	-7.490E-02	% P	7.831E+00	1.44E+03	2.65E+01 G
			1112.07	2.578E+00	?(	1.991E+01	2.25E+02	1.36E+01 G
			778.92	1.446E+00	?(	5.343E+00	1.49E+02	1.29E+01 G
			964.11	-4.950E+00	+	1.571E+01	9.45E+01	1.46E+01 G
			244.69	-5.122E+00	+	2.872E+01	1.68E+02	7.58E+00 G
			1408.00	1.516E+00	?	6.816E+00	2.10E+02	2.10E+01 GA
EU-154	I	1.2798E+00					3.14E+03	
			123.10	5.434E-01	*(	2.055E+00	1.13E+02	4.08E+01 G
			1274.54	2.000E-08	%	4.312E+00	5.85E+09	3.52E+01 G
			723.36	1.496E+00	?(	7.702E+00	1.50E+02	2.02E+01 G
			873.23	-3.983E+00	&	1.405E+01	1.04E+02	1.23E+01 G
			1004.77	-3.446E+00	+	1.049E+01	9.04E+01	1.80E+01 G
			996.33	3.701E+00	?(	1.345E+01	1.06E+02	1.06E+01 G
EU-155	I	-3.2206E-03					1.81E+03	
			105.31	-3.221E-03	&(P	6.262E+00	9.05E+04	2.12E+01 G
			86.54	-1.225E+00	&	7.433E+00	1.82E+02	3.07E+01 G
HF-181	F	8.8967E-02					4.24E+01	
			482.00	8.897E-02	?(	1.889E+00	6.15E+02	8.05E+01 G
			133.02	0.000E+00	-	3.721E+00	1.00E+03	4.33E+01 G
			345.83	-3.111E+00	+ P	1.423E+01	6.15E+01	1.51E+01 G
			136.30	0.000E+00	&	2.780E+01	1.00E+03	5.85E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Ta-182	F	-2.2767E+00					1.14E+02	
			1121.30	-2.277E+00	(	9.590E+00	1.25E+02	3.49E+01 G
			1221.41	-2.823E-01	+	5.826E+00	9.40E+02	2.70E+01 G
			1189.05	-3.458E-01	%	1.033E+01	1.37E+03	1.62E+01 G
Hg-203	F	-4.0705E-01					4.66E+01	
			279.20	-4.070E-01	?(	1.335E+00	1.33E+02	8.15E+01 G
TL-208	N	2.2731E+00					6.98E+02	
			583.02	2.273E+00	*(P	1.509E+00	2.93E+01	8.45E+01 G
			277.28	-1.178E-02	& P	1.992E+01	4.92E+04	6.31E+00 G
			860.56	9.727E+00	+ P	8.426E+00	4.07E+01	1.24E+01 G
PM-146	C	-7.7231E-01					2.02E+03	
			453.88	-7.723E-01	?(P	1.865E+00	8.48E+01	6.50E+01 G
			747.16	5.243E-01	& P	2.943E+00	2.33E+02	3.40E+01 G
			735.72	-1.275E+00	+	5.420E+00	1.81E+02	2.25E+01 G
Y-88	F	2.4429E-01					1.07E+02	
			1836.06	2.443E-01	?(P	1.175E+00	2.21E+02	9.92E+01 G
			898.04	-3.106E-02	% P	1.156E+00	1.63E+03	9.37E+01 G
Cd-113m		-4.2239E+03					5.33E+03	
			263.70	-4.224E+03	?(	1.857E+04	1.30E+02	6.00E-03 K
Cf-251	T	1.6435E-01					3.28E+05	
			176.60	1.643E-01	%(	5.141E+00	1.20E+03	1.70E+01 G
			227.00	2.735E+00	&	1.321E+01	1.86E+02	6.30E+00 GA
Cf-249	T	5.1774E-01					1.28E+05	
			387.95	5.177E-01	(	1.861E+00	1.07E+02	6.60E+01 G
			333.44	-2.752E+00	&	1.351E+01	1.47E+02	1.55E+01 G
Sn-126		4.4572E+00					3.65E+07	
			87.57	2.255E+00	}	5.662E+00	2.81E+01	3.75E+01 GA
			64.28	4.457E+00	?(	1.772E+01	1.19E+02	9.70E+00 G
			86.94	0.000E+00	}	2.443E+01	2.14E+03	9.04E+00 GA
PB-210	N	2.5068E+01					8.14E+03	
			46.54	2.507E+01	(P	3.033E+01	4.66E+01	4.25E+00 G
PB-212	N	1.0020E+01					6.98E+02	
			238.63	1.002E+01	(P	1.860E+00	8.26E+00	4.33E+01 G
			300.03	1.591E+01	+	1.564E+01	3.65E+01	3.28E+00 GA

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

PB-214   N   2.0523E+01                                     5.84E+05
                          351.93 2.052E+01  (P 2.136E+00 6.84E+00 3.76E+01 G
                          295.09 2.053E+01  (P 4.618E+00 1.25E+01 1.93E+01 G
                          242.00 2.101E+01   P 1.046E+01 1.77E+01 7.43E+00 GA

BI-207   C   6.8562E-02                                     1.18E+04
                         1063.66 6.856E-02 ?(P 1.592E+00 9.58E+02 7.45E+01 G
                          569.70-1.132E-01 & P 1.119E+00 3.50E+02 9.77E+01 G

BI-212   N   4.2790E-01                                     6.98E+02
                          727.17 4.279E-01 %(  2.200E+01 1.47E+03 7.55E+00 G
                          785.42 3.320E+01 ?   6.461E+01 8.27E+01 1.28E+00 GA

U-235    N  -1.5462E+00                                     2.57E+11
                          143.79-3.431E+00 ?(P 1.510E+01 1.76E+02 1.10E+01 G
                          205.33 2.577E+00 ?(P 1.697E+01 2.54E+02 5.01E+00 G
                          163.38 0.000E+00 +   2.317E+01 1.00E+03 5.08E+00 G
                          185.72-5.360E-01 +   2.289E+00 1.27E+02 5.40E+01 GA

BI-214   N   1.8280E+01                                     5.84E+05
                          609.31 1.828E+01  (P 2.616E+00 9.43E+00 4.61E+01 G
                         1120.29 3.225E+01 + P 4.300E+00 1.10E+01 1.51E+01 G
                         1764.49 5.148E+00 - P 1.491E+01 8.59E+01 1.54E+01 G

BI-210M  T  -2.0022E-01                                     1.10E+09
                          265.83-2.002E-01 ?(P 2.318E+00 2.97E+02 5.00E+01 G
                          304.90 0.000E+00 +   8.907E+00 1.00E+03 2.80E+01 G

AC-228   N   1.1077E+01                                     2.10E+03
                          911.07 9.907E+00  (P 3.670E+00 2.03E+01 2.90E+01 G
                          968.97 1.245E+01  (P 3.531E+00 1.78E+01 1.75E+01 G
                          338.32 1.190E+01  (P 6.428E+00 1.97E+01 1.20E+01 G
                           93.35 5.187E+00 - P 3.792E+01 2.20E+02 5.56E+00 XA

TH-227   N   3.0294E+00                                     7.95E+03
                          256.24 3.893E+00 &(  1.350E+01 1.41E+02 7.00E+00 G
                          235.97 2.538E+00 ?(  1.689E+01 1.99E+02 1.23E+01 G
                           50.14-6.086E+00 +   2.370E+01 1.17E+02 8.00E+00 G

TH-229   N   1.8055E+00                                     2.68E+06
                          193.51 1.806E+00 @(  2.206E+01 4.72E+02 4.40E+00 G
                          210.85-9.572E+00 + P 3.615E+01 1.17E+02 2.99E+00 G

TH-234   N   1.4459E+01                                     1.63E+12
                           92.59 1.521E+01  (P 1.475E+01 3.07E+01 5.58E+00 G
                           63.29 1.336E+01  (P 2.795E+01 6.36E+01 3.81E+00 G
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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

PA-234   N   1.4781E+00                                     1.63E+12
                          131.29 1.530E+00 &(  8.783E+00 1.72E+02 1.80E+01 G
                          946.02 1.408E+00 ?(  7.307E+00 2.19E+02 1.34E+01 G
                          569.47 2.632E-01 %   1.280E+01 1.36E+03 8.20E+00 G
                          883.24 0.000E+00 -   1.792E+01 1.00E+03 9.60E+00 G
                          880.53-3.974E+00 +   2.737E+01 1.98E+02 6.00E+00 GA

PA-234M  N   6.2396E+01                                     1.63E+12
                         1001.00 1.995E+01 &(P 1.381E+02 1.94E+02 8.37E-01 G
                          766.41 1.832E+02 ?(P 6.658E+02 1.08E+02 2.94E-01 G

AM-241   T  -3.4374E-01                                     1.58E+05
                           59.54-3.437E-01 ?(P 5.100E+00 2.30E+02 3.59E+01 G

Cs-136   F  -7.2832E-01                                     1.30E+01
                          818.50-7.283E-01 ?(  2.115E+00 8.68E+01 1.00E+02 G
                         1048.07 1.910E-01 +   1.686E+00 2.47E+02 8.00E+01 G
                          340.57-3.407E-01 +   4.427E+00 3.85E+02 4.69E+01 G

Np-239   T  -1.3780E+00                                     2.36E+00
                          103.70 0.000E+00 +   5.541E+00 1.00E+03 2.40E+01 X
                          106.13-1.378E+00  (  5.465E+00 1.19E+02 2.27E+01 G
                           99.50 1.980E+00 ?   8.717E+00 1.32E+02 1.50E+01 X

Nd-147      -2.4442E+00                                     1.11E+01
                          531.00-2.444E+00 ?(  7.897E+00 1.34E+02 1.30E+01 G
                           91.10-4.180E-01 +   7.374E+00 5.28E+02 2.83E+01 G

TL-210   N  -1.1088E-01                                     5.84E+05
                          799.60-1.109E-01 &(  1.938E+00 5.03E+02 9.90E+01 G
                          296.00-4.936E-01 +   3.217E+00 1.95E+02 7.90E+01 G
                         1313.00 8.628E-01 ?   6.305E+00 3.27E+02 2.10E+01 GA
   ( - 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
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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

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********** 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	
TH-227	50.14	353.	-23.	-0.013	116.52	-6.086E+00	
AM-241	59.54	526.	-7.	-0.004	229.76	-3.437E-01	P
BA-133	80.99	1137.	-25.	-0.014	84.75	-9.184E-01	P
EU-155	86.54	1538.	-31.	-0.017	182.28	-1.225E+00	
Nd-147	91.10	1339.	-10.	-0.005	528.01	-4.180E-01	
Np-239	99.50	542.	25.	0.014	131.86	1.980E+00	
Np-239	106.13	496.	-27.	-0.015	118.87	-1.378E+00	
EU-152	121.78	267.	9.	0.005	249.59	3.835E-01	
CO-57	122.06	218.	4.	0.002	483.88	5.947E-02	
EU-154	123.10	216.	19.	0.010	112.78	5.434E-01	
Tc-99m	140.51	798.	-29.	-0.016	140.81	-4.067E-01	
U-235	143.79	782.	-30.	-0.017	175.55	-3.431E+00	P
CE-141	145.44	866.	-29.	-0.016	143.73	-7.582E-01	
Ba-140	162.66	318.	-12.	-0.006	221.44	-2.483E+00	
CE-139	165.85	256.	24.	0.013	96.24	4.029E-01	
U-235	185.72	315.	-20.	-0.011	127.48	-5.360E-01	
TH-229	193.51	180.	5.	0.003	472.17	1.806E+00	
U-235	205.33	125.	8.	0.005	253.79	2.577E+00	P
TH-229	210.85	198.	-18.	-0.010	116.77	-9.572E+00	P
Cf-251	227.00	103.	10.	0.006	186.06	2.735E+00	
TH-227	235.97	647.	18.	0.010	198.84	2.538E+00	
EU-152	244.69	675.	-22.	-0.012	167.79	-5.122E+00	
TH-227	256.24	112.	15.	0.008	140.53	3.893E+00	
Cd-113m	263.70	152.	-14.	-0.008	130.28	-4.224E+03	
BI-210M	265.83	163.	-5.	-0.003	296.59	-2.002E-01	P
Hg-203	279.20	132.	-17.	-0.010	133.32	-4.070E-01	
I-131	284.30	100.	-11.	-0.006	166.83	-3.644E+00	P
TL-210	296.00	702.	-19.	-0.011	194.86	-4.936E-01	
PA-231	300.07	683.	-19.	-0.011	191.57	-1.606E+01	
PA-233	300.18	663.	-16.	-0.009	225.98	-5.320E+00	
La-140	328.76	416.	-19.	-0.011	126.52	-2.081E+00	P

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Cf-249	333.44	397.	-19.	-0.011	146.52	-2.752E+00	
Cs-136	340.57	377.	-7.	-0.004	384.60	-3.407E-01	
HF-181	345.83	394.	-21.	-0.012	61.53	-3.111E+00	P
BA-133	356.00	492.	-20.	-0.011	160.25	-7.330E-01	
I-131	364.48	44.	6.	0.003	220.27	1.718E-01	
BA-133	383.84	97.	7.	0.004	207.01	1.861E+00	P
Cf-249	387.95	104.	14.	0.008	106.61	5.177E-01	
SN-113	391.69	150.	4.	0.002	388.62	1.727E-01	P
SB-125	427.88	52.	4.	0.002	419.94	3.145E-01	P
AG-108M	433.94	57.	2.	0.001	636.98	7.102E-02	P
PM-146	453.88	79.	-18.	-0.010	84.81	-7.723E-01	P
SB-125	463.37	101.	3.	0.002	421.98	9.018E-01	P
Ir-192	468.06	107.	-6.	-0.003	247.21	-3.251E-01	
BE-7	477.60	119.	-14.	-0.008	112.17	-3.832E+00	
HF-181	482.00	117.	2.	0.001	614.71	8.897E-02	
La-140	487.02	127.	-2.	-0.001	873.01	-1.163E-01	
RU-103	497.05	30.	9.	0.005	134.38	2.790E-01	P
RH-106	511.86	70.	80.	0.044	18.54	1.197E+01	
Nd-147	531.00	43.	-10.	-0.006	133.71	-2.444E+00	
Ba-140	537.26	35.	8.	0.005	148.32	1.060E+00	
CS-134	563.24	26.	12.	0.007	90.35	4.671E+00	
CS-134	569.32	35.	-5.	-0.003	184.34	-9.819E-01	
BI-207	569.70	44.	-3.	-0.002	350.06	-1.132E-01	P
SB-125	600.50	368.	12.	0.007	220.17	2.342E+00	
SB-124	602.73	381.	12.	0.007	236.03	4.050E-01	P
CS-134	604.71	466.	-16.	-0.009	191.42	-5.574E-01	
RU-103	610.30	450.	-16.	-0.009	187.53	-9.560E+00	
AG-108M	614.28	434.	-16.	-0.009	183.76	-6.162E-01	
PM-144	618.06	439.	-18.	-0.010	168.43	-6.162E-01	
RH-106	621.92	422.	-14.	-0.008	208.62	-4.884E+00	
SB-125	635.89	50.	-4.	-0.002	289.26	-1.086E+00	
AG-110M	657.76	88.	-18.	-0.010	127.29	-6.980E-01	P
CS-137	661.66	93.	-15.	-0.009	152.19	-6.530E-01	P
PM-144	696.54	80.	-12.	-0.007	104.77	-4.741E-01	
NB-94	702.63	66.	13.	0.007	91.03	5.093E-01	
SB-124	722.79	61.	13.	0.007	91.84	4.522E+00	
EU-154	723.36	65.	8.	0.004	150.06	1.496E+00	
PM-146	735.72	37.	-7.	-0.004	180.56	-1.275E+00	
PM-146	747.16	23.	5.	0.003	232.70	5.243E-01	P
ZR-95	756.73	28.	-2.	-0.001	490.12	-1.573E-01	P
AG-110M	763.94	130.	-26.	-0.014	66.07	-4.608E+00	
NB-95	765.79	155.	-26.	-0.014	71.69	-1.032E+00	
PA-234M	766.41	97.	13.	0.007	107.74	1.832E+02	P
EU-152	778.92	9.	5.	0.003	148.85	1.446E+00	
BI-212	785.42	14.	10.	0.006	82.72	3.320E+01	
CS-134	795.87	71.	-16.	-0.009	78.26	-7.769E-01	
TL-210	799.60	87.	-3.	-0.001	503.02	-1.109E-01	
CS-134	801.95	109.	-18.	-0.010	85.33	-8.626E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
CO-58	810.78	66.	-12.	-0.006	123.63	-4.932E-01	P
Cs-136	818.50	103.	-17.	-0.010	86.77	-7.283E-01	
MN-54	834.85	30.	4.	0.002	305.16	1.719E-01	
NB-94	871.10	33.	-8.	-0.004	107.53	-3.552E-01	
EU-154	873.23	60.	-11.	-0.006	104.05	-3.983E+00	
Sc-46	889.28	49.	10.	0.005	108.18	4.325E-01	P
AG-110M	937.49	40.	-4.	-0.002	351.19	-5.454E-01	
EU-152	964.11	94.	-15.	-0.008	94.47	-4.950E+00	
EU-154	996.33	32.	8.	0.004	106.07	3.701E+00	
PA-234M	1001.00	20.	3.	0.002	194.31	1.995E+01	P
EU-154	1004.77	58.	-13.	-0.007	90.35	-3.446E+00	
Cs-136	1048.07	26.	3.	0.002	247.21	1.910E-01	
RH-106	1050.36	24.	6.	0.003	122.47	1.962E+01	
BI-207	1063.66	19.	1.	0.001	958.47	6.856E-02	P
Ga-68	1077.40	32.	-5.	-0.003	261.02	-9.262E+00	
FE-59	1099.25	27.	2.	0.001	614.13	1.805E-01	P
EU-152	1112.07	107.	7.	0.004	225.26	2.578E+00	
ZN-65	1115.55	114.	6.	0.003	252.26	6.397E-01	
Ta-182	1121.30	164.	-15.	-0.008	125.02	-2.277E+00	
CO-60	1173.24	17.	9.	0.005	117.31	4.803E-01	P
Ta-182	1221.41	28.	-1.	-0.001	940.25	-2.823E-01	
NA-22	1274.53	23.	-2.	-0.001	505.14	-1.332E-01	P
FE-59	1291.60	17.	-1.	-0.001	972.11	-1.381E-01	
TL-210	1313.00	17.	3.	0.002	327.45	8.628E-01	
CO-60	1332.50	18.	-2.	-0.001	552.05	-1.272E-01	P
AG-110M	1384.30	12.	5.	0.003	173.21	1.294E+00	
EU-152	1408.00	18.	5.	0.003	209.76	1.516E+00	
La-140	1596.21	25.	-10.	-0.006	140.43	-7.598E-01	P
SB-124	1690.98	13.	-4.	-0.002	346.82	-6.437E-01	P
Y-88	1836.06	7.	3.	0.002	220.62	2.443E-01	P

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 Counting 1 Sigma	MDA Bq/Sample
BE-7	#A	-3.8320E+00	-3.8320E+00	1.122E+02%	1.45E+01
NA-22	#A	-1.3324E-01	-1.3324E-01	5.051E+02%	1.49E+00
K-40	#	1.1652E+02	1.1652E+02	7.648E+00%	1.08E+01
Sc-46	#A	4.3248E-01	4.3248E-01	1.082E+02%	1.59E+00
CR-51	#A	-1.0580E-01	-1.0580E-01	4.984E+03%	2.60E+01
MN-54	#A	1.7188E-01	1.7188E-01	3.052E+02%	1.21E+00
FE-59	#A	1.8048E-01	1.8048E-01	6.141E+02%	2.52E+00
Co-56	#C	1.2899E+00	1.2899E+00	3.401E+01%	1.13E+00
CO-57	#A	5.9474E-02	5.9474E-02	4.839E+02%	9.81E-01
CO-58	#A	-4.9323E-01	-4.9324E-01	1.236E+02%	1.71E+00

CO-60	#A	1.7643E-01	1.7643E-01	1.173E+02%	1.38E+00
ZN-65	#A	6.3974E-01	6.3974E-01	2.523E+02%	5.53E+00
NB-94	#A	5.0927E-01	5.0927E-01	9.103E+01%	1.56E+00
ZR-95	#A	-1.5730E-01	-1.5730E-01	4.901E+02%	2.01E+00
NB-95	#A	-1.0316E+00	-1.0316E+00	7.169E+01%	2.45E+00
RU-103	#A	2.7902E-01	2.7903E-01	1.344E+02%	9.15E-01
RH-106	#A	-1.5561E+00	-1.5561E+00	1.210E+02%	3.42E+01
AG-108M	#A	7.1022E-02	7.1022E-02	6.370E+02%	1.11E+00
AG-110M	#A	3.2416E-01	3.2417E-01	1.732E+02%	2.37E+00
SN-113	#A	1.7267E-01	1.7267E-01	3.886E+02%	2.30E+00
SB-124	#A	8.1306E-01	8.1306E-01	9.184E+01%	3.22E+00
SB-125	#A	1.0457E+00	1.0457E+00	2.116E+02%	3.24E+00
I-131	#A	1.7176E-01	1.7177E-01	2.203E+02%	9.63E-01
Gd-153	#A	2.0133E-01	2.0133E-01	1.018E+03%	6.85E+00
Ga-68	#A	-9.1535E+00	-9.2618E+00	2.610E+02%	5.38E+01
Tc-99m	#A	-4.0581E-01	-4.0671E-01	1.408E+02%	1.91E+00
BA-133	#A	-7.3301E-01	-7.3301E-01	1.603E+02%	3.93E+00
CS-134	#A	-2.9237E-01	-2.9237E-01	5.977E+01%	2.03E+00
CS-137	#A	-6.5298E-01	-6.5298E-01	1.522E+02%	2.02E+00
CE-139	#A	4.0293E-01	4.0293E-01	9.624E+01%	1.29E+00
Ba-140	#A	1.0597E+00	1.0597E+00	1.483E+02%	3.83E+00
La-140	#A	-7.5980E-01	-7.5983E-01	1.404E+02%	1.92E+00
CE-141	#A	-7.5814E-01	-7.5816E-01	1.437E+02%	3.63E+00
CE-144	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.45E+01
PM-144	#A	-4.7413E-01	-4.7413E-01	1.048E+02%	1.68E+00
EU-152	#A	1.1754E+00	1.1754E+00	1.226E+02%	3.24E+00
EU-154	#A	1.2798E+00	1.2798E+00	7.187E+01%	2.05E+00
EU-155	#A	-3.2206E-03	-3.2206E-03	9.054E+04%	6.26E+00
HF-181	#A	8.8966E-02	8.8967E-02	6.147E+02%	1.89E+00
Ta-182	#A	-2.2767E+00	-2.2767E+00	1.250E+02%	9.59E+00
Hg-203	#A	-4.0704E-01	-4.0705E-01	1.333E+02%	1.33E+00
TL-208	#	2.2731E+00	2.2731E+00	2.930E+01%	1.51E+00
PM-146	#A	-7.7231E-01	-7.7231E-01	8.481E+01%	1.86E+00
Y-88	#A	2.4429E-01	2.4429E-01	2.206E+02%	1.18E+00
Cd-113m	#A	-4.2239E+03	-4.2239E+03	1.303E+02%	1.86E+04
Cd-109	#A	0.0000E+00	0.0000E+00	1.000E+03%	5.72E+01
Cf-251	#A	1.6435E-01	1.6435E-01	1.204E+03%	5.14E+00
Cf-249	#A	5.1774E-01	5.1774E-01	1.066E+02%	1.86E+00
Sn-126	#A	4.4572E+00	4.4572E+00	1.192E+02%	1.77E+01
PB-210	A	2.5068E+01	2.5068E+01	4.664E+01%	3.03E+01
PB-212		1.0020E+01	1.0020E+01	8.257E+00%	1.86E+00
PB-214		2.0523E+01	2.0523E+01	6.842E+00%	2.14E+00
BI-207	#A	6.8562E-02	6.8562E-02	9.585E+02%	1.59E+00
BI-212	#A	4.2790E-01	4.2790E-01	1.466E+03%	2.20E+01
U-235	#A	-1.5462E+00	-1.5462E+00	1.543E+02%	1.51E+01
BI-214		1.8280E+01	1.8280E+01	9.426E+00%	2.62E+00
BI-210M	#A	-2.0022E-01	-2.0022E-01	2.966E+02%	2.32E+00
AC-228		1.1077E+01	1.1077E+01	1.113E+01%	3.67E+00
TH-227	#A	3.0294E+00	3.0294E+00	1.217E+02%	1.35E+01

TH-229 #A	1.8055E+00	1.8055E+00	4.722E+02%		2.21E+01
TH-234 A	1.4459E+01	1.4459E+01	3.075E+01%		1.47E+01
PA-231 #A	0.0000E+00	0.0000E+00	1.000E+03%		8.61E+01
PA-233 #A	0.0000E+00	0.0000E+00	1.000E+03%		7.04E+00
PA-234 #A	1.4781E+00	1.4781E+00	1.391E+02%		8.78E+00
PA-234M#A	6.2396E+01	6.2396E+01	1.077E+02%		1.38E+02
AM-241 #A	-3.4374E-01	-3.4374E-01	2.298E+02%		5.10E+00
Np-237 #A	0.0000E+00	0.0000E+00	1.000E+03%		1.66E+01
Ir-192 #A	0.0000E+00	0.0000E+00	7.071E+02%		2.94E+00
Cs-136 #A	-7.2829E-01	-7.2832E-01	8.677E+01%		2.12E+00
Np-239 #A	-1.3777E+00	-1.3780E+00	1.189E+02%		5.46E+00
Nd-147 #A	-2.4441E+00	-2.4442E+00	1.337E+02%		7.90E+00
TL-210 #A	-1.1088E-01	-1.1088E-01	5.030E+02%		1.94E+00
Kr-85 #A	0.0000E+00	0.0000E+00	1.000E+03%		4.17E+02

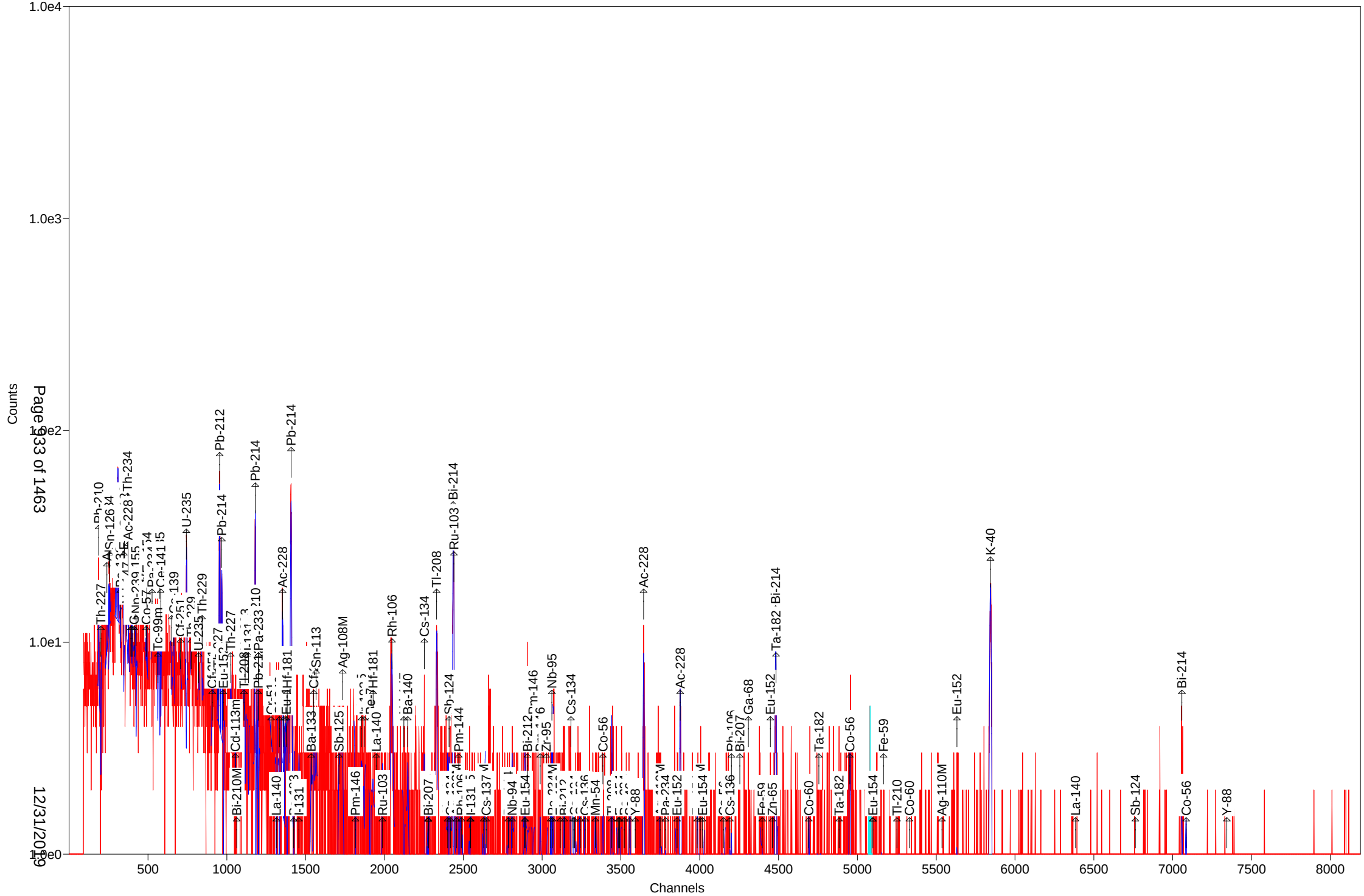
  # - All peaks for activity calculation had bad shape.
  * - Activity omitted from total
  & - Activity omitted from total and all peaks had bad shape.
  < - MDA value printed.
  A - Activity printed, but activity < MDA.
  B - Activity < MDA and failed test.
  C - Area < Critical level.
  F - Failed fraction or key line test.
  H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (25.1 to 1999.6 keV) 2.159E+02 Bq/Sample
Total Decayed Activity (25.1 to 1999.6 keV) 2.1594672E+02 Bq/Sample

(Page 21 of 21)

452567_Gamma_160-36526-A-10-B. 16_Gamma_20192290.spc.



Sample Description: 452567_Gamma_160-36526-A-11-C
Detector: Detector #17
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-11-C

Decay to Time: 12/25/2019 09:36 Live Time: 1800 sec
Acquisition Time: 12/25/2019 09:36:54 Real Time: 1806 sec
Analysis Time: 12/25/2019 10:07 Dead Time: 0.35 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 17_Soil_TunaCan.Clb
Efficiency Cal Desc: 17_TunaCan_90099_032612
Efficiency Cal Date: 4/12/2012 09:28
Energy Cal Date: 2/29/2012 10:33
Library: Client_Long_Rev15.lib
Bkgd Correction File: 17_2019-12-07_1454.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	-8.649E-01	398.6	3.448E+00	3.448E+00	1.202E+01
NA-22	8.443E-02	357.1	3.015E-01	3.015E-01	1.135E+00
K-40	1.409E+02	7.1	9.985E+00	1.232E+01	1.009E+01
Sc-46	8.009E-03	6230.5	4.990E-01	4.990E-01	1.773E+00
CR-51	3.395E+00	109.7	3.725E+00	3.730E+00	1.254E+01
MN-54	-1.375E-01	378.6	5.204E-01	5.204E-01	1.254E+00
FE-59	-4.338E-01	143.4	6.221E-01	6.225E-01	2.371E+00
Co-56	9.684E-01	53.6	5.194E-01	5.218E-01	1.058E+00
CO-57	2.893E-01	111.2	3.217E-01	3.221E-01	1.078E+00
CO-58	3.964E-01	91.5	3.627E-01	3.633E-01	1.233E+00
CO-60	-3.621E-01	185.6	6.720E-01	6.722E-01	1.594E+00
ZN-65	0.000E+00	1.#INF	2.764E-01	2.764E-01	5.377E+00
NB-94	3.701E-01	120.4	4.455E-01	4.459E-01	1.089E+00
ZR-95	8.013E-01	97.9	7.846E-01	7.857E-01	1.910E+00
NB-95	-5.264E-01	121.7	6.407E-01	6.413E-01	2.169E+00
RU-103	3.435E-02	1112.1	3.820E-01	3.820E-01	9.985E-01
RH-106	4.875E+00	83.0	4.046E+00	4.054E+00	1.155E+01
AG-108M	2.744E-01	128.4	3.524E-01	3.526E-01	9.376E-01
AG-110M	4.453E-01	89.4	3.982E-01	3.989E-01	2.417E+00
SN-113	4.374E-01	140.1	6.126E-01	6.131E-01	2.080E+00
SB-124	1.056E-01	360.6	3.806E-01	3.806E-01	3.326E+00
SB-125	1.857E+00	41.9	7.773E-01	7.831E-01	3.315E+00
I-131	-3.632E-01	144.9	5.261E-01	5.265E-01	1.182E+00
Gd-153	3.582E-01	119.2	4.268E-01	4.274E-01	3.312E+00
Ga-68	-1.778E+01	137.9	2.452E+01	2.454E+01	5.578E+01
Tc-99m	7.786E-03	5409.3	4.212E-01	4.212E-01	1.430E+00
BA-133	-7.595E-01	159.5	1.211E+00	1.212E+00	4.057E+00
CS-134	2.541E-01	93.5	2.377E-01	2.380E-01	1.825E+00
CS-137	-4.067E-01	127.5	5.185E-01	5.190E-01	1.772E+00
CE-139	-4.518E-01	113.3	5.121E-01	5.139E-01	1.710E+00
Ba-140	-1.355E+00	144.7	1.960E+00	1.961E+00	4.919E+00
La-140	-1.905E-01	113.0	2.154E-01	2.156E-01	1.969E+00
CE-141	-6.579E-01	101.7	6.691E-01	6.700E-01	2.235E+00

CE-144	-3.244E+00	40.9	1.328E+00	1.338E+00	1.387E+01
PM-144	9.294E-01	20.9	1.938E-01	1.997E-01	2.978E-01
EU-152	1.280E+00	106.5	1.363E+00	1.365E+00	3.088E+00
EU-154	4.530E-01	87.7	3.974E-01	3.981E-01	2.418E+00
EU-155	9.567E-01	157.4	1.506E+00	1.507E+00	5.064E+00
HF-181	2.993E-02	117.9	3.528E-02	3.531E-02	1.684E+00
Ta-182	-1.734E-01	81.9	1.420E-01	1.423E-01	8.277E+00
Hg-203	-3.354E-01	122.7	4.114E-01	4.118E-01	1.390E+00
TL-208	4.772E+00	9.7	4.644E-01	5.262E-01	5.357E-01
PM-146	4.657E-01	94.0	4.380E-01	4.386E-01	1.518E+00
Y-88	4.247E-01	44.7	1.899E-01	1.915E-01	6.260E-01
Cd-113m	-6.176E+03	98.9	6.108E+03	6.121E+03	2.046E+04
Cd-109	2.499E+00	547.6	1.369E+01	1.369E+01	4.597E+01
Cf-251	6.237E-01	281.0	1.753E+00	1.754E+00	4.790E+00
Cf-249	7.452E-01	80.7	6.017E-01	6.029E-01	2.000E+00
Sn-126	-4.299E+00	111.3	4.786E+00	4.791E+00	1.599E+01
PB-210	2.675E+01	41.5	1.111E+01	1.122E+01	3.069E+01
PB-212	1.179E+01	7.1	8.401E-01	1.135E+00	1.577E+00
PB-214	1.909E+01	6.5	1.237E+00	1.585E+00	2.472E+00
BI-207	9.170E-01	49.6	4.548E-01	4.572E-01	1.015E+00
BI-212	5.057E+00	93.6	4.735E+00	4.742E+00	1.607E+01
U-235	4.317E-01	472.0	2.038E+00	2.038E+00	1.141E+01
BI-214	1.903E+01	7.8	1.480E+00	1.780E+00	1.942E+00
BI-210M	1.700E-01	396.1	6.731E-01	6.732E-01	2.309E+00
AC-228	1.364E+01	9.2	1.254E+00	1.434E+00	1.244E+00
TH-227	3.776E+00	48.8	1.843E+00	1.857E+00	1.353E+01
TH-229	-4.638E+00	172.4	7.998E+00	8.007E+00	2.166E+01
TH-234	1.684E+01	27.2	4.573E+00	4.668E+00	1.613E+01
PA-231	5.552E+00	221.3	1.228E+01	1.229E+01	8.001E+01
PA-233	6.654E-01	233.3	1.552E+00	1.553E+00	6.541E+00
PA-234	-1.822E+00	99.0	1.803E+00	1.805E+00	7.983E+00
PA-234M	3.449E+01	149.4	5.152E+01	5.155E+01	1.793E+02
AM-241	1.047E-01	1204.2	1.260E+00	1.260E+00	3.625E+00
Np-237	0.000E+00	1.#INF	4.501E+00	4.501E+00	1.501E+01
Ir-192	-8.667E-02	82.4	7.145E-02	7.163E-02	1.440E+00
Cs-136	-6.514E-01	92.7	6.041E-01	6.052E-01	2.031E+00
Np-239	1.044E+00	129.0	1.347E+00	1.348E+00	4.518E+00
Nd-147	-2.016E+00	180.0	3.628E+00	3.630E+00	9.151E+00
TL-210	1.644E-01	226.5	3.723E-01	3.724E-01	1.627E+00
Kr-85	5.208E+01	245.4	1.278E+02	1.278E+02	4.362E+02
Total	3.807E+02				

Analyst: Caleb Quinn

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Sample description
452567_Gamma_160-36526-A-11-C

Spectrum Filename: C:\User\SPC\Det17\17_Gamma_20192435.An1

Acquisition information
Start time: 12/25/2019 9:36:54 AM
Live time: 1800
Real time: 1806
Dead time: 0.35 %
Detector ID: 17

Detector system
Ge17 SN/11080671

Calibration
Filename: 17_Soil_TunaCan.Clb
17_TunaCan_90099_032612

Energy Calibration
Created: 2/29/2012 10:33:23 AM
Zero offset: 0.108 keV
Gain: 0.250 keV/channel
Quadratic: -2.584E-08 keV/channel^2

Efficiency Calibration
Created: 4/12/2012 9:28:42 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.91 %
Log(Eff): -5.264190E-01 + (-4.024164E-01*Log(E)) + (-2.604461E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.00 %
Log(Eff): -2.343889E+01 + (8.582715E+00*Log(E)) + (-9.075430E-01*Log(E)^2)

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.12keV)
Stop channel: 8000 (1999.54keV)
Peak rejection level: 1000.000%
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

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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	12/25/2019 9:36:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	17_2019-12-07_1454.PBC 12/7/2019 2:54:46 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 25 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1466

***** 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
46.66	43.	41.54	0.91	2.109E-02	46.54	4.250	PBC<MDA	PB210
50.14	37.	48.80	0.78	2.357E-02	50.14	8.000	PBC<MDA	TH227
63.59	101.	21.56	1.06	3.178E-02	63.29	3.810	3.533E+01	TH234
74.85	151.	13.96	0.80	3.682E-02				
77.21	263.	8.75	0.80	3.765E-02				
80.99	21.	118.00	0.81	3.884E-02	80.99	34.060	PBC<MDA	BA133
87.25	87.	27.61	0.67	4.043E-02	86.54	30.700	3.910E+00	EU155
					86.94	9.040	1.325E+01	Sn126
					87.57	37.500	3.183E+00	Sn126
					88.04	3.790	3.141E+01	Cd109
92.74	95.	25.79	1.57	4.147E-02	92.59	5.584	2.281E+01	TH234
					93.35	5.561	2.284E+01	AC228
103.20	19.	119.16	0.83	4.265E-02	103.20	21.800	PBC<MDA	Gd153
103.70	19.	123.36	0.83	4.269E-02	103.70	24.000	PBC<MDA	Np239
105.31	16.	157.44	0.83	4.278E-02	105.31	21.200	PBC<MDA	EU155
106.13	18.	128.97	0.83	4.282E-02	106.13	22.700	PBC<MDA	Np239
121.78	19.	106.45	0.85	4.277E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	2.891E-01	CO57
122.06	19.	111.22	0.85	4.276E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	2.893E-01	CO57
176.60	7.	281.03	0.90	3.667E-02	176.60	17.000	PBC<MDA	Cf251
185.84	83.	19.99	1.37	3.544E-02	185.72	54.000	2.397E+00	U235

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
205.33	4.	472.02	0.92	3.312E-02	205.33	5.010	PBC<MDA	U235
235.97	17.	204.34	0.95	3.012E-02	235.97	12.300	PBC<MDA	TH227
238.47	260.	8.57	0.99	2.990E-02	238.63	43.300	1.114E+01	PB212
241.87	69.	21.47	0.96	2.960E-02	242.00	7.430	1.748E+01	PB214
244.69	6.	553.92	0.96	2.938E-02	244.69	7.580	PBC<MDA	EU152
265.83	4.	396.07	0.98	2.774E-02	265.83	50.000	PBC<MDA	BI210M
277.30	14.	95.67	0.99	2.694E-02	277.28	6.310	PBC<MDA	TL208
295.24	188.	10.10	1.15	2.579E-02	295.09	19.300	2.103E+01	PB214
					296.00	79.000	5.149E+00	TL210
299.50	13.	236.83	1.01	2.550E-02	300.03	3.280	PBC<MDA	PB212
300.07	14.	221.26	1.01	2.550E-02	300.07	2.460	PBC<MDA	PA231
					300.18	6.200	4.783E+00	PA233
300.18	13.	233.29	1.01	2.549E-02	300.07	2.460	PBC<MDA	PA231
					300.18	6.200	4.651E+00	PA233
320.08	15.	109.73	1.03	2.437E-02	320.08	9.940	PBC<MDA	CR51
328.76	2.	491.54	1.04	2.391E-02	328.76	20.300	PBC<MDA	La140
333.44	13.	102.93	1.04	2.368E-02	333.44	15.510	PBC<MDA	Cf249
338.45	68.	18.68	0.94	2.344E-02	338.32	12.010	1.342E+01	AC228
340.57	9.	208.49	1.05	2.333E-02	340.57	46.900	PBC<MDA	Cs136
345.83	11.	171.25	1.05	2.308E-02	345.83	15.070	PBC<MDA	HF181
351.93	279.	8.11	0.95	2.279E-02	351.93	37.600	1.810E+01	PB214
383.84	12.	117.96	1.09	2.143E-02	383.84	8.940	PBC<MDA	BA133
387.95	12.	124.43	1.09	2.127E-02	387.95	66.000	PBC<MDA	Cf249
391.69	11.	140.06	1.09	2.112E-02	391.69	64.000	PBC<MDA	SN113
427.88	4.	334.21	1.13	1.983E-02	427.88	29.600	PBC<MDA	SB125
433.94	9.	128.43	1.13	1.963E-02	433.94	90.480	PBC<MDA	AG108M
453.88	2.	818.46	1.15	1.900E-02	453.88	65.000	PBC<MDA	PM146
463.37	21.	41.86	1.16	1.872E-02	463.37	10.470	PBC<MDA	SB125
468.06	8.	128.67	1.16	1.859E-02	468.06	51.750	PBC<MDA	Ir192
487.02	10.	113.05	1.18	1.806E-02	487.02	45.500	PBC<MDA	La140
511.86	76.	19.71	2.45	1.742E-02	511.86	20.000	1.207E+01	RH106
513.98	7.	245.37	1.20	1.737E-02	513.98	0.430	PBC<MDA	Kr85
569.32	8.	93.54	1.25	1.612E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	3.364E+00	PA234
					569.70	97.740	2.823E-01	BI207
583.27	115.	9.73	0.57	1.583E-02	583.02	84.500	4.783E+00	TL208
604.71	3.	937.75	1.28	1.542E-02	604.71	97.620	PBC<MDA	CS134
609.28	232.	7.78	1.36	1.533E-02	609.31	46.090	1.822E+01	BI214
					610.30	5.750	1.462E+02	RU103
618.06	4.	212.76	1.30	1.517E-02	618.06	99.100	PBC<MDA	PM144
621.92	7.	135.28	1.30	1.510E-02	621.92	9.930	PBC<MDA	RH106
636.97	2.	601.24	1.31	1.484E-02	636.97	7.170	PBC<MDA	I131
696.42	23.	20.85	1.36	1.389E-02	696.54	99.000	9.294E-01	PM144
702.63	9.	120.36	1.37	1.380E-02	702.63	97.900	PBC<MDA	NB94
722.79	3.	360.56	1.39	1.351E-02	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	1.358E-01	AG108M
					723.36	20.220	6.104E-01	EU154
727.96	9.	93.64	1.39	1.345E-02	727.17	7.550	PBC<MDA	BI212

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
735.72	8.	94.03	1.40	1.333E-02	735.72	22.500	PBC<MDA	PM146
747.16	4.	264.97	1.41	1.318E-02	747.16	34.000	PBC<MDA	PM146
756.73	10.	97.91	1.41	1.306E-02	756.73	54.460	PBC<MDA	ZR95
766.41	-2.	910.93	1.42	1.293E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	PBC<MDA	PA234M
786.66	9.	91.44	1.44	1.270E-02	785.42	1.280	PBC<MDA	BI212
795.87	3.	335.00	1.45	1.257E-02	795.87	85.530	PBC<MDA	CS134
810.78	9.	91.49	1.46	1.240E-02	810.78	99.460	PBC<MDA	CO58
846.77	9.	103.51	1.49	1.200E-02	846.77	99.935	PBC<MDA	Co56
860.63	19.	29.70	0.47	1.185E-02	860.56	12.420	7.107E+00	TL208
880.53	1.	767.30	1.52	1.165E-02	880.53	6.000	PBC<MDA	PA234
911.45	73.	11.70	2.08	1.135E-02	911.07	29.000	1.232E+01	AC228
964.11	6.	181.41	1.59	1.088E-02	964.11	14.605	PBC<MDA	EU152
969.17	54.	16.58	1.59	1.083E-02	968.97	17.460	1.600E+01	AC228
996.33	8.	87.73	1.62	1.061E-02	996.33	10.600	PBC<MDA	EU154
1001.00	5.	149.39	1.62	1.057E-02	1001.00	0.837	PBC<MDA	PA234M
1048.07	6.	75.12	1.66	1.021E-02	1048.07	80.000	PBC<MDA	Cs136
1050.36	6.	96.23	1.66	1.019E-02	1050.36	1.560	PBC<MDA	RH106
1063.66	12.	49.60	1.67	1.009E-02	1063.66	74.500	PBC<MDA	BI207
1120.15	61.	15.81	1.44	9.697E-03	1120.29	15.100	2.321E+01	BI214
					1120.55	99.987	PBC<MDA	Sc46
					1121.30	34.900	1.005E+01	Ta182
1189.05	9.	86.63	1.77	9.263E-03	1189.05	16.200	PBC<MDA	Ta182
1238.28	19.	53.64	1.81	8.977E-03	1238.28	66.070	PBC<MDA	Co56
1274.53	1.	357.07	1.84	8.779E-03	1274.53	99.940	PBC<MDA	NA22
					1274.54	35.190	2.398E-01	EU154
1313.00	7.	107.76	1.87	8.579E-03	1313.00	21.000	PBC<MDA	TL210
1384.30	7.	89.43	1.93	8.233E-03	1384.30	24.290	PBC<MDA	AG110M
1408.00	7.	86.62	1.94	8.125E-03	1408.00	21.005	PBC<MDA	EU152
1460.85	214.	7.08	1.81	7.894E-03	1460.83	10.670	1.409E+02	K40
1764.35	40.	20.39	2.21	6.804E-03	1764.49	15.400	2.145E+01	BI214
1836.06	5.	44.72	2.26	6.593E-03	1836.06	99.200	PBC<MDA	Y88

********** 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
298.82	74.86	146.	151.	4.095E+03	13.96	0.802	- sD
308.24	77.22	133.	263.	6.980E+03	8.75	0.804	- D
742.58	185.84	72.	83.	2.331E+03	19.99	1.373	- 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: Client_Long_Rev15.lib

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********** 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	186.11	46.66	100.	43.	0.024	41.54	0.908
TH-227	200.03	50.14	102.	37.	0.021	48.80	0.778s
TH-234	252.59	63.29	104.	55.	0.031	29.63	0.791D
Sn-126	256.56	64.28	349.	-24.	-0.013	111.32	0.792
BA-133	323.36	80.99	211.	21.	0.012	118.00	0.807s
Np-237	345.35	86.49	900.	0.	0.000	167.13	0.813A
EU-155	345.56	86.54	829.	-26.	-0.015	155.82	0.813s
Sn-126	347.15	86.94	779.	-26.	-0.015	151.04	0.813s
Sn-126	349.67	87.57	689.	26.	0.015	73.49	0.814D
Cd-109	351.55	88.04	715.	7.	0.004	547.63	0.814A
Nd-147	363.79	91.10	722.	0.	0.000	1000.00	0.817s
TH-234	369.74	92.59	191.	46.	0.025	45.50	0.818D
AC-228	372.78	93.35	701.	26.	0.014	145.76	0.819
Gd-153	389.37	97.50	243.	-5.	-0.003	443.17	0.823s
Np-239	397.37	99.50	285.	-22.	-0.012	109.62	0.825
Gd-153	412.16	103.20	255.	19.	0.011	119.16	0.828s
Np-239	414.16	103.70	274.	19.	0.011	123.36	0.829s
EU-155	420.61	105.31	294.	16.	0.009	157.44	0.830s
Np-239	423.88	106.13	268.	18.	0.010	128.97	0.831
EU-152	486.45	121.78	196.	19.	0.011	106.45	0.846
CO-57	487.57	122.06	215.	19.	0.011	111.22	0.846
EU-154	491.73	123.10	246.	-14.	-0.008	159.58	0.847s
PA-234	524.49	131.29	520.	-25.	-0.014	98.97	0.855s
HF-181	531.41	133.02	547.	-27.	-0.015	124.98	0.856s
CE-144	533.46	133.54	592.	-27.	-0.015	40.93	0.857s
HF-181	544.50	136.30	646.	-27.	-0.015	133.44	0.859s
CO-57	545.20	136.47	673.	-27.	-0.015	136.16	0.859s
U-235	574.43	143.79	366.	0.	0.000	1000.00	0.866s
CE-141	581.05	145.44	266.	-23.	-0.013	101.71	0.868s
Ba-140	649.90	162.66	336.	-23.	-0.013	114.67	0.884s
U-235	652.78	163.38	262.	-6.	-0.003	198.29	0.885s
CE-139	662.67	165.85	384.	-25.	-0.014	113.34	0.887s
Cf-251	705.64	176.60	120.	7.	0.004	281.03	0.897s
U-235	742.10	185.72	230.	-19.	-0.011	112.96	0.905s
TH-229	773.25	193.51	147.	-13.	-0.007	172.44	0.913s
U-235	820.52	205.33	118.	4.	0.002	472.02	0.924s
TH-229	842.58	210.85	153.	-12.	-0.007	180.92	0.929s
Cf-251	907.16	227.00	107.	-5.	-0.003	396.54	0.944s
TH-227	943.03	235.97	608.	17.	0.010	204.34	0.952s
PB-212	953.67	238.63	53.	275.	0.153	7.12	0.954D
PB-214	967.13	242.00	76.	69.	0.038	21.47	0.957D
EU-152	977.91	244.69	617.	6.	0.004	553.92	0.960s
TH-227	1024.08	256.24	97.	-16.	-0.009	114.50	0.971s
Cd-113m	1053.91	263.70	160.	-19.	-0.010	98.89	0.978s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
BI-210M	1062.44	265.83	139.	4.	0.002	396.07	0.979s
TL-208	1108.23	277.28	85.	14.	0.008	95.67	0.990s
Hg-203	1115.89	279.20	124.	-13.	-0.007	122.65	0.992s
PB-214	1180.02	295.24	49.	188.	0.105	10.10	1.150s
TL-210	1183.07	296.00	464.	14.	0.008	226.46	1.007s
PB-212	1199.19	300.03	434.	13.	0.007	236.83	1.011
PA-231	1199.35	300.07	446.	14.	0.008	221.26	1.011
PA-233	1199.79	300.18	470.	13.	0.007	233.29	1.011
PA-231	1209.66	302.65	483.	0.	0.000	1000.00	1.013s
BA-133	1210.47	302.85	483.	0.	0.000	1000.00	1.013s
Ba-140	1218.46	304.85	483.	0.	0.000	1000.00	1.015s
BI-210M	1218.64	304.90	483.	0.	0.000	1000.00	1.015s
Ir-192	1232.82	308.44	483.	0.	0.000	1000.00	1.019s
Ir-192	1265.01	316.49	128.	-16.	-0.009	103.08	1.026s
CR-51	1279.38	320.08	124.	15.	0.008	109.73	1.029s
La-140	1314.07	328.76	33.	2.	0.001	491.54	1.037s
Cf-249	1332.79	333.44	44.	13.	0.007	102.93	1.041s
AC-228	1352.81	338.45	28.	68.	0.038	18.68	0.943s
Cs-136	1361.30	340.57	185.	9.	0.005	208.49	1.048s
EU-152	1376.16	344.29	187.	-11.	-0.006	173.35	1.051s
HF-181	1382.33	345.83	183.	11.	0.006	171.25	1.053s
PB-214	1406.74	351.93	58.	279.	0.155	8.11	0.955
BA-133	1423.00	356.00	458.	-19.	-0.011	159.47	1.062s
I-131	1456.93	364.48	59.	-16.	-0.009	144.88	1.070
BA-133	1534.34	383.84	93.	12.	0.007	117.96	1.087s
Cf-249	1550.77	387.95	105.	12.	0.007	124.43	1.091s
SN-113	1565.73	391.69	106.	11.	0.006	140.06	1.094s
SB-125	1710.44	427.88	48.	4.	0.002	334.21	1.127s
AG-108M	1734.69	433.94	34.	9.	0.005	128.43	1.132s
PM-146	1814.44	453.88	44.	2.	0.001	818.46	1.150
SB-125	1852.38	463.37	29.	21.	0.012	41.86	1.158s
Ir-192	1871.15	468.06	50.	8.	0.004	128.67	1.163s
BE-7	1909.29	477.59	70.	-3.	-0.002	398.61	1.171
HF-181	1926.89	482.00	80.	-8.	-0.004	162.02	1.175s
La-140	1946.98	487.02	28.	10.	0.005	113.05	1.180s
RH-106	2046.35	511.86	73.	76.	0.042	19.71	2.452s
Kr-85	2054.81	513.98	144.	7.	0.004	245.37	1.203s
Nd-147	2122.88	531.00	52.	-8.	-0.004	179.99	1.219s
Ba-140	2147.92	537.26	52.	-10.	-0.006	144.68	1.224s
CS-134	2251.82	563.24	44.	-2.	-0.001	653.20	1.247s
CS-134	2276.15	569.32	24.	8.	0.004	93.54	1.252s
PA-234	2276.75	569.47	41.	-6.	-0.004	148.96	1.253s
TL-208	2331.95	583.27	5.	115.	0.064	9.73	0.570s
SB-125	2400.86	600.50	370.	-12.	-0.007	232.93	1.280s
CS-134	2417.70	604.71	311.	3.	0.001	937.75	1.284s
BI-214	2436.00	609.28	22.	232.	0.129	7.78	1.355
RU-103	2440.05	610.30	314.	0.	0.000	1000.00	1.288s
PM-144	2471.11	618.06	40.	4.	0.002	212.76	1.295

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
RH-106	2486.52	621.92	37.	7.	0.004	135.28	1.299s
SB-125	2542.41	635.89	43.	-13.	-0.007	75.00	1.311s
I-131	2546.75	636.97	60.	2.	0.001	601.24	1.312s
AG-110M	2629.90	657.76	40.	-7.	-0.004	139.10	1.330s
CS-137	2645.49	661.66	61.	-9.	-0.005	127.50	1.333s
PM-144	2785.03	696.54	0.	23.	0.013	20.85	1.363s
NB-94	2809.38	702.63	26.	9.	0.005	120.36	1.368s
SB-124	2890.01	722.79	57.	3.	0.002	360.56	1.386s
AG-108M	2890.61	722.94	60.	0.	0.000	1000.00	1.386s
EU-154	2892.30	723.36	60.	0.	0.000	1000.00	1.386s
BI-212	2907.54	727.17	33.	9.	0.005	93.64	1.390s
PM-146	2941.74	735.72	13.	8.	0.005	94.03	1.397s
PM-146	2987.51	747.16	26.	4.	0.002	264.97	1.407s
ZR-95	3025.79	756.73	22.	10.	0.006	97.91	1.415s
AG-110M	3054.64	763.94	88.	-20.	-0.011	70.79	1.421s
NB-95	3062.03	765.79	105.	-12.	-0.007	121.71	1.423
PA-234M	3064.52	766.41	132.	-2.	-0.001	910.93	1.423s
BI-212	3140.56	785.42	13.	9.	0.005	91.44	1.440s
CS-134	3182.36	795.87	49.	3.	0.002	335.00	1.448
TL-210	3197.29	799.60	52.	0.	0.000	1000.00	1.451s
CS-134	3206.69	801.95	80.	-15.	-0.008	87.04	1.454s
CO-58	3241.99	810.78	28.	9.	0.005	91.49	1.461
La-140	3261.97	815.77	58.	-12.	-0.007	90.69	1.465s
Cs-136	3272.90	818.50	82.	-14.	-0.008	92.74	1.467s
MN-54	3338.30	834.85	28.	-3.	-0.002	378.59	1.481s
Co-56	3385.99	846.77	19.	9.	0.005	103.51	1.491s
TL-208	3441.43	860.63	3.	19.	0.010	29.70	0.471s
NB-94	3483.32	871.10	33.	-9.	-0.005	99.26	1.512s
EU-154	3491.85	873.23	52.	-2.	-0.001	683.67	1.514s
PA-234	3521.06	880.53	52.	1.	0.001	767.30	1.520s
PA-234	3531.90	883.24	53.	0.	0.000	1000.00	1.522s
Y-88	3591.11	898.04	33.	-5.	-0.003	263.90	1.534s
AC-228	3644.77	911.45	0.	73.	0.041	11.70	2.084s
AG-110M	3748.95	937.49	47.	-17.	-0.010	87.46	1.567s
PA-234	3783.07	946.02	23.	-4.	-0.002	241.30	1.574s
EU-152	3855.45	964.11	48.	6.	0.003	181.41	1.589s
AC-228	3874.90	968.97	14.	54.	0.030	16.58	1.593
EU-154	3984.36	996.33	20.	8.	0.004	87.73	1.616s
PA-234M	4003.04	1001.00	31.	5.	0.003	149.39	1.620s
EU-154	4018.15	1004.77	16.	0.	0.000	1000.00	1.623s
Co-56	4150.45	1037.84	20.	-7.	-0.004	145.45	1.650s
Cs-136	4191.39	1048.07	7.	6.	0.003	75.12	1.658s
RH-106	4200.55	1050.36	13.	6.	0.003	96.23	1.661s
BI-207	4253.77	1063.66	6.	12.	0.007	49.60	1.671s
Ga-68	4308.74	1077.40	30.	-9.	-0.005	137.89	1.683s
FE-59	4396.18	1099.25	20.	-4.	-0.002	143.42	1.700s
EU-152	4447.49	1112.07	97.	-4.	-0.002	351.78	1.711s
ZN-65	4461.38	1115.55	93.	0.	0.000	1000.00	1.713s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
BI-214	4479.79	1120.15	8.	61.	0.034	15.81	1.439
Ta-182	4484.41	1121.30	105.	-11.	-0.006	139.05	1.718
CO-60	4692.24	1173.24	30.	-7.	-0.004	130.60	1.760s
Ta-182	4755.52	1189.05	10.	9.	0.005	86.63	1.772
Ta-182	4885.02	1221.41	37.	-12.	-0.007	116.15	1.798
Co-56	4952.53	1238.28	17.	19.	0.011	53.64	1.812s
NA-22	5097.60	1274.53	11.	1.	0.001	357.07	1.840s
EU-154	5097.64	1274.54	12.	0.	0.000	1000.00	1.840s
FE-59	5165.90	1291.60	16.	-2.	-0.001	434.48	1.854s
TL-210	5251.56	1313.00	11.	7.	0.004	107.76	1.870s
CO-60	5329.61	1332.50	22.	-6.	-0.003	185.56	1.886s
AG-110M	5536.92	1384.30	5.	7.	0.004	89.43	1.926s
EU-152	5631.79	1408.00	5.	7.	0.004	86.62	1.944s
K-40	5843.32	1460.85	7.	214.	0.119	7.08	1.809
La-140	6385.15	1596.21	23.	-9.	-0.005	133.23	2.087s
SB-124	6764.55	1690.98	6.	-2.	-0.001	304.14	2.157s
BI-214	7058.84	1764.49	14.	40.	0.022	20.39	2.211
Y-88	7345.39	1836.06	0.	5.	0.003	44.72	2.262s

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
BE-7	C	-8.6493E-01				5.31E+01	
			477.60	-8.649E-01	?(	1.202E+01 3.99E+02 1.05E+01	G
NA-22	C	8.4429E-02				9.50E+02	
			1274.53	8.443E-02	?(	1.135E+00 3.57E+02 9.99E+01	G
K-40	N	1.4095E+02				4.66E+11	
			1460.83	1.409E+02	(P	1.009E+01 7.08E+00 1.07E+01	G
Sc-46	F	8.0087E-03				8.38E+01	
			889.28	8.009E-03	%(	1.773E+00 6.23E+03 1.00E+02	G
			1120.55	-2.865E-02	%	2.724E+00 2.72E+03 1.00E+02	G
CR-51	F	3.3947E+00				2.77E+01	
			320.08	3.395E+00	&(P	1.254E+01 1.10E+02 9.94E+00	G
MN-54	C	-1.3745E-01				3.12E+02	
			834.85	-1.375E-01	?(	1.254E+00 3.79E+02 1.00E+02	G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
FE-59	F	-4.3377E-01					4.45E+01	
			1099.25	-4.338E-01	?(P	2.371E+00	1.43E+02	5.65E+01 G
			1291.60	-3.485E-01	+ P	3.190E+00	4.34E+02	4.32E+01 G
Co-56	C	9.6836E-01					7.73E+01	
			846.77	4.324E-01	?(	1.058E+00	1.04E+02	9.99E+01 G
			1238.28	1.779E+00	?(P	2.054E+00	5.36E+01	6.61E+01 G
			1037.84	-2.677E+00	+	9.005E+00	1.45E+02	1.41E+01 G
			1771.35	-3.527E-01	%	1.966E+01	1.57E+03	1.55E+01 A
CO-57	C	2.8926E-01					2.72E+02	
			122.06	2.893E-01	?(	1.078E+00	1.11E+02	8.56E+01 G
			136.47	-3.400E+00	+	1.544E+01	1.36E+02	1.07E+01 G
CO-58	C	3.9640E-01					7.09E+01	
			810.78	3.964E-01	?(	1.233E+00	9.15E+01	9.95E+01 G
CO-60	F	-3.6212E-01					1.93E+03	
			1332.50	-3.621E-01	?(P	1.594E+00	1.86E+02	1.00E+02 G
			1173.24	-4.425E-01	+ P	1.689E+00	1.31E+02	9.99E+01 G
NB-94	I	3.7014E-01					7.41E+06	
			702.63	3.701E-01	?(	1.089E+00	1.20E+02	9.79E+01 G
			871.10	-4.104E-01	+	1.389E+00	9.93E+01	9.99E+01 G
ZR-95	I	8.0132E-01					6.40E+01	
			756.73	8.013E-01	?(P	1.910E+00	9.79E+01	5.45E+01 G
			724.20	-5.226E-02	% P	3.635E+00	3.22E+03	4.42E+01 G
NB-95	I	-5.2642E-01					6.40E+01	
			765.79	-5.264E-01	(	2.169E+00	1.22E+02	9.98E+01 G
RU-103	I	3.4347E-02					3.93E+01	
			497.05	3.435E-02	%(	9.985E-01	1.11E+03	9.09E+01 G
			610.30	0.000E+00	-	5.381E+01	1.00E+03	5.75E+00 GA
RH-106	I	4.8747E+00					3.74E+02	
			621.92	2.470E+00	?(	1.155E+01	1.35E+02	9.93E+00 G
			1050.36	2.018E+01	&(	6.718E+01	9.62E+01	1.56E+00 G
			511.86	1.207E+01	?	6.796E+00	1.97E+01	2.00E+01 GA
AG-108M	C	2.7435E-01					1.53E+05	
			433.94	2.744E-01	?(P	9.376E-01	1.28E+02	9.05E+01 G
			722.94	0.000E+00	&	1.757E+00	1.00E+03	9.08E+01 G
			614.28	-1.352E-02	%	3.509E+00	7.63E+03	8.98E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
AG-110M	F	4.4531E-01					2.50E+02	
			884.68	-1.532E-02	%(P	2.417E+00	2.43E+03	7.27E+01 G
			657.76	-2.701E-01	+	1.299E+00	1.39E+02	9.46E+01 G
			937.49	-2.508E+00	+	5.027E+00	8.75E+01	3.44E+01 G
			1384.30	1.824E+00	?(P	3.780E+00	8.94E+01	2.43E+01 G
			763.94	-3.802E+00	+	8.930E+00	7.08E+01	2.23E+01 G
SN-113	F	4.3742E-01					1.15E+02	
			391.69	4.374E-01	&(P	2.080E+00	1.40E+02	6.40E+01 G
SB-124	F	1.0555E-01					6.02E+01	
			602.73	-8.380E-03	%(	3.326E+00	1.17E+04	9.83E+01 G
			1690.98	-3.304E-01	+	2.333E+00	3.04E+02	4.78E+01 G
			722.79	1.141E+00	?(	1.441E+01	3.61E+02	1.08E+01 G
SB-125	I	1.8567E+00					1.01E+03	
			427.88	3.712E-01	&(P	3.315E+00	3.34E+02	2.96E+01 G
			600.50	-2.363E+00	+	1.853E+01	2.33E+02	1.79E+01 G
			635.89	-4.408E+00	+	1.104E+01	7.50E+01	1.13E+01 G
			463.37	6.057E+00	&(	7.921E+00	4.19E+01	1.05E+01 G
I-131	I	-3.6316E-01					8.02E+00	
			364.48	-4.790E-01	?(P	1.182E+00	1.45E+02	8.17E+01 G
			284.30	2.372E-01	% P	1.529E+01	2.43E+03	6.14E+00 G
			636.97	9.573E-01	&(	2.024E+01	6.01E+02	7.17E+00 G
Gd-153	F	3.5821E-01					2.42E+02	
			97.50	-2.198E-01	&(	3.312E+00	4.43E+02	3.00E+01 G
			103.20	1.154E+00	(	4.608E+00	1.19E+02	2.18E+01 G
Ga-68	C	-1.7779E+01					4.71E-02	
			1077.40	-1.778E+01	?(	5.578E+01	1.38E+02	3.30E+00 G
Tc-99m	I	7.7862E-03					2.51E-01	
			140.51	7.786E-03	%(	1.430E+00	5.41E+03	8.93E+01 G
BA-133	F	-7.5949E-01					3.85E+03	
			356.00	-7.595E-01	?(	4.057E+00	1.59E+02	6.20E+01 G
			302.85	0.000E+00	+	1.258E+01	1.00E+03	1.83E+01 G
			383.84	3.465E+00	?	1.384E+01	1.18E+02	8.94E+00 GA
			80.99	8.849E-01	? P	2.956E+00	1.18E+02	3.41E+01 GA
CS-134	I	2.5408E-01					7.54E+02	
			795.87	1.550E-01	?(	1.825E+00	3.35E+02	8.55E+01 G
			604.71	9.843E-02	?(	3.135E+00	9.38E+02	9.76E+01 G
			569.32	1.793E+00	?(	5.724E+00	9.35E+01	1.54E+01 G
			801.95	-7.754E+00	+	2.264E+01	8.70E+01	8.69E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			563.24	-8.192E-01	+	1.377E+01	6.53E+02	8.35E+00 G
CS-137	I	-4.0671E-01					1.10E+04	
			661.66	-4.067E-01	?(	1.772E+00	1.27E+02	8.52E+01 G
CE-139	F	-4.5177E-01					1.38E+02	
			165.85	-4.518E-01	?(	1.710E+00	1.13E+02	7.99E+01 G
Ba-140	I	-1.3547E+00					1.28E+01	
			537.26	-1.355E+00	?(	4.919E+00	1.45E+02	2.44E+01 G
			162.66	-5.385E+00	+	2.064E+01	1.15E+02	6.22E+00 G
			304.85	0.000E+00	&	5.399E+01	1.00E+03	4.29E+00 G
La-140	I	-1.9053E-01					1.28E+01	
			1596.21	-6.854E-01	?(	1.969E+00	1.33E+02	9.54E+01 G
			487.02	6.493E-01	&(P	1.862E+00	1.13E+02	4.55E+01 G
			328.76	2.526E-01	?(	3.374E+00	4.92E+02	2.03E+01 G
			815.77	-2.413E+00	&	7.375E+00	9.07E+01	2.33E+01 G
CE-141	I	-6.5790E-01					3.25E+01	
			145.44	-6.579E-01	?(	2.235E+00	1.02E+02	4.82E+01 G
CE-144	I	-3.2437E+00					2.85E+02	
			133.54	-3.244E+00	&(P	1.387E+01	4.09E+01	1.11E+01 G
PM-144	C	9.2937E-01					3.63E+02	
			696.54	9.294E-01	?(	2.978E-01	2.09E+01	9.90E+01 G
			618.06	1.601E-01	-	1.194E+00	2.13E+02	9.91E+01 G
EU-152	F	1.2802E+00					4.94E+03	
			121.78	8.656E-01	?(	3.088E+00	1.06E+02	2.86E+01 G
			344.29	-1.026E+00	+	6.022E+00	1.73E+02	2.65E+01 G
			1112.07	-1.670E+00	+	2.029E+01	3.52E+02	1.36E+01 G
			778.92	-3.360E-01	%	8.895E+00	1.05E+03	1.29E+01 G
			964.11	1.933E+00	?(	1.218E+01	1.81E+02	1.46E+01 G
			244.69	1.586E+00	?(	2.955E+01	5.54E+02	7.58E+00 G
			1408.00	2.202E+00	?	4.386E+00	8.66E+01	2.10E+01 GA
EU-154	I	4.5298E-01					3.14E+03	
			123.10	-4.497E-01	&(	2.418E+00	1.60E+02	4.08E+01 G
			1274.54	0.000E+00	+	3.390E+00	1.00E+03	3.52E+01 G
			723.36	0.000E+00	&	7.896E+00	1.00E+03	2.02E+01 G
			873.23	-5.793E-01	+	1.400E+01	6.84E+02	1.23E+01 G
			1004.77	0.000E+00	+	6.234E+00	1.00E+03	1.80E+01 G
			996.33	3.927E+00	?(	1.172E+01	8.77E+01	1.06E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
EU-155	I	9.5672E-01					1.81E+03	
			105.31	9.567E-01	(P	5.064E+00	1.57E+02	2.12E+01 G
			86.54	-1.184E+00	+	6.152E+00	1.56E+02	3.07E+01 G
HF-181	F	2.9930E-02					4.24E+01	
			482.00	-3.034E-01	(	1.684E+00	1.62E+02	8.05E+01 G
			133.02	-8.187E-01	+	3.414E+00	1.25E+02	4.33E+01 G
			345.83	1.811E+00	&(	1.050E+01	1.71E+02	1.51E+01 G
			136.30	-6.205E+00	+	2.762E+01	1.33E+02	5.85E+00 G
Ta-182	F	-1.7337E-01					1.14E+02	
			1121.30	-1.752E+00	&(	8.277E+00	1.39E+02	3.49E+01 G
			1221.41	-2.797E+00	+	7.072E+00	1.16E+02	2.70E+01 G
			1189.05	3.228E+00	(	6.459E+00	8.66E+01	1.62E+01 G
Hg-203	F	-3.3540E-01					4.66E+01	
			279.20	-3.354E-01	?(	1.390E+00	1.23E+02	8.15E+01 G
TL-208	N	4.7724E+00					6.98E+02	
			583.02	4.783E+00	(P	5.357E-01	9.73E+00	8.45E+01 G
			277.28	4.636E+00	?(	1.493E+01	9.57E+01	6.31E+00 G
			860.56	7.107E+00	+ P	4.151E+00	2.97E+01	1.24E+01 G
PM-146	C	4.6573E-01					2.02E+03	
			453.88	7.190E-02	?(P	1.518E+00	8.18E+02	6.50E+01 G
			747.16	4.959E-01	?(	3.282E+00	2.65E+02	3.40E+01 G
			735.72	1.558E+00	(	3.613E+00	9.40E+01	2.25E+01 G
Y-88	F	4.2472E-01					1.07E+02	
			1836.06	4.247E-01	?(	6.260E-01	4.47E+01	9.92E+01 G
			898.04	-2.411E-01	-	1.516E+00	2.64E+02	9.37E+01 G
Cd-113m		-6.1763E+03					5.33E+03	
			263.70	-6.176E+03	?(	2.046E+04	9.89E+01	6.00E-03 K
Cd-109	F	2.4995E+00					4.53E+02	
							Derived Ave Activity	
			88.04	2.499E+00	}(	4.597E+01	5.48E+02	3.79E+00 G
Cf-251	T	6.2375E-01					3.28E+05	
			176.60	6.237E-01	&(	4.790E+00	2.81E+02	1.70E+01 G
			227.00	-1.330E+00	+	1.449E+01	3.97E+02	6.30E+00 GA
Cf-249	T	7.4516E-01					1.28E+05	
			387.95	4.745E-01	?(	2.000E+00	1.24E+02	6.60E+01 G
			333.44	1.897E+00	&(	5.086E+00	1.03E+02	1.55E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Sn-126		-4.2994E+00					3.65E+07	
			87.57	9.648E-01	}	4.573E+00	7.35E+01	3.75E+01 GA
			64.28	-4.299E+00	&(	1.599E+01	1.11E+02	9.70E+00 G
			86.94	-4.012E+00	}	2.022E+01	1.51E+02	9.04E+00 GA
PB-210	N	2.6754E+01					8.14E+03	
			46.54	2.675E+01	(P	3.069E+01	4.15E+01	4.25E+00 G
PB-212	N	1.1791E+01					6.98E+02	
			238.63	1.179E+01	(P	1.577E+00	7.12E+00	4.33E+01 G
			300.03	8.322E+00	& P	6.627E+01	2.37E+02	3.28E+00 GA
PB-214	N	1.9095E+01					5.84E+05	
			351.93	1.810E+01	(P	2.472E+00	8.11E+00	3.76E+01 G
			295.09	2.103E+01	@(P	3.924E+00	1.01E+01	1.93E+01 G
			242.00	1.748E+01		1.093E+01	2.15E+01	7.43E+00 GA
BI-207	C	9.1696E-01					1.18E+04	
			1063.66	9.170E-01	?(P	1.015E+00	4.96E+01	7.45E+01 G
			569.70	2.352E-02	%	1.087E+00	1.28E+03	9.77E+01 G
BI-212	N	5.0566E+00					6.98E+02	
			727.17	5.057E+00	&(P	1.607E+01	9.36E+01	7.55E+00 G
			785.42	2.963E+01	&	6.670E+01	9.14E+01	1.28E+00 GA
U-235	N	4.3168E-01					2.57E+11	
			143.79	0.000E+00	*(	1.141E+01	1.00E+03	1.10E+01 G
			205.33	1.376E+00	(P	1.785E+01	4.72E+02	5.01E+00 G
			163.38	-1.641E+00	+ P	2.246E+01	1.98E+02	5.08E+00 G
			185.72	-5.629E-01	+	2.131E+00	1.13E+02	5.40E+01 GA
BI-214	N	1.9027E+01					5.84E+05	
			609.31	1.822E+01	(P	1.942E+00	7.78E+00	4.61E+01 G
			1120.29	2.321E+01	+ P	5.974E+00	1.58E+01	1.51E+01 G
			1764.49	2.145E+01	?(P	1.053E+01	2.04E+01	1.54E+01 G
BI-210M	T	1.6995E-01					1.10E+09	
			265.83	1.700E-01	&(P	2.309E+00	3.96E+02	5.00E+01 G
			304.90	0.000E+00	-	8.272E+00	1.00E+03	2.80E+01 G
AC-228	N	1.3643E+01					2.10E+03	
			911.07	1.232E+01	(	1.244E+00	1.17E+01	2.90E+01 G
			968.97	1.600E+01	?(	5.829E+00	1.66E+01	1.75E+01 G
			338.32	1.342E+01	(	5.402E+00	1.87E+01	1.20E+01 G
			93.35	6.233E+00	-	3.032E+01	1.46E+02	5.56E+00 XA

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
TH-227	N	3.7758E+00					7.95E+03	
			256.24	-4.369E+00	?(	1.353E+01	1.14E+02	7.00E+00 G
			235.97	2.578E+00	+	1.764E+01	2.04E+02	1.23E+01 G
			50.14	1.090E+01	*(	1.467E+01	4.88E+01	8.00E+00 G
TH-229	N	-4.6382E+00					2.68E+06	
			193.51	-4.638E+00	?(	2.166E+01	1.72E+02	4.40E+00 G
			210.85	-7.045E+00	+	3.451E+01	1.81E+02	2.99E+00 G
TH-234	N	1.6841E+01					1.63E+12	
			92.59	1.098E+01	(P	1.613E+01	4.55E+01	5.58E+00 G
			63.29	2.543E+01	(P	2.320E+01	2.96E+01	3.81E+00 G
PA-231	N	5.5517E+00					1.20E+07	
			302.65	0.000E+00	?(	8.001E+01	1.00E+03	2.88E+00 G
			300.07	1.205E+01	(	8.960E+01	2.21E+02	2.46E+00 G
PA-233	C	6.6540E-01					7.82E+08	
			312.01	-2.103E-02	%(P	6.541E+00	8.78E+03	3.60E+01 G
			300.18	4.651E+00	(	3.646E+01	2.33E+02	6.20E+00 G
PA-234	N	-1.8218E+00					1.63E+12	
			131.29	-1.822E+00	&(P	7.983E+00	9.90E+01	1.80E+01 G
			946.02	-1.628E+00	+	9.476E+00	2.41E+02	1.34E+01 G
			569.47	-2.663E+00	+	1.374E+01	1.49E+02	8.20E+00 G
			883.24	0.000E+00	+	1.824E+01	1.00E+03	9.60E+00 G
			880.53	1.060E+00	+	2.878E+01	7.67E+02	6.00E+00 GA
PA-234M	N	3.4485E+01					1.63E+12	
			1001.00	3.449E+01	?(P	1.793E+02	1.49E+02	8.37E-01 G
			766.41	-2.600E+01	+ P	8.213E+02	9.11E+02	2.94E-01 G
AM-241	T	1.0467E-01					1.58E+05	
			59.54	1.047E-01	%(	3.625E+00	1.20E+03	3.59E+01 G
Ir-192	F	-8.6672E-02					7.40E+01	
			316.49	-4.158E-01	&(	1.440E+00	1.03E+02	8.70E+01 G
			468.06	4.669E-01	?(	2.060E+00	1.29E+02	5.18E+01 G
			308.44	0.000E+00	+	7.355E+00	1.00E+03	3.18E+01 G
Cs-136	F	-6.5137E-01					1.30E+01	
			818.50	-6.514E-01	?(	2.031E+00	9.27E+01	1.00E+02 G
			1048.07	4.006E-01	+	1.013E+00	7.51E+01	8.00E+01 G
			340.57	4.740E-01	&	3.354E+00	2.08E+02	4.69E+01 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

Np-239   T   1.0441E+00                                      2.36E+00
                          103.70 1.048E+00 ?   4.333E+00 1.23E+02 2.40E+01 X
                          106.13 1.044E+00  (  4.518E+00 1.29E+02 2.27E+01 G
                           99.50-1.942E+00 +   7.120E+00 1.10E+02 1.50E+01 X

Nd-147      -2.0160E+00                                     1.11E+01
                          531.00-2.016E+00 ?(  9.151E+00 1.80E+02 1.30E+01 G
                           91.10 0.000E+00 +   6.097E+00 1.00E+03 2.83E+01 G

TL-210   N   1.6441E-01                                      5.84E+05
                          799.60 0.000E+00 ?(  1.627E+00 1.00E+03 9.90E+01 G
                          296.00 3.704E-01 ?(  2.818E+00 2.26E+02 7.90E+01 G
                         1313.00 2.261E+00 ?   5.529E+00 1.08E+02 2.10E+01 GA

Kr-85    I   5.2076E+01                                      3.92E+03
                          513.98 5.208E+01 ?(  4.362E+02 2.45E+02 4.30E-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

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********** 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	
TH-227	50.14	102.	37.	0.021	48.80	1.090E+01	
BA-133	80.99	211.	21.	0.012	118.00	8.849E-01	P
EU-155	86.54	829.	-26.	-0.015	155.82	-1.184E+00	
Gd-153	97.50	243.	-5.	-0.003	443.17	-2.198E-01	
Np-239	99.50	285.	-22.	-0.012	109.62	-1.942E+00	
Gd-153	103.20	255.	19.	0.011	119.16	1.154E+00	
Np-239	103.70	274.	19.	0.011	123.36	1.048E+00	
EU-155	105.31	294.	16.	0.009	157.44	9.567E-01	P
Np-239	106.13	268.	18.	0.010	128.97	1.044E+00	
EU-152	121.78	196.	19.	0.011	106.45	8.656E-01	
CO-57	122.06	215.	19.	0.011	111.22	2.893E-01	
EU-154	123.10	246.	-14.	-0.008	159.58	-4.497E-01	
PA-234	131.29	520.	-25.	-0.014	98.97	-1.822E+00	P
HF-181	133.02	547.	-27.	-0.015	124.98	-8.187E-01	
CE-144	133.54	592.	-27.	-0.015	40.93	-3.244E+00	P
HF-181	136.30	646.	-27.	-0.015	133.44	-6.205E+00	
CO-57	136.47	673.	-27.	-0.015	136.16	-3.400E+00	
CE-141	145.44	266.	-23.	-0.013	101.71	-6.579E-01	
Ba-140	162.66	336.	-23.	-0.013	114.67	-5.385E+00	
U-235	163.38	262.	-6.	-0.003	198.29	-1.641E+00	P
CE-139	165.85	384.	-25.	-0.014	113.34	-4.518E-01	
Cf-251	176.60	120.	7.	0.004	281.03	6.237E-01	
U-235	185.72	230.	-19.	-0.011	112.96	-5.629E-01	
TH-229	193.51	147.	-13.	-0.007	172.44	-4.638E+00	
U-235	205.33	118.	4.	0.002	472.02	1.376E+00	P
TH-229	210.85	153.	-12.	-0.007	180.92	-7.045E+00	
Cf-251	227.00	107.	-5.	-0.003	396.54	-1.330E+00	
TH-227	235.97	608.	17.	0.010	204.34	2.578E+00	
EU-152	244.69	617.	6.	0.004	553.92	1.586E+00	
TH-227	256.24	97.	-16.	-0.009	114.50	-4.369E+00	
Cd-113m	263.70	160.	-19.	-0.010	98.89	-6.176E+03	
BI-210M	265.83	139.	4.	0.002	396.07	1.700E-01	P
Hg-203	279.20	124.	-13.	-0.007	122.65	-3.354E-01	
TL-210	296.00	464.	14.	0.008	226.46	3.704E-01	
PA-231	300.07	446.	14.	0.008	221.26	1.205E+01	
PA-233	300.18	470.	13.	0.007	233.29	4.651E+00	
Ir-192	316.49	128.	-16.	-0.009	103.08	-4.158E-01	
CR-51	320.08	124.	15.	0.008	109.73	3.395E+00	P
La-140	328.76	33.	2.	0.001	491.54	2.526E-01	
Cf-249	333.44	44.	13.	0.007	102.93	1.897E+00	
Cs-136	340.57	185.	9.	0.005	208.49	4.740E-01	
EU-152	344.29	187.	-11.	-0.006	173.35	-1.026E+00	
HF-181	345.83	183.	11.	0.006	171.25	1.811E+00	
BA-133	356.00	458.	-19.	-0.011	159.47	-7.595E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
I-131	364.48	59.	-16.	-0.009	144.88	-4.790E-01	P
BA-133	383.84	93.	12.	0.007	117.96	3.465E+00	
Cf-249	387.95	105.	12.	0.007	124.43	4.745E-01	
SN-113	391.69	106.	11.	0.006	140.06	4.374E-01	P
SB-125	427.88	48.	4.	0.002	334.21	3.712E-01	P
AG-108M	433.94	34.	9.	0.005	128.43	2.744E-01	P
PM-146	453.88	44.	2.	0.001	818.46	7.190E-02	P
SB-125	463.37	29.	21.	0.012	41.86	6.057E+00	
Ir-192	468.06	50.	8.	0.004	128.67	4.669E-01	
BE-7	477.59	70.	-3.	-0.002	398.61	-8.649E-01	
HF-181	482.00	80.	-8.	-0.004	162.02	-3.034E-01	
La-140	487.02	28.	10.	0.005	113.05	6.493E-01	P
RH-106	511.86	73.	76.	0.042	19.71	1.207E+01	
Kr-85	513.98	144.	7.	0.004	245.37	5.208E+01	
Nd-147	531.00	52.	-8.	-0.004	179.99	-2.016E+00	
Ba-140	537.26	52.	-10.	-0.006	144.68	-1.355E+00	
CS-134	563.24	44.	-2.	-0.001	653.20	-8.192E-01	
CS-134	569.32	24.	8.	0.004	93.54	1.793E+00	
PA-234	569.47	41.	-6.	-0.004	148.96	-2.663E+00	
SB-125	600.50	370.	-12.	-0.007	232.93	-2.363E+00	
CS-134	604.71	311.	3.	0.001	937.75	9.843E-02	
RH-106	621.92	37.	7.	0.004	135.28	2.470E+00	
SB-125	635.89	43.	-13.	-0.007	75.00	-4.408E+00	
I-131	636.97	60.	2.	0.001	601.24	9.573E-01	
AG-110M	657.76	40.	-7.	-0.004	139.10	-2.701E-01	
CS-137	661.66	61.	-9.	-0.005	127.50	-4.067E-01	
NB-94	702.63	26.	9.	0.005	120.36	3.701E-01	
SB-124	722.79	57.	3.	0.002	360.56	1.141E+00	
PM-146	735.72	13.	8.	0.005	94.03	1.558E+00	
PM-146	747.16	26.	4.	0.002	264.97	4.959E-01	
ZR-95	756.73	22.	10.	0.006	97.91	8.013E-01	P
AG-110M	763.94	88.	-20.	-0.011	70.79	-3.802E+00	
NB-95	765.79	105.	-12.	-0.007	121.71	-5.264E-01	
PA-234M	766.41	132.	-2.	-0.001	910.93	-2.600E+01	P
CS-134	795.87	49.	3.	0.002	335.00	1.550E-01	
CS-134	801.95	80.	-15.	-0.008	87.04	-7.754E+00	
CO-58	810.78	28.	9.	0.005	91.49	3.964E-01	
La-140	815.77	58.	-12.	-0.007	90.69	-2.413E+00	
Cs-136	818.50	82.	-14.	-0.008	92.74	-6.514E-01	
MN-54	834.85	28.	-3.	-0.002	378.59	-1.375E-01	
Co-56	846.77	19.	9.	0.005	103.51	4.324E-01	
NB-94	871.10	33.	-9.	-0.005	99.26	-4.104E-01	
EU-154	873.23	52.	-2.	-0.001	683.67	-5.793E-01	
PA-234	880.53	52.	1.	0.001	767.30	1.060E+00	
Y-88	898.04	33.	-5.	-0.003	263.90	-2.411E-01	
AG-110M	937.49	47.	-17.	-0.010	87.46	-2.508E+00	
PA-234	946.02	23.	-4.	-0.002	241.30	-1.628E+00	
EU-152	964.11	48.	6.	0.003	181.41	1.933E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
EU-154	996.33	20.	8.	0.004	87.73	3.927E+00		
PA-234M	1001.00	31.	5.	0.003	149.39	3.449E+01		P
Co-56	1037.84	20.	-7.	-0.004	145.45	-2.677E+00		
Cs-136	1048.07	7.	6.	0.003	75.12	4.006E-01		
RH-106	1050.36	13.	6.	0.003	96.23	2.018E+01		
BI-207	1063.66	6.	12.	0.007	49.60	9.170E-01		P
Ga-68	1077.40	30.	-9.	-0.005	137.89	-1.778E+01		
FE-59	1099.25	20.	-4.	-0.002	143.42	-4.338E-01		P
EU-152	1112.07	97.	-4.	-0.002	351.78	-1.670E+00		
Ta-182	1121.30	105.	-11.	-0.006	139.05	-1.752E+00		
CO-60	1173.24	30.	-7.	-0.004	130.60	-4.425E-01		P
Ta-182	1189.05	10.	9.	0.005	86.63	3.228E+00		
Ta-182	1221.41	37.	-12.	-0.007	116.15	-2.797E+00		
Co-56	1238.28	17.	19.	0.011	53.64	1.779E+00		P
NA-22	1274.53	11.	1.	0.001	357.07	8.443E-02		
FE-59	1291.60	16.	-2.	-0.001	434.48	-3.485E-01		P
TL-210	1313.00	11.	7.	0.004	107.76	2.261E+00		
CO-60	1332.50	22.	-6.	-0.003	185.56	-3.621E-01		P
AG-110M	1384.30	5.	7.	0.004	89.43	1.824E+00		P
EU-152	1408.00	5.	7.	0.004	86.62	2.202E+00		
La-140	1596.21	23.	-9.	-0.005	133.23	-6.854E-01		
SB-124	1690.98	6.	-2.	-0.001	304.14	-3.304E-01		
Y-88	1836.06	0.	5.	0.003	44.72	4.247E-01		

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
BE-7	#A	-8.6492E-01	-8.6493E-01	3.986E+02%	1.20E+01
NA-22	#A	8.4429E-02	8.4429E-02	3.571E+02%	1.14E+00
K-40		1.4095E+02	1.4095E+02	7.084E+00%	1.01E+01
Sc-46	#A	8.0086E-03	8.0087E-03	6.231E+03%	1.77E+00
CR-51	#A	3.3946E+00	3.3947E+00	1.097E+02%	1.25E+01
MN-54	#A	-1.3745E-01	-1.3745E-01	3.786E+02%	1.25E+00
FE-59	#A	-4.3377E-01	-4.3377E-01	1.434E+02%	2.37E+00
Co-56	#A	9.6835E-01	9.6836E-01	5.364E+01%	1.06E+00
CO-57	#A	2.8926E-01	2.8926E-01	1.112E+02%	1.08E+00
CO-58	#A	3.9640E-01	3.9640E-01	9.149E+01%	1.23E+00
CO-60	#A	-3.6212E-01	-3.6212E-01	1.856E+02%	1.59E+00
ZN-65	#A	0.0000E+00	0.0000E+00	1.000E+03%	5.38E+00
NB-94	#A	3.7014E-01	3.7014E-01	1.204E+02%	1.09E+00
ZR-95	#A	8.0131E-01	8.0132E-01	9.791E+01%	1.91E+00
NB-95	#A	-5.2641E-01	-5.2642E-01	1.217E+02%	2.17E+00
RU-103	#A	3.4346E-02	3.4347E-02	1.112E+03%	9.98E-01
RH-106	#A	4.8747E+00	4.8747E+00	8.301E+01%	1.16E+01

AG-108M#A	2.7435E-01	2.7435E-01	1.284E+02%	9.38E-01
AG-110M#A	4.4531E-01	4.4531E-01	8.943E+01%	2.42E+00
SN-113 #A	4.3742E-01	4.3742E-01	1.401E+02%	2.08E+00
SB-124 #A	1.0555E-01	1.0555E-01	3.606E+02%	3.33E+00
SB-125 #A	1.8567E+00	1.8567E+00	4.186E+01%	3.32E+00
I-131 #A	-3.6314E-01	-3.6316E-01	1.449E+02%	1.18E+00
Gd-153 #A	3.5821E-01	3.5821E-01	1.192E+02%	3.31E+00
Ga-68 #A	-1.7617E+01	-1.7779E+01	1.379E+02%	5.58E+01
Tc-99m #A	7.7728E-03	7.7862E-03	5.409E+03%	1.43E+00
BA-133 #A	-7.5949E-01	-7.5949E-01	1.595E+02%	4.06E+00
CS-134 #A	2.5408E-01	2.5408E-01	9.354E+01%	1.83E+00
CS-137 #A	-4.0671E-01	-4.0671E-01	1.275E+02%	1.77E+00
CE-139 #A	-4.5177E-01	-4.5177E-01	1.133E+02%	1.71E+00
Ba-140 #A	-1.3546E+00	-1.3547E+00	1.447E+02%	4.92E+00
La-140 #A	-1.9052E-01	-1.9053E-01	1.130E+02%	1.97E+00
CE-141 #A	-6.5789E-01	-6.5790E-01	1.017E+02%	2.24E+00
CE-144 #A	-3.2437E+00	-3.2437E+00	4.093E+01%	1.39E+01
PM-144	9.2937E-01	9.2937E-01	2.085E+01%	2.98E-01
EU-152 #A	1.2802E+00	1.2802E+00	1.065E+02%	3.09E+00
EU-154 #A	4.5298E-01	4.5298E-01	8.773E+01%	2.42E+00
EU-155 #A	9.5672E-01	9.5672E-01	1.574E+02%	5.06E+00
HF-181 #A	2.9929E-02	2.9930E-02	1.179E+02%	1.68E+00
Ta-182 #A	-1.7337E-01	-1.7337E-01	8.192E+01%	8.28E+00
Hg-203 #A	-3.3539E-01	-3.3540E-01	1.227E+02%	1.39E+00
TL-208	4.7724E+00	4.7724E+00	9.730E+00%	5.36E-01
PM-146 #A	4.6573E-01	4.6573E-01	9.403E+01%	1.52E+00
Y-88 #A	4.2472E-01	4.2472E-01	4.472E+01%	6.26E-01
Cd-113m#A	-6.1763E+03	-6.1763E+03	9.889E+01%	2.05E+04
Cd-109 #A	2.4995E+00	2.4995E+00	5.476E+02%	4.60E+01
Cf-251 #A	6.2375E-01	6.2375E-01	2.810E+02%	4.79E+00
Cf-249 #A	7.4516E-01	7.4516E-01	8.074E+01%	2.00E+00
Sn-126 #A	-4.2994E+00	-4.2994E+00	1.113E+02%	1.60E+01
PB-210 A	2.6754E+01	2.6754E+01	4.154E+01%	3.07E+01
PB-212	1.1791E+01	1.1791E+01	7.125E+00%	1.58E+00
PB-214	1.9095E+01	1.9095E+01	6.476E+00%	2.47E+00
BI-207 #A	9.1696E-01	9.1696E-01	4.960E+01%	1.01E+00
BI-212 A	5.0566E+00	5.0566E+00	9.364E+01%	1.61E+01
U-235 #A	4.3168E-01	4.3168E-01	4.720E+02%	1.14E+01
BI-214	1.9027E+01	1.9027E+01	7.778E+00%	1.94E+00
BI-210M#A	1.6995E-01	1.6995E-01	3.961E+02%	2.31E+00
AC-228	1.3643E+01	1.3643E+01	9.193E+00%	1.24E+00
TH-227 #A	3.7758E+00	3.7758E+00	4.880E+01%	1.35E+01
TH-229 #A	-4.6382E+00	-4.6382E+00	1.724E+02%	2.17E+01
TH-234	1.6841E+01	1.6841E+01	2.715E+01%	1.61E+01
PA-231 #A	5.5517E+00	5.5517E+00	2.213E+02%	8.00E+01
PA-233 #A	6.6540E-01	6.6540E-01	2.333E+02%	6.54E+00
PA-234 #A	-1.8218E+00	-1.8218E+00	9.897E+01%	7.98E+00
PA-234M#A	3.4485E+01	3.4485E+01	1.494E+02%	1.79E+02
AM-241 #A	1.0467E-01	1.0467E-01	1.204E+03%	3.63E+00

Np-237	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.50E+01
Ir-192	#A	-8.6672E-02	-8.6672E-02	8.243E+01%	1.44E+00
Cs-136	#A	-6.5135E-01	-6.5137E-01	9.274E+01%	2.03E+00
Np-239	#A	1.0440E+00	1.0441E+00	1.290E+02%	4.52E+00
Nd-147	#A	-2.0159E+00	-2.0160E+00	1.800E+02%	9.15E+00
TL-210	#A	1.6441E-01	1.6441E-01	2.265E+02%	1.63E+00
Kr-85	#A	5.2076E+01	5.2076E+01	2.454E+02%	4.36E+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 (25.1 to 1999.5 keV) 2.538E+02 Bq/Sample
Total Decayed Activity (25.1 to 1999.5 keV) 2.5380244E+02 Bq/Sample

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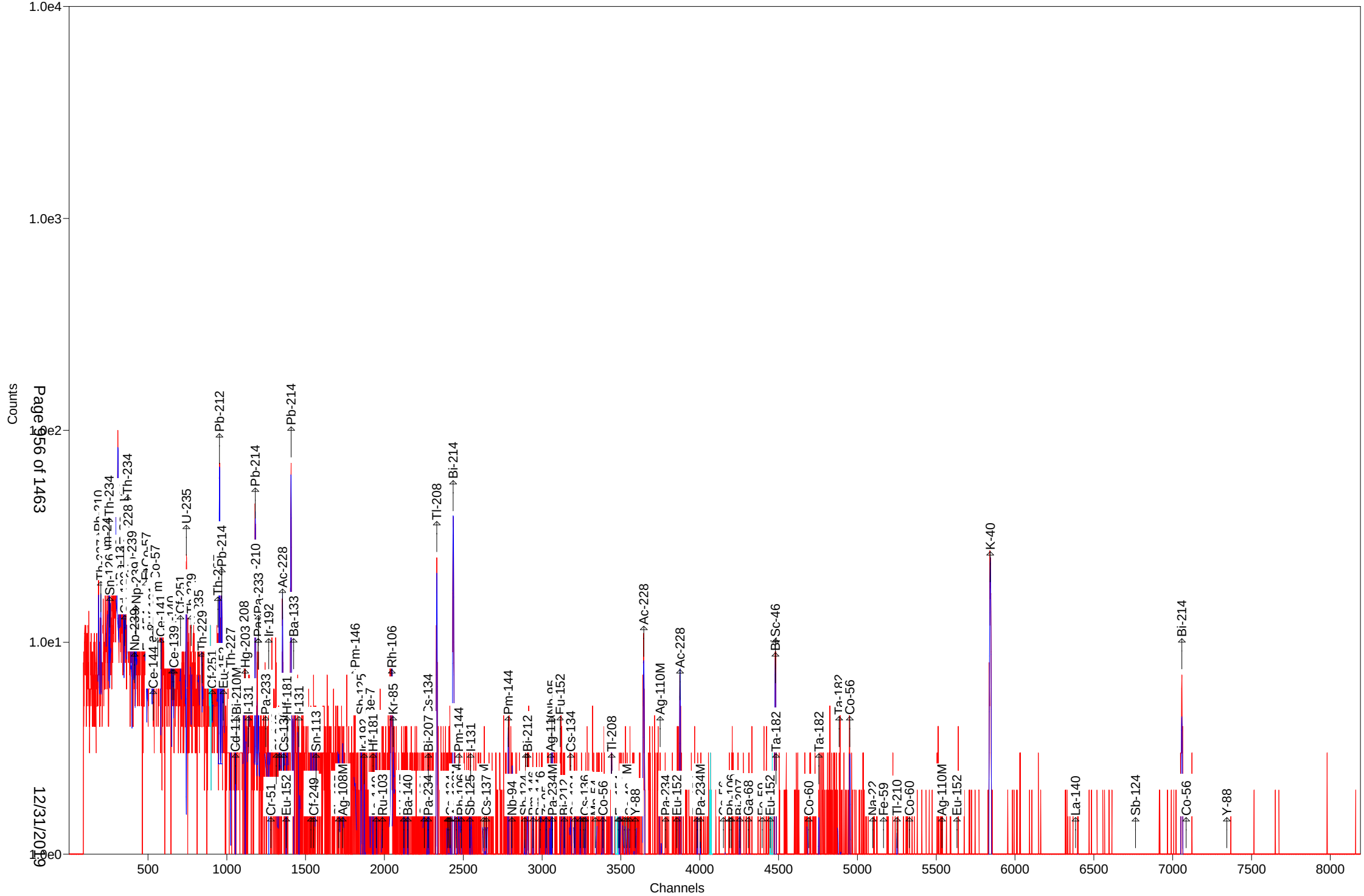
452567_Gamma_160-36526-A-11-C. 17_Gamma_20192435.spc.



Test America St. Louis Spectrum ID: 9_Gamma_20193839

Sample Description: 452567_Gamma_160-36526-A-11-D DU
Detector: Detector # 9
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-11-D DU

Decay to Time: 12/25/2019 10:09 Live Time: 1800 sec
Acquisition Time: 12/25/2019 10:10:44 Real Time: 1802 sec
Analysis Time: 12/25/2019 10:41 Dead Time: 0.11 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 9_Soil_TunaCan.Clb
Efficiency Cal Desc: 9_Soil_TunaCan_90099_050312
Efficiency Cal Date: 6/14/2012 10:19
Energy Cal Date: 3/1/2012 13:57
Library: Client_Long_Rev15.lib
Bkgd Correction File: 9_2019-12-07_1444.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	1.530E-01	2301.1	3.520E+00	3.520E+00	1.220E+01
NA-22	1.022E+00	22.4	2.284E-01	2.341E-01	3.764E-01
K-40	1.331E+02	6.5	8.699E+00	1.105E+01	8.406E+00
Sc-46	0.000E+00	1.#INF	2.035E-01	2.035E-01	1.538E+00
CR-51	-3.973E+00	82.3	3.269E+00	3.276E+00	2.333E+01
MN-54	-2.699E-01	173.2	4.674E-01	4.677E-01	1.184E+00
FE-59	-9.109E-01	93.9	8.556E-01	8.568E-01	2.346E+00
Co-56	4.666E-01	71.5	3.336E-01	3.344E-01	1.127E+00
CO-57	0.000E+00	1.#INF	1.757E-01	1.757E-01	9.909E-01
CO-58	-3.600E-02	1090.9	3.927E-01	3.927E-01	1.386E+00
CO-60	2.200E-01	87.7	1.928E-01	1.931E-01	3.900E-01
ZN-65	-2.419E-01	573.6	1.388E+00	1.388E+00	4.793E+00
NB-94	3.202E-01	82.5	2.641E-01	2.647E-01	1.466E+00
ZR-95	3.897E-01	101.6	3.958E-01	3.963E-01	1.889E+00
NB-95	6.055E-01	77.8	4.713E-01	4.723E-01	1.572E+00
RU-103	-3.645E-02	1011.5	3.687E-01	3.687E-01	9.127E-01
RH-106	3.109E+00	284.3	8.840E+00	8.842E+00	2.976E+01
AG-108M	9.214E-02	238.4	2.197E-01	2.197E-01	9.384E-01
AG-110M	3.008E-01	85.6	2.575E-01	2.579E-01	2.107E+00
SN-113	-2.326E-01	255.3	5.939E-01	5.940E-01	2.024E+00
SB-124	5.246E-01	86.7	4.548E-01	4.556E-01	2.730E+00
SB-125	1.239E+00	94.2	1.168E+00	1.170E+00	2.516E+00
I-131	1.725E-01	296.4	5.115E-01	5.115E-01	9.158E-01
Gd-153	-1.091E+00	144.8	1.580E+00	1.581E+00	5.262E+00
Ga-68	4.266E+00	398.4	1.700E+01	1.700E+01	3.877E+01
Tc-99m	3.601E-01	142.6	5.135E-01	5.139E-01	1.712E+00
BA-133	-5.813E-01	172.6	1.003E+00	1.004E+00	3.362E+00
CS-134	3.963E-01	102.5	4.063E-01	4.069E-01	1.639E+00
CS-137	4.749E-01	88.7	4.213E-01	4.221E-01	1.417E+00
CE-139	3.549E-01	101.0	3.584E-01	3.600E-01	1.196E+00
Ba-140	9.291E-01	116.4	1.081E+00	1.082E+00	2.670E+00
La-140	-1.998E-02	109.4	2.186E-02	2.188E-02	1.444E+00
CE-141	6.296E-01	145.0	9.127E-01	9.133E-01	3.044E+00

CE-144	-2.810E+00	139.8	3.930E+00	3.932E+00	1.310E+01
PM-144	-6.703E-01	119.0	7.976E-01	7.984E-01	1.749E+00
EU-152	2.516E+00	32.4	8.155E-01	8.262E-01	2.593E+00
EU-154	5.241E-01	56.0	2.934E-01	2.947E-01	2.092E+00
EU-155	1.184E+00	129.6	1.534E+00	1.536E+00	5.127E+00
HF-181	-2.969E-01	152.0	4.513E-01	4.516E-01	1.536E+00
Ta-182	1.884E+00	84.3	1.589E+00	1.591E+00	6.446E+00
Hg-203	-4.626E-01	81.3	3.760E-01	3.769E-01	1.252E+00
TL-208	3.839E+00	12.5	4.809E-01	5.205E-01	8.264E-01
PM-146	5.199E-01	96.5	5.017E-01	5.024E-01	1.202E+00
Y-88	4.100E-02	1067.4	4.376E-01	4.376E-01	1.006E+00
Cd-113m	4.571E+03	74.5	3.404E+03	3.417E+03	1.133E+04
Cd-109	0.000E+00	1.#INF	1.524E+01	1.524E+01	5.071E+01
Cf-251	8.142E-01	186.7	1.520E+00	1.522E+00	3.933E+00
Cf-249	7.968E-01	83.3	6.636E-01	6.649E-01	1.514E+00
Sn-126	3.387E+00	111.1	3.764E+00	3.768E+00	1.258E+01
PB-210	-1.374E+01	91.4	1.257E+01	1.259E+01	4.784E+01
PB-212	9.865E+00	7.4	7.297E-01	9.694E-01	1.535E+00
PB-214	1.976E+01	4.9	9.703E-01	1.413E+00	1.767E+00
BI-207	-7.164E-02	143.5	1.028E-01	1.029E-01	1.725E+00
BI-212	1.528E+01	21.9	3.353E+00	3.446E+00	6.166E+00
U-235	1.948E+00	208.3	4.056E+00	4.058E+00	1.356E+01
BI-214	2.011E+01	8.1	1.636E+00	1.941E+00	2.301E+00
BI-210M	4.325E-02	1236.3	5.347E-01	5.347E-01	1.844E+00
AC-228	9.329E+00	17.5	1.631E+00	1.699E+00	2.957E+00
TH-227	-5.713E+00	96.3	5.502E+00	5.513E+00	1.342E+01
TH-229	-2.946E-01	2509.3	7.391E+00	7.391E+00	1.838E+01
TH-234	2.234E+01	20.9	4.671E+00	4.834E+00	1.071E+01
PA-231	2.596E+00	449.5	1.167E+01	1.167E+01	7.358E+01
PA-233	0.000E+00	1.#INF	4.962E-01	4.962E-01	6.012E+00
PA-234	-1.719E+00	142.7	2.452E+00	2.454E+00	8.173E+00
PA-234M	4.517E+01	72.0	3.253E+01	3.261E+01	1.976E+02
AM-241	5.276E-02	2346.7	1.238E+00	1.238E+00	4.191E+00
Np-237	2.262E+00	185.5	4.197E+00	4.199E+00	1.398E+01
Ir-192	0.000E+00	1.#INF	2.232E-01	2.232E-01	2.511E+00
Cs-136	3.466E-01	70.3	2.437E-01	2.445E-01	9.819E-01
Np-239	1.131E+00	128.7	1.456E+00	1.458E+00	4.864E+00
Nd-147	4.681E+00	45.7	2.138E+00	2.155E+00	4.895E+00
TL-210	0.000E+00	1.#INF	3.580E-02	3.580E-02	1.483E+00
Kr-85	8.793E+01	109.8	9.658E+01	9.671E+01	3.253E+02
Total	4.979E+03				

Analyst: Caleb Quinn

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Sample description
452567_Gamma_160-36526-A-11-D DU

Spectrum Filename: C:\User\SPC\Det9\9_Gamma_20193839.An1

Acquisition information
Start time: 12/25/2019 10:10:44 AM
Live time: 1800
Real time: 1802
Dead time: 0.11 %
Detector ID: 9

Detector system
Ge9 S/N09363993

Calibration
Filename: 9_Soil_TunaCan.Clb
9_Soil_TunaCan_90099_050312

Energy Calibration
Created: 3/1/2012 1:57:17 PM
Zero offset: 0.074 keV
Gain: 0.250 keV/channel
Quadratic: -2.269E-08 keV/channel^2

Efficiency Calibration
Created: 6/14/2012 10:19:51 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.30 %
Log(Eff): -8.079856E-01 + (-2.367265E-01*Log(E)) + (-3.950640E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.42 %
Log(Eff): -2.387916E+01 + (8.875647E+00*Log(E)) + (-9.401100E-01*Log(E)^2)

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.08keV)
Stop channel: 8000 (1999.34keV)
Peak rejection level: 1000.000%
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:	YES	12/25/2019 10:09:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	9_2019-12-07_1444.PBC 12/7/2019 2:44:35 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 25 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1552

***** 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
50.14	23.	108.94	1.00	2.900E-02	50.14	8.000	PBC<MDA	TH227
63.18	40.	47.09	1.01	3.921E-02	63.29	3.810	PBC<MDA	TH234
64.17	24.	111.12	1.02	3.987E-02	64.28	9.700	PBC<MDA	Sn126
74.90	205.	11.85	1.03	4.575E-02				
77.13	350.	7.86	1.03	4.675E-02				
86.49	27.	185.54	1.04	5.008E-02	86.49	13.100	PBC<MDA	Np237
					86.54	30.700	9.649E-01	EU155
					86.94	9.040	3.270E+00	Sn126
86.94	28.	78.20	1.04	5.021E-02	86.49	13.100	PBC<MDA	Np237
					86.54	30.700	9.996E-01	EU155
					86.94	9.040	3.387E+00	Sn126
87.57	90.	23.03	1.04	5.038E-02	87.57	37.500	PBC<MDA	Sn126
					88.04	3.790	2.602E+01	Cd109
93.10	116.	20.86	1.47	5.166E-02	92.59	5.584	2.234E+01	TH234
					93.35	5.561	PBC<MDA	AC228
105.31	24.	129.60	1.05	5.318E-02	105.31	21.200	PBC<MDA	EU155
106.13	25.	128.73	1.05	5.323E-02	106.13	22.700	PBC<MDA	Np239
121.78	69.	32.41	1.07	5.305E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	8.404E-01	CO57
140.51	29.	142.58	1.09	5.091E-02	140.51	89.300	PBC<MDA	Tc99m
143.82	19.	208.28	1.09	5.039E-02	143.79	10.960	PBC<MDA	U235
145.48	27.	144.97	1.09	5.012E-02	145.44	48.200	PBC<MDA	CE141

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
165.85	24.	101.01	1.11	4.736E-02	165.85	79.900	PBC<MDA	CE139
177.82	11.	186.69	1.12	4.549E-02	176.60	17.000	PBC<MDA	Cf251
185.76	151.	20.76	0.80	4.402E-02	185.72	54.000	3.528E+00	U235
238.50	287.	7.40	1.18	3.734E-02	238.63	43.300	9.862E+00	PB212
241.67	137.	12.66	1.18	3.701E-02	242.00	7.430	2.764E+01	PB214
263.70	17.	74.47	1.20	3.489E-02	263.70	0.006	PBC<MDA	Cd113m
277.28	10.	146.72	1.21	3.372E-02	277.28	6.310	PBC<MDA	TL208
295.18	250.	8.31	1.30	3.231E-02	295.09	19.300	2.228E+01	PB214
					296.00	79.000	5.455E+00	TL210
299.96	18.	194.69	1.24	3.195E-02	300.03	3.280	PBC<MDA	PB212
					300.07	2.460	1.288E+01	PA231
					300.18	6.200	5.111E+00	PA233
300.07	8.	449.55	1.24	3.195E-02	300.03	3.280	PBC<MDA	PB212
					300.07	2.460	5.635E+00	PA231
					300.18	6.200	2.236E+00	PA233
328.76	19.	130.46	1.26	2.999E-02	328.76	20.300	PBC<MDA	La140
333.44	19.	134.07	1.27	2.970E-02	333.44	15.510	PBC<MDA	Cf249
338.32	14.	184.06	1.27	2.940E-02	338.32	12.010	PBC<MDA	AC228
344.29	19.	129.47	1.28	2.905E-02	344.29	26.500	PBC<MDA	EU152
351.77	364.	6.53	1.35	2.861E-02	351.93	37.600	1.882E+01	PB214
364.48	5.	296.42	1.29	2.791E-02	364.48	81.700	PBC<MDA	I131
383.84	14.	94.19	1.31	2.691E-02	383.84	8.940	PBC<MDA	BA133
387.95	14.	98.83	1.31	2.671E-02	387.95	66.000	PBC<MDA	Cf249
427.88	15.	94.25	1.35	2.491E-02	427.88	29.600	PBC<MDA	SB125
453.88	15.	96.49	1.37	2.388E-02	453.88	65.000	PBC<MDA	PM146
511.86	63.	21.95	2.67	2.188E-02	511.86	20.000	7.943E+00	RH106
513.98	15.	109.84	1.42	2.182E-02	513.98	0.430	PBC<MDA	Kr85
531.00	23.	45.68	1.44	2.130E-02	531.00	13.000	PBC<MDA	Nd147
537.26	9.	116.37	1.44	2.112E-02	537.26	24.390	PBC<MDA	Ba140
563.24	11.	102.54	1.47	2.040E-02	563.24	8.350	PBC<MDA	CS134
569.70	5.	186.48	1.47	2.023E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	1.730E+00	PA234
					569.70	97.740	1.452E-01	BI207
583.25	116.	12.53	1.49	1.989E-02	583.02	84.500	3.839E+00	TL208
600.50	9.	304.41	1.50	1.946E-02	600.50	17.860	PBC<MDA	SB125
602.73	9.	307.65	1.50	1.940E-02	602.73	98.260	PBC<MDA	SB124
604.71	9.	310.88	1.50	1.936E-02	604.71	97.620	PBC<MDA	CS134
609.30	304.	8.13	1.16	1.925E-02	609.31	46.090	1.902E+01	BI214
					610.30	5.750	1.526E+02	RU103
614.28	9.	316.27	1.51	1.913E-02	614.28	89.850	PBC<MDA	AG108M
618.06	9.	319.03	1.51	1.904E-02	618.06	99.100	PBC<MDA	PM144
621.92	11.	284.35	1.51	1.896E-02	621.92	9.930	PBC<MDA	RH106
636.97	2.	671.87	1.53	1.862E-02	636.97	7.170	PBC<MDA	I131
661.66	13.	88.73	1.55	1.810E-02	661.66	85.210	PBC<MDA	CS137
702.63	14.	96.01	1.58	1.730E-02	702.63	97.900	PBC<MDA	NB94
724.20	10.	101.56	1.60	1.691E-02	724.20	44.150	PBC<MDA	ZR95
727.15	35.	21.95	1.63	1.686E-02	727.17	7.550	1.528E+01	BI212
756.73	2.	654.15	1.62	1.635E-02	756.73	54.460	PBC<MDA	ZR95

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
765.79	18.	77.83	1.63	1.621E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	2.057E+02	PA234M
766.41	15.	72.02	1.63	1.620E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	1.752E+02	PA234M
785.42	8.	152.73	1.65	1.590E-02	785.42	1.280	PBC<MDA	BI212
795.87	6.	191.49	1.66	1.574E-02	795.87	85.530	PBC<MDA	CS134
818.50	12.	70.30	1.67	1.540E-02	818.50	100.000	PBC<MDA	Cs136
871.10	5.	134.16	1.71	1.468E-02	871.10	99.890	PBC<MDA	NB94
873.23	7.	105.95	1.72	1.465E-02	873.23	12.270	PBC<MDA	EU154
880.53	12.	83.47	1.72	1.456E-02	880.53	6.000	PBC<MDA	PA234
911.07	69.	17.48	1.75	1.418E-02	911.07	29.000	9.329E+00	AC228
964.11	34.	26.97	1.79	1.357E-02	964.11	14.605	9.595E+00	EU152
968.79	9.	121.52	1.79	1.352E-02	968.97	17.460	PBC<MDA	AC228
1004.77	9.	89.58	1.82	1.314E-02	1004.77	18.010	PBC<MDA	EU154
1037.84	6.	91.02	1.84	1.281E-02	1037.84	14.130	PBC<MDA	Co56
1048.07	5.	180.98	1.85	1.271E-02	1048.07	80.000	PBC<MDA	Cs136
1077.40	3.	398.43	1.87	1.244E-02	1077.40	3.300	PBC<MDA	Ga68
1120.17	70.	15.72	1.90	1.206E-02	1120.29	15.100	2.150E+01	BI214
					1120.55	99.987	PBC<MDA	Sc46
1121.18	11.	125.66	1.90	1.205E-02	1120.55	99.987	PBC<MDA	Sc46
					1121.30	34.900	1.513E+00	Ta182
1173.24	9.	87.66	1.94	1.163E-02	1173.24	99.900	PBC<MDA	CO60
1188.74	9.	112.49	1.95	1.150E-02	1189.05	16.200	PBC<MDA	Ta182
1238.28	17.	85.39	1.98	1.114E-02	1238.28	66.070	PBC<MDA	Co56
1274.53	20.	22.36	2.01	1.088E-02	1274.53	99.940	1.022E+00	NA22
					1274.54	35.190	2.901E+00	EU154
1384.30	7.	85.58	2.08	1.018E-02	1384.30	24.290	PBC<MDA	AG110M
1408.00	20.	46.04	2.10	1.004E-02	1408.00	21.005	5.179E+00	EU152
1460.58	249.	6.54	1.76	9.749E-03	1460.83	10.670	1.331E+02	K40
1690.98	8.	86.69	2.27	8.649E-03	1690.98	47.790	PBC<MDA	SB124
1764.01	51.	17.46	2.31	8.350E-03	1764.49	15.400	2.204E+01	BI214

********** 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	
299.21	74.85	192.	205.	4.478E+03	11.85	1.025	-	D
308.13	77.08	204.	350.	7.490E+03	7.86	1.027	-	D

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: Client_Long_Rev15.lib

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********** 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	185.80	46.54	386.	-27.	-0.015	91.42	0.998s
TH-227	200.20	50.14	296.	23.	0.013	108.94	1.001s
TH-234	252.77	63.29	156.	40.	0.022	47.09	1.014D
Sn-126	256.74	64.28	331.	24.	0.013	111.12	1.015s
BA-133	323.56	80.99	1272.	-34.	-0.019	73.93	1.031s
Np-237	345.55	86.49	1215.	27.	0.015	185.54	1.036A
EU-155	345.76	86.54	1494.	-31.	-0.017	179.76	1.036s
Sn-126	347.35	86.94	1405.	28.	0.015	78.20	1.037D
Sn-126	349.87	87.57	1275.	90.	0.050	23.03	1.037D
Cd-109	351.75	88.04	1363.	0.	0.000	171.53	1.038A
Nd-147	363.99	91.10	1244.	-10.	-0.006	481.57	1.041s
TH-234	371.99	93.10	128.	116.	0.064	20.91	1.475s
Gd-153	389.58	97.50	984.	-31.	-0.017	144.81	1.047s
Np-239	397.58	99.50	1015.	-31.	-0.017	146.77	1.049s
Gd-153	412.37	103.20	1046.	-31.	-0.017	148.48	1.052s
EU-155	420.82	105.31	473.	24.	0.013	129.60	1.054s
Np-239	424.09	106.13	489.	25.	0.014	128.73	1.055s
EU-152	486.67	121.78	213.	69.	0.038	32.41	1.070s
CO-57	487.80	122.06	282.	0.	0.000	1000.00	1.070s
EU-154	491.95	123.10	285.	-26.	-0.014	94.58	1.071s
PA-234	524.72	131.29	844.	-29.	-0.016	142.69	1.079s
HF-181	531.64	133.02	815.	-29.	-0.016	140.04	1.081s
CE-144	533.69	133.54	814.	-29.	-0.016	139.85	1.081
HF-181	544.74	136.30	843.	-29.	-0.016	141.94	1.084s
CO-57	545.43	136.47	872.	-29.	-0.016	144.34	1.084s
Tc-99m	561.57	140.51	814.	29.	0.016	142.58	1.088s
U-235	574.67	143.79	803.	19.	0.011	208.28	1.091s
CE-141	581.29	145.44	774.	27.	0.015	144.97	1.092s
Ba-140	650.15	162.66	239.	-18.	-0.010	276.89	1.108
U-235	653.03	163.38	255.	0.	0.000	1000.00	1.109
CE-139	662.92	165.85	286.	24.	0.013	101.01	1.111s
Cf-251	705.90	176.60	125.	11.	0.006	186.69	1.122s
U-235	742.54	185.76	156.	151.	0.084	20.76	0.800s
U-235	820.80	205.33	196.	-27.	-0.015	46.23	1.148s
TH-229	842.87	210.85	216.	-29.	-0.016	99.40	1.153s
Cf-251	907.45	227.00	176.	-27.	-0.015	98.34	1.168s
TH-227	943.33	235.97	760.	-23.	-0.013	169.86	1.176s
PB-212	953.97	238.63	81.	287.	0.159	7.40	1.179D
PB-214	967.43	242.00	80.	138.	0.077	12.49	1.182D
TH-227	1024.39	256.24	152.	-26.	-0.014	96.31	1.195s
Cd-113m	1054.23	263.70	74.	17.	0.010	74.47	1.202s
TL-208	1108.55	277.28	99.	10.	0.005	146.72	1.215
Hg-203	1116.22	279.20	160.	-23.	-0.013	81.29	1.216s
I-131	1136.61	284.30	132.	-24.	-0.014	94.46	1.221s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
PB-214	1179.77	295.09	37.	242.	0.135	7.33	1.231D
TL-210	1183.41	296.00	654.	-8.	-0.004	481.41	1.231s
PB-212	1199.52	300.03	620.	18.	0.010	194.69	1.235s
PA-231	1199.68	300.07	638.	8.	0.004	449.55	1.235s
PA-233	1200.12	300.18	646.	0.	0.000	1000.00	1.235s
PA-231	1210.00	302.65	646.	0.	0.000	1000.00	1.237s
BA-133	1210.81	302.85	646.	0.	0.000	1000.00	1.238s
Ba-140	1218.80	304.85	646.	0.	0.000	1000.00	1.240s
BI-210M	1218.99	304.90	646.	0.	0.000	1000.00	1.240s
Ir-192	1233.16	308.44	646.	0.	0.000	1000.00	1.243s
PA-233	1247.44	312.01	646.	0.	0.000	1000.00	1.246s
Ir-192	1265.35	316.49	646.	0.	0.000	1000.00	1.250s
CR-51	1279.73	320.08	717.	-22.	-0.012	82.28	1.253s
La-140	1314.43	328.76	285.	19.	0.010	130.46	1.261s
Cf-249	1333.15	333.44	304.	19.	0.010	134.07	1.265s
AC-228	1352.66	338.32	327.	14.	0.008	184.06	1.270
EU-152	1376.53	344.29	287.	19.	0.010	129.47	1.275s
HF-181	1382.70	345.83	106.	-18.	-0.010	82.89	1.276s
PB-214	1406.47	351.77	46.	364.	0.202	6.53	1.352
BA-133	1423.37	356.00	496.	-18.	-0.010	172.59	1.285s
I-131	1457.31	364.48	56.	5.	0.003	296.42	1.293s
BA-133	1534.73	383.84	76.	14.	0.008	94.19	1.310s
Cf-249	1551.17	387.95	95.	14.	0.008	98.83	1.314s
SN-113	1566.12	391.69	161.	-7.	-0.004	255.29	1.317s
SB-125	1710.86	427.88	43.	15.	0.008	94.25	1.349s
AG-108M	1735.10	433.94	56.	-4.	-0.002	356.80	1.354s
PM-146	1814.87	453.88	44.	15.	0.008	96.49	1.372s
SB-125	1852.82	463.37	104.	0.	0.000	1000.00	1.380s
HF-181	1927.34	482.00	107.	-10.	-0.005	152.03	1.396s
La-140	1947.43	487.02	124.	-15.	-0.008	93.99	1.400s
RH-106	2046.81	511.86	63.	63.	0.035	21.95	2.672s
Kr-85	2055.27	513.98	126.	15.	0.008	109.84	1.424s
Nd-147	2123.35	531.00	22.	23.	0.013	45.68	1.438
Ba-140	2148.39	537.26	22.	9.	0.005	116.37	1.444s
CS-134	2252.30	563.24	24.	11.	0.006	102.54	1.466s
PA-234	2277.24	569.47	47.	0.	0.000	1000.00	1.471s
BI-207	2278.16	569.70	44.	5.	0.003	186.48	1.471s
TL-208	2332.37	583.25	23.	116.	0.065	12.53	1.495s
SB-125	2401.36	600.50	372.	9.	0.005	304.41	1.497s
SB-124	2410.29	602.73	381.	9.	0.005	307.65	1.499s
CS-134	2418.21	604.71	390.	9.	0.005	310.88	1.500s
BI-214	2436.58	609.30	53.	304.	0.169	8.13	1.163
RU-103	2440.56	610.30	399.	9.	0.005	313.42	1.505s
AG-108M	2456.49	614.28	408.	9.	0.005	316.27	1.508s
PM-144	2471.62	618.06	417.	9.	0.005	319.03	1.512s
RH-106	2487.04	621.92	443.	11.	0.006	284.35	1.515s
SB-125	2542.94	635.89	74.	-19.	-0.011	67.42	1.526s
I-131	2547.28	636.97	72.	2.	0.001	671.87	1.527s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
AG-110M	2630.43	657.76	62.	-18.	-0.010	67.02	1.544s
CS-137	2646.03	661.66	62.	13.	0.007	88.73	1.548s
PM-144	2785.58	696.54	122.	-21.	-0.012	119.00	1.576s
NB-94	2809.93	702.63	81.	14.	0.008	96.01	1.581s
SB-124	2890.57	722.79	129.	-19.	-0.011	86.52	1.598s
AG-108M	2891.17	722.94	110.	-19.	-0.011	80.29	1.598s
EU-154	2892.86	723.36	97.	-19.	-0.010	78.93	1.598s
ZR-95	2896.22	724.20	43.	10.	0.005	101.56	1.599s
BI-212	2908.03	727.15	6.	35.	0.019	21.95	1.632
PM-146	2988.08	747.16	56.	-20.	-0.011	68.29	1.617s
ZR-95	3026.36	756.73	35.	2.	0.001	654.15	1.625
AG-110M	3055.23	763.94	90.	-22.	-0.012	64.71	1.631s
NB-95	3062.61	765.79	85.	18.	0.010	77.83	1.632s
PA-234M	3065.10	766.41	51.	15.	0.008	72.02	1.633s
EU-152	3115.14	778.92	40.	-11.	-0.006	129.95	1.643s
BI-212	3141.15	785.42	77.	8.	0.005	152.73	1.648
CS-134	3182.96	795.87	63.	6.	0.003	191.49	1.656s
TL-210	3197.88	799.60	69.	0.	0.000	1000.00	1.659s
La-140	3262.58	815.77	41.	0.	0.000	1000.00	1.672s
Cs-136	3273.50	818.50	28.	12.	0.006	70.30	1.674s
MN-54	3338.91	834.85	40.	-7.	-0.004	173.21	1.687s
Co-56	3386.61	846.77	35.	-7.	-0.004	174.41	1.696s
NB-94	3483.94	871.10	20.	5.	0.003	134.16	1.715s
EU-154	3492.47	873.23	24.	7.	0.004	105.95	1.717s
PA-234	3521.68	880.53	44.	12.	0.007	83.47	1.722s
PA-234	3532.53	883.24	66.	-2.	-0.001	540.43	1.724s
AG-110M	3538.30	884.68	64.	0.	0.000	1000.00	1.725s
Sc-46	3556.69	889.28	64.	0.	0.000	1000.00	1.729s
Y-88	3591.74	898.04	45.	-5.	-0.003	298.33	1.736s
AC-228	3643.88	911.07	17.	69.	0.038	17.48	1.746
AG-110M	3749.60	937.49	40.	0.	0.000	1000.00	1.766s
PA-234	3783.72	946.02	40.	-9.	-0.005	158.05	1.772s
EU-152	3856.11	964.11	26.	34.	0.019	26.97	1.786s
AC-228	3875.56	968.97	52.	9.	0.005	121.52	1.790
EU-154	3985.03	996.33	57.	-5.	-0.003	232.77	1.810s
EU-154	4018.82	1004.77	11.	9.	0.005	89.58	1.816s
Co-56	4151.13	1037.84	5.	6.	0.004	91.02	1.841s
Cs-136	4192.07	1048.07	33.	5.	0.003	180.98	1.848s
RH-106	4201.23	1050.36	52.	-12.	-0.007	86.72	1.850s
BI-207	4254.46	1063.66	32.	-6.	-0.003	218.16	1.860s
Ga-68	4309.44	1077.40	21.	3.	0.001	398.43	1.870s
FE-59	4396.88	1099.25	32.	-11.	-0.006	93.93	1.886s
ZN-65	4462.09	1115.55	116.	-3.	-0.001	573.64	1.897s
BI-214	4481.06	1120.29	26.	70.	0.039	15.72	1.901D
Ta-182	4485.12	1121.30	98.	11.	0.006	125.66	1.901s
CO-60	4692.96	1173.24	11.	9.	0.005	87.66	1.938s
Ta-182	4756.25	1189.05	17.	9.	0.005	112.49	1.949s
Ta-182	4885.75	1221.41	45.	-17.	-0.010	94.21	1.972s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Co-56	4953.27	1238.28	34.	17.	0.009	85.39	1.984s
NA-22	5098.35	1274.53	0.	20.	0.011	22.36	2.008s
EU-154	5098.39	1274.54	20.	0.	0.000	1000.00	2.008s
FE-59	5166.65	1291.60	45.	-20.	-0.011	82.55	2.020s
TL-210	5252.32	1313.00	23.	-6.	-0.003	201.47	2.034s
CO-60	5330.37	1332.50	0.	0.	0.000	1000.00	2.047s
AG-110M	5537.69	1384.30	6.	7.	0.004	85.58	2.082s
EU-152	5632.56	1408.00	11.	20.	0.011	46.04	2.097s
K-40	5843.01	1460.58	8.	249.	0.138	6.54	1.762
La-140	6385.95	1596.21	18.	-6.	-0.003	175.59	2.215s
SB-124	6765.35	1690.98	6.	8.	0.004	86.69	2.272s
BI-214	7059.65	1764.49	14.	51.	0.028	17.46	2.314s

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
BE-7	C	1.5298E-01				5.31E+01	
			477.60	1.530E-01	%(	1.220E+01 2.30E+03 1.05E+01	G
NA-22	C	1.0215E+00				9.50E+02	
			1274.53	1.022E+00	&(	3.764E-01 2.24E+01 9.99E+01	G
K-40	N	1.3309E+02				4.66E+11	
			1460.83	1.331E+02	(P	8.406E+00 6.54E+00 1.07E+01	G
CR-51	F	-3.9733E+00				2.77E+01	
			320.08	-3.973E+00	?(P	2.333E+01 8.23E+01 9.94E+00	G
MN-54	C	-2.6987E-01				3.12E+02	
			834.85	-2.699E-01	?(P	1.184E+00 1.73E+02 1.00E+02	G
FE-59	F	-9.1094E-01				4.45E+01	
			1099.25	-9.109E-01	?(P	2.346E+00 9.39E+01 5.65E+01	G
			1291.60	-2.374E+00	+	4.071E+00 8.26E+01 4.32E+01	G
Co-56	C	4.6660E-01				7.73E+01	
			846.77	-2.719E-01	?(P	1.127E+00 1.74E+02 9.99E+01	G
			1238.28	1.263E+00	?(P	2.261E+00 8.54E+01 6.61E+01	G
			1037.84	1.965E+00	?(	4.135E+00 9.10E+01 1.41E+01	G
			1771.35	2.156E-01	%	1.743E+01 2.29E+03 1.55E+01	A

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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CO-58	C	-3.6003E-02					7.09E+01	
			810.78	-3.600E-02	%(	1.386E+00	1.09E+03	9.95E+01 G
CO-60	F	2.1998E-01					1.93E+03	
			1332.50	0.000E+00	?(	3.900E-01	1.00E+03	1.00E+02 G
			1173.24	4.401E-01	?(P	8.688E-01	8.77E+01	9.99E+01 G
ZN-65	F	-2.4193E-01					2.44E+02	
			1115.55	-2.419E-01	?(	4.793E+00	5.74E+02	5.06E+01 G
NB-94	I	3.2020E-01					7.41E+06	
			702.63	4.537E-01	(P	1.466E+00	9.60E+01	9.79E+01 G
			871.10	1.894E-01	&(	8.921E-01	1.34E+02	9.99E+01 G
ZR-95	I	3.8973E-01					6.40E+01	
			756.73	1.248E-01	?(	1.889E+00	6.54E+02	5.45E+01 G
			724.20	7.166E-01	?(	2.476E+00	1.02E+02	4.42E+01 G
NB-95	I	6.0554E-01					6.40E+01	
			765.79	6.055E-01	&(	1.572E+00	7.78E+01	9.98E+01 G
RU-103	I	-3.6451E-02					3.93E+01	
			497.05	-3.645E-02	%(	9.127E-01	1.01E+03	9.09E+01 G
			610.30	4.556E+00	?	4.815E+01	3.13E+02	5.75E+00 GA
RH-106	I	3.1090E+00					3.74E+02	
			621.92	3.109E+00	?(	2.976E+01	2.84E+02	9.93E+00 G
			1050.36	-3.508E+01	+	1.024E+02	8.67E+01	1.56E+00 G
			511.86	7.943E+00	?	5.039E+00	2.19E+01	2.00E+01 GA
AG-108M	C	9.2140E-02					1.53E+05	
			433.94	-1.079E-01	?(	9.384E-01	3.57E+02	9.05E+01 G
			722.94	-6.952E-01	+	1.861E+00	8.03E+01	9.08E+01 G
			614.28	2.936E-01	?(	3.130E+00	3.16E+02	8.98E+01 G
AG-110M	F	3.0084E-01					2.50E+02	
			884.68	0.000E+00	?(	2.107E+00	1.00E+03	7.27E+01 G
			657.76	-5.751E-01	+	1.276E+00	6.70E+01	9.46E+01 G
			937.49	0.000E+00	?(	3.752E+00	1.00E+03	3.44E+01 G
			1384.30	1.627E+00	?(	3.100E+00	8.56E+01	2.43E+01 G
			763.94	-3.373E+00	+	7.206E+00	6.47E+01	2.23E+01 G
SN-113	F	-2.3262E-01					1.15E+02	
			391.69	-2.326E-01	?(	2.024E+00	2.55E+02	6.40E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
SB-124	F	5.2461E-01					6.02E+01	
			602.73	2.630E-01	?(	2.730E+00	3.08E+02	9.83E+01 G
			1690.98	1.062E+00	&(	1.941E+00	8.67E+01	4.78E+01 G
			722.79	-5.841E+00	+	1.689E+01	8.65E+01	1.08E+01 G
SB-125	I	1.2393E+00					1.01E+03	
			427.88	1.118E+00	&(	2.516E+00	9.42E+01	2.96E+01 G
			600.50	1.441E+00	?(	1.480E+01	3.04E+02	1.79E+01 G
			635.89	-5.042E+00	+	1.125E+01	6.74E+01	1.13E+01 G
			463.37	0.000E+00	&	1.133E+01	1.00E+03	1.05E+01 G
I-131	I	1.7254E-01					8.02E+00	
			364.48	1.218E-01	?(	9.158E-01	2.96E+02	8.17E+01 G
			284.30	-6.655E+00	+	1.535E+01	9.45E+01	6.14E+00 G
			636.97	7.503E-01	?(	1.764E+01	6.72E+02	7.17E+00 G
Gd-153	F	-1.0911E+00					2.42E+02	
			97.50	-1.091E+00	?(	5.262E+00	1.45E+02	3.00E+01 G
			103.20	-1.491E+00	+	7.372E+00	1.48E+02	2.18E+01 G
Ga-68	C	4.2664E+00					4.71E-02	
			1077.40	4.266E+00	?(	3.877E+01	3.98E+02	3.30E+00 G
Tc-99m	I	3.6013E-01					2.51E-01	
			140.51	3.601E-01	?(	1.712E+00	1.43E+02	8.93E+01 G
BA-133	F	-5.8135E-01					3.85E+03	
			356.00	-5.813E-01	&(	3.362E+00	1.73E+02	6.20E+01 G
			302.85	0.000E+00	&	1.157E+01	1.00E+03	1.83E+01 G
			383.84	3.156E+00	&	1.001E+01	9.42E+01	8.94E+00 GA
			80.99	-1.135E+00	+ P	5.704E+00	7.39E+01	3.41E+01 GA
CS-134	I	3.9629E-01					7.54E+02	
			795.87	2.477E-01	?(	1.639E+00	1.91E+02	8.55E+01 G
			604.71	2.657E-01	?(	2.786E+00	3.11E+02	9.76E+01 G
			569.32	5.949E-02	%	6.165E+00	2.90E+03	1.54E+01 G
			801.95	4.086E-01	%	1.692E+01	1.18E+03	8.69E+00 G
			563.24	3.446E+00	&(P	8.354E+00	1.03E+02	8.35E+00 G
CS-137	I	4.7486E-01					1.10E+04	
			661.66	4.749E-01	?(	1.417E+00	8.87E+01	8.52E+01 G
CE-139	F	3.5485E-01					1.38E+02	
			165.85	3.549E-01	&(P	1.196E+00	1.01E+02	7.99E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Ba-140	I	9.2908E-01					1.28E+01	
			537.26	9.291E-01	?(P	2.670E+00	1.16E+02	2.44E+01 G
			162.66	-3.420E+00	+ P	1.424E+01	2.77E+02	6.22E+00 G
			304.85	0.000E+00	-	4.965E+01	1.00E+03	4.29E+00 G
La-140	I	-1.9985E-02					1.28E+01	
			1596.21	-3.853E-01	?(	1.444E+00	1.76E+02	9.54E+01 G
			487.02	-8.035E-01	+ P	2.941E+00	9.40E+01	4.55E+01 G
			328.76	1.697E+00	?(	7.426E+00	1.30E+02	2.03E+01 G
			815.77	0.000E+00	+	5.030E+00	1.00E+03	2.33E+01 G
CE-141	I	6.2957E-01					3.25E+01	
			145.44	6.296E-01	?(	3.044E+00	1.45E+02	4.82E+01 G
CE-144	I	-2.8099E+00					2.85E+02	
			133.54	-2.810E+00	?(	1.310E+01	1.40E+02	1.11E+01 G
PM-144	C	-6.7027E-01					3.63E+02	
			696.54	-6.703E-01	?(P	1.749E+00	1.19E+02	9.90E+01 G
			618.06	2.680E-01	+	2.882E+00	3.19E+02	9.91E+01 G
EU-152	F	2.5161E+00					4.94E+03	
			121.78	2.516E+00	&(	2.593E+00	3.24E+01	2.86E+01 G
			344.29	1.357E+00	&	5.894E+00	1.29E+02	2.65E+01 G
			1112.07	9.256E-02	%	1.838E+01	5.73E+03	1.36E+01 G
			778.92	-2.952E+00	-	8.637E+00	1.30E+02	1.29E+01 G
			964.11	9.595E+00	+	7.355E+00	2.70E+01	1.46E+01 G
			244.69	-2.555E-01	%	2.554E+01	2.97E+03	7.58E+00 G
			1408.00	5.179E+00	&	4.845E+00	4.60E+01	2.10E+01 GA
EU-154	I	5.2414E-01					3.14E+03	
			123.10	-6.634E-01	&(	2.092E+00	9.46E+01	4.08E+01 G
			1274.54	0.000E+00	&	3.416E+00	1.00E+03	3.52E+01 G
			723.36	-3.005E+00	+	7.910E+00	7.89E+01	2.02E+01 G
			873.23	2.163E+00	?(	7.891E+00	1.06E+02	1.23E+01 G
			1004.77	2.097E+00	&(	4.209E+00	8.96E+01	1.80E+01 G
			996.33	-1.849E+00	+	1.497E+01	2.33E+02	1.06E+01 G
EU-155	I	1.1840E+00					1.81E+03	
			105.31	1.184E+00	&(	5.127E+00	1.30E+02	2.12E+01 G
			86.54	-1.104E+00	+	6.604E+00	1.80E+02	3.07E+01 G
HF-181	F	-2.9685E-01					4.24E+01	
			482.00	-2.969E-01	?(	1.536E+00	1.52E+02	8.05E+01 G
			133.02	-7.185E-01	+	3.353E+00	1.40E+02	4.33E+01 G
			345.83	-2.329E+00	+	6.448E+00	8.29E+01	1.51E+01 G
			136.30	-5.378E+00	+	2.544E+01	1.42E+02	5.85E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Ta-182	F	1.8838E+00					1.14E+02	
			1121.30	1.513E+00	?(	6.446E+00	1.26E+02	3.49E+01 G
			1221.41	-3.167E+00	+	6.228E+00	9.42E+01	2.70E+01 G
			1189.05	2.683E+00	?(	6.535E+00	1.12E+02	1.62E+01 G
Hg-203	F	-4.6257E-01					4.66E+01	
			279.20	-4.626E-01	?(	1.252E+00	8.13E+01	8.15E+01 G
TL-208	N	3.8390E+00					6.98E+02	
			583.02	3.839E+00	@(P	8.264E-01	1.25E+01	8.45E+01 G
			277.28	2.569E+00	- P	1.282E+01	1.47E+02	6.31E+00 G
			860.56	3.033E-01	% P	9.256E+00	1.31E+03	1.24E+01 G
PM-146	C	5.1992E-01					2.02E+03	
			453.88	5.199E-01	@(P	1.202E+00	9.65E+01	6.50E+01 G
			747.16	-1.931E+00	+ P	3.720E+00	6.83E+01	3.40E+01 G
			735.72	-1.609E-01	% P	3.409E+00	1.22E+03	2.25E+01 G
Y-88	F	4.0995E-02					1.07E+02	
			1836.06	4.100E-02	%(P	1.006E+00	1.07E+03	9.92E+01 G
			898.04	-2.067E-01	+	1.405E+00	2.98E+02	9.37E+01 G
Cd-113m		4.5714E+03					5.33E+03	
			263.70	4.571E+03	&(	1.133E+04	7.45E+01	6.00E-03 K
Cf-251	T	8.1424E-01					3.28E+05	
			176.60	8.142E-01	&(	3.933E+00	1.87E+02	1.70E+01 G
			227.00	-6.156E+00	+	1.475E+01	9.83E+01	6.30E+00 GA
Cf-249	T	7.9681E-01					1.28E+05	
			387.95	4.552E-01	*(	1.514E+00	9.88E+01	6.60E+01 G
			333.44	2.250E+00	&(	1.012E+01	1.34E+02	1.55E+01 G
Sn-126		3.3871E+00					3.65E+07	
			87.57	2.636E+00	}	4.972E+00	2.30E+01	3.75E+01 GA
			64.28	3.387E+00	?(	1.258E+01	1.11E+02	9.70E+00 G
			86.94	3.387E+00	}	2.171E+01	7.82E+01	9.04E+00 GA
PB-210	N	-1.3745E+01					8.14E+03	
			46.54	-1.374E+01	(P	4.784E+01	9.14E+01	4.25E+00 G
PB-212	N	9.8654E+00					6.98E+02	
			238.63	9.865E+00	(P	1.535E+00	7.40E+00	4.33E+01 G
			300.03	9.657E+00	?	6.294E+01	1.95E+02	3.28E+00 GA

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PB-214	N	1.9763E+01					5.84E+05	
			351.93	1.882E+01	(P	1.767E+00	6.53E+00	3.76E+01 G
			295.09	2.160E+01	(P	2.749E+00	7.33E+00	1.93E+01 G
			242.00	2.794E+01 +		8.970E+00	1.25E+01	7.43E+00 GA
BI-207	C	-7.1640E-02					1.18E+04	
			1063.66	-3.561E-01	&(	1.725E+00	2.18E+02	7.45E+01 G
			569.70	1.452E-01	?(	9.430E-01	1.86E+02	9.77E+01 G
BI-212	N	1.5279E+01					6.98E+02	
			727.17	1.528E+01	(	6.166E+00	2.19E+01	7.55E+00 G
			785.42	2.274E+01	P	1.188E+02	1.53E+02	1.28E+00 GA
U-235	N	1.9476E+00					2.57E+11	
			143.79	1.948E+00	&(	1.356E+01	2.08E+02	1.10E+01 G
			205.33	-7.330E+00	& P	1.829E+01	4.62E+01	5.01E+00 G
			163.38	0.000E+00 -		1.804E+01	1.00E+03	5.08E+00 G
			185.72	3.528E+00 *		1.423E+00	2.08E+01	5.40E+01 GA
BI-214	N	2.0114E+01					5.84E+05	
			609.31	1.902E+01	(P	2.301E+00	8.13E+00	4.61E+01 G
			1120.29	2.150E+01	(P	8.060E+00	1.57E+01	1.51E+01 G
			1764.49	2.204E+01	?(P	8.701E+00	1.75E+01	1.54E+01 G
BI-210M	T	4.3248E-02					1.10E+09	
			265.83	4.325E-02	&(P	1.844E+00	1.24E+03	5.00E+01 G
			304.90	0.000E+00 -		7.607E+00	1.00E+03	2.80E+01 G
AC-228	N	9.3294E+00					2.10E+03	
			911.07	9.329E+00	(P	2.957E+00	1.75E+01	2.90E+01 G
			968.97	2.051E+00 -	P	8.521E+00	1.22E+02	1.75E+01 G
			338.32	2.212E+00 -	P	1.368E+01	1.84E+02	1.20E+01 G
			93.35	-1.520E-01 %	P	3.216E+01	6.32E+03	5.56E+00 XA
TH-227	N	-5.7128E+00					7.95E+03	
			256.24	-5.713E+00	&(	1.342E+01	9.63E+01	7.00E+00 G
			235.97	-2.779E+00 +		1.576E+01	1.70E+02	1.23E+01 G
			50.14	5.455E+00 +	P	1.986E+01	1.09E+02	8.00E+00 G
TH-229	N	-2.9456E-01					2.68E+06	
			193.51	-2.946E-01 %(		1.838E+01	2.51E+03	4.40E+00 G
			210.85	-1.351E+01 +		3.265E+01	9.94E+01	2.99E+00 G
TH-234	N	2.2341E+01					1.63E+12	
			92.59	2.234E+01	(P	1.071E+01	2.09E+01	5.58E+00 G
			63.29	1.482E+01 -		2.266E+01	4.71E+01	3.81E+00 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

PA-231   N   2.5957E+00                                      1.20E+07
                         302.65 0.000E+00 &(  7.358E+01 1.00E+03 2.88E+00 G
                         300.07 5.635E+00 ?(  8.512E+01 4.50E+02 2.46E+00 G

PA-234   N  -1.7187E+00                                      1.63E+12
                         131.29-1.719E+00 ?(  8.173E+00 1.43E+02 1.80E+01 G
                         946.02-2.709E+00 +   9.688E+00 1.58E+02 1.34E+01 G
                         569.47 0.000E+00 +   1.160E+01 1.00E+03 8.20E+00 G
                         883.24-8.547E-01 +   1.618E+01 5.40E+02 9.60E+00 G
                         880.53 7.617E+00 ?   2.138E+01 8.35E+01 6.00E+00 GA

PA-234M  N   4.5173E+01                                      1.63E+12
                        1001.00-5.150E-01 %(P 1.976E+02 1.04E+04 8.37E-01 G
                         766.41 1.752E+02 &(  4.199E+02 7.20E+01 2.94E-01 G

AM-241   T   5.2757E-02                                      1.58E+05
                          59.54 5.276E-02 %(  4.191E+00 2.35E+03 3.59E+01 G

Np-237   F   2.2619E+00                                      2.14E+06
                                                           Derived Ave Activity
                          86.49 2.262E+00 }(  1.398E+01 1.86E+02 1.31E+01 G

Cs-136   F   3.4659E-01                                      1.30E+01
                         818.50 4.199E-01 &(  9.819E-01 7.03E+01 1.00E+02 G
                        1048.07 2.549E-01 ?(  1.618E+00 1.81E+02 8.00E+01 G
                         340.57 8.167E-02 %   3.593E+00 1.30E+03 4.69E+01 G

Np-239   T   1.1314E+00                                      2.36E+00
                         103.70-7.344E-03 %   6.790E+00 2.76E+04 2.40E+01 X
                         106.13 1.131E+00 ?(  4.864E+00 1.29E+02 2.27E+01 G
                          99.50-2.176E+00 +   1.064E+01 1.47E+02 1.50E+01 X

Nd-147       4.6809E+00                                      1.11E+01
                         531.00 4.681E+00 &(  4.895E+00 4.57E+01 1.30E+01 G
                          91.10-3.977E-01 -   6.402E+00 4.82E+02 2.83E+01 G

Kr-85    I   8.7931E+01                                      3.92E+03
                         513.98 8.793E+01 &(  3.253E+02 1.10E+02 4.30E-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.
```

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$ - 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	
PB-210	46.54	386.	-27.	-0.015	91.42	-1.374E+01	P
TH-227	50.14	296.	23.	0.013	108.94	5.455E+00	P
BA-133	80.99	1272.	-34.	-0.019	73.93	-1.135E+00	P
EU-155	86.54	1494.	-31.	-0.017	179.76	-1.104E+00	
Nd-147	91.10	1244.	-10.	-0.006	481.57	-3.977E-01	
Gd-153	97.50	984.	-31.	-0.017	144.81	-1.091E+00	
Np-239	99.50	1015.	-31.	-0.017	146.77	-2.176E+00	
Gd-153	103.20	1046.	-31.	-0.017	148.48	-1.491E+00	
EU-155	105.31	473.	24.	0.013	129.60	1.184E+00	
Np-239	106.13	489.	25.	0.014	128.73	1.131E+00	
EU-152	121.78	213.	69.	0.038	32.41	2.516E+00	
EU-154	123.10	285.	-26.	-0.014	94.58	-6.634E-01	
PA-234	131.29	844.	-29.	-0.016	142.69	-1.719E+00	
HF-181	133.02	815.	-29.	-0.016	140.04	-7.185E-01	
CE-144	133.54	814.	-29.	-0.016	139.85	-2.810E+00	
HF-181	136.30	843.	-29.	-0.016	141.94	-5.378E+00	
CO-57	136.47	872.	-29.	-0.016	144.34	-2.947E+00	
Tc-99m	140.51	814.	29.	0.016	142.58	3.601E-01	
Ba-140	162.66	239.	-18.	-0.010	276.89	-3.420E+00	P
CE-139	165.85	286.	24.	0.013	101.01	3.549E-01	P
TH-229	210.85	216.	-29.	-0.016	99.40	-1.351E+01	
TH-227	235.97	760.	-23.	-0.013	169.86	-2.779E+00	
TH-227	256.24	152.	-26.	-0.014	96.31	-5.713E+00	
Cd-113m	263.70	74.	17.	0.010	74.47	4.571E+03	
Hg-203	279.20	160.	-23.	-0.013	81.29	-4.626E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
I-131	284.30	132.	-24.	-0.014	94.46	-6.655E+00		
TL-210	296.00	654.	-8.	-0.004	481.41	-1.642E-01		
PA-231	300.07	638.	8.	0.004	449.55	5.635E+00		
CR-51	320.08	717.	-22.	-0.012	82.28	-3.973E+00		P
La-140	328.76	285.	19.	0.010	130.46	1.697E+00		
Cf-249	333.44	304.	19.	0.010	134.07	2.250E+00		
EU-152	344.29	287.	19.	0.010	129.47	1.357E+00		
HF-181	345.83	106.	-18.	-0.010	82.89	-2.329E+00		
BA-133	356.00	496.	-18.	-0.010	172.59	-5.813E-01		
I-131	364.48	56.	5.	0.003	296.42	1.218E-01		
BA-133	383.84	76.	14.	0.008	94.19	3.156E+00		
Cf-249	387.95	95.	14.	0.008	98.83	4.552E-01		
SN-113	391.69	161.	-7.	-0.004	255.29	-2.326E-01		
SB-125	427.88	43.	15.	0.008	94.25	1.118E+00		
AG-108M	433.94	56.	-4.	-0.002	356.80	-1.079E-01		
PM-146	453.88	44.	15.	0.008	96.49	5.199E-01		P
HF-181	482.00	107.	-10.	-0.005	152.03	-2.969E-01		
La-140	487.02	124.	-15.	-0.008	93.99	-8.035E-01		P
RH-106	511.86	63.	63.	0.035	21.95	7.943E+00		
Kr-85	513.98	126.	15.	0.008	109.84	8.793E+01		
Nd-147	531.00	22.	23.	0.013	45.68	4.681E+00		
Ba-140	537.26	22.	9.	0.005	116.37	9.291E-01		P
CS-134	563.24	24.	11.	0.006	102.54	3.446E+00		P
BI-207	569.70	44.	5.	0.003	186.48	1.452E-01		
SB-125	600.50	372.	9.	0.005	304.41	1.441E+00		
SB-124	602.73	381.	9.	0.005	307.65	2.630E-01		
CS-134	604.71	390.	9.	0.005	310.88	2.657E-01		
RU-103	610.30	399.	9.	0.005	313.42	4.556E+00		
AG-108M	614.28	408.	9.	0.005	316.27	2.936E-01		
PM-144	618.06	417.	9.	0.005	319.03	2.680E-01		
RH-106	621.92	443.	11.	0.006	284.35	3.109E+00		
SB-125	635.89	74.	-19.	-0.011	67.42	-5.042E+00		
I-131	636.97	72.	2.	0.001	671.87	7.503E-01		
AG-110M	657.76	62.	-18.	-0.010	67.02	-5.751E-01		
CS-137	661.66	62.	13.	0.007	88.73	4.749E-01		
PM-144	696.54	122.	-21.	-0.012	119.00	-6.703E-01		P
NB-94	702.63	81.	14.	0.008	96.01	4.537E-01		P
SB-124	722.79	129.	-19.	-0.011	86.52	-5.841E+00		
AG-108M	722.94	110.	-19.	-0.011	80.29	-6.952E-01		
EU-154	723.36	97.	-19.	-0.010	78.93	-3.005E+00		
ZR-95	724.20	43.	10.	0.005	101.56	7.166E-01		
PM-146	747.16	56.	-20.	-0.011	68.29	-1.931E+00		P
ZR-95	756.73	35.	2.	0.001	654.15	1.248E-01		
AG-110M	763.94	90.	-22.	-0.012	64.71	-3.373E+00		
NB-95	765.79	85.	18.	0.010	77.83	6.055E-01		
PA-234M	766.41	51.	15.	0.008	72.02	1.752E+02		
EU-152	778.92	40.	-11.	-0.006	129.95	-2.952E+00		
CS-134	795.87	63.	6.	0.003	191.49	2.477E-01		

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
Cs-136	818.50	28.	12.	0.006	70.30	4.199E-01		
MN-54	834.85	40.	-7.	-0.004	173.21	-2.699E-01		P
Co-56	846.77	35.	-7.	-0.004	174.41	-2.719E-01		P
NB-94	871.10	20.	5.	0.003	134.16	1.894E-01		
EU-154	873.23	24.	7.	0.004	105.95	2.163E+00		
PA-234	880.53	44.	12.	0.007	83.47	7.617E+00		
PA-234	883.24	66.	-2.	-0.001	540.43	-8.547E-01		
Y-88	898.04	45.	-5.	-0.003	298.33	-2.067E-01		
PA-234	946.02	40.	-9.	-0.005	158.05	-2.709E+00		
EU-152	964.11	26.	34.	0.019	26.97	9.595E+00		
EU-154	996.33	57.	-5.	-0.003	232.77	-1.849E+00		
EU-154	1004.77	11.	9.	0.005	89.58	2.097E+00		
Co-56	1037.84	5.	6.	0.004	91.02	1.965E+00		
Cs-136	1048.07	33.	5.	0.003	180.98	2.549E-01		
RH-106	1050.36	52.	-12.	-0.007	86.72	-3.508E+01		
BI-207	1063.66	32.	-6.	-0.003	218.16	-3.561E-01		
Ga-68	1077.40	21.	3.	0.001	398.43	4.266E+00		
FE-59	1099.25	32.	-11.	-0.006	93.93	-9.109E-01		P
ZN-65	1115.55	116.	-3.	-0.001	573.64	-2.419E-01		
CO-60	1173.24	11.	9.	0.005	87.66	4.401E-01		P
Co-56	1238.28	34.	17.	0.009	85.39	1.263E+00		P
FE-59	1291.60	45.	-20.	-0.011	82.55	-2.374E+00		
TL-210	1313.00	23.	-6.	-0.003	201.47	-1.411E+00		
AG-110M	1384.30	6.	7.	0.004	85.58	1.627E+00		
EU-152	1408.00	11.	20.	0.011	46.04	5.179E+00		
La-140	1596.21	18.	-6.	-0.003	175.59	-3.853E-01		
SB-124	1690.98	6.	8.	0.004	86.69	1.062E+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 Counting 1 Sigma	MDA Bq/Sample
BE-7	#A	1.5298E-01	1.5298E-01	2.301E+03%	1.22E+01
NA-22	#	1.0215E+00	1.0215E+00	2.236E+01%	3.76E-01
K-40		1.3309E+02	1.3309E+02	6.536E+00%	8.41E+00
Sc-46	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.54E+00
CR-51	#A	-3.9732E+00	-3.9733E+00	8.228E+01%	2.33E+01
MN-54	#A	-2.6987E-01	-2.6987E-01	1.732E+02%	1.18E+00
FE-59	#A	-9.1092E-01	-9.1094E-01	9.393E+01%	2.35E+00
Co-56	#A	4.6660E-01	4.6660E-01	7.149E+01%	1.13E+00
CO-57	#A	0.0000E+00	0.0000E+00	1.000E+03%	9.91E-01
CO-58	#A	-3.6002E-02	-3.6003E-02	1.091E+03%	1.39E+00
CO-60	#A	2.1998E-01	2.1998E-01	8.766E+01%	3.90E-01
ZN-65	#A	-2.4193E-01	-2.4193E-01	5.736E+02%	4.79E+00
NB-94	#A	3.2020E-01	3.2020E-01	8.249E+01%	1.47E+00

ZR-95	#A	3.8972E-01	3.8973E-01	1.016E+02%	1.89E+00
NB-95	#A	6.0553E-01	6.0554E-01	7.783E+01%	1.57E+00
RU-103	#A	-3.6450E-02	-3.6451E-02	1.011E+03%	9.13E-01
RH-106	#A	3.1090E+00	3.1090E+00	2.843E+02%	2.98E+01
AG-108M	#A	9.2140E-02	9.2140E-02	2.384E+02%	9.38E-01
AG-110M	#A	3.0084E-01	3.0084E-01	8.558E+01%	2.11E+00
SN-113	#A	-2.3262E-01	-2.3262E-01	2.553E+02%	2.02E+00
SB-124	#A	5.2460E-01	5.2461E-01	8.669E+01%	2.73E+00
SB-125	#A	1.2393E+00	1.2393E+00	9.425E+01%	2.52E+00
I-131	#A	1.7253E-01	1.7254E-01	2.964E+02%	9.16E-01
Gd-153	#A	-1.0911E+00	-1.0911E+00	1.448E+02%	5.26E+00
Ga-68	#A	4.1914E+00	4.2664E+00	3.984E+02%	3.88E+01
Tc-99m	#A	3.5894E-01	3.6013E-01	1.426E+02%	1.71E+00
BA-133	#A	-5.8135E-01	-5.8135E-01	1.726E+02%	3.36E+00
CS-134	#A	3.9629E-01	3.9629E-01	1.025E+02%	1.64E+00
CS-137	#A	4.7486E-01	4.7486E-01	8.873E+01%	1.42E+00
CE-139	#A	3.5485E-01	3.5485E-01	1.010E+02%	1.20E+00
Ba-140	#A	9.2902E-01	9.2908E-01	1.164E+02%	2.67E+00
La-140	#A	-1.9984E-02	-1.9985E-02	1.094E+02%	1.44E+00
CE-141	#A	6.2955E-01	6.2957E-01	1.450E+02%	3.04E+00
CE-144	#A	-2.8099E+00	-2.8099E+00	1.398E+02%	1.31E+01
PM-144	#A	-6.7027E-01	-6.7027E-01	1.190E+02%	1.75E+00
EU-152	#A	2.5161E+00	2.5161E+00	3.241E+01%	2.59E+00
EU-154	#A	5.2414E-01	5.2414E-01	5.597E+01%	2.09E+00
EU-155	#A	1.1840E+00	1.1840E+00	1.296E+02%	5.13E+00
HF-181	#A	-2.9684E-01	-2.9685E-01	1.520E+02%	1.54E+00
Ta-182	#A	1.8838E+00	1.8838E+00	8.433E+01%	6.45E+00
Hg-203	#A	-4.6256E-01	-4.6257E-01	8.129E+01%	1.25E+00
TL-208		3.8390E+00	3.8390E+00	1.253E+01%	8.26E-01
PM-146	#A	5.1992E-01	5.1992E-01	9.649E+01%	1.20E+00
Y-88	#A	4.0995E-02	4.0995E-02	1.067E+03%	1.01E+00
Cd-113m	#A	4.5714E+03	4.5714E+03	7.447E+01%	1.13E+04
Cd-109	#A	0.0000E+00	0.0000E+00	1.000E+03%	5.07E+01
Cf-251	A	8.1424E-01	8.1424E-01	1.867E+02%	3.93E+00
Cf-249	#A	7.9681E-01	7.9681E-01	8.328E+01%	1.51E+00
Sn-126	#A	3.3871E+00	3.3871E+00	1.111E+02%	1.26E+01
PB-210	#A	-1.3745E+01	-1.3745E+01	9.142E+01%	4.78E+01
PB-212		9.8654E+00	9.8654E+00	7.397E+00%	1.54E+00
PB-214		1.9763E+01	1.9763E+01	4.909E+00%	1.77E+00
BI-207	#A	-7.1640E-02	-7.1640E-02	1.435E+02%	1.73E+00
BI-212		1.5279E+01	1.5279E+01	2.195E+01%	6.17E+00
U-235	#A	1.9476E+00	1.9476E+00	2.083E+02%	1.36E+01
BI-214		2.0114E+01	2.0114E+01	8.134E+00%	2.30E+00
BI-210M	#A	4.3248E-02	4.3248E-02	1.236E+03%	1.84E+00
AC-228	#	9.3294E+00	9.3294E+00	1.748E+01%	2.96E+00
TH-227	#A	-5.7128E+00	-5.7128E+00	9.631E+01%	1.34E+01
TH-229	#A	-2.9456E-01	-2.9456E-01	2.509E+03%	1.84E+01
TH-234	#	2.2341E+01	2.2341E+01	2.091E+01%	1.07E+01
PA-231	#A	2.5957E+00	2.5957E+00	4.495E+02%	7.36E+01

PA-233 #A	0.0000E+00	0.0000E+00	7.071E+02%		6.01E+00
PA-234 #A	-1.7187E+00	-1.7187E+00	1.427E+02%		8.17E+00
PA-234M#A	4.5173E+01	4.5173E+01	7.202E+01%		1.98E+02
AM-241 #A	5.2757E-02	5.2757E-02	2.347E+03%		4.19E+00
Np-237 #A	2.2619E+00	2.2619E+00	1.855E+02%		1.40E+01
Ir-192 #A	0.0000E+00	0.0000E+00	7.071E+02%		2.51E+00
Cs-136 #A	3.4657E-01	3.4659E-01	7.030E+01%		9.82E-01
Np-239 #A	1.1310E+00	1.1314E+00	1.287E+02%		4.86E+00
Nd-147 #A	4.6806E+00	4.6809E+00	4.568E+01%		4.90E+00
TL-210 #A	0.0000E+00	0.0000E+00	1.000E+03%		1.48E+00
Kr-85 #A	8.7931E+01	8.7931E+01	1.098E+02%		3.25E+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 (25.1 to 1999.3 keV) 2.243E+02 Bq/Sample
Total Decayed Activity (25.1 to 1999.3 keV) 2.2428841E+02 Bq/Sample

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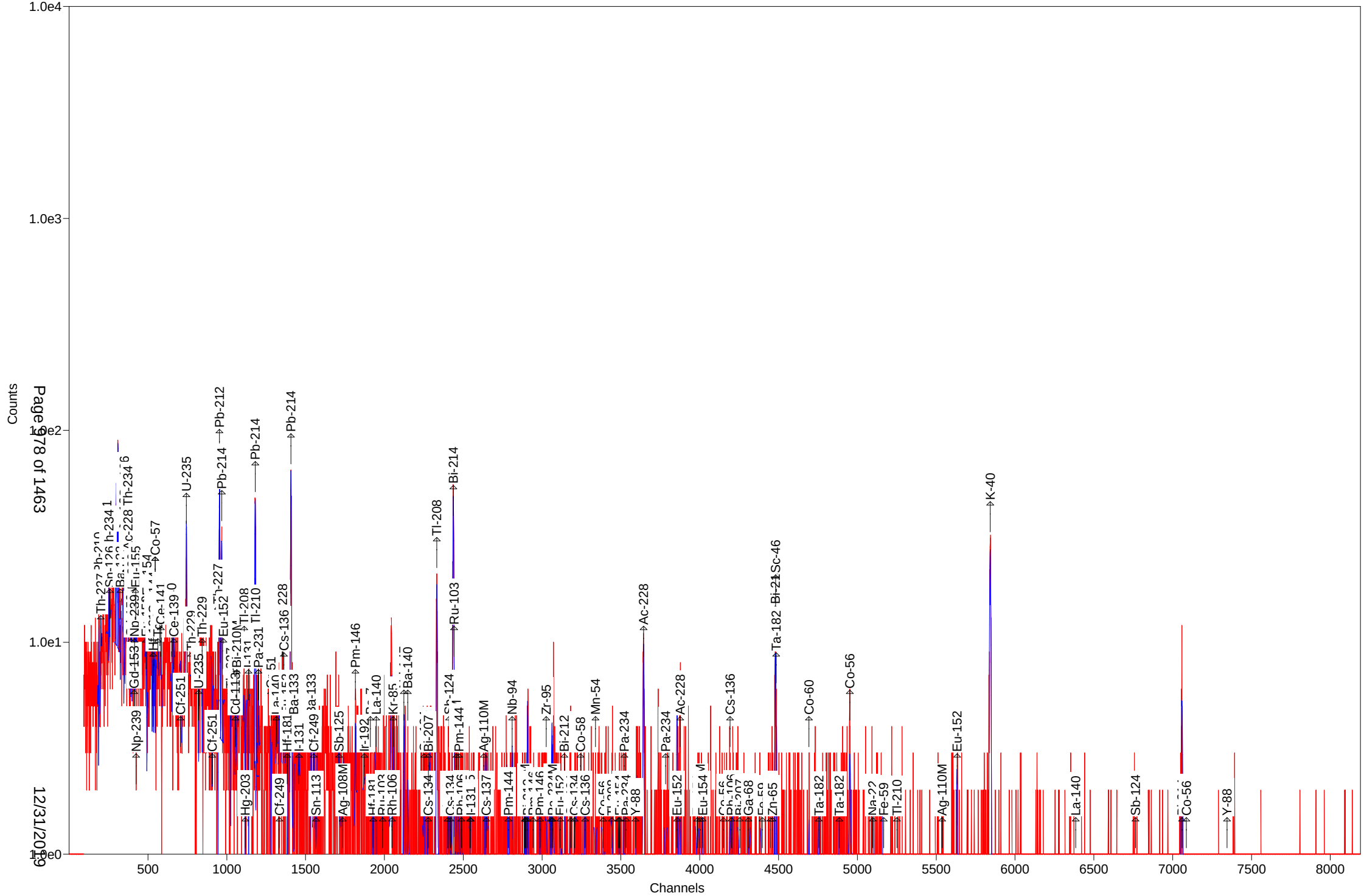
452567_Gamma_160-36526-A-11-D DU. 9_Gamma_20193839.spc.



Test America St. Louis Spectrum ID: 5_Gamma_20193365

Sample Description: 452567_Gamma_160-36526-A-12-B
Detector: Detector # 5
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-12-B

Decay to Time: 12/25/2019 09:37 Live Time: 1800 sec
Acquisition Time: 12/25/2019 09:37:43 Real Time: 1805 sec
Analysis Time: 12/25/2019 10:08 Dead Time: 0.27 %
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_Long_Rev15.lib
Bkgd Correction File: 5_2019-12-07_1448.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	-5.604E+00	86.4	4.840E+00	4.849E+00	1.715E+01
NA-22	-3.237E-01	203.5	6.586E-01	6.588E-01	2.353E+00
K-40	3.022E+02	5.9	1.773E+01	2.353E+01	1.076E+01
Sc-46	-6.694E-01	136.7	9.148E-01	9.154E-01	3.121E+00
CR-51	4.866E-01	867.6	4.222E+00	4.222E+00	1.468E+01
MN-54	-5.881E-01	77.1	4.532E-01	4.542E-01	2.129E+00
FE-59	1.073E+00	89.7	9.624E-01	9.639E-01	3.148E+00
Co-56	-6.247E-01	74.3	4.639E-01	4.650E-01	2.032E+00
CO-57	0.000E+00	1.#INF	1.985E-01	1.985E-01	1.201E+00
CO-58	-6.431E-01	68.5	4.403E-01	4.416E-01	2.349E+00
CO-60	2.979E-01	191.4	5.702E-01	5.704E-01	1.427E+00
ZN-65	-1.697E-01	1207.7	2.050E+00	2.050E+00	7.196E+00
NB-94	1.598E-01	257.5	4.116E-01	4.116E-01	1.472E+00
ZR-95	1.534E-01	905.5	1.389E+00	1.389E+00	3.467E+00
NB-95	3.563E-01	201.5	7.178E-01	7.180E-01	2.485E+00
RU-103	2.336E-02	2453.4	5.730E-01	5.730E-01	1.497E+00
RH-106	4.292E+00	271.1	1.164E+01	1.164E+01	3.947E+01
AG-108M	2.567E-01	94.6	2.428E-01	2.432E-01	1.524E+00
AG-110M	2.342E-01	228.4	5.350E-01	5.351E-01	3.967E+00
SN-113	4.939E-01	135.8	6.708E-01	6.713E-01	2.294E+00
SB-124	9.205E-01	83.2	7.658E-01	7.672E-01	3.571E+00
SB-125	1.548E+00	109.6	1.698E+00	1.700E+00	4.031E+00
I-131	4.940E-01	80.3	3.967E-01	3.976E-01	1.401E+00
Gd-153	4.320E-01	115.7	4.999E-01	5.005E-01	3.694E+00
Ga-68	-3.286E+01	113.5	3.731E+01	3.736E+01	8.435E+01
Tc-99m	3.404E-01	121.6	4.138E-01	4.143E-01	1.389E+00
BA-133	6.125E-01	202.7	1.241E+00	1.242E+00	4.192E+00
CS-134	5.886E-01	100.4	5.909E-01	5.917E-01	1.721E+00
CS-137	1.436E-01	306.3	4.398E-01	4.399E-01	1.584E+00
CE-139	3.279E-01	119.8	3.929E-01	3.941E-01	1.324E+00
Ba-140	1.242E-01	89.5	1.112E-01	1.114E-01	5.915E+00
La-140	-2.118E-01	212.9	4.510E-01	4.511E-01	2.278E+00
CE-141	1.506E-01	532.7	8.020E-01	8.021E-01	2.725E+00

CE-144	-3.235E+00	137.6	4.453E+00	4.456E+00	1.489E+01
PM-144	-1.042E-02	173.1	1.805E-02	1.806E-02	1.878E+00
EU-152	1.999E+00	100.4	2.006E+00	2.009E+00	3.527E+00
EU-154	6.499E-01	98.6	6.405E-01	6.414E-01	2.759E+00
EU-155	1.125E+00	160.8	1.809E+00	1.810E+00	6.083E+00
HF-181	-4.228E-01	99.4	4.201E-01	4.206E-01	2.597E+00
Ta-182	-2.832E+00	96.6	2.735E+00	2.739E+00	9.253E+00
Hg-203	-5.675E-02	963.1	5.466E-01	5.466E-01	1.886E+00
TL-208	5.652E+00	11.4	6.429E-01	7.066E-01	7.284E-01
PM-146	1.249E+00	54.4	6.796E-01	6.826E-01	1.620E+00
Y-88	-1.367E+00	57.8	7.899E-01	7.939E-01	2.534E+00
Cd-113m	-7.093E+03	96.9	6.871E+03	6.886E+03	2.307E+04
Cd-109	8.005E+00	176.8	1.415E+01	1.416E+01	4.738E+01
Cf-251	1.444E+00	105.6	1.525E+00	1.530E+00	4.151E+00
Cf-249	5.276E-01	154.2	8.136E-01	8.141E-01	2.770E+00
Sn-126	-2.043E+00	263.1	5.376E+00	5.377E+00	1.815E+01
PB-210	-7.054E+00	222.2	1.568E+01	1.568E+01	4.622E+01
PB-212	1.344E+01	7.7	1.029E+00	1.347E+00	1.993E+00
PB-214	1.618E+01	8.5	1.368E+00	1.606E+00	2.963E+00
BI-207	-1.161E+00	92.6	1.075E+00	1.077E+00	3.404E+00
BI-212	5.177E+00	110.4	5.718E+00	5.724E+00	1.976E+01
U-235	3.305E+00	91.3	3.017E+00	3.022E+00	1.152E+01
BI-214	1.405E+01	11.1	1.556E+00	1.719E+00	2.971E+00
BI-210M	7.091E-01	104.8	7.432E-01	7.444E-01	2.507E+00
AC-228	1.424E+01	12.5	1.784E+00	1.926E+00	4.068E+00
TH-227	3.660E+00	112.2	4.105E+00	4.111E+00	1.353E+01
TH-229	2.556E+00	180.7	4.619E+00	4.624E+00	2.461E+01
TH-234	2.616E+01	22.0	5.762E+00	5.944E+00	1.540E+01
PA-231	1.459E+00	703.7	1.027E+01	1.027E+01	9.180E+01
PA-233	1.112E+00	196.5	2.185E+00	2.186E+00	7.353E+00
PA-234	-5.720E-01	115.0	6.575E-01	6.582E-01	9.502E+00
PA-234M	6.642E+01	82.0	5.449E+01	5.460E+01	3.206E+02
AM-241	9.103E-01	145.2	1.322E+00	1.323E+00	3.779E+00
Np-237	2.721E+00	154.2	4.198E+00	4.200E+00	1.403E+01
Ir-192	4.595E-01	102.2	4.695E-01	4.703E-01	1.584E+00
Cs-136	2.891E-01	67.5	1.951E-01	1.958E-01	2.758E+00
Np-239	1.052E+00	163.4	1.718E+00	1.719E+00	5.776E+00
Nd-147	3.583E-01	881.3	3.158E+00	3.158E+00	8.438E+00
TL-210	5.907E-01	92.6	5.470E-01	5.481E-01	1.860E+00
Kr-85	3.699E+01	411.5	1.522E+02	1.522E+02	5.259E+02
Total	5.482E+02				

Analyst: Caleb Quinn

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Sample description
452567_Gamma_160-36526-A-12-B

Spectrum Filename: C:\User\SPC\Det5\5_Gamma_20193365.An1

Acquisition information
Start time: 12/25/2019 9:37:43 AM
Live time: 1800
Real time: 1805
Dead time: 0.27 %
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_Long_Rev15.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/(1.0000E+00* 1.0000E+00) = 1.0000E+00
Detection limit method: Reg. Guide 4.16 Method

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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	12/25/2019 9:37:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	5_2019-12-07_1448.PBC 12/7/2019 2:48:46 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 21 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1396

***** 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
46.45	22.	72.94	0.42	1.783E-02	46.54	4.250	PBC<MDA	PB210
50.14	11.	173.43	0.79	2.012E-02	50.14	8.000	PBC<MDA	TH227
59.54	15.	145.22	0.80	2.533E-02	59.54	35.900	PBC<MDA	AM241
63.28	68.	35.38	1.20	2.712E-02	63.29	3.810	3.642E+01	TH234
74.78	134.	15.00	0.81	3.149E-02				
77.06	229.	9.50	0.81	3.217E-02				
80.99	7.	360.39	0.82	3.320E-02	80.99	34.060	PBC<MDA	BA133
86.49	22.	154.24	0.82	3.435E-02	86.49	13.100	PBC<MDA	Np237
					86.54	30.700	1.161E+00	EU155
88.04	19.	176.79	0.83	3.462E-02	88.04	3.790	PBC<MDA	Cd109
92.44	91.	21.54	1.13	3.525E-02	92.59	5.584	2.563E+01	TH234
					93.35	5.561	2.567E+01	AC228
99.50	15.	108.98	0.84	3.592E-02	99.50	15.000	PBC<MDA	Np239
103.20	18.	115.70	0.84	3.612E-02	103.20	21.800	PBC<MDA	Gd153
103.70	18.	120.45	0.84	3.614E-02	103.70	24.000	PBC<MDA	Np239
105.31	16.	160.77	0.84	3.618E-02	105.31	21.200	PBC<MDA	EU155
106.13	16.	163.40	0.84	3.620E-02	106.13	22.700	PBC<MDA	Np239
121.78	7.	266.52	0.86	3.584E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	1.299E-01	CO57
129.24	43.	45.63	0.54	3.528E-02				
140.51	18.	121.57	0.88	3.411E-02	140.51	89.300	PBC<MDA	Tc99m
143.79	18.	125.57	0.88	3.371E-02	143.79	10.960	PBC<MDA	U235

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
145.44	4.	532.71	0.88	3.351E-02	145.44	48.200	PBC<MDA	CE141
162.66	18.	89.51	0.90	3.113E-02	162.66	6.220	PBC<MDA	Ba140
163.38	13.	132.56	0.90	3.102E-02	163.38	5.080	PBC<MDA	U235
165.85	15.	119.83	0.91	3.133E-02	165.85	79.900	PBC<MDA	CE139
176.60	13.	105.60	0.92	2.975E-02	176.60	17.000	PBC<MDA	Cf251
185.72	39.	53.36	0.93	2.854E-02	185.72	54.000	PBC<MDA	U235
210.85	10.	180.73	0.95	2.569E-02	210.85	2.990	PBC<MDA	TH229
227.00	11.	140.65	0.97	2.417E-02	227.00	6.300	PBC<MDA	Cf251
238.63	243.	8.60	1.11	2.319E-02	238.63	43.300	1.343E+01	PB212
242.04	80.	15.92	0.98	2.293E-02	242.00	7.430	2.625E+01	PB214
244.69	14.	220.57	0.98	2.272E-02	244.69	7.580	PBC<MDA	EU152
256.24	10.	142.30	1.00	2.186E-02	256.24	7.000	PBC<MDA	TH227
265.83	14.	104.82	1.00	2.121E-02	265.83	50.000	PBC<MDA	BI210M
295.15	108.	13.40	0.86	1.945E-02	295.09	19.300	1.604E+01	PB214
					296.00	79.000	3.928E+00	TL210
299.98	14.	191.60	1.04	1.918E-02	300.03	3.280	PBC<MDA	PB212
					300.07	2.460	PBC<MDA	PA231
					300.18	6.200	PBC<MDA	PA233
300.07	3.	990.28	1.04	1.918E-02	300.03	3.280	PBC<MDA	PB212
					300.07	2.460	3.167E+00	PA231
					300.18	6.200	1.257E+00	PA233
312.01	13.	196.55	1.05	1.857E-02	312.01	36.000	PBC<MDA	PA233
316.49	13.	102.18	1.05	1.835E-02	316.49	87.040	PBC<MDA	Ir192
320.08	2.	867.57	1.06	1.818E-02	320.08	9.940	PBC<MDA	CR51
338.29	65.	23.83	0.99	1.736E-02	338.32	12.010	1.728E+01	AC228
340.57	11.	162.61	1.08	1.727E-02	340.57	46.900	PBC<MDA	Cs136
344.29	11.	167.81	1.08	1.711E-02	344.29	26.500	PBC<MDA	EU152
345.83	7.	269.80	1.08	1.705E-02	345.83	15.070	PBC<MDA	HF181
351.90	185.	10.31	1.02	1.680E-02	351.93	37.600	1.625E+01	PB214
356.00	11.	202.69	1.09	1.664E-02	356.00	62.050	PBC<MDA	BA133
383.84	12.	116.02	1.12	1.563E-02	383.84	8.940	PBC<MDA	BA133
387.95	10.	154.22	1.12	1.549E-02	387.95	66.000	PBC<MDA	Cf249
391.69	9.	135.81	1.12	1.537E-02	391.69	64.000	PBC<MDA	SN113
427.88	2.	591.61	1.16	1.428E-02	427.88	29.600	PBC<MDA	SB125
453.88	20.	54.41	1.18	1.360E-02	453.88	65.000	PBC<MDA	PM146
463.37	11.	109.64	1.19	1.336E-02	463.37	10.470	PBC<MDA	SB125
487.02	5.	212.88	1.21	1.282E-02	487.02	45.500	PBC<MDA	La140
511.86	27.	46.39	2.48	1.230E-02	511.86	20.000	PBC<MDA	RH106
513.98	4.	411.46	1.24	1.226E-02	513.98	0.430	PBC<MDA	Kr85
531.00	1.	881.29	1.25	1.193E-02	531.00	13.000	PBC<MDA	Nd147
563.09	3.	256.00	1.28	1.135E-02	563.24	8.350	PBC<MDA	CS134
567.83	5.	145.60	1.29	1.125E-02	569.32	15.380	PBC<MDA	CS134
569.47	4.	179.33	1.29	1.125E-02	569.47	8.200	PBC<MDA	PA234
					569.70	97.740	2.106E-01	BI207
583.20	95.	11.37	1.28	1.103E-02	583.02	84.500	5.652E+00	TL208
600.50	8.	259.71	1.31	1.076E-02	600.50	17.860	PBC<MDA	SB125
602.73	8.	251.83	1.32	1.073E-02	602.73	98.260	PBC<MDA	SB124
604.68	8.	255.85	1.32	1.070E-02	604.71	97.620	PBC<MDA	CS134

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
609.23	126.	10.62	1.05	1.063E-02	609.31	46.090	1.427E+01	BI214
					610.30	5.750	1.145E+02	RU103
614.28	8.	263.91	1.33	1.056E-02	614.28	89.850	PBC<MDA	AG108M
618.06	7.	292.08	1.33	1.051E-02	618.06	99.100	PBC<MDA	PM144
621.92	8.	271.08	1.33	1.045E-02	621.92	9.930	PBC<MDA	RH106
635.89	3.	209.33	1.34	1.026E-02	635.89	11.310	PBC<MDA	SB125
636.97	9.	80.32	1.34	1.025E-02	636.97	7.170	PBC<MDA	I131
657.76	3.	228.41	1.36	9.974E-03	657.76	94.640	PBC<MDA	AG110M
661.66	2.	306.33	1.37	9.924E-03	661.66	85.210	PBC<MDA	CS137
702.63	2.	442.48	1.40	9.438E-03	702.63	97.900	PBC<MDA	NB94
722.79	10.	83.19	1.42	9.217E-03	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	6.539E-01	AG108M
					723.36	20.220	2.939E+00	EU154
722.94	10.	94.60	1.42	9.215E-03	722.79	10.810	5.494E+00	SB124
					722.94	90.840	6.539E-01	AG108M
					723.36	20.220	2.939E+00	EU154
723.36	5.	217.65	1.42	9.211E-03	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	3.070E-01	AG108M
					723.36	20.220	1.380E+00	EU154
727.17	6.	110.44	1.42	9.170E-03	727.17	7.550	PBC<MDA	BI212
747.16	7.	139.54	1.44	8.965E-03	747.16	34.000	PBC<MDA	PM146
756.73	1.	905.54	1.45	8.869E-03	756.73	54.460	PBC<MDA	ZR95
765.79	6.	201.46	1.45	8.781E-03	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	1.210E+02	PA234M
766.41	12.	82.04	1.45	8.776E-03	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	2.664E+02	PA234M
795.77	7.	100.40	1.48	8.503E-03	795.87	85.530	PBC<MDA	CS134
799.60	9.	92.60	1.48	8.469E-03	799.60	98.960	PBC<MDA	TL210
860.67	7.	95.93	1.53	7.963E-03	860.56	12.420	PBC<MDA	TL208
871.10	3.	263.39	1.54	7.882E-03	871.10	99.890	PBC<MDA	NB94
873.23	6.	118.98	1.54	7.866E-03	873.23	12.270	PBC<MDA	EU154
910.68	52.	18.35	2.04	7.591E-03	911.07	29.000	1.305E+01	AC228
937.49	2.	619.68	1.59	7.411E-03	937.49	34.360	PBC<MDA	AG110M
964.11	10.	115.30	1.61	7.239E-03	964.11	14.605	PBC<MDA	EU152
968.78	32.	22.53	1.23	7.209E-03	968.97	17.460	1.412E+01	AC228
1004.77	3.	289.64	1.64	6.992E-03	1004.77	18.010	PBC<MDA	EU154
1048.07	10.	67.47	1.67	6.749E-03	1048.07	80.000	PBC<MDA	Cs136
1099.25	6.	147.67	1.71	6.484E-03	1099.25	56.500	PBC<MDA	FE59
1120.01	28.	20.69	1.88	6.381E-03	1120.29	15.100	1.627E+01	BI214
					1120.55	99.987	PBC<MDA	Sc46
1291.60	6.	101.72	1.84	5.661E-03	1291.60	43.200	PBC<MDA	FE59
1313.00	13.	50.07	1.85	5.583E-03	1313.00	21.000	PBC<MDA	TL210
1332.50	3.	191.40	1.87	5.514E-03	1332.50	99.980	PBC<MDA	CO60
1384.30	2.	324.82	1.90	5.340E-03	1384.30	24.290	PBC<MDA	AG110M
1408.00	4.	152.39	1.91	5.264E-03	1408.00	21.005	PBC<MDA	EU152
1460.61	296.	5.87	1.18	5.104E-03	1460.83	10.670	3.022E+02	K40
1765.34	28.	21.19	2.11	4.351E-03	1764.49	15.400	2.302E+01	BI214

********** 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	
298.75	74.76	133.	134.	4.240E+03	15.00	0.813	-	D
307.89	77.04	121.	229.	7.109E+03	9.50	0.815	-	D
516.75	129.24	91.	43.	1.228E+03	45.63	0.538	-	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: Client_Long_Rev15.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	185.69	46.54	169.	-10.	-0.005	222.20	0.783s
TH-227	200.11	50.14	117.	11.	0.006	173.43	0.787s
AM-241	237.72	59.54	161.	15.	0.008	145.22	0.797
TH-234	252.70	63.28	151.	68.	0.038	35.38	1.196s
Sn-126	256.71	64.28	330.	-10.	-0.005	263.13	0.802
BA-133	323.61	80.99	197.	7.	0.004	360.39	0.819
Np-237	345.63	86.49	567.	22.	0.012	154.24	0.825s
EU-155	345.84	86.54	601.	-23.	-0.013	151.35	0.825s
Sn-126	347.43	86.94	578.	-10.	-0.006	330.00	0.825
Cd-109	351.83	88.04	549.	19.	0.011	176.79	0.826s
Nd-147	364.08	91.10	568.	0.	0.000	1000.00	0.829s
TH-234	370.05	92.59	124.	68.	0.038	26.23	0.831D
AC-228	373.09	93.35	494.	21.	0.011	153.69	0.832s
Gd-153	389.70	97.50	217.	-3.	-0.002	696.82	0.836s
Np-239	397.71	99.50	134.	15.	0.009	108.98	0.838
Gd-153	412.52	103.20	198.	18.	0.010	115.70	0.842s
Np-239	414.52	103.70	216.	18.	0.010	120.45	0.842s
EU-155	420.98	105.31	304.	16.	0.009	160.77	0.844s
Np-239	424.25	106.13	315.	16.	0.009	163.40	0.845s
EU-152	486.90	121.78	179.	7.	0.004	266.52	0.861s
CO-57	488.03	122.06	186.	0.	0.000	1000.00	0.861s
EU-154	492.18	123.10	224.	-22.	-0.012	100.15	0.862s
PA-234	524.99	131.29	511.	-22.	-0.012	143.86	0.871s
HF-181	531.91	133.02	488.	-23.	-0.013	140.45	0.872
CE-144	533.97	133.54	469.	-23.	-0.013	137.64	0.873
HF-181	545.02	136.30	492.	-23.	-0.013	140.38	0.876
CO-57	545.72	136.47	514.	-23.	-0.013	143.46	0.876

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Tc-99m	561.88	140.51	233.	18.	0.010	121.57	0.880s
U-235	574.99	143.79	251.	18.	0.010	125.57	0.883s
CE-141	581.61	145.44	270.	4.	0.002	532.71	0.885s
Ba-140	650.54	162.66	120.	18.	0.010	89.51	0.902s
U-235	653.42	163.38	139.	13.	0.007	132.56	0.903s
CE-139	663.32	165.85	149.	15.	0.008	119.83	0.905s
Cf-251	706.34	176.60	57.	13.	0.007	105.60	0.916s
U-235	742.85	185.72	127.	39.	0.022	53.36	0.925s
U-235	821.35	205.33	81.	-4.	-0.002	419.39	0.945s
TH-229	843.44	210.85	93.	10.	0.005	180.73	0.950s
Cf-251	908.08	227.00	77.	11.	0.006	140.65	0.966s
TH-227	943.98	235.97	554.	-16.	-0.009	206.16	0.975s
PB-212	954.64	238.63	51.	243.	0.135	7.66	0.978D
PB-214	968.10	242.00	42.	80.	0.045	15.92	0.981D
EU-152	978.89	244.69	477.	14.	0.008	220.57	0.984
TH-227	1025.11	256.24	55.	10.	0.006	142.30	0.995
Cd-113m	1054.97	263.70	117.	-16.	-0.009	96.87	1.002s
BI-210M	1063.50	265.83	94.	14.	0.008	104.82	1.005s
TL-208	1109.33	277.28	124.	-17.	-0.010	38.77	1.016
Hg-203	1117.00	279.20	132.	-2.	-0.001	963.12	1.017s
I-131	1137.41	284.30	73.	-15.	-0.009	107.56	1.022s
PB-214	1180.84	295.15	34.	108.	0.060	13.40	0.863
TL-210	1184.24	296.00	360.	-4.	-0.002	598.56	1.034s
PB-212	1200.37	300.03	340.	14.	0.008	191.60	1.038s
PA-231	1200.53	300.07	353.	3.	0.001	990.28	1.038s
PA-233	1200.97	300.18	356.	0.	0.000	1000.00	1.038s
PA-231	1210.86	302.65	356.	0.	0.000	1000.00	1.040s
BA-133	1211.66	302.85	356.	0.	0.000	1000.00	1.040s
Ba-140	1219.66	304.85	356.	0.	0.000	1000.00	1.042s
BI-210M	1219.85	304.90	356.	0.	0.000	1000.00	1.042s
Ir-192	1234.03	308.44	356.	0.	0.000	1000.00	1.046s
PA-233	1248.32	312.01	339.	13.	0.007	196.55	1.049s
Ir-192	1266.25	316.49	84.	13.	0.007	102.18	1.053s
CR-51	1280.63	320.08	93.	2.	0.001	867.57	1.057s
La-140	1315.35	328.76	77.	0.	0.000	1000.00	1.065s
Cf-249	1334.08	333.44	73.	-16.	-0.009	101.16	1.070s
AC-228	1353.49	338.29	34.	65.	0.036	23.83	0.989
Cs-136	1362.62	340.57	143.	11.	0.006	162.61	1.077s
EU-152	1377.49	344.29	154.	11.	0.006	167.81	1.080s
HF-181	1383.66	345.83	164.	7.	0.004	269.80	1.082s
PB-214	1407.96	351.90	44.	185.	0.103	10.31	1.016
BA-133	1424.36	356.00	260.	11.	0.006	202.69	1.091s
I-131	1458.32	364.48	44.	-2.	-0.001	624.50	1.099
BA-133	1535.78	383.84	95.	12.	0.007	116.02	1.117
Cf-249	1552.22	387.95	107.	10.	0.005	154.22	1.121s
SN-113	1567.19	391.69	66.	9.	0.005	135.81	1.125s
SB-125	1711.99	427.88	36.	2.	0.001	591.61	1.158s
AG-108M	1736.25	433.94	48.	-8.	-0.004	176.39	1.164s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
PM-146	1816.05	453.88	24.	20.	0.011	54.41	1.182s
SB-125	1854.01	463.37	65.	11.	0.006	109.64	1.191s
Ir-192	1872.79	468.06	90.	-14.	-0.008	101.15	1.195s
BE-7	1910.94	477.59	72.	-14.	-0.008	86.37	1.204s
HF-181	1928.56	482.00	97.	-15.	-0.008	99.36	1.208
La-140	1948.65	487.02	33.	5.	0.003	212.88	1.212
RH-106	2048.06	511.86	67.	27.	0.015	46.39	2.485s
Kr-85	2056.53	513.98	102.	4.	0.002	411.46	1.237
Nd-147	2124.62	531.00	20.	1.	0.001	881.29	1.252s
Ba-140	2149.67	537.26	36.	-6.	-0.003	200.00	1.258s
CS-134	2253.60	563.24	12.	3.	0.002	256.00	1.280s
CS-134	2277.94	569.32	24.	5.	0.003	145.60	1.286s
PA-234	2278.54	569.47	26.	4.	0.002	179.33	1.286s
BI-207	2279.47	569.70	30.	0.	0.000	1000.00	1.286s
TL-208	2333.47	583.20	4.	95.	0.053	11.37	1.275
SB-125	2402.69	600.50	187.	8.	0.004	259.71	1.313s
SB-124	2411.61	602.73	195.	8.	0.004	251.83	1.315s
CS-134	2419.53	604.71	202.	8.	0.004	255.85	1.317
BI-214	2437.93	609.31	25.	118.	0.065	11.07	1.321D
RU-103	2441.89	610.30	210.	8.	0.004	259.80	1.322s
AG-108M	2457.82	614.28	218.	8.	0.004	263.91	1.325s
PM-144	2472.94	618.06	226.	7.	0.004	292.08	1.328
RH-106	2488.37	621.92	232.	8.	0.004	271.08	1.332s
SB-125	2544.26	635.89	16.	3.	0.002	209.33	1.344s
I-131	2548.61	636.97	24.	9.	0.005	80.32	1.345s
AG-110M	2631.76	657.76	20.	3.	0.002	228.41	1.362
CS-137	2647.36	661.66	21.	2.	0.001	306.33	1.366s
PM-144	2786.90	696.54	39.	-7.	-0.004	185.99	1.395s
NB-94	2811.25	702.63	22.	2.	0.001	442.48	1.400s
SB-124	2891.88	722.79	29.	10.	0.005	83.19	1.417s
AG-108M	2892.48	722.94	39.	10.	0.005	94.60	1.417s
EU-154	2894.17	723.36	48.	5.	0.003	217.65	1.418s
ZR-95	2897.53	724.20	93.	-17.	-0.010	56.02	1.418s
BI-212	2909.41	727.17	22.	6.	0.004	110.44	1.421s
PM-146	2943.61	735.72	22.	-2.	-0.001	575.33	1.428s
PM-146	2989.37	747.16	22.	7.	0.004	139.54	1.437s
ZR-95	3027.65	756.73	35.	1.	0.001	905.54	1.445s
AG-110M	3056.50	763.94	53.	-16.	-0.009	69.41	1.451s
NB-95	3063.89	765.79	61.	6.	0.003	201.46	1.453s
PA-234M	3066.38	766.41	45.	12.	0.007	82.04	1.453s
EU-152	3116.41	778.92	23.	-9.	-0.005	114.56	1.463s
CS-134	3184.20	795.87	18.	7.	0.004	100.40	1.477s
TL-210	3199.12	799.60	30.	9.	0.005	92.60	1.480s
CO-58	3243.82	810.78	49.	-10.	-0.005	68.47	1.489s
La-140	3263.80	815.77	58.	0.	0.000	1000.00	1.493s
Cs-136	3274.72	818.50	68.	-8.	-0.004	156.70	1.495s
MN-54	3340.10	834.85	38.	-9.	-0.005	77.05	1.508s
Co-56	3387.78	846.77	33.	-9.	-0.005	74.26	1.518s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
TL-208	3442.95	860.56	9.	7.	0.004	95.93	1.529s
NB-94	3485.08	871.10	23.	3.	0.001	263.39	1.537s
EU-154	3493.61	873.23	21.	6.	0.003	118.98	1.539s
PA-234	3522.80	880.53	52.	-12.	-0.007	89.47	1.544s
PA-234	3533.64	883.24	64.	-2.	-0.001	683.15	1.547s
AG-110M	3539.41	884.68	65.	0.	0.000	1000.00	1.547s
Sc-46	3557.79	889.28	77.	-9.	-0.005	136.65	1.551s
Y-88	3592.83	898.04	25.	-9.	-0.005	78.69	1.558s
AC-228	3643.40	910.68	8.	52.	0.029	18.35	2.035s
AG-110M	3750.60	937.49	23.	2.	0.001	619.68	1.589s
PA-234	3784.70	946.02	28.	-7.	-0.004	164.75	1.595s
EU-152	3857.05	964.11	58.	10.	0.005	115.30	1.609s
AC-228	3875.73	968.78	4.	32.	0.018	22.53	1.226s
EU-154	3985.88	996.33	41.	-4.	-0.002	251.44	1.633s
EU-154	4019.65	1004.77	15.	3.	0.002	289.64	1.639s
Co-56	4151.87	1037.84	20.	-6.	-0.003	156.84	1.664s
Cs-136	4192.77	1048.07	18.	10.	0.006	67.47	1.671s
RH-106	4201.93	1050.36	56.	-15.	-0.009	73.13	1.673s
BI-207	4255.11	1063.66	35.	-10.	-0.006	92.58	1.682s
Ga-68	4310.04	1077.40	30.	-11.	-0.006	113.55	1.692s
FE-59	4397.41	1099.25	15.	6.	0.003	147.67	1.708s
EU-152	4448.68	1112.07	85.	-14.	-0.008	70.11	1.717s
BI-214	4480.42	1120.01	3.	28.	0.016	20.69	1.876
Sc-46	4482.57	1120.55	66.	-15.	-0.008	82.57	1.723
Ta-182	4485.56	1121.30	54.	-11.	-0.006	96.59	1.724
CO-60	4693.21	1173.24	35.	-10.	-0.006	56.81	1.760s
Ta-182	4885.79	1221.41	27.	-6.	-0.003	211.36	1.793s
Co-56	4953.23	1238.28	43.	-10.	-0.005	156.93	1.804s
NA-22	5098.13	1274.53	21.	-3.	-0.002	203.47	1.828s
EU-154	5098.17	1274.54	25.	0.	0.000	1000.00	1.828s
FE-59	5166.35	1291.60	5.	6.	0.003	101.72	1.840s
TL-210	5251.91	1313.00	5.	13.	0.007	50.07	1.854s
CO-60	5329.85	1332.50	6.	3.	0.002	191.40	1.866s
AG-110M	5536.88	1384.30	11.	2.	0.001	324.82	1.899s
EU-152	5631.62	1408.00	5.	4.	0.002	152.39	1.914
K-40	5841.87	1460.61	3.	296.	0.165	5.87	1.178s
La-140	6383.73	1596.21	12.	-5.	-0.003	384.94	2.024s
SB-124	6762.39	1690.98	0.	0.	0.000	1000.00	2.076s
BI-214	7056.06	1764.49	3.	28.	0.015	21.19	2.114s
Co-56	7083.46	1771.35	31.	0.	0.000	1000.00	2.117s
Y-88	7341.96	1836.06	12.	-10.	-0.006	57.77	2.149s

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

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*****   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 -  Average     ------------- Peak --------------
Name   Code  Activity     Energy   Activity Code MDA Value
             Bq/Sample     keV     Bq/Sample     Bq/Sample      COMMENTS
_____________________________________________________________________________

BE-7     C  -5.6042E+00                                     5.31E+01
                          477.60-5.604E+00 &(P 1.715E+01 8.64E+01 1.05E+01 G

NA-22    C  -3.2367E-01                                     9.50E+02
                         1274.53-3.237E-01 ?(  2.353E+00 2.03E+02 9.99E+01 G

K-40     N   3.0218E+02                                     4.66E+11
                         1460.83 3.022E+02  (P 1.076E+01 5.87E+00 1.07E+01 G

Sc-46    F  -6.6942E-01                                     8.38E+01
                          889.28-6.694E-01 ?(  3.121E+00 1.37E+02 1.00E+02 G
                         1120.55-1.277E+00 +   3.533E+00 8.26E+01 1.00E+02 G

CR-51    F   4.8664E-01                                     2.77E+01
                          320.08 4.866E-01 ?(P 1.468E+01 8.68E+02 9.94E+00 G

MN-54    C  -5.8810E-01                                     3.12E+02
                          834.85-5.881E-01 &(P 2.129E+00 7.71E+01 1.00E+02 G

FE-59    F   1.0734E+00                                     4.45E+01
                         1099.25 9.099E-01 ?(  3.148E+00 1.48E+02 5.65E+01 G
                         1291.60 1.287E+00 ?(  3.060E+00 1.02E+02 4.32E+01 G

Co-56    C  -6.2469E-01                                     7.73E+01
                          846.77-6.247E-01 ?(P 2.032E+00 7.43E+01 9.99E+01 G
                         1238.28-1.386E+00 +   4.752E+00 1.57E+02 6.61E+01 G
                         1037.84-3.522E+00 + P 1.364E+01 1.57E+02 1.41E+01 G
                         1771.35 0.000E+00 +   2.371E+01 1.00E+03 1.55E+01  A

CO-58    C  -6.4311E-01                                     7.09E+01
                          810.78-6.431E-01 ?(P 2.349E+00 6.85E+01 9.95E+01 G

CO-60    F   2.9789E-01                                     1.93E+03
                         1332.50 2.979E-01 ?(P 1.427E+00 1.91E+02 1.00E+02 G
                         1173.24-9.452E-01 + P 2.759E+00 5.68E+01 9.99E+01 G

ZN-65    F  -1.6975E-01                                     2.44E+02
                         1115.55-1.697E-01 %(  7.196E+00 1.21E+03 5.06E+01 G

NB-94    I   1.5985E-01                                     7.41E+06
                          702.63 1.310E-01 ?(P 1.472E+00 4.42E+02 9.79E+01 G
                          871.10 1.882E-01 ?(  1.779E+00 2.63E+02 9.99E+01 G
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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
ZR-95	I	1.5335E-01					6.40E+01	
			756.73	1.534E-01	?(	3.467E+00	9.06E+02	5.45E+01 G
			724.20	-2.359E+00	+ P	6.500E+00	5.60E+01	4.42E+01 G
NB-95	I	3.5630E-01					6.40E+01	
			765.79	3.563E-01	?(	2.485E+00	2.01E+02	9.98E+01 G
RU-103	I	2.3356E-02					3.93E+01	
			497.05	2.336E-02	%(P	1.497E+00	2.45E+03	9.09E+01 G
			610.30	7.243E+00	?	6.389E+01	2.60E+02	5.75E+00 GA
RH-106	I	4.2924E+00					3.74E+02	
			621.92	4.292E+00	?(	3.947E+01	2.71E+02	9.93E+00 G
			1050.36	-8.131E+01	+	1.980E+02	7.31E+01	1.56E+00 G
			511.86	6.172E+00	?	9.206E+00	4.64E+01	2.00E+01 GA
AG-108M	C	2.5668E-01					1.53E+05	
			433.94	-3.512E-01	?(P	1.524E+00	1.76E+02	9.05E+01 G
			722.94	6.539E-01	?(	2.099E+00	9.46E+01	9.08E+01 G
			614.28	4.672E-01	(	4.185E+00	2.64E+02	8.98E+01 G
AG-110M	F	2.3422E-01					2.50E+02	
			884.68	0.000E+00	?(	3.967E+00	1.00E+03	7.27E+01 G
			657.76	1.707E-01	?(	1.401E+00	2.28E+02	9.46E+01 G
			937.49	3.636E-01	&(	5.502E+00	6.20E+02	3.44E+01 G
			1384.30	9.994E-01	?(	7.679E+00	3.25E+02	2.43E+01 G
			763.94	-4.521E+00	+	1.041E+01	6.94E+01	2.23E+01 G
SN-113	F	4.9394E-01					1.15E+02	
			391.69	4.939E-01	?(	2.294E+00	1.36E+02	6.40E+01 G
SB-124	F	9.2054E-01					6.02E+01	
			602.73	4.174E-01	?(	3.571E+00	2.52E+02	9.83E+01 G
			1690.98	0.000E+00	-	1.899E+00	1.00E+03	4.78E+01 G
			722.79	5.494E+00	?(	1.542E+01	8.32E+01	1.08E+01 G
SB-125	I	1.5485E+00					1.01E+03	
			427.88	2.629E-01	?(	4.031E+00	5.92E+02	2.96E+01 G
			600.50	2.177E+00	?(P	1.922E+01	2.60E+02	1.79E+01 G
			635.89	1.370E+00	?(	1.036E+01	2.09E+02	1.13E+01 G
			463.37	4.305E+00	?(P	1.601E+01	1.10E+02	1.05E+01 G
I-131	I	4.9397E-01					8.02E+00	
			364.48	-8.334E-02	&(	1.401E+00	6.24E+02	8.17E+01 G
			284.30	-6.917E+00	+	1.922E+01	1.08E+02	6.14E+00 G
			636.97	7.072E+00	&(	1.915E+01	8.03E+01	7.17E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Gd-153	F	4.3202E-01					2.42E+02	
			97.50	-1.553E-01	(	3.694E+00	6.97E+02	3.00E+01 G
			103.20	1.240E+00	?(	4.818E+00	1.16E+02	2.18E+01 G
Ga-68	C	-3.2863E+01					4.71E-02	
			1077.40	-3.286E+01	?(	8.435E+01	1.14E+02	3.30E+00 G
Tc-99m	I	3.4042E-01					2.51E-01	
			140.51	3.404E-01	?(	1.389E+00	1.22E+02	8.93E+01 G
BA-133	F	6.1245E-01					3.85E+03	
			356.00	6.125E-01	?(	4.192E+00	2.03E+02	6.20E+01 G
			302.85	0.000E+00	-	1.443E+01	1.00E+03	1.83E+01 G
			383.84	4.875E+00	& P	1.914E+01	1.16E+02	8.94E+00 GA
			80.99	3.423E-01	& P	3.347E+00	3.60E+02	3.41E+01 GA
CS-134	I	5.8860E-01					7.54E+02	
			795.87	4.977E-01	?(P	1.721E+00	1.00E+02	8.55E+01 G
			604.71	4.218E-01	&(	3.666E+00	2.56E+02	9.76E+01 G
			569.32	1.605E+00	&(	8.198E+00	1.46E+02	1.54E+01 G
			801.95	2.476E-01	%	2.509E+01	2.83E+03	8.69E+00 G
			563.24	1.598E+00	?(	1.105E+01	2.56E+02	8.35E+00 G
CS-137	I	1.4358E-01					1.10E+04	
			661.66	1.436E-01	(P	1.584E+00	3.06E+02	8.52E+01 G
CE-139	F	3.2789E-01					1.38E+02	
			165.85	3.279E-01	&(	1.324E+00	1.20E+02	7.99E+01 G
Ba-140	I	1.2420E-01					1.28E+01	
			537.26	-1.157E+00	&(	5.915E+00	2.00E+02	2.44E+01 G
			162.66	5.149E+00	(	1.543E+01	8.95E+01	6.22E+00 G
			304.85	0.000E+00	-	6.200E+01	1.00E+03	4.29E+00 G
La-140	I	-2.1185E-01					1.28E+01	
			1596.21	-5.557E-01	?(P	2.278E+00	3.85E+02	9.54E+01 G
			487.02	5.090E-01	(P	2.795E+00	2.13E+02	4.55E+01 G
			328.76	0.000E+00	+	6.711E+00	1.00E+03	2.03E+01 G
			815.77	0.000E+00	+	1.092E+01	1.00E+03	2.33E+01 G
CE-141	I	1.5056E-01					3.25E+01	
			145.44	1.506E-01	(	2.725E+00	5.33E+02	4.82E+01 G
CE-144	I	-3.2352E+00					2.85E+02	
			133.54	-3.235E+00	(	1.489E+01	1.38E+02	1.11E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PM-144	C	-1.0424E-02					3.63E+02	
			696.54	-4.132E-01	?(	1.878E+00	1.86E+02	9.90E+01 G
			618.06	3.919E-01	&(P	3.886E+00	2.92E+02	9.91E+01 G
EU-152	F	1.9987E+00					4.94E+03	
			121.78	3.887E-01	(	3.527E+00	2.67E+02	2.86E+01 G
			344.29	1.302E+00	?(	7.408E+00	1.68E+02	2.65E+01 G
			1112.07	-8.742E+00	+ P	2.893E+01	7.01E+01	1.36E+01 G
			778.92	-4.629E+00	+	1.251E+01	1.15E+02	1.29E+01 G
			964.11	5.089E+00	?(	1.999E+01	1.15E+02	1.46E+01 G
			244.69	4.553E+00	(	3.372E+01	2.21E+02	7.58E+00 G
			1408.00	1.842E+00	?	6.769E+00	1.52E+02	2.10E+01 GA
EU-154	I	6.4985E-01					3.14E+03	
			123.10	-8.240E-01	?(	2.759E+00	1.00E+02	4.08E+01 G
			1274.54	0.000E+00	+	7.130E+00	1.00E+03	3.52E+01 G
			723.36	1.380E+00	?(	1.048E+01	2.18E+02	2.02E+01 G
			873.23	3.358E+00	?(	1.390E+01	1.19E+02	1.23E+01 G
			1004.77	1.323E+00	?(	9.158E+00	2.90E+02	1.80E+01 G
			996.33	-2.729E+00	+	2.413E+01	2.51E+02	1.06E+01 G
EU-155	I	1.1254E+00					1.81E+03	
			105.31	1.125E+00	*(	6.083E+00	1.61E+02	2.12E+01 G
			86.54	-1.219E+00	&	6.162E+00	1.51E+02	3.07E+01 G
HF-181	F	-4.2277E-01					4.24E+01	
			482.00	-7.766E-01	?(	2.597E+00	9.94E+01	8.05E+01 G
			133.02	-8.269E-01	&	3.883E+00	1.40E+02	4.33E+01 G
			345.83	1.467E+00	?(	1.350E+01	2.70E+02	1.51E+01 G
			136.30	-6.204E+00	&	2.912E+01	1.40E+02	5.85E+00 G
Ta-182	F	-2.8315E+00					1.14E+02	
			1121.30	-2.832E+00	&(	9.253E+00	9.66E+01	3.49E+01 G
			1221.41	-1.965E+00	+	9.284E+00	2.11E+02	2.70E+01 G
			1189.05	5.650E-01	%	1.595E+01	1.21E+03	1.62E+01 G
Hg-203	F	-5.6749E-02					4.66E+01	
			279.20	-5.675E-02	?(	1.886E+00	9.63E+02	8.15E+01 G
TL-208	N	5.6518E+00					6.98E+02	
			583.02	5.652E+00	(	7.284E-01	1.14E+01	8.45E+01 G
			277.28	-7.486E+00	- P	2.348E+01	3.88E+01	6.31E+00 G
			860.56	4.130E+00	- P	9.588E+00	9.59E+01	1.24E+01 G
PM-146	C	1.2490E+00					2.02E+03	
			453.88	1.226E+00	*(P	1.620E+00	5.44E+01	6.50E+01 G
			747.16	1.293E+00	?(P	4.470E+00	1.40E+02	3.40E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			735.72	-4.532E-01	-	6.635E+00	5.75E+02	2.25E+01 G
Y-88	F	-1.3674E+00					1.07E+02	
			1836.06	-1.367E+00	?(P	2.534E+00	5.78E+01	9.92E+01 G
			898.04	-7.231E-01	+ P	2.020E+00	7.87E+01	9.37E+01 G
Cd-113m		-7.0928E+03					5.33E+03	
			263.70	-7.093E+03	*(	2.307E+04	9.69E+01	6.00E-03 K
Cd-109	F	8.0053E+00					4.53E+02	
			88.04	8.005E+00	?(	4.738E+01	1.77E+02	3.79E+00 G
Cf-251	T	1.4437E+00					3.28E+05	
			176.60	1.444E+00	&(	4.151E+00	1.06E+02	1.70E+01 G
			227.00	4.135E+00	?	1.587E+01	1.41E+02	6.30E+00 GA
Cf-249	T	5.2759E-01					1.28E+05	
			387.95	5.276E-01	?(	2.770E+00	1.54E+02	6.60E+01 G
			333.44	-3.329E+00	+	8.687E+00	1.01E+02	1.55E+01 G
Sn-126		-2.0430E+00					3.65E+07	
			87.57	3.272E-07	%	4.880E+00	4.42E+08	3.75E+01 GA
			64.28	-2.043E+00	(	1.815E+01	2.63E+02	9.70E+00 G
			86.94	-1.848E+00	+	2.049E+01	3.30E+02	9.04E+00 GA
PB-210	N	-7.0545E+00					8.14E+03	
			46.54	-7.054E+00	?(P	4.622E+01	2.22E+02	4.25E+00 G
PB-212	N	1.3437E+01					6.98E+02	
			238.63	1.344E+01	(P	1.993E+00	7.66E+00	4.33E+01 G
			300.03	1.213E+01	? P	7.821E+01	1.92E+02	3.28E+00 GA
PB-214	N	1.6179E+01					5.84E+05	
			351.93	1.625E+01	(P	2.963E+00	1.03E+01	3.76E+01 G
			295.09	1.604E+01	(P	4.401E+00	1.34E+01	1.93E+01 G
			242.00	2.625E+01	+ P	1.068E+01	1.59E+01	7.43E+00 GA
BI-207	C	-1.1614E+00					1.18E+04	
			1063.66	-1.161E+00	?(P	3.404E+00	9.26E+01	7.45E+01 G
			569.70	0.000E+00	+	1.427E+00	1.00E+03	9.77E+01 G
BI-212	N	5.1775E+00					6.98E+02	
			727.17	5.177E+00	&(P	1.976E+01	1.10E+02	7.55E+00 G
			785.42	-3.462E+00	% P	1.282E+02	1.45E+03	1.28E+00 GA
U-235	N	3.3052E+00					2.57E+11	
			143.79	2.733E+00	&(	1.152E+01	1.26E+02	1.10E+01 G
			205.33	-1.726E+00	- P	1.886E+01	4.19E+02	5.01E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			163.38	4.539E+00	*(P	2.033E+01	1.33E+02	5.08E+00 G
			185.72	1.418E+00		1.989E+00	5.34E+01	5.40E+01 GA
BI-214	N	1.4055E+01						5.84E+05
			609.31	1.333E+01	(P	2.971E+00	1.11E+01	4.61E+01 G
			1120.29	1.627E+01	(P	6.045E+00	2.07E+01	1.51E+01 G
			1764.49	2.302E+01	+ P	9.193E+00	2.12E+01	1.54E+01 G
BI-210M	T	7.0906E-01						1.10E+09
			265.83	7.091E-01	?(	2.507E+00	1.05E+02	5.00E+01 G
			304.90	0.000E+00	-	9.501E+00	1.00E+03	2.80E+01 G
AC-228	N	1.4241E+01						2.10E+03
			911.07	1.305E+01	(P	4.068E+00	1.84E+01	2.90E+01 G
			968.97	1.412E+01	(	5.310E+00	2.25E+01	1.75E+01 G
			338.32	1.728E+01	(P	7.976E+00	2.38E+01	1.20E+01 G
			93.35	5.838E+00	-	3.003E+01	1.54E+02	5.56E+00 XA
TH-227	N	3.6599E+00						7.95E+03
			256.24	3.630E+00	?(	1.353E+01	1.42E+02	7.00E+00 G
			235.97	-3.139E+00	+	2.169E+01	2.06E+02	1.23E+01 G
			50.14	3.686E+00	&(P	1.836E+01	1.73E+02	8.00E+00 G
TH-229	N	2.5557E+00						2.68E+06
			193.51	-4.577E-01	%(	2.461E+01	1.95E+03	4.40E+00 G
			210.85	6.990E+00	(	3.452E+01	1.81E+02	2.99E+00 G
TH-234	N	2.6164E+01						1.63E+12
			92.59	1.917E+01	(P	1.540E+01	2.62E+01	5.58E+00 G
			63.29	3.642E+01	@(P	3.227E+01	3.54E+01	3.81E+00 G
PA-231	N	1.4588E+00						1.20E+07
			302.65	0.000E+00	(	9.180E+01	1.00E+03	2.88E+00 G
			300.07	3.167E+00	?(	1.063E+02	9.90E+02	2.46E+00 G
PA-233	C	1.1116E+00						7.82E+08
			312.01	1.112E+00	?(P	7.353E+00	1.97E+02	3.60E+01 G
			300.18	0.000E+00	-	4.235E+01	1.00E+03	6.20E+00 G
PA-234	N	-5.7200E-01						1.63E+12
			131.29	-1.976E+00	?(	9.502E+00	1.44E+02	1.80E+01 G
			946.02	-3.946E+00	+	1.543E+01	1.65E+02	1.34E+01 G
			569.47	2.509E+00	?(	1.590E+01	1.79E+02	8.20E+00 G
			883.24	-1.235E+00	+	2.963E+01	6.83E+02	9.60E+00 G
			880.53	-1.423E+01	+	4.292E+01	8.95E+01	6.00E+00 GA

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

PA-234M  N   6.6422E+01                                      1.63E+12
                         1001.00-3.832E+00 %(P 3.206E+02 2.36E+03 8.37E-01 G
                          766.41 2.664E+02 ?(  7.340E+02 8.20E+01 2.94E-01 G

AM-241   T   9.1032E-01                                      1.58E+05
                           59.54 9.103E-01  (P 3.779E+00 1.45E+02 3.59E+01 G

Np-237   F   2.7213E+00                                      2.14E+06
                           86.49 2.721E+00 &(  1.403E+01 1.54E+02 1.31E+01 G

Ir-192   F   4.5950E-01                                      7.40E+01
                          316.49 4.595E-01 &(  1.584E+00 1.02E+02 8.70E+01 G
                          468.06-1.117E+00 +   3.808E+00 1.01E+02 5.18E+01 G
                          308.44 0.000E+00 -   8.459E+00 1.00E+03 3.18E+01 G

Cs-136   F   2.8911E-01                                      1.30E+01
                          818.50-5.129E-01 ?(  2.758E+00 1.57E+02 1.00E+02 G
                         1048.07 1.035E+00 &(  2.313E+00 6.75E+01 8.00E+01 G
                          340.57 7.266E-01 ?(  4.009E+00 1.63E+02 4.69E+01 G

Np-239   T   1.0516E+00                                      2.36E+00
                          103.70 1.127E+00 ?   4.557E+00 1.20E+02 2.40E+01 X
                          106.13 1.052E+00 ?(  5.776E+00 1.63E+02 2.27E+01 G
                           99.50 1.591E+00 ?   5.835E+00 1.09E+02 1.50E+01 X

Nd-147       3.5831E-01                                      1.11E+01
                          531.00 3.583E-01 ?(  8.438E+00 8.81E+02 1.30E+01 G
                           91.10 0.000E+00 -   6.367E+00 1.00E+03 2.83E+01 G

TL-210   N   5.9070E-01                                      5.84E+05
                          799.60 5.907E-01 ?(  1.860E+00 9.26E+01 9.90E+01 G
                          296.00-1.631E-01 -   3.306E+00 5.99E+02 7.90E+01 G
                         1313.00 6.002E+00 ?   6.383E+00 5.01E+01 2.10E+01 GA

Kr-85    I   3.6994E+01                                      3.92E+03
                          513.98 3.699E+01  (  5.259E+02 4.11E+02 4.30E-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.
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+ - 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

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********** 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	
PB-210	46.54	169.	-10.	-0.005	222.20	-7.054E+00	P
TH-227	50.14	117.	11.	0.006	173.43	3.686E+00	P
AM-241	59.54	161.	15.	0.008	145.22	9.103E-01	P
Sn-126	64.28	330.	-10.	-0.005	263.13	-2.043E+00	
BA-133	80.99	197.	7.	0.004	360.39	3.423E-01	P
EU-155	86.54	601.	-23.	-0.013	151.35	-1.219E+00	
Sn-126	86.94	578.	-10.	-0.006	330.00	-1.848E+00	
Gd-153	97.50	217.	-3.	-0.002	696.82	-1.553E-01	
Np-239	99.50	134.	15.	0.009	108.98	1.591E+00	
Gd-153	103.20	198.	18.	0.010	115.70	1.240E+00	
Np-239	103.70	216.	18.	0.010	120.45	1.127E+00	
EU-155	105.31	304.	16.	0.009	160.77	1.125E+00	
Np-239	106.13	315.	16.	0.009	163.40	1.052E+00	
EU-152	121.78	179.	7.	0.004	266.52	3.887E-01	
EU-154	123.10	224.	-22.	-0.012	100.15	-8.240E-01	
PA-234	131.29	511.	-22.	-0.012	143.86	-1.976E+00	
HF-181	133.02	488.	-23.	-0.013	140.45	-8.269E-01	
CE-144	133.54	469.	-23.	-0.013	137.64	-3.235E+00	
HF-181	136.30	492.	-23.	-0.013	140.38	-6.204E+00	
CO-57	136.47	514.	-23.	-0.013	143.46	-3.401E+00	
Tc-99m	140.51	233.	18.	0.010	121.57	3.404E-01	
U-235	143.79	251.	18.	0.010	125.57	2.733E+00	
CE-141	145.44	270.	4.	0.002	532.71	1.506E-01	
Ba-140	162.66	120.	18.	0.010	89.51	5.149E+00	
U-235	163.38	139.	13.	0.007	132.56	4.539E+00	P
CE-139	165.85	149.	15.	0.008	119.83	3.279E-01	
Cf-251	176.60	57.	13.	0.007	105.60	1.444E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
U-235	185.72	127.	39.	0.022	53.36	1.418E+00	
U-235	205.33	81.	-4.	-0.002	419.39	-1.726E+00	P
TH-229	210.85	93.	10.	0.005	180.73	6.990E+00	
Cf-251	227.00	77.	11.	0.006	140.65	4.135E+00	
TH-227	235.97	554.	-16.	-0.009	206.16	-3.139E+00	
EU-152	244.69	477.	14.	0.008	220.57	4.553E+00	
TH-227	256.24	55.	10.	0.006	142.30	3.630E+00	
Cd-113m	263.70	117.	-16.	-0.009	96.87	-7.093E+03	
BI-210M	265.83	94.	14.	0.008	104.82	7.091E-01	
Hg-203	279.20	132.	-2.	-0.001	963.12	-5.675E-02	
I-131	284.30	73.	-15.	-0.009	107.56	-6.917E+00	
TL-210	296.00	360.	-4.	-0.002	598.56	-1.631E-01	
PA-231	300.07	353.	3.	0.001	990.28	3.167E+00	
PA-233	312.01	339.	13.	0.007	196.55	1.112E+00	P
Ir-192	316.49	84.	13.	0.007	102.18	4.595E-01	
CR-51	320.08	93.	2.	0.001	867.57	4.866E-01	P
Cf-249	333.44	73.	-16.	-0.009	101.16	-3.329E+00	
Cs-136	340.57	143.	11.	0.006	162.61	7.266E-01	
EU-152	344.29	154.	11.	0.006	167.81	1.302E+00	
HF-181	345.83	164.	7.	0.004	269.80	1.467E+00	
BA-133	356.00	260.	11.	0.006	202.69	6.125E-01	
I-131	364.48	44.	-2.	-0.001	624.50	-8.334E-02	
BA-133	383.84	95.	12.	0.007	116.02	4.875E+00	P
Cf-249	387.95	107.	10.	0.005	154.22	5.276E-01	
SN-113	391.69	66.	9.	0.005	135.81	4.939E-01	
SB-125	427.88	36.	2.	0.001	591.61	2.629E-01	
AG-108M	433.94	48.	-8.	-0.004	176.39	-3.512E-01	P
PM-146	453.88	24.	20.	0.011	54.41	1.226E+00	P
SB-125	463.37	65.	11.	0.006	109.64	4.305E+00	P
Ir-192	468.06	90.	-14.	-0.008	101.15	-1.117E+00	
BE-7	477.59	72.	-14.	-0.008	86.37	-5.604E+00	P
HF-181	482.00	97.	-15.	-0.008	99.36	-7.766E-01	
La-140	487.02	33.	5.	0.003	212.88	5.090E-01	P
RH-106	511.86	67.	27.	0.015	46.39	6.172E+00	
Kr-85	513.98	102.	4.	0.002	411.46	3.699E+01	
Nd-147	531.00	20.	1.	0.001	881.29	3.583E-01	
Ba-140	537.26	36.	-6.	-0.003	200.00	-1.157E+00	
PA-234	569.47	26.	4.	0.002	179.33	2.509E+00	
SB-125	600.50	187.	8.	0.004	259.71	2.177E+00	P
SB-124	602.73	195.	8.	0.004	251.83	4.174E-01	
RU-103	610.30	210.	8.	0.004	259.80	7.243E+00	
AG-108M	614.28	218.	8.	0.004	263.91	4.672E-01	
PM-144	618.06	226.	7.	0.004	292.08	3.919E-01	P
RH-106	621.92	232.	8.	0.004	271.08	4.292E+00	
SB-125	635.89	16.	3.	0.002	209.33	1.370E+00	
I-131	636.97	24.	9.	0.005	80.32	7.072E+00	
AG-110M	657.76	20.	3.	0.002	228.41	1.707E-01	
CS-137	661.66	21.	2.	0.001	306.33	1.436E-01	P

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
PM-144	696.54	39.	-7.	-0.004	185.99	-4.132E-01	
NB-94	702.63	22.	2.	0.001	442.48	1.310E-01	P
SB-124	722.79	29.	10.	0.005	83.19	5.494E+00	
AG-108M	722.94	39.	10.	0.005	94.60	6.539E-01	
EU-154	723.36	48.	5.	0.003	217.65	1.380E+00	
ZR-95	724.20	93.	-17.	-0.010	56.02	-2.359E+00	P
BI-212	727.17	22.	6.	0.004	110.44	5.177E+00	P
PM-146	735.72	22.	-2.	-0.001	575.33	-4.532E-01	
PM-146	747.16	22.	7.	0.004	139.54	1.293E+00	P
ZR-95	756.73	35.	1.	0.001	905.54	1.534E-01	
AG-110M	763.94	53.	-16.	-0.009	69.41	-4.521E+00	
NB-95	765.79	61.	6.	0.003	201.46	3.563E-01	
PA-234M	766.41	45.	12.	0.007	82.04	2.664E+02	
EU-152	778.92	23.	-9.	-0.005	114.56	-4.629E+00	
TL-210	799.60	30.	9.	0.005	92.60	5.907E-01	
CO-58	810.78	49.	-10.	-0.005	68.47	-6.431E-01	P
Cs-136	818.50	68.	-8.	-0.004	156.70	-5.129E-01	
MN-54	834.85	38.	-9.	-0.005	77.05	-5.881E-01	P
Co-56	846.77	33.	-9.	-0.005	74.26	-6.247E-01	P
NB-94	871.10	23.	3.	0.001	263.39	1.882E-01	
EU-154	873.23	21.	6.	0.003	118.98	3.358E+00	
PA-234	880.53	52.	-12.	-0.007	89.47	-1.423E+01	
PA-234	883.24	64.	-2.	-0.001	683.15	-1.235E+00	
Sc-46	889.28	77.	-9.	-0.005	136.65	-6.694E-01	
Y-88	898.04	25.	-9.	-0.005	78.69	-7.231E-01	P
AG-110M	937.49	23.	2.	0.001	619.68	3.636E-01	
PA-234	946.02	28.	-7.	-0.004	164.75	-3.946E+00	
EU-152	964.11	58.	10.	0.005	115.30	5.089E+00	
EU-154	996.33	41.	-4.	-0.002	251.44	-2.729E+00	
EU-154	1004.77	15.	3.	0.002	289.64	1.323E+00	
Co-56	1037.84	20.	-6.	-0.003	156.84	-3.522E+00	P
Cs-136	1048.07	18.	10.	0.006	67.47	1.035E+00	
RH-106	1050.36	56.	-15.	-0.009	73.13	-8.131E+01	
BI-207	1063.66	35.	-10.	-0.006	92.58	-1.161E+00	P
Ga-68	1077.40	30.	-11.	-0.006	113.55	-3.286E+01	
FE-59	1099.25	15.	6.	0.003	147.67	9.099E-01	
EU-152	1112.07	85.	-14.	-0.008	70.11	-8.742E+00	P
Sc-46	1120.55	66.	-15.	-0.008	82.57	-1.277E+00	
Ta-182	1121.30	54.	-11.	-0.006	96.59	-2.832E+00	
CO-60	1173.24	35.	-10.	-0.006	56.81	-9.452E-01	P
Ta-182	1221.41	27.	-6.	-0.003	211.36	-1.965E+00	
Co-56	1238.28	43.	-10.	-0.005	156.93	-1.386E+00	
NA-22	1274.53	21.	-3.	-0.002	203.47	-3.237E-01	
FE-59	1291.60	5.	6.	0.003	101.72	1.287E+00	
TL-210	1313.00	5.	13.	0.007	50.07	6.002E+00	
CO-60	1332.50	6.	3.	0.002	191.40	2.979E-01	P
AG-110M	1384.30	11.	2.	0.001	324.82	9.994E-01	
EU-152	1408.00	5.	4.	0.002	152.39	1.842E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
La-140	1596.21	12.	-5.	-0.003	384.94	-5.557E-01	P
Y-88	1836.06	12.	-10.	-0.006	57.77	-1.367E+00	P

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 Counting 1 Sigma	MDA Bq/Sample
BE-7	#A	-5.6042E+00	-5.6042E+00	8.637E+01%	1.72E+01
NA-22	#A	-3.2367E-01	-3.2367E-01	2.035E+02%	2.35E+00
K-40		3.0218E+02	3.0218E+02	5.868E+00%	1.08E+01
Sc-46	#A	-6.6942E-01	-6.6942E-01	1.367E+02%	3.12E+00
CR-51	#A	4.8663E-01	4.8664E-01	8.676E+02%	1.47E+01
MN-54	#A	-5.8810E-01	-5.8810E-01	7.705E+01%	2.13E+00
FE-59	#A	1.0734E+00	1.0734E+00	8.965E+01%	3.15E+00
Co-56	#A	-6.2469E-01	-6.2469E-01	7.426E+01%	2.03E+00
CO-57	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.20E+00
CO-58	#A	-6.4311E-01	-6.4311E-01	6.847E+01%	2.35E+00
CO-60	#A	2.9789E-01	2.9789E-01	1.914E+02%	1.43E+00
ZN-65	#A	-1.6975E-01	-1.6975E-01	1.208E+03%	7.20E+00
NB-94	#A	1.5985E-01	1.5985E-01	2.575E+02%	1.47E+00
ZR-95	#A	1.5335E-01	1.5335E-01	9.055E+02%	3.47E+00
NB-95	#A	3.5630E-01	3.5630E-01	2.015E+02%	2.48E+00
RU-103	#A	2.3356E-02	2.3356E-02	2.453E+03%	1.50E+00
RH-106	#A	4.2924E+00	4.2924E+00	2.711E+02%	3.95E+01
AG-108M	#A	2.5668E-01	2.5668E-01	9.460E+01%	1.52E+00
AG-110M	#A	2.3422E-01	2.3422E-01	2.284E+02%	3.97E+00
SN-113	#A	4.9394E-01	4.9394E-01	1.358E+02%	2.29E+00
SB-124	#A	9.2053E-01	9.2054E-01	8.319E+01%	3.57E+00
SB-125	#A	1.5485E+00	1.5485E+00	1.096E+02%	4.03E+00
I-131	#A	4.9395E-01	4.9397E-01	8.032E+01%	1.40E+00
Gd-153	#A	4.3202E-01	4.3202E-01	1.157E+02%	3.69E+00
Ga-68	#A	-3.2623E+01	-3.2863E+01	1.135E+02%	8.44E+01
Tc-99m	#A	3.3995E-01	3.4042E-01	1.216E+02%	1.39E+00
BA-133	#A	6.1245E-01	6.1245E-01	2.027E+02%	4.19E+00
CS-134	#A	5.8860E-01	5.8860E-01	1.004E+02%	1.72E+00
CS-137	#A	1.4358E-01	1.4358E-01	3.063E+02%	1.58E+00
CE-139	#A	3.2789E-01	3.2789E-01	1.198E+02%	1.32E+00
Ba-140	#A	1.2420E-01	1.2420E-01	8.951E+01%	5.91E+00
La-140	#A	-2.1184E-01	-2.1185E-01	2.129E+02%	2.28E+00
CE-141	#A	1.5056E-01	1.5056E-01	5.327E+02%	2.73E+00
CE-144	#A	-3.2352E+00	-3.2352E+00	1.376E+02%	1.49E+01
PM-144	#A	-1.0424E-02	-1.0424E-02	1.731E+02%	1.88E+00
EU-152	#A	1.9987E+00	1.9987E+00	1.004E+02%	3.53E+00
EU-154	#A	6.4985E-01	6.4985E-01	9.857E+01%	2.76E+00
EU-155	#A	1.1254E+00	1.1254E+00	1.608E+02%	6.08E+00

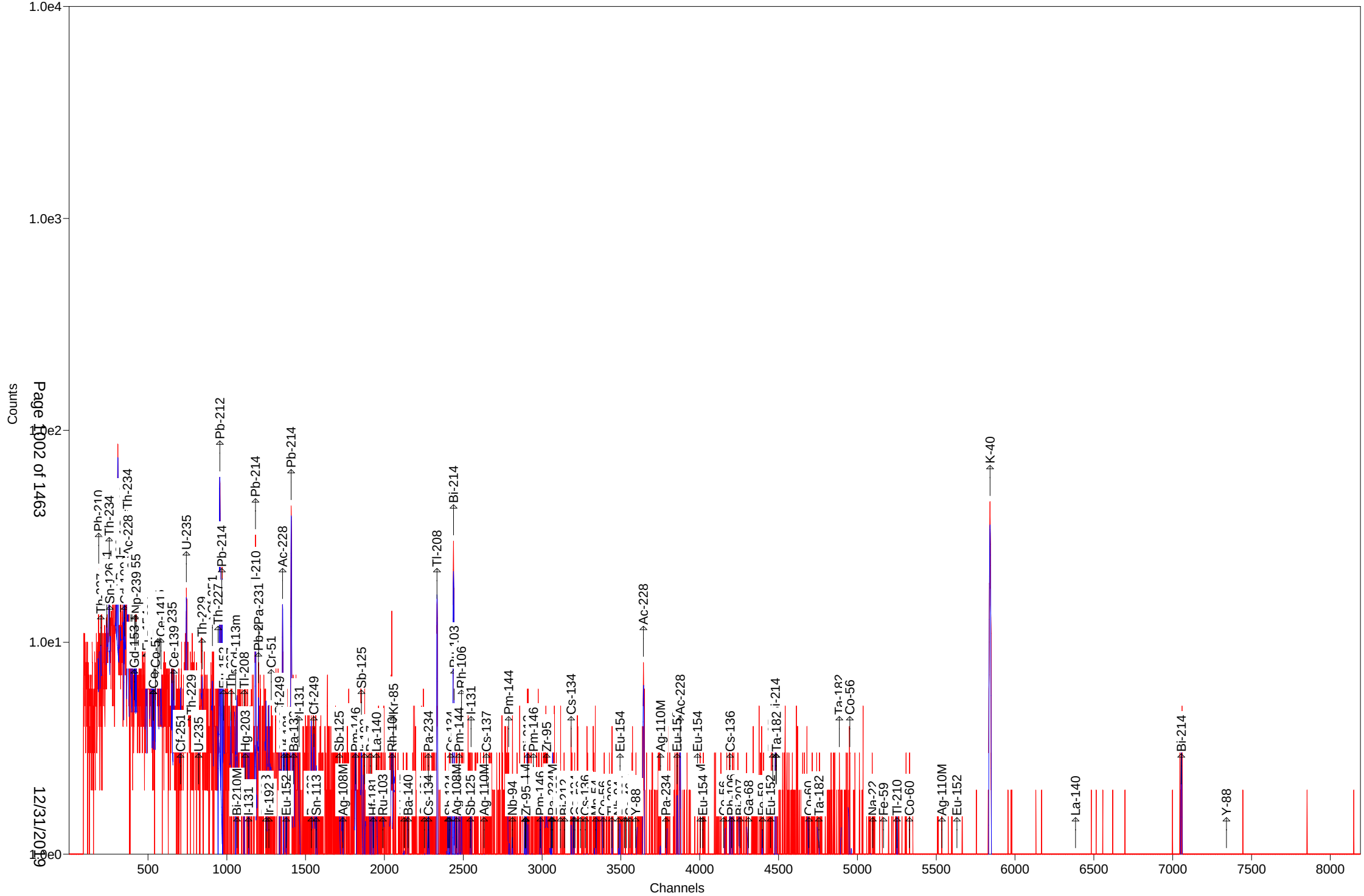
HF-181 #A	-4.2277E-01	-4.2277E-01	9.936E+01%		2.60E+00
Ta-182 #A	-2.8315E+00	-2.8315E+00	9.659E+01%		9.25E+00
Hg-203 #A	-5.6748E-02	-5.6749E-02	9.631E+02%		1.89E+00
TL-208	5.6518E+00	5.6518E+00	1.137E+01%		7.28E-01
PM-146 #A	1.2490E+00	1.2490E+00	5.441E+01%		1.62E+00
Y-88 #A	-1.3674E+00	-1.3674E+00	5.777E+01%		2.53E+00
Cd-113m#A	-7.0928E+03	-7.0928E+03	9.687E+01%		2.31E+04
Cd-109 #A	8.0053E+00	8.0053E+00	1.768E+02%		4.74E+01
Cf-251 #A	1.4437E+00	1.4437E+00	1.056E+02%		4.15E+00
Cf-249 #A	5.2759E-01	5.2759E-01	1.542E+02%		2.77E+00
Sn-126 #A	-2.0430E+00	-2.0430E+00	2.631E+02%		1.81E+01
PB-210 #A	-7.0545E+00	-7.0545E+00	2.222E+02%		4.62E+01
PB-212	1.3437E+01	1.3437E+01	7.655E+00%		1.99E+00
PB-214	1.6179E+01	1.6179E+01	8.454E+00%		2.96E+00
BI-207 #A	-1.1614E+00	-1.1614E+00	9.258E+01%		3.40E+00
BI-212 #A	5.1775E+00	5.1775E+00	1.104E+02%		1.98E+01
U-235 #A	3.3052E+00	3.3052E+00	9.129E+01%		1.15E+01
BI-214	1.4055E+01	1.4055E+01	1.107E+01%		2.97E+00
BI-210M#A	7.0906E-01	7.0906E-01	1.048E+02%		2.51E+00
AC-228	1.4241E+01	1.4241E+01	1.253E+01%		4.07E+00
TH-227 #A	3.6599E+00	3.6599E+00	1.122E+02%		1.35E+01
TH-229 #A	2.5557E+00	2.5557E+00	1.807E+02%		2.46E+01
TH-234 #	2.6164E+01	2.6164E+01	2.202E+01%		1.54E+01
PA-231 #A	1.4588E+00	1.4588E+00	7.037E+02%		9.18E+01
PA-233 #A	1.1116E+00	1.1116E+00	1.965E+02%		7.35E+00
PA-234 #A	-5.7200E-01	-5.7200E-01	1.150E+02%		9.50E+00
PA-234M#A	6.6422E+01	6.6422E+01	8.204E+01%		3.21E+02
AM-241 #A	9.1032E-01	9.1032E-01	1.452E+02%		3.78E+00
Np-237 #A	2.7213E+00	2.7213E+00	1.542E+02%		1.40E+01
Ir-192 #A	4.5949E-01	4.5950E-01	1.022E+02%		1.58E+00
Cs-136 #A	2.8910E-01	2.8911E-01	6.747E+01%		2.76E+00
Np-239 #A	1.0514E+00	1.0516E+00	1.634E+02%		5.78E+00
Nd-147 #A	3.5830E-01	3.5831E-01	8.813E+02%		8.44E+00
TL-210 #A	5.9070E-01	5.9070E-01	9.260E+01%		1.86E+00
Kr-85 #A	3.6994E+01	3.6994E+01	4.115E+02%		5.26E+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 2000.8 keV) 3.919E+02 Bq/Sample
Total Decayed Activity (37.6 to 2000.8 keV) 3.9190768E+02 Bq/Sample

452567_Gamma_160-36526-A-12-B. 5_Gamma_20193365.spc.



Test America St. Louis Spectrum ID: 12_Gamma_20193695

Sample Description: 452567_Gamma_160-36526-A-13-B
Detector: Detector #12
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-13-B

Decay to Time: 12/25/2019 10:11 Live Time: 1800 sec
Acquisition Time: 12/25/2019 10:11:20 Real Time: 1802 sec
Analysis Time: 12/25/2019 10:41 Dead Time: 0.08 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 12_Soil_TunaCan.Clb
Efficiency Cal Desc: 12_TunaCan_108513
Efficiency Cal Date: 4/20/2018 11:53
Energy Cal Date: 4/20/2018 11:13
Library: Client_Long_Rev15.lib
Bkgd Correction File: 12_2019-12-07_1443.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	-4.324E+00	118.1	5.108E+00	5.112E+00	1.725E+01
NA-22	-7.492E-01	88.9	6.664E-01	6.674E-01	2.252E+00
K-40	2.507E+02	5.7	1.424E+01	1.905E+01	9.985E+00
Sc-46	0.000E+00	1.#INF	2.636E-01	2.636E-01	2.375E+00
CR-51	-4.536E+00	195.5	8.866E+00	8.869E+00	2.969E+01
MN-54	-6.684E-01	109.3	7.307E-01	7.315E-01	1.692E+00
FE-59	5.162E-01	124.6	6.432E-01	6.437E-01	2.694E+00
Co-56	9.514E-01	46.9	4.465E-01	4.491E-01	1.224E+00
CO-57	1.278E-01	234.1	2.992E-01	2.992E-01	1.021E+00
CO-58	-4.132E-01	126.4	5.222E-01	5.226E-01	1.791E+00
CO-60	7.266E-02	972.1	7.064E-01	7.064E-01	1.593E+00
ZN-65	0.000E+00	1.#INF	4.347E-01	4.347E-01	6.303E+00
NB-94	-1.236E-01	458.8	5.671E-01	5.671E-01	1.360E+00
ZR-95	-1.465E+00	90.3	1.324E+00	1.326E+00	3.037E+00
NB-95	6.908E-01	80.7	5.573E-01	5.584E-01	1.866E+00
RU-103	-2.321E-01	229.7	5.332E-01	5.333E-01	1.354E+00
RH-106	1.213E+01	76.5	9.281E+00	9.302E+00	3.641E+01
AG-108M	-7.014E-02	681.9	4.783E-01	4.783E-01	1.227E+00
AG-110M	7.137E-01	33.7	2.405E-01	2.432E-01	3.216E+00
SN-113	6.605E-01	114.7	7.576E-01	7.584E-01	2.554E+00
SB-124	5.185E-01	159.6	8.276E-01	8.280E-01	3.720E+00
SB-125	2.980E+00	27.1	8.079E-01	8.217E-01	3.986E+00
I-131	5.484E-01	100.5	5.512E-01	5.519E-01	1.189E+00
Gd-153	-1.181E+00	139.2	1.644E+00	1.646E+00	5.493E+00
Ga-68	-1.165E+01	201.6	2.349E+01	2.350E+01	5.295E+01
Tc-99m	-4.617E-01	164.2	7.582E-01	7.587E-01	2.529E+00
BA-133	-7.934E-01	165.6	1.314E+00	1.314E+00	4.404E+00
CS-134	2.891E+00	16.7	4.824E-01	5.044E-01	9.461E-01
CS-137	-5.766E-01	96.6	5.568E-01	5.576E-01	1.884E+00
CE-139	-4.976E-01	107.8	5.363E-01	5.369E-01	1.791E+00
Ba-140	-4.584E-01	428.8	1.966E+00	1.966E+00	4.861E+00
La-140	1.334E-01	75.1	1.002E-01	1.004E-01	2.248E+00
CE-141	-8.505E-01	165.9	1.411E+00	1.412E+00	4.705E+00

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CE-144	-3.538E+00	158.3	5.600E+00	5.603E+00	1.868E+01
PM-144	1.271E-01	159.3	2.025E-01	2.026E-01	1.644E+00
EU-152	1.716E+00	72.9	1.252E+00	1.255E+00	2.949E+00
EU-154	1.585E+00	82.5	1.308E+00	1.311E+00	2.283E+00
EU-155	3.699E-01	337.7	1.249E+00	1.249E+00	7.956E+00
HF-181	0.000E+00	1.#INF	1.207E-01	1.207E-01	2.389E+00
Ta-182	2.049E+00	84.7	1.735E+00	1.738E+00	7.115E+00
Hg-203	-9.746E-02	408.6	3.982E-01	3.982E-01	1.376E+00
TL-208	7.231E+00	10.5	7.557E-01	8.404E-01	1.070E+00
PM-146	6.241E-01	94.0	5.869E-01	5.878E-01	1.468E+00
Y-88	6.131E-01	50.1	3.073E-01	3.093E-01	1.407E+00
Cd-113m	4.954E+03	113.4	5.620E+03	5.627E+03	1.897E+04
Cd-109	1.001E+01	165.0	1.651E+01	1.652E+01	5.509E+01
Cf-251	-2.415E+00	106.8	2.578E+00	2.581E+00	6.574E+00
Cf-249	5.385E-01	104.9	5.647E-01	5.653E-01	2.606E+00
Sn-126	-1.286E+00	501.9	6.454E+00	6.454E+00	2.172E+01
PB-210	2.988E+01	53.3	1.592E+01	1.603E+01	4.256E+01
PB-212	1.532E+01	6.3	9.716E-01	1.258E+00	1.699E+00
PB-214	2.230E+01	5.7	1.265E+00	1.696E+00	1.766E+00
BI-207	9.024E-01	88.2	7.962E-01	7.975E-01	1.757E+00
BI-212	2.331E+01	18.9	4.402E+00	4.560E+00	6.780E+00
U-235	-3.692E+00	165.9	6.126E+00	6.129E+00	2.043E+01
BI-214	1.778E+01	10.0	1.782E+00	1.999E+00	2.878E+00
BI-210M	-8.473E-01	91.9	7.787E-01	7.799E-01	2.605E+00
AC-228	1.322E+01	12.9	1.710E+00	1.836E+00	2.036E+00
TH-227	-6.157E+00	99.5	6.126E+00	6.135E+00	1.570E+01
TH-229	5.763E+00	148.1	8.535E+00	8.541E+00	2.201E+01
TH-234	-1.557E+01	45.1	7.014E+00	7.067E+00	4.025E+01
PA-231	0.000E+00	1.#INF	6.481E+00	6.481E+00	9.511E+01
PA-233	0.000E+00	1.#INF	1.937E-01	1.937E-01	7.786E+00
PA-234	1.748E+00	128.4	2.244E+00	2.246E+00	7.637E+00
PA-234M	8.599E+01	87.8	7.553E+01	7.565E+01	2.543E+02
AM-241	-1.494E+00	133.5	1.995E+00	1.997E+00	6.654E+00
Np-237	2.907E+00	168.4	4.897E+00	4.900E+00	1.634E+01
Ir-192	-1.859E-01	145.1	2.697E-01	2.699E-01	3.498E+00
Cs-136	2.022E-01	155.6	3.146E-01	3.148E-01	1.925E+00
Np-239	-4.814E-01	454.5	2.188E+00	2.188E+00	7.363E+00
Nd-147	1.329E+00	148.3	1.971E+00	1.973E+00	8.063E+00
TL-210	-6.787E-01	104.0	7.058E-01	7.068E-01	2.381E+00
Kr-85	1.014E+02	143.9	1.459E+02	1.460E+02	4.938E+02
Total	5.575E+03				

Analyst: Caleb Quinn

Sample description
452567_Gamma_160-36526-A-13-B

Spectrum Filename: C:\User\SPC\Det12\12_Gamma_20193695.An1

Acquisition information

Start time:	12/25/2019 10:11:20 AM
Live time:	1800
Real time:	1802
Dead time:	0.08 %
Detector ID:	12

Detector system
Ge12 S/N10034336

Calibration

Filename:	12_Soil_TunaCan.Clb

12_TunaCan_108513

Energy Calibration

Created:	4/20/2018 11:13:27 AM
Zero offset:	0.059 keV
Gain:	0.250 keV/channel
Quadratic:	-3.735E-08 keV/channel^2

Efficiency Calibration

Created:	4/20/2018 11:53:09 AM
Type:	Polynomial
Uncertainty:	1.020 %
Coefficients:	-0.363508 -4.707999 0.462125
	-0.051256 0.002384 -0.000043

Library Files

Main analysis library:	Client_Long_Rev15.lib
Library Match Width:	0.500
Peak stripping:	Library based

Analysis parameters

Analysis engine:	Env32 G800W064
Start channel:	100 (25.08keV)
Stop channel:	8000 (1999.13keV)
Peak rejection level:	1000.000%
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

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Activity range factor: 2.000
Min. step backg. energy 0.000
Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	YES	12/25/2019 10:11:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	12_2019-12-07_1443.PBC 12/7/2019 2:43:53 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 25 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1115

***** 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
46.55	41.	53.28	0.81	1.801E-02	46.54	4.250	PBC<MDA	PB210
50.14	18.	133.45	0.85	2.193E-02	50.14	8.000	PBC<MDA	TH227
63.07	83.	34.20	0.94	2.973E-02	63.29	3.810	PBC<MDA	TH234
74.87	170.	12.44	0.88	3.334E-02				
77.17	299.	8.16	0.88	3.387E-02				
87.17	103.	18.55	0.89	3.568E-02	86.49	13.100	1.224E+01	Np237
					86.54	30.700	5.223E+00	EU155
					86.94	9.040	1.771E+01	Sn126
					87.57	37.500	4.258E+00	Sn126
					88.04	3.790	4.205E+01	Cd109
90.11	78.	23.31	0.90	3.608E-02				
91.10	25.	166.84	0.90	3.621E-02	91.10	28.300	PBC<MDA	Nd147
93.22	95.	20.29	0.90	3.645E-02	93.35	5.561	2.614E+01	AC228
121.78	11.	156.12	0.93	3.725E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	1.859E-01	CO57
122.06	7.	234.08	0.93	3.724E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	1.278E-01	CO57
123.10	14.	130.51	0.93	3.721E-02	123.10	40.790	PBC<MDA	EU154
131.29	14.	193.52	0.94	3.683E-02	131.29	18.000	PBC<MDA	PA234
185.96	84.	29.65	0.96	3.212E-02	185.72	54.000	PBC<MDA	U235
193.51	14.	148.11	1.00	3.140E-02	193.51	4.400	PBC<MDA	TH229
222.15	22.	50.62	0.46	2.880E-02				
227.00	20.	102.20	1.03	2.839E-02	227.00	6.300	PBC<MDA	Cf251
235.97	17.	210.82	1.04	2.764E-02	235.97	12.300	PBC<MDA	TH227
238.56	317.	6.63	1.05	2.744E-02	238.63	43.300	1.484E+01	PB212
241.75	108.	14.07	1.05	2.718E-02	242.00	7.430	2.979E+01	PB214
263.70	14.	113.43	1.07	2.554E-02	263.70	0.006	PBC<MDA	Cd113m

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
270.43	37.	43.51	0.33	2.508E-02				
277.36	15.	60.25	1.25	2.462E-02	277.28	6.310	PBC<MDA	TL208
295.08	192.	9.17	1.08	2.350E-02	295.09	19.300	2.358E+01	PB214
					296.00	79.000	5.774E+00	TL210
300.20	15.	223.01	1.11	2.321E-02	300.03	3.280	PBC<MDA	PB212
					300.07	2.460	1.460E+01	PA231
					300.18	6.200	5.794E+00	PA233
328.76	15.	87.79	1.13	2.165E-02	328.76	20.300	PBC<MDA	La140
333.44	15.	104.86	1.14	2.142E-02	333.44	15.510	PBC<MDA	Cf249
338.12	84.	14.77	0.83	2.118E-02	338.32	12.010	1.834E+01	AC228
340.57	11.	155.56	1.15	2.108E-02	340.57	46.900	PBC<MDA	Cs136
344.29	11.	160.66	1.15	2.090E-02	344.29	26.500	PBC<MDA	EU152
351.88	291.	7.00	1.25	2.055E-02	351.93	37.600	2.094E+01	PB214
364.48	14.	100.51	1.17	2.001E-02	364.48	81.700	PBC<MDA	I131
383.84	15.	107.62	1.19	1.923E-02	383.84	8.940	PBC<MDA	BA133
387.95	2.	914.69	1.19	1.907E-02	387.95	66.000	PBC<MDA	Cf249
391.69	14.	114.71	1.20	1.893E-02	391.69	64.000	PBC<MDA	SN113
453.88	12.	94.05	1.26	1.692E-02	453.88	65.000	PBC<MDA	PM146
463.37	47.	27.11	1.27	1.666E-02	463.37	10.470	1.508E+01	SB125
468.06	6.	218.39	1.27	1.653E-02	468.06	51.750	PBC<MDA	Ir192
487.02	12.	114.19	1.29	1.604E-02	487.02	45.500	PBC<MDA	La140
511.86	96.	15.73	2.56	1.546E-02	511.86	20.000	1.731E+01	RH106
513.98	12.	143.90	1.31	1.541E-02	513.98	0.430	PBC<MDA	Kr85
531.00	5.	245.31	1.33	1.504E-02	531.00	13.000	PBC<MDA	Nd147
563.24	3.	426.01	1.36	1.439E-02	563.24	8.350	PBC<MDA	CS134
569.32	2.	563.91	1.37	1.428E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	7.909E-01	PA234
					569.70	97.740	6.637E-02	BI207
583.09	154.	10.45	1.31	1.403E-02	583.02	84.500	7.231E+00	TL208
600.50	14.	196.90	1.40	1.373E-02	600.50	17.860	PBC<MDA	SB125
602.73	13.	207.90	1.40	1.369E-02	602.73	98.260	PBC<MDA	SB124
604.71	6.	487.62	1.40	1.366E-02	604.71	97.620	PBC<MDA	CS134
609.23	200.	10.02	1.52	1.358E-02	609.31	46.090	1.778E+01	BI214
618.06	13.	205.64	1.41	1.344E-02	618.06	99.100	PBC<MDA	PM144
621.92	11.	234.32	1.42	1.338E-02	621.92	9.930	PBC<MDA	RH106
636.97	2.	453.67	1.43	1.315E-02	636.97	7.170	PBC<MDA	I131
657.76	19.	33.70	1.45	1.284E-02	657.76	94.640	8.684E-01	AG110M
724.20	7.	142.30	1.51	1.198E-02	724.20	44.150	PBC<MDA	ZR95
727.46	38.	18.88	1.95	1.194E-02	727.17	7.550	2.331E+01	BI212
765.79	14.	80.67	1.55	1.150E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	2.346E+02	PA234M
778.92	10.	110.78	1.56	1.136E-02	778.92	12.940	PBC<MDA	EU152
785.42	6.	191.49	1.57	1.129E-02	785.42	1.280	PBC<MDA	BI212
795.87	48.	16.69	1.58	1.119E-02	795.87	85.530	2.816E+00	CS134
801.95	6.	167.38	1.58	1.113E-02	801.95	8.690	PBC<MDA	CS134
873.23	2.	489.90	1.65	1.046E-02	873.23	12.270	PBC<MDA	EU154
898.04	16.	50.13	1.67	1.025E-02	898.04	93.700	PBC<MDA	Y88
911.23	70.	12.94	1.22	1.015E-02	911.07	29.000	1.322E+01	AC228

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
946.02	6.	168.87	1.72	9.873E-03	946.02	13.400	PBC<MDA	PA234
964.11	9.	150.56	1.73	9.739E-03	964.11	14.605	PBC<MDA	EU152
968.91	61.	17.57	2.21	9.703E-03	968.97	17.460	1.989E+01	AC228
1001.00	12.	87.83	1.76	9.476E-03	1001.00	0.837	PBC<MDA	PA234M
1004.77	14.	82.54	1.77	9.450E-03	1004.77	18.010	PBC<MDA	EU154
1050.36	15.	76.53	1.81	9.147E-03	1050.36	1.560	PBC<MDA	RH106
1063.66	11.	88.23	1.82	9.063E-03	1063.66	74.500	PBC<MDA	BI207
1120.37	63.	12.60	1.48	8.722E-03	1120.29	15.100	2.657E+01	BI214
					1120.55	99.987	4.014E+00	Sc46
1121.69	7.	173.50	1.87	8.716E-03	1121.30	34.900	PBC<MDA	Ta182
1189.05	9.	84.66	1.93	8.342E-03	1189.05	16.200	PBC<MDA	Ta182
1238.28	23.	46.93	1.97	8.090E-03	1238.28	66.070	2.391E+00	Co56
1291.60	7.	124.60	2.02	7.834E-03	1291.60	43.200	PBC<MDA	FE59
1313.00	3.	302.33	2.04	7.735E-03	1313.00	21.000	PBC<MDA	TL210
1332.50	1.	972.11	2.05	7.647E-03	1332.50	99.980	PBC<MDA	CO60
1384.30	7.	85.05	2.10	7.423E-03	1384.30	24.290	PBC<MDA	AG110M
1460.93	342.	5.68	2.34	7.112E-03	1460.83	10.670	2.507E+02	K40
1690.98	3.	242.22	2.35	6.302E-03	1690.98	47.790	PBC<MDA	SB124
1764.67	52.	13.87	1.12	6.075E-03	1764.49	15.400	3.088E+01	BI214
1836.06	3.	204.94	2.46	5.866E-03	1836.06	99.200	PBC<MDA	Y88

********** 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
253.05	63.18	149.	76.	2.540E+03	25.58	0.868	- D
299.05	74.89	137.	170.	5.091E+03	12.44	0.880	- sD
308.22	77.19	147.	299.	8.818E+03	8.16	0.883	- D
359.10	90.02	118.	83.	2.294E+03	21.59	0.896	- D
743.14	185.96	113.	102.	3.165E+03	23.95	0.957	-
887.82	222.15	34.	22.	7.639E+02	50.62	0.457	- s
1080.87	270.43	54.	37.	1.482E+03	43.51	0.330	- 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: Client_Long_Rev15.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	185.84	46.55	145.	41.	0.023	53.28	0.812
TH-227	200.18	50.14	289.	18.	0.010	133.45	0.855s
AM-241	237.74	59.54	646.	-27.	-0.015	133.50	0.865s
TH-234	252.74	63.29	557.	-25.	-0.014	92.00	0.868
Sn-126	256.71	64.28	574.	-7.	-0.004	501.95	0.869s
BA-133	323.50	80.99	1116.	-29.	-0.016	165.51	0.887s
Np-237	345.49	86.49	832.	24.	0.014	168.43	0.892A
EU-155	345.70	86.54	857.	12.	0.007	337.72	0.892s
Sn-126	347.29	86.94	828.	24.	0.014	87.62	0.892D
Sn-126	349.81	87.57	777.	24.	0.014	86.96	0.893D
Cd-109	351.68	88.04	801.	24.	0.014	164.95	0.894A
Nd-147	363.92	91.10	825.	25.	0.014	166.84	0.897s
TH-234	369.87	92.59	961.	-57.	-0.032	45.06	0.898s
AC-228	372.91	93.35	140.	95.	0.053	20.29	0.899D
Gd-153	389.50	97.50	523.	-23.	-0.013	139.19	0.903s
Np-239	397.50	99.50	546.	-15.	-0.008	219.25	0.905s
Gd-153	412.29	103.20	561.	0.	0.000	1000.00	0.909s
Np-239	414.29	103.70	561.	0.	0.000	1000.00	0.909s
EU-155	420.73	105.31	561.	0.	0.000	1000.00	0.911s
Np-239	424.00	106.13	552.	-7.	-0.004	454.46	0.912
EU-152	486.56	121.78	133.	11.	0.006	156.12	0.928s
CO-57	487.69	122.06	144.	7.	0.004	234.08	0.928s
EU-154	491.84	123.10	164.	14.	0.008	130.51	0.929s
PA-234	524.60	131.29	360.	14.	0.008	193.52	0.938s
HF-181	531.51	133.02	725.	-24.	-0.013	163.05	0.939
CE-144	533.57	133.54	829.	-26.	-0.014	158.26	0.940s
HF-181	544.61	136.30	854.	-26.	-0.014	160.21	0.943s
CO-57	545.30	136.47	880.	-26.	-0.014	162.59	0.943s
Tc-99m	561.44	140.51	906.	-26.	-0.015	164.24	0.947s
U-235	574.53	143.79	933.	-26.	-0.015	165.94	0.950
CE-141	581.15	145.44	950.	-26.	-0.015	165.93	0.952s
Ba-140	649.99	162.66	304.	-23.	-0.013	107.69	0.969
U-235	652.87	163.38	327.	-23.	-0.013	111.51	0.970
CE-139	662.76	165.85	333.	-24.	-0.014	107.78	0.973s
Cf-251	705.72	176.60	187.	-24.	-0.014	106.78	0.983s
U-235	742.18	185.72	302.	-40.	-0.022	65.32	0.992
TH-229	773.32	193.51	125.	14.	0.008	148.11	1.000s
U-235	820.59	205.33	147.	-18.	-0.010	130.43	1.012s
TH-229	842.65	210.85	165.	-15.	-0.008	162.28	1.018s
Cf-251	907.22	227.00	114.	20.	0.011	102.20	1.034s
TH-227	943.09	235.97	662.	17.	0.010	210.82	1.043s
PB-212	953.73	238.63	52.	327.	0.182	6.34	1.045D
PB-214	967.18	242.00	58.	109.	0.060	13.79	1.049D
EU-152	977.96	244.69	691.	-6.	-0.003	610.00	1.051s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
TH-227	1024.13	256.24	110.	-20.	-0.011	99.50	1.063s
Cd-113m	1053.96	263.70	113.	14.	0.008	113.43	1.070s
BI-210M	1062.48	265.83	149.	-19.	-0.011	91.90	1.072s
TL-208	1108.56	277.36	25.	15.	0.008	60.25	1.251
Hg-203	1115.93	279.20	100.	-4.	-0.002	408.58	1.086s
I-131	1136.32	284.30	103.	-20.	-0.011	97.11	1.091s
PB-214	1179.42	295.08	37.	192.	0.107	9.17	1.081
TL-210	1183.11	296.00	580.	-13.	-0.007	263.45	1.102s
PB-212	1199.22	300.03	552.	15.	0.008	223.01	1.106
PA-231	1199.38	300.07	567.	0.	0.000	1000.00	1.106
PA-233	1199.82	300.18	567.	0.	0.000	1000.00	1.107
PA-231	1209.70	302.65	567.	0.	0.000	1000.00	1.109s
BA-133	1210.50	302.85	567.	0.	0.000	1000.00	1.109s
Ba-140	1218.49	304.85	567.	0.	0.000	1000.00	1.111s
BI-210M	1218.68	304.90	567.	0.	0.000	1000.00	1.111
Ir-192	1232.85	308.44	567.	0.	0.000	1000.00	1.115s
PA-233	1247.13	312.01	567.	0.	0.000	1000.00	1.118s
Ir-192	1265.04	316.49	657.	-19.	-0.011	191.02	1.123s
CR-51	1279.41	320.08	605.	-18.	-0.010	195.45	1.126s
La-140	1314.10	328.76	82.	15.	0.008	87.79	1.135s
Cf-249	1332.81	333.44	113.	15.	0.008	104.86	1.139
AC-228	1351.52	338.12	21.	84.	0.047	14.77	0.833s
Cs-136	1361.32	340.57	148.	11.	0.006	155.56	1.146s
EU-152	1376.18	344.29	159.	11.	0.006	160.66	1.150s
HF-181	1382.35	345.83	221.	-14.	-0.008	148.20	1.151s
PB-214	1406.54	351.88	22.	301.	0.167	6.67	1.249s
BA-133	1423.02	356.00	438.	-18.	-0.010	165.56	1.162s
I-131	1456.95	364.48	48.	14.	0.008	100.51	1.170s
BA-133	1534.35	383.84	131.	15.	0.009	107.62	1.189
Cf-249	1550.79	387.95	146.	2.	0.001	914.69	1.193s
SN-113	1565.74	391.69	129.	14.	0.008	114.71	1.196s
SB-125	1710.45	427.88	56.	-13.	-0.007	116.07	1.232s
AG-108M	1734.69	433.94	48.	-2.	-0.001	681.91	1.238
PM-146	1814.45	453.88	32.	12.	0.007	94.05	1.257
SB-125	1852.39	463.37	59.	47.	0.026	27.11	1.266s
Ir-192	1871.16	468.06	98.	6.	0.004	218.39	1.271s
BE-7	1909.29	477.60	117.	-13.	-0.007	118.11	1.280s
HF-181	1926.90	482.00	131.	0.	0.000	1000.00	1.284s
La-140	1946.98	487.02	86.	12.	0.007	114.19	1.289s
RU-103	1987.11	497.05	48.	-6.	-0.003	229.73	1.298s
RH-106	2046.35	511.86	67.	96.	0.054	15.73	2.563s
Kr-85	2054.81	513.98	145.	12.	0.007	143.90	1.315s
Nd-147	2122.88	531.00	30.	5.	0.003	245.31	1.331s
Ba-140	2147.92	537.26	39.	-3.	-0.002	428.82	1.337s
CS-134	2251.82	563.24	30.	3.	0.001	426.01	1.362s
CS-134	2276.15	569.32	43.	2.	0.001	563.91	1.367s
TL-208	2331.22	583.09	19.	154.	0.086	10.45	1.310s
SB-125	2400.87	600.50	359.	14.	0.008	196.90	1.397s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
SB-124	2409.79	602.73	352.	13.	0.007	207.90	1.399
CS-134	2417.71	604.71	364.	6.	0.003	487.62	1.401s
BI-214	2435.77	609.23	41.	200.	0.111	10.02	1.515
RU-103	2440.06	610.30	370.	0.	0.000	1000.00	1.406s
AG-108M	2455.99	614.28	443.	-19.	-0.011	158.44	1.410s
PM-144	2471.12	618.06	351.	13.	0.007	205.64	1.414
RH-106	2486.54	621.92	328.	11.	0.006	234.32	1.417s
I-131	2546.77	636.97	26.	2.	0.001	453.67	1.432s
AG-110M	2629.92	657.76	11.	19.	0.011	33.70	1.451s
CS-137	2645.51	661.66	54.	-11.	-0.006	96.57	1.455s
PM-144	2785.05	696.54	51.	-6.	-0.004	243.25	1.487s
NB-94	2809.41	702.63	33.	-3.	-0.001	458.77	1.493s
AG-108M	2890.65	722.94	68.	0.	0.000	1000.00	1.512s
EU-154	2892.34	723.36	68.	0.	0.000	1000.00	1.512s
ZR-95	2895.69	724.20	52.	7.	0.004	142.30	1.513s
BI-212	2908.75	727.46	3.	38.	0.021	18.88	1.954s
PM-146	2941.78	735.72	33.	-5.	-0.003	263.90	1.524
PM-146	2987.55	747.16	51.	-14.	-0.008	109.28	1.535s
ZR-95	3025.83	756.73	47.	-17.	-0.009	90.33	1.543s
AG-110M	3054.69	763.94	64.	-17.	-0.010	70.27	1.550
NB-95	3062.08	765.79	59.	14.	0.008	80.67	1.552s
PA-234M	3064.57	766.41	73.	-14.	-0.008	91.51	1.552s
EU-152	3114.61	778.92	23.	10.	0.005	110.78	1.564s
BI-212	3140.62	785.42	28.	6.	0.003	191.49	1.570
CS-134	3182.43	795.87	8.	48.	0.027	16.69	1.579
TL-210	3197.35	799.60	92.	-13.	-0.007	103.98	1.583s
CS-134	3206.76	801.95	53.	6.	0.004	167.38	1.585s
CO-58	3242.06	810.78	49.	-8.	-0.005	126.37	1.593s
La-140	3262.05	815.77	57.	0.	0.000	1000.00	1.598s
Cs-136	3272.97	818.50	57.	0.	0.000	1000.00	1.600
MN-54	3338.38	834.85	42.	-13.	-0.007	109.33	1.615s
Co-56	3386.08	846.77	20.	0.	0.000	1000.00	1.626s
TL-208	3441.27	860.56	30.	-5.	-0.003	244.95	1.638s
NB-94	3483.41	871.10	35.	-8.	-0.004	110.40	1.648s
EU-154	3491.95	873.23	47.	2.	0.001	489.90	1.650s
PA-234	3521.16	880.53	63.	-14.	-0.008	84.52	1.657s
PA-234	3532.00	883.24	77.	0.	0.000	1000.00	1.659s
AG-110M	3537.78	884.68	77.	0.	0.000	1000.00	1.660s
Sc-46	3556.17	889.28	79.	0.	0.000	1000.00	1.664s
Y-88	3591.22	898.04	10.	16.	0.009	50.13	1.672s
AC-228	3643.99	911.23	3.	70.	0.039	12.94	1.215s
AG-110M	3749.09	937.49	40.	-16.	-0.009	90.43	1.708s
PA-234	3783.21	946.02	20.	6.	0.003	168.87	1.716s
EU-152	3855.60	964.11	78.	9.	0.005	150.56	1.732s
AC-228	3874.80	968.91	9.	61.	0.034	17.57	2.211s
EU-154	3984.54	996.33	81.	-17.	-0.010	77.45	1.761s
PA-234M	4003.22	1001.00	52.	12.	0.007	87.83	1.765s
EU-154	4018.33	1004.77	58.	14.	0.008	82.54	1.768s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Co-56	4150.66	1037.84	32.	0.	0.000	1000.00	1.798s
Cs-136	4191.60	1048.07	59.	-21.	-0.012	56.40	1.807s
RH-106	4200.76	1050.36	62.	15.	0.009	76.53	1.809s
BI-207	4253.99	1063.66	16.	11.	0.006	88.23	1.820s
Ga-68	4308.98	1077.40	21.	-5.	-0.003	201.56	1.833s
EU-152	4447.76	1112.07	118.	-14.	-0.008	112.94	1.863s
ZN-65	4461.66	1115.55	104.	0.	0.000	1000.00	1.866s
BI-214	4480.97	1120.37	0.	63.	0.035	12.60	1.478
Sc-46	4481.68	1120.55	104.	0.	0.000	1000.00	1.870
Ta-182	4484.69	1121.30	60.	7.	0.004	173.50	1.871s
CO-60	4692.57	1173.24	27.	-3.	-0.001	444.41	1.916s
Ta-182	4755.86	1189.05	11.	9.	0.005	84.66	1.930
Ta-182	4885.39	1221.41	57.	-22.	-0.012	84.76	1.957
Co-56	4952.92	1238.28	17.	23.	0.013	46.93	1.972
NA-22	5098.03	1274.53	40.	-11.	-0.006	88.94	2.003s
EU-154	5098.08	1274.54	50.	0.	0.000	1000.00	2.003s
FE-59	5166.35	1291.60	11.	7.	0.004	124.60	2.017s
TL-210	5252.04	1313.00	11.	3.	0.001	302.33	2.036s
CO-60	5330.11	1332.50	17.	1.	0.001	972.11	2.052s
AG-110M	5537.48	1384.30	6.	7.	0.004	85.05	2.096s
K-40	5844.30	1460.93	6.	342.	0.190	5.68	2.338
La-140	6386.02	1596.21	24.	-7.	-0.004	173.21	2.269s
SB-124	6765.58	1690.98	6.	3.	0.001	242.22	2.345s
BI-214	7060.73	1764.67	0.	52.	0.029	13.87	1.123s
Co-56	7087.48	1771.35	62.	-6.	-0.003	190.03	2.408s
Y-88	7346.69	1836.06	7.	3.	0.002	204.94	2.459s

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
BE-7	C	-4.3244E+00				5.31E+01	
			477.60	-4.324E+00	?(	1.725E+01 1.18E+02 1.05E+01	G
NA-22	C	-7.4925E-01				9.50E+02	
			1274.53	-7.492E-01	?(	2.252E+00 8.89E+01 9.99E+01	G
K-40	N	2.5074E+02				4.66E+11	
			1460.83	2.507E+02	(	9.985E+00 5.68E+00 1.07E+01	G
CR-51	F	-4.5362E+00				2.77E+01	
			320.08	-4.536E+00	&(	2.969E+01 1.95E+02 9.94E+00	G

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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
MN-54	C	-6.6836E-01					3.12E+02	
			834.85	-6.684E-01	?(	1.692E+00	1.09E+02	1.00E+02 G
FE-59	F	5.1622E-01					4.45E+01	
			1099.25	7.411E-02	%(	2.694E+00	1.58E+03	5.65E+01 G
			1291.60	1.094E+00	?(	3.020E+00	1.25E+02	4.32E+01 G
Co-56	C	9.5144E-01					7.73E+01	
			846.77	0.000E+00	?(	1.224E+00	1.00E+03	9.99E+01 G
			1238.28	2.391E+00	?(	2.279E+00	4.69E+01	6.61E+01 G
			1037.84	0.000E+00	&	1.239E+01	1.00E+03	1.41E+01 G
			1771.35	-3.556E+00	+	2.336E+01	1.90E+02	1.55E+01 A
CO-57	C	1.2780E-01					2.72E+02	
			122.06	1.278E-01	&(	1.021E+00	2.34E+02	8.56E+01 G
			136.47	-3.704E+00	+	2.009E+01	1.63E+02	1.07E+01 G
CO-58	C	-4.1324E-01					7.09E+01	
			810.78	-4.132E-01	?(	1.791E+00	1.26E+02	9.95E+01 G
CO-60	F	7.2664E-02					1.93E+03	
			1332.50	7.266E-02	?(	1.593E+00	9.72E+02	1.00E+02 G
			1173.24	-1.760E-01	+	1.767E+00	4.44E+02	9.99E+01 G
NB-94	I	-1.2361E-01					7.41E+06	
			702.63	-1.236E-01	?(	1.360E+00	4.59E+02	9.79E+01 G
			871.10	-4.245E-01	+	1.607E+00	1.10E+02	9.99E+01 G
ZR-95	I	-1.4654E+00					6.40E+01	
			756.73	-1.465E+00	?(	3.037E+00	9.03E+01	5.45E+01 G
			724.20	7.817E-01	+	3.826E+00	1.42E+02	4.42E+01 G
NB-95	I	6.9084E-01					6.40E+01	
			765.79	6.908E-01	?(	1.866E+00	8.07E+01	9.98E+01 G
RU-103	I	-2.3208E-01					3.93E+01	
			497.05	-2.321E-01	&(	1.354E+00	2.30E+02	9.09E+01 G
			610.30	0.000E+00	+	6.576E+01	1.00E+03	5.75E+00 GA
RH-106	I	1.2127E+01					3.74E+02	
			621.92	4.607E+00	&(	3.641E+01	2.34E+02	9.93E+00 G
			1050.36	5.999E+01	?(	1.532E+02	7.65E+01	1.56E+00 G
			511.86	1.731E+01	?	7.325E+00	1.57E+01	2.00E+01 GA
AG-108M	C	-7.0135E-02					1.53E+05	
			433.94	-7.014E-02	?(	1.227E+00	6.82E+02	9.05E+01 G
			722.94	0.000E+00	+	2.098E+00	1.00E+03	9.08E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			614.28	-8.694E-01	+	4.615E+00	1.58E+02	8.98E+01 G
AG-110M	F	7.1371E-01					2.50E+02	
			884.68	0.000E+00	?(	3.216E+00	1.00E+03	7.27E+01 G
			657.76	8.684E-01	?(	8.302E-01	3.37E+01	9.46E+01 G
			937.49	-2.603E+00	+	5.236E+00	9.04E+01	3.44E+01 G
			1384.30	2.247E+00	?(	4.253E+00	8.51E+01	2.43E+01 G
			763.94	-3.715E+00	+	8.664E+00	7.03E+01	2.23E+01 G
SN-113	F	6.6047E-01					1.15E+02	
			391.69	6.605E-01	?(	2.554E+00	1.15E+02	6.40E+01 G
SB-124	F	5.1851E-01					6.02E+01	
			602.73	5.315E-01	&(	3.720E+00	2.08E+02	9.83E+01 G
			1690.98	4.919E-01	?(	2.663E+00	2.42E+02	4.78E+01 G
			722.79	-2.142E-01	%	1.769E+01	2.35E+03	1.08E+01 G
SB-125	I	2.9800E+00					1.01E+03	
			427.88	-1.379E+00	?(	3.986E+00	1.16E+02	2.96E+01 G
			600.50	3.113E+00	&(	2.062E+01	1.97E+02	1.79E+01 G
			635.89	-1.244E-01	%	1.059E+01	2.34E+03	1.13E+01 G
			463.37	1.508E+01	(	1.223E+01	2.71E+01	1.05E+01 G
I-131	I	5.4837E-01					8.02E+00	
			364.48	4.758E-01	&(	1.189E+00	1.01E+02	8.17E+01 G
			284.30	-7.511E+00	&	1.870E+01	9.71E+01	6.14E+00 G
			636.97	1.375E+00	&(	1.569E+01	4.54E+02	7.17E+00 G
Gd-153	F	-1.1811E+00					2.42E+02	
			97.50	-1.181E+00	(	5.493E+00	1.39E+02	3.00E+01 G
			103.20	0.000E+00	&	7.754E+00	1.00E+03	2.18E+01 G
Ga-68	C	-1.1654E+01					4.71E-02	
			1077.40	-1.165E+01	?(	5.295E+01	2.02E+02	3.30E+00 G
Tc-99m	I	-4.6167E-01					2.51E-01	
			140.51	-4.617E-01	(	2.529E+00	1.64E+02	8.93E+01 G
BA-133	F	-7.9343E-01					3.85E+03	
			356.00	-7.934E-01	?(	4.404E+00	1.66E+02	6.20E+01 G
			302.85	0.000E+00	&	1.495E+01	1.00E+03	1.83E+01 G
			383.84	4.996E+00	?	1.809E+01	1.08E+02	8.94E+00 GA
			80.99	-1.352E+00	&	7.455E+00	1.66E+02	3.41E+01 GA
CS-134	I	2.8908E+00					7.54E+02	
			795.87	2.816E+00	&(	9.461E-01	1.67E+01	8.55E+01 G
			604.71	2.316E-01	-	3.819E+00	4.88E+02	9.76E+01 G
			569.32	4.216E-01	-	8.445E+00	5.64E+02	1.54E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			801.95	3.628E+00	?(	2.099E+01	1.67E+02	8.69E+00 G
			563.24	1.233E+00	-	1.312E+01	4.26E+02	8.35E+00 G
CS-137	I	-5.7660E-01					1.10E+04	
			661.66	-5.766E-01	?(	1.884E+00	9.66E+01	8.52E+01 G
CE-139	F	-4.9757E-01					1.38E+02	
			165.85	-4.976E-01	?(	1.791E+00	1.08E+02	7.99E+01 G
Ba-140	I	-4.5838E-01					1.28E+01	
			537.26	-4.584E-01	?(	4.861E+00	4.29E+02	2.44E+01 G
			162.66	-6.067E+00	&	2.183E+01	1.08E+02	6.22E+00 G
			304.85	0.000E+00	+	6.420E+01	1.00E+03	4.29E+00 G
La-140	I	1.3342E-01					1.28E+01	
			1596.21	-6.161E-01	?(	2.248E+00	1.73E+02	9.54E+01 G
			487.02	9.020E-01	&(	3.489E+00	1.14E+02	4.55E+01 G
			328.76	1.933E+00	&(	5.693E+00	8.78E+01	2.03E+01 G
			815.77	0.000E+00	-	8.251E+00	1.00E+03	2.33E+01 G
CE-141	I	-8.5050E-01					3.25E+01	
			145.44	-8.505E-01	?(	4.705E+00	1.66E+02	4.82E+01 G
CE-144	I	-3.5384E+00					2.85E+02	
			133.54	-3.538E+00	&(	1.868E+01	1.58E+02	1.11E+01 G
PM-144	C	1.2712E-01					3.63E+02	
			696.54	-2.885E-01	?(	1.644E+00	2.43E+02	9.90E+01 G
			618.06	5.423E-01	(	3.754E+00	2.06E+02	9.91E+01 G
EU-152	F	1.7164E+00					4.94E+03	
			121.78	5.566E-01	&(	2.949E+00	1.56E+02	2.86E+01 G
			344.29	1.134E+00	?(	6.171E+00	1.61E+02	2.65E+01 G
			1112.07	-6.500E+00	+	2.476E+01	1.13E+02	1.36E+01 G
			778.92	3.652E+00	?(	9.529E+00	1.11E+02	1.29E+01 G
			964.11	3.328E+00	?(	1.713E+01	1.51E+02	1.46E+01 G
			244.69	-1.661E+00	+	3.405E+01	6.10E+02	7.58E+00 G
			1408.00	-3.611E-01	%	8.118E+00	1.03E+03	2.10E+01 GA
EU-154	I	1.5846E+00					3.14E+03	
			123.10	5.186E-01	?(	2.283E+00	1.31E+02	4.08E+01 G
			1274.54	0.000E+00	-	7.136E+00	1.00E+03	3.52E+01 G
			723.36	0.000E+00	-	9.429E+00	1.00E+03	2.02E+01 G
			873.23	8.655E-01	&(	1.500E+01	4.90E+02	1.23E+01 G
			1004.77	4.489E+00	&(	1.242E+01	8.25E+01	1.80E+01 G
			996.33	-9.548E+00	+	2.466E+01	7.75E+01	1.06E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
EU-155	I	3.6986E-01					1.81E+03	
			105.31	0.000E+00	*(	7.956E+00	1.00E+03	2.12E+01 G
			86.54	6.253E-01	&(	7.071E+00	3.38E+02	3.07E+01 G
Ta-182	F	2.0491E+00					1.14E+02	
			1121.30	1.189E+00	?(	7.115E+00	1.74E+02	3.49E+01 G
			1221.41	-5.420E+00	+	9.512E+00	8.48E+01	2.70E+01 G
			1189.05	3.903E+00	(	7.371E+00	8.47E+01	1.62E+01 G
Hg-203	F	-9.7462E-02					4.66E+01	
			279.20	-9.746E-02	(	1.376E+00	4.09E+02	8.15E+01 G
TL-208	N	7.2313E+00					6.98E+02	
			583.02	7.231E+00	*(	1.070E+00	1.05E+01	8.45E+01 G
			277.28	5.365E+00	-	9.303E+00	6.02E+01	6.31E+00 G
			860.56	-2.115E+00	&	1.194E+01	2.45E+02	1.24E+01 G
PM-146	C	6.2406E-01					2.02E+03	
			453.88	6.241E-01	?(	1.468E+00	9.40E+01	6.50E+01 G
			747.16	-2.000E+00	&	5.037E+00	1.09E+02	3.40E+01 G
			735.72	-9.731E-01	+	6.119E+00	2.64E+02	2.25E+01 G
Y-88	F	6.1308E-01					1.07E+02	
			1836.06	3.182E-01	?(	1.407E+00	2.05E+02	9.92E+01 G
			898.04	9.252E-01	&(	1.009E+00	5.01E+01	9.37E+01 G
Cd-113m		4.9543E+03					5.33E+03	
			263.70	4.954E+03	(	1.897E+04	1.13E+02	6.00E-03 K
Cd-109	F	1.0007E+01					4.53E+02	
							Derived Ave Activity	
			88.04	1.001E+01	}(	5.509E+01	1.65E+02	3.79E+00 G
Cf-251	T	-2.4146E+00					3.28E+05	
			176.60	-2.415E+00	?(	6.574E+00	1.07E+02	1.70E+01 G
			227.00	6.214E+00		1.628E+01	1.02E+02	6.30E+00 GA
Cf-249	T	5.3848E-01					1.28E+05	
			387.95	8.275E-02	*(	2.606E+00	9.15E+02	6.60E+01 G
			333.44	2.478E+00	&(	8.748E+00	1.05E+02	1.55E+01 G
Sn-126		-1.2857E+00					3.65E+07	
			87.57	1.013E+00	}	5.494E+00	8.70E+01	3.75E+01 GA
			64.28	-1.286E+00	?(	2.172E+01	5.02E+02	9.70E+00 G
			86.94	4.208E+00	}	2.357E+01	8.76E+01	9.04E+00 GA

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PB-210	N	2.9881E+01					8.14E+03	
			46.54	2.988E+01	(P	4.256E+01	5.33E+01	4.25E+00 G
PB-212	N	1.5315E+01					6.98E+02	
			238.63	1.532E+01	(	1.699E+00	6.34E+00	4.33E+01 G
			300.03	1.095E+01	-	8.188E+01	2.23E+02	3.28E+00 GA
PB-214	N	2.2297E+01					5.84E+05	
			351.93	2.164E+01	*(	1.766E+00	6.67E+00	3.76E+01 G
			295.09	2.358E+01	(P	3.781E+00	9.17E+00	1.93E+01 G
			242.00	2.996E+01	+	1.053E+01	1.38E+01	7.43E+00 GA
BI-207	C	9.0235E-01					1.18E+04	
			1063.66	9.024E-01	&(	1.757E+00	8.82E+01	7.45E+01 G
			569.70	-2.655E-02	%	1.389E+00	1.47E+03	9.77E+01 G
BI-212	N	2.3312E+01					6.98E+02	
			727.17	2.331E+01	(	6.780E+00	1.89E+01	7.55E+00 G
			785.42	2.306E+01		1.052E+02	1.91E+02	1.28E+00 GA
U-235	N	-3.6917E+00					2.57E+11	
			143.79	-3.692E+00	(	2.043E+01	1.66E+02	1.10E+01 G
			205.33	-6.466E+00	+	2.165E+01	1.30E+02	5.01E+00 G
			163.38	-7.449E+00	+	2.776E+01	1.12E+02	5.08E+00 G
			185.72	-1.295E+00	+ P	2.677E+00	6.53E+01	5.40E+01 GA
BI-214	N	1.7775E+01					5.84E+05	
			609.31	1.778E+01	(P	2.878E+00	1.00E+01	4.61E+01 G
			1120.29	2.657E+01	+	3.109E+00	1.26E+01	1.51E+01 G
			1764.49	3.088E+01	+	4.376E+00	1.39E+01	1.54E+01 G
BI-210M	T	-8.4733E-01					1.10E+09	
			265.83	-8.473E-01	?(	2.605E+00	9.19E+01	5.00E+01 G
			304.90	0.000E+00	+	9.837E+00	1.00E+03	2.80E+01 G
AC-228	N	1.3216E+01					2.10E+03	
			911.07	1.322E+01	(	2.036E+00	1.29E+01	2.90E+01 G
			968.97	1.989E+01	+	5.557E+00	1.76E+01	1.75E+01 G
			338.32	1.834E+01	+	5.255E+00	1.48E+01	1.20E+01 G
			93.35	2.614E+01	+	1.583E+01	2.03E+01	5.56E+00 XA
TH-227	N	-6.1571E+00					7.95E+03	
			256.24	-6.157E+00	?(	1.570E+01	9.95E+01	7.00E+00 G
			235.97	2.839E+00	+	2.004E+01	2.11E+02	1.23E+01 G
			50.14	5.797E+00	&	2.595E+01	1.33E+02	8.00E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
TH-229	N	5.7630E+00					2.68E+06	
			193.51	5.763E+00	?(	2.201E+01	1.48E+02	4.40E+00 G
			210.85	-9.354E+00	&	3.902E+01	1.62E+02	2.99E+00 G
TH-234	N	-1.5567E+01					1.63E+12	
			92.59	-1.557E+01	*(P	4.025E+01	4.51E+01	5.58E+00 G
			63.29	-1.236E+01	+ P	5.520E+01	9.20E+01	3.81E+00 G
PA-234	N	1.7477E+00					1.63E+12	
			131.29	1.173E+00	(	7.637E+00	1.94E+02	1.80E+01 G
			946.02	2.519E+00	?(	9.889E+00	1.69E+02	1.34E+01 G
			569.47	-3.163E-01	%	1.639E+01	1.45E+03	8.20E+00 G
			883.24	0.000E+00	-	2.432E+01	1.00E+03	9.60E+00 G
			880.53	-1.246E+01	+	3.534E+01	8.45E+01	6.00E+00 GA
PA-234M	N	8.5992E+01					1.63E+12	
			1001.00	8.599E+01	?(	2.543E+02	8.78E+01	8.37E-01 G
			766.41	-2.264E+02	+	6.970E+02	9.15E+01	2.94E-01 G
AM-241	T	-1.4942E+00					1.58E+05	
			59.54	-1.494E+00	(	6.654E+00	1.34E+02	3.59E+01 G
Np-237	F	2.9073E+00					2.14E+06	
								Derived Ave Activity
			86.49	2.907E+00	}(	1.634E+01	1.68E+02	1.31E+01 G
Ir-192	F	-1.8590E-01					7.40E+01	
			316.49	-5.474E-01	&(	3.498E+00	1.91E+02	8.70E+01 G
			468.06	4.221E-01	&(	3.164E+00	2.18E+02	5.18E+01 G
			308.44	0.000E+00	+	8.751E+00	1.00E+03	3.18E+01 G
Cs-136	F	2.0220E-01					1.30E+01	
			818.50	0.000E+00	&(	1.925E+00	1.00E+03	1.00E+02 G
			1048.07	-1.580E+00	+	2.911E+00	5.64E+01	8.00E+01 G
			340.57	6.333E-01	&(	3.339E+00	1.56E+02	4.69E+01 G
Np-239	T	-4.8137E-01					2.36E+00	
			103.70	0.000E+00	+	7.040E+00	1.00E+03	2.40E+01 X
			106.13	-4.814E-01	?(	7.363E+00	4.54E+02	2.27E+01 G
			99.50	-1.521E+00	+	1.118E+01	2.19E+02	1.50E+01 X
Nd-147		1.3289E+00					1.11E+01	
			531.00	1.326E+00	?(	8.063E+00	2.45E+02	1.30E+01 G
			91.10	1.330E+00	?(	7.406E+00	1.67E+02	2.83E+01 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

TL-210   N  -6.7875E-01                                      5.84E+05
                          799.60-6.787E-01 &(  2.381E+00 1.04E+02 9.90E+01 G
                          296.00-3.899E-01 +   3.448E+00 2.63E+02 7.90E+01 G
                         1313.00 9.121E-01 ?   6.293E+00 3.02E+02 2.10E+01 GA

Kr-85    I   1.0139E+02                                      3.92E+03
                          513.98 1.014E+02 ?(  4.938E+02 1.44E+02 4.30E-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

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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********** 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	
TH-227	50.14	289.	18.	0.010	133.45	5.797E+00	
AM-241	59.54	646.	-27.	-0.015	133.50	-1.494E+00	
TH-234	63.29	557.	-25.	-0.014	92.00	-1.236E+01	P
BA-133	80.99	1116.	-29.	-0.016	165.51	-1.352E+00	
EU-155	86.54	857.	12.	0.007	337.72	6.253E-01	
Nd-147	91.10	825.	25.	0.014	166.84	1.330E+00	
TH-234	92.59	961.	-57.	-0.032	45.06	-1.557E+01	P

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Gd-153	97.50	523.	-23.	-0.013	139.19	-1.181E+00	
Np-239	99.50	546.	-15.	-0.008	219.25	-1.521E+00	
Np-239	106.13	552.	-7.	-0.004	454.46	-4.814E-01	
EU-152	121.78	133.	11.	0.006	156.12	5.566E-01	
CO-57	122.06	144.	7.	0.004	234.08	1.278E-01	
EU-154	123.10	164.	14.	0.008	130.51	5.186E-01	
PA-234	131.29	360.	14.	0.008	193.52	1.173E+00	
HF-181	133.02	725.	-24.	-0.013	163.05	-8.222E-01	
CE-144	133.54	829.	-26.	-0.014	158.26	-3.538E+00	
HF-181	136.30	854.	-26.	-0.014	160.21	-6.760E+00	
CO-57	136.47	880.	-26.	-0.014	162.59	-3.704E+00	
Tc-99m	140.51	906.	-26.	-0.015	164.24	-4.617E-01	
U-235	143.79	933.	-26.	-0.015	165.94	-3.692E+00	
CE-141	145.44	950.	-26.	-0.015	165.93	-8.505E-01	
Ba-140	162.66	304.	-23.	-0.013	107.69	-6.067E+00	
U-235	163.38	327.	-23.	-0.013	111.51	-7.449E+00	
CE-139	165.85	333.	-24.	-0.014	107.78	-4.976E-01	
Cf-251	176.60	187.	-24.	-0.014	106.78	-2.415E+00	
U-235	185.72	302.	-40.	-0.022	65.32	-1.295E+00	P
TH-229	193.51	125.	14.	0.008	148.11	5.763E+00	
U-235	205.33	147.	-18.	-0.010	130.43	-6.466E+00	
TH-229	210.85	165.	-15.	-0.008	162.28	-9.354E+00	
Cf-251	227.00	114.	20.	0.011	102.20	6.214E+00	
TH-227	235.97	662.	17.	0.010	210.82	2.839E+00	
EU-152	244.69	691.	-6.	-0.003	610.00	-1.661E+00	
TH-227	256.24	110.	-20.	-0.011	99.50	-6.157E+00	
Cd-113m	263.70	113.	14.	0.008	113.43	4.954E+03	
BI-210M	265.83	149.	-19.	-0.011	91.90	-8.473E-01	
Hg-203	279.20	100.	-4.	-0.002	408.58	-9.746E-02	
I-131	284.30	103.	-20.	-0.011	97.11	-7.511E+00	
TL-210	296.00	580.	-13.	-0.007	263.45	-3.899E-01	
Ir-192	316.49	657.	-19.	-0.011	191.02	-5.474E-01	
CR-51	320.08	605.	-18.	-0.010	195.45	-4.536E+00	
La-140	328.76	82.	15.	0.008	87.79	1.933E+00	
Cf-249	333.44	113.	15.	0.008	104.86	2.478E+00	
Cs-136	340.57	148.	11.	0.006	155.56	6.333E-01	
EU-152	344.29	159.	11.	0.006	160.66	1.134E+00	
HF-181	345.83	221.	-14.	-0.008	148.20	-2.554E+00	
BA-133	356.00	438.	-18.	-0.010	165.56	-7.934E-01	
I-131	364.48	48.	14.	0.008	100.51	4.758E-01	
BA-133	383.84	131.	15.	0.009	107.62	4.996E+00	
Cf-249	387.95	146.	2.	0.001	914.69	8.275E-02	
SN-113	391.69	129.	14.	0.008	114.71	6.605E-01	
SB-125	427.88	56.	-13.	-0.007	116.07	-1.379E+00	
AG-108M	433.94	48.	-2.	-0.001	681.91	-7.014E-02	
PM-146	453.88	32.	12.	0.007	94.05	6.241E-01	
SB-125	463.37	59.	47.	0.026	27.11	1.508E+01	
Ir-192	468.06	98.	6.	0.004	218.39	4.221E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
BE-7	477.60	117.	-13.	-0.007	118.11	-4.324E+00	
La-140	487.02	86.	12.	0.007	114.19	9.020E-01	
RU-103	497.05	48.	-6.	-0.003	229.73	-2.321E-01	
RH-106	511.86	67.	96.	0.054	15.73	1.731E+01	
Kr-85	513.98	145.	12.	0.007	143.90	1.014E+02	
Nd-147	531.00	30.	5.	0.003	245.31	1.326E+00	
Ba-140	537.26	39.	-3.	-0.002	428.82	-4.584E-01	
SB-125	600.50	359.	14.	0.008	196.90	3.113E+00	
SB-124	602.73	352.	13.	0.007	207.90	5.315E-01	
AG-108M	614.28	443.	-19.	-0.011	158.44	-8.694E-01	
RH-106	621.92	328.	11.	0.006	234.32	4.607E+00	
I-131	636.97	26.	2.	0.001	453.67	1.375E+00	
AG-110M	657.76	11.	19.	0.011	33.70	8.684E-01	
CS-137	661.66	54.	-11.	-0.006	96.57	-5.766E-01	
NB-94	702.63	33.	-3.	-0.001	458.77	-1.236E-01	
ZR-95	724.20	52.	7.	0.004	142.30	7.817E-01	
PM-146	735.72	33.	-5.	-0.003	263.90	-9.731E-01	
PM-146	747.16	51.	-14.	-0.008	109.28	-2.000E+00	
ZR-95	756.73	47.	-17.	-0.009	90.33	-1.465E+00	
AG-110M	763.94	64.	-17.	-0.010	70.27	-3.715E+00	
NB-95	765.79	59.	14.	0.008	80.67	6.908E-01	
PA-234M	766.41	73.	-14.	-0.008	91.51	-2.264E+02	
EU-152	778.92	23.	10.	0.005	110.78	3.652E+00	
TL-210	799.60	92.	-13.	-0.007	103.98	-6.787E-01	
CO-58	810.78	49.	-8.	-0.005	126.37	-4.132E-01	
MN-54	834.85	42.	-13.	-0.007	109.33	-6.684E-01	
NB-94	871.10	35.	-8.	-0.004	110.40	-4.245E-01	
EU-154	873.23	47.	2.	0.001	489.90	8.655E-01	
PA-234	880.53	63.	-14.	-0.008	84.52	-1.246E+01	
Y-88	898.04	10.	16.	0.009	50.13	9.252E-01	
AG-110M	937.49	40.	-16.	-0.009	90.43	-2.603E+00	
PA-234	946.02	20.	6.	0.003	168.87	2.519E+00	
EU-152	964.11	78.	9.	0.005	150.56	3.328E+00	
EU-154	996.33	81.	-17.	-0.010	77.45	-9.548E+00	
PA-234M	1001.00	52.	12.	0.007	87.83	8.599E+01	
EU-154	1004.77	58.	14.	0.008	82.54	4.489E+00	
Cs-136	1048.07	59.	-21.	-0.012	56.40	-1.580E+00	
RH-106	1050.36	62.	15.	0.009	76.53	5.999E+01	
BI-207	1063.66	16.	11.	0.006	88.23	9.024E-01	
Ga-68	1077.40	21.	-5.	-0.003	201.56	-1.165E+01	
EU-152	1112.07	118.	-14.	-0.008	112.94	-6.500E+00	
Ta-182	1121.30	60.	7.	0.004	173.50	1.189E+00	
CO-60	1173.24	27.	-3.	-0.001	444.41	-1.760E-01	
Ta-182	1189.05	11.	9.	0.005	84.66	3.903E+00	
Ta-182	1221.41	57.	-22.	-0.012	84.76	-5.420E+00	
Co-56	1238.28	17.	23.	0.013	46.93	2.391E+00	
NA-22	1274.53	40.	-11.	-0.006	88.94	-7.492E-01	
FE-59	1291.60	11.	7.	0.004	124.60	1.094E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
TL-210	1313.00	11.	3.	0.001	302.33	9.121E-01	
CO-60	1332.50	17.	1.	0.001	972.11	7.266E-02	
AG-110M	1384.30	6.	7.	0.004	85.05	2.247E+00	
La-140	1596.21	24.	-7.	-0.004	173.21	-6.161E-01	
SB-124	1690.98	6.	3.	0.001	242.22	4.919E-01	
Co-56	1771.35	62.	-6.	-0.003	190.03	-3.556E+00	
Y-88	1836.06	7.	3.	0.002	204.94	3.182E-01	

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 Counting 1 Sigma	MDA Bq/Sample
BE-7	#A	-4.3244E+00	-4.3244E+00	1.181E+02%	1.73E+01
NA-22	#A	-7.4925E-01	-7.4925E-01	8.894E+01%	2.25E+00
K-40		2.5074E+02	2.5074E+02	5.678E+00%	9.98E+00
Sc-46	#A	0.0000E+00	0.0000E+00	7.071E+02%	2.37E+00
CR-51	#A	-4.5361E+00	-4.5362E+00	1.955E+02%	2.97E+01
MN-54	#A	-6.6836E-01	-6.6836E-01	1.093E+02%	1.69E+00
FE-59	#A	5.1622E-01	5.1622E-01	1.246E+02%	2.69E+00
Co-56	#A	9.5144E-01	9.5144E-01	4.693E+01%	1.22E+00
CO-57	#A	1.2780E-01	1.2780E-01	2.341E+02%	1.02E+00
CO-58	#A	-4.1324E-01	-4.1324E-01	1.264E+02%	1.79E+00
CO-60	#A	7.2664E-02	7.2664E-02	9.721E+02%	1.59E+00
ZN-65	#A	0.0000E+00	0.0000E+00	1.000E+03%	6.30E+00
NB-94	#A	-1.2361E-01	-1.2361E-01	4.588E+02%	1.36E+00
ZR-95	#A	-1.4654E+00	-1.4654E+00	9.033E+01%	3.04E+00
NB-95	#A	6.9084E-01	6.9084E-01	8.067E+01%	1.87E+00
RU-103	#A	-2.3208E-01	-2.3208E-01	2.297E+02%	1.35E+00
RH-106	#A	1.2127E+01	1.2127E+01	7.653E+01%	3.64E+01
AG-108M	#A	-7.0135E-02	-7.0135E-02	6.819E+02%	1.23E+00
AG-110M	#A	7.1371E-01	7.1371E-01	3.370E+01%	3.22E+00
SN-113	#A	6.6047E-01	6.6047E-01	1.147E+02%	2.55E+00
SB-124	#A	5.1851E-01	5.1851E-01	1.596E+02%	3.72E+00
SB-125	#A	2.9800E+00	2.9800E+00	2.711E+01%	3.99E+00
I-131	#A	5.4836E-01	5.4837E-01	1.005E+02%	1.19E+00
Gd-153	#A	-1.1811E+00	-1.1811E+00	1.392E+02%	5.49E+00
Ga-68	#A	-1.1614E+01	-1.1654E+01	2.016E+02%	5.30E+01
Tc-99m	#A	-4.6137E-01	-4.6167E-01	1.642E+02%	2.53E+00
BA-133	#A	-7.9343E-01	-7.9343E-01	1.656E+02%	4.40E+00
CS-134	#	2.8908E+00	2.8908E+00	1.669E+01%	9.46E-01
CS-137	#A	-5.7660E-01	-5.7660E-01	9.657E+01%	1.88E+00
CE-139	#A	-4.9757E-01	-4.9757E-01	1.078E+02%	1.79E+00
Ba-140	#A	-4.5837E-01	-4.5838E-01	4.288E+02%	4.86E+00
La-140	#A	1.3342E-01	1.3342E-01	7.509E+01%	2.25E+00
CE-141	#A	-8.5050E-01	-8.5050E-01	1.659E+02%	4.71E+00

CE-144 #A	-3.5384E+00	-3.5384E+00	1.583E+02%		1.87E+01
PM-144 A	1.2712E-01	1.2712E-01	1.593E+02%		1.64E+00
EU-152 #A	1.7164E+00	1.7164E+00	7.294E+01%		2.95E+00
EU-154 #A	1.5846E+00	1.5846E+00	8.254E+01%		2.28E+00
EU-155 #A	3.6986E-01	3.6986E-01	3.377E+02%		7.96E+00
HF-181 #A	0.0000E+00	0.0000E+00	1.000E+03%		2.39E+00
Ta-182 #A	2.0491E+00	2.0491E+00	8.466E+01%		7.11E+00
Hg-203 #A	-9.7461E-02	-9.7462E-02	4.086E+02%		1.38E+00
TL-208	7.2313E+00	7.2313E+00	1.045E+01%		1.07E+00
PM-146 #A	6.2406E-01	6.2406E-01	9.405E+01%		1.47E+00
Y-88 #A	6.1308E-01	6.1308E-01	5.013E+01%		1.41E+00
Cd-113m#A	4.9543E+03	4.9543E+03	1.134E+02%		1.90E+04
Cd-109 #A	1.0007E+01	1.0007E+01	1.650E+02%		5.51E+01
Cf-251 #A	-2.4146E+00	-2.4146E+00	1.068E+02%		6.57E+00
Cf-249 #A	5.3848E-01	5.3848E-01	1.049E+02%		2.61E+00
Sn-126 #A	-1.2857E+00	-1.2857E+00	5.019E+02%		2.17E+01
PB-210 A	2.9881E+01	2.9881E+01	5.328E+01%		4.26E+01
PB-212	1.5315E+01	1.5315E+01	6.344E+00%		1.70E+00
PB-214	2.2297E+01	2.2297E+01	5.672E+00%		1.77E+00
BI-207 #A	9.0235E-01	9.0235E-01	8.823E+01%		1.76E+00
BI-212	2.3312E+01	2.3312E+01	1.888E+01%		6.78E+00
U-235 #A	-3.6917E+00	-3.6917E+00	1.659E+02%		2.04E+01
BI-214	1.7775E+01	1.7775E+01	1.002E+01%		2.88E+00
BI-210M#A	-8.4733E-01	-8.4733E-01	9.190E+01%		2.60E+00
AC-228	1.3216E+01	1.3216E+01	1.294E+01%		2.04E+00
TH-227 #A	-6.1571E+00	-6.1571E+00	9.950E+01%		1.57E+01
TH-229 #A	5.7630E+00	5.7630E+00	1.481E+02%		2.20E+01
TH-234 #A	-1.5567E+01	-1.5567E+01	4.506E+01%		4.02E+01
PA-231 #A	0.0000E+00	0.0000E+00	7.071E+02%		9.51E+01
PA-233 #A	0.0000E+00	0.0000E+00	7.071E+02%		7.79E+00
PA-234 #A	1.7477E+00	1.7477E+00	1.284E+02%		7.64E+00
PA-234M#A	8.5992E+01	8.5992E+01	8.783E+01%		2.54E+02
AM-241 #A	-1.4942E+00	-1.4942E+00	1.335E+02%		6.65E+00
Np-237 #A	2.9073E+00	2.9073E+00	1.684E+02%		1.63E+01
Ir-192 #A	-1.8590E-01	-1.8590E-01	1.451E+02%		3.50E+00
Cs-136 #A	2.0220E-01	2.0220E-01	1.556E+02%		1.93E+00
Np-239 #A	-4.8134E-01	-4.8137E-01	4.545E+02%		7.36E+00
Nd-147 #A	1.3289E+00	1.3289E+00	1.483E+02%		8.06E+00
TL-210 #A	-6.7875E-01	-6.7875E-01	1.040E+02%		2.38E+00
Kr-85 #A	1.0139E+02	1.0139E+02	1.439E+02%		4.94E+02

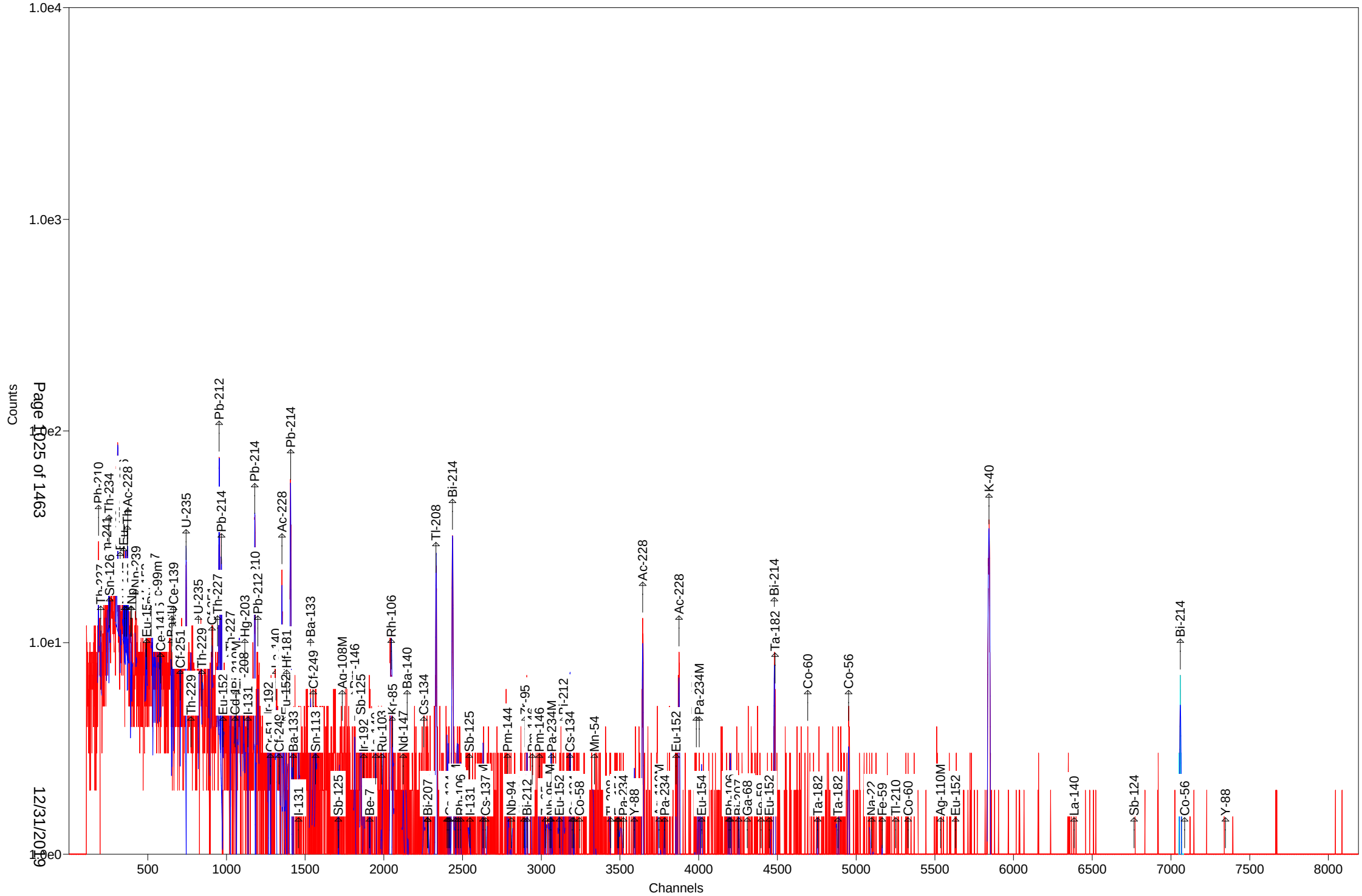
- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (25.1 to 1999.1 keV) 3.798E+02 Bq/Sample
Total Decayed Activity (25.1 to 1999.1 keV) 3.7976593E+02 Bq/Sample

(Page 22 of 22)

452567_Gamma_160-36526-A-13-B. 12_Gamma_20193695.spc.



Test America St. Louis Spectrum ID: 14_Gamma_20192822

Sample Description: 452567_Gamma_160-36526-A-14-B
Detector: Detector #14
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-14-B

Decay to Time: 12/25/2019 10:11 Live Time: 1800 sec
Acquisition Time: 12/25/2019 10:11:59 Real Time: 1801 sec
Analysis Time: 12/25/2019 10:42 Dead Time: 0.05 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 14_Soil_TunaCan.Clb
Efficiency Cal Desc: 14_TunaCan_90099_042312
Efficiency Cal Date: 4/23/2012 11:29
Energy Cal Date: 2/28/2012 10:48
Library: Client_Long_Rev15.lib
Bkgd Correction File: 14_2019-12-07_1445.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	-4.389E+00	96.4	4.229E+00	4.235E+00	1.424E+01
NA-22	-7.962E-01	78.5	6.253E-01	6.266E-01	2.099E+00
K-40	2.249E+02	5.9	1.318E+01	1.750E+01	8.032E+00
Sc-46	-1.612E-01	284.8	4.591E-01	4.592E-01	1.627E+00
CR-51	1.994E+00	203.9	4.066E+00	4.067E+00	1.385E+01
MN-54	-1.584E-02	2506.8	3.970E-01	3.970E-01	1.404E+00
FE-59	-8.043E-01	134.9	1.085E+00	1.086E+00	2.669E+00
Co-56	6.363E-01	95.2	6.060E-01	6.069E-01	1.414E+00
CO-57	-2.919E-01	109.7	3.203E-01	3.207E-01	1.073E+00
CO-58	3.675E-01	125.5	4.611E-01	4.615E-01	1.588E+00
CO-60	-5.236E-02	130.2	6.816E-02	6.821E-02	1.598E+00
ZN-65	-1.866E+00	103.6	1.934E+00	1.936E+00	6.513E+00
NB-94	1.817E-01	69.7	1.267E-01	1.270E-01	1.367E+00
ZR-95	-5.172E-02	2858.2	1.478E+00	1.478E+00	2.466E+00
NB-95	2.937E-02	2061.4	6.055E-01	6.055E-01	2.121E+00
RU-103	3.074E-01	100.5	3.090E-01	3.094E-01	7.906E-01
RH-106	6.123E+00	88.4	5.415E+00	5.425E+00	8.963E+00
AG-108M	3.052E-01	102.3	3.121E-01	3.125E-01	8.294E-01
AG-110M	2.124E-01	206.2	4.379E-01	4.380E-01	2.342E+00
SN-113	-7.261E-03	9069.5	6.585E-01	6.585E-01	2.287E+00
SB-124	1.875E-01	548.7	1.029E+00	1.029E+00	3.487E+00
SB-125	1.582E+00	99.8	1.579E+00	1.581E+00	2.822E+00
I-131	-4.433E-01	99.4	4.408E-01	4.414E-01	1.406E+00
Gd-153	5.473E-02	86.0	4.705E-02	4.717E-02	2.946E+00
Ga-68	1.117E+01	146.1	1.631E+01	1.632E+01	3.897E+01
Tc-99m	2.771E-01	131.0	3.629E-01	3.633E-01	1.218E+00
BA-133	-5.951E-01	195.7	1.164E+00	1.165E+00	3.915E+00
CS-134	1.344E+00	39.7	5.331E-01	5.376E-01	1.950E+00
CS-137	2.648E-01	200.2	5.301E-01	5.303E-01	1.840E+00
CE-139	-3.689E-01	115.7	4.267E-01	4.281E-01	1.429E+00
Ba-140	1.720E+00	76.6	1.317E+00	1.320E+00	2.768E+00
La-140	3.994E-01	141.8	5.664E-01	5.668E-01	1.258E+00
CE-141	1.129E-01	611.4	6.901E-01	6.901E-01	2.342E+00

CE-144	0.000E+00	1.#INF	5.558E-01	5.558E-01	1.112E+01
PM-144	-2.672E-01	178.2	4.762E-01	4.764E-01	1.179E+00
EU-152	1.030E+00	87.9	9.053E-01	9.069E-01	3.620E+00
EU-154	1.856E+00	32.7	6.077E-01	6.155E-01	1.215E+00
EU-155	0.000E+00	1.#INF	8.543E-01	8.543E-01	4.909E+00
HF-181	-2.643E-01	132.8	3.509E-01	3.512E-01	1.995E+00
Ta-182	-3.517E+00	91.4	3.213E+00	3.218E+00	1.075E+01
Hg-203	-2.058E-01	195.9	4.031E-01	4.033E-01	1.377E+00
TL-208	4.716E+00	12.4	5.847E-01	6.338E-01	9.323E-01
PM-146	1.689E-02	212.2	3.584E-02	3.585E-02	1.558E+00
Y-88	4.664E-01	44.7	2.086E-01	2.103E-01	7.259E-01
Cd-113m	-5.272E+03	98.7	5.202E+03	5.213E+03	1.749E+04
Cd-109	8.207E+00	162.5	1.334E+01	1.335E+01	4.454E+01
Cf-251	2.361E-01	713.0	1.683E+00	1.683E+00	4.631E+00
Cf-249	-1.222E-01	293.1	3.581E-01	3.581E-01	2.266E+00
Sn-126	-1.205E-01	3585.1	4.319E+00	4.319E+00	1.469E+01
PB-210	3.629E+01	26.0	9.443E+00	9.680E+00	2.851E+01
PB-212	1.076E+01	8.4	9.050E-01	1.142E+00	2.056E+00
PB-214	1.910E+01	6.4	1.223E+00	1.575E+00	2.178E+00
BI-207	-4.173E-01	224.4	9.363E-01	9.365E-01	2.171E+00
BI-212	1.701E+01	23.5	4.004E+00	4.101E+00	9.540E+00
U-235	2.705E+00	102.6	2.775E+00	2.778E+00	1.010E+01
BI-214	1.740E+01	8.4	1.462E+00	1.719E+00	2.174E+00
BI-210M	4.705E-01	110.5	5.197E-01	5.204E-01	1.760E+00
AC-228	1.491E+01	8.1	1.204E+00	1.424E+00	2.225E+00
TH-227	2.063E+00	155.3	3.203E+00	3.206E+00	1.114E+01
TH-229	2.689E+00	241.4	6.493E+00	6.496E+00	1.780E+01
TH-234	1.179E+01	37.9	4.467E+00	4.515E+00	1.558E+01
PA-231	0.000E+00	1.#INF	3.538E+00	3.538E+00	8.018E+01
PA-233	-8.237E-01	240.5	1.981E+00	1.981E+00	6.658E+00
PA-234	6.573E-01	82.8	5.443E-01	5.454E-01	6.525E+00
PA-234M	5.305E+01	93.7	4.970E+01	4.977E+01	2.798E+02
AM-241	-1.118E+00	112.2	1.254E+00	1.256E+00	3.546E+00
Np-237	-2.696E+00	168.9	4.553E+00	4.556E+00	1.518E+01
Ir-192	-8.351E-02	97.9	8.174E-02	8.189E-02	1.484E+00
Cs-136	2.395E-01	67.7	1.622E-01	1.628E-01	1.147E+00
Np-239	9.767E-01	120.6	1.178E+00	1.179E+00	3.956E+00
Nd-147	-2.456E+00	148.1	3.638E+00	3.640E+00	9.175E+00
TL-210	0.000E+00	1.#INF	7.044E-02	7.044E-02	1.792E+00
Kr-85	0.000E+00	1.#INF	1.969E+01	1.969E+01	4.235E+02
Total	4.588E+02				

Analyst: Caleb Quinn

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Sample description
452567_Gamma_160-36526-A-14-B

Spectrum Filename: C:\User\SPC\Det14\14_Gamma_20192822.An1

Acquisition information
Start time: 12/25/2019 10:11:59 AM
Live time: 1800
Real time: 1801
Dead time: 0.05 %
Detector ID: 14

Detector system
Ge14 SN/11080670

Calibration
Filename: 14_Soil_TunaCan.Clb
14_TunaCan_90099_042312

Energy Calibration
Created: 2/28/2012 10:48:23 AM
Zero offset: 0.130 keV
Gain: 0.250 keV/channel
Quadratic: -2.050E-08 keV/channel^2

Efficiency Calibration
Created: 4/23/2012 11:29:47 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.02 %
Log(Eff): 2.101260E-01 + (-5.951973E-01*Log(E)) + (-1.605331E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.28 %
Log(Eff): -2.391492E+01 + (8.828985E+00*Log(E)) + (-9.371496E-01*Log(E)^2)

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.14keV)
Stop channel: 8000 (1999.51keV)
Peak rejection level: 1000.000%
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:	YES	12/25/2019 10:11:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	14_2019-12-07_1445.PBC 12/7/2019 2:45:57 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 26 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.2016

***** 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
46.48	42.	43.73	1.14	2.166E-02	46.54	4.250	PBC<MDA	PB210
63.27	40.	45.11	0.77	3.281E-02	63.29	3.810	PBC<MDA	TH234
74.77	130.	17.51	0.78	3.811E-02				
77.17	232.	9.92	0.78	3.898E-02				
80.99	6.	396.86	0.78	4.020E-02	80.99	34.060	PBC<MDA	BA133
87.10	89.	20.87	0.79	4.178E-02	86.49	13.100	9.045E+00	Np237
					86.54	30.700	3.858E+00	EU155
					86.94	9.040	1.308E+01	Sn126
					87.57	37.500	3.142E+00	Sn126
88.09	23.	162.52	0.79	4.196E-02	88.04	3.790	PBC<MDA	Cd109
89.81	49.	31.73	0.79	4.233E-02				
92.67	34.	60.88	0.80	4.279E-02	92.59	5.584	PBC<MDA	TH234
93.43	24.	156.66	0.80	4.291E-02	93.35	5.561	PBC<MDA	AC228
99.50	20.	111.84	0.80	4.365E-02	99.50	15.000	PBC<MDA	Np239
103.20	19.	122.18	0.81	4.392E-02	103.20	21.800	PBC<MDA	Gd153
106.13	18.	120.61	0.81	4.406E-02	106.13	22.700	PBC<MDA	Np239
123.08	48.	32.75	1.41	4.372E-02	123.10	40.790	1.506E+00	EU154
140.51	18.	130.99	0.85	4.193E-02	140.51	89.300	PBC<MDA	Tc99m
143.79	14.	171.18	0.85	4.148E-02	143.79	10.960	PBC<MDA	U235
145.44	4.	611.39	0.85	4.125E-02	145.44	48.200	PBC<MDA	CE141
162.66	18.	117.19	0.87	3.853E-02	162.66	6.220	PBC<MDA	Ba140
176.60	3.	713.05	0.88	3.692E-02	176.60	17.000	PBC<MDA	Cf251

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
185.72	83.	25.13	0.89	3.553E-02	185.72	54.000	2.398E+00	U235
193.51	7.	241.42	0.90	3.443E-02	193.51	4.400	PBC<MDA	TH229
205.33	14.	113.03	0.91	3.290E-02	205.33	5.010	PBC<MDA	U235
235.97	14.	222.41	0.94	2.957E-02	235.97	12.300	PBC<MDA	TH227
238.23	256.	9.16	0.96	2.935E-02	238.63	43.300	1.088E+01	PB212
241.62	63.	24.09	0.95	2.900E-02	242.00	7.430	1.620E+01	PB214
244.69	16.	211.98	0.95	2.875E-02	244.69	7.580	PBC<MDA	EU152
256.24	6.	216.68	0.96	2.775E-02	256.24	7.000	PBC<MDA	TH227
265.83	11.	110.47	0.97	2.697E-02	265.83	50.000	PBC<MDA	BI210M
277.18	30.	36.71	1.27	2.610E-02	277.28	6.310	1.004E+01	TL208
284.30	3.	561.98	0.99	2.560E-02	284.30	6.140	PBC<MDA	I131
294.89	181.	10.17	0.88	2.488E-02	295.09	19.300	2.049E+01	PB214
308.44	13.	207.63	1.01	2.403E-02	308.44	31.750	PBC<MDA	Ir192
320.08	8.	203.89	1.03	2.334E-02	320.08	9.940	PBC<MDA	CR51
328.76	11.	141.82	1.03	2.286E-02	328.76	20.300	PBC<MDA	La140
333.44	2.	697.32	1.04	2.261E-02	333.44	15.510	PBC<MDA	Cf249
338.17	79.	14.38	0.98	2.235E-02	338.32	12.010	1.627E+01	AC228
345.83	4.	345.27	1.05	2.197E-02	345.83	15.070	PBC<MDA	HF181
351.51	278.	7.28	1.23	2.169E-02	351.93	37.600	1.852E+01	PB214
383.84	22.	55.29	1.09	2.025E-02	383.84	8.940	PBC<MDA	BA133
427.88	11.	99.80	1.13	1.859E-02	427.88	29.600	PBC<MDA	SB125
433.94	9.	102.27	1.13	1.838E-02	433.94	90.480	PBC<MDA	AG108M
463.37	9.	155.34	1.16	1.745E-02	463.37	10.470	PBC<MDA	SB125
497.05	8.	100.52	1.19	1.650E-02	497.05	90.900	PBC<MDA	RU103
511.86	68.	18.61	2.46	1.612E-02	511.86	20.000	1.177E+01	RH106
537.26	7.	98.59	1.23	1.551E-02	537.26	24.390	PBC<MDA	Ba140
563.24	10.	96.88	1.25	1.494E-02	563.24	8.350	PBC<MDA	CS134
569.32	8.	74.06	1.26	1.481E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	3.472E+00	PA234
					569.70	97.740	PBC<MDA	BI207
582.85	104.	12.40	0.61	1.454E-02	583.02	84.500	4.716E+00	TL208
600.50	11.	232.27	1.29	1.419E-02	600.50	17.860	PBC<MDA	SB125
602.73	5.	548.74	1.29	1.415E-02	602.73	98.260	PBC<MDA	SB124
609.01	209.	8.02	1.61	1.404E-02	609.31	46.090	1.740E+01	BI214
					610.30	5.750	1.443E+02	RU103
621.92	9.	99.16	1.31	1.380E-02	621.92	9.930	PBC<MDA	RH106
635.89	2.	473.71	1.32	1.356E-02	635.89	11.310	PBC<MDA	SB125
661.66	5.	200.20	1.34	1.313E-02	661.66	85.210	PBC<MDA	CS137
723.16	1.	799.02	1.40	1.222E-02	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	7.207E-02	AG108M
					723.36	20.220	3.239E-01	EU154
726.97	28.	23.54	1.40	1.217E-02	727.17	7.550	1.701E+01	BI212
747.16	3.	324.52	1.42	1.191E-02	747.16	34.000	PBC<MDA	PM146
766.41	13.	93.67	1.43	1.167E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	2.160E+02	PA234M
778.92	4.	209.42	1.44	1.151E-02	778.92	12.940	PBC<MDA	EU152
785.42	3.	290.26	1.45	1.144E-02	785.42	1.280	PBC<MDA	BI212
795.87	6.	163.30	1.46	1.131E-02	795.87	85.530	PBC<MDA	CS134

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
801.95	12.	39.67	1.46	1.124E-02	801.95	8.690	PBC<MDA	CS134
810.78	7.	125.47	1.47	1.115E-02	810.78	99.460	PBC<MDA	CO58
871.10	7.	69.72	1.52	1.052E-02	871.10	99.890	PBC<MDA	NB94
883.24	8.	99.85	1.53	1.040E-02	883.24	9.600	PBC<MDA	PA234
898.04	8.	92.77	1.54	1.026E-02	898.04	93.700	PBC<MDA	Y88
911.06	78.	12.15	1.50	1.014E-02	911.07	29.000	1.478E+01	AC228
964.11	8.	144.27	1.60	9.682E-03	964.11	14.605	PBC<MDA	EU152
968.54	43.	15.25	1.75	9.642E-03	968.97	17.460	1.419E+01	AC228
1037.84	7.	106.27	1.65	9.116E-03	1037.84	14.130	PBC<MDA	Co56
1048.07	10.	67.73	1.66	9.043E-03	1048.07	80.000	PBC<MDA	Cs136
1050.36	5.	146.47	1.66	9.027E-03	1050.36	1.560	PBC<MDA	RH106
1077.40	5.	146.06	1.69	8.841E-03	1077.40	3.300	PBC<MDA	Ga68
1120.04	56.	17.21	0.71	8.562E-03	1120.29	15.100	2.396E+01	BI214
1173.24	4.	180.85	1.76	8.244E-03	1173.24	99.900	PBC<MDA	CO60
1238.28	12.	95.24	1.80	7.886E-03	1238.28	66.070	PBC<MDA	Co56
1276.12	11.	73.15	1.83	7.700E-03	1274.54	35.190	PBC<MDA	EU154
1384.30	3.	206.16	1.91	7.192E-03	1384.30	24.290	PBC<MDA	AG110M
1408.00	7.	39.84	1.92	7.092E-03	1408.00	21.005	PBC<MDA	EU152
1460.73	297.	5.86	2.09	6.879E-03	1460.83	10.670	2.249E+02	K40
1596.21	2.	248.05	2.04	6.391E-03	1596.21	95.400	PBC<MDA	La140
1764.99	21.	31.88	2.14	5.878E-03	1764.49	15.400	1.316E+01	BI214
1836.06	5.	44.72	2.19	5.686E-03	1836.06	99.200	PBC<MDA	Y88

********** 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	
298.46	74.77	190.	134.	3.509E+03	16.96	0.777	-	sD
308.08	77.17	143.	237.	6.068E+03	9.68	0.780	-	D
359.35	89.91	100.	46.	1.090E+03	34.04	0.793	-	sD

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: Client_Long_Rev15.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	185.58	46.54	92.	60.	0.033	26.02	0.748D
TH-227	199.98	50.14	171.	-17.	-0.010	91.01	0.751s
AM-241	237.55	59.54	210.	-22.	-0.012	112.21	0.761s
TH-234	252.55	63.29	139.	40.	0.022	45.11	0.765D
BA-133	323.33	80.99	198.	6.	0.003	396.86	0.784s
Np-237	345.33	86.49	985.	-26.	-0.015	168.92	0.789s
EU-155	345.54	86.54	756.	-5.	-0.003	808.18	0.790s
Sn-126	347.13	86.94	751.	0.	0.000	1000.00	0.790
Sn-126	349.65	87.57	694.	23.	0.013	83.08	0.791D
Cd-109	351.53	88.04	717.	23.	0.013	162.52	0.791A
Nd-147	363.77	91.10	726.	-4.	-0.002	909.03	0.794s
TH-234	369.72	92.59	190.	34.	0.019	60.88	0.796D
AC-228	372.76	93.35	675.	24.	0.013	156.66	0.797s
Gd-153	389.36	97.50	203.	-17.	-0.009	120.98	0.801s
Np-239	397.36	99.50	234.	20.	0.011	111.84	0.803s
Gd-153	412.15	103.20	272.	19.	0.011	122.18	0.807s
EU-155	420.60	105.31	293.	0.	0.000	1000.00	0.809s
Np-239	423.87	106.13	216.	18.	0.010	120.61	0.810s
EU-152	486.45	121.78	286.	-21.	-0.011	118.80	0.826
CO-57	487.58	122.06	224.	-20.	-0.011	109.74	0.826s
EU-154	491.64	123.08	61.	48.	0.027	32.75	1.413s
PA-234	524.50	131.29	358.	-21.	-0.011	132.14	0.836s
HF-181	531.42	133.02	379.	-13.	-0.007	217.10	0.838s
CE-144	533.47	133.54	392.	0.	0.000	1000.00	0.838
HF-181	544.52	136.30	392.	0.	0.000	1000.00	0.841
CO-57	545.21	136.47	387.	-21.	-0.012	132.44	0.841
Tc-99m	561.35	140.51	272.	18.	0.010	130.99	0.845s
U-235	574.45	143.79	294.	14.	0.008	171.18	0.849s
CE-141	581.07	145.44	303.	4.	0.002	611.39	0.850s
Ba-140	649.93	162.66	216.	18.	0.010	117.19	0.868s
CE-139	662.70	165.85	272.	-21.	-0.011	115.66	0.871s
Cf-251	705.68	176.60	113.	3.	0.001	713.05	0.882
U-235	742.15	185.72	114.	83.	0.046	25.13	0.892s
TH-229	773.30	193.51	97.	7.	0.004	241.42	0.899s
U-235	820.58	205.33	77.	14.	0.008	113.03	0.912s
TH-229	842.65	210.85	160.	-22.	-0.012	72.13	0.917s
Cf-251	907.23	227.00	120.	-19.	-0.011	105.13	0.933s
TH-227	943.11	235.97	497.	14.	0.008	222.41	0.942s
PB-212	953.75	238.63	90.	246.	0.137	8.41	0.945D
PB-214	967.21	242.00	83.	63.	0.035	24.09	0.948D
EU-152	977.99	244.69	532.	16.	0.009	211.98	0.951s
TH-227	1024.17	256.24	61.	6.	0.004	216.68	0.962s
Cd-113m	1054.01	263.70	108.	-15.	-0.009	98.69	0.970s
BI-210M	1062.53	265.83	74.	11.	0.006	110.47	0.972s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
TL-208	1107.93	277.18	28.	30.	0.017	36.71	1.274s
Hg-203	1115.99	279.20	114.	-8.	-0.004	195.91	0.985s
I-131	1136.39	284.30	66.	3.	0.002	561.98	0.990s
PB-214	1178.68	294.87	40.	175.	0.097	10.37	0.874
TL-210	1183.18	296.00	469.	-15.	-0.008	203.44	1.002s
PB-212	1199.30	300.03	452.	-4.	-0.002	144.86	1.006
PA-231	1199.46	300.07	448.	0.	0.000	1000.00	1.006s
PA-233	1199.90	300.18	448.	0.	0.000	1000.00	1.006s
PA-231	1209.78	302.65	448.	0.	0.000	1000.00	1.008s
BA-133	1210.59	302.85	448.	0.	0.000	1000.00	1.009s
Ba-140	1218.57	304.85	448.	0.	0.000	1000.00	1.011s
BI-210M	1218.76	304.90	448.	0.	0.000	1000.00	1.011s
Ir-192	1232.94	308.44	342.	13.	0.007	207.63	1.014s
PA-233	1247.22	312.01	461.	-13.	-0.007	240.48	1.018s
Ir-192	1265.13	316.49	125.	-17.	-0.009	97.89	1.022s
CR-51	1279.51	320.08	140.	8.	0.005	203.89	1.026
La-140	1314.21	328.76	62.	11.	0.006	141.82	1.034s
Cf-249	1332.92	333.44	55.	2.	0.001	697.32	1.039s
AC-228	1351.83	338.17	13.	79.	0.044	14.38	0.985s
Cs-136	1361.44	340.57	209.	-14.	-0.008	147.59	1.045s
HF-181	1382.47	345.83	56.	4.	0.002	345.27	1.050
PB-214	1405.20	351.51	39.	272.	0.151	7.52	1.232
BA-133	1423.15	356.00	383.	-14.	-0.008	195.67	1.060s
I-131	1457.08	364.48	77.	-17.	-0.009	99.44	1.069s
BA-133	1534.50	383.84	65.	22.	0.012	55.29	1.087
Cf-249	1550.94	387.95	121.	-5.	-0.003	293.06	1.091s
SB-125	1710.63	427.88	29.	11.	0.006	99.80	1.129
AG-108M	1734.87	433.94	23.	9.	0.005	102.27	1.135s
PM-146	1814.64	453.88	40.	-3.	-0.002	273.45	1.154s
SB-125	1852.59	463.37	88.	9.	0.005	155.34	1.163s
Ir-192	1871.36	468.06	135.	-17.	-0.010	98.46	1.167s
BE-7	1909.50	477.60	86.	-14.	-0.008	96.35	1.176s
HF-181	1927.10	482.00	98.	-11.	-0.006	132.78	1.180s
La-140	1947.19	487.02	52.	-10.	-0.006	133.28	1.185s
RU-103	1987.33	497.05	16.	8.	0.005	100.52	1.194s
RH-106	2046.57	511.86	47.	68.	0.038	18.61	2.458s
Kr-85	2055.03	513.98	115.	0.	0.000	1000.00	1.210s
Nd-147	2123.11	531.00	44.	-9.	-0.005	148.10	1.225s
Ba-140	2148.15	537.26	12.	7.	0.004	98.59	1.231s
CS-134	2252.06	563.24	24.	10.	0.006	96.88	1.255s
CS-134	2276.40	569.32	12.	8.	0.004	74.06	1.260s
BI-207	2277.92	569.70	37.	-7.	-0.004	156.80	1.261
TL-208	2330.51	582.85	15.	104.	0.058	12.40	0.612s
SB-125	2401.12	600.50	319.	11.	0.006	232.27	1.289s
SB-124	2410.04	602.73	329.	5.	0.003	548.74	1.291s
CS-134	2417.96	604.71	334.	0.	0.000	1000.00	1.292s
BI-214	2435.14	609.01	24.	202.	0.112	8.40	1.609s
RU-103	2440.31	610.30	334.	0.	0.000	1000.00	1.297s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
AG-108M	2456.25	614.28	334.	0.	0.000	1000.00	1.301s
RH-106	2486.79	621.92	17.	9.	0.005	99.16	1.308s
SB-125	2542.69	635.89	30.	2.	0.001	473.71	1.320s
I-131	2547.03	636.97	42.	-7.	-0.004	249.00	1.321s
AG-110M	2630.18	657.76	53.	-5.	-0.003	198.43	1.339
CS-137	2645.77	661.66	54.	5.	0.003	200.20	1.343s
PM-144	2785.32	696.54	26.	-6.	-0.003	178.21	1.374s
SB-124	2890.31	722.79	79.	-12.	-0.006	112.22	1.396s
AG-108M	2890.91	722.94	67.	0.	0.000	1000.00	1.397s
EU-154	2892.60	723.36	66.	1.	0.001	799.02	1.397s
ZR-95	2895.96	724.20	70.	-6.	-0.003	201.38	1.398s
BI-212	2907.84	727.17	8.	28.	0.016	23.54	1.400D
PM-146	2942.05	735.72	17.	-2.	-0.001	703.21	1.408s
PM-146	2987.81	747.16	17.	3.	0.001	324.52	1.417s
AG-110M	3054.96	763.94	72.	-18.	-0.010	94.05	1.432
PA-234M	3064.83	766.41	71.	13.	0.007	93.67	1.434s
EU-152	3114.87	778.92	13.	4.	0.002	209.42	1.444s
BI-212	3140.88	785.42	22.	3.	0.002	290.26	1.450
CS-134	3182.68	795.87	45.	6.	0.003	163.30	1.459s
TL-210	3197.61	799.60	51.	0.	0.000	1000.00	1.462s
CS-134	3207.01	801.95	6.	12.	0.007	39.67	1.464
CO-58	3242.31	810.77	39.	7.	0.004	125.47	1.471s
Cs-136	3273.22	818.50	19.	-4.	-0.002	255.36	1.478s
Co-56	3386.32	846.77	28.	-2.	-0.001	565.69	1.501s
NB-94	3483.65	871.10	9.	7.	0.004	69.72	1.522s
EU-154	3492.19	873.23	49.	-14.	-0.008	75.85	1.523s
PA-234	3532.24	883.24	31.	8.	0.005	99.85	1.531s
AG-110M	3538.01	884.68	39.	0.	0.000	1000.00	1.533
Sc-46	3556.40	889.28	35.	-3.	-0.002	284.80	1.536s
Y-88	3591.45	898.04	9.	8.	0.004	92.77	1.543s
AC-228	3643.56	911.06	4.	78.	0.043	12.15	1.503
AG-110M	3749.30	937.49	28.	-13.	-0.007	87.99	1.576s
PA-234	3783.42	946.02	23.	-8.	-0.005	113.45	1.582s
EU-152	3855.80	964.11	57.	8.	0.004	144.27	1.597s
AC-228	3873.53	968.54	0.	43.	0.024	15.25	1.750s
EU-154	3984.71	996.33	70.	-7.	-0.004	165.89	1.622s
EU-154	4018.51	1004.77	45.	-17.	-0.009	90.25	1.629s
Co-56	4150.81	1037.84	10.	7.	0.004	106.27	1.655s
Cs-136	4191.74	1048.07	18.	10.	0.006	67.73	1.663
RH-106	4200.91	1050.36	30.	5.	0.003	146.47	1.665s
BI-207	4254.12	1063.66	25.	-5.	-0.003	224.35	1.675s
Ga-68	4309.10	1077.40	10.	5.	0.003	146.06	1.685
FE-59	4396.54	1099.25	20.	-7.	-0.004	134.88	1.702s
EU-152	4447.85	1112.07	122.	-15.	-0.008	110.21	1.712s
ZN-65	4461.74	1115.55	107.	-15.	-0.008	103.64	1.714s
BI-214	4479.72	1120.04	7.	56.	0.031	17.21	0.713s
Ta-182	4484.77	1121.30	140.	-19.	-0.011	91.36	1.719
CO-60	4692.60	1173.24	10.	4.	0.002	180.85	1.757s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Ta-182	4755.88	1189.05	35.	-8.	-0.004	166.38	1.769
Ta-182	4885.38	1221.41	32.	-6.	-0.003	218.16	1.792
Co-56	4952.89	1238.28	22.	12.	0.006	95.24	1.805s
NA-22	5097.96	1274.53	32.	-11.	-0.006	78.54	1.831s
EU-154	5098.00	1274.54	27.	11.	0.006	73.15	1.831s
FE-59	5166.25	1291.60	21.	-8.	-0.005	130.66	1.843s
TL-210	5251.92	1313.00	27.	-10.	-0.005	125.61	1.858s
CO-60	5329.96	1332.50	16.	-5.	-0.003	187.26	1.871s
AG-110M	5537.26	1384.30	5.	3.	0.001	206.16	1.907s
EU-152	5632.13	1408.00	0.	7.	0.004	39.84	1.923s
K-40	5843.18	1460.73	3.	297.	0.165	5.86	2.085
La-140	6385.44	1596.21	6.	2.	0.001	248.05	2.044s
SB-124	6764.81	1690.98	11.	-2.	-0.001	344.64	2.102
BI-214	7059.07	1764.49	13.	21.	0.012	31.88	2.145
Co-56	7086.53	1771.35	24.	0.	0.000	1000.00	2.149s
Y-88	7345.59	1836.06	0.	5.	0.003	44.72	2.185s

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
BE-7	C	-4.3894E+00				5.31E+01	
			477.60	-4.389E+00	?(	1.424E+01 9.64E+01 1.05E+01	G
NA-22	C	-7.9618E-01				9.50E+02	
			1274.53	-7.962E-01	&(	2.099E+00 7.85E+01 9.99E+01	G
K-40	N	2.2490E+02				4.66E+11	
			1460.83	2.249E+02	(P	8.032E+00 5.86E+00 1.07E+01	G
Sc-46	F	-1.6121E-01				8.38E+01	
			889.28	-1.612E-01	?(	1.627E+00 2.85E+02 1.00E+02	G
			1120.55	-4.198E-02	%	3.087E+00 2.11E+03 1.00E+02	G
CR-51	F	1.9942E+00				2.77E+01	
			320.08	1.994E+00	?(	1.385E+01 2.04E+02 9.94E+00	G
MN-54	C	-1.5836E-02				3.12E+02	
			834.85	-1.584E-02	%(P	1.404E+00 2.51E+03 1.00E+02	G
FE-59	F	-8.0431E-01				4.45E+01	
			1099.25	-8.043E-01	?(P	2.669E+00 1.35E+02 5.65E+01	G
			1291.60	-1.407E+00	+	4.092E+00 1.31E+02 4.32E+01	G

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Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Co-56	C 6.3632E-01					7.73E+01	
		846.77	-1.033E-01	?(	1.414E+00	5.66E+02	9.99E+01 G
		1238.28	1.245E+00	&(P	2.631E+00	9.52E+01	6.61E+01 G
		1037.84	3.019E+00	?(	7.525E+00	1.06E+02	1.41E+01 G
		1771.35	0.000E+00	-	1.569E+01	1.00E+03	1.55E+01 A
CO-57	C -2.9192E-01					2.72E+02	
		122.06	-2.919E-01	&(	1.073E+00	1.10E+02	8.56E+01 G
		136.47	-2.609E+00	+	1.157E+01	1.32E+02	1.07E+01 G
CO-58	C 3.6752E-01					7.09E+01	
		810.78	3.675E-01	?(	1.588E+00	1.25E+02	9.95E+01 G
CO-60	F -5.2362E-02					1.93E+03	
		1332.50	-3.743E-01	?(	1.598E+00	1.87E+02	1.00E+02 G
		1173.24	2.698E-01	?(	1.177E+00	1.81E+02	9.99E+01 G
ZN-65	F -1.8662E+00					2.44E+02	
		1115.55	-1.866E+00	?(	6.513E+00	1.04E+02	5.06E+01 G
NB-94	I 1.8167E-01					7.41E+06	
		702.63	-3.024E-02	&(	1.367E+00	1.81E+03	9.79E+01 G
		871.10	3.894E-01	?(P	9.012E-01	6.97E+01	9.99E+01 G
ZR-95	I -5.1722E-02					6.40E+01	
		756.73	-5.172E-02	%(P	2.466E+00	2.86E+03	5.45E+01 G
		724.20	-6.183E-01	+	4.297E+00	2.01E+02	4.42E+01 G
NB-95	I 2.9375E-02					6.40E+01	
		765.79	2.937E-02	%(	2.121E+00	2.06E+03	9.98E+01 G
RU-103	I 3.0741E-01					3.93E+01	
		497.05	3.074E-01	*(	7.906E-01	1.01E+02	9.09E+01 G
		610.30	0.000E+00	-	6.059E+01	1.00E+03	5.75E+00 GA
RH-106	I 6.1232E+00					3.74E+02	
		621.92	3.686E+00	&(	8.963E+00	9.92E+01	9.93E+00 G
		1050.36	2.164E+01	?(	1.106E+02	1.46E+02	1.56E+00 G
		511.86	1.177E+01	?	5.951E+00	1.86E+01	2.00E+01 GA
AG-108M	C 3.0523E-01					1.53E+05	
		433.94	3.052E-01	?(P	8.294E-01	1.02E+02	9.05E+01 G
		722.94	0.000E+00	-	2.043E+00	1.00E+03	9.08E+01 G
		614.28	0.000E+00	&	3.898E+00	1.00E+03	8.98E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
AG-110M	F	2.1242E-01					2.50E+02	
			884.68	0.000E+00	?(	2.342E+00	1.00E+03	7.27E+01 G
			657.76	-2.373E-01	+	1.635E+00	1.98E+02	9.46E+01 G
			937.49	-2.191E+00	+	4.467E+00	8.80E+01	3.44E+01 G
			1384.30	8.480E-01	?(	4.284E+00	2.06E+02	2.43E+01 G
			763.94	-3.876E+00	+ P	8.992E+00	9.40E+01	2.23E+01 G
SN-113	F	-7.2609E-03					1.15E+02	
			391.69	-7.261E-03	%(	2.287E+00	9.07E+03	6.40E+01 G
SB-124	F	1.8750E-01					6.02E+01	
			602.73	1.875E-01	&(	3.487E+00	5.49E+02	9.83E+01 G
			1690.98	-4.453E-01	+	3.511E+00	3.45E+02	4.78E+01 G
			722.79	-4.864E+00	+	1.850E+01	1.12E+02	1.08E+01 G
SB-125	I	1.5824E+00					1.01E+03	
			427.88	1.077E+00	&(	2.822E+00	9.98E+01	2.96E+01 G
			600.50	2.405E+00	?(	1.884E+01	2.32E+02	1.79E+01 G
			635.89	6.038E-01	&(	1.028E+01	4.74E+02	1.13E+01 G
			463.37	2.665E+00	?(P	1.413E+01	1.55E+02	1.05E+01 G
I-131	I	-4.4328E-01					8.02E+00	
			364.48	-5.490E-01	?(	1.406E+00	9.94E+01	8.17E+01 G
			284.30	9.632E-01	?(P	1.437E+01	5.62E+02	6.14E+00 G
			636.97	-3.918E+00	+ P	1.880E+01	2.49E+02	7.17E+00 G
Gd-153	F	5.4732E-02					2.42E+02	
			97.50	-7.246E-01	?(	2.946E+00	1.21E+02	3.00E+01 G
			103.20	1.127E+00	(	4.616E+00	1.22E+02	2.18E+01 G
Ga-68	C	1.1168E+01					4.71E-02	
			1077.40	1.117E+01	?(	3.897E+01	1.46E+02	3.30E+00 G
Tc-99m	I	2.7708E-01					2.51E-01	
			140.51	2.771E-01	?(	1.218E+00	1.31E+02	8.93E+01 G
BA-133	F	-5.9508E-01					3.85E+03	
			356.00	-5.951E-01	&(	3.915E+00	1.96E+02	6.20E+01 G
			302.85	0.000E+00	+	1.260E+01	1.00E+03	1.83E+01 G
			383.84	6.868E+00	?	1.239E+01	5.53E+01	8.94E+00 GA
			80.99	2.435E-01		2.771E+00	3.97E+02	3.41E+01 GA
CS-134	I	1.3437E+00					7.54E+02	
			795.87	3.444E-01	?(	1.950E+00	1.63E+02	8.55E+01 G
			604.71	0.000E+00	-	3.543E+00	1.00E+03	9.76E+01 G
			569.32	1.851E+00	?(	4.597E+00	7.41E+01	1.54E+01 G
			801.95	7.089E+00	&(	8.030E+00	3.97E+01	8.69E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			563.24	4.666E+00	?(P	1.142E+01	9.69E+01	8.35E+00 G
CS-137	I	2.6479E-01					1.10E+04	
			661.66	2.648E-01	&(	1.840E+00	2.00E+02	8.52E+01 G
CE-139	F	-3.6888E-01					1.38E+02	
			165.85	-3.689E-01	?(	1.429E+00	1.16E+02	7.99E+01 G
Ba-140	I	1.7201E+00					1.28E+01	
			537.26	1.088E+00	?(	2.768E+00	9.86E+01	2.44E+01 G
			162.66	4.197E+00	?(	1.651E+01	1.17E+02	6.22E+00 G
			304.85	0.000E+00	-	5.413E+01	1.00E+03	4.29E+00 G
La-140	I	3.9939E-01					1.28E+01	
			1596.21	2.126E-01	?(	1.258E+00	2.48E+02	9.54E+01 G
			487.02	-7.449E-01	+ P	2.649E+00	1.33E+02	4.55E+01 G
			328.76	1.277E+00	?(	4.729E+00	1.42E+02	2.03E+01 G
			815.77	-9.637E-02	% P	7.417E+00	1.72E+03	2.33E+01 G
CE-141	I	1.1288E-01					3.25E+01	
			145.44	1.129E-01	?(	2.342E+00	6.11E+02	4.82E+01 G
PM-144	C	-2.6721E-01					3.63E+02	
			696.54	-2.672E-01	?(	1.179E+00	1.78E+02	9.90E+01 G
			618.06	-5.703E-04	% P	3.552E+00	1.21E+05	9.91E+01 G
EU-152	F	1.0295E+00					4.94E+03	
			121.78	-9.098E-01	&(	3.620E+00	1.19E+02	2.86E+01 G
			344.29	6.731E-02	% P	6.124E+00	2.65E+03	2.65E+01 G
			1112.07	-6.893E+00	+	2.559E+01	1.10E+02	1.36E+01 G
			778.92	1.363E+00	?(P	7.358E+00	2.09E+02	1.29E+01 G
			964.11	3.012E+00	?(	1.493E+01	1.44E+02	1.46E+01 G
			244.69	3.952E+00	?(	2.810E+01	2.12E+02	7.58E+00 G
			1408.00	2.526E+00	? P	2.749E+00	3.98E+01	2.10E+01 GA
EU-154	I	1.8557E+00					3.14E+03	
			123.10	1.506E+00	*(	1.215E+00	3.27E+01	4.08E+01 G
			1274.54	2.261E+00	&(	5.523E+00	7.31E+01	3.52E+01 G
			723.36	3.239E-01	-	9.091E+00	7.99E+02	2.02E+01 G
			873.23	-6.046E+00	-	1.531E+01	7.58E+01	1.23E+01 G
			1004.77	-5.601E+00	-	1.121E+01	9.03E+01	1.80E+01 G
			996.33	-4.078E+00	-	2.324E+01	1.66E+02	1.06E+01 G
HF-181	F	-2.6427E-01					4.24E+01	
			482.00	-4.423E-01	?(	1.995E+00	1.33E+02	8.05E+01 G
			133.02	-3.831E-01	+	2.799E+00	2.17E+02	4.33E+01 G
			345.83	6.868E-01	(	6.301E+00	3.45E+02	1.51E+01 G
			136.30	0.000E+00	+	2.124E+01	1.00E+03	5.85E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Ta-182	F	-3.5167E+00					1.14E+02	
			1121.30	-3.517E+00	(	1.075E+01	9.14E+01	3.49E+01 G
			1221.41	-1.548E+00	+	7.500E+00	2.18E+02	2.70E+01 G
			1189.05	-3.365E+00	+	1.274E+01	1.66E+02	1.62E+01 G
Hg-203	F	-2.0579E-01					4.66E+01	
			279.20	-2.058E-01	?(	1.377E+00	1.96E+02	8.15E+01 G
TL-208	N	4.7156E+00					6.98E+02	
			583.02	4.716E+00	@(P	9.323E-01	1.24E+01	8.45E+01 G
			277.28	1.004E+01	+ P	9.269E+00	3.67E+01	6.31E+00 G
			860.56	2.789E-02	% P	9.682E+00	1.39E+04	1.24E+01 G
PM-146	C	1.6890E-02					2.02E+03	
			453.88	-1.657E-01	?(P	1.558E+00	2.73E+02	6.50E+01 G
			747.16	3.659E-01	?(	3.034E+00	3.25E+02	3.40E+01 G
			735.72	-4.968E-01	+ P	4.539E+00	7.03E+02	2.25E+01 G
Y-88	F	4.6636E-01					1.07E+02	
			1836.06	4.925E-01	?(	7.259E-01	4.47E+01	9.92E+01 G
			898.04	4.387E-01	&(	9.795E-01	9.28E+01	9.37E+01 G
Cd-113m		-5.2716E+03					5.33E+03	
			263.70	-5.272E+03	&(	1.749E+04	9.87E+01	6.00E-03 K
Cd-109	F	8.2071E+00					4.53E+02	
							Derived Ave Activity	
			88.04	8.207E+00	}(	4.454E+01	1.63E+02	3.79E+00 G
Cf-251	T	2.3606E-01					3.28E+05	
			176.60	2.361E-01	?(	4.631E+00	7.13E+02	1.70E+01 G
			227.00	-5.500E+00	+	1.556E+01	1.05E+02	6.30E+00 GA
Cf-249	T	-1.2218E-01					1.28E+05	
			387.95	-2.254E-01	?(	2.266E+00	2.93E+02	6.60E+01 G
			333.44	3.169E-01	?(	5.905E+00	6.97E+02	1.55E+01 G
Sn-126		-1.2046E-01					3.65E+07	
			87.57	8.309E-01	}	4.439E+00	8.31E+01	3.75E+01 GA
			64.28	-1.205E-01	%(	1.469E+01	3.59E+03	9.70E+00 G
			86.94	0.000E+00	+	1.921E+01	1.00E+03	9.04E+00 GA
PB-210	N	3.6287E+01					8.14E+03	
			46.54	3.629E+01	(P	2.851E+01	2.60E+01	4.25E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PB-212	N	1.0756E+01					6.98E+02	
			238.63	1.076E+01	(P	2.056E+00	8.41E+00	4.33E+01 G
			300.03	-2.976E+00	& P	7.025E+01	1.45E+02	3.28E+00 GA
PB-214	N	1.9096E+01					5.84E+05	
			351.93	1.852E+01	(P	2.178E+00	7.52E+00	3.76E+01 G
			295.09	2.022E+01	(P	3.737E+00	1.04E+01	1.93E+01 G
			242.00	1.620E+01	-	1.166E+01	2.41E+01	7.43E+00 GA
BI-207	C	-4.1733E-01					1.18E+04	
			1063.66	-4.173E-01	?(	2.171E+00	2.24E+02	7.45E+01 G
			569.70	-2.555E-01	+ P	1.187E+00	1.57E+02	9.77E+01 G
BI-212	N	1.7009E+01					6.98E+02	
			727.17	1.701E+01	(	9.540E+00	2.35E+01	7.55E+00 G
			785.42	1.265E+01		9.261E+01	2.90E+02	1.28E+00 GA
U-235	N	2.7052E+00					2.57E+11	
			143.79	1.754E+00	?(P	1.010E+01	1.71E+02	1.10E+01 G
			205.33	4.785E+00	?(P	1.468E+01	1.13E+02	5.01E+00 G
			163.38	-1.543E-01	% P	2.114E+01	4.00E+03	5.08E+00 G
			185.72	2.398E+00	* P	1.521E+00	2.51E+01	5.40E+01 GA
BI-214	N	1.7397E+01					5.84E+05	
			609.31	1.740E+01	(P	2.174E+00	8.40E+00	4.61E+01 G
			1120.29	2.396E+01	+ P	6.550E+00	1.72E+01	1.51E+01 G
			1764.49	1.316E+01	- P	1.180E+01	3.19E+01	1.54E+01 G
BI-210M	T	4.7046E-01					1.10E+09	
			265.83	4.705E-01	&(P	1.760E+00	1.10E+02	5.00E+01 G
			304.90	0.000E+00	-	8.294E+00	1.00E+03	2.80E+01 G
AC-228	N	1.4910E+01					2.10E+03	
			911.07	1.478E+01	(P	2.225E+00	1.22E+01	2.90E+01 G
			968.97	1.419E+01	(	2.432E+00	1.52E+01	1.75E+01 G
			338.32	1.627E+01	*(P	4.087E+00	1.44E+01	1.20E+01 G
			93.35	5.508E+00	-	2.882E+01	1.57E+02	5.56E+00 XA
TH-227	N	2.0631E+00					7.95E+03	
			256.24	1.856E+00	?(P	1.114E+01	2.17E+02	7.00E+00 G
			235.97	2.181E+00	?(	1.628E+01	2.22E+02	1.23E+01 G
			50.14	-4.915E+00	+ P	1.814E+01	9.10E+01	8.00E+00 G
TH-229	N	2.6893E+00					2.68E+06	
			193.51	2.689E+00	*(	1.780E+01	2.41E+02	4.40E+00 G
			210.85	-1.285E+01	+ P	3.555E+01	7.21E+01	2.99E+00 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

TH-234   N   1.1791E+01                                      1.63E+12
                          92.59 7.806E+00  (P 1.558E+01 6.09E+01 5.58E+00 G
                          63.29 1.763E+01  (P 2.562E+01 4.51E+01 3.81E+00 G

PA-233   C  -8.2370E-01                                      7.82E+08
                         312.01-8.237E-01 ?(  6.658E+00 2.40E+02 3.60E+01 G
                         300.18 0.000E+00 &   3.701E+01 1.00E+03 6.20E+00 G

PA-234   N   6.5727E-01                                      1.63E+12
                         131.29-1.474E+00 ?(  6.525E+00 1.32E+02 1.80E+01 G
                         946.02-3.538E+00 + P 1.065E+01 1.13E+02 1.34E+01 G
                         569.47 2.642E-01 %   1.260E+01 1.31E+03 8.20E+00 G
                         883.24 4.654E+00 ?(P 1.586E+01 9.99E+01 9.60E+00 G
                         880.53 2.916E-01 % P 2.881E+01 2.75E+03 6.00E+00 GA

PA-234M  N   5.3052E+01                                      1.63E+12
                        1001.00-4.180E+00 %(P 2.798E+02 1.62E+03 8.37E-01 G
                         766.41 2.160E+02 ?(  6.815E+02 9.37E+01 2.94E-01 G

AM-241   T  -1.1177E+00                                      1.58E+05
                          59.54-1.118E+00  (  3.546E+00 1.12E+02 3.59E+01 G

Np-237   F  -2.6955E+00                                      2.14E+06
                          86.49-2.696E+00 &(  1.518E+01 1.69E+02 1.31E+01 G

Ir-192   F  -8.3509E-02                                      7.40E+01
                         316.49-4.516E-01 ?(  1.484E+00 9.79E+01 8.70E+01 G
                         468.06-1.067E+00 +   3.526E+00 9.85E+01 5.18E+01 G
                         308.44 9.256E-01 ?(  6.472E+00 2.08E+02 3.18E+01 G

Cs-136   F   2.3954E-01                                      1.30E+01
                         818.50-1.842E-01 ?(  1.147E+00 2.55E+02 1.00E+02 G
                        1048.07 7.692E-01 &(  1.726E+00 6.77E+01 8.00E+01 G
                         340.57-7.497E-01 +   3.730E+00 1.48E+02 4.69E+01 G

Np-239   T   9.7666E-01                                      2.36E+00
                         103.70 8.283E-02 %   4.333E+00 1.54E+03 2.40E+01 X
                         106.13 9.767E-01 ?(  3.956E+00 1.21E+02 2.27E+01 G
                          99.50 1.675E+00 ?   6.276E+00 1.12E+02 1.50E+01 X

Nd-147      -2.4562E+00                                      1.11E+01
                         531.00-2.456E+00 ?(  9.175E+00 1.48E+02 1.30E+01 G
                          91.10-1.937E-01 +   5.920E+00 9.09E+02 2.83E+01 G
   ( - This peak used in the nuclide activity average.

   * - Peak is too wide, but only one peak in library.
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! - 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	
TH-227	50.14	171.	-17.	-0.010	91.01	-4.915E+00	P
AM-241	59.54	210.	-22.	-0.012	112.21	-1.118E+00	
BA-133	80.99	198.	6.	0.003	396.86	2.435E-01	
Np-237	86.49	985.	-26.	-0.015	168.92	-2.696E+00	
EU-155	86.54	756.	-5.	-0.003	808.18	-2.094E-01	
Nd-147	91.10	726.	-4.	-0.002	909.03	-1.937E-01	
Gd-153	97.50	203.	-17.	-0.009	120.98	-7.246E-01	
Np-239	99.50	234.	20.	0.011	111.84	1.675E+00	
Gd-153	103.20	272.	19.	0.011	122.18	1.127E+00	
Np-239	106.13	216.	18.	0.010	120.61	9.767E-01	
EU-152	121.78	286.	-21.	-0.011	118.80	-9.098E-01	
CO-57	122.06	224.	-20.	-0.011	109.74	-2.919E-01	
PA-234	131.29	358.	-21.	-0.011	132.14	-1.474E+00	
HF-181	133.02	379.	-13.	-0.007	217.10	-3.831E-01	
CO-57	136.47	387.	-21.	-0.012	132.44	-2.609E+00	
Tc-99m	140.51	272.	18.	0.010	130.99	2.771E-01	
U-235	143.79	294.	14.	0.008	171.18	1.754E+00	P
CE-141	145.44	303.	4.	0.002	611.39	1.129E-01	
Ba-140	162.66	216.	18.	0.010	117.19	4.197E+00	
CE-139	165.85	272.	-21.	-0.011	115.66	-3.689E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Cf-251	176.60	113.	3.	0.001	713.05	2.361E-01	
U-235	185.72	114.	83.	0.046	25.13	2.398E+00	P
TH-229	193.51	97.	7.	0.004	241.42	2.689E+00	
U-235	205.33	77.	14.	0.008	113.03	4.785E+00	P
TH-229	210.85	160.	-22.	-0.012	72.13	-1.285E+01	P
Cf-251	227.00	120.	-19.	-0.011	105.13	-5.500E+00	
TH-227	235.97	497.	14.	0.008	222.41	2.181E+00	
EU-152	244.69	532.	16.	0.009	211.98	3.952E+00	
TH-227	256.24	61.	6.	0.004	216.68	1.856E+00	P
Cd-113m	263.70	108.	-15.	-0.009	98.69	-5.272E+03	
BI-210M	265.83	74.	11.	0.006	110.47	4.705E-01	P
Hg-203	279.20	114.	-8.	-0.004	195.91	-2.058E-01	
I-131	284.30	66.	3.	0.002	561.98	9.632E-01	P
TL-210	296.00	469.	-15.	-0.008	203.44	-4.303E-01	
Ir-192	308.44	342.	13.	0.007	207.63	9.256E-01	
PA-233	312.01	461.	-13.	-0.007	240.48	-8.237E-01	
Ir-192	316.49	125.	-17.	-0.009	97.89	-4.516E-01	
CR-51	320.08	140.	8.	0.005	203.89	1.994E+00	
La-140	328.76	62.	11.	0.006	141.82	1.277E+00	
Cf-249	333.44	55.	2.	0.001	697.32	3.169E-01	
Cs-136	340.57	209.	-14.	-0.008	147.59	-7.497E-01	
HF-181	345.83	56.	4.	0.002	345.27	6.868E-01	
BA-133	356.00	383.	-14.	-0.008	195.67	-5.951E-01	
I-131	364.48	77.	-17.	-0.009	99.44	-5.490E-01	
BA-133	383.84	65.	22.	0.012	55.29	6.868E+00	
Cf-249	387.95	121.	-5.	-0.003	293.06	-2.254E-01	
SB-125	427.88	29.	11.	0.006	99.80	1.077E+00	
AG-108M	433.94	23.	9.	0.005	102.27	3.052E-01	P
PM-146	453.88	40.	-3.	-0.002	273.45	-1.657E-01	P
SB-125	463.37	88.	9.	0.005	155.34	2.665E+00	P
Ir-192	468.06	135.	-17.	-0.010	98.46	-1.067E+00	
BE-7	477.60	86.	-14.	-0.008	96.35	-4.389E+00	
HF-181	482.00	98.	-11.	-0.006	132.78	-4.423E-01	
La-140	487.02	52.	-10.	-0.006	133.28	-7.449E-01	P
RU-103	497.05	16.	8.	0.005	100.52	3.074E-01	
RH-106	511.86	47.	68.	0.038	18.61	1.177E+01	
Nd-147	531.00	44.	-9.	-0.005	148.10	-2.456E+00	
Ba-140	537.26	12.	7.	0.004	98.59	1.088E+00	
CS-134	563.24	24.	10.	0.006	96.88	4.666E+00	P
CS-134	569.32	12.	8.	0.004	74.06	1.851E+00	
BI-207	569.70	37.	-7.	-0.004	156.80	-2.555E-01	P
SB-125	600.50	319.	11.	0.006	232.27	2.405E+00	
SB-124	602.73	329.	5.	0.003	548.74	1.875E-01	
RH-106	621.92	17.	9.	0.005	99.16	3.686E+00	
SB-125	635.89	30.	2.	0.001	473.71	6.038E-01	
I-131	636.97	42.	-7.	-0.004	249.00	-3.918E+00	P
AG-110M	657.76	53.	-5.	-0.003	198.43	-2.373E-01	
CS-137	661.66	54.	5.	0.003	200.20	2.648E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
PM-144	696.54	26.	-6.	-0.003	178.21	-2.672E-01		
SB-124	722.79	79.	-12.	-0.006	112.22	-4.864E+00		
ZR-95	724.20	70.	-6.	-0.003	201.38	-6.183E-01		
PM-146	735.72	17.	-2.	-0.001	703.21	-4.968E-01		P
PM-146	747.16	17.	3.	0.001	324.52	3.659E-01		
AG-110M	763.94	72.	-18.	-0.010	94.05	-3.876E+00		P
PA-234M	766.41	71.	13.	0.007	93.67	2.160E+02		
EU-152	778.92	13.	4.	0.002	209.42	1.363E+00		P
CS-134	795.87	45.	6.	0.003	163.30	3.444E-01		
CS-134	801.95	6.	12.	0.007	39.67	7.089E+00		
CO-58	810.77	39.	7.	0.004	125.47	3.675E-01		
Cs-136	818.50	19.	-4.	-0.002	255.36	-1.842E-01		
Co-56	846.77	28.	-2.	-0.001	565.69	-1.033E-01		
NB-94	871.10	9.	7.	0.004	69.72	3.894E-01		P
PA-234	883.24	31.	8.	0.005	99.85	4.654E+00		P
Sc-46	889.28	35.	-3.	-0.002	284.80	-1.612E-01		
Y-88	898.04	9.	8.	0.004	92.77	4.387E-01		
AG-110M	937.49	28.	-13.	-0.007	87.99	-2.191E+00		
PA-234	946.02	23.	-8.	-0.005	113.45	-3.538E+00		P
EU-152	964.11	57.	8.	0.004	144.27	3.012E+00		
Co-56	1037.84	10.	7.	0.004	106.27	3.019E+00		
Cs-136	1048.07	18.	10.	0.006	67.73	7.692E-01		
RH-106	1050.36	30.	5.	0.003	146.47	2.164E+01		
BI-207	1063.66	25.	-5.	-0.003	224.35	-4.173E-01		
Ga-68	1077.40	10.	5.	0.003	146.06	1.117E+01		
FE-59	1099.25	20.	-7.	-0.004	134.88	-8.043E-01		P
EU-152	1112.07	122.	-15.	-0.008	110.21	-6.893E+00		
ZN-65	1115.55	107.	-15.	-0.008	103.64	-1.866E+00		
Ta-182	1121.30	140.	-19.	-0.011	91.36	-3.517E+00		
CO-60	1173.24	10.	4.	0.002	180.85	2.698E-01		
Ta-182	1189.05	35.	-8.	-0.004	166.38	-3.365E+00		
Ta-182	1221.41	32.	-6.	-0.003	218.16	-1.548E+00		
Co-56	1238.28	22.	12.	0.006	95.24	1.245E+00		P
NA-22	1274.53	32.	-11.	-0.006	78.54	-7.962E-01		
FE-59	1291.60	21.	-8.	-0.005	130.66	-1.407E+00		
TL-210	1313.00	27.	-10.	-0.005	125.61	-3.404E+00		
CO-60	1332.50	16.	-5.	-0.003	187.26	-3.743E-01		
AG-110M	1384.30	5.	3.	0.001	206.16	8.480E-01		
EU-152	1408.00	0.	7.	0.004	39.84	2.526E+00		P
La-140	1596.21	6.	2.	0.001	248.05	2.126E-01		
SB-124	1690.98	11.	-2.	-0.001	344.64	-4.453E-01		
Y-88	1836.06	0.	5.	0.003	44.72	4.925E-01		

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
BE-7	#A	-4.3894E+00	-4.3894E+00	9.635E+01%	1.42E+01
NA-22	#A	-7.9618E-01	-7.9618E-01	7.854E+01%	2.10E+00
K-40		2.2490E+02	2.2490E+02	5.861E+00%	8.03E+00
Sc-46	#A	-1.6121E-01	-1.6121E-01	2.848E+02%	1.63E+00
CR-51	#A	1.9942E+00	1.9942E+00	2.039E+02%	1.39E+01
MN-54	#A	-1.5836E-02	-1.5836E-02	2.507E+03%	1.40E+00
FE-59	#A	-8.0430E-01	-8.0431E-01	1.349E+02%	2.67E+00
Co-56	#A	6.3632E-01	6.3632E-01	9.524E+01%	1.41E+00
CO-57	#A	-2.9192E-01	-2.9192E-01	1.097E+02%	1.07E+00
CO-58	#A	3.6751E-01	3.6752E-01	1.255E+02%	1.59E+00
CO-60	#A	-5.2362E-02	-5.2362E-02	1.302E+02%	1.60E+00
ZN-65	#A	-1.8662E+00	-1.8662E+00	1.036E+02%	6.51E+00
NB-94	#A	1.8167E-01	1.8167E-01	6.972E+01%	1.37E+00
ZR-95	#A	-5.1722E-02	-5.1722E-02	2.858E+03%	2.47E+00
NB-95	#A	2.9375E-02	2.9375E-02	2.061E+03%	2.12E+00
RU-103	#A	3.0741E-01	3.0741E-01	1.005E+02%	7.91E-01
RH-106	#A	6.1232E+00	6.1232E+00	8.844E+01%	8.96E+00
AG-108M	#A	3.0523E-01	3.0523E-01	1.023E+02%	8.29E-01
AG-110M	#A	2.1242E-01	2.1242E-01	2.062E+02%	2.34E+00
SN-113	#A	-7.2609E-03	-7.2609E-03	9.069E+03%	2.29E+00
SB-124	#A	1.8750E-01	1.8750E-01	5.487E+02%	3.49E+00
SB-125	#A	1.5824E+00	1.5824E+00	9.980E+01%	2.82E+00
I-131	#A	-4.4326E-01	-4.4328E-01	9.944E+01%	1.41E+00
Gd-153	#A	5.4732E-02	5.4732E-02	8.597E+01%	2.95E+00
Ga-68	#A	1.1057E+01	1.1168E+01	1.461E+02%	3.90E+01
Tc-99m	#A	2.7656E-01	2.7708E-01	1.310E+02%	1.22E+00
BA-133	#A	-5.9508E-01	-5.9508E-01	1.957E+02%	3.91E+00
CS-134	#A	1.3437E+00	1.3437E+00	3.967E+01%	1.95E+00
CS-137	#A	2.6479E-01	2.6479E-01	2.002E+02%	1.84E+00
CE-139	#A	-3.6888E-01	-3.6888E-01	1.157E+02%	1.43E+00
Ba-140	#A	1.7200E+00	1.7201E+00	7.657E+01%	2.77E+00
La-140	#A	3.9938E-01	3.9939E-01	1.418E+02%	1.26E+00
CE-141	#A	1.1288E-01	1.1288E-01	6.114E+02%	2.34E+00
CE-144	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.11E+01
PM-144	#A	-2.6721E-01	-2.6721E-01	1.782E+02%	1.18E+00
EU-152	#A	1.0295E+00	1.0295E+00	8.793E+01%	3.62E+00
EU-154	#	1.8557E+00	1.8557E+00	3.275E+01%	1.22E+00
EU-155	#A	0.0000E+00	0.0000E+00	1.000E+03%	4.91E+00
HF-181	#A	-2.6426E-01	-2.6427E-01	1.328E+02%	1.99E+00
Ta-182	#A	-3.5167E+00	-3.5167E+00	9.136E+01%	1.08E+01
Hg-203	#A	-2.0578E-01	-2.0579E-01	1.959E+02%	1.38E+00
TL-208		4.7156E+00	4.7156E+00	1.240E+01%	9.32E-01
PM-146	#A	1.6890E-02	1.6890E-02	2.122E+02%	1.56E+00

Y-88 #A	4.6635E-01	4.6636E-01	4.472E+01%		7.26E-01
Cd-113m#A	-5.2716E+03	-5.2716E+03	9.869E+01%		1.75E+04
Cd-109 #A	8.2071E+00	8.2071E+00	1.625E+02%		4.45E+01
Cf-251 #A	2.3606E-01	2.3606E-01	7.130E+02%		4.63E+00
Cf-249 #A	-1.2218E-01	-1.2218E-01	2.931E+02%		2.27E+00
Sn-126 #A	-1.2046E-01	-1.2046E-01	3.585E+03%		1.47E+01
PB-210	3.6287E+01	3.6287E+01	2.602E+01%		2.85E+01
PB-212	1.0756E+01	1.0756E+01	8.414E+00%		2.06E+00
PB-214	1.9096E+01	1.9096E+01	6.407E+00%		2.18E+00
BI-207 #A	-4.1733E-01	-4.1733E-01	2.244E+02%		2.17E+00
BI-212	1.7009E+01	1.7009E+01	2.354E+01%		9.54E+00
U-235 #A	2.7052E+00	2.7052E+00	1.026E+02%		1.01E+01
BI-214	1.7397E+01	1.7397E+01	8.405E+00%		2.17E+00
BI-210M#A	4.7046E-01	4.7046E-01	1.105E+02%		1.76E+00
AC-228	1.4910E+01	1.4910E+01	8.076E+00%		2.23E+00
TH-227 #A	2.0631E+00	2.0631E+00	1.553E+02%		1.11E+01
TH-229 #A	2.6893E+00	2.6893E+00	2.414E+02%		1.78E+01
TH-234 #A	1.1791E+01	1.1791E+01	3.789E+01%		1.56E+01
PA-231 #A	0.0000E+00	0.0000E+00	7.071E+02%		8.02E+01
PA-233 #A	-8.2370E-01	-8.2370E-01	2.405E+02%		6.66E+00
PA-234 #A	6.5727E-01	6.5727E-01	8.281E+01%		6.52E+00
PA-234M#A	5.3052E+01	5.3052E+01	9.367E+01%		2.80E+02
AM-241 #A	-1.1177E+00	-1.1177E+00	1.122E+02%		3.55E+00
Np-237 #A	-2.6955E+00	-2.6955E+00	1.689E+02%		1.52E+01
Ir-192 #A	-8.3509E-02	-8.3509E-02	9.789E+01%		1.48E+00
Cs-136 #A	2.3953E-01	2.3954E-01	6.773E+01%		1.15E+00
Np-239 #A	9.7647E-01	9.7666E-01	1.206E+02%		3.96E+00
Nd-147 #A	-2.4561E+00	-2.4562E+00	1.481E+02%		9.18E+00
TL-210 #A	0.0000E+00	0.0000E+00	1.000E+03%		1.79E+00
Kr-85 #A	0.0000E+00	0.0000E+00	1.000E+03%		4.24E+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 (25.1 to 1999.5 keV) 3.587E+02 Bq/Sample
Total Decayed Activity (25.1 to 1999.5 keV) 3.5871832E+02 Bq/Sample

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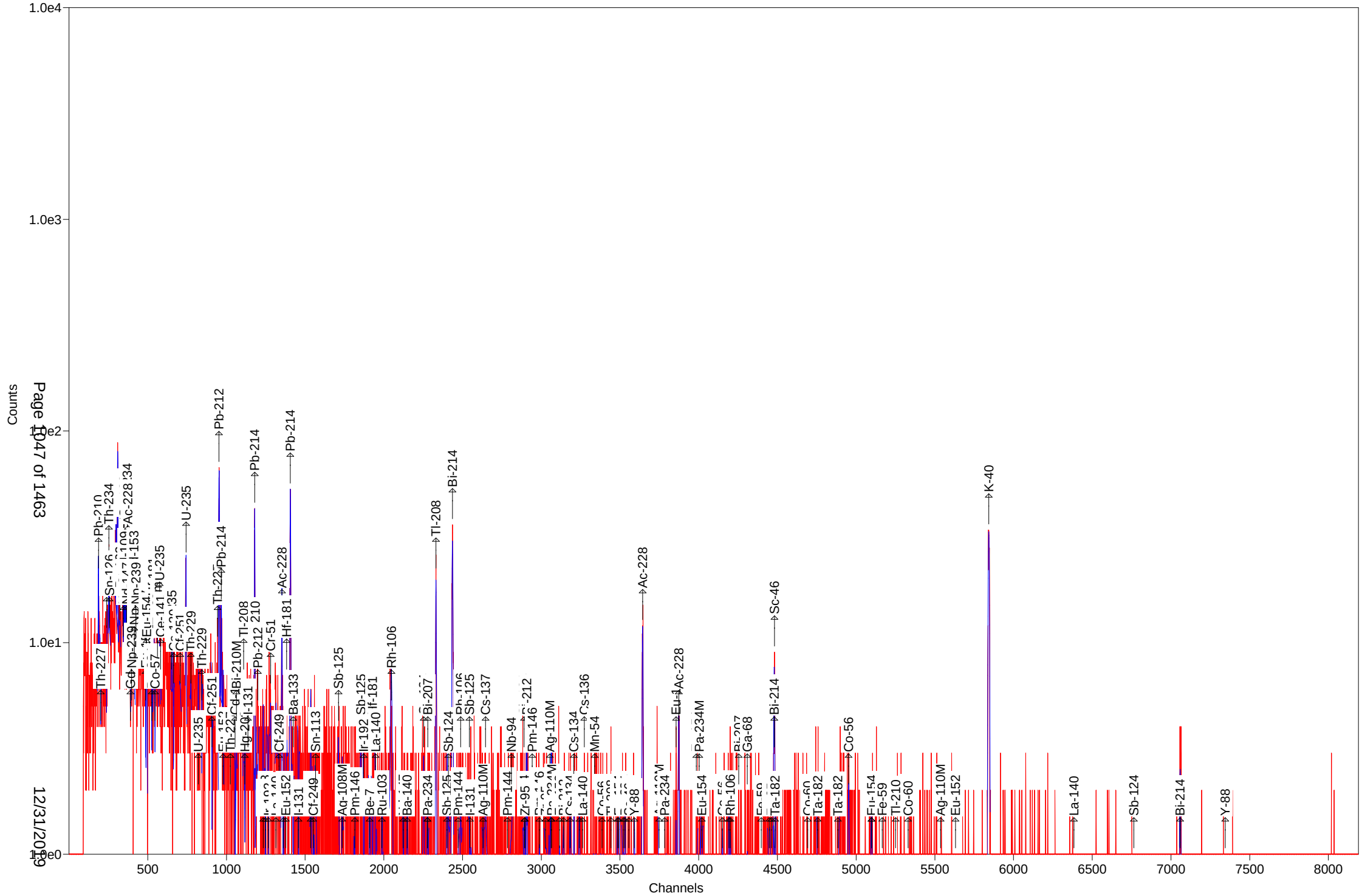
452567_Gamma_160-36526-A-14-B. 14_Gamma_20192822.spc.



Test America St. Louis Spectrum ID: 16_Gamma_20192291

Sample Description: 452567_Gamma_160-36526-A-15-B
Detector: Detector #16
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-15-B

Decay to Time: 12/25/2019 10:12 Live Time: 1800 sec
Acquisition Time: 12/25/2019 10:12:53 Real Time: 1804 sec
Analysis Time: 12/25/2019 10:43 Dead Time: 0.24 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 16_Soil_TunaCan.Clb
Efficiency Cal Desc: 16_TunaCan_90099_071012
Efficiency Cal Date: 7/13/2012 09:47
Energy Cal Date: 2/28/2012 09:35
Library: Client_Long_Rev15.lib
Bkgd Correction File: 16_2019-12-07_1450.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	4.213E+00	102.3	4.310E+00	4.316E+00	1.449E+01
NA-22	-1.135E-01	696.7	7.911E-01	7.911E-01	1.641E+00
K-40	2.037E+02	5.7	1.153E+01	1.554E+01	1.079E+01
Sc-46	-9.062E-01	75.1	6.807E-01	6.823E-01	2.435E+00
CR-51	-1.058E-01	6440.2	6.814E+00	6.814E+00	3.232E+01
MN-54	-8.594E-02	740.8	6.366E-01	6.366E-01	1.460E+00
FE-59	4.297E-01	284.3	1.222E+00	1.222E+00	2.732E+00
Co-56	1.572E+00	25.8	4.059E-01	4.138E-01	1.398E+00
CO-57	0.000E+00	1.#INF	1.736E-01	1.736E-01	1.244E+00
CO-58	-2.678E-01	210.7	5.642E-01	5.644E-01	1.880E+00
CO-60	8.705E-01	48.5	4.219E-01	4.242E-01	9.051E-01
ZN-65	0.000E+00	1.#INF	2.585E-01	2.585E-01	6.328E+00
NB-94	-6.820E-01	86.8	5.918E-01	5.929E-01	1.980E+00
ZR-95	4.048E-01	238.9	9.671E-01	9.673E-01	2.291E+00
NB-95	0.000E+00	1.#INF	1.142E-01	1.142E-01	2.121E+00
RU-103	-6.477E-02	678.4	4.394E-01	4.394E-01	1.171E+00
RH-106	9.863E+00	88.0	8.677E+00	8.692E+00	4.324E+01
AG-108M	4.561E-01	98.2	4.477E-01	4.483E-01	1.067E+00
AG-110M	4.109E-01	180.7	7.423E-01	7.426E-01	2.556E+00
SN-113	6.369E-01	111.4	7.094E-01	7.102E-01	2.383E+00
SB-124	-7.984E-02	55.4	4.424E-02	4.444E-02	4.613E+00
SB-125	1.858E+00	81.1	1.506E+00	1.509E+00	3.695E+00
I-131	-1.348E-02	233.5	3.147E-02	3.148E-02	1.329E+00
Gd-153	-1.501E+00	170.8	2.563E+00	2.565E+00	8.515E+00
Ga-68	2.648E+01	86.0	2.278E+01	2.283E+01	4.946E+01
Tc-99m	-4.898E-01	147.0	7.197E-01	7.203E-01	2.394E+00
BA-133	-7.671E-01	194.9	1.495E+00	1.496E+00	4.996E+00
CS-134	1.261E+00	78.5	9.901E-01	9.923E-01	1.908E+00
CS-137	-8.574E-01	136.3	1.168E+00	1.169E+00	2.108E+00
CE-139	3.960E-01	117.3	4.644E-01	4.659E-01	1.552E+00
Ba-140	-4.663E-01	436.7	2.036E+00	2.037E+00	4.960E+00
La-140	3.084E-01	115.0	3.546E-01	3.549E-01	1.692E+00
CE-141	-9.139E-01	140.8	1.287E+00	1.288E+00	4.280E+00

CE-144	6.722E-01	743.3	4.996E+00	4.997E+00	1.673E+01
PM-144	1.011E-01	502.2	5.079E-01	5.080E-01	1.764E+00
EU-152	2.666E+00	58.4	1.556E+00	1.563E+00	3.649E+00
EU-154	2.870E-01	89.4	2.565E-01	2.569E-01	2.503E+00
EU-155	4.557E-01	784.6	3.575E+00	3.575E+00	1.192E+01
HF-181	6.571E-01	92.4	6.071E-01	6.080E-01	2.021E+00
Ta-182	1.024E-01	2621.1	2.684E+00	2.684E+00	9.249E+00
Hg-203	-2.095E-01	225.6	4.725E-01	4.727E-01	1.604E+00
TL-208	3.148E+00	14.9	4.684E-01	4.961E-01	9.112E-01
PM-146	5.915E-01	104.7	6.193E-01	6.200E-01	1.490E+00
Y-88	2.443E-01	220.6	5.390E-01	5.391E-01	1.175E+00
Cd-113m	-3.966E+03	164.3	6.516E+03	6.521E+03	2.200E+04
Cd-109	0.000E+00	1.#INF	2.136E+01	2.136E+01	7.094E+01
Cf-251	-1.835E+00	139.6	2.562E+00	2.567E+00	6.530E+00
Cf-249	1.044E+00	85.5	8.930E-01	8.946E-01	2.245E+00
Sn-126	-5.679E+00	116.5	6.616E+00	6.622E+00	2.200E+01
PB-210	4.118E+01	34.9	1.439E+01	1.459E+01	3.546E+01
PB-212	1.055E+01	8.2	8.690E-01	1.105E+00	2.008E+00
PB-214	3.813E+01	4.7	1.782E+00	2.665E+00	2.286E+00
BI-207	-1.621E+00	59.5	9.648E-01	9.683E-01	2.606E+00
BI-212	-4.279E+00	174.3	7.459E+00	7.462E+00	2.548E+01
U-235	-4.098E+00	180.1	7.383E+00	7.386E+00	1.889E+01
BI-214	4.099E+01	4.9	1.996E+00	2.919E+00	2.425E+00
BI-210M	-1.018E+00	76.4	7.779E-01	7.802E-01	2.879E+00
AC-228	1.070E+01	19.5	2.084E+00	2.154E+00	4.065E+00
TH-227	2.855E+00	218.6	6.242E+00	6.244E+00	1.542E+01
TH-229	-1.054E+01	95.9	1.010E+01	1.014E+01	2.564E+01
TH-234	2.010E+01	23.6	4.743E+00	4.873E+00	1.532E+01
PA-231	0.000E+00	1.#INF	5.772E+00	5.772E+00	1.071E+02
PA-233	0.000E+00	1.#INF	5.867E-01	5.867E-01	8.761E+00
PA-234	4.403E+00	61.5	2.707E+00	2.717E+00	9.955E+00
PA-234M	4.535E+01	82.0	3.718E+01	3.725E+01	2.593E+02
AM-241	7.080E-01	240.2	1.701E+00	1.701E+00	5.694E+00
Np-237	-3.891E+00	58.7	2.285E+00	2.295E+00	2.053E+01
Ir-192	3.126E-01	93.1	2.911E-01	2.917E-01	3.661E+00
Cs-136	6.077E-01	94.5	5.745E-01	5.755E-01	2.040E+00
Np-239	-2.023E+00	173.2	3.503E+00	3.505E+00	1.163E+01
Nd-147	3.154E+00	94.2	2.971E+00	2.977E+00	7.131E+00
TL-210	-2.940E-01	179.1	5.267E-01	5.270E-01	1.810E+00
Kr-85	0.000E+00	1.#INF	3.123E+01	3.123E+01	4.814E+02
Total	4.818E+02				

Analyst: Caleb Quinn

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Sample description
452567_Gamma_160-36526-A-15-B

Spectrum Filename: C:\User\SPC\Det16\16_Gamma_20192291.An1

Acquisition information

Start time:	12/25/2019 10:12:53 AM
Live time:	1800
Real time:	1804
Dead time:	0.24 %
Detector ID:	16

Detector system
Ge16 SN/11012217

Calibration

Filename:	16_Soil_TunaCan.Clb

16_TunaCan_90099_071012

Energy Calibration

Created:	2/28/2012 9:35:31 AM
Zero offset:	0.050 keV
Gain:	0.250 keV/channel
Quadratic:	-2.285E-08 keV/channel^2

Efficiency Calibration

Created:	7/13/2012 9:47:24 AM
Knee Energy:	165.85 keV
Above the Knee:	Quadratic Uncertainty = 1.01 %
Log(Eff):	1.477416E-02 + (-5.514266E-01*Log(E)) + (-1.443482E-02*Log(E)^2)
Below the Knee:	Quadratic Uncertainty = 1.17 %
Log(Eff):	-2.408438E+01 + (8.948554E+00*Log(E)) + (-9.513599E-01*Log(E)^2)

Library Files

Main analysis library:	Client_Long_Rev15.lib
Library Match Width:	0.500
Peak stripping:	Library based

Analysis parameters

Analysis engine:	Env32 G800W064
Start channel:	100 (25.06keV)
Stop channel:	8000 (1999.64keV)
Peak rejection level:	1000.000%
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

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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	12/25/2019 10:12:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	16_2019-12-07_1450.PBC 12/7/2019 2:50:17 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 25 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1244

***** 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
46.42	74.	34.94	1.07	2.352E-02	46.54	4.250	4.118E+01	PB210
59.44	15.	240.21	0.97	3.327E-02	59.54	35.900	PBC<MDA	AM241
63.19	64.	36.08	0.97	3.561E-02	63.29	3.810	PBC<MDA	TH234
74.72	201.	12.98	0.99	4.135E-02				
77.13	366.	8.15	0.99	4.229E-02				
87.14	128.	18.57	1.00	4.530E-02	86.49	13.100	PBC<MDA	Np237
					86.54	30.700	5.135E+00	EU155
					86.94	9.040	1.740E+01	Sn126
					87.57	37.500	4.181E+00	Sn126
					88.04	3.790	4.128E+01	Cd109
89.87	67.	31.22	1.00	4.589E-02				
92.64	74.	30.41	1.00	4.638E-02	92.59	5.584	1.596E+01	TH234
105.31	8.	784.58	1.01	4.766E-02	105.31	21.200	PBC<MDA	EU155
121.78	15.	180.05	1.03	4.731E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	2.013E-01	CO57
131.29	30.	147.87	1.04	4.639E-02	131.29	18.000	PBC<MDA	PA234
133.02	30.	149.85	1.04	4.618E-02	133.02	43.300	PBC<MDA	HF181
					133.54	11.090	3.305E+00	CE144
133.54	6.	743.27	1.04	4.612E-02	133.02	43.300	PBC<MDA	HF181
					133.54	11.090	6.722E-01	CE144
165.85	24.	117.27	1.07	4.156E-02	165.85	79.900	PBC<MDA	CE139
185.68	188.	15.79	1.49	3.840E-02	185.72	54.000	5.038E+00	U235

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
210.85	8.	315.32	1.11	3.511E-02	210.85	2.990	PBC<MDA	TH229
227.00	22.	100.00	1.13	3.332E-02	227.00	6.300	PBC<MDA	Cf251
238.62	264.	8.24	1.14	3.216E-02	238.63	43.300	1.055E+01	PB212
241.92	194.	10.63	1.14	3.185E-02	242.00	7.430	4.556E+01	PB214
244.69	24.	167.11	1.14	3.160E-02	244.69	7.580	PBC<MDA	EU152
256.24	11.	218.62	1.15	3.058E-02	256.24	7.000	PBC<MDA	TH227
284.30	7.	350.26	1.18	2.839E-02	284.30	6.140	PBC<MDA	I131
295.13	426.	7.45	1.12	2.764E-02	295.09	19.300	4.439E+01	PB214
					296.00	79.000	1.087E+01	TL210
328.76	20.	129.05	1.22	2.559E-02	328.76	20.300	PBC<MDA	La140
333.68	20.	131.80	1.22	2.533E-02	333.44	15.510	PBC<MDA	Cf249
338.18	16.	172.50	1.23	2.506E-02	338.32	12.010	PBC<MDA	AC228
340.57	11.	250.43	1.23	2.494E-02	340.57	46.900	PBC<MDA	Cs136
351.85	629.	4.67	1.36	2.437E-02	351.93	37.600	3.813E+01	PB214
383.84	16.	114.34	1.27	2.288E-02	383.84	8.940	PBC<MDA	BA133
387.06	17.	109.06	1.27	2.271E-02	387.95	66.000	PBC<MDA	Cf249
391.69	17.	111.38	1.27	2.255E-02	391.69	64.000	PBC<MDA	SN113
427.88	15.	114.88	1.31	2.115E-02	427.88	29.600	PBC<MDA	SB125
433.94	16.	98.16	1.31	2.093E-02	433.94	90.480	PBC<MDA	AG108M
453.88	14.	104.71	1.33	2.026E-02	453.88	65.000	PBC<MDA	PM146
463.37	14.	93.97	1.34	1.996E-02	463.37	10.470	PBC<MDA	SB125
468.06	15.	93.13	1.34	1.981E-02	468.06	51.750	PBC<MDA	Ir192
477.60	16.	102.31	1.35	1.952E-02	477.60	10.520	PBC<MDA	BE7
482.00	16.	108.11	1.35	1.939E-02	482.00	80.500	PBC<MDA	HF181
487.02	14.	114.98	1.36	1.925E-02	487.02	45.500	PBC<MDA	La140
511.86	69.	26.53	2.63	1.856E-02	511.86	20.000	1.033E+01	RH106
531.00	13.	94.21	1.40	1.807E-02	531.00	13.000	PBC<MDA	Nd147
563.24	5.	267.77	1.43	1.730E-02	563.24	8.350	PBC<MDA	CS134
569.47	16.	68.14	1.43	1.716E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	6.215E+00	PA234
					569.70	97.740	PBC<MDA	BI207
569.70	2.	582.96	1.43	1.716E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	PBC<MDA	PA234
					569.70	97.740	PBC<MDA	BI207
583.22	81.	14.88	1.44	1.687E-02	583.02	84.500	3.169E+00	TL208
609.49	564.	4.87	1.57	1.633E-02	609.31	46.090	4.164E+01	BI214
					610.30	5.750	3.342E+02	RU103
621.92	19.	200.50	1.48	1.609E-02	621.92	9.930	PBC<MDA	RH106
635.89	4.	192.62	1.49	1.583E-02	635.89	11.310	PBC<MDA	SB125
696.54	3.	502.18	1.54	1.479E-02	696.54	99.000	PBC<MDA	PM144
722.79	14.	90.34	1.57	1.439E-02	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	6.091E-01	AG108M
					723.36	20.220	2.737E+00	EU154
756.73	6.	238.88	1.60	1.391E-02	756.73	54.460	PBC<MDA	ZR95
766.41	16.	81.97	1.60	1.378E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	PBC<MDA	PA234M
778.92	8.	138.45	1.62	1.362E-02	778.92	12.940	PBC<MDA	EU152
785.42	15.	85.34	1.62	1.353E-02	785.42	1.280	PBC<MDA	BI212

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
795.87	15.	78.54	1.63	1.340E-02	795.87	85.530	PBC<MDA	CS134
801.95	12.	103.41	1.64	1.332E-02	801.95	8.690	PBC<MDA	CS134
818.50	15.	94.53	1.65	1.312E-02	818.50	100.000	PBC<MDA	Cs136
860.41	8.	177.54	1.69	1.264E-02	860.56	12.420	PBC<MDA	TL208
871.10	6.	163.84	1.69	1.253E-02	871.10	99.890	PBC<MDA	NB94
883.24	16.	86.72	1.71	1.240E-02	883.24	9.600	PBC<MDA	PA234
884.68	7.	180.67	1.71	1.238E-02	884.68	72.680	PBC<MDA	AG110M
911.07	68.	19.48	1.73	1.211E-02	911.07	29.000	1.070E+01	AC228
964.11	16.	58.39	1.77	1.161E-02	964.11	14.605	PBC<MDA	EU152
969.44	15.	88.27	1.78	1.157E-02	968.97	17.460	PBC<MDA	AC228
996.33	1.	920.60	1.80	1.133E-02	996.33	10.600	PBC<MDA	EU154
1004.77	10.	124.28	1.81	1.126E-02	1004.77	18.010	PBC<MDA	EU154
1037.84	3.	432.48	1.84	1.099E-02	1037.84	14.130	PBC<MDA	Co56
1048.07	3.	225.83	1.84	1.091E-02	1048.07	80.000	PBC<MDA	Cs136
1050.36	10.	87.98	1.85	1.089E-02	1050.36	1.560	PBC<MDA	RH106
1077.40	14.	86.05	1.87	1.068E-02	1077.40	3.300	PBC<MDA	Ga68
1099.25	5.	284.31	1.89	1.052E-02	1099.25	56.500	PBC<MDA	FE59
1120.31	110.	12.55	1.74	1.037E-02	1120.29	15.100	3.899E+01	BI214
					1120.55	99.987	PBC<MDA	Sc46
1238.28	52.	25.82	2.00	9.617E-03	1238.28	66.070	4.516E+00	Co56
1332.50	14.	48.46	2.08	9.097E-03	1332.50	99.980	PBC<MDA	CO60
1408.00	8.	152.07	2.14	8.723E-03	1408.00	21.005	PBC<MDA	EU152
1461.23	332.	5.66	3.22	8.482E-03	1460.83	10.670	2.037E+02	K40
1690.98	1.	567.39	2.37	7.585E-03	1690.98	47.790	PBC<MDA	SB124
1764.82	47.	23.13	2.43	7.342E-03	1764.49	15.400	2.302E+01	BI214
1836.06	3.	220.62	2.48	7.121E-03	1836.06	99.200	PBC<MDA	Y88

********** 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
298.54	74.73	237.	204.	4.937E+03	12.76	0.985	- D
308.17	77.14	256.	372.	8.794E+03	7.99	0.988	- D
359.34	89.88	191.	77.	1.686E+03	27.67	0.999	- sD
742.17	185.68	154.	188.	4.896E+03	15.79	1.494	- 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: Client_Long_Rev15.lib

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********** 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	185.37	46.42	172.	74.	0.041	34.94	1.068s
TH-227	200.26	50.14	541.	-28.	-0.015	120.73	0.963s
AM-241	237.83	59.54	660.	15.	0.008	240.21	0.971s
TH-234	252.82	63.29	233.	64.	0.035	36.08	0.975D
Sn-126	256.79	64.28	856.	-36.	-0.020	116.50	0.976s
BA-133	323.60	80.99	1537.	-40.	-0.022	58.10	0.991s
Np-237	345.59	86.49	2145.	-41.	-0.023	58.72	0.996
EU-155	345.80	86.54	2254.	-38.	-0.021	178.53	0.996
Sn-126	347.39	86.94	2217.	-38.	-0.021	177.00	0.997
Sn-126	349.91	87.57	2056.	-38.	-0.021	170.41	0.997s
Cd-109	351.79	88.04	2179.	0.	0.000	175.29	0.998A
Nd-147	364.02	91.10	2028.	-38.	-0.021	168.69	1.001s
TH-234	369.98	92.59	218.	74.	0.041	30.41	1.002D
AC-228	373.02	93.35	2072.	-45.	-0.025	51.71	1.003
Gd-153	389.61	97.50	2104.	-38.	-0.021	170.77	1.007s
Np-239	397.61	99.50	2142.	-38.	-0.021	171.98	1.008s
Gd-153	412.40	103.20	2180.	-38.	-0.021	172.95	1.012s
Np-239	414.40	103.70	2218.	-38.	-0.021	174.37	1.012s
EU-155	420.85	105.31	2109.	8.	0.005	784.58	1.014s
Np-239	424.11	106.13	2309.	-39.	-0.022	173.16	1.014s
EU-152	486.69	121.78	341.	15.	0.008	180.05	1.029
CO-57	487.81	122.06	356.	0.	0.000	1000.00	1.029
EU-154	491.96	123.10	325.	-29.	-0.016	89.37	1.030s
PA-234	524.73	131.29	994.	30.	0.017	147.87	1.038s
HF-181	531.64	133.02	1024.	30.	0.017	149.85	1.039
CE-144	533.70	133.54	1055.	6.	0.003	743.27	1.040
HF-181	544.74	136.30	1061.	0.	0.000	1000.00	1.042s
CO-57	545.43	136.47	1061.	0.	0.000	1000.00	1.042s
Tc-99m	561.57	140.51	1267.	-34.	-0.019	146.95	1.046s
U-235	574.67	143.79	1234.	-36.	-0.020	180.14	1.049s
CE-141	581.29	145.44	1211.	-35.	-0.020	140.81	1.050s
Ba-140	650.14	162.66	422.	-18.	-0.010	167.82	1.066s
U-235	653.01	163.38	440.	0.	0.000	1000.00	1.067
CE-139	662.90	165.85	373.	24.	0.013	117.27	1.069s
Cf-251	705.88	176.60	271.	-22.	-0.012	139.60	1.079s
U-235	742.34	185.72	444.	-29.	-0.016	106.18	1.087s
TH-229	773.49	193.51	246.	-31.	-0.017	95.88	1.094s
TH-229	842.82	210.85	191.	8.	0.005	315.32	1.110s
Cf-251	907.40	227.00	132.	22.	0.012	100.00	1.125s
TH-227	943.27	235.97	971.	-20.	-0.011	219.27	1.133s
PB-212	953.91	238.63	104.	264.	0.147	8.24	1.136D
PB-214	967.37	242.00	119.	194.	0.108	10.73	1.139D
EU-152	978.14	244.69	822.	24.	0.014	167.11	1.141
TH-227	1024.32	256.24	148.	11.	0.006	218.62	1.152s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Cd-113m	1054.15	263.70	216.	-13.	-0.007	164.28	1.158s
BI-210M	1062.67	265.83	255.	-27.	-0.015	76.42	1.160
TL-208	1108.46	277.28	204.	-2.	-0.001	407.15	1.171s
Hg-203	1116.13	279.20	194.	-9.	-0.005	225.61	1.173s
I-131	1136.52	284.30	136.	7.	0.004	350.26	1.177s
PB-214	1179.85	295.13	110.	426.	0.237	7.45	1.122
TL-210	1183.31	296.00	1076.	-22.	-0.012	209.75	1.188s
PB-212	1199.42	300.03	1034.	-22.	-0.012	205.03	1.191s
PA-233	1200.02	300.18	1010.	0.	0.000	1000.00	1.192s
PA-231	1209.90	302.65	1010.	0.	0.000	1000.00	1.194s
BA-133	1210.70	302.85	1010.	0.	0.000	1000.00	1.194s
Ba-140	1218.69	304.85	1010.	0.	0.000	1000.00	1.196s
BI-210M	1218.88	304.90	1010.	0.	0.000	1000.00	1.196s
Ir-192	1233.05	308.44	1010.	0.	0.000	1000.00	1.199s
PA-233	1247.34	312.01	1010.	0.	0.000	1000.00	1.202
Ir-192	1265.24	316.49	1010.	0.	0.000	1000.00	1.206s
La-140	1314.31	328.76	330.	20.	0.011	129.05	1.217s
Cf-249	1333.02	333.44	350.	20.	0.011	131.80	1.222s
AC-228	1352.54	338.32	375.	16.	0.009	172.50	1.226
Cs-136	1361.54	340.57	391.	11.	0.006	250.43	1.228s
PB-214	1406.64	351.85	56.	629.	0.349	4.67	1.363
BA-133	1423.24	356.00	804.	-21.	-0.012	194.94	1.242s
I-131	1457.16	364.48	88.	-6.	-0.003	308.82	1.250s
BA-133	1534.57	383.84	162.	16.	0.009	114.34	1.267
Cf-249	1551.01	387.95	154.	17.	0.009	109.06	1.271
SN-113	1565.96	391.69	161.	17.	0.009	111.38	1.274s
SB-125	1710.67	427.88	70.	15.	0.008	114.88	1.307s
AG-108M	1734.91	433.94	52.	16.	0.009	98.16	1.312s
PM-146	1814.67	453.88	49.	14.	0.008	104.71	1.330s
SB-125	1852.61	463.37	85.	14.	0.008	93.97	1.338s
Ir-192	1871.38	468.06	96.	15.	0.009	93.13	1.342s
BE-7	1909.51	477.60	119.	16.	0.009	102.31	1.351s
HF-181	1927.12	482.00	135.	16.	0.009	108.11	1.355s
La-140	1947.21	487.02	126.	14.	0.008	114.98	1.359s
RU-103	1987.33	497.05	52.	-2.	-0.001	678.39	1.368
RH-106	2046.57	511.86	133.	69.	0.038	26.53	2.631s
Kr-85	2055.03	513.98	202.	0.	0.000	1000.00	1.383s
Nd-147	2123.10	531.00	35.	13.	0.007	94.21	1.398s
Ba-140	2148.14	537.26	61.	-4.	-0.002	436.74	1.404s
CS-134	2252.03	563.24	48.	5.	0.003	267.77	1.427s
CS-134	2276.36	569.32	61.	-5.	-0.003	240.54	1.432s
PA-234	2276.96	569.47	50.	16.	0.009	68.14	1.432s
BI-207	2277.89	569.70	56.	2.	0.001	582.96	1.432s
TL-208	2331.97	583.22	20.	81.	0.045	14.88	1.442
SB-125	2401.07	600.50	815.	-18.	-0.010	221.97	1.460s
SB-124	2409.99	602.73	798.	-19.	-0.011	64.19	1.462
BI-214	2437.04	609.49	42.	564.	0.313	4.87	1.568
RU-103	2440.26	610.30	760.	-20.	-0.011	198.51	1.468

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
AG-108M	2456.19	614.28	740.	-20.	-0.011	195.48	1.472s
PM-144	2471.31	618.06	720.	-18.	-0.010	207.99	1.475s
RH-106	2486.73	621.92	681.	19.	0.010	200.50	1.479
SB-125	2542.62	635.89	33.	4.	0.002	192.62	1.491s
I-131	2546.96	636.97	52.	-12.	-0.007	87.70	1.492s
AG-110M	2630.10	657.76	66.	-5.	-0.003	531.51	1.510s
CS-137	2645.69	661.66	102.	-20.	-0.011	136.27	1.513s
PM-144	2785.22	696.54	88.	3.	0.001	502.18	1.544s
NB-94	2809.57	702.63	109.	-18.	-0.010	86.77	1.549s
SB-124	2890.19	722.79	77.	14.	0.008	90.34	1.567s
AG-108M	2890.80	722.94	91.	0.	0.000	1000.00	1.567s
EU-154	2892.49	723.36	91.	0.	0.000	1000.00	1.567s
ZR-95	2895.84	724.20	95.	-5.	-0.003	279.29	1.568s
BI-212	2907.73	727.17	101.	-8.	-0.005	174.31	1.570
PM-146	2941.93	735.72	47.	-14.	-0.008	109.43	1.578s
PM-146	2987.69	747.16	51.	-17.	-0.010	157.48	1.588s
ZR-95	3025.97	756.73	37.	6.	0.003	238.88	1.596
AG-110M	3054.82	763.94	99.	-16.	-0.009	93.16	1.602s
NB-95	3062.21	765.79	114.	0.	0.000	1000.00	1.604s
PA-234M	3064.70	766.41	80.	16.	0.009	81.97	1.605s
EU-152	3114.73	778.92	23.	8.	0.004	138.45	1.615s
BI-212	3140.74	785.42	33.	15.	0.008	85.34	1.621s
CS-134	3182.54	795.87	62.	15.	0.008	78.54	1.630s
TL-210	3197.46	799.60	75.	-7.	-0.004	179.15	1.633s
CS-134	3206.86	801.95	71.	12.	0.007	103.41	1.635s
CO-58	3242.16	810.78	80.	-6.	-0.004	210.66	1.643s
La-140	3262.14	815.77	89.	-18.	-0.010	77.46	1.647s
Cs-136	3273.06	818.50	95.	15.	0.008	94.53	1.649s
MN-54	3338.46	834.85	45.	-2.	-0.001	740.78	1.663s
Co-56	3386.15	846.77	40.	-7.	-0.004	202.20	1.674s
TL-208	3441.33	860.56	46.	8.	0.005	177.54	1.685
NB-94	3483.47	871.10	51.	6.	0.004	163.84	1.695s
EU-154	3492.00	873.23	65.	-7.	-0.004	170.98	1.696s
PA-234	3521.21	880.53	128.	-21.	-0.011	81.08	1.703s
PA-234	3532.05	883.24	85.	16.	0.009	86.72	1.705s
AG-110M	3537.82	884.68	69.	7.	0.004	180.67	1.706s
Sc-46	3556.21	889.28	121.	-20.	-0.011	75.11	1.710s
AC-228	3643.38	911.07	24.	68.	0.038	19.48	1.729
AG-110M	3749.09	937.49	50.	-6.	-0.003	262.29	1.751s
PA-234	3783.21	946.02	35.	-5.	-0.003	263.94	1.759s
EU-152	3855.58	964.11	38.	16.	0.009	58.39	1.774s
AC-228	3875.02	968.97	83.	15.	0.008	88.27	1.778s
EU-154	3984.48	996.33	75.	1.	0.001	920.60	1.801s
PA-234M	4003.15	1001.00	79.	-3.	-0.002	474.78	1.805s
EU-154	4018.27	1004.77	67.	10.	0.005	124.28	1.808s
Co-56	4150.56	1037.84	32.	3.	0.002	432.48	1.836s
Cs-136	4191.49	1048.07	27.	3.	0.002	225.83	1.845s
RH-106	4200.65	1050.36	31.	10.	0.005	87.98	1.847s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
BI-207	4253.86	1063.66	56.	-23.	-0.013	59.53	1.858s
Ga-68	4308.84	1077.40	27.	14.	0.008	86.05	1.870s
FE-59	4396.27	1099.25	32.	5.	0.003	284.31	1.888
EU-152	4447.58	1112.07	158.	-7.	-0.004	256.75	1.899s
ZN-65	4461.46	1115.55	151.	0.	0.000	1000.00	1.901s
BI-214	4480.51	1120.31	15.	110.	0.061	12.55	1.741s
Sc-46	4481.49	1120.55	151.	0.	0.000	1000.00	1.906
CO-60	4692.30	1173.24	46.	-9.	-0.005	159.39	1.950s
Ta-182	4885.06	1221.41	45.	-12.	-0.007	131.16	1.990
Co-56	4952.57	1238.28	23.	52.	0.029	25.82	2.004s
NA-22	5097.62	1274.53	29.	-2.	-0.001	696.69	2.034s
EU-154	5097.66	1274.54	30.	0.	0.000	1000.00	2.034s
FE-59	5165.91	1291.60	17.	-1.	-0.001	972.11	2.048s
TL-210	5251.57	1313.00	45.	-17.	-0.010	94.21	2.066s
CO-60	5329.61	1332.50	7.	14.	0.008	48.46	2.081s
EU-152	5631.75	1408.00	24.	8.	0.004	152.07	2.143s
K-40	5844.80	1461.23	10.	332.	0.184	5.66	3.216s
La-140	6385.02	1596.21	19.	-5.	-0.003	375.00	2.294s
SB-124	6764.37	1690.98	7.	1.	0.001	567.39	2.369s
BI-214	7058.61	1764.49	35.	47.	0.026	23.13	2.427s
Y-88	7345.12	1836.06	7.	3.	0.002	220.62	2.483s

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
BE-7	C	4.2127E+00				5.31E+01	
			477.60	4.213E+00	?(	1.449E+01 1.02E+02 1.05E+01	G
NA-22	C	-1.1355E-01				9.50E+02	
			1274.53	-1.135E-01	?(P	1.641E+00 6.97E+02 9.99E+01	G
K-40	N	2.0368E+02				4.66E+11	
			1460.83	2.037E+02	(P	1.079E+01 5.66E+00 1.07E+01	G
Sc-46	F	-9.0625E-01				8.38E+01	
			889.28	-9.062E-01	?(P	2.435E+00 7.51E+01 1.00E+02	G
			1120.55	0.000E+00	+	3.213E+00 1.00E+03 1.00E+02	G
CR-51	F	-1.0580E-01				2.77E+01	
			320.08	-1.058E-01	%(P	3.232E+01 6.44E+03 9.94E+00	G

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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
MN-54	C	-8.5939E-02					3.12E+02	
			834.85	-8.594E-02	?(	1.460E+00	7.41E+02	1.00E+02 G
FE-59	F	4.2969E-01					4.45E+01	
			1099.25	4.297E-01	?(P	2.732E+00	2.84E+02	5.65E+01 G
			1291.60	-1.381E-01	&	3.027E+00	9.72E+02	4.32E+01 G
Co-56	C	1.5717E+00					7.73E+01	
			846.77	-3.041E-01	?(	1.398E+00	2.02E+02	9.99E+01 G
			1238.28	4.516E+00	(P	2.206E+00	2.58E+01	6.61E+01 G
			1037.84	1.074E+00	?(	1.040E+01	4.32E+02	1.41E+01 G
			1771.35	-2.451E-01	%	2.221E+01	2.59E+03	1.55E+01 A
CO-58	C	-2.6784E-01					7.09E+01	
			810.78	-2.678E-01	?(P	1.880E+00	2.11E+02	9.95E+01 G
CO-60	F	8.7051E-01					1.93E+03	
			1332.50	8.705E-01	&(P	9.051E-01	4.85E+01	1.00E+02 G
			1173.24	-4.820E-01	- P	1.899E+00	1.59E+02	9.99E+01 G
NB-94	I	-6.8202E-01					7.41E+06	
			702.63	-6.820E-01	?(	1.980E+00	8.68E+01	9.79E+01 G
			871.10	2.812E-01	+	1.593E+00	1.64E+02	9.99E+01 G
ZR-95	I	4.0485E-01					6.40E+01	
			756.73	4.048E-01	?(P	2.291E+00	2.39E+02	5.45E+01 G
			724.20	-4.377E-01	+	4.214E+00	2.79E+02	4.42E+01 G
RU-103	I	-6.4772E-02					3.93E+01	
			497.05	-6.477E-02	&(P	1.171E+00	6.78E+02	9.09E+01 G
			610.30	-1.171E+01	&	7.770E+01	1.99E+02	5.75E+00 GA
RH-106	I	9.8626E+00					3.74E+02	
			621.92	6.445E+00	?(	4.324E+01	2.01E+02	9.93E+00 G
			1050.36	3.162E+01	?(	9.418E+01	8.80E+01	1.56E+00 G
			511.86	1.033E+01	?	8.449E+00	2.65E+01	2.00E+01 GA
AG-108M	C	4.5610E-01					1.53E+05	
			433.94	4.561E-01	&(P	1.067E+00	9.82E+01	9.05E+01 G
			722.94	0.000E+00	-	2.004E+00	1.00E+03	9.08E+01 G
			614.28	-7.547E-01	+	4.932E+00	1.95E+02	8.98E+01 G
AG-110M	F	4.1086E-01					2.50E+02	
			884.68	4.109E-01	?(	2.556E+00	1.81E+02	7.27E+01 G
			657.76	-1.967E-01	+ P	1.545E+00	5.32E+02	9.46E+01 G
			937.49	-8.181E-01	+	4.862E+00	2.62E+02	3.44E+01 G
			1384.30	-2.588E-01	%	6.610E+00	1.19E+03	2.43E+01 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments
                          763.94-2.828E+00 &   8.844E+00 9.32E+01 2.23E+01 G

SN-113   F   6.3694E-01                                     1.15E+02
                          391.69 6.369E-01  (P 2.383E+00 1.11E+02 6.40E+01 G

SB-124   F  -7.9845E-02                                     6.02E+01
                          602.73-6.516E-01 ?(P 4.613E+00 6.42E+01 9.83E+01 G
                         1690.98 1.737E-01 + P 2.287E+00 5.67E+02 4.78E+01 G
                          722.79 5.117E+00 ?(  1.554E+01 9.03E+01 1.08E+01 G

SB-125   I   1.8585E+00                                     1.01E+03
                          427.88 1.350E+00 &(P 3.695E+00 1.15E+02 2.96E+01 G
                          600.50-3.447E+00 +   2.558E+01 2.22E+02 1.79E+01 G
                          635.89 1.345E+00 ?(  9.108E+00 1.93E+02 1.13E+01 G
                          463.37 3.851E+00  (P 1.216E+01 9.40E+01 1.05E+01 G

I-131    I  -1.3478E-02                                     8.02E+00
                          364.48-1.718E-01 ?(  1.329E+00 3.09E+02 8.17E+01 G
                          284.30 2.093E+00 &(P 1.821E+01 3.50E+02 6.14E+00 G
                          636.97-6.047E+00 +   1.786E+01 8.77E+01 7.17E+00 G

Gd-153   F  -1.5011E+00                                     2.42E+02
                           97.50-1.501E+00 ?(  8.515E+00 1.71E+02 3.00E+01 G
                          103.20-2.055E+00 &   1.181E+01 1.73E+02 2.18E+01 G

Ga-68    C   2.6477E+01                                     4.71E-02
                         1077.40 2.648E+01 ?(  4.946E+01 8.60E+01 3.30E+00 G

Tc-99m   I  -4.8976E-01                                     2.51E-01
                          140.51-4.898E-01  (  2.394E+00 1.47E+02 8.93E+01 G

BA-133   F  -7.6712E-01                                     3.85E+03
                          356.00-7.671E-01 ?(  4.996E+00 1.95E+02 6.20E+01 G
                          302.85 0.000E+00 +   1.684E+01 1.00E+03 1.83E+01 G
                          383.84 4.383E+00 & P 1.684E+01 1.14E+02 8.94E+00 GA
                           80.99-1.488E+00 + P 6.933E+00 5.81E+01 3.41E+01 GA

CS-134   I   1.2608E+00                                     7.54E+02
                          795.87 7.268E-01 &(  1.908E+00 7.85E+01 8.55E+01 G
                          604.71-9.427E-02 %   4.600E+00 1.45E+03 9.76E+01 G
                          569.32-9.819E-01 -   8.207E+00 2.41E+02 1.54E+01 G
                          801.95 5.757E+00 &(  2.014E+01 1.03E+02 8.69E+00 G
                          563.24 2.051E+00 ?(  1.341E+01 2.68E+02 8.35E+00 G

CS-137   I  -8.5736E-01                                     1.10E+04
                          661.66-8.574E-01 ?(P 2.108E+00 1.36E+02 8.52E+01 G
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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CE-139	F	3.9599E-01					1.38E+02	
			165.85	3.960E-01	?(	1.552E+00	1.17E+02	7.99E+01 G
Ba-140	I	-4.6626E-01					1.28E+01	
			537.26	-4.663E-01	?(	4.960E+00	4.37E+02	2.44E+01 G
			162.66	-3.779E+00	&	2.127E+01	1.68E+02	6.22E+00 G
			304.85	0.000E+00	+	7.231E+01	1.00E+03	4.29E+00 G
La-140	I	3.0837E-01					1.28E+01	
			1596.21	-3.680E-01	?(P	1.692E+00	3.75E+02	9.54E+01 G
			487.02	8.992E-01	&(	3.486E+00	1.15E+02	4.55E+01 G
			328.76	2.163E+00	?(P	9.348E+00	1.29E+02	2.03E+01 G
			815.77	-3.285E+00	+	8.481E+00	7.75E+01	2.33E+01 G
CE-141	I	-9.1392E-01					3.25E+01	
			145.44	-9.139E-01	?(	4.280E+00	1.41E+02	4.82E+01 G
CE-144	I	6.7222E-01					2.85E+02	
			133.54	6.722E-01	(	1.673E+01	7.43E+02	1.11E+01 G
PM-144	C	1.0115E-01					3.63E+02	
			696.54	1.011E-01	?(	1.764E+00	5.02E+02	9.90E+01 G
			618.06	-6.371E-01	+	4.433E+00	2.08E+02	9.91E+01 G
EU-152	F	2.6655E+00					4.94E+03	
			121.78	6.026E-01	?(	3.649E+00	1.80E+02	2.86E+01 G
			344.29	-7.489E-02	% P	8.152E+00	3.21E+03	2.65E+01 G
			1112.07	-2.733E+00	+	2.393E+01	2.57E+02	1.36E+01 G
			778.92	2.417E+00	&(	7.952E+00	1.38E+02	1.29E+01 G
			964.11	5.362E+00	&(	1.024E+01	5.84E+01	1.46E+01 G
			244.69	5.671E+00	?(	3.163E+01	1.67E+02	7.58E+00 G
			1408.00	2.426E+00	?	7.743E+00	1.52E+02	2.10E+01 GA
EU-154	I	2.8700E-01					3.14E+03	
			123.10	-8.415E-01	?(	2.503E+00	8.94E+01	4.08E+01 G
			1274.54	0.000E+00	+	4.714E+00	1.00E+03	3.52E+01 G
			723.36	0.000E+00	+	9.008E+00	1.00E+03	2.02E+01 G
			873.23	-2.474E+00	+	1.457E+01	1.71E+02	1.23E+01 G
			1004.77	2.649E+00	?(	1.122E+01	1.24E+02	1.80E+01 G
			996.33	6.168E-01	?(	1.988E+01	9.21E+02	1.06E+01 G
EU-155	I	4.5566E-01					1.81E+03	
			105.31	4.557E-01	?(P	1.192E+01	7.85E+02	2.12E+01 G
			86.54	-1.514E+00	&	8.975E+00	1.79E+02	3.07E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
HF-181	F	6.5707E-01					4.24E+01	
			482.00	5.558E-01	&(	2.021E+00	1.08E+02	8.05E+01 G
			133.02	8.454E-01	&(	4.219E+00	1.50E+02	4.33E+01 G
			345.83	-4.056E-02	% P	7.094E+00	1.05E+04	1.51E+01 G
			136.30	0.000E+00	-	3.207E+01	1.00E+03	5.85E+00 G
Ta-182	F	1.0238E-01					1.14E+02	
			1121.30	1.024E-01	%(	9.249E+00	2.62E+03	3.49E+01 G
			1221.41	-2.612E+00	+	7.218E+00	1.31E+02	2.70E+01 G
			1189.05	-1.153E-01	%	9.516E+00	3.75E+03	1.62E+01 G
Hg-203	F	-2.0945E-01					4.66E+01	
			279.20	-2.095E-01	(	1.604E+00	2.26E+02	8.15E+01 G
TL-208	N	3.1483E+00					6.98E+02	
			583.02	3.169E+00	(P	9.112E-01	1.49E+01	8.45E+01 G
			277.28	-7.225E-01	- P	2.112E+01	4.07E+02	6.31E+00 G
			860.56	3.004E+00	?(P	1.208E+01	1.78E+02	1.24E+01 G
PM-146	C	5.9145E-01					2.02E+03	
			453.88	5.915E-01	(P	1.490E+00	1.05E+02	6.50E+01 G
			747.16	-2.035E+00	& P	4.206E+00	1.57E+02	3.40E+01 G
			735.72	-2.375E+00	+	6.004E+00	1.09E+02	2.25E+01 G
Y-88	F	2.4429E-01					1.07E+02	
			1836.06	2.443E-01	?(P	1.175E+00	2.21E+02	9.92E+01 G
			898.04	1.736E-02	% P	1.274E+00	3.09E+03	9.37E+01 G
Cd-113m		-3.9664E+03					5.33E+03	
			263.70	-3.966E+03	?(	2.200E+04	1.64E+02	6.00E-03 K
Cf-251	T	-1.8352E+00					3.28E+05	
			176.60	-1.835E+00	(	6.530E+00	1.40E+02	1.70E+01 G
			227.00	5.822E+00	?	1.489E+01	1.00E+02	6.30E+00 GA
Cf-249	T	1.0440E+00					1.28E+05	
			387.95	6.126E-01	&(	2.245E+00	1.09E+02	6.60E+01 G
			333.44	2.880E+00	?(	1.271E+01	1.32E+02	1.55E+01 G
Sn-126		-5.6786E+00					3.65E+07	
			87.57	-1.234E+00	}	6.984E+00	1.70E+02	3.75E+01 GA
			64.28	-5.679E+00	?(	2.200E+01	1.16E+02	9.70E+00 G
			86.94	-5.130E+00	+	3.016E+01	1.77E+02	9.04E+00 GA
PB-210	N	4.1184E+01					8.14E+03	
			46.54	4.118E+01	*(P	3.546E+01	3.49E+01	4.25E+00 G

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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PB-212	N	1.0547E+01					6.98E+02	
			238.63	1.055E+01	(P	2.008E+00	8.24E+00	4.33E+01 G
			300.03	-1.382E+01	-	9.457E+01	2.05E+02	3.28E+00 GA
PB-214	N	3.8129E+01					5.84E+05	
			351.93	3.813E+01	(P	2.286E+00	4.67E+00	3.76E+01 G
			295.09	4.439E+01	+ P	5.363E+00	7.45E+00	1.93E+01 G
			242.00	4.556E+01	+ P	1.257E+01	1.07E+01	7.43E+00 GA
BI-207	C	-1.6208E+00					1.18E+04	
			1063.66	-1.621E+00	?(P	2.606E+00	5.95E+01	7.45E+01 G
			569.70	6.092E-02	+ P	1.247E+00	5.83E+02	9.77E+01 G
BI-212	N	-4.2790E+00					6.98E+02	
			727.17	-4.279E+00	(	2.548E+01	1.74E+02	7.55E+00 G
			785.42	4.782E+01	?	9.411E+01	8.53E+01	1.28E+00 GA
U-235	N	-4.0983E+00					2.57E+11	
			143.79	-4.098E+00	&(P	1.889E+01	1.80E+02	1.10E+01 G
			205.33	-1.097E-01	% P	2.154E+01	1.84E+04	5.01E+00 G
			163.38	0.000E+00	&	2.665E+01	1.00E+03	5.08E+00 G
			185.72	-7.646E-01	+	2.706E+00	1.06E+02	5.40E+01 GA
BI-214	N	4.0986E+01					5.84E+05	
			609.31	4.164E+01	(P	2.425E+00	4.87E+00	4.61E+01 G
			1120.29	3.899E+01	*(P	7.380E+00	1.26E+01	1.51E+01 G
			1764.49	2.302E+01	- P	1.491E+01	2.31E+01	1.54E+01 G
BI-210M	T	-1.0179E+00					1.10E+09	
			265.83	-1.018E+00	?(P	2.879E+00	7.64E+01	5.00E+01 G
			304.90	0.000E+00	+	1.108E+01	1.00E+03	2.80E+01 G
AC-228	N	1.0697E+01					2.10E+03	
			911.07	1.070E+01	(P	4.065E+00	1.95E+01	2.90E+01 G
			968.97	4.192E+00	- P	1.241E+01	8.83E+01	1.75E+01 G
			338.32	2.963E+00	- P	1.715E+01	1.72E+02	1.20E+01 G
			93.35	-9.586E+00	- P	4.615E+01	5.17E+01	5.56E+00 XA
TH-227	N	2.8551E+00					7.95E+03	
			256.24	2.855E+00	(	1.542E+01	2.19E+02	7.00E+00 G
			235.97	-2.815E+00	+	2.061E+01	2.19E+02	1.23E+01 G
			50.14	-7.244E+00	+	2.917E+01	1.21E+02	8.00E+00 G
TH-229	N	-1.0539E+01					2.68E+06	
			193.51	-1.054E+01	?(	2.564E+01	9.59E+01	4.40E+00 G
			210.85	4.364E+00	& P	3.550E+01	3.15E+02	2.99E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
TH-234	N	2.0099E+01					1.63E+12	
			92.59	1.596E+01	(P	1.532E+01	3.04E+01	5.58E+00 G
			63.29	2.616E+01	(P	3.023E+01	3.61E+01	3.81E+00 G
PA-234	N	4.4029E+00					1.63E+12	
			131.29	2.021E+00	&(	9.955E+00	1.48E+02	1.80E+01 G
			946.02	-1.760E+00	+	1.066E+01	2.64E+02	1.34E+01 G
			569.47	6.215E+00	?(	1.403E+01	6.81E+01	8.20E+00 G
			883.24	7.321E+00	?(	2.128E+01	8.67E+01	9.60E+00 G
			880.53	-1.528E+01	+	4.130E+01	8.11E+01	6.00E+00 GA
PA-234M	N	4.5352E+01					1.63E+12	
			1001.00	-1.695E+01	?(P	2.593E+02	4.75E+02	8.37E-01 G
			766.41	2.227E+02	?(P	6.101E+02	8.20E+01	2.94E-01 G
AM-241	T	7.0798E-01					1.58E+05	
			59.54	7.080E-01	?(P	5.694E+00	2.40E+02	3.59E+01 G
Np-237	F	-3.8913E+00					2.14E+06	
			86.49	-3.891E+00	&(P	2.053E+01	5.87E+01	1.31E+01 G
Ir-192	F	3.1263E-01					7.40E+01	
			316.49	0.000E+00	?(	3.661E+00	1.00E+03	8.70E+01 G
			468.06	8.384E-01	(	2.622E+00	9.31E+01	5.18E+01 G
			308.44	0.000E+00	-	9.852E+00	1.00E+03	3.18E+01 G
Cs-136	F	6.0771E-01					1.30E+01	
			818.50	6.423E-01	?(	2.040E+00	9.45E+01	1.00E+02 G
			1048.07	2.123E-01	-	1.705E+00	2.26E+02	8.00E+01 G
			340.57	5.339E-01	?(	4.503E+00	2.50E+02	4.69E+01 G
Np-239	T	-2.0229E+00					2.36E+00	
			103.70	-1.867E+00	+	1.081E+01	1.74E+02	2.40E+01 X
			106.13	-2.023E+00	&(	1.163E+01	1.73E+02	2.27E+01 G
			99.50	-2.995E+00	+	1.711E+01	1.72E+02	1.50E+01 X
Nd-147		3.1538E+00					1.11E+01	
			531.00	3.154E+00	?(	7.131E+00	9.42E+01	1.30E+01 G
			91.10	-1.614E+00	-	9.047E+00	1.69E+02	2.83E+01 G
TL-210	N	-2.9402E-01					5.84E+05	
			799.60	-2.940E-01	(	1.810E+00	1.79E+02	9.90E+01 G
			296.00	-5.667E-01	+	3.966E+00	2.10E+02	7.90E+01 G
			1313.00	-4.985E+00	+	9.803E+00	9.42E+01	2.10E+01 GA

(- This peak used in the nuclide activity average.

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  * - 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

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********** 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	
TH-227	50.14	541.	-28.	-0.015	120.73	-7.244E+00	
Sn-126	64.28	856.	-36.	-0.020	116.50	-5.679E+00	
BA-133	80.99	1537.	-40.	-0.022	58.10	-1.488E+00	P
Np-237	86.49	2145.	-41.	-0.023	58.72	-3.891E+00	P
EU-155	86.54	2254.	-38.	-0.021	178.53	-1.514E+00	
Sn-126	86.94	2217.	-38.	-0.021	177.00	-5.130E+00	
Sn-126	87.57	2056.	-38.	-0.021	170.41	-1.234E+00	
Nd-147	91.10	2028.	-38.	-0.021	168.69	-1.614E+00	
Gd-153	97.50	2104.	-38.	-0.021	170.77	-1.501E+00	
Np-239	99.50	2142.	-38.	-0.021	171.98	-2.995E+00	
Gd-153	103.20	2180.	-38.	-0.021	172.95	-2.055E+00	
Np-239	103.70	2218.	-38.	-0.021	174.37	-1.867E+00	
EU-155	105.31	2109.	8.	0.005	784.58	4.557E-01	P
Np-239	106.13	2309.	-39.	-0.022	173.16	-2.023E+00	
EU-152	121.78	341.	15.	0.008	180.05	6.026E-01	
EU-154	123.10	325.	-29.	-0.016	89.37	-8.415E-01	
PA-234	131.29	994.	30.	0.017	147.87	2.021E+00	
HF-181	133.02	1024.	30.	0.017	149.85	8.454E-01	
CE-144	133.54	1055.	6.	0.003	743.27	6.722E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Tc-99m	140.51	1267.	-34.	-0.019	146.95	-4.898E-01	
U-235	143.79	1234.	-36.	-0.020	180.14	-4.098E+00	P
CE-141	145.44	1211.	-35.	-0.020	140.81	-9.139E-01	
Ba-140	162.66	422.	-18.	-0.010	167.82	-3.779E+00	
CE-139	165.85	373.	24.	0.013	117.27	3.960E-01	
Cf-251	176.60	271.	-22.	-0.012	139.60	-1.835E+00	
U-235	185.72	444.	-29.	-0.016	106.18	-7.646E-01	
TH-229	193.51	246.	-31.	-0.017	95.88	-1.054E+01	
TH-229	210.85	191.	8.	0.005	315.32	4.364E+00	P
Cf-251	227.00	132.	22.	0.012	100.00	5.822E+00	
TH-227	235.97	971.	-20.	-0.011	219.27	-2.815E+00	
EU-152	244.69	822.	24.	0.014	167.11	5.671E+00	
TH-227	256.24	148.	11.	0.006	218.62	2.855E+00	
Cd-113m	263.70	216.	-13.	-0.007	164.28	-3.966E+03	
BI-210M	265.83	255.	-27.	-0.015	76.42	-1.018E+00	P
Hg-203	279.20	194.	-9.	-0.005	225.61	-2.095E-01	
I-131	284.30	136.	7.	0.004	350.26	2.093E+00	P
TL-210	296.00	1076.	-22.	-0.012	209.75	-5.667E-01	
La-140	328.76	330.	20.	0.011	129.05	2.163E+00	P
Cs-136	340.57	391.	11.	0.006	250.43	5.339E-01	
BA-133	356.00	804.	-21.	-0.012	194.94	-7.671E-01	
I-131	364.48	88.	-6.	-0.003	308.82	-1.718E-01	
BA-133	383.84	162.	16.	0.009	114.34	4.383E+00	P
SN-113	391.69	161.	17.	0.009	111.38	6.369E-01	P
SB-125	427.88	70.	15.	0.008	114.88	1.350E+00	P
AG-108M	433.94	52.	16.	0.009	98.16	4.561E-01	P
PM-146	453.88	49.	14.	0.008	104.71	5.915E-01	P
SB-125	463.37	85.	14.	0.008	93.97	3.851E+00	P
Ir-192	468.06	96.	15.	0.009	93.13	8.384E-01	
BE-7	477.60	119.	16.	0.009	102.31	4.213E+00	
HF-181	482.00	135.	16.	0.009	108.11	5.558E-01	
La-140	487.02	126.	14.	0.008	114.98	8.992E-01	
RU-103	497.05	52.	-2.	-0.001	678.39	-6.477E-02	P
RH-106	511.86	133.	69.	0.038	26.53	1.033E+01	
Nd-147	531.00	35.	13.	0.007	94.21	3.154E+00	
Ba-140	537.26	61.	-4.	-0.002	436.74	-4.663E-01	
CS-134	563.24	48.	5.	0.003	267.77	2.051E+00	
CS-134	569.32	61.	-5.	-0.003	240.54	-9.819E-01	
PA-234	569.47	50.	16.	0.009	68.14	6.215E+00	
BI-207	569.70	56.	2.	0.001	582.96	6.092E-02	P
SB-125	600.50	815.	-18.	-0.010	221.97	-3.447E+00	
SB-124	602.73	798.	-19.	-0.011	64.19	-6.516E-01	P
RU-103	610.30	760.	-20.	-0.011	198.51	-1.171E+01	
AG-108M	614.28	740.	-20.	-0.011	195.48	-7.547E-01	
PM-144	618.06	720.	-18.	-0.010	207.99	-6.371E-01	
RH-106	621.92	681.	19.	0.010	200.50	6.445E+00	
SB-125	635.89	33.	4.	0.002	192.62	1.345E+00	
I-131	636.97	52.	-12.	-0.007	87.70	-6.047E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
AG-110M	657.76	66.	-5.	-0.003	531.51	-1.967E-01	P
CS-137	661.66	102.	-20.	-0.011	136.27	-8.574E-01	P
PM-144	696.54	88.	3.	0.001	502.18	1.011E-01	
NB-94	702.63	109.	-18.	-0.010	86.77	-6.820E-01	
SB-124	722.79	77.	14.	0.008	90.34	5.117E+00	
ZR-95	724.20	95.	-5.	-0.003	279.29	-4.377E-01	
BI-212	727.17	101.	-8.	-0.005	174.31	-4.279E+00	
PM-146	735.72	47.	-14.	-0.008	109.43	-2.375E+00	
PM-146	747.16	51.	-17.	-0.010	157.48	-2.035E+00	P
ZR-95	756.73	37.	6.	0.003	238.88	4.048E-01	P
AG-110M	763.94	99.	-16.	-0.009	93.16	-2.828E+00	
PA-234M	766.41	80.	16.	0.009	81.97	2.227E+02	P
EU-152	778.92	23.	8.	0.004	138.45	2.417E+00	
BI-212	785.42	33.	15.	0.008	85.34	4.782E+01	
CS-134	795.87	62.	15.	0.008	78.54	7.268E-01	
TL-210	799.60	75.	-7.	-0.004	179.15	-2.940E-01	
CS-134	801.95	71.	12.	0.007	103.41	5.757E+00	
CO-58	810.78	80.	-6.	-0.004	210.66	-2.678E-01	P
La-140	815.77	89.	-18.	-0.010	77.46	-3.285E+00	
Cs-136	818.50	95.	15.	0.008	94.53	6.423E-01	
MN-54	834.85	45.	-2.	-0.001	740.78	-8.594E-02	
NB-94	871.10	51.	6.	0.004	163.84	2.812E-01	
EU-154	873.23	65.	-7.	-0.004	170.98	-2.474E+00	
PA-234	880.53	128.	-21.	-0.011	81.08	-1.528E+01	
PA-234	883.24	85.	16.	0.009	86.72	7.321E+00	
AG-110M	884.68	69.	7.	0.004	180.67	4.109E-01	
Sc-46	889.28	121.	-20.	-0.011	75.11	-9.062E-01	P
AG-110M	937.49	50.	-6.	-0.003	262.29	-8.181E-01	
PA-234	946.02	35.	-5.	-0.003	263.94	-1.760E+00	
EU-152	964.11	38.	16.	0.009	58.39	5.362E+00	
EU-154	996.33	75.	1.	0.001	920.60	6.168E-01	
PA-234M	1001.00	79.	-3.	-0.002	474.78	-1.695E+01	P
EU-154	1004.77	67.	10.	0.005	124.28	2.649E+00	
Cs-136	1048.07	27.	3.	0.002	225.83	2.123E-01	
RH-106	1050.36	31.	10.	0.005	87.98	3.162E+01	
BI-207	1063.66	56.	-23.	-0.013	59.53	-1.621E+00	P
Ga-68	1077.40	27.	14.	0.008	86.05	2.648E+01	
FE-59	1099.25	32.	5.	0.003	284.31	4.297E-01	P
EU-152	1112.07	158.	-7.	-0.004	256.75	-2.733E+00	
CO-60	1173.24	46.	-9.	-0.005	159.39	-4.820E-01	P
Ta-182	1221.41	45.	-12.	-0.007	131.16	-2.612E+00	
NA-22	1274.53	29.	-2.	-0.001	696.69	-1.135E-01	P
FE-59	1291.60	17.	-1.	-0.001	972.11	-1.381E-01	
TL-210	1313.00	45.	-17.	-0.010	94.21	-4.985E+00	
CO-60	1332.50	7.	14.	0.008	48.46	8.705E-01	P
EU-152	1408.00	24.	8.	0.004	152.07	2.426E+00	
La-140	1596.21	19.	-5.	-0.003	375.00	-3.680E-01	P
SB-124	1690.98	7.	1.	0.001	567.39	1.737E-01	P

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Y-88	1836.06	7.	3.	0.002	220.62	2.443E-01	P

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 Counting 1 Sigma	MDA Bq/Sample
BE-7	#A	4.2127E+00	4.2127E+00	1.023E+02%	1.45E+01
NA-22	#A	-1.1355E-01	-1.1355E-01	6.967E+02%	1.64E+00
K-40	#	2.0368E+02	2.0368E+02	5.660E+00%	1.08E+01
Sc-46	#A	-9.0624E-01	-9.0625E-01	7.511E+01%	2.43E+00
CR-51	#A	-1.0580E-01	-1.0580E-01	6.440E+03%	3.23E+01
MN-54	#A	-8.5938E-02	-8.5939E-02	7.408E+02%	1.46E+00
FE-59	#A	4.2969E-01	4.2969E-01	2.843E+02%	2.73E+00
Co-56	#C	1.5717E+00	1.5717E+00	2.582E+01%	1.40E+00
CO-57	#A	0.0000E+00	0.0000E+00	7.071E+02%	1.24E+00
CO-58	#A	-2.6784E-01	-2.6784E-01	2.107E+02%	1.88E+00
CO-60	#A	8.7051E-01	8.7051E-01	4.846E+01%	9.05E-01
ZN-65	#A	0.0000E+00	0.0000E+00	1.000E+03%	6.33E+00
NB-94	#A	-6.8202E-01	-6.8202E-01	8.677E+01%	1.98E+00
ZR-95	#A	4.0485E-01	4.0485E-01	2.389E+02%	2.29E+00
NB-95	#A	0.0000E+00	0.0000E+00	1.000E+03%	2.12E+00
RU-103	#A	-6.4771E-02	-6.4772E-02	6.784E+02%	1.17E+00
RH-106	#A	9.8625E+00	9.8626E+00	8.798E+01%	4.32E+01
AG-108M	#A	4.5610E-01	4.5610E-01	9.816E+01%	1.07E+00
AG-110M	#A	4.1086E-01	4.1086E-01	1.807E+02%	2.56E+00
SN-113	#A	6.3694E-01	6.3694E-01	1.114E+02%	2.38E+00
SB-124	#A	-7.9844E-02	-7.9845E-02	5.541E+01%	4.61E+00
SB-125	#A	1.8585E+00	1.8585E+00	8.105E+01%	3.70E+00
I-131	#A	-1.3477E-02	-1.3478E-02	2.335E+02%	1.33E+00
Gd-153	#A	-1.5011E+00	-1.5011E+00	1.708E+02%	8.52E+00
Ga-68	#A	2.6239E+01	2.6477E+01	8.605E+01%	4.95E+01
Tc-99m	#A	-4.8893E-01	-4.8976E-01	1.470E+02%	2.39E+00
BA-133	#A	-7.6712E-01	-7.6712E-01	1.949E+02%	5.00E+00
CS-134	#A	1.2608E+00	1.2608E+00	7.854E+01%	1.91E+00
CS-137	#A	-8.5736E-01	-8.5736E-01	1.363E+02%	2.11E+00
CE-139	#A	3.9599E-01	3.9599E-01	1.173E+02%	1.55E+00
Ba-140	#A	-4.6625E-01	-4.6626E-01	4.367E+02%	4.96E+00
La-140	#A	3.0836E-01	3.0837E-01	1.150E+02%	1.69E+00
CE-141	#A	-9.1391E-01	-9.1392E-01	1.408E+02%	4.28E+00
CE-144	#A	6.7222E-01	6.7222E-01	7.433E+02%	1.67E+01
PM-144	#A	1.0115E-01	1.0115E-01	5.022E+02%	1.76E+00
EU-152	#A	2.6655E+00	2.6655E+00	5.839E+01%	3.65E+00
EU-154	#A	2.8700E-01	2.8700E-01	8.937E+01%	2.50E+00
EU-155	#A	4.5566E-01	4.5566E-01	7.846E+02%	1.19E+01
HF-181	#A	6.5707E-01	6.5707E-01	9.239E+01%	2.02E+00

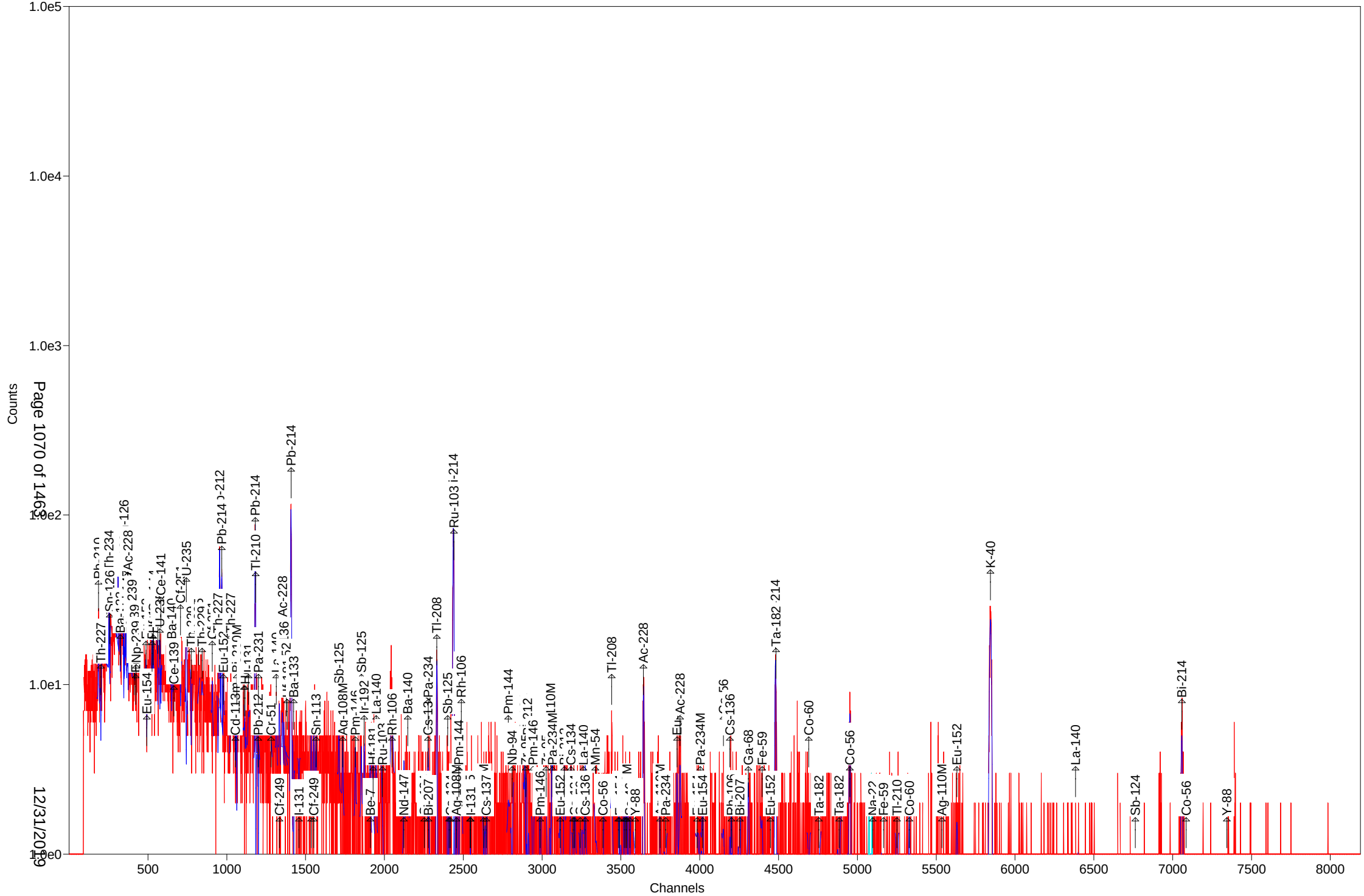
Ta-182 #A	1.0238E-01	1.0238E-01	2.621E+03%	9.25E+00
Hg-203 #A	-2.0945E-01	-2.0945E-01	2.256E+02%	1.60E+00
TL-208	3.1483E+00	3.1483E+00	1.488E+01%	9.11E-01
PM-146 #A	5.9145E-01	5.9145E-01	1.047E+02%	1.49E+00
Y-88 #A	2.4429E-01	2.4429E-01	2.206E+02%	1.18E+00
Cd-113m#A	-3.9664E+03	-3.9664E+03	1.643E+02%	2.20E+04
Cd-109 #A	0.0000E+00	0.0000E+00	1.000E+03%	7.09E+01
Cf-251 #A	-1.8352E+00	-1.8352E+00	1.396E+02%	6.53E+00
Cf-249 #A	1.0440E+00	1.0440E+00	8.554E+01%	2.25E+00
Sn-126 #A	-5.6786E+00	-5.6786E+00	1.165E+02%	2.20E+01
PB-210 #	4.1184E+01	4.1184E+01	3.494E+01%	3.55E+01
PB-212	1.0547E+01	1.0547E+01	8.240E+00%	2.01E+00
PB-214	3.8129E+01	3.8129E+01	4.674E+00%	2.29E+00
BI-207 #A	-1.6208E+00	-1.6208E+00	5.953E+01%	2.61E+00
BI-212 #A	-4.2790E+00	-4.2790E+00	1.743E+02%	2.55E+01
U-235 #A	-4.0983E+00	-4.0983E+00	1.801E+02%	1.89E+01
BI-214	4.0986E+01	4.0986E+01	4.870E+00%	2.42E+00
BI-210M#A	-1.0179E+00	-1.0179E+00	7.642E+01%	2.88E+00
AC-228 #	1.0697E+01	1.0697E+01	1.948E+01%	4.06E+00
TH-227 #A	2.8551E+00	2.8551E+00	2.186E+02%	1.54E+01
TH-229 #A	-1.0539E+01	-1.0539E+01	9.588E+01%	2.56E+01
TH-234	2.0099E+01	2.0099E+01	2.360E+01%	1.53E+01
PA-231 #A	0.0000E+00	0.0000E+00	1.000E+03%	1.07E+02
PA-233 #A	0.0000E+00	0.0000E+00	7.071E+02%	8.76E+00
PA-234 #A	4.4029E+00	4.4029E+00	6.149E+01%	9.95E+00
PA-234M#A	4.5352E+01	4.5352E+01	8.197E+01%	2.59E+02
AM-241 #A	7.0798E-01	7.0798E-01	2.402E+02%	5.69E+00
Np-237 #A	-3.8913E+00	-3.8913E+00	5.872E+01%	2.05E+01
Ir-192 #A	3.1262E-01	3.1263E-01	9.313E+01%	3.66E+00
Cs-136 #A	6.0769E-01	6.0771E-01	9.453E+01%	2.04E+00
Np-239 #A	-2.0226E+00	-2.0229E+00	1.732E+02%	1.16E+01
Nd-147 #A	3.1537E+00	3.1538E+00	9.421E+01%	7.13E+00
TL-210 #A	-2.9402E-01	-2.9402E-01	1.791E+02%	1.81E+00
Kr-85 #A	0.0000E+00	0.0000E+00	1.000E+03%	4.81E+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 (25.1 to 1999.6 keV) 3.578E+02 Bq/Sample
Total Decayed Activity (25.1 to 1999.6 keV) 3.5777829E+02 Bq/Sample

452567_Gamma_160-36526-A-15-B. 16_Gamma_20192291.spc.



Test America St. Louis Spectrum ID: 17_Gamma_20192436

Sample Description: 452567_Gamma_160-36526-A-16-B
Detector: Detector #17
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-16-B

Decay to Time: 12/25/2019 10:13 Live Time: 1800 sec
Acquisition Time: 12/25/2019 10:13:42 Real Time: 1806 sec
Analysis Time: 12/25/2019 10:44 Dead Time: 0.35 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 17_Soil_TunaCan.Clb
Efficiency Cal Desc: 17_TunaCan_90099_032612
Efficiency Cal Date: 4/12/2012 09:28
Energy Cal Date: 2/29/2012 10:33
Library: Client_Long_Rev15.lib
Bkgd Correction File: 17_2019-12-07_1454.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	-4.695E+00	95.2	4.469E+00	4.476E+00	1.500E+01
NA-22	-1.072E+00	56.5	6.061E-01	6.084E-01	1.975E+00
K-40	1.772E+02	6.3	1.112E+01	1.435E+01	1.009E+01
Sc-46	4.565E-01	119.3	5.447E-01	5.452E-01	1.857E+00
CR-51	-2.029E+00	150.8	3.060E+00	3.062E+00	1.451E+01
MN-54	2.596E-01	121.8	3.163E-01	3.166E-01	7.764E-01
FE-59	2.295E-01	167.1	3.836E-01	3.838E-01	2.615E+00
Co-56	1.428E+00	39.5	5.641E-01	5.688E-01	1.168E+00
CO-57	0.000E+00	1.#INF	2.558E-01	2.558E-01	1.258E+00
CO-58	4.577E-01	90.7	4.150E-01	4.156E-01	1.405E+00
CO-60	8.172E-01	51.0	4.170E-01	4.190E-01	8.953E-01
ZN-65	-1.844E+00	115.3	2.126E+00	2.128E+00	7.149E+00
NB-94	4.550E-01	59.2	2.695E-01	2.705E-01	1.089E+00
ZR-95	2.941E-01	117.8	3.464E-01	3.468E-01	2.488E+00
NB-95	-1.043E+00	76.6	7.987E-01	8.005E-01	2.654E+00
RU-103	4.487E-01	98.7	4.431E-01	4.437E-01	1.105E+00
RH-106	-6.257E+00	214.3	1.341E+01	1.341E+01	4.490E+01
AG-108M	-5.751E-01	69.9	4.022E-01	4.033E-01	1.312E+00
AG-110M	8.213E-01	31.8	2.615E-01	2.649E-01	2.560E+00
SN-113	-6.759E-01	86.9	5.875E-01	5.886E-01	2.688E+00
SB-124	-2.699E-01	132.8	3.584E-01	3.586E-01	4.547E+00
SB-125	1.520E+00	97.5	1.482E+00	1.484E+00	3.196E+00
I-131	8.262E-01	85.7	7.078E-01	7.091E-01	1.148E+00
Gd-153	-4.396E-01	242.1	1.064E+00	1.064E+00	3.596E+00
Ga-68	1.774E+01	100.3	1.780E+01	1.783E+01	4.092E+01
Tc-99m	3.367E-01	128.0	4.311E-01	4.315E-01	1.443E+00
BA-133	-7.010E-01	217.2	1.523E+00	1.523E+00	5.094E+00
CS-134	1.895E-01	150.0	2.842E-01	2.844E-01	1.960E+00
CS-137	-5.541E-01	104.9	5.809E-01	5.817E-01	1.964E+00
CE-139	4.079E-01	115.1	4.696E-01	4.712E-01	1.570E+00
Ba-140	1.490E+00	98.9	1.474E+00	1.476E+00	3.707E+00
La-140	9.365E-01	57.7	5.406E-01	5.429E-01	1.092E+00
CE-141	5.934E-01	130.8	7.765E-01	7.770E-01	2.599E+00

CE-144	2.667E+00	138.7	3.698E+00	3.701E+00	1.236E+01
PM-144	4.516E-01	106.9	4.829E-01	4.835E-01	9.860E-01
EU-152	1.677E+00	104.0	1.744E+00	1.746E+00	3.638E+00
EU-154	8.682E-01	102.8	8.926E-01	8.938E-01	2.557E+00
EU-155	-4.620E-02	2770.4	1.280E+00	1.280E+00	6.220E+00
HF-181	8.320E-01	82.6	6.875E-01	6.889E-01	1.873E+00
Ta-182	5.476E-02	5227.8	2.863E+00	2.863E+00	9.872E+00
Hg-203	-5.816E-01	98.4	5.721E-01	5.731E-01	1.911E+00
TL-208	4.423E+00	12.9	5.710E-01	6.154E-01	1.008E+00
PM-146	-1.080E-01	537.2	5.802E-01	5.802E-01	1.855E+00
Y-88	1.208E-01	304.1	3.675E-01	3.675E-01	1.200E+00
Cd-113m	-5.919E+03	97.4	5.763E+03	5.776E+03	1.932E+04
Cd-109	0.000E+00	1.#INF	1.770E+01	1.770E+01	5.931E+01
Cf-251	-1.247E+00	181.7	2.267E+00	2.270E+00	6.114E+00
Cf-249	7.164E-01	109.3	7.831E-01	7.840E-01	2.250E+00
Sn-126	1.244E+00	385.1	4.789E+00	4.789E+00	1.619E+01
PB-210	3.339E+01	41.5	1.384E+01	1.398E+01	3.629E+01
PB-212	1.021E+01	8.5	8.712E-01	1.093E+00	1.973E+00
PB-214	3.677E+01	4.5	1.651E+00	2.525E+00	2.061E+00
BI-207	1.082E-01	137.0	1.482E-01	1.483E-01	2.105E+00
BI-212	5.057E+00	131.3	6.641E+00	6.646E+00	2.266E+01
U-235	2.697E+00	131.1	3.537E+00	3.540E+00	1.183E+01
BI-214	3.513E+01	5.1	1.795E+00	2.560E+00	1.786E+00
BI-210M	6.996E-01	110.7	7.747E-01	7.758E-01	2.600E+00
AC-228	1.243E+01	14.1	1.753E+00	1.864E+00	2.587E+00
TH-227	-6.518E+00	98.5	6.421E+00	6.433E+00	1.720E+01
TH-229	5.981E+00	125.1	7.481E+00	7.497E+00	2.020E+01
TH-234	9.200E+00	52.1	4.796E+00	4.823E+00	1.628E+01
PA-231	0.000E+00	1.#INF	6.808E+00	6.808E+00	9.617E+01
PA-233	-2.103E-02	3933.1	8.271E-01	8.271E-01	7.861E+00
PA-234	4.332E-01	59.4	2.574E-01	2.584E-01	8.265E+00
PA-234M	5.454E+01	135.4	7.383E+01	7.388E+01	1.489E+02
AM-241	5.757E-01	243.3	1.401E+00	1.401E+00	3.990E+00
Np-237	0.000E+00	1.#INF	5.634E+00	5.634E+00	1.876E+01
Ir-192	-1.326E-02	72.9	9.663E-03	9.695E-03	1.633E+00
Cs-136	-6.093E-01	102.6	6.252E-01	6.261E-01	2.108E+00
Np-239	-3.811E-01	444.0	1.692E+00	1.692E+00	5.708E+00
Nd-147	-4.401E+00	95.5	4.203E+00	4.210E+00	1.037E+01
TL-210	0.000E+00	1.#INF	1.098E-01	1.098E-01	1.743E+00
Kr-85	3.720E+01	349.3	1.299E+02	1.299E+02	4.448E+02
Total	4.644E+02				

Analyst: Caleb Quinn

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Sample description
452567_Gamma_160-36526-A-16-B

Spectrum Filename: C:\User\SPC\Det17\17_Gamma_20192436.An1

Acquisition information
Start time: 12/25/2019 10:13:42 AM
Live time: 1800
Real time: 1806
Dead time: 0.35 %
Detector ID: 17

Detector system
Ge17 SN/11080671

Calibration
Filename: 17_Soil_TunaCan.Clb
17_TunaCan_90099_032612

Energy Calibration
Created: 2/29/2012 10:33:23 AM
Zero offset: 0.108 keV
Gain: 0.250 keV/channel
Quadratic: -2.584E-08 keV/channel^2

Efficiency Calibration
Created: 4/12/2012 9:28:42 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.91 %
Log(Eff): -5.264190E-01 + (-4.024164E-01*Log(E)) + (-2.604461E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.00 %
Log(Eff): -2.343889E+01 + (8.582715E+00*Log(E)) + (-9.075430E-01*Log(E)^2)

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.12keV)
Stop channel: 8000 (1999.54keV)
Peak rejection level: 1000.000%
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

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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	12/25/2019 10:13:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	17_2019-12-07_1454.PBC 12/7/2019 2:54:46 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 23 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1472

***** 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
46.56	49.	43.77	0.51	2.098E-02	46.54	4.250	PBC<MDA	PB210
59.54	11.	243.34	0.79	2.957E-02	59.54	35.900	PBC<MDA	AM241
63.38	19.	100.00	0.79	3.164E-02	63.29	3.810	PBC<MDA	TH234
64.37	7.	385.06	0.79	3.216E-02	64.28	9.700	PBC<MDA	Sn126
74.76	168.	14.14	0.80	3.679E-02				
77.23	301.	8.49	0.80	3.766E-02				
84.09	57.	30.35	0.81	3.969E-02				
87.23	113.	17.15	0.81	4.043E-02	86.49	13.100	1.189E+01	Np237
					86.54	30.700	5.074E+00	EU155
					86.94	9.040	1.719E+01	Sn126
					87.57	37.500	4.131E+00	Sn126
					88.04	3.790	4.077E+01	Cd109
92.76	110.	21.87	0.91	4.147E-02	92.59	5.584	1.773E+01	TH234
					93.35	5.561	2.656E+01	AC228
99.50	6.	431.41	0.82	4.234E-02	99.50	15.000	PBC<MDA	Np239
121.78	21.	115.66	0.85	4.277E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	3.137E-01	CO57
129.43	65.	29.61	1.47	4.230E-02				
133.54	22.	138.65	0.86	4.192E-02	133.54	11.090	PBC<MDA	CE144
140.51	22.	128.02	0.86	4.119E-02	140.51	89.300	PBC<MDA	Tc99m
143.79	22.	131.13	0.87	4.080E-02	143.79	10.960	PBC<MDA	U235
145.44	21.	130.85	0.87	4.059E-02	145.44	48.200	PBC<MDA	CE141

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
165.85	22.	115.12	0.89	3.825E-02	165.85	79.900	PBC<MDA	CE139
185.82	90.	28.09	0.91	3.544E-02	185.72	54.000	2.620E+00	U235
193.51	16.	125.09	0.91	3.448E-02	193.51	4.400	PBC<MDA	TH229
227.00	14.	141.78	0.94	3.093E-02	227.00	6.300	PBC<MDA	Cf251
235.97	11.	347.59	0.95	3.012E-02	235.97	12.300	PBC<MDA	TH227
238.56	238.	8.66	0.95	2.989E-02	238.63	43.300	1.020E+01	PB212
241.73	154.	12.15	0.96	2.963E-02	242.00	7.430	3.888E+01	PB214
244.69	19.	200.46	0.96	2.938E-02	244.69	7.580	PBC<MDA	EU152
265.83	17.	110.73	0.98	2.774E-02	265.83	50.000	PBC<MDA	BI210M
284.30	11.	166.87	1.00	2.648E-02	284.30	6.140	PBC<MDA	I131
295.09	327.	7.67	1.09	2.580E-02	295.09	19.300	3.654E+01	PB214
					296.00	79.000	8.946E+00	TL210
299.82	43.	30.88	0.40	2.550E-02	300.03	3.280	2.851E+01	PB212
328.76	16.	102.54	1.04	2.391E-02	328.76	20.300	PBC<MDA	La140
333.44	10.	180.62	1.04	2.368E-02	333.44	15.510	PBC<MDA	Cf249
338.45	45.	26.56	1.44	2.343E-02	338.32	12.010	8.816E+00	AC228
344.29	16.	116.69	1.05	2.315E-02	344.29	26.500	PBC<MDA	EU152
345.83	15.	128.80	1.05	2.308E-02	345.83	15.070	PBC<MDA	HF181
351.86	569.	4.67	1.03	2.279E-02	351.93	37.600	3.689E+01	PB214
364.48	8.	173.37	1.07	2.223E-02	364.48	81.700	PBC<MDA	I131
383.84	14.	117.53	1.09	2.143E-02	383.84	8.940	PBC<MDA	BA133
387.95	14.	123.19	1.09	2.127E-02	387.95	66.000	PBC<MDA	Cf249
427.88	8.	168.04	1.13	1.983E-02	427.88	29.600	PBC<MDA	SB125
463.37	13.	98.97	1.16	1.872E-02	463.37	10.470	PBC<MDA	SB125
468.06	13.	104.92	1.16	1.859E-02	468.06	51.750	PBC<MDA	Ir192
482.00	14.	103.56	1.18	1.820E-02	482.00	80.500	PBC<MDA	HF181
497.05	13.	98.74	1.19	1.779E-02	497.05	90.900	PBC<MDA	RU103
511.86	82.	18.50	2.45	1.742E-02	511.86	20.000	1.302E+01	RH106
513.98	5.	349.28	1.20	1.737E-02	513.98	0.430	PBC<MDA	Kr85
537.26	11.	98.89	1.22	1.682E-02	537.26	24.390	PBC<MDA	Ba140
569.47	12.	79.13	1.25	1.611E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	5.178E+00	PA234
					569.70	97.740	4.346E-01	BI207
569.70	6.	136.95	1.25	1.611E-02	569.32	15.380	1.423E+00	CS134
					569.47	8.200	2.670E+00	PA234
					569.70	97.740	2.241E-01	BI207
583.18	107.	12.91	1.15	1.584E-02	583.02	84.500	4.423E+00	TL208
609.32	448.	5.11	1.29	1.533E-02	609.31	46.090	3.518E+01	BI214
					610.30	5.750	2.824E+02	RU103
618.06	14.	234.62	1.30	1.517E-02	618.06	99.100	PBC<MDA	PM144
636.97	9.	90.28	1.31	1.484E-02	636.97	7.170	PBC<MDA	I131
657.76	29.	31.84	1.33	1.449E-02	657.76	94.640	1.161E+00	AG110M
696.54	9.	106.93	1.36	1.389E-02	696.54	99.000	PBC<MDA	PM144
702.63	12.	94.00	1.37	1.380E-02	702.63	97.900	PBC<MDA	NB94
722.79	7.	132.77	1.39	1.351E-02	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	3.117E-01	AG108M
					723.36	20.220	1.401E+00	EU154
722.94	11.	93.36	1.39	1.351E-02	722.79	10.810	4.099E+00	SB124

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
					722.94	90.840	4.878E-01	AG108M
					723.36	20.220	2.193E+00	EU154
723.36	11.	102.81	1.39	1.350E-02	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	4.879E-01	AG108M
					723.36	20.220	2.193E+00	EU154
724.20	10.	117.79	1.39	1.349E-02	724.20	44.150	PBC<MDA	ZR95
727.17	9.	131.33	1.39	1.345E-02	727.17	7.550	PBC<MDA	BI212
766.41	11.	135.36	1.42	1.293E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	PBC<MDA	PA234M
778.92	3.	426.01	1.43	1.278E-02	778.92	12.940	PBC<MDA	EU152
785.42	11.	90.01	1.44	1.270E-02	785.42	1.280	PBC<MDA	BI212
801.95	7.	149.96	1.45	1.250E-02	801.95	8.690	PBC<MDA	CS134
810.78	10.	90.66	1.46	1.240E-02	810.78	99.460	PBC<MDA	CO58
815.77	10.	100.65	1.47	1.234E-02	815.77	23.280	PBC<MDA	La140
834.85	6.	121.84	1.48	1.213E-02	834.85	99.980	PBC<MDA	MN54
846.77	7.	158.51	1.49	1.200E-02	846.77	99.935	PBC<MDA	Co56
861.01	26.	23.95	1.39	1.185E-02	860.56	12.420	9.749E+00	TL208
871.10	9.	72.11	1.51	1.175E-02	871.10	99.890	PBC<MDA	NB94
873.23	5.	163.16	1.51	1.172E-02	873.23	12.270	PBC<MDA	EU154
880.53	9.	92.16	1.52	1.165E-02	880.53	6.000	PBC<MDA	PA234
889.28	10.	119.32	1.53	1.156E-02	889.28	99.984	PBC<MDA	Sc46
898.04	1.	692.82	1.53	1.148E-02	898.04	93.700	PBC<MDA	Y88
910.94	74.	14.10	1.15	1.135E-02	911.07	29.000	1.243E+01	AC228
946.02	2.	398.21	1.57	1.103E-02	946.02	13.400	PBC<MDA	PA234
964.11	8.	147.26	1.59	1.088E-02	964.11	14.605	PBC<MDA	EU152
969.00	62.	16.85	1.59	1.083E-02	968.97	17.460	1.826E+01	AC228
1001.00	3.	245.34	1.62	1.057E-02	1001.00	0.837	PBC<MDA	PA234M
1004.77	2.	303.32	1.62	1.054E-02	1004.77	18.010	PBC<MDA	EU154
1048.07	8.	71.65	1.66	1.021E-02	1048.07	80.000	PBC<MDA	Cs136
1077.40	9.	100.31	1.68	9.992E-03	1077.40	3.300	PBC<MDA	Ga68
1120.24	92.	14.73	1.27	9.697E-03	1120.29	15.100	3.497E+01	BI214
					1120.55	99.987	PBC<MDA	Sc46
					1121.30	34.900	1.514E+01	Ta182
1173.24	4.	247.00	1.76	9.359E-03	1173.24	99.900	PBC<MDA	CO60
1238.28	33.	39.49	1.81	8.977E-03	1238.28	66.070	3.122E+00	Co56
1291.60	6.	167.18	1.85	8.689E-03	1291.60	43.200	PBC<MDA	FE59
1313.00	9.	106.38	1.87	8.579E-03	1313.00	21.000	PBC<MDA	TL210
1332.50	12.	51.02	1.89	8.481E-03	1332.50	99.980	PBC<MDA	CO60
1384.30	7.	109.97	1.93	8.233E-03	1384.30	24.290	PBC<MDA	AG110M
1408.00	12.	82.93	1.94	8.125E-03	1408.00	21.005	PBC<MDA	EU152
1460.76	269.	6.27	2.18	7.894E-03	1460.83	10.670	1.772E+02	K40
1596.21	6.	96.69	2.09	7.364E-03	1596.21	95.400	PBC<MDA	La140
1764.37	77.	11.94	2.21	6.804E-03	1764.49	15.400	4.098E+01	BI214
1836.06	2.	304.14	2.26	6.593E-03	1836.06	99.200	PBC<MDA	Y88

********** 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
298.46	74.77	199.	168.	4.574E+03	14.14	0.802	- sD
308.31	77.24	177.	301.	8.001E+03	8.49	0.804	- D
335.67	84.11	119.	57.	1.434E+03	30.19	0.810	- sD
517.03	129.15	95.	65.	1.529E+03	29.61	1.471	- s
742.50	185.82	160.	90.	2.548E+03	28.09	0.913	-

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: Client_Long_Rev15.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	185.49	46.51	142.	54.	0.030	41.45	0.513s
AM-241	237.59	59.54	249.	11.	0.006	243.34	0.787s
TH-234	252.59	63.29	164.	19.	0.010	100.00	0.791D
Sn-126	256.56	64.28	358.	7.	0.004	385.06	0.792s
BA-133	323.36	80.99	1445.	-29.	-0.016	64.71	0.807s
Np-237	345.35	86.49	1416.	0.	0.000	189.43	0.813A
EU-155	345.56	86.54	1316.	-28.	-0.016	184.46	0.813D
Sn-126	347.15	86.94	191.	8.	0.005	385.08	0.813A
Sn-126	349.67	87.57	1213.	34.	0.019	62.13	0.814D
Cd-109	351.55	88.04	1202.	0.	0.000	1000.00	0.814A
Nd-147	363.79	91.10	1202.	0.	0.000	1000.00	0.817s
TH-234	369.74	92.59	195.	40.	0.022	52.13	0.818D
AC-228	372.78	93.35	1247.	-5.	-0.003	953.96	0.819
Gd-153	389.37	97.50	288.	-10.	-0.006	242.07	0.823
Np-239	397.37	99.50	332.	6.	0.003	431.41	0.825s
Gd-153	412.16	103.20	425.	-24.	-0.013	123.18	0.828s
Np-239	414.16	103.70	449.	0.	0.000	1000.00	0.829s
Np-239	423.88	106.13	435.	-7.	-0.004	443.96	0.831s
EU-152	486.45	121.78	275.	21.	0.011	115.66	0.846s
CO-57	487.57	122.06	296.	0.	0.000	1000.00	0.846s
PA-234	524.49	131.29	558.	-24.	-0.013	88.67	0.855s
HF-181	531.41	133.02	535.	-19.	-0.010	177.36	0.856s
CE-144	533.46	133.54	468.	22.	0.012	138.65	0.857
HF-181	544.50	136.30	539.	-23.	-0.013	146.29	0.859s
Tc-99m	561.34	140.51	373.	22.	0.012	128.02	0.863s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
U-235	574.43	143.79	394.	22.	0.012	131.13	0.866s
CE-141	581.05	145.44	363.	21.	0.012	130.85	0.868
Ba-140	649.90	162.66	426.	-26.	-0.014	116.02	0.884s
U-235	652.78	163.38	384.	-7.	-0.004	422.45	0.885s
CE-139	662.67	165.85	322.	22.	0.012	115.12	0.887s
Cf-251	705.64	176.60	200.	-14.	-0.008	181.73	0.897s
U-235	742.10	185.72	328.	-19.	-0.010	139.08	0.905
TH-229	773.25	193.51	127.	16.	0.009	125.09	0.913
Cf-251	907.16	227.00	120.	14.	0.008	141.78	0.944s
TH-227	943.03	235.97	744.	11.	0.006	347.59	0.952s
PB-212	953.67	238.63	86.	238.	0.132	8.53	0.954D
PB-214	967.13	242.00	99.	156.	0.087	12.08	0.957D
EU-152	977.91	244.69	706.	19.	0.010	200.46	0.960s
TH-227	1024.08	256.24	160.	-23.	-0.013	98.51	0.971
Cd-113m	1053.91	263.70	142.	-18.	-0.010	97.37	0.978
BI-210M	1062.44	265.83	178.	17.	0.010	110.73	0.979s
TL-208	1108.23	277.28	174.	-21.	-0.012	89.58	0.990
Hg-203	1115.89	279.20	241.	-23.	-0.013	98.37	0.992s
I-131	1136.28	284.30	100.	11.	0.006	166.87	0.996s
PB-214	1179.42	295.09	65.	327.	0.182	7.67	1.085
TL-210	1183.07	296.00	751.	-17.	-0.010	227.24	1.007s
PB-212	1198.34	299.82	35.	43.	0.024	30.88	0.402s
PA-231	1199.35	300.07	734.	-17.	-0.010	223.85	1.011s
PA-233	1199.79	300.18	716.	-12.	-0.007	308.84	1.011s
PA-231	1209.66	302.65	704.	0.	0.000	1000.00	1.013s
BA-133	1210.47	302.85	704.	0.	0.000	1000.00	1.013s
Ba-140	1218.46	304.85	704.	0.	0.000	1000.00	1.015
BI-210M	1218.64	304.90	704.	0.	0.000	1000.00	1.015
Ir-192	1232.82	308.44	704.	0.	0.000	1000.00	1.019s
Ir-192	1265.01	316.49	166.	-19.	-0.010	101.20	1.026s
CR-51	1279.38	320.08	169.	-9.	-0.005	150.83	1.029s
La-140	1314.07	328.76	70.	16.	0.009	102.54	1.037s
Cf-249	1332.79	333.44	84.	10.	0.005	180.62	1.041s
AC-228	1352.84	338.45	30.	45.	0.025	26.56	1.438s
Cs-136	1361.30	340.57	257.	-18.	-0.010	129.19	1.048s
EU-152	1376.16	344.29	156.	16.	0.009	116.69	1.051s
HF-181	1382.33	345.83	181.	15.	0.008	128.80	1.053s
PB-214	1406.46	351.86	39.	569.	0.316	4.67	1.029
BA-133	1423.00	356.00	730.	-18.	-0.010	217.21	1.062s
I-131	1456.93	364.48	56.	8.	0.005	173.37	1.070s
BA-133	1534.34	383.84	121.	14.	0.008	117.53	1.087s
Cf-249	1550.77	387.95	135.	14.	0.008	123.19	1.091s
SN-113	1565.73	391.69	181.	-16.	-0.009	86.93	1.094s
SB-125	1710.44	427.88	44.	8.	0.004	168.04	1.127s
AG-108M	1734.69	433.94	71.	-18.	-0.010	69.94	1.132s
PM-146	1814.44	453.88	68.	-2.	-0.001	537.21	1.150
SB-125	1852.38	463.37	81.	13.	0.007	98.97	1.158s
Ir-192	1871.15	468.06	92.	13.	0.007	104.92	1.163s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
BE-7	1909.29	477.59	112.	-16.	-0.009	95.20	1.171s
HF-181	1926.89	482.00	100.	14.	0.008	103.56	1.175s
La-140	1946.98	487.02	64.	-3.	-0.002	380.98	1.180s
RU-103	1987.11	497.05	40.	13.	0.007	98.74	1.188s
RH-106	2046.35	511.86	73.	82.	0.045	18.50	2.452s
Kr-85	2054.81	513.98	150.	5.	0.003	349.28	1.203s
Nd-147	2122.88	531.00	68.	-17.	-0.010	95.48	1.219s
Ba-140	2147.92	537.26	28.	11.	0.006	98.89	1.224s
CS-134	2251.82	563.24	60.	-17.	-0.009	93.56	1.247s
CS-134	2276.15	569.32	48.	-8.	-0.004	127.48	1.252s
PA-234	2276.75	569.47	41.	12.	0.007	79.13	1.253s
BI-207	2277.67	569.70	35.	6.	0.004	136.95	1.253s
TL-208	2331.59	583.18	21.	107.	0.059	12.91	1.153s
SB-125	2400.86	600.50	697.	-16.	-0.009	234.06	1.280s
SB-124	2409.78	602.73	681.	-16.	-0.009	231.03	1.282s
CS-134	2417.70	604.71	665.	-16.	-0.009	228.01	1.284s
BI-214	2436.12	609.32	18.	448.	0.249	5.11	1.293
RU-103	2440.05	610.30	649.	-16.	-0.009	224.43	1.288s
AG-108M	2455.98	614.28	632.	-16.	-0.009	221.06	1.292s
PM-144	2471.11	618.06	551.	14.	0.008	234.62	1.295s
RH-106	2486.52	621.92	647.	-17.	-0.009	214.30	1.299s
SB-125	2542.41	635.89	39.	-9.	-0.005	107.00	1.311
I-131	2546.75	636.97	29.	9.	0.005	90.28	1.312s
AG-110M	2629.90	657.76	27.	29.	0.016	31.84	1.330s
CS-137	2645.49	661.66	76.	-12.	-0.007	104.85	1.333
PM-144	2785.03	696.54	22.	9.	0.005	106.93	1.363s
NB-94	2809.38	702.63	26.	12.	0.006	94.00	1.368s
SB-124	2890.01	722.79	38.	7.	0.004	132.77	1.386s
AG-108M	2890.61	722.94	45.	11.	0.006	93.36	1.386s
EU-154	2892.30	723.36	56.	11.	0.006	102.81	1.386s
ZR-95	2895.66	724.20	67.	10.	0.006	117.79	1.387s
BI-212	2907.54	727.17	69.	9.	0.005	131.33	1.390s
PM-146	2941.74	735.72	30.	-3.	-0.002	341.69	1.397s
PM-146	2987.51	747.16	35.	-4.	-0.002	331.91	1.407s
ZR-95	3025.79	756.73	39.	-3.	-0.002	394.91	1.415s
AG-110M	3054.64	763.94	132.	-24.	-0.013	70.13	1.421
NB-95	3062.03	765.79	160.	-24.	-0.013	76.61	1.423s
PA-234M	3064.52	766.41	106.	11.	0.006	135.36	1.423s
EU-152	3114.56	778.92	30.	3.	0.001	426.01	1.434s
BI-212	3140.56	785.42	22.	11.	0.006	90.01	1.440s
CS-134	3182.36	795.87	57.	-3.	-0.002	342.31	1.448s
TL-210	3197.29	799.60	60.	0.	0.000	1000.00	1.451s
CS-134	3206.69	801.95	54.	7.	0.004	149.96	1.454s
CO-58	3241.99	810.78	37.	10.	0.006	90.66	1.461s
La-140	3261.97	815.77	47.	10.	0.006	100.65	1.465s
Cs-136	3272.90	818.50	89.	-14.	-0.008	102.60	1.467s
MN-54	3338.30	834.85	9.	6.	0.003	121.84	1.481s
Co-56	3385.99	846.77	23.	7.	0.004	158.51	1.491

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
TL-208	3442.96	861.01	3.	26.	0.014	23.95	1.393
NB-94	3483.32	871.10	17.	9.	0.005	72.11	1.512s
EU-154	3491.85	873.23	34.	5.	0.003	163.16	1.514s
PA-234	3521.06	880.53	31.	9.	0.005	92.16	1.520s
PA-234	3531.90	883.24	62.	-2.	-0.001	522.30	1.522s
Sc-46	3556.06	889.28	60.	10.	0.005	119.32	1.527s
Y-88	3591.11	898.04	19.	1.	0.001	692.82	1.534s
AC-228	3642.71	910.94	7.	74.	0.041	14.10	1.153s
AG-110M	3748.95	937.49	51.	-18.	-0.010	87.31	1.567s
PA-234	3783.07	946.02	19.	2.	0.001	398.21	1.574s
EU-152	3855.45	964.11	62.	8.	0.004	147.26	1.589s
AC-228	3874.90	968.97	24.	62.	0.035	16.85	1.593
PA-234M	4003.04	1001.00	20.	3.	0.001	245.34	1.620
EU-154	4018.15	1004.77	28.	2.	0.001	303.32	1.623s
Co-56	4150.45	1037.84	25.	0.	0.000	1000.00	1.650s
Cs-136	4191.39	1048.07	13.	8.	0.005	71.65	1.658s
RH-106	4200.55	1050.36	35.	-5.	-0.003	178.92	1.661s
Ga-68	4308.74	1077.40	15.	9.	0.005	100.31	1.683
FE-59	4396.18	1099.25	25.	-2.	-0.001	289.49	1.700
EU-152	4447.49	1112.07	186.	-17.	-0.009	117.25	1.711s
ZN-65	4461.38	1115.55	169.	-16.	-0.009	115.30	1.713s
BI-214	4480.16	1120.24	18.	92.	0.051	14.73	1.266s
Sc-46	4481.41	1120.55	153.	0.	0.000	1000.00	1.717s
CO-60	4692.24	1173.24	15.	4.	0.002	247.00	1.760
Ta-182	4755.52	1189.05	45.	-10.	-0.006	150.83	1.772
Ta-182	4885.02	1221.41	43.	-8.	-0.004	197.00	1.798
Co-56	4952.53	1238.28	28.	33.	0.019	39.49	1.812
NA-22	5097.60	1274.53	37.	-17.	-0.009	56.51	1.840s
EU-154	5097.64	1274.54	54.	-2.	-0.001	439.36	1.840s
FE-59	5165.90	1291.60	16.	6.	0.003	167.18	1.854s
TL-210	5251.56	1313.00	16.	9.	0.005	106.38	1.870s
CO-60	5329.61	1332.50	6.	12.	0.007	51.02	1.886s
AG-110M	5536.92	1384.30	11.	7.	0.004	109.97	1.926s
EU-152	5631.79	1408.00	16.	12.	0.007	82.93	1.944s
K-40	5842.95	1460.76	7.	269.	0.149	6.27	2.178
La-140	6385.15	1596.21	6.	6.	0.004	96.69	2.087s
SB-124	6764.55	1690.98	18.	-9.	-0.005	118.63	2.157s
BI-214	7058.84	1764.49	4.	77.	0.043	11.94	2.211
Co-56	7086.31	1771.35	81.	0.	0.000	1000.00	2.216s
Y-88	7345.39	1836.06	6.	2.	0.001	304.14	2.262s

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
BE-7	C	-4.6946E+00				5.31E+01	
			477.60	-4.695E+00	?(	1.500E+01 9.52E+01 1.05E+01	G
NA-22	C	-1.0724E+00				9.50E+02	
			1274.53	-1.072E+00	?(	1.975E+00 5.65E+01 9.99E+01	G
K-40	N	1.7723E+02				4.66E+11	
			1460.83	1.772E+02	(P	1.009E+01 6.27E+00 1.07E+01	G
Sc-46	F	4.5649E-01				8.38E+01	
			889.28	4.565E-01	&(	1.857E+00 1.19E+02 1.00E+02	G
			1120.55	0.000E+00	-	3.459E+00 1.00E+03 1.00E+02	G
CR-51	F	-2.0291E+00				2.77E+01	
			320.08	-2.029E+00	?(P	1.451E+01 1.51E+02 9.94E+00	G
MN-54	C	2.5963E-01				3.12E+02	
			834.85	2.596E-01	&(	7.764E-01 1.22E+02 1.00E+02	G
FE-59	F	2.2952E-01				4.45E+01	
			1099.25	-2.339E-01	?(P	2.615E+00 2.89E+02 5.65E+01	G
			1291.60	8.356E-01	?(P	3.190E+00 1.67E+02 4.32E+01	G
Co-56	C	1.4283E+00				7.73E+01	
			846.77	3.089E-01	&(	1.168E+00 1.59E+02 9.99E+01	G
			1238.28	3.122E+00	(P	2.550E+00 3.95E+01 6.61E+01	G
			1037.84	0.000E+00	-	9.946E+00 1.00E+03 1.41E+01	G
			1771.35	0.000E+00	-	2.362E+01 1.00E+03 1.55E+01	A
CO-58	C	4.5773E-01				7.09E+01	
			810.78	4.577E-01	?(	1.405E+00 9.07E+01 9.95E+01	G
CO-60	F	8.1724E-01				1.93E+03	
			1332.50	8.172E-01	?(P	8.953E-01 5.10E+01 1.00E+02	G
			1173.24	2.111E-01	- P	1.249E+00 2.47E+02 9.99E+01	G
ZN-65	F	-1.8441E+00				2.44E+02	
			1115.55	-1.844E+00	?(	7.149E+00 1.15E+02 5.06E+01	G
NB-94	I	4.5496E-01				7.41E+06	
			702.63	4.793E-01	&(	1.089E+00 9.40E+01 9.79E+01	G
			871.10	4.311E-01	?(	1.038E+00 7.21E+01 9.99E+01	G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
ZR-95	I	2.9411E-01					6.40E+01	
			756.73	-2.405E-01	?(P	2.488E+00	3.95E+02	5.45E+01 G
			724.20	9.536E-01	?(P	3.819E+00	1.18E+02	4.42E+01 G
NB-95	I	-1.0426E+00					6.40E+01	
			765.79	-1.043E+00	?(	2.654E+00	7.66E+01	9.98E+01 G
RU-103	I	4.4870E-01					3.93E+01	
			497.05	4.487E-01	&(	1.105E+00	9.87E+01	9.09E+01 G
			610.30	-1.019E+01	+	7.659E+01	2.24E+02	5.75E+00 GA
RH-106	I	-6.2570E+00					3.74E+02	
			621.92	-6.257E+00	?(	4.490E+01	2.14E+02	9.93E+00 G
			1050.36	-1.686E+01	+	1.056E+02	1.79E+02	1.56E+00 G
			511.86	1.302E+01	?	6.796E+00	1.85E+01	2.00E+01 GA
AG-108M	C	-5.7508E-01					1.53E+05	
			433.94	-5.751E-01	(P	1.312E+00	6.99E+01	9.05E+01 G
			722.94	4.878E-01	+	1.541E+00	9.34E+01	9.08E+01 G
			614.28	-6.569E-01	&	4.864E+00	2.21E+02	8.98E+01 G
AG-110M	F	8.2126E-01					2.50E+02	
			884.68	-1.532E-02	&(P	2.560E+00	2.68E+03	7.27E+01 G
			657.76	1.161E+00	&(	1.097E+00	3.18E+01	9.46E+01 G
			937.49	-2.631E+00	+	5.253E+00	8.73E+01	3.44E+01 G
			1384.30	2.000E+00	?(P	5.008E+00	1.10E+02	2.43E+01 G
			763.94	-4.656E+00	&	1.082E+01	7.01E+01	2.23E+01 G
SN-113	F	-6.7591E-01					1.15E+02	
			391.69	-6.759E-01	?(P	2.688E+00	8.69E+01	6.40E+01 G
SB-124	F	-2.6990E-01					6.02E+01	
			602.73	-5.877E-01	?(	4.547E+00	2.31E+02	9.83E+01 G
			1690.98	-1.487E+00	+	3.714E+00	1.19E+02	4.78E+01 G
			722.79	2.619E+00	?(	1.201E+01	1.33E+02	1.08E+01 G
SB-125	I	1.5196E+00					1.01E+03	
			427.88	7.183E-01	?(P	3.196E+00	1.68E+02	2.96E+01 G
			600.50	-3.220E+00	+	2.523E+01	2.34E+02	1.79E+01 G
			635.89	-2.865E+00	+	1.048E+01	1.07E+02	1.13E+01 G
			463.37	3.785E+00	?(	1.263E+01	9.90E+01	1.05E+01 G
I-131	I	8.2619E-01					8.02E+00	
			364.48	2.511E-01	?(P	1.148E+00	1.73E+02	8.17E+01 G
			284.30	3.883E+00	?(P	1.682E+01	1.67E+02	6.14E+00 G
			636.97	4.762E+00	?(	1.459E+01	9.03E+01	7.17E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Gd-153	F	-4.3959E-01					2.42E+02	
			97.50	-4.396E-01	?(	3.596E+00	2.42E+02	3.00E+01 G
			103.20	-1.434E+00	+	5.902E+00	1.23E+02	2.18E+01 G
Ga-68	C	1.7743E+01					4.71E-02	
			1077.40	1.774E+01	?(	4.092E+01	1.00E+02	3.30E+00 G
Tc-99m	I	3.3673E-01					2.51E-01	
			140.51	3.367E-01	?(	1.443E+00	1.28E+02	8.93E+01 G
BA-133	F	-7.0098E-01					3.85E+03	
			356.00	-7.010E-01	&(	5.094E+00	2.17E+02	6.20E+01 G
			302.85	0.000E+00	+	1.512E+01	1.00E+03	1.83E+01 G
			383.84	3.950E+00	?	1.567E+01	1.18E+02	8.94E+00 GA
			80.99	-1.217E+00	+ P	7.554E+00	6.47E+01	3.41E+01 GA
CS-134	I	1.8953E-01					7.54E+02	
			795.87	-1.636E-01	?(	1.960E+00	3.42E+02	8.55E+01 G
			604.71	-5.938E-01	+	4.535E+00	2.28E+02	9.76E+01 G
			569.32	-1.793E+00	+	7.843E+00	1.27E+02	1.54E+01 G
			801.95	3.665E+00	?(	1.893E+01	1.50E+02	8.69E+00 G
			563.24	-6.877E+00	+	1.589E+01	9.36E+01	8.35E+00 G
CS-137	I	-5.5406E-01					1.10E+04	
			661.66	-5.541E-01	(	1.964E+00	1.05E+02	8.52E+01 G
CE-139	F	4.0794E-01					1.38E+02	
			165.85	4.079E-01	&(	1.570E+00	1.15E+02	7.99E+01 G
Ba-140	I	1.4901E+00					1.28E+01	
			537.26	1.490E+00	?(	3.707E+00	9.89E+01	2.44E+01 G
			162.66	-5.977E+00	+	2.315E+01	1.16E+02	6.22E+00 G
			304.85	0.000E+00	-	6.489E+01	1.00E+03	4.29E+00 G
La-140	I	9.3646E-01					1.28E+01	
			1596.21	5.008E-01	?(	1.092E+00	9.67E+01	9.54E+01 G
			487.02	-2.296E-01	- P	2.712E+00	3.81E+02	4.55E+01 G
			328.76	1.798E+00	?(	4.761E+00	1.03E+02	2.03E+01 G
			815.77	1.970E+00	?(	6.734E+00	1.01E+02	2.33E+01 G
CE-141	I	5.9340E-01					3.25E+01	
			145.44	5.934E-01	?(	2.599E+00	1.31E+02	4.82E+01 G
CE-144	I	2.6674E+00					2.85E+02	
			133.54	2.667E+00	&(P	1.236E+01	1.39E+02	1.11E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PM-144	C	4.5163E-01					3.63E+02	
			696.54	3.771E-01	&(	9.860E-01	1.07E+02	9.90E+01 G
			618.06	5.260E-01	&(	4.141E+00	2.35E+02	9.91E+01 G
EU-152	F	1.6768E+00					4.94E+03	
			121.78	9.393E-01	&(	3.638E+00	1.16E+02	2.86E+01 G
			344.29	1.404E+00	(	5.514E+00	1.17E+02	2.65E+01 G
			1112.07	-7.025E+00	+	2.768E+01	1.17E+02	1.36E+01 G
			778.92	8.961E-01	?(	9.535E+00	4.26E+02	1.29E+01 G
			964.11	2.734E+00	?(	1.382E+01	1.47E+02	1.46E+01 G
			244.69	4.709E+00	?(	3.158E+01	2.00E+02	7.58E+00 G
			1408.00	3.814E+00		6.950E+00	8.29E+01	2.10E+01 GA
EU-154	I	8.6821E-01					3.14E+03	
			123.10	-7.442E-02	&(	2.557E+00	1.01E+03	4.08E+01 G
			1274.54	-4.311E-01	+	6.661E+00	4.39E+02	3.52E+01 G
			723.36	2.193E+00	?(	7.647E+00	1.03E+02	2.02E+01 G
			873.23	2.019E+00	?(	1.151E+01	1.63E+02	1.23E+01 G
			1004.77	7.317E-01	?(	7.945E+00	3.03E+02	1.80E+01 G
			996.33	1.647E-01	%	1.602E+01	2.71E+03	1.06E+01 G
EU-155	I	-4.6199E-02					1.81E+03	
			105.31	-4.620E-02	%(P	6.220E+00	2.77E+03	2.12E+01 G
			86.54	-1.256E+00	+	7.718E+00	1.84E+02	3.07E+01 G
HF-181	F	8.3203E-01					4.24E+01	
			482.00	5.367E-01	?(	1.873E+00	1.04E+02	8.05E+01 G
			133.02	-5.685E-01	+	3.377E+00	1.77E+02	4.33E+01 G
			345.83	2.410E+00	?(	1.045E+01	1.29E+02	1.51E+01 G
			136.30	-5.170E+00	+	2.528E+01	1.46E+02	5.85E+00 G
Ta-182	F	5.4756E-02					1.14E+02	
			1121.30	5.476E-02	%(	9.872E+00	5.23E+03	3.49E+01 G
			1221.41	-1.739E+00	+	7.518E+00	1.97E+02	2.70E+01 G
			1189.05	-3.702E+00	+	1.258E+01	1.51E+02	1.62E+01 G
Hg-203	F	-5.8159E-01					4.66E+01	
			279.20	-5.816E-01	?(	1.911E+00	9.84E+01	8.15E+01 G
TL-208	N	4.4228E+00					6.98E+02	
			583.02	4.423E+00	(P	1.008E+00	1.29E+01	8.45E+01 G
			277.28	-7.022E+00	-	2.100E+01	8.96E+01	6.31E+00 G
			860.56	9.749E+00	+ P	4.151E+00	2.40E+01	1.24E+01 G
PM-146	C	-1.0800E-01					2.02E+03	
			453.88	-1.080E-01	&(P	1.855E+00	5.37E+02	6.50E+01 G
			747.16	-4.546E-01	+	3.737E+00	3.32E+02	3.40E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			735.72	-6.173E-01	+	5.255E+00	3.42E+02	2.25E+01 G
Y-88	F	1.2082E-01					1.07E+02	
			1836.06	1.699E-01	?(	1.200E+00	3.04E+02	9.92E+01 G
			898.04	6.887E-02	?(	1.180E+00	6.93E+02	9.37E+01 G
Cd-113m		-5.9191E+03					5.33E+03	
			263.70	-5.919E+03	&(	1.932E+04	9.74E+01	6.00E-03 K
Cf-251	T	-1.2475E+00					3.28E+05	
			176.60	-1.247E+00	&(	6.114E+00	1.82E+02	1.70E+01 G
			227.00	3.991E+00	&	1.533E+01	1.42E+02	6.30E+00 GA
Cf-249	T	7.1637E-01					1.28E+05	
			387.95	5.411E-01	*(	2.250E+00	1.23E+02	6.60E+01 G
			333.44	1.462E+00	(	6.884E+00	1.81E+02	1.55E+01 G
Sn-126		1.2436E+00					3.65E+07	
			87.57	1.244E+00	}	6.036E+00	6.21E+01	3.75E+01 GA
			64.28	1.244E+00	?(	1.619E+01	3.85E+02	9.70E+00 G
			86.94	1.244E+00	}	1.021E+01	3.85E+02	9.04E+00 GA
PB-210	N	3.3392E+01					8.14E+03	
			46.54	3.339E+01	(P	3.629E+01	4.15E+01	4.25E+00 G
PB-212	N	1.0215E+01					6.98E+02	
			238.63	1.021E+01	(P	1.973E+00	8.53E+00	4.33E+01 G
			300.03	2.851E+01	+ P	2.013E+01	3.09E+01	3.28E+00 GA
PB-214	N	3.6772E+01					5.84E+05	
			351.93	3.689E+01	(P	2.061E+00	4.67E+00	3.76E+01 G
			295.09	3.654E+01	(P	4.479E+00	7.67E+00	1.93E+01 G
			242.00	3.936E+01		1.241E+01	1.21E+01	7.43E+00 GA
BI-207	C	1.0824E-01					1.18E+04	
			1063.66	-4.374E-02	%(P	2.105E+00	1.13E+03	7.45E+01 G
			569.70	2.241E-01	?(	1.063E+00	1.37E+02	9.77E+01 G
BI-212	N	5.0566E+00					6.98E+02	
			727.17	5.057E+00	?(P	2.266E+01	1.31E+02	7.55E+00 G
			785.42	3.826E+01		8.341E+01	9.00E+01	1.28E+00 GA
U-235	N	2.6973E+00					2.57E+11	
			143.79	2.697E+00	&(	1.183E+01	1.31E+02	1.10E+01 G
			205.33	-4.095E-01	% P	2.072E+01	2.08E+03	5.01E+00 G
			163.38	-2.112E+00	& P	2.706E+01	4.22E+02	5.08E+00 G
			185.72	-5.417E-01	-	2.527E+00	1.39E+02	5.40E+01 GA

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
BI-214	N	3.5132E+01					5.84E+05	
			609.31	3.518E+01	(P	1.786E+00	5.11E+00	4.61E+01 G
			1120.29	3.497E+01	(P	8.493E+00	1.47E+01	1.51E+01 G
			1764.49	4.098E+01	+ P	6.195E+00	1.19E+01	1.54E+01 G
BI-210M	T	6.9964E-01					1.10E+09	
			265.83	6.996E-01	&(P	2.600E+00	1.11E+02	5.00E+01 G
			304.90	0.000E+00	-	9.943E+00	1.00E+03	2.80E+01 G
AC-228	N	1.2430E+01					2.10E+03	
			911.07	1.243E+01	*(	2.587E+00	1.41E+01	2.90E+01 G
			968.97	1.826E+01	+	7.474E+00	1.69E+01	1.75E+01 G
			338.32	8.816E+00	-	5.601E+00	2.66E+01	1.20E+01 G
			93.35	-1.260E+00	-	4.021E+01	9.54E+02	5.56E+00 XA
TH-227	N	-6.5184E+00					7.95E+03	
			256.24	-6.518E+00	&(	1.720E+01	9.85E+01	7.00E+00 G
			235.97	1.670E+00	&	1.947E+01	3.48E+02	1.23E+01 G
			50.14	-5.893E-01	%	1.968E+01	1.16E+03	8.00E+00 G
TH-229	N	5.9808E+00					2.68E+06	
			193.51	5.981E+00	&(	2.020E+01	1.25E+02	4.40E+00 G
			210.85	1.142E+00	%	3.415E+01	1.09E+03	2.99E+00 G
TH-234	N	9.2000E+00					1.63E+12	
			92.59	9.600E+00	(P	1.628E+01	5.21E+01	5.58E+00 G
			63.29	8.613E+00	(P	2.872E+01	1.00E+02	3.81E+00 G
PA-233	C	-2.1030E-02					7.82E+08	
			312.01	-2.103E-02	%(P	7.861E+00	3.93E+03	3.60E+01 G
			300.18	-4.327E+00	+	4.479E+01	3.09E+02	6.20E+00 G
PA-234	N	4.3321E-01					1.63E+12	
			131.29	-1.728E+00	?(P	8.265E+00	8.87E+01	1.80E+01 G
			946.02	8.767E-01	+	8.583E+00	3.98E+02	1.34E+01 G
			569.47	5.178E+00	?(	1.374E+01	7.91E+01	8.20E+00 G
			883.24	-1.072E+00	+	1.964E+01	5.22E+02	9.60E+00 G
			880.53	7.275E+00	?	2.277E+01	9.22E+01	6.00E+00 GA
PA-234M	N	5.4544E+01					1.63E+12	
			1001.00	1.690E+01	?(P	1.489E+02	2.45E+02	8.37E-01 G
			766.41	1.617E+02	?(P	7.414E+02	1.35E+02	2.94E-01 G
AM-241	T	5.7568E-01					1.58E+05	
			59.54	5.757E-01	*(	3.990E+00	2.43E+02	3.59E+01 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

Ir-192   F  -1.3257E-02                                      7.40E+01
                         316.49-4.814E-01 ?(  1.633E+00 1.01E+02 8.70E+01 G
                         468.06 7.742E-01  (  2.741E+00 1.05E+02 5.18E+01 G
                         308.44 0.000E+00 +   8.840E+00 1.00E+03 3.18E+01 G

Cs-136   F  -6.0930E-01                                      1.30E+01
                         818.50-6.093E-01 ?(  2.108E+00 1.03E+02 1.00E+02 G
                        1048.07 5.550E-01 +   1.328E+00 7.17E+01 8.00E+01 G
                         340.57-9.060E-01 &   3.929E+00 1.29E+02 4.69E+01 G

Np-239   T  -3.8108E-01                                      2.36E+00
                         103.70 0.000E+00 &   5.503E+00 1.00E+03 2.40E+01 X
                         106.13-3.811E-01 *(  5.708E+00 4.44E+02 2.27E+01 G
                          99.50 5.249E-01 &   7.665E+00 4.31E+02 1.50E+01 X

Nd-147      -4.4013E+00                                      1.11E+01
                         531.00-4.401E+00 ?(  1.037E+01 9.55E+01 1.30E+01 G
                          91.10 0.000E+00 +   7.830E+00 1.00E+03 2.83E+01 G

Kr-85    I   3.7197E+01                                      3.92E+03
                         513.98 3.720E+01 ?(  4.448E+02 3.49E+02 4.30E-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
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M - No MDA Calculation
R - Coincidence Corrected
H - Halflife limit exceeded
A - Not in Average
C - Coincidence Peak

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********** 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	
AM-241	59.54	249.	11.	0.006	243.34	5.757E-01	
BA-133	80.99	1445.	-29.	-0.016	64.71	-1.217E+00	P
EU-155	86.54	1316.	-28.	-0.016	184.46	-1.256E+00	
Gd-153	97.50	288.	-10.	-0.006	242.07	-4.396E-01	
Np-239	99.50	332.	6.	0.003	431.41	5.249E-01	
Gd-153	103.20	425.	-24.	-0.013	123.18	-1.434E+00	
Np-239	106.13	435.	-7.	-0.004	443.96	-3.811E-01	
EU-152	121.78	275.	21.	0.011	115.66	9.393E-01	
PA-234	131.29	558.	-24.	-0.013	88.67	-1.728E+00	P
HF-181	133.02	535.	-19.	-0.010	177.36	-5.685E-01	
CE-144	133.54	468.	22.	0.012	138.65	2.667E+00	P
HF-181	136.30	539.	-23.	-0.013	146.29	-5.170E+00	
Tc-99m	140.51	373.	22.	0.012	128.02	3.367E-01	
U-235	143.79	394.	22.	0.012	131.13	2.697E+00	
CE-141	145.44	363.	21.	0.012	130.85	5.934E-01	
Ba-140	162.66	426.	-26.	-0.014	116.02	-5.977E+00	
U-235	163.38	384.	-7.	-0.004	422.45	-2.112E+00	P
CE-139	165.85	322.	22.	0.012	115.12	4.079E-01	
Cf-251	176.60	200.	-14.	-0.008	181.73	-1.247E+00	
U-235	185.72	328.	-19.	-0.010	139.08	-5.417E-01	
TH-229	193.51	127.	16.	0.009	125.09	5.981E+00	
Cf-251	227.00	120.	14.	0.008	141.78	3.991E+00	
TH-227	235.97	744.	11.	0.006	347.59	1.670E+00	
EU-152	244.69	706.	19.	0.010	200.46	4.709E+00	
TH-227	256.24	160.	-23.	-0.013	98.51	-6.518E+00	
Cd-113m	263.70	142.	-18.	-0.010	97.37	-5.919E+03	
BI-210M	265.83	178.	17.	0.010	110.73	6.996E-01	P
Hg-203	279.20	241.	-23.	-0.013	98.37	-5.816E-01	
I-131	284.30	100.	11.	0.006	166.87	3.883E+00	P
TL-210	296.00	751.	-17.	-0.010	227.24	-4.685E-01	
PA-231	300.07	734.	-17.	-0.010	223.85	-1.524E+01	
PA-233	300.18	716.	-12.	-0.007	308.84	-4.327E+00	
Ir-192	316.49	166.	-19.	-0.010	101.20	-4.814E-01	
CR-51	320.08	169.	-9.	-0.005	150.83	-2.029E+00	P
La-140	328.76	70.	16.	0.009	102.54	1.798E+00	
Cf-249	333.44	84.	10.	0.005	180.62	1.462E+00	
Cs-136	340.57	257.	-18.	-0.010	129.19	-9.060E-01	
EU-152	344.29	156.	16.	0.009	116.69	1.404E+00	
HF-181	345.83	181.	15.	0.008	128.80	2.410E+00	
BA-133	356.00	730.	-18.	-0.010	217.21	-7.010E-01	
I-131	364.48	56.	8.	0.005	173.37	2.511E-01	P
BA-133	383.84	121.	14.	0.008	117.53	3.950E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Cf-249	387.95	135.	14.	0.008	123.19	5.411E-01	
SN-113	391.69	181.	-16.	-0.009	86.93	-6.759E-01	P
SB-125	427.88	44.	8.	0.004	168.04	7.183E-01	P
AG-108M	433.94	71.	-18.	-0.010	69.94	-5.751E-01	P
PM-146	453.88	68.	-2.	-0.001	537.21	-1.080E-01	P
SB-125	463.37	81.	13.	0.007	98.97	3.785E+00	
Ir-192	468.06	92.	13.	0.007	104.92	7.742E-01	
BE-7	477.59	112.	-16.	-0.009	95.20	-4.695E+00	
HF-181	482.00	100.	14.	0.008	103.56	5.367E-01	
La-140	487.02	64.	-3.	-0.002	380.98	-2.296E-01	P
RU-103	497.05	40.	13.	0.007	98.74	4.487E-01	
RH-106	511.86	73.	82.	0.045	18.50	1.302E+01	
Kr-85	513.98	150.	5.	0.003	349.28	3.720E+01	
Nd-147	531.00	68.	-17.	-0.010	95.48	-4.401E+00	
Ba-140	537.26	28.	11.	0.006	98.89	1.490E+00	
CS-134	563.24	60.	-17.	-0.009	93.56	-6.877E+00	
CS-134	569.32	48.	-8.	-0.004	127.48	-1.793E+00	
PA-234	569.47	41.	12.	0.007	79.13	5.178E+00	
BI-207	569.70	35.	6.	0.004	136.95	2.241E-01	
SB-125	600.50	697.	-16.	-0.009	234.06	-3.220E+00	
SB-124	602.73	681.	-16.	-0.009	231.03	-5.877E-01	
CS-134	604.71	665.	-16.	-0.009	228.01	-5.938E-01	
RU-103	610.30	649.	-16.	-0.009	224.43	-1.019E+01	
AG-108M	614.28	632.	-16.	-0.009	221.06	-6.569E-01	
PM-144	618.06	551.	14.	0.008	234.62	5.260E-01	
RH-106	621.92	647.	-17.	-0.009	214.30	-6.257E+00	
SB-125	635.89	39.	-9.	-0.005	107.00	-2.865E+00	
I-131	636.97	29.	9.	0.005	90.28	4.762E+00	
AG-110M	657.76	27.	29.	0.016	31.84	1.161E+00	
CS-137	661.66	76.	-12.	-0.007	104.85	-5.541E-01	
PM-144	696.54	22.	9.	0.005	106.93	3.771E-01	
NB-94	702.63	26.	12.	0.006	94.00	4.793E-01	
SB-124	722.79	38.	7.	0.004	132.77	2.619E+00	
AG-108M	722.94	45.	11.	0.006	93.36	4.878E-01	
EU-154	723.36	56.	11.	0.006	102.81	2.193E+00	
ZR-95	724.20	67.	10.	0.006	117.79	9.536E-01	P
BI-212	727.17	69.	9.	0.005	131.33	5.057E+00	P
PM-146	735.72	30.	-3.	-0.002	341.69	-6.173E-01	
PM-146	747.16	35.	-4.	-0.002	331.91	-4.546E-01	
ZR-95	756.73	39.	-3.	-0.002	394.91	-2.405E-01	P
AG-110M	763.94	132.	-24.	-0.013	70.13	-4.656E+00	
NB-95	765.79	160.	-24.	-0.013	76.61	-1.043E+00	
PA-234M	766.41	106.	11.	0.006	135.36	1.617E+02	P
EU-152	778.92	30.	3.	0.001	426.01	8.961E-01	
BI-212	785.42	22.	11.	0.006	90.01	3.826E+01	
CS-134	795.87	57.	-3.	-0.002	342.31	-1.636E-01	
CS-134	801.95	54.	7.	0.004	149.96	3.665E+00	
CO-58	810.78	37.	10.	0.006	90.66	4.577E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
La-140	815.77	47.	10.	0.006	100.65	1.970E+00		
Cs-136	818.50	89.	-14.	-0.008	102.60	-6.093E-01		
MN-54	834.85	9.	6.	0.003	121.84	2.596E-01		
NB-94	871.10	17.	9.	0.005	72.11	4.311E-01		
EU-154	873.23	34.	5.	0.003	163.16	2.019E+00		
PA-234	880.53	31.	9.	0.005	92.16	7.275E+00		
PA-234	883.24	62.	-2.	-0.001	522.30	-1.072E+00		
Sc-46	889.28	60.	10.	0.005	119.32	4.565E-01		
Y-88	898.04	19.	1.	0.001	692.82	6.887E-02		
AG-110M	937.49	51.	-18.	-0.010	87.31	-2.631E+00		
PA-234	946.02	19.	2.	0.001	398.21	8.767E-01		
EU-152	964.11	62.	8.	0.004	147.26	2.734E+00		
PA-234M	1001.00	20.	3.	0.001	245.34	1.690E+01		P
EU-154	1004.77	28.	2.	0.001	303.32	7.317E-01		
Cs-136	1048.07	13.	8.	0.005	71.65	5.550E-01		
RH-106	1050.36	35.	-5.	-0.003	178.92	-1.686E+01		
Ga-68	1077.40	15.	9.	0.005	100.31	1.774E+01		
FE-59	1099.25	25.	-2.	-0.001	289.49	-2.339E-01		P
EU-152	1112.07	186.	-17.	-0.009	117.25	-7.025E+00		
ZN-65	1115.55	169.	-16.	-0.009	115.30	-1.844E+00		
CO-60	1173.24	15.	4.	0.002	247.00	2.111E-01		P
Ta-182	1189.05	45.	-10.	-0.006	150.83	-3.702E+00		
Ta-182	1221.41	43.	-8.	-0.004	197.00	-1.739E+00		
NA-22	1274.53	37.	-17.	-0.009	56.51	-1.072E+00		
EU-154	1274.54	54.	-2.	-0.001	439.36	-4.311E-01		
FE-59	1291.60	16.	6.	0.003	167.18	8.356E-01		P
TL-210	1313.00	16.	9.	0.005	106.38	2.775E+00		
CO-60	1332.50	6.	12.	0.007	51.02	8.172E-01		P
AG-110M	1384.30	11.	7.	0.004	109.97	2.000E+00		P
EU-152	1408.00	16.	12.	0.007	82.93	3.814E+00		
La-140	1596.21	6.	6.	0.004	96.69	5.008E-01		
SB-124	1690.98	18.	-9.	-0.005	118.63	-1.487E+00		
Y-88	1836.06	6.	2.	0.001	304.14	1.699E-01		

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 Counting 1 Sigma	MDA Bq/Sample
BE-7	#A	-4.6946E+00	-4.6946E+00	9.520E+01%	1.50E+01
NA-22	#A	-1.0724E+00	-1.0724E+00	5.651E+01%	1.97E+00
K-40		1.7723E+02	1.7723E+02	6.274E+00%	1.01E+01
Sc-46	#A	4.5649E-01	4.5649E-01	1.193E+02%	1.86E+00
CR-51	#A	-2.0291E+00	-2.0291E+00	1.508E+02%	1.45E+01
MN-54	#A	2.5963E-01	2.5963E-01	1.218E+02%	7.76E-01
FE-59	#A	2.2952E-01	2.2952E-01	1.671E+02%	2.62E+00

Co-56	#C	1.4283E+00	1.4283E+00	3.949E+01%	1.17E+00
CO-57	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.26E+00
CO-58	#A	4.5772E-01	4.5773E-01	9.066E+01%	1.40E+00
CO-60	#A	8.1724E-01	8.1724E-01	5.102E+01%	8.95E-01
ZN-65	#A	-1.8441E+00	-1.8441E+00	1.153E+02%	7.15E+00
NB-94	#A	4.5496E-01	4.5496E-01	5.924E+01%	1.09E+00
ZR-95	#A	2.9410E-01	2.9411E-01	1.178E+02%	2.49E+00
NB-95	#A	-1.0426E+00	-1.0426E+00	7.661E+01%	2.65E+00
RU-103	#A	4.4870E-01	4.4870E-01	9.874E+01%	1.11E+00
RH-106	#A	-6.2570E+00	-6.2570E+00	2.143E+02%	4.49E+01
AG-108M	#A	-5.7508E-01	-5.7508E-01	6.994E+01%	1.31E+00
AG-110M	#A	8.2126E-01	8.2126E-01	3.184E+01%	2.56E+00
SN-113	#A	-6.7590E-01	-6.7591E-01	8.693E+01%	2.69E+00
SB-124	#A	-2.6990E-01	-2.6990E-01	1.328E+02%	4.55E+00
SB-125	#A	1.5196E+00	1.5196E+00	9.751E+01%	3.20E+00
I-131	#A	8.2615E-01	8.2619E-01	8.567E+01%	1.15E+00
Gd-153	#A	-4.3959E-01	-4.3959E-01	2.421E+02%	3.60E+00
Ga-68	#A	1.7617E+01	1.7743E+01	1.003E+02%	4.09E+01
Tc-99m	#A	3.3628E-01	3.3673E-01	1.280E+02%	1.44E+00
BA-133	#A	-7.0098E-01	-7.0098E-01	2.172E+02%	5.09E+00
CS-134	#A	1.8953E-01	1.8953E-01	1.500E+02%	1.96E+00
CS-137	#A	-5.5406E-01	-5.5406E-01	1.049E+02%	1.96E+00
CE-139	#A	4.0794E-01	4.0794E-01	1.151E+02%	1.57E+00
Ba-140	#A	1.4901E+00	1.4901E+00	9.889E+01%	3.71E+00
La-140	#A	9.3644E-01	9.3646E-01	5.773E+01%	1.09E+00
CE-141	#A	5.9340E-01	5.9340E-01	1.308E+02%	2.60E+00
CE-144	#A	2.6674E+00	2.6674E+00	1.387E+02%	1.24E+01
PM-144	#A	4.5162E-01	4.5163E-01	1.069E+02%	9.86E-01
EU-152	#A	1.6768E+00	1.6768E+00	1.040E+02%	3.64E+00
EU-154	#A	8.6821E-01	8.6821E-01	1.028E+02%	2.56E+00
EU-155	#A	-4.6199E-02	-4.6199E-02	2.770E+03%	6.22E+00
HF-181	#A	8.3203E-01	8.3203E-01	8.263E+01%	1.87E+00
Ta-182	#A	5.4756E-02	5.4756E-02	5.228E+03%	9.87E+00
Hg-203	#A	-5.8158E-01	-5.8159E-01	9.837E+01%	1.91E+00
TL-208		4.4228E+00	4.4228E+00	1.291E+01%	1.01E+00
PM-146	#A	-1.0800E-01	-1.0800E-01	5.372E+02%	1.86E+00
Y-88	#A	1.2082E-01	1.2082E-01	3.041E+02%	1.20E+00
Cd-113m	#A	-5.9191E+03	-5.9191E+03	9.737E+01%	1.93E+04
Cd-109	#A	0.0000E+00	0.0000E+00	1.000E+03%	5.93E+01
Cf-251	#A	-1.2475E+00	-1.2475E+00	1.817E+02%	6.11E+00
Cf-249	#A	7.1637E-01	7.1637E-01	1.093E+02%	2.25E+00
Sn-126	A	1.2436E+00	1.2436E+00	3.851E+02%	1.62E+01
PB-210	A	3.3392E+01	3.3392E+01	4.145E+01%	3.63E+01
PB-212		1.0215E+01	1.0215E+01	8.529E+00%	1.97E+00
PB-214		3.6772E+01	3.6772E+01	4.491E+00%	2.06E+00
BI-207	#A	1.0824E-01	1.0824E-01	1.370E+02%	2.10E+00
BI-212	#A	5.0566E+00	5.0566E+00	1.313E+02%	2.27E+01
U-235	#A	2.6973E+00	2.6973E+00	1.311E+02%	1.18E+01
BI-214		3.5132E+01	3.5132E+01	5.109E+00%	1.79E+00

BI-210M#A	6.9964E-01	6.9964E-01	1.107E+02%	2.60E+00
AC-228	1.2430E+01	1.2430E+01	1.410E+01%	2.59E+00
TH-227 #A	-6.5184E+00	-6.5184E+00	9.851E+01%	1.72E+01
TH-229 #A	5.9808E+00	5.9808E+00	1.251E+02%	2.02E+01
TH-234 A	9.2000E+00	9.2000E+00	5.213E+01%	1.63E+01
PA-231 #A	0.0000E+00	0.0000E+00	1.000E+03%	9.62E+01
PA-233 #A	-2.1030E-02	-2.1030E-02	3.933E+03%	7.86E+00
PA-234 #A	4.3321E-01	4.3321E-01	5.942E+01%	8.27E+00
PA-234M#A	5.4544E+01	5.4544E+01	1.354E+02%	1.49E+02
AM-241 #A	5.7568E-01	5.7568E-01	2.433E+02%	3.99E+00
Np-237 #A	0.0000E+00	0.0000E+00	1.000E+03%	1.88E+01
Ir-192 #A	-1.3257E-02	-1.3257E-02	7.289E+01%	1.63E+00
Cs-136 #A	-6.0928E-01	-6.0930E-01	1.026E+02%	2.11E+00
Np-239 #A	-3.8102E-01	-3.8108E-01	4.440E+02%	5.71E+00
Nd-147 #A	-4.4012E+00	-4.4013E+00	9.548E+01%	1.04E+01
TL-210 #A	0.0000E+00	0.0000E+00	1.000E+03%	1.74E+00
Kr-85 #A	3.7197E+01	3.7197E+01	3.493E+02%	4.45E+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 (25.1 to 1999.5 keV) 3.188E+02 Bq/Sample
Total Decayed Activity (25.1 to 1999.5 keV) 3.1878922E+02 Bq/Sample

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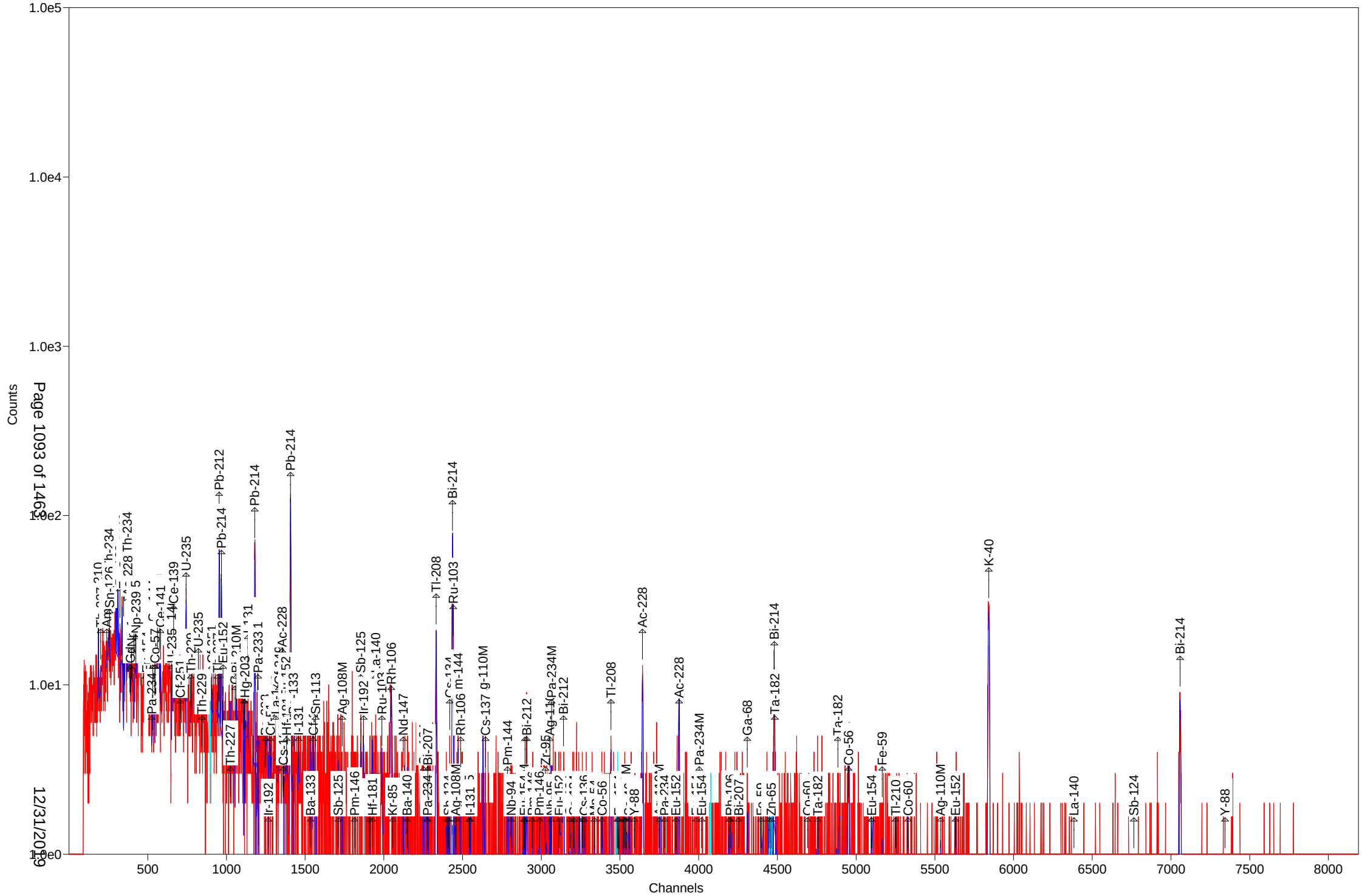
452567_Gamma_160-36526-A-16-B. 17_Gamma_20192436.spc.



Test America St. Louis Spectrum ID: 5_Gamma_20193366

Sample Description: 452567_Gamma_160-36526-A-17-B
Detector: Detector # 5
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-17-B

Decay to Time: 12/25/2019 10:14 Live Time: 1800 sec
Acquisition Time: 12/25/2019 10:14:30 Real Time: 1806 sec
Analysis Time: 12/25/2019 10:44 Dead Time: 0.33 %
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_Long_Rev15.lib
Bkgd Correction File: 5_2019-12-07_1448.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	4.560E+00	100.2	4.571E+00	4.577E+00	1.547E+01
NA-22	9.710E-02	574.5	5.578E-01	5.578E-01	2.073E+00
K-40	1.508E+02	9.0	1.357E+01	1.561E+01	1.549E+01
Sc-46	-1.023E+00	98.7	1.010E+00	1.011E+00	3.400E+00
CR-51	-2.011E+00	457.1	9.190E+00	9.191E+00	1.726E+01
MN-54	1.602E-01	441.5	7.072E-01	7.072E-01	1.726E+00
FE-59	1.279E+00	67.8	8.675E-01	8.699E-01	2.646E+00
Co-56	9.284E-01	87.5	8.128E-01	8.142E-01	1.750E+00
CO-57	5.193E-01	112.7	5.855E-01	5.862E-01	1.181E+00
CO-58	5.779E-01	94.8	5.476E-01	5.484E-01	1.864E+00
CO-60	-1.724E-01	639.2	1.102E+00	1.102E+00	2.193E+00
ZN-65	0.000E+00	1.#INF	8.042E-01	8.042E-01	7.699E+00
NB-94	5.719E-01	95.3	5.450E-01	5.458E-01	1.335E+00
ZR-95	3.834E-01	290.3	1.113E+00	1.113E+00	2.806E+00
NB-95	6.804E-01	112.7	7.666E-01	7.674E-01	2.603E+00
RU-103	-2.191E-01	187.8	4.115E-01	4.116E-01	1.639E+00
RH-106	6.557E+00	225.3	1.477E+01	1.477E+01	4.973E+01
AG-108M	2.939E-01	117.5	3.454E-01	3.458E-01	1.336E+00
AG-110M	-1.294E+00	90.4	1.170E+00	1.172E+00	3.938E+00
SN-113	3.182E-01	287.0	9.134E-01	9.135E-01	3.130E+00
SB-124	4.603E-01	44.1	2.031E-01	2.045E-01	5.340E+00
SB-125	-2.123E-01	78.1	1.659E-01	1.662E-01	5.407E+00
I-131	5.661E-01	104.0	5.887E-01	5.894E-01	1.600E+00
Gd-153	5.177E-01	214.0	1.108E+00	1.108E+00	3.751E+00
Ga-68	8.944E+00	370.9	3.317E+01	3.318E+01	7.754E+01
Tc-99m	-1.378E-01	365.4	5.035E-01	5.035E-01	1.701E+00
BA-133	-1.041E+00	173.2	1.803E+00	1.803E+00	6.034E+00
CS-134	1.071E+00	69.2	7.410E-01	7.431E-01	1.707E+00
CS-137	-4.414E-03	13355.5	5.895E-01	5.895E-01	2.116E+00
CE-139	2.947E-01	169.9	5.006E-01	5.013E-01	1.688E+00
Ba-140	-6.863E-01	81.1	5.564E-01	5.575E-01	6.749E+00
La-140	1.132E+00	36.0	4.078E-01	4.121E-01	1.719E+00
CE-141	7.261E-01	121.9	8.854E-01	8.861E-01	2.964E+00

CE-144	-3.490E+00	134.0	4.677E+00	4.680E+00	1.562E+01
PM-144	1.542E-01	154.5	2.383E-01	2.385E-01	1.878E+00
EU-152	1.813E+00	68.1	1.235E+00	1.239E+00	3.339E+00
EU-154	7.219E-01	83.6	6.032E-01	6.044E-01	2.862E+00
EU-155	1.591E+00	149.4	2.378E+00	2.379E+00	7.951E+00
HF-181	2.220E-01	269.7	5.987E-01	5.988E-01	2.085E+00
Ta-182	2.800E+00	80.9	2.266E+00	2.270E+00	8.809E+00
Hg-203	-5.927E-01	95.1	5.635E-01	5.645E-01	1.888E+00
TL-208	2.444E+00	36.1	8.826E-01	8.917E-01	2.004E+00
PM-146	6.718E-01	96.6	6.493E-01	6.502E-01	1.734E+00
Y-88	-3.026E-01	380.7	1.152E+00	1.152E+00	1.914E+00
Cd-113m	1.735E+03	310.2	5.382E+03	5.383E+03	1.868E+04
Cd-109	9.526E+00	156.8	1.494E+01	1.495E+01	4.993E+01
Cf-251	2.130E+00	104.4	2.224E+00	2.232E+00	5.983E+00
Cf-249	7.338E-01	118.7	8.712E-01	8.720E-01	2.941E+00
Sn-126	6.324E-01	793.2	5.016E+00	5.016E+00	1.705E+01
PB-210	2.170E+01	54.5	1.182E+01	1.189E+01	3.418E+01
PB-212	1.100E+01	9.0	9.863E-01	1.216E+00	2.133E+00
PB-214	3.256E+01	5.2	1.700E+00	2.399E+00	3.074E+00
BI-207	6.920E-02	1390.5	9.623E-01	9.623E-01	2.348E+00
BI-212	-6.947E-01	1058.3	7.352E+00	7.352E+00	3.086E+01
U-235	2.988E+00	124.4	3.718E+00	3.721E+00	1.375E+01
BI-214	3.241E+01	6.7	2.169E+00	2.746E+00	2.737E+00
BI-210M	-9.335E-01	96.3	8.990E-01	9.007E-01	3.013E+00
AC-228	1.466E+01	15.5	2.275E+00	2.395E+00	3.471E+00
TH-227	-2.783E+00	262.7	7.310E+00	7.311E+00	1.902E+01
TH-229	-9.307E+00	107.1	9.968E+00	9.996E+00	2.678E+01
TH-234	1.795E+00	368.9	6.621E+00	6.622E+00	3.289E+01
PA-231	7.329E+00	232.8	1.706E+01	1.707E+01	1.060E+02
PA-233	-1.928E-01	153.1	2.952E-01	2.953E-01	9.195E+00
PA-234	6.642E-01	78.3	5.200E-01	5.211E-01	9.118E+00
PA-234M	3.440E+01	114.7	3.946E+01	3.950E+01	3.782E+02
AM-241	-3.110E-01	343.1	1.067E+00	1.067E+00	4.192E+00
Np-237	0.000E+00	1.#INF	4.634E+00	4.634E+00	1.548E+01
Ir-192	4.687E-01	115.7	5.422E-01	5.429E-01	1.801E+00
Cs-136	-2.112E-01	85.7	1.809E-01	1.813E-01	2.436E+00
Np-239	1.460E+00	148.9	2.175E+00	2.177E+00	7.275E+00
Nd-147	8.784E-01	156.9	1.378E+00	1.379E+00	1.042E+01
TL-210	4.768E-01	108.4	5.170E-01	5.177E-01	1.799E+00
Kr-85	-1.353E+02	130.5	1.766E+02	1.767E+02	5.969E+02
Total	2.102E+03				

Analyst: Caleb Quinn

Sample description
452567_Gamma_160-36526-A-17-B

Spectrum Filename: C:\User\SPC\Det5\5_Gamma_20193366.An1

Acquisition information
Start time: 12/25/2019 10:14:30 AM
Live time: 1800
Real time: 1806
Dead time: 0.33 %
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_Long_Rev15.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/(1.0000E+00* 1.0000E+00) =
1.0000E+00
Detection limit method: Reg. Guide 4.16 Method

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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	12/25/2019 10:14:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	5_2019-12-07_1448.PBC 12/7/2019 2:48:46 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 24 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.0833

***** 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
46.79	30.	54.48	1.01	1.788E-02	46.54	4.250	PBC<MDA	PB210
63.29	6.	368.87	0.80	2.712E-02	63.29	3.810	PBC<MDA	TH234
64.62	3.	793.18	0.80	2.757E-02	64.28	9.700	PBC<MDA	Sn126
74.78	210.	10.81	0.81	3.149E-02				
77.11	329.	7.10	0.81	3.218E-02				
87.17	132.	15.41	1.16	3.447E-02	86.49	13.100	1.630E+01	Np237
					86.54	30.700	6.952E+00	EU155
					86.94	9.040	2.356E+01	Sn126
					87.57	37.500	5.662E+00	Sn126
					88.04	3.790	5.589E+01	Cd109
91.10	23.	156.86	0.83	3.508E-02	91.10	28.300	PBC<MDA	Nd147
92.70	23.	151.95	0.83	3.536E-02	92.59	5.584	PBC<MDA	TH234
					93.35	5.561	6.385E+00	AC228
97.50	10.	214.01	0.84	3.577E-02	97.50	30.000	PBC<MDA	Gd153
104.57	22.	149.40	0.84	3.618E-02	105.31	21.200	PBC<MDA	EU155
106.13	22.	148.94	0.84	3.620E-02	106.13	22.700	PBC<MDA	Np239
121.78	20.	91.28	0.86	3.584E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	3.656E-01	CO57
122.06	17.	112.75	0.86	3.582E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	3.118E-01	CO57
136.47	14.	217.96	0.88	3.457E-02	136.30	5.850	PBC<MDA	HF181
					136.47	10.680	2.182E+00	CO57

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
145.44	21.	121.93	0.88	3.351E-02	145.44	48.200	PBC<MDA	CE141
162.66	20.	112.60	0.90	3.113E-02	162.66	6.220	PBC<MDA	Ba140
163.38	19.	124.41	0.90	3.102E-02	163.38	5.080	PBC<MDA	U235
165.85	13.	169.86	0.91	3.133E-02	165.85	79.900	PBC<MDA	CE139
176.60	19.	104.43	0.92	2.975E-02	176.60	17.000	PBC<MDA	Cf251
186.09	128.	17.13	1.02	2.849E-02	185.72	54.000	4.622E+00	U235
205.33	14.	137.27	0.94	2.626E-02	205.33	5.010	PBC<MDA	U235
238.63	199.	8.96	0.98	2.319E-02	238.63	43.300	1.101E+01	PB212
241.92	99.	15.24	0.98	2.293E-02	242.00	7.430	3.217E+01	PB214
263.70	4.	310.24	1.00	2.135E-02	263.70	0.006	PBC<MDA	Cd113m
277.28	8.	193.81	1.02	2.048E-02	277.28	6.310	PBC<MDA	TL208
284.30	15.	103.98	1.02	2.006E-02	284.30	6.140	PBC<MDA	I131
295.11	224.	8.21	1.05	1.945E-02	295.09	19.300	3.308E+01	PB214
					296.00	79.000	8.103E+00	TL210
299.38	13.	233.83	1.04	1.918E-02	300.03	3.280	PBC<MDA	PB212
300.07	13.	232.79	1.04	1.918E-02	300.07	2.460	PBC<MDA	PA231
					300.18	6.200	6.082E+00	PA233
300.18	13.	236.07	1.04	1.917E-02	300.07	2.460	PBC<MDA	PA231
					300.18	6.200	6.082E+00	PA233
316.49	8.	185.64	1.05	1.835E-02	316.49	87.040	PBC<MDA	Ir192
328.76	14.	111.80	1.07	1.778E-02	328.76	20.300	PBC<MDA	La140
338.42	45.	28.36	0.77	1.736E-02	338.32	12.010	1.204E+01	AC228
340.57	12.	136.31	1.08	1.727E-02	340.57	46.900	PBC<MDA	Cs136
344.29	12.	141.94	1.08	1.711E-02	344.29	26.500	PBC<MDA	EU152
351.93	367.	6.46	0.96	1.680E-02	351.93	37.600	3.229E+01	PB214
364.48	2.	617.60	1.10	1.632E-02	364.48	81.700	PBC<MDA	I131
387.95	14.	118.72	1.12	1.549E-02	387.95	66.000	PBC<MDA	Cf249
391.69	6.	287.02	1.12	1.537E-02	391.69	64.000	PBC<MDA	SN113
454.39	10.	105.02	1.18	1.360E-02	453.88	65.000	PBC<MDA	PM146
463.37	11.	102.00	1.19	1.336E-02	463.37	10.470	PBC<MDA	SB125
468.06	10.	138.06	1.20	1.325E-02	468.06	51.750	PBC<MDA	Ir192
477.60	11.	100.23	1.20	1.303E-02	477.60	10.520	PBC<MDA	BE7
482.00	4.	269.73	1.21	1.293E-02	482.00	80.500	PBC<MDA	HF181
487.02	23.	36.03	1.21	1.282E-02	487.02	45.500	2.223E+00	La140
511.86	72.	17.79	2.48	1.230E-02	511.86	20.000	1.634E+01	RH106
563.24	9.	94.11	1.28	1.135E-02	563.24	8.350	PBC<MDA	CS134
569.32	2.	353.55	1.29	1.125E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	1.204E+00	PA234
					569.70	97.740	1.011E-01	BI207
583.08	40.	36.11	1.30	1.103E-02	583.02	84.500	2.384E+00	TL208
609.30	286.	6.69	1.23	1.063E-02	609.31	46.090	3.241E+01	BI214
					610.30	5.750	2.601E+02	RU103
618.06	12.	220.67	1.33	1.051E-02	618.06	99.100	PBC<MDA	PM144
621.92	12.	225.26	1.33	1.045E-02	621.92	9.930	PBC<MDA	RH106
657.76	8.	84.62	1.36	9.974E-03	657.76	94.640	PBC<MDA	AG110M
702.63	10.	95.30	1.40	9.438E-03	702.63	97.900	PBC<MDA	NB94
722.79	20.	44.13	1.42	9.217E-03	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	1.335E+00	AG108M

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
					723.36	20.220	6.000E+00	EU154
722.94	9.	117.55	1.42	9.215E-03	722.79	10.810	4.955E+00	SB124
					722.94	90.840	5.897E-01	AG108M
					723.36	20.220	2.651E+00	EU154
736.15	5.	96.65	1.43	9.081E-03	735.72	22.500	PBC<MDA	PM146
746.86	1.	604.18	1.44	8.965E-03	747.16	34.000	PBC<MDA	PM146
756.73	3.	290.26	1.45	8.869E-03	756.73	54.460	PBC<MDA	ZR95
765.79	11.	112.66	1.45	8.781E-03	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	2.311E+02	PA234M
766.41	9.	114.73	1.45	8.776E-03	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	2.010E+02	PA234M
778.92	8.	115.31	1.46	8.657E-03	778.92	12.940	PBC<MDA	EU152
785.42	10.	98.69	1.47	8.597E-03	785.42	1.280	PBC<MDA	BI212
795.87	10.	69.17	1.48	8.503E-03	795.87	85.530	PBC<MDA	CS134
799.60	7.	108.42	1.48	8.469E-03	799.60	98.960	PBC<MDA	TL210
810.78	9.	94.76	1.49	8.371E-03	810.78	99.460	PBC<MDA	CO58
815.77	4.	221.67	1.49	8.328E-03	815.77	23.280	PBC<MDA	La140
834.85	2.	441.50	1.51	8.168E-03	834.85	99.980	PBC<MDA	MN54
846.77	1.	819.73	1.52	8.072E-03	846.77	99.935	PBC<MDA	Co56
861.11	19.	33.23	1.53	7.963E-03	860.56	12.420	1.077E+01	TL208
911.16	62.	15.52	1.65	7.591E-03	911.07	29.000	1.574E+01	AC228
946.02	8.	90.05	1.60	7.355E-03	946.02	13.400	PBC<MDA	PA234
968.90	11.	76.69	1.61	7.209E-03	968.97	17.460	PBC<MDA	AC228
1004.77	9.	121.56	1.64	6.992E-03	1004.77	18.010	PBC<MDA	EU154
1048.07	5.	100.00	1.67	6.749E-03	1048.07	80.000	PBC<MDA	Cs136
1077.40	3.	370.93	1.69	6.594E-03	1077.40	3.300	PBC<MDA	Ga68
1099.25	8.	89.73	1.71	6.484E-03	1099.25	56.500	PBC<MDA	FE59
1120.29	9.	117.62	1.72	6.381E-03	1120.29	15.100	PBC<MDA	BI214
					1120.55	99.987	PBC<MDA	Sc46
1120.55	12.	86.55	1.72	6.380E-03	1120.29	15.100	PBC<MDA	BI214
					1120.55	99.987	1.043E+00	Sc46
					1121.30	34.900	2.990E+00	Ta182
1121.16	10.	100.22	1.72	6.376E-03	1120.55	99.987	PBC<MDA	Sc46
					1121.30	34.900	2.590E+00	Ta182
1189.05	5.	201.66	1.77	6.069E-03	1189.05	16.200	PBC<MDA	Ta182
1221.41	9.	90.75	1.79	5.934E-03	1221.41	27.000	PBC<MDA	Ta182
1238.28	15.	87.54	1.80	5.866E-03	1238.28	66.070	PBC<MDA	Co56
1274.53	1.	574.46	1.83	5.725E-03	1274.53	99.940	PBC<MDA	NA22
					1274.54	35.190	2.758E-01	EU154
1291.60	6.	101.72	1.84	5.661E-03	1291.60	43.200	PBC<MDA	FE59
1313.00	6.	90.55	1.85	5.583E-03	1313.00	21.000	PBC<MDA	TL210
1460.54	148.	9.00	0.76	5.104E-03	1460.83	10.670	1.508E+02	K40
1596.21	3.	187.20	2.02	4.736E-03	1596.21	95.400	PBC<MDA	La140
1764.36	28.	30.67	2.11	4.351E-03	1764.49	15.400	2.330E+01	BI214
1771.35	7.	129.77	2.12	4.337E-03	1771.35	15.480	PBC<MDA	Co56

********** 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	
298.77	74.74	151.	210.	6.658E+03	10.81	0.813	-	D
308.08	77.06	108.	329.	1.023E+04	7.10	0.815	-	D
744.31	186.09	87.	128.	4.500E+03	17.13	1.016	-	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: Client_Long_Rev15.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	186.71	46.79	89.	30.	0.016	54.48	1.014s
TH-227	200.11	50.14	159.	-19.	-0.011	83.85	0.787s
AM-241	237.72	59.54	200.	-5.	-0.003	343.07	0.797s
TH-234	252.74	63.29	243.	6.	0.003	368.87	0.801s
Sn-126	256.71	64.28	290.	3.	0.002	793.18	0.802s
BA-133	323.61	80.99	367.	-30.	-0.017	77.28	0.819s
Np-237	345.63	86.49	693.	0.	0.000	164.79	0.825A
EU-155	345.84	86.54	658.	30.	0.017	64.15	0.825D
Sn-126	347.43	86.94	642.	4.	0.002	581.45	0.825D
Sn-126	349.95	87.57	588.	15.	0.008	138.54	0.826D
Cd-109	351.83	88.04	611.	22.	0.012	156.82	0.826A
Nd-147	364.08	91.10	634.	23.	0.013	156.86	0.829s
AC-228	373.09	93.35	578.	23.	0.013	151.95	0.832s
Gd-153	389.70	97.50	224.	10.	0.006	214.01	0.836s
Np-239	397.71	99.50	295.	-22.	-0.012	114.08	0.838
Gd-153	412.52	103.20	308.	-8.	-0.004	332.67	0.842s
Np-239	414.52	103.70	312.	-23.	-0.013	108.48	0.842s
EU-155	420.98	105.31	528.	22.	0.012	149.40	0.844
Np-239	424.25	106.13	507.	22.	0.012	148.94	0.845s
EU-152	486.90	121.78	160.	20.	0.011	91.28	0.861s
CO-57	488.03	122.06	180.	17.	0.010	112.75	0.861s
EU-154	492.18	123.10	242.	-20.	-0.011	114.66	0.862s
PA-234	524.99	131.29	469.	-24.	-0.013	128.07	0.871s
HF-181	531.91	133.02	494.	-24.	-0.013	130.99	0.872s
CE-144	533.97	133.54	518.	-24.	-0.013	134.02	0.873s
CO-57	545.72	136.47	492.	14.	0.008	217.96	0.876s
Tc-99m	561.88	140.51	355.	-7.	-0.004	365.39	0.880s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
U-235	574.99	143.79	363.	0.	0.000	1000.00	0.883
CE-141	581.61	145.44	321.	21.	0.012	121.93	0.885s
Ba-140	650.54	162.66	240.	20.	0.011	112.60	0.902s
U-235	653.42	163.38	261.	19.	0.010	124.41	0.903s
CE-139	663.32	165.85	248.	13.	0.007	169.86	0.905s
Cf-251	706.34	176.60	123.	19.	0.011	104.43	0.916s
U-235	742.85	185.72	273.	-18.	-0.010	132.40	0.925s
TH-229	774.03	193.51	143.	-20.	-0.011	107.10	0.933s
U-235	821.35	205.33	111.	14.	0.008	137.27	0.945
TH-229	843.44	210.85	157.	-23.	-0.013	100.50	0.950s
Cf-251	908.08	227.00	123.	-20.	-0.011	99.14	0.966s
PB-212	954.64	238.63	59.	199.	0.110	8.97	0.978D
PB-214	968.10	242.00	57.	97.	0.054	14.99	0.981D
EU-152	978.89	244.69	517.	-13.	-0.007	242.80	0.984s
TH-227	1025.11	256.24	114.	-8.	-0.004	262.66	0.995
Cd-113m	1054.97	263.70	75.	4.	0.002	310.24	1.002
BI-210M	1063.50	265.83	138.	-18.	-0.010	96.31	1.005s
TL-208	1109.33	277.28	103.	8.	0.004	193.81	1.016
Hg-203	1117.00	279.20	133.	-18.	-0.010	95.07	1.017s
I-131	1137.41	284.30	66.	15.	0.008	103.98	1.022s
PB-214	1180.68	295.11	35.	224.	0.124	8.21	1.048
TL-210	1184.24	296.00	456.	13.	0.007	234.73	1.034s
PB-212	1200.37	300.03	440.	13.	0.007	233.83	1.038
PA-231	1200.53	300.07	452.	13.	0.007	232.79	1.038
PA-233	1200.97	300.18	465.	13.	0.007	236.07	1.038
BA-133	1211.66	302.85	479.	0.	0.000	1000.00	1.040s
Ba-140	1219.66	304.85	479.	0.	0.000	1000.00	1.042s
BI-210M	1219.85	304.90	479.	0.	0.000	1000.00	1.042s
Ir-192	1234.03	308.44	479.	0.	0.000	1000.00	1.046s
PA-233	1248.32	312.01	536.	-15.	-0.009	195.04	1.049s
Ir-192	1266.25	316.49	111.	8.	0.005	185.64	1.053s
CR-51	1280.63	320.08	132.	-7.	-0.004	457.08	1.057s
La-140	1315.35	328.76	66.	14.	0.008	111.80	1.065s
Cf-249	1334.08	333.44	59.	-2.	-0.001	863.25	1.070s
AC-228	1354.00	338.42	33.	45.	0.025	28.36	0.770s
Cs-136	1362.62	340.57	124.	12.	0.007	136.31	1.077s
EU-152	1377.49	344.29	136.	12.	0.007	141.94	1.080s
HF-181	1383.66	345.83	234.	-16.	-0.009	134.33	1.082s
PB-214	1408.08	351.93	48.	367.	0.204	6.46	0.963
BA-133	1424.36	356.00	552.	-19.	-0.011	173.17	1.091s
I-131	1458.32	364.48	59.	2.	0.001	617.60	1.099s
BA-133	1535.78	383.84	200.	-18.	-0.010	133.00	1.117s
Cf-249	1552.22	387.95	122.	14.	0.008	118.72	1.121s
SN-113	1567.19	391.69	128.	6.	0.003	287.02	1.125
SB-125	1711.99	427.88	68.	-14.	-0.008	118.38	1.158s
PM-146	1816.05	453.88	28.	10.	0.006	105.02	1.182s
SB-125	1854.01	463.37	58.	11.	0.006	102.00	1.191
Ir-192	1872.79	468.06	83.	10.	0.005	138.06	1.195s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
BE-7	1910.94	477.59	58.	11.	0.006	100.23	1.204
HF-181	1928.56	482.00	61.	4.	0.002	269.73	1.208s
La-140	1948.65	487.02	13.	23.	0.013	36.03	1.212s
RU-103	1988.80	497.05	45.	-5.	-0.003	187.79	1.221s
RH-106	2048.06	511.86	47.	72.	0.040	17.79	2.485
Kr-85	2056.53	513.98	134.	-13.	-0.007	130.50	1.237s
Nd-147	2124.62	531.00	32.	0.	0.000	1000.00	1.252s
Ba-140	2149.67	537.26	48.	-12.	-0.007	116.67	1.258s
CS-134	2253.60	563.24	16.	9.	0.005	94.11	1.280s
CS-134	2277.94	569.32	24.	2.	0.001	353.55	1.286
PA-234	2278.54	569.47	27.	-1.	-0.001	741.62	1.286
BI-207	2279.47	569.70	26.	0.	0.000	1000.00	1.286
TL-208	2332.76	583.02	44.	40.	0.022	36.11	1.298s
SB-125	2402.69	600.50	483.	-15.	-0.008	57.70	1.313s
SB-124	2411.61	602.73	448.	-14.	-0.008	219.84	1.315s
CS-134	2419.53	604.71	434.	-14.	-0.008	216.21	1.317
BI-214	2437.90	609.30	21.	286.	0.159	6.69	1.231
RU-103	2441.89	610.30	420.	-14.	-0.008	212.06	1.322s
AG-108M	2457.82	614.28	407.	-10.	-0.005	297.16	1.325s
PM-144	2472.94	618.06	369.	12.	0.007	220.67	1.328s
RH-106	2488.37	621.92	375.	12.	0.007	225.26	1.332s
SB-125	2544.26	635.89	48.	-8.	-0.005	122.96	1.344s
AG-110M	2631.76	657.76	20.	8.	0.005	84.62	1.362s
PM-144	2786.90	696.54	39.	-6.	-0.003	216.35	1.395s
NB-94	2811.25	702.63	17.	10.	0.005	95.30	1.400s
SB-124	2891.88	722.79	29.	20.	0.011	44.13	1.417s
AG-108M	2892.48	722.94	50.	9.	0.005	117.55	1.417s
PM-146	2943.61	735.72	4.	5.	0.003	96.65	1.428s
PM-146	2989.37	747.16	18.	1.	0.001	604.18	1.437s
ZR-95	3027.65	756.73	22.	3.	0.002	290.26	1.445s
AG-110M	3056.50	763.94	59.	-17.	-0.009	69.20	1.451s
NB-95	3063.89	765.79	68.	11.	0.006	112.66	1.453s
PA-234M	3066.38	766.41	53.	9.	0.005	114.73	1.453s
EU-152	3116.41	778.92	19.	8.	0.005	115.31	1.463s
BI-212	3142.41	785.42	19.	10.	0.005	98.69	1.468
CS-134	3184.20	795.87	18.	10.	0.005	69.17	1.477s
TL-210	3199.12	799.60	27.	7.	0.004	108.42	1.480s
CS-134	3208.53	801.95	62.	-9.	-0.005	129.12	1.482s
CO-58	3243.82	810.78	29.	9.	0.005	94.76	1.489s
La-140	3263.80	815.77	38.	4.	0.002	221.67	1.493s
Cs-136	3274.72	818.50	52.	-10.	-0.006	103.78	1.495s
MN-54	3340.10	834.85	24.	2.	0.001	441.50	1.508s
Co-56	3387.78	846.77	24.	1.	0.001	819.73	1.518s
TL-208	3442.95	860.56	5.	19.	0.011	33.23	1.529s
NB-94	3485.08	871.10	35.	-9.	-0.005	98.76	1.537s
EU-154	3493.61	873.23	52.	-6.	-0.003	170.46	1.539s
PA-234	3522.80	880.53	41.	-5.	-0.003	175.89	1.544s
PA-234	3533.64	883.24	47.	0.	0.000	1000.00	1.547s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
AG-110M	3539.41	884.68	64.	-13.	-0.007	90.39	1.547s
Sc-46	3557.79	889.28	92.	-14.	-0.008	98.71	1.551s
Y-88	3592.83	898.04	25.	-8.	-0.005	80.31	1.558
AC-228	3645.31	911.16	6.	62.	0.035	15.52	1.648s
PA-234	3784.70	946.02	9.	8.	0.004	90.05	1.595s
EU-152	3857.05	964.11	58.	0.	0.000	1000.00	1.609s
AC-228	3876.48	968.97	31.	11.	0.006	76.69	1.612s
EU-154	3985.88	996.33	51.	-13.	-0.007	84.27	1.633s
PA-234M	4004.55	1001.00	64.	-3.	-0.001	381.84	1.636
EU-154	4019.65	1004.77	58.	9.	0.005	121.56	1.639s
Co-56	4151.87	1037.84	20.	-4.	-0.002	238.00	1.664s
Cs-136	4192.77	1048.07	10.	5.	0.003	100.00	1.671s
RH-106	4201.93	1050.36	24.	-4.	-0.002	207.02	1.673s
Ga-68	4310.04	1077.40	25.	3.	0.002	370.93	1.692
FE-59	4397.41	1099.25	10.	8.	0.005	89.73	1.708s
EU-152	4448.68	1112.07	91.	-9.	-0.005	96.00	1.717s
ZN-65	4462.56	1115.55	82.	0.	0.000	1000.00	1.720s
BI-214	4481.51	1120.29	54.	9.	0.005	117.62	1.723s
Sc-46	4482.57	1120.55	48.	12.	0.007	86.55	1.723s
Ta-182	4485.56	1121.30	49.	10.	0.006	100.22	1.724s
CO-60	4693.21	1173.24	30.	-7.	-0.004	146.12	1.760s
Ta-182	4756.42	1189.05	20.	5.	0.003	201.66	1.771
Ta-182	4885.79	1221.41	11.	9.	0.005	90.75	1.793
Co-56	4953.23	1238.28	32.	15.	0.009	87.54	1.804s
NA-22	5098.13	1274.53	16.	1.	0.001	574.46	1.828s
EU-154	5098.17	1274.54	17.	0.	0.000	1000.00	1.828s
FE-59	5166.35	1291.60	5.	6.	0.003	101.72	1.840s
TL-210	5251.91	1313.00	5.	6.	0.004	90.55	1.854s
CO-60	5329.85	1332.50	17.	-2.	-0.001	639.16	1.866s
AG-110M	5536.88	1384.30	16.	-7.	-0.004	135.27	1.899s
K-40	5841.58	1460.54	7.	148.	0.082	9.00	0.761s
La-140	6383.73	1596.21	6.	3.	0.002	187.20	2.024s
SB-124	6762.39	1690.98	6.	-5.	-0.003	128.27	2.076s
BI-214	7056.06	1764.49	23.	28.	0.016	30.67	2.114s
Co-56	7083.46	1771.35	42.	7.	0.004	129.77	2.117s
Y-88	7341.96	1836.06	6.	-2.	-0.001	380.65	2.149s

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
BE-7	C	4.5604E+00				5.31E+01	
			477.60	4.560E+00	?(P	1.547E+01	1.00E+02 1.05E+01 G
NA-22	C	9.7101E-02				9.50E+02	
			1274.53	9.710E-02	?(	2.073E+00	5.74E+02 9.99E+01 G
K-40	N	1.5084E+02				4.66E+11	
			1460.83	1.508E+02	(P	1.549E+01	9.00E+00 1.07E+01 G
Sc-46	F	-1.0232E+00				8.38E+01	
			889.28	-1.023E+00	&(	3.400E+00	9.87E+01 1.00E+02 G
			1120.55	1.043E+00	+	3.040E+00	8.65E+01 1.00E+02 G
CR-51	F	-2.0106E+00				2.77E+01	
			320.08	-2.011E+00	&(P	1.726E+01	4.57E+02 9.94E+00 G
MN-54	C	1.6018E-01				3.12E+02	
			834.85	1.602E-01	?(P	1.726E+00	4.41E+02 1.00E+02 G
FE-59	F	1.2792E+00				4.45E+01	
			1099.25	1.273E+00	?(	2.646E+00	8.97E+01 5.65E+01 G
			1291.60	1.287E+00	?(	3.060E+00	1.02E+02 4.32E+01 G
Co-56	C	9.2845E-01				7.73E+01	
			846.77	8.697E-02	?(P	1.750E+00	8.20E+02 9.99E+01 G
			1238.28	2.201E+00	&(	4.167E+00	8.75E+01 6.61E+01 G
			1037.84	-2.366E+00	+ P	1.364E+01	2.38E+02 1.41E+01 G
			1771.35	6.083E+00	?	2.718E+01	1.30E+02 1.55E+01 A
CO-57	C	5.1931E-01				2.72E+02	
			122.06	3.118E-01	(	1.181E+00	1.13E+02 8.56E+01 G
			136.47	2.182E+00	*(	1.597E+01	2.18E+02 1.07E+01 G
CO-58	C	5.7790E-01				7.09E+01	
			810.78	5.779E-01	?(P	1.864E+00	9.48E+01 9.95E+01 G
CO-60	F	-1.7235E-01				1.93E+03	
			1332.50	-1.724E-01	?(P	2.193E+00	6.39E+02 1.00E+02 G
			1173.24	-6.733E-01	+ P	2.575E+00	1.46E+02 9.99E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
NB-94	I	5.7190E-01					7.41E+06	
			702.63	5.719E-01	(P	1.335E+00	9.53E+01	9.79E+01 G
			871.10	-6.350E-01	&	2.136E+00	9.88E+01	9.99E+01 G
ZR-95	I	3.8338E-01					6.40E+01	
			756.73	3.834E-01	&(	2.806E+00	2.90E+02	5.45E+01 G
			724.20	-2.336E-02	% P	5.272E+00	5.32E+03	4.42E+01 G
NB-95	I	6.8039E-01					6.40E+01	
			765.79	6.804E-01	?(	2.603E+00	1.13E+02	9.98E+01 G
RU-103	I	-2.1911E-01					3.93E+01	
			497.05	-2.191E-01	?(P	1.639E+00	1.88E+02	9.09E+01 G
			610.30	-1.254E+01	+	8.941E+01	2.12E+02	5.75E+00 GA
RH-106	I	6.5568E+00					3.74E+02	
			621.92	6.557E+00	?(	4.973E+01	2.25E+02	9.93E+00 G
			1050.36	-1.850E+01	+	1.363E+02	2.07E+02	1.56E+00 G
			511.86	1.634E+01		7.802E+00	1.78E+01	2.00E+01 GA
AG-108M	C	2.9386E-01					1.53E+05	
			433.94	-3.197E-03	%(P	1.336E+00	3.23E+04	9.05E+01 G
			722.94	5.897E-01	?(	2.369E+00	1.18E+02	9.08E+01 G
			614.28	-5.652E-01	+	5.661E+00	2.97E+02	8.98E+01 G
AG-110M	F	-1.2945E+00					2.50E+02	
			884.68	-1.294E+00	?(	3.938E+00	9.04E+01	7.27E+01 G
			657.76	4.829E-01	+	1.386E+00	8.46E+01	9.46E+01 G
			937.49	7.272E-02	%	4.984E+00	2.76E+03	3.44E+01 G
			1384.30	-2.998E+00	+	9.144E+00	1.35E+02	2.43E+01 G
			763.94	-4.741E+00	+	1.088E+01	6.92E+01	2.23E+01 G
SN-113	F	3.1823E-01					1.15E+02	
			391.69	3.182E-01	(	3.130E+00	2.87E+02	6.40E+01 G
SB-124	F	4.6030E-01					6.02E+01	
			602.73	-7.229E-01	&(	5.340E+00	2.20E+02	9.83E+01 G
			1690.98	-1.203E+00	+	3.557E+00	1.28E+02	4.78E+01 G
			722.79	1.122E+01	?(	1.558E+01	4.41E+01	1.08E+01 G
SB-125	I	-2.1233E-01					1.01E+03	
			427.88	-1.840E+00	&(	5.407E+00	1.18E+02	2.96E+01 G
			600.50	-4.282E+00	& P	3.037E+01	5.77E+01	1.79E+01 G
			635.89	-3.990E+00	+	1.681E+01	1.23E+02	1.13E+01 G
			463.37	4.389E+00	&(P	1.517E+01	1.02E+02	1.05E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
I-131	I	5.6614E-01					8.02E+00	
			364.48	9.723E-02	?(	1.600E+00	6.18E+02	8.17E+01 G
			284.30	6.806E+00	?(	1.830E+01	1.04E+02	6.14E+00 G
			636.97	5.042E-01	%	2.935E+01	1.65E+03	7.17E+00 G
Gd-153	F	5.1767E-01					2.42E+02	
			97.50	5.177E-01	(	3.751E+00	2.14E+02	3.00E+01 G
			103.20	-5.292E-01	+	5.957E+00	3.33E+02	2.18E+01 G
Ga-68	C	8.9436E+00					4.71E-02	
			1077.40	8.944E+00	&(	7.754E+01	3.71E+02	3.30E+00 G
Tc-99m	I	-1.3778E-01					2.51E-01	
			140.51	-1.378E-01	?(	1.701E+00	3.65E+02	8.93E+01 G
BA-133	F	-1.0410E+00					3.85E+03	
			356.00	-1.041E+00	?(	6.034E+00	1.73E+02	6.20E+01 G
			302.85	0.000E+00	+	1.667E+01	1.00E+03	1.83E+01 G
			383.84	-7.090E+00	+ P	2.725E+01	1.33E+02	8.94E+00 GA
			80.99	-1.486E+00	+ P	4.519E+00	7.73E+01	3.41E+01 GA
CS-134	I	1.0713E+00					7.54E+02	
			795.87	7.436E-01	&(P	1.707E+00	6.92E+01	8.55E+01 G
			604.71	-7.306E-01	-	5.309E+00	2.16E+02	9.76E+01 G
			569.32	6.420E-01	?(	8.198E+00	3.54E+02	1.54E+01 G
			801.95	-6.753E+00	+	2.980E+01	1.29E+02	8.69E+00 G
			563.24	5.218E+00	&(	1.251E+01	9.41E+01	8.35E+00 G
CS-137	I	-4.4137E-03					1.10E+04	
			661.66	-4.414E-03	%(P	2.116E+00	1.34E+04	8.52E+01 G
CE-139	F	2.9469E-01					1.38E+02	
			165.85	2.947E-01	&(	1.688E+00	1.70E+02	7.99E+01 G
Ba-140	I	-6.8631E-01					1.28E+01	
			537.26	-2.314E+00	?(	6.749E+00	1.17E+02	2.44E+01 G
			162.66	5.697E+00	&(	2.149E+01	1.13E+02	6.22E+00 G
			304.85	0.000E+00	+	7.162E+01	1.00E+03	4.29E+00 G
La-140	I	1.1316E+00					1.28E+01	
			1596.21	3.871E-01	?(P	1.719E+00	1.87E+02	9.54E+01 G
			487.02	2.223E+00	@(P	1.837E+00	3.60E+01	4.55E+01 G
			328.76	2.155E+00	*(	6.244E+00	1.12E+02	2.03E+01 G
			815.77	1.156E+00	?(	9.004E+00	2.22E+02	2.33E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CE-141	I	7.2609E-01					3.25E+01	
			145.44	7.261E-01	&(	2.964E+00	1.22E+02	4.82E+01 G
CE-144	I	-3.4898E+00					2.85E+02	
			133.54	-3.490E+00	(	1.562E+01	1.34E+02	1.11E+01 G
PM-144	C	1.5424E-01					3.63E+02	
			696.54	-3.542E-01	&(	1.878E+00	2.16E+02	9.90E+01 G
			618.06	6.621E-01	?(P	4.919E+00	2.21E+02	9.91E+01 G
EU-152	F	1.8129E+00					4.94E+03	
			121.78	1.094E+00	(	3.339E+00	9.13E+01	2.86E+01 G
			344.29	1.455E+00	?(	6.995E+00	1.42E+02	2.65E+01 G
			1112.07	-5.722E+00	+ P	2.991E+01	9.60E+01	1.36E+01 G
			778.92	4.133E+00	?(	1.133E+01	1.15E+02	1.29E+01 G
			964.11	0.000E+00	-	2.007E+01	1.00E+03	1.46E+01 G
			244.69	-4.302E+00	+	3.507E+01	2.43E+02	7.58E+00 G
			1408.00	1.675E-01	%	9.008E+00	2.23E+03	2.10E+01 GA
EU-154	I	7.2191E-01					3.14E+03	
			123.10	-7.449E-01	&(	2.862E+00	1.15E+02	4.08E+01 G
			1274.54	0.000E+00	+	6.046E+00	1.00E+03	3.52E+01 G
			723.36	1.989E-01	%	1.143E+01	1.62E+03	2.02E+01 G
			873.23	-3.549E+00	+	2.093E+01	1.70E+02	1.23E+01 G
			1004.77	4.044E+00	?(	1.678E+01	1.22E+02	1.80E+01 G
			996.33	-9.445E+00	+	2.674E+01	8.43E+01	1.06E+01 G
EU-155	I	1.5915E+00					1.81E+03	
			105.31	1.591E+00	&(	7.951E+00	1.49E+02	2.12E+01 G
			86.54	1.591E+00	}	6.438E+00	6.42E+01	3.07E+01 G
HF-181	F	2.2197E-01					4.24E+01	
			482.00	2.220E-01	?(	2.085E+00	2.70E+02	8.05E+01 G
			133.02	-8.920E-01	+	3.903E+00	1.31E+02	4.33E+01 G
			345.83	-3.546E+00	+	1.601E+01	1.34E+02	1.51E+01 G
			136.30	-6.950E-01	%	3.054E+01	1.30E+03	5.85E+00 G
Ta-182	F	2.7996E+00					1.14E+02	
			1121.30	2.590E+00	?(	8.809E+00	1.00E+02	3.49E+01 G
			1221.41	3.055E+00	(	6.217E+00	9.07E+01	2.70E+01 G
			1189.05	2.825E+00	(	1.331E+01	2.02E+02	1.62E+01 G
Hg-203	F	-5.9269E-01					4.66E+01	
			279.20	-5.927E-01	&(	1.888E+00	9.51E+01	8.15E+01 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

TL-208   N   2.4441E+00                                     6.98E+02
                          583.02 2.384E+00 ?(  2.004E+00 3.61E+01 8.45E+01 G
                          277.28 3.250E+00  (P 2.154E+01 1.94E+02 6.31E+00 G
                          860.56 1.077E+01 + P 7.274E+00 3.32E+01 1.24E+01 G

PM-146   C   6.7179E-01                                     2.02E+03
                          453.88 6.525E-01 ?(P 1.734E+00 1.05E+02 6.50E+01 G
                          747.16 2.599E-01 ?(P 4.055E+00 6.04E+02 3.40E+01 G
                          735.72 1.350E+00 ?(  3.374E+00 9.66E+01 2.25E+01 G

Y-88     F  -3.0259E-01                                     1.07E+02
                         1836.06-3.026E-01 ?(P 1.914E+00 3.81E+02 9.92E+01 G
                          898.04-6.459E-01 + P 2.020E+00 8.03E+01 9.37E+01 G

Cd-113m      1.7347E+03                                     5.33E+03
                          263.70 1.735E+03  (  1.868E+04 3.10E+02 6.00E-03   K

Cd-109   F   9.5263E+00                                     4.53E+02
                                                          Derived Ave Activity
                           88.04 9.526E+00 }(  4.993E+01 1.57E+02 3.79E+00 G

Cf-251   T   2.1299E+00                                     3.28E+05
                          176.60 2.130E+00 *(  5.983E+00 1.04E+02 1.70E+01 G
                          227.00-7.460E+00 +   1.987E+01 9.91E+01 6.30E+00 GA

Cf-249   T   7.3382E-01                                     1.28E+05
                          387.95 7.338E-01 ?(  2.941E+00 1.19E+02 6.60E+01 G
                          333.44-3.397E-01 -   7.828E+00 8.63E+02 1.55E+01 G

Sn-126       6.3244E-01                                     3.65E+07
                           87.57 6.324E-01 }   4.965E+00 1.39E+02 3.75E+01 GA
                           64.28 6.324E-01 ?(  1.705E+01 7.93E+02 9.70E+00 G
                           86.94 6.324E-01 }   2.156E+01 5.81E+02 9.04E+00 GA

PB-210   N   2.1699E+01                                     8.14E+03
                           46.54 2.170E+01  (P 3.418E+01 5.45E+01 4.25E+00 G

PB-212   N   1.0999E+01                                     6.98E+02
                          238.63 1.100E+01  (P 2.133E+00 8.97E+00 4.33E+01 G
                          300.03 1.128E+01 & P 8.867E+01 2.34E+02 3.28E+00 GA

PB-214   N   3.2556E+01                                     5.84E+05
                          351.93 3.229E+01  (P 3.074E+00 6.46E+00 3.76E+01 G
                          295.09 3.308E+01  (P 4.509E+00 8.21E+00 1.93E+01 G
                          242.00 3.166E+01   P 1.235E+01 1.50E+01 7.43E+00 GA
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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
BI-207	C	6.9201E-02					1.18E+04	
			1063.66	6.920E-02	%(P	2.348E+00	1.39E+03	7.45E+01 G
			569.70	0.000E+00	-	1.338E+00	1.00E+03	9.77E+01 G
BI-212	N	-6.9469E-01					6.98E+02	
			727.17	-6.947E-01	%(P	3.086E+01	1.06E+03	7.55E+00 G
			785.42	4.977E+01	? P	1.163E+02	9.87E+01	1.28E+00 GA
U-235	N	2.9884E+00					2.57E+11	
			143.79	0.000E+00	?(	1.375E+01	1.00E+03	1.10E+01 G
			205.33	5.874E+00	&(P	2.188E+01	1.37E+02	5.01E+00 G
			163.38	6.590E+00	?(P	2.750E+01	1.24E+02	5.08E+00 G
			185.72	-6.463E-01	+	2.872E+00	1.32E+02	5.40E+01 GA
BI-214	N	3.2405E+01					5.84E+05	
			609.31	3.241E+01	(P	2.737E+00	6.69E+00	4.61E+01 G
			1120.29	5.300E+00	- P	2.125E+01	1.18E+02	1.51E+01 G
			1764.49	2.330E+01	- P	2.073E+01	3.07E+01	1.54E+01 G
BI-210M	T	-9.3352E-01					1.10E+09	
			265.83	-9.335E-01	?(	3.013E+00	9.63E+01	5.00E+01 G
			304.90	0.000E+00	+	1.097E+01	1.00E+03	2.80E+01 G
AC-228	N	1.4659E+01					2.10E+03	
			911.07	1.574E+01	*(P	3.471E+00	1.55E+01	2.90E+01 G
			968.97	4.947E+00	-	1.271E+01	7.67E+01	1.75E+01 G
			338.32	1.204E+01	(P	7.833E+00	2.84E+01	1.20E+01 G
			93.35	6.385E+00	&	3.243E+01	1.52E+02	5.56E+00 XA
TH-227	N	-2.7829E+00					7.95E+03	
			256.24	-2.783E+00	?(	1.902E+01	2.63E+02	7.00E+00 G
			235.97	5.315E-01	&	2.209E+01	1.23E+03	1.23E+01 G
			50.14	-6.670E+00	+ P	2.124E+01	8.38E+01	8.00E+00 G
TH-229	N	-9.3074E+00					2.68E+06	
			193.51	-9.307E+00	?(	2.678E+01	1.07E+02	4.40E+00 G
			210.85	-1.639E+01	+	4.414E+01	1.00E+02	2.99E+00 G
TH-234	N	1.7950E+00					1.63E+12	
			92.59	8.090E-01	%(P	3.289E+01	1.21E+03	5.58E+00 G
			63.29	3.240E+00	*(P	4.053E+01	3.69E+02	3.81E+00 G
PA-231	N	7.3293E+00					1.20E+07	
			302.65	5.003E-01	%(	1.060E+02	6.27E+03	2.88E+00 G
			300.07	1.532E+01	?(	1.199E+02	2.33E+02	2.46E+00 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

PA-233   C  -1.9278E-01                                     7.82E+08
                         312.01-1.273E+00  (P 9.195E+00 1.95E+02 3.60E+01 G
                         300.18 6.082E+00 ?(  4.825E+01 2.36E+02 6.20E+00 G

PA-234   N   6.6425E-01                                     1.63E+12
                         131.29-2.131E+00 ?(  9.118E+00 1.28E+02 1.80E+01 G
                         946.02 4.419E+00 &(  9.552E+00 9.00E+01 1.34E+01 G
                         569.47-6.022E-01 +   1.621E+01 7.42E+02 8.20E+00 G
                         883.24 0.000E+00 -   2.566E+01 1.00E+03 9.60E+00 G
                         880.53-6.322E+00 +   3.872E+01 1.76E+02 6.00E+00 GA

PA-234M  N   3.4397E+01                                     1.63E+12
                        1001.00-2.411E+01 ?(P 3.782E+02 3.82E+02 8.37E-01 G
                         766.41 2.010E+02 &(  7.866E+02 1.15E+02 2.94E-01 G

AM-241   T  -3.1103E-01                                     1.58E+05
                          59.54-3.110E-01 ?(P 4.192E+00 3.43E+02 3.59E+01 G

Ir-192   F   4.6873E-01                                     7.40E+01
                         316.49 2.841E-01 ?(  1.801E+00 1.86E+02 8.70E+01 G
                         468.06 7.793E-01 ?(  3.667E+00 1.38E+02 5.18E+01 G
                         308.44 0.000E+00 -   9.772E+00 1.00E+03 3.18E+01 G

Cs-136   F  -2.1120E-01                                     1.30E+01
                         818.50-6.912E-01 ?(  2.436E+00 1.04E+02 1.00E+02 G
                        1048.07 5.145E-01 +   1.795E+00 1.00E+02 8.00E+01 G
                         340.57 8.124E-01 ?(  3.751E+00 1.36E+02 4.69E+01 G

Np-239   T   1.4603E+00                                     2.36E+00
                         103.70-1.502E+00 +   5.446E+00 1.08E+02 2.40E+01 X
                         106.13 1.460E+00  (  7.275E+00 1.49E+02 2.27E+01 G
                          99.50-2.234E+00 +   8.528E+00 1.14E+02 1.50E+01 X

Nd-147       8.7835E-01                                     1.11E+01
                         531.00 0.000E+00 ?(  1.042E+01 1.00E+03 1.30E+01 G
                          91.10 1.282E+00 ?(  6.718E+00 1.57E+02 2.83E+01 G

TL-210   N   4.7682E-01                                     5.84E+05
                         799.60 4.823E-01 ?(  1.799E+00 1.08E+02 9.90E+01 G
                         296.00 4.699E-01 ?(  3.708E+00 2.35E+02 7.90E+01 G
                        1313.00 3.051E+00 ?   6.383E+00 9.05E+01 2.10E+01 GA

Kr-85    I  -1.3529E+02                                     3.92E+03
                         513.98-1.353E+02 ?(  5.969E+02 1.31E+02 4.30E-01 G
   ( - This peak used in the nuclide activity average.
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  * - 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

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********** 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	
TH-227	50.14	159.	-19.	-0.011	83.85	-6.670E+00	P
AM-241	59.54	200.	-5.	-0.003	343.07	-3.110E-01	P
TH-234	63.29	243.	6.	0.003	368.87	3.240E+00	P
BA-133	80.99	367.	-30.	-0.017	77.28	-1.486E+00	P
Nd-147	91.10	634.	23.	0.013	156.86	1.282E+00	
Gd-153	97.50	224.	10.	0.006	214.01	5.177E-01	
Np-239	99.50	295.	-22.	-0.012	114.08	-2.234E+00	
Gd-153	103.20	308.	-8.	-0.004	332.67	-5.292E-01	
Np-239	103.70	312.	-23.	-0.013	108.48	-1.502E+00	
Np-239	106.13	507.	22.	0.012	148.94	1.460E+00	
EU-152	121.78	160.	20.	0.011	91.28	1.094E+00	
CO-57	122.06	180.	17.	0.010	112.75	3.118E-01	
EU-154	123.10	242.	-20.	-0.011	114.66	-7.449E-01	
PA-234	131.29	469.	-24.	-0.013	128.07	-2.131E+00	
HF-181	133.02	494.	-24.	-0.013	130.99	-8.920E-01	
CE-144	133.54	518.	-24.	-0.013	134.02	-3.490E+00	
CO-57	136.47	492.	14.	0.008	217.96	2.182E+00	
Tc-99m	140.51	355.	-7.	-0.004	365.39	-1.378E-01	
CE-141	145.44	321.	21.	0.012	121.93	7.261E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Ba-140	162.66	240.	20.	0.011	112.60	5.697E+00	
U-235	163.38	261.	19.	0.010	124.41	6.590E+00	P
CE-139	165.85	248.	13.	0.007	169.86	2.947E-01	
Cf-251	176.60	123.	19.	0.011	104.43	2.130E+00	
U-235	185.72	273.	-18.	-0.010	132.40	-6.463E-01	
TH-229	193.51	143.	-20.	-0.011	107.10	-9.307E+00	
U-235	205.33	111.	14.	0.008	137.27	5.874E+00	P
TH-229	210.85	157.	-23.	-0.013	100.50	-1.639E+01	
Cf-251	227.00	123.	-20.	-0.011	99.14	-7.460E+00	
EU-152	244.69	517.	-13.	-0.007	242.80	-4.302E+00	
TH-227	256.24	114.	-8.	-0.004	262.66	-2.783E+00	
Cd-113m	263.70	75.	4.	0.002	310.24	1.735E+03	
BI-210M	265.83	138.	-18.	-0.010	96.31	-9.335E-01	
Hg-203	279.20	133.	-18.	-0.010	95.07	-5.927E-01	
I-131	284.30	66.	15.	0.008	103.98	6.806E+00	
TL-210	296.00	456.	13.	0.007	234.73	4.699E-01	
PA-231	300.07	452.	13.	0.007	232.79	1.532E+01	
PA-233	300.18	465.	13.	0.007	236.07	6.082E+00	
PA-233	312.01	536.	-15.	-0.009	195.04	-1.273E+00	P
Ir-192	316.49	111.	8.	0.005	185.64	2.841E-01	
CR-51	320.08	132.	-7.	-0.004	457.08	-2.011E+00	P
La-140	328.76	66.	14.	0.008	111.80	2.155E+00	
Cf-249	333.44	59.	-2.	-0.001	863.25	-3.397E-01	
Cs-136	340.57	124.	12.	0.007	136.31	8.124E-01	
EU-152	344.29	136.	12.	0.007	141.94	1.455E+00	
HF-181	345.83	234.	-16.	-0.009	134.33	-3.546E+00	
BA-133	356.00	552.	-19.	-0.011	173.17	-1.041E+00	
I-131	364.48	59.	2.	0.001	617.60	9.723E-02	
BA-133	383.84	200.	-18.	-0.010	133.00	-7.090E+00	P
Cf-249	387.95	122.	14.	0.008	118.72	7.338E-01	
SN-113	391.69	128.	6.	0.003	287.02	3.182E-01	
SB-125	427.88	68.	-14.	-0.008	118.38	-1.840E+00	
SB-125	463.37	58.	11.	0.006	102.00	4.389E+00	P
Ir-192	468.06	83.	10.	0.005	138.06	7.793E-01	
BE-7	477.59	58.	11.	0.006	100.23	4.560E+00	P
HF-181	482.00	61.	4.	0.002	269.73	2.220E-01	
La-140	487.02	13.	23.	0.013	36.03	2.223E+00	P
RU-103	497.05	45.	-5.	-0.003	187.79	-2.191E-01	P
RH-106	511.86	47.	72.	0.040	17.79	1.634E+01	
Kr-85	513.98	134.	-13.	-0.007	130.50	-1.353E+02	
Ba-140	537.26	48.	-12.	-0.007	116.67	-2.314E+00	
CS-134	563.24	16.	9.	0.005	94.11	5.218E+00	
CS-134	569.32	24.	2.	0.001	353.55	6.420E-01	
PA-234	569.47	27.	-1.	-0.001	741.62	-6.022E-01	
SB-125	600.50	483.	-15.	-0.008	57.70	-4.282E+00	P
SB-124	602.73	448.	-14.	-0.008	219.84	-7.229E-01	
CS-134	604.71	434.	-14.	-0.008	216.21	-7.306E-01	
RU-103	610.30	420.	-14.	-0.008	212.06	-1.254E+01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
AG-108M	614.28	407.	-10.	-0.005	297.16	-5.652E-01	
PM-144	618.06	369.	12.	0.007	220.67	6.621E-01	P
RH-106	621.92	375.	12.	0.007	225.26	6.557E+00	
SB-125	635.89	48.	-8.	-0.005	122.96	-3.990E+00	
AG-110M	657.76	20.	8.	0.005	84.62	4.829E-01	
PM-144	696.54	39.	-6.	-0.003	216.35	-3.542E-01	
NB-94	702.63	17.	10.	0.005	95.30	5.719E-01	P
SB-124	722.79	29.	20.	0.011	44.13	1.122E+01	
AG-108M	722.94	50.	9.	0.005	117.55	5.897E-01	
ZR-95	756.73	22.	3.	0.002	290.26	3.834E-01	
AG-110M	763.94	59.	-17.	-0.009	69.20	-4.741E+00	
NB-95	765.79	68.	11.	0.006	112.66	6.804E-01	
PA-234M	766.41	53.	9.	0.005	114.73	2.010E+02	
EU-152	778.92	19.	8.	0.005	115.31	4.133E+00	
BI-212	785.42	19.	10.	0.005	98.69	4.977E+01	P
CS-134	795.87	18.	10.	0.005	69.17	7.436E-01	P
TL-210	799.60	27.	7.	0.004	108.42	4.823E-01	
CS-134	801.95	62.	-9.	-0.005	129.12	-6.753E+00	
CO-58	810.78	29.	9.	0.005	94.76	5.779E-01	P
La-140	815.77	38.	4.	0.002	221.67	1.156E+00	
Cs-136	818.50	52.	-10.	-0.006	103.78	-6.912E-01	
MN-54	834.85	24.	2.	0.001	441.50	1.602E-01	P
Co-56	846.77	24.	1.	0.001	819.73	8.697E-02	P
NB-94	871.10	35.	-9.	-0.005	98.76	-6.350E-01	
EU-154	873.23	52.	-6.	-0.003	170.46	-3.549E+00	
PA-234	880.53	41.	-5.	-0.003	175.89	-6.322E+00	
AG-110M	884.68	64.	-13.	-0.007	90.39	-1.294E+00	
Sc-46	889.28	92.	-14.	-0.008	98.71	-1.023E+00	
Y-88	898.04	25.	-8.	-0.005	80.31	-6.459E-01	P
PA-234	946.02	9.	8.	0.004	90.05	4.419E+00	
EU-154	996.33	51.	-13.	-0.007	84.27	-9.445E+00	
PA-234M	1001.00	64.	-3.	-0.001	381.84	-2.411E+01	P
EU-154	1004.77	58.	9.	0.005	121.56	4.044E+00	
Co-56	1037.84	20.	-4.	-0.002	238.00	-2.366E+00	P
Cs-136	1048.07	10.	5.	0.003	100.00	5.145E-01	
RH-106	1050.36	24.	-4.	-0.002	207.02	-1.850E+01	
Ga-68	1077.40	25.	3.	0.002	370.93	8.944E+00	
FE-59	1099.25	10.	8.	0.005	89.73	1.273E+00	
EU-152	1112.07	91.	-9.	-0.005	96.00	-5.722E+00	P
Sc-46	1120.55	48.	12.	0.007	86.55	1.043E+00	
CO-60	1173.24	30.	-7.	-0.004	146.12	-6.733E-01	P
Co-56	1238.28	32.	15.	0.009	87.54	2.201E+00	
NA-22	1274.53	16.	1.	0.001	574.46	9.710E-02	
FE-59	1291.60	5.	6.	0.003	101.72	1.287E+00	
TL-210	1313.00	5.	6.	0.004	90.55	3.051E+00	
CO-60	1332.50	17.	-2.	-0.001	639.16	-1.724E-01	P
AG-110M	1384.30	16.	-7.	-0.004	135.27	-2.998E+00	
La-140	1596.21	6.	3.	0.002	187.20	3.871E-01	P

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
SB-124	1690.98	6.	-5.	-0.003	128.27	-1.203E+00		
Co-56	1771.35	42.	7.	0.004	129.77	6.083E+00		
Y-88	1836.06	6.	-2.	-0.001	380.65	-3.026E-01		P

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 Counting 1 Sigma	MDA Bq/Sample
BE-7	#A	4.5604E+00	4.5604E+00	1.002E+02%	1.55E+01
NA-22	#A	9.7101E-02	9.7101E-02	5.745E+02%	2.07E+00
K-40		1.5084E+02	1.5084E+02	8.995E+00%	1.55E+01
Sc-46	#A	-1.0232E+00	-1.0232E+00	9.871E+01%	3.40E+00
CR-51	#A	-2.0106E+00	-2.0106E+00	4.571E+02%	1.73E+01
MN-54	#A	1.6018E-01	1.6018E-01	4.415E+02%	1.73E+00
FE-59	#A	1.2792E+00	1.2792E+00	6.782E+01%	2.65E+00
Co-56	#A	9.2845E-01	9.2845E-01	8.754E+01%	1.75E+00
CO-57	#A	5.1931E-01	5.1931E-01	1.127E+02%	1.18E+00
CO-58	#A	5.7790E-01	5.7790E-01	9.476E+01%	1.86E+00
CO-60	#A	-1.7235E-01	-1.7235E-01	6.392E+02%	2.19E+00
ZN-65	#A	0.0000E+00	0.0000E+00	1.000E+03%	7.70E+00
NB-94	#A	5.7190E-01	5.7190E-01	9.530E+01%	1.33E+00
ZR-95	#A	3.8338E-01	3.8338E-01	2.903E+02%	2.81E+00
NB-95	#A	6.8038E-01	6.8039E-01	1.127E+02%	2.60E+00
RU-103	#A	-2.1911E-01	-2.1911E-01	1.878E+02%	1.64E+00
RH-106	#A	6.5568E+00	6.5568E+00	2.253E+02%	4.97E+01
AG-108M	#A	2.9386E-01	2.9386E-01	1.175E+02%	1.34E+00
AG-110M	#A	-1.2944E+00	-1.2945E+00	9.039E+01%	3.94E+00
SN-113	#A	3.1823E-01	3.1823E-01	2.870E+02%	3.13E+00
SB-124	#A	4.6029E-01	4.6030E-01	4.413E+01%	5.34E+00
SB-125	#A	-2.1233E-01	-2.1233E-01	7.813E+01%	5.41E+00
I-131	#A	5.6612E-01	5.6614E-01	1.040E+02%	1.60E+00
Gd-153	#A	5.1767E-01	5.1767E-01	2.140E+02%	3.75E+00
Ga-68	#A	8.8980E+00	8.9436E+00	3.709E+02%	7.75E+01
Tc-99m	#A	-1.3765E-01	-1.3778E-01	3.654E+02%	1.70E+00
BA-133	#A	-1.0410E+00	-1.0410E+00	1.732E+02%	6.03E+00
CS-134	#A	1.0713E+00	1.0713E+00	6.917E+01%	1.71E+00
CS-137	#A	-4.4137E-03	-4.4137E-03	1.336E+04%	2.12E+00
CE-139	#A	2.9469E-01	2.9469E-01	1.699E+02%	1.69E+00
Ba-140	#A	-6.8630E-01	-6.8631E-01	8.107E+01%	6.75E+00
La-140	#A	1.1316E+00	1.1316E+00	3.603E+01%	1.72E+00
CE-141	#A	7.2609E-01	7.2609E-01	1.219E+02%	2.96E+00
CE-144	#A	-3.4898E+00	-3.4898E+00	1.340E+02%	1.56E+01
PM-144	#A	1.5424E-01	1.5424E-01	1.545E+02%	1.88E+00
EU-152	#A	1.8129E+00	1.8129E+00	6.813E+01%	3.34E+00
EU-154	#A	7.2191E-01	7.2191E-01	8.355E+01%	2.86E+00

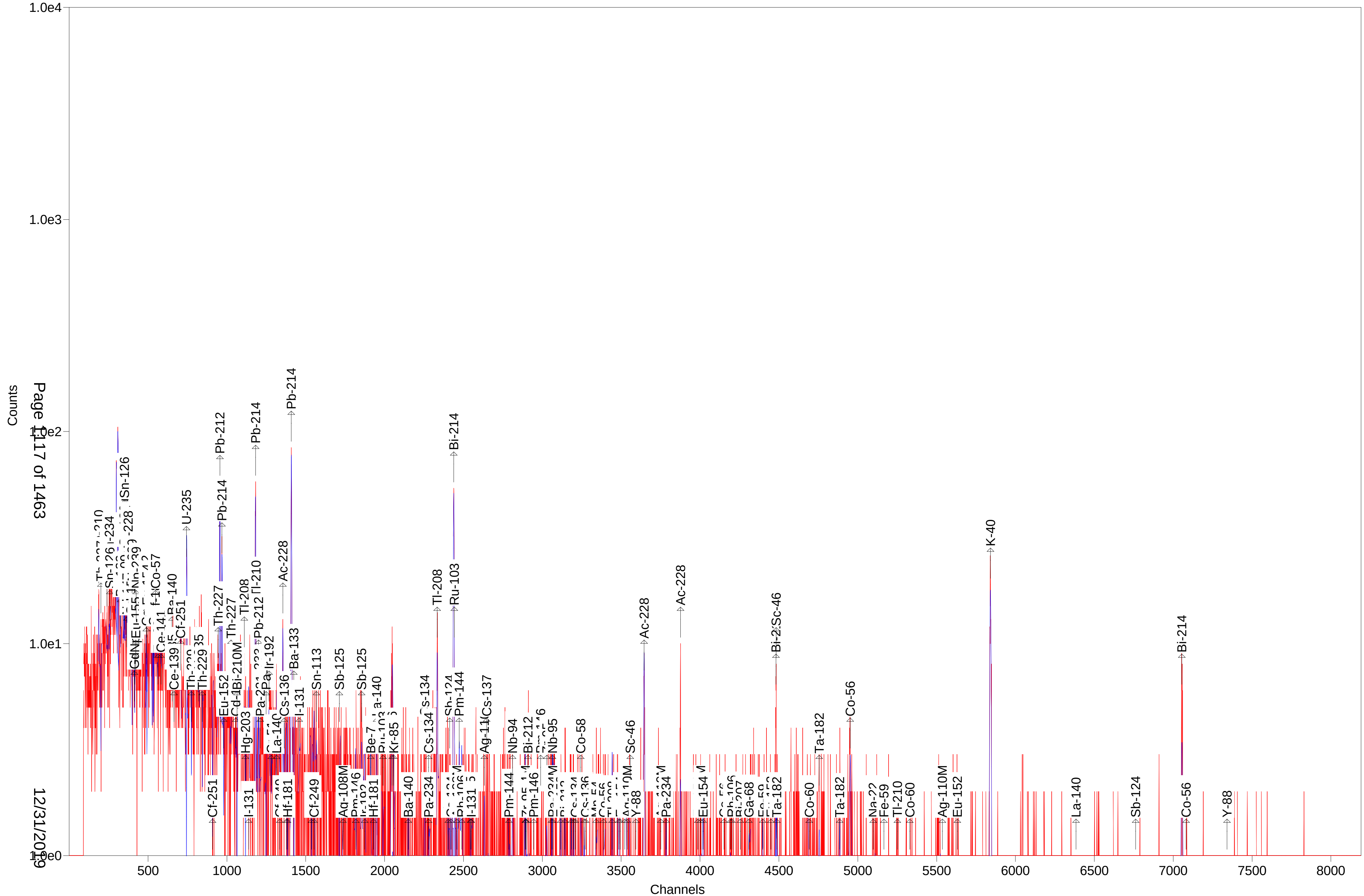
EU-155 #A	1.5915E+00	1.5915E+00	1.494E+02%		7.95E+00
HF-181 #A	2.2197E-01	2.2197E-01	2.697E+02%		2.08E+00
Ta-182 A	2.7996E+00	2.7996E+00	8.093E+01%		8.81E+00
Hg-203 #A	-5.9269E-01	-5.9269E-01	9.507E+01%		1.89E+00
TL-208	2.4441E+00	2.4441E+00	3.611E+01%		2.00E+00
PM-146 #A	6.7179E-01	6.7179E-01	9.665E+01%		1.73E+00
Y-88 #A	-3.0259E-01	-3.0259E-01	3.807E+02%		1.91E+00
Cd-113m#A	1.7347E+03	1.7347E+03	3.102E+02%		1.87E+04
Cd-109 #A	9.5263E+00	9.5263E+00	1.568E+02%		4.99E+01
Cf-251 #A	2.1299E+00	2.1299E+00	1.044E+02%		5.98E+00
Cf-249 #A	7.3382E-01	7.3382E-01	1.187E+02%		2.94E+00
Sn-126 #A	6.3244E-01	6.3244E-01	7.932E+02%		1.70E+01
PB-210 A	2.1699E+01	2.1699E+01	5.448E+01%		3.42E+01
PB-212	1.0999E+01	1.0999E+01	8.967E+00%		2.13E+00
PB-214	3.2556E+01	3.2556E+01	5.223E+00%		3.07E+00
BI-207 #A	6.9201E-02	6.9201E-02	1.391E+03%		2.35E+00
BI-212 #A	-6.9469E-01	-6.9469E-01	1.058E+03%		3.09E+01
U-235 #A	2.9884E+00	2.9884E+00	1.244E+02%		1.37E+01
BI-214	3.2405E+01	3.2405E+01	6.694E+00%		2.74E+00
BI-210M#A	-9.3352E-01	-9.3352E-01	9.631E+01%		3.01E+00
AC-228	1.4659E+01	1.4659E+01	1.552E+01%		3.47E+00
TH-227 #A	-2.7829E+00	-2.7829E+00	2.627E+02%		1.90E+01
TH-229 #A	-9.3074E+00	-9.3074E+00	1.071E+02%		2.68E+01
TH-234 #A	1.7950E+00	1.7950E+00	3.689E+02%		3.29E+01
PA-231 #A	7.3293E+00	7.3293E+00	2.328E+02%		1.06E+02
PA-233 #A	-1.9278E-01	-1.9278E-01	1.531E+02%		9.20E+00
PA-234 #A	6.6425E-01	6.6425E-01	7.828E+01%		9.12E+00
PA-234M#A	3.4397E+01	3.4397E+01	1.147E+02%		3.78E+02
AM-241 #A	-3.1103E-01	-3.1103E-01	3.431E+02%		4.19E+00
Np-237 #A	0.0000E+00	0.0000E+00	1.000E+03%		1.55E+01
Ir-192 #A	4.6873E-01	4.6873E-01	1.157E+02%		1.80E+00
Cs-136 #A	-2.1120E-01	-2.1120E-01	8.566E+01%		2.44E+00
Np-239 #A	1.4601E+00	1.4603E+00	1.489E+02%		7.27E+00
Nd-147 #A	8.7833E-01	8.7835E-01	1.569E+02%		1.04E+01
TL-210 #A	4.7682E-01	4.7682E-01	1.084E+02%		1.80E+00
Kr-85 #A	-1.3529E+02	-1.3529E+02	1.305E+02%		5.97E+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 2000.8 keV) 2.656E+02 Bq/Sample
Total Decayed Activity (37.6 to 2000.8 keV) 2.6560220E+02 Bq/Sample

452567_Gamma_160-36526-A-17-B. 5_Gamma_20193366.spc.



Test America St. Louis Spectrum ID: 9_Gamma_20193840

Sample Description: 452567_Gamma_160-36526-A-18-B
Detector: Detector # 9
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-18-B

Decay to Time: 12/25/2019 10:42 Live Time: 1800 sec
Acquisition Time: 12/25/2019 10:42:41 Real Time: 1802 sec
Analysis Time: 12/25/2019 11:13 Dead Time: 0.11 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 9_Soil_TunaCan.Clb
Efficiency Cal Desc: 9_Soil_TunaCan_90099_050312
Efficiency Cal Date: 6/14/2012 10:19
Energy Cal Date: 3/1/2012 13:57
Library: Client_Long_Rev15.lib
Bkgd Correction File: 9_2019-12-07_1444.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	3.142E+00	102.7	3.226E+00	3.230E+00	1.088E+01
NA-22	4.937E-01	58.8	2.904E-01	2.915E-01	9.397E-01
K-40	1.780E+02	5.6	9.982E+00	1.351E+01	8.406E+00
Sc-46	3.205E-02	1573.0	5.041E-01	5.041E-01	1.761E+00
CR-51	2.241E-01	3050.7	6.837E+00	6.837E+00	2.301E+01
MN-54	-1.966E-01	202.1	3.973E-01	3.975E-01	1.040E+00
FE-59	-2.952E-01	288.3	8.510E-01	8.512E-01	1.960E+00
Co-56	3.202E-01	148.8	4.764E-01	4.766E-01	1.051E+00
CO-57	0.000E+00	1.#INF	1.705E-01	1.705E-01	9.539E-01
CO-58	3.617E-01	79.0	2.859E-01	2.865E-01	9.612E-01
CO-60	3.001E-01	86.9	2.607E-01	2.612E-01	7.304E-01
ZN-65	3.707E-01	402.1	1.491E+00	1.491E+00	5.120E+00
NB-94	3.798E-01	101.4	3.851E-01	3.856E-01	1.303E+00
ZR-95	2.495E-01	279.3	6.970E-01	6.971E-01	1.622E+00
NB-95	6.368E-01	59.1	3.761E-01	3.776E-01	1.233E+00
RU-103	-5.683E-01	89.5	5.084E-01	5.092E-01	1.199E+00
RH-106	-3.808E+00	238.1	9.064E+00	9.066E+00	3.046E+01
AG-108M	1.660E-02	2301.4	3.820E-01	3.820E-01	9.384E-01
AG-110M	2.673E-01	74.5	1.992E-01	1.997E-01	2.398E+00
SN-113	-1.851E-01	318.8	5.899E-01	5.900E-01	2.016E+00
SB-124	3.395E-01	253.2	8.598E-01	8.600E-01	2.893E+00
SB-125	5.767E-01	132.7	7.654E-01	7.659E-01	3.390E+00
I-131	6.062E-01	108.9	6.603E-01	6.611E-01	8.192E-01
Gd-153	8.041E-01	212.9	1.712E+00	1.713E+00	5.710E+00
Ga-68	-1.583E+01	132.4	2.096E+01	2.098E+01	4.601E+01
Tc-99m	1.385E-01	390.9	5.415E-01	5.415E-01	1.813E+00
BA-133	-2.113E-01	146.2	3.089E-01	3.091E-01	3.560E+00
CS-134	2.064E-01	212.6	4.388E-01	4.389E-01	1.525E+00
CS-137	-6.716E-01	79.3	5.327E-01	5.338E-01	1.776E+00
CE-139	3.185E-01	96.1	3.062E-01	3.077E-01	1.023E+00
Ba-140	1.713E+00	115.3	1.976E+00	1.978E+00	2.890E+00
La-140	2.068E-01	96.1	1.988E-01	1.991E-01	1.444E+00
CE-141	6.296E-01	146.1	9.198E-01	9.203E-01	3.067E+00

CE-144	-2.739E+00	146.0	3.999E+00	4.001E+00	1.333E+01
PM-144	-6.453E-01	109.3	7.050E-01	7.058E-01	1.472E+00
EU-152	1.287E+00	96.7	1.245E+00	1.246E+00	2.774E+00
EU-154	-6.971E-01	85.3	5.948E-01	5.959E-01	1.979E+00
EU-155	1.142E+00	89.1	1.018E+00	1.020E+00	3.394E+00
HF-181	7.164E-01	80.5	5.770E-01	5.781E-01	1.528E+00
Ta-182	1.235E+00	172.9	2.135E+00	2.136E+00	7.267E+00
Hg-203	3.936E-01	80.1	3.155E-01	3.163E-01	1.052E+00
TL-208	3.778E+00	14.2	5.383E-01	5.729E-01	9.150E-01
PM-146	7.629E-01	68.9	5.253E-01	5.268E-01	1.202E+00
Y-88	2.420E-01	94.3	2.283E-01	2.287E-01	1.006E+00
Cd-113m	1.371E+03	333.5	4.572E+03	4.573E+03	1.565E+04
Cd-109	0.000E+00	1.#INF	1.498E+01	1.498E+01	4.988E+01
Cf-251	-1.437E-01	1120.8	1.611E+00	1.611E+00	4.198E+00
Cf-249	4.987E-01	95.5	4.761E-01	4.768E-01	1.599E+00
Sn-126	-3.400E+00	140.6	4.780E+00	4.783E+00	1.597E+01
PB-210	1.149E+01	116.6	1.340E+01	1.342E+01	4.480E+01
PB-212	1.332E+01	5.8	7.700E-01	1.156E+00	1.295E+00
PB-214	2.054E+01	6.1	1.252E+00	1.645E+00	1.796E+00
BI-207	2.176E-01	291.1	6.333E-01	6.334E-01	1.438E+00
BI-212	6.874E+00	102.7	7.063E+00	7.072E+00	2.374E+01
U-235	0.000E+00	1.#INF	1.683E+00	1.683E+00	1.440E+01
BI-214	1.958E+01	7.0	1.367E+00	1.704E+00	1.803E+00
BI-210M	-1.725E-01	93.1	1.605E-01	1.608E-01	2.097E+00
AC-228	1.288E+01	9.6	1.237E+00	1.401E+00	1.834E+00
TH-227	-2.454E+00	194.1	4.762E+00	4.764E+00	1.180E+01
TH-229	2.062E+00	342.4	7.059E+00	7.061E+00	1.750E+01
TH-234	1.775E+01	22.9	4.056E+00	4.175E+00	1.241E+01
PA-231	9.311E+00	170.3	1.585E+01	1.586E+01	7.076E+01
PA-233	1.195E+00	175.7	2.100E+00	2.101E+00	6.110E+00
PA-234	1.224E+00	47.5	5.818E-01	5.852E-01	8.003E+00
PA-234M	4.084E+01	82.3	3.361E+01	3.367E+01	2.065E+02
AM-241	-1.278E+00	107.6	1.375E+00	1.377E+00	4.580E+00
Np-237	-2.362E+00	188.9	4.463E+00	4.465E+00	1.486E+01
Ir-192	4.912E-01	89.3	4.384E-01	4.394E-01	2.579E+00
Cs-136	-4.695E-01	94.7	4.447E-01	4.455E-01	1.499E+00
Np-239	4.825E-01	212.6	1.026E+00	1.026E+00	3.469E+00
Nd-147	-2.273E+00	138.4	3.147E+00	3.149E+00	7.560E+00
TL-210	3.671E-01	78.3	2.873E-01	2.881E-01	1.084E+00
Kr-85	0.000E+00	1.#INF	2.369E+01	2.369E+01	3.460E+02
Total	1.730E+03				

Analyst: Caleb Quinn

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Sample description
452567_Gamma_160-36526-A-18-B

Spectrum Filename: C:\User\SPC\Det9\9_Gamma_20193840.An1

Acquisition information
Start time: 12/25/2019 10:42:41 AM
Live time: 1800
Real time: 1802
Dead time: 0.11 %
Detector ID: 9

Detector system
Ge9 S/N09363993

Calibration
Filename: 9_Soil_TunaCan.Clb
9_Soil_TunaCan_90099_050312

Energy Calibration
Created: 3/1/2012 1:57:17 PM
Zero offset: 0.074 keV
Gain: 0.250 keV/channel
Quadratic: -2.269E-08 keV/channel^2

Efficiency Calibration
Created: 6/14/2012 10:19:51 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.30 %
Log(Eff): -8.079856E-01 + (-2.367265E-01*Log(E)) +
(-3.950640E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.42 %
Log(Eff): -2.387916E+01 + (8.875647E+00*Log(E)) +
(-9.401100E-01*Log(E)^2)

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.08keV)
Stop channel: 8000 (1999.34keV)
Peak rejection level: 1000.000%
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:	YES	12/25/2019 10:42:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	9_2019-12-07_1444.PBC 12/7/2019 2:44:35 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 26 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1699

***** 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
31.89	30.	37.63	0.45	1.205E-02				
46.65	37.	39.85	0.71	2.586E-02	46.54	4.250	PBC<MDA	PB210
63.87	57.	34.78	0.47	3.960E-02	63.29	3.810	2.120E+01	TH234
					64.28	9.700	8.189E+00	Sn126
74.79	256.	9.15	1.03	4.572E-02				
77.25	346.	7.47	1.03	4.681E-02				
87.09	132.	14.24	1.04	5.029E-02	86.49	13.100	1.116E+01	Np237
					86.54	30.700	4.760E+00	EU155
					86.94	9.040	1.613E+01	Sn126
					87.57	37.500	3.875E+00	Sn126
					88.04	3.790	3.825E+01	Cd109
89.83	88.	20.64	1.04	5.099E-02				
92.97	127.	14.24	1.04	5.166E-02	92.59	5.584	2.452E+01	TH234
					93.35	5.561	PBC<MDA	AC228
97.56	23.	212.92	1.05	5.240E-02	97.50	30.000	PBC<MDA	Gd153
105.31	23.	89.12	1.05	5.318E-02	105.31	21.200	PBC<MDA	EU155
106.13	10.	212.58	1.05	5.323E-02	106.13	22.700	PBC<MDA	Np239
140.76	11.	390.91	1.09	5.091E-02	140.51	89.300	PBC<MDA	Tc99m
145.44	27.	146.10	1.09	5.012E-02	145.44	48.200	PBC<MDA	CE141
162.66	18.	128.31	1.11	4.690E-02	162.66	6.220	PBC<MDA	Ba140
165.77	22.	96.13	1.11	4.736E-02	165.85	79.900	PBC<MDA	CE139
185.72	124.	19.52	1.13	4.403E-02	185.72	54.000	2.898E+00	U235

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
193.51	7.	342.36	1.14	4.287E-02	193.51	4.400	PBC<MDA	TH229
201.50	13.	69.90	0.70	4.175E-02				
209.25	55.	36.50	0.72	4.072E-02				
238.48	388.	5.78	1.18	3.734E-02	238.63	43.300	1.332E+01	PB212
241.85	158.	10.87	1.18	3.699E-02	242.00	7.430	3.200E+01	PB214
244.69	18.	207.71	1.18	3.670E-02	244.69	7.580	PBC<MDA	EU152
263.70	5.	333.46	1.20	3.489E-02	263.70	0.006	PBC<MDA	Cd113m
277.28	2.	707.39	1.21	3.372E-02	277.28	6.310	PBC<MDA	TL208
279.20	19.	80.14	1.22	3.356E-02	279.20	81.460	PBC<MDA	Hg203
284.30	13.	130.77	1.22	3.315E-02	284.30	6.140	PBC<MDA	I131
295.07	281.	8.48	0.77	3.232E-02	295.09	19.300	2.500E+01	PB214
					296.00	79.000	6.120E+00	TL210
300.00	35.	30.25	1.24	3.195E-02	300.03	3.280	1.833E+01	PB212
					300.07	2.460	2.445E+01	PA231
					300.18	6.200	9.702E+00	PA233
300.07	14.	238.11	1.24	3.195E-02	300.03	3.280	PBC<MDA	PB212
					300.07	2.460	1.007E+01	PA231
					300.18	6.200	3.995E+00	PA233
300.18	14.	241.05	1.24	3.194E-02	300.03	3.280	PBC<MDA	PB212
					300.07	2.460	1.007E+01	PA231
					300.18	6.200	3.995E+00	PA233
302.65	14.	243.50	1.24	3.176E-02	302.65	2.880	PBC<MDA	PA231
					302.85	18.330	1.362E+00	BA133
302.85	14.	246.31	1.24	3.175E-02	302.65	2.880	PBC<MDA	PA231
					302.85	18.330	1.362E+00	BA133
304.85	14.	248.78	1.24	3.160E-02	304.85	4.290	PBC<MDA	Ba140
					304.90	28.000	8.973E-01	BI210M
304.90	14.	251.58	1.24	3.160E-02	304.85	4.290	PBC<MDA	Ba140
					304.90	28.000	8.973E-01	BI210M
308.44	14.	253.70	1.24	3.135E-02	308.44	31.750	PBC<MDA	Ir192
312.01	14.	255.79	1.25	3.110E-02	312.01	36.000	PBC<MDA	PA233
316.49	14.	257.66	1.25	3.080E-02	316.49	87.040	PBC<MDA	Ir192
338.16	87.	18.01	1.04	2.940E-02	338.32	12.010	1.361E+01	AC228
345.83	18.	118.33	1.28	2.896E-02	345.83	15.070	PBC<MDA	HF181
351.81	398.	6.09	1.41	2.861E-02	351.93	37.600	2.054E+01	PB214
364.48	3.	436.74	1.29	2.791E-02	364.48	81.700	PBC<MDA	I131
387.95	16.	95.47	1.31	2.671E-02	387.95	66.000	PBC<MDA	Cf249
453.88	15.	96.49	1.37	2.388E-02	453.88	65.000	PBC<MDA	PM146
463.37	7.	175.55	1.38	2.352E-02	463.37	10.470	PBC<MDA	SB125
468.06	14.	89.26	1.38	2.335E-02	468.06	51.750	PBC<MDA	Ir192
477.60	14.	102.69	1.39	2.301E-02	477.60	10.520	PBC<MDA	BE7
482.00	14.	109.29	1.40	2.286E-02	482.00	80.500	PBC<MDA	HF181
487.02	7.	202.99	1.40	2.269E-02	487.02	45.500	PBC<MDA	La140
511.86	52.	29.42	2.67	2.188E-02	511.86	20.000	6.601E+00	RH106
537.26	5.	203.24	1.44	2.112E-02	537.26	24.390	PBC<MDA	Ba140
563.24	2.	833.18	1.47	2.040E-02	563.24	8.350	PBC<MDA	CS134
583.18	114.	14.25	1.78	1.989E-02	583.02	84.500	3.778E+00	TL208
600.50	12.	250.12	1.50	1.946E-02	600.50	17.860	PBC<MDA	SB125

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
602.73	12.	253.22	1.50	1.940E-02	602.73	98.260	PBC<MDA	SB124
604.71	6.	507.13	1.50	1.936E-02	604.71	97.620	PBC<MDA	CS134
609.17	313.	6.98	1.17	1.925E-02	609.31	46.090	1.958E+01	BI214
					610.30	5.750	1.572E+02	RU103
636.97	10.	108.93	1.53	1.862E-02	636.97	7.170	PBC<MDA	I131
657.76	12.	74.54	1.54	1.818E-02	657.76	94.640	PBC<MDA	AG110M
702.63	12.	101.40	1.58	1.730E-02	702.63	97.900	PBC<MDA	NB94
727.17	16.	102.74	1.60	1.686E-02	727.17	7.550	PBC<MDA	BI212
735.72	10.	98.27	1.61	1.671E-02	735.72	22.500	PBC<MDA	PM146
756.73	4.	279.32	1.62	1.635E-02	756.73	54.460	PBC<MDA	ZR95
765.79	19.	59.06	1.63	1.621E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	2.163E+02	PA234M
766.41	14.	82.30	1.63	1.620E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	1.622E+02	PA234M
785.42	12.	86.57	1.65	1.590E-02	785.42	1.280	PBC<MDA	BI212
795.87	5.	212.60	1.66	1.574E-02	795.87	85.530	PBC<MDA	CS134
799.60	12.	78.26	1.66	1.568E-02	799.60	98.960	PBC<MDA	TL210
810.78	10.	79.04	1.67	1.551E-02	810.78	99.460	PBC<MDA	CO58
815.77	9.	96.10	1.67	1.544E-02	815.77	23.280	PBC<MDA	La140
860.09	33.	22.90	0.76	1.482E-02	860.56	12.420	9.911E+00	TL208
898.04	11.	94.33	1.74	1.434E-02	898.04	93.700	PBC<MDA	Y88
910.93	94.	11.39	1.61	1.418E-02	911.07	29.000	1.264E+01	AC228
946.02	17.	47.55	1.77	1.377E-02	946.02	13.400	PBC<MDA	PA234
969.28	54.	19.42	0.42	1.352E-02	968.97	17.460	1.277E+01	AC228
1063.66	4.	291.05	1.86	1.257E-02	1063.66	74.500	PBC<MDA	BI207
1112.07	11.	139.74	1.89	1.213E-02	1112.07	13.644	PBC<MDA	EU152
1115.55	4.	402.12	1.90	1.210E-02	1115.55	50.600	PBC<MDA	ZN65
1120.01	85.	16.15	1.87	1.206E-02	1120.29	15.100	2.579E+01	BI214
					1120.55	99.987	PBC<MDA	Sc46
1121.31	9.	172.86	1.90	1.205E-02	1120.55	99.987	PBC<MDA	Sc46
					1121.30	34.900	1.235E+00	Ta182
1173.24	5.	201.07	1.94	1.163E-02	1173.24	99.900	PBC<MDA	CO60
1238.28	10.	148.79	1.98	1.114E-02	1238.28	66.070	PBC<MDA	Co56
1274.53	10.	58.82	2.01	1.088E-02	1274.53	99.940	PBC<MDA	NA22
					1274.54	35.190	1.402E+00	EU154
1313.00	2.	488.62	2.03	1.063E-02	1313.00	21.000	PBC<MDA	TL210
1332.50	7.	86.88	2.05	1.050E-02	1332.50	99.980	PBC<MDA	CO60
1384.30	3.	302.33	2.08	1.018E-02	1384.30	24.290	PBC<MDA	AG110M
1460.68	333.	5.61	2.08	9.749E-03	1460.83	10.670	1.780E+02	K40
1764.14	63.	13.30	2.31	8.350E-03	1764.49	15.400	2.737E+01	BI214

********** 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	
127.22	31.89	35.	30.	2.503E+03	37.63	0.449	-	s

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Channel	Energy	Background	Net area	Eff*Area	Uncert	FWHM	Suspected
255.10	63.87	112.	57.	1.439E+03	34.78	0.465	- sM
298.78	74.77	146.	256.	5.592E+03	9.15	1.025	- D
308.59	77.23	161.	346.	7.388E+03	7.47	1.027	- D
359.78	89.98	103.	90.	1.758E+03	19.20	1.040	- sD
805.47	201.50	30.	13.	3.034E+02	69.90	0.703	- sc
836.46	209.25	87.	55.	1.351E+03	36.50	0.720	- 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: Client_Long_Rev15.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	185.80	46.54	337.	23.	0.013	116.58	0.998s
AM-241	237.77	59.54	513.	-30.	-0.017	107.61	1.010s
TH-234	252.77	63.29	483.	-18.	-0.010	173.12	1.014s
Sn-126	256.74	64.28	542.	-24.	-0.013	140.58	1.015
BA-133	323.56	80.99	1219.	-31.	-0.017	84.87	1.031s
Np-237	345.55	86.49	1375.	-28.	-0.016	188.93	1.036s
EU-155	345.76	86.54	1375.	-29.	-0.016	182.97	1.036s
Sn-126	347.35	86.94	1347.	-29.	-0.016	181.02	1.037
Sn-126	349.87	87.57	1207.	-22.	-0.012	222.41	1.037s
Cd-109	351.75	88.04	1318.	0.	0.000	178.89	1.038A
Nd-147	363.99	91.10	1185.	0.	0.000	1000.00	1.041s
TH-234	369.94	92.59	175.	92.	0.051	22.85	1.042D
AC-228	372.98	93.35	1137.	28.	0.016	170.10	1.043s
Gd-153	389.58	97.50	1162.	23.	0.013	212.92	1.047s
Np-239	414.37	103.70	849.	0.	0.000	1000.00	1.053s
EU-155	420.82	105.31	202.	23.	0.013	89.12	1.054s
Np-239	424.09	106.13	244.	10.	0.006	212.58	1.055s
EU-152	486.67	121.78	245.	-15.	-0.009	146.70	1.070s
CO-57	487.80	122.06	261.	0.	0.000	1000.00	1.070s
EU-154	491.95	123.10	254.	-27.	-0.015	85.32	1.071s
PA-234	524.72	131.29	809.	-28.	-0.016	143.31	1.079s
HF-181	531.64	133.02	815.	-28.	-0.016	143.64	1.081s
CE-144	533.69	133.54	844.	-28.	-0.016	146.02	1.081s
HF-181	544.74	136.30	872.	-28.	-0.016	148.06	1.084s
CO-57	545.43	136.47	900.	-8.	-0.004	564.77	1.084s
Tc-99m	561.57	140.51	919.	11.	0.006	390.91	1.088s
U-235	574.67	143.79	908.	0.	0.000	1000.00	1.091s
CE-141	581.29	145.44	786.	27.	0.015	146.10	1.092s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Ba-140	650.15	162.66	244.	18.	0.010	128.31	1.108s
U-235	653.03	163.38	240.	-5.	-0.003	440.45	1.109s
CE-139	662.92	165.85	206.	22.	0.012	96.13	1.111s
U-235	742.37	185.72	132.	124.	0.069	19.52	1.130s
TH-229	773.52	193.51	148.	7.	0.004	342.36	1.137s
TH-229	842.87	210.85	244.	-21.	-0.012	105.09	1.153s
Cf-251	907.45	227.00	128.	-4.	-0.002	556.03	1.168s
TH-227	943.33	235.97	933.	-25.	-0.014	174.79	1.176
PB-212	953.97	238.63	56.	388.	0.215	5.78	1.179D
PB-214	967.43	242.00	69.	158.	0.088	10.87	1.182D
EU-152	978.21	244.69	722.	18.	0.010	207.71	1.185s
TH-227	1024.39	256.24	116.	-11.	-0.006	194.06	1.195s
Cd-113m	1054.23	263.70	146.	5.	0.003	333.46	1.202s
BI-210M	1062.75	265.83	182.	-24.	-0.013	93.06	1.204s
TL-208	1108.55	277.28	117.	2.	0.001	707.39	1.215
Hg-203	1116.22	279.20	111.	19.	0.011	80.14	1.216
I-131	1136.61	284.30	72.	13.	0.007	130.77	1.221s
PB-214	1179.77	295.09	38.	282.	0.157	6.71	1.231D
TL-210	1183.41	296.00	554.	14.	0.008	235.89	1.231s
PB-212	1199.52	300.03	37.	35.	0.019	30.25	1.235D
PA-231	1199.68	300.07	568.	14.	0.008	238.11	1.235
PA-233	1200.12	300.18	582.	14.	0.008	241.05	1.235
PA-231	1210.00	302.65	596.	14.	0.008	243.50	1.237s
BA-133	1210.81	302.85	611.	14.	0.008	246.31	1.238s
Ba-140	1218.80	304.85	625.	14.	0.008	248.78	1.240
BI-210M	1218.99	304.90	639.	14.	0.008	251.58	1.240
Ir-192	1233.16	308.44	653.	14.	0.008	253.70	1.243s
PA-233	1247.44	312.01	668.	14.	0.008	255.79	1.246s
Ir-192	1265.35	316.49	682.	14.	0.008	257.66	1.250s
La-140	1314.43	328.76	424.	-17.	-0.009	176.36	1.261s
AC-228	1352.03	338.16	39.	87.	0.048	18.01	1.039s
Cs-136	1361.66	340.57	255.	-10.	-0.005	235.67	1.272
EU-152	1376.53	344.29	254.	-20.	-0.011	115.79	1.275
HF-181	1382.70	345.83	225.	18.	0.010	118.33	1.276s
PB-214	1406.63	351.81	47.	398.	0.221	6.09	1.411
BA-133	1423.37	356.00	558.	-21.	-0.012	157.43	1.285s
I-131	1457.31	364.48	44.	3.	0.002	436.74	1.293
BA-133	1534.73	383.84	167.	-8.	-0.005	226.61	1.310s
Cf-249	1551.17	387.95	106.	16.	0.009	95.47	1.314s
SN-113	1566.12	391.69	160.	-6.	-0.003	318.76	1.317s
SB-125	1710.86	427.88	82.	-7.	-0.004	255.25	1.349s
PM-146	1814.87	453.88	44.	15.	0.008	96.49	1.372s
SB-125	1852.82	463.37	72.	7.	0.004	175.55	1.380s
Ir-192	1871.59	468.06	67.	14.	0.008	89.26	1.384s
BE-7	1909.73	477.60	92.	14.	0.008	102.69	1.392s
HF-181	1927.34	482.00	106.	14.	0.008	109.29	1.396s
La-140	1947.43	487.02	112.	7.	0.004	202.99	1.400s
RU-103	1987.56	497.05	78.	-21.	-0.012	89.46	1.409s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
RH-106	2046.81	511.86	91.	52.	0.029	29.42	2.672
Kr-85	2055.27	513.98	143.	0.	0.000	1000.00	1.424s
Nd-147	2123.35	531.00	56.	-11.	-0.006	138.41	1.438s
Ba-140	2148.39	537.26	27.	5.	0.003	203.24	1.444s
CS-134	2252.30	563.24	52.	2.	0.001	833.18	1.466
CS-134	2276.64	569.32	51.	-2.	-0.001	439.16	1.471s
PA-234	2277.24	569.47	54.	0.	0.000	1000.00	1.471s
BI-207	2278.16	569.70	70.	-13.	-0.007	92.87	1.471s
TL-208	2332.07	583.18	29.	114.	0.063	14.25	1.782s
SB-125	2401.36	600.50	418.	12.	0.006	250.12	1.497s
SB-124	2410.29	602.73	429.	12.	0.006	253.22	1.499s
CS-134	2418.21	604.71	441.	6.	0.003	507.13	1.500s
BI-214	2436.05	609.17	31.	313.	0.174	6.98	1.174
AG-108M	2456.49	614.28	447.	0.	0.000	1000.00	1.508s
PM-144	2471.62	618.06	447.	0.	0.000	1000.00	1.512s
RH-106	2487.04	621.92	465.	-13.	-0.007	238.05	1.515s
SB-125	2542.94	635.89	57.	-12.	-0.006	95.83	1.526s
I-131	2547.28	636.97	54.	10.	0.006	108.93	1.527s
AG-110M	2630.43	657.76	34.	12.	0.007	74.54	1.544s
CS-137	2646.03	661.66	100.	-19.	-0.010	79.32	1.548s
PM-144	2785.58	696.54	85.	-20.	-0.011	109.25	1.576s
NB-94	2809.93	702.63	63.	12.	0.006	101.40	1.581s
SB-124	2890.57	722.79	123.	-25.	-0.014	66.32	1.598s
AG-108M	2891.17	722.94	148.	-25.	-0.014	72.14	1.598s
EU-154	2892.86	723.36	173.	-15.	-0.008	129.69	1.598s
BI-212	2908.11	727.17	123.	16.	0.009	102.74	1.601
PM-146	2942.31	735.72	19.	10.	0.006	98.27	1.608s
PM-146	2988.08	747.16	42.	-12.	-0.007	81.04	1.617s
ZR-95	3026.36	756.73	25.	4.	0.002	279.32	1.625s
AG-110M	3055.23	763.94	60.	0.	0.000	1000.00	1.631s
NB-95	3062.61	765.79	51.	19.	0.010	59.06	1.632s
PA-234M	3065.10	766.41	59.	14.	0.008	82.30	1.633s
EU-152	3115.14	778.92	40.	-5.	-0.003	281.66	1.643s
BI-212	3141.15	785.42	52.	12.	0.007	86.57	1.648
CS-134	3182.96	795.87	54.	5.	0.003	212.60	1.656s
TL-210	3197.88	799.60	35.	12.	0.006	78.26	1.659s
CS-134	3207.29	801.95	89.	-16.	-0.009	85.14	1.661s
CO-58	3242.59	810.78	26.	10.	0.006	79.04	1.668s
La-140	3262.58	815.77	37.	9.	0.005	96.10	1.672s
Cs-136	3273.50	818.50	70.	-13.	-0.007	94.73	1.674s
MN-54	3338.91	834.85	30.	-5.	-0.003	202.10	1.687s
TL-208	3439.90	860.09	5.	33.	0.018	22.90	0.763s
NB-94	3483.94	871.10	38.	-9.	-0.005	102.44	1.715s
EU-154	3492.47	873.23	53.	-6.	-0.004	167.84	1.717s
PA-234	3521.68	880.53	75.	-10.	-0.005	130.44	1.722s
PA-234	3532.53	883.24	84.	0.	0.000	1000.00	1.724s
AG-110M	3538.30	884.68	84.	0.	0.000	1000.00	1.725s
Y-88	3591.74	898.04	20.	11.	0.006	94.33	1.736s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
AC-228	3643.32	910.93	5.	94.	0.052	11.39	1.615
AG-110M	3749.60	937.49	50.	-16.	-0.009	100.32	1.766s
PA-234	3783.72	946.02	10.	17.	0.009	47.55	1.772s
EU-152	3856.11	964.11	54.	0.	0.000	1000.00	1.786s
AC-228	3876.80	969.28	10.	54.	0.030	19.42	0.425s
EU-154	3985.03	996.33	53.	-14.	-0.008	78.06	1.810s
EU-154	4018.82	1004.77	27.	-2.	-0.001	493.68	1.816s
Co-56	4151.13	1037.84	43.	-16.	-0.009	98.08	1.841s
Cs-136	4192.07	1048.07	33.	-7.	-0.004	117.30	1.848s
RH-106	4201.23	1050.36	48.	-7.	-0.004	152.48	1.850s
BI-207	4254.46	1063.66	21.	4.	0.002	291.05	1.860s
Ga-68	4309.44	1077.40	32.	-10.	-0.006	132.41	1.870s
FE-59	4396.88	1099.25	22.	-4.	-0.002	288.29	1.886s
EU-152	4448.20	1112.07	122.	11.	0.006	139.74	1.895s
ZN-65	4462.09	1115.55	133.	4.	0.002	402.12	1.897s
BI-214	4479.94	1120.01	18.	85.	0.047	16.15	1.873
Sc-46	4482.12	1120.55	137.	0.	0.000	1000.00	1.901
Ta-182	4485.12	1121.30	126.	9.	0.005	172.86	1.901
CO-60	4692.96	1173.24	16.	5.	0.003	201.07	1.938s
Ta-182	4756.25	1189.05	34.	-13.	-0.007	108.79	1.949
Ta-182	4885.75	1221.41	23.	-2.	-0.001	674.39	1.972
Co-56	4953.27	1238.28	40.	10.	0.006	148.79	1.984s
NA-22	5098.35	1274.53	11.	10.	0.005	58.82	2.008s
EU-154	5098.39	1274.54	21.	0.	0.000	1000.00	2.008s
TL-210	5252.32	1313.00	17.	2.	0.001	488.62	2.034s
CO-60	5330.37	1332.50	6.	7.	0.004	86.88	2.047s
AG-110M	5537.69	1384.30	11.	3.	0.001	302.33	2.082s
EU-152	5632.56	1408.00	23.	-4.	-0.002	308.96	2.097s
K-40	5843.41	1460.68	8.	333.	0.185	5.61	2.077
La-140	6385.95	1596.21	18.	-3.	-0.002	346.41	2.215s
SB-124	6765.35	1690.98	13.	-3.	-0.001	337.04	2.272s
BI-214	7059.65	1764.49	4.	63.	0.035	13.30	2.314s
Co-56	7087.11	1771.35	78.	-8.	-0.004	158.64	2.318s

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	Peak Code	MDA Value Bq/Sample	COMMENTS
BE-7	C	3.1419E+00				5.31E+01	
			477.60	3.142E+00	?(	1.088E+01 1.03E+02 1.05E+01	G

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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
NA-22	C	4.9374E-01					9.50E+02	
			1274.53	4.937E-01	?(	9.397E-01	5.88E+01	9.99E+01 G
K-40	N	1.7795E+02					4.66E+11	
			1460.83	1.780E+02	(P	8.406E+00	5.61E+00	1.07E+01 G
Sc-46	F	3.2045E-02					8.38E+01	
			889.28	3.205E-02	%(	1.761E+00	1.57E+03	1.00E+02 G
			1120.55	0.000E+00	-	2.638E+00	1.00E+03	1.00E+02 G
CR-51	F	2.2411E-01					2.77E+01	
			320.08	2.241E-01	%(P	2.301E+01	3.05E+03	9.94E+00 G
MN-54	C	-1.9661E-01					3.12E+02	
			834.85	-1.966E-01	?(P	1.040E+00	2.02E+02	1.00E+02 G
FE-59	F	-2.9520E-01					4.45E+01	
			1099.25	-2.952E-01	?(P	1.960E+00	2.88E+02	5.65E+01 G
			1291.60	-7.962E-02	%	2.973E+00	1.68E+03	4.32E+01 G
Co-56	C	3.2015E-01					7.73E+01	
			846.77	2.444E-02	%(P	1.051E+00	1.83E+03	9.99E+01 G
			1238.28	7.674E-01	(P	2.425E+00	1.49E+02	6.61E+01 G
			1037.84	-4.808E+00	+	1.017E+01	9.81E+01	1.41E+01 G
			1771.35	-3.478E+00	+	1.890E+01	1.59E+02	1.55E+01 A
CO-58	C	3.6167E-01					7.09E+01	
			810.78	3.617E-01	&(	9.612E-01	7.90E+01	9.95E+01 G
CO-60	F	3.0009E-01					1.93E+03	
			1332.50	3.769E-01	?(	7.304E-01	8.69E+01	1.00E+02 G
			1173.24	2.233E-01	?(P	1.030E+00	2.01E+02	9.99E+01 G
ZN-65	F	3.7067E-01					2.44E+02	
			1115.55	3.707E-01	?(	5.120E+00	4.02E+02	5.06E+01 G
NB-94	I	3.7977E-01					7.41E+06	
			702.63	3.798E-01	?(P	1.303E+00	1.01E+02	9.79E+01 G
			871.10	-3.409E-01	&	1.191E+00	1.02E+02	9.99E+01 G
ZR-95	I	2.4952E-01					6.40E+01	
			756.73	2.495E-01	&(	1.622E+00	2.79E+02	5.45E+01 G
			724.20	9.923E-02	%	4.781E+00	1.40E+03	4.42E+01 G
NB-95	I	6.3679E-01					6.40E+01	
			765.79	6.368E-01	?(	1.233E+00	5.91E+01	9.98E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
RU-103	I	-5.6827E-01					3.93E+01	
			497.05	-5.683E-01	?(	1.199E+00	8.95E+01	9.09E+01 G
			610.30	-1.534E-05	%	5.088E+01	9.80E+07	5.75E+00 GA
RH-106	I	-3.8077E+00					3.74E+02	
			621.92	-3.808E+00	?(	3.046E+01	2.38E+02	9.93E+00 G
			1050.36	-1.871E+01	+	9.852E+01	1.52E+02	1.56E+00 G
			511.86	6.601E+00	?	5.987E+00	2.94E+01	2.00E+01 GA
AG-108M	C	1.6600E-02					1.53E+05	
			433.94	1.660E-02	&(	9.384E-01	2.30E+03	9.05E+01 G
			722.94	-8.975E-01	&	2.147E+00	7.21E+01	9.08E+01 G
			614.28	0.000E+00	-	3.272E+00	1.00E+03	8.98E+01 G
AG-110M	F	2.6732E-01					2.50E+02	
			884.68	0.000E+00	?(	2.398E+00	1.00E+03	7.27E+01 G
			657.76	3.875E-01	?(	9.649E-01	7.45E+01	9.46E+01 G
			937.49	-1.865E+00	+	4.157E+00	1.00E+02	3.44E+01 G
			1384.30	5.989E-01	?(	4.132E+00	3.02E+02	2.43E+01 G
			763.94	0.000E+00	&	5.960E+00	1.00E+03	2.23E+01 G
SN-113	F	-1.8507E-01					1.15E+02	
			391.69	-1.851E-01	?(	2.016E+00	3.19E+02	6.40E+01 G
SB-124	F	3.3954E-01					6.02E+01	
			602.73	3.395E-01	?(	2.893E+00	2.53E+02	9.83E+01 G
			1690.98	-3.584E-01	+	2.593E+00	3.37E+02	4.78E+01 G
			722.79	-7.540E+00	&	1.653E+01	6.63E+01	1.08E+01 G
SB-125	I	5.7666E-01					1.01E+03	
			427.88	-5.526E-01	?(	3.390E+00	2.55E+02	2.96E+01 G
			600.50	1.861E+00	?(	1.566E+01	2.50E+02	1.79E+01 G
			635.89	-3.074E+00	&	9.956E+00	9.58E+01	1.13E+01 G
			463.37	1.579E+00	?(	9.531E+00	1.76E+02	1.05E+01 G
I-131	I	6.0619E-01					8.02E+00	
			364.48	7.310E-02	(	8.192E-01	4.37E+02	8.17E+01 G
			284.30	3.548E+00	&(	1.153E+01	1.31E+02	6.14E+00 G
			636.97	4.161E+00	?(	1.542E+01	1.09E+02	7.17E+00 G
Gd-153	F	8.0415E-01					2.42E+02	
			97.50	8.041E-01	&(	5.710E+00	2.13E+02	3.00E+01 G
			103.20	8.009E-02	%	6.649E+00	2.47E+03	2.18E+01 G
Ga-68	C	-1.5828E+01					4.71E-02	
			1077.40	-1.583E+01	?(	4.601E+01	1.32E+02	3.30E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Tc-99m	I	1.3852E-01					2.51E-01	
			140.51	1.385E-01	?(	1.813E+00	3.91E+02	8.93E+01 G
BA-133	F	-2.1133E-01					3.85E+03	
			356.00	-6.762E-01	(	3.560E+00	1.57E+02	6.20E+01 G
			302.85	1.362E+00	(	1.125E+01	2.46E+02	1.83E+01 G
			383.84	-1.886E+00	&	1.454E+01	2.27E+02	8.94E+00 GA
			80.99	-1.053E+00	+ P	5.585E+00	8.49E+01	3.41E+01 GA
CS-134	I	2.0640E-01					7.54E+02	
			795.87	2.064E-01	&(	1.525E+00	2.13E+02	8.55E+01 G
			604.71	1.728E-01	?(	2.957E+00	5.07E+02	9.76E+01 G
			569.32	-4.164E-01	+	6.442E+00	4.39E+02	1.54E+01 G
			801.95	-6.675E+00	+	1.902E+01	8.51E+01	8.69E+00 G
			563.24	5.996E-01	&(P	1.186E+01	8.33E+02	8.35E+00 G
CS-137	I	-6.7156E-01					1.10E+04	
			661.66	-6.716E-01	&(	1.776E+00	7.93E+01	8.52E+01 G
CE-139	F	3.1851E-01					1.38E+02	
			165.85	3.185E-01	?(P	1.023E+00	9.61E+01	7.99E+01 G
Ba-140	I	1.7134E+00					1.28E+01	
			537.26	5.696E-01	?(P	2.890E+00	2.03E+02	2.44E+01 G
			162.66	3.341E+00	(P	1.439E+01	1.28E+02	6.22E+00 G
			304.85	5.856E+00	&(	4.884E+01	2.49E+02	4.29E+00 G
La-140	I	2.0682E-01					1.28E+01	
			1596.21	-1.927E-01	?(	1.444E+00	3.46E+02	9.54E+01 G
			487.02	4.027E-01	&(P	2.794E+00	2.03E+02	4.55E+01 G
			328.76	-1.521E+00	+	8.999E+00	1.76E+02	2.03E+01 G
			815.77	1.461E+00	?(	4.772E+00	9.61E+01	2.33E+01 G
CE-141	I	6.2956E-01					3.25E+01	
			145.44	6.296E-01	&(	3.067E+00	1.46E+02	4.82E+01 G
CE-144	I	-2.7387E+00					2.85E+02	
			133.54	-2.739E+00	&(	1.333E+01	1.46E+02	1.11E+01 G
PM-144	C	-6.4529E-01					3.63E+02	
			696.54	-6.453E-01	?(P	1.472E+00	1.09E+02	9.90E+01 G
			618.06	0.000E+00	+	2.980E+00	1.00E+03	9.91E+01 G
EU-152	F	1.2868E+00					4.94E+03	
			121.78	-5.618E-01	&(	2.774E+00	1.47E+02	2.86E+01 G
			344.29	-1.431E+00	&	5.551E+00	1.16E+02	2.65E+01 G
			1112.07	3.831E+00	&(	1.815E+01	1.40E+02	1.36E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			778.92	-1.342E+00	+	8.637E+00	2.82E+02	1.29E+01 G
			964.11	0.000E+00	-	1.039E+01	1.00E+03	1.46E+01 G
			244.69	3.678E+00	&(	2.555E+01	2.08E+02	7.58E+00 G
			1408.00	-9.655E-01	&	6.556E+00	3.09E+02	2.10E+01 GA
EU-154	I	-6.9705E-01					3.14E+03	
			123.10	-6.971E-01	*(	1.979E+00	8.53E+01	4.08E+01 G
			1274.54	0.000E+00	+	3.491E+00	1.00E+03	3.52E+01 G
			723.36	-2.378E+00	+	1.039E+01	1.30E+02	2.02E+01 G
			873.23	-1.957E+00	+	1.135E+01	1.68E+02	1.23E+01 G
			1004.77	-5.657E-01	+	6.313E+00	4.94E+02	1.80E+01 G
			996.33	-5.578E+00	+	1.456E+01	7.81E+01	1.06E+01 G
EU-155	I	1.1419E+00					1.81E+03	
			105.31	1.142E+00	&(	3.394E+00	8.91E+01	2.12E+01 G
			86.54	-1.041E+00	&	6.340E+00	1.83E+02	3.07E+01 G
HF-181	F	7.1638E-01					4.24E+01	
			482.00	4.144E-01	?(	1.528E+00	1.09E+02	8.05E+01 G
			133.02	-7.003E-01	&	3.353E+00	1.44E+02	4.33E+01 G
			345.83	2.329E+00	?(	9.248E+00	1.18E+02	1.51E+01 G
			136.30	-5.241E+00	+	2.586E+01	1.48E+02	5.85E+00 G
Ta-182	F	1.2352E+00					1.14E+02	
			1121.30	1.235E+00	(	7.267E+00	1.73E+02	3.49E+01 G
			1221.41	-3.045E-01	-	4.549E+00	6.74E+02	2.70E+01 G
			1189.05	-3.875E+00	+	8.908E+00	1.09E+02	1.62E+01 G
Hg-203	F	3.9363E-01					4.66E+01	
			279.20	3.936E-01	?(	1.052E+00	8.01E+01	8.15E+01 G
TL-208	N	3.7784E+00					6.98E+02	
			583.02	3.778E+00	(P	9.150E-01	1.42E+01	8.45E+01 G
			277.28	5.671E-01	- P	1.386E+01	7.07E+02	6.31E+00 G
			860.56	9.911E+00	+ P	4.013E+00	2.29E+01	1.24E+01 G
PM-146	C	7.6289E-01					2.02E+03	
			453.88	5.199E-01	&(P	1.202E+00	9.65E+01	6.50E+01 G
			747.16	-1.191E+00	+ P	3.258E+00	8.10E+01	3.40E+01 G
			735.72	1.465E+00	?(P	3.409E+00	9.83E+01	2.25E+01 G
Y-88	F	2.4200E-01					1.07E+02	
			1836.06	4.099E-02	%(P	1.006E+00	1.07E+03	9.92E+01 G
			898.04	4.548E-01	?(	9.737E-01	9.43E+01	9.37E+01 G
Cd-113m		1.3711E+03					5.33E+03	
			263.70	1.371E+03	&(	1.565E+04	3.33E+02	6.00E-03 K

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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Cf-251	T	-1.4369E-01					3.28E+05	
			176.60	-1.437E-01	%(	4.198E+00	1.12E+03	1.70E+01 G
			227.00	-9.142E-01	+	1.267E+01	5.56E+02	6.30E+00 GA
Cf-249	T	4.9867E-01					1.28E+05	
			387.95	4.987E-01	&(	1.599E+00	9.55E+01	6.60E+01 G
			333.44	2.412E-01	%	1.157E+01	1.42E+03	1.55E+01 G
Sn-126		-3.4001E+00					3.65E+07	
			87.57	-6.526E-01	}	4.841E+00	2.22E+02	3.75E+01 GA
			64.28	-3.400E+00	(	1.597E+01	1.41E+02	9.70E+00 G
			86.94	-3.528E+00	+	2.126E+01	1.81E+02	9.04E+00 GA
PB-210	N	1.1495E+01					8.14E+03	
			46.54	1.149E+01	?(P	4.480E+01	1.17E+02	4.25E+00 G
PB-212	N	1.3324E+01					6.98E+02	
			238.63	1.332E+01	(P	1.295E+00	5.78E+00	4.33E+01 G
			300.03	1.833E+01	+	1.655E+01	3.02E+01	3.28E+00 GA
PB-214	N	2.0542E+01					5.84E+05	
			351.93	2.054E+01	(P	1.796E+00	6.09E+00	3.76E+01 G
			295.09	2.515E+01	+ P	2.789E+00	6.71E+00	1.93E+01 G
			242.00	3.200E+01	+	8.364E+00	1.09E+01	7.43E+00 GA
BI-207	C	2.1760E-01					1.18E+04	
			1063.66	2.176E-01	?(	1.438E+00	2.91E+02	7.45E+01 G
			569.70	-3.746E-01	&	1.172E+00	9.29E+01	9.77E+01 G
BI-212	N	6.8743E+00					6.98E+02	
			727.17	6.874E+00	(	2.374E+01	1.03E+02	7.55E+00 G
			785.42	3.406E+01	P	9.915E+01	8.66E+01	1.28E+00 GA
BI-214	N	1.9582E+01					5.84E+05	
			609.31	1.958E+01	(P	1.803E+00	6.98E+00	4.61E+01 G
			1120.29	2.579E+01	+ P	6.932E+00	1.62E+01	1.51E+01 G
			1764.49	2.737E+01	+ P	5.021E+00	1.33E+01	1.54E+01 G
BI-210M	T	-1.7249E-01					1.10E+09	
			265.83	-7.716E-01	?(P	2.097E+00	9.31E+01	5.00E+01 G
			304.90	8.973E-01	&(	7.567E+00	2.52E+02	2.80E+01 G
AC-228	N	1.2877E+01					2.10E+03	
			911.07	1.264E+01	(P	1.834E+00	1.14E+01	2.90E+01 G
			968.97	1.277E+01	(P	4.064E+00	1.94E+01	1.75E+01 G
			338.32	1.361E+01	@(P	5.034E+00	1.80E+01	1.20E+01 G
			93.35	5.450E+00	- P	3.088E+01	1.70E+02	5.56E+00 XA

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
TH-227	N	-2.4540E+00					7.95E+03	
			256.24	-2.454E+00	?(	1.180E+01	1.94E+02	7.00E+00 G
			235.97	-2.988E+00	+	1.742E+01	1.75E+02	1.23E+01 G
			50.14	-6.219E-01	% P	2.094E+01	1.02E+03	8.00E+00 G
TH-229	N	2.0619E+00					2.68E+06	
			193.51	2.062E+00	?(	1.750E+01	3.42E+02	4.40E+00 G
			210.85	-9.859E+00	&	3.466E+01	1.05E+02	2.99E+00 G
TH-234	N	1.7748E+01					1.63E+12	
			92.59	1.775E+01	(P	1.241E+01	2.29E+01	5.58E+00 G
			63.29	-6.739E+00	&	3.910E+01	1.73E+02	3.81E+00 G
PA-231	N	9.3107E+00					1.20E+07	
			302.65	8.665E+00	(	7.076E+01	2.43E+02	2.88E+00 G
			300.07	1.007E+01	(	8.041E+01	2.38E+02	2.46E+00 G
PA-233	C	1.1950E+00					7.82E+08	
			312.01	7.127E-01	&(	6.110E+00	2.56E+02	3.60E+01 G
			300.18	3.995E+00	(	3.230E+01	2.41E+02	6.20E+00 G
PA-234	N	1.2236E+00					1.63E+12	
			131.29	-1.675E+00	?(	8.003E+00	1.43E+02	1.80E+01 G
			946.02	5.117E+00	?(	5.252E+00	4.75E+01	1.34E+01 G
			569.47	0.000E+00	-	1.234E+01	1.00E+03	8.20E+00 G
			883.24	0.000E+00	-	1.813E+01	1.00E+03	9.60E+00 G
			880.53	-6.147E+00	+	2.733E+01	1.30E+02	6.00E+00 GA
PA-234M	N	4.0836E+01					1.63E+12	
			1001.00	-1.809E+00	%(P	2.065E+02	2.94E+03	8.37E-01 G
			766.41	1.622E+02	?(	4.476E+02	8.23E+01	2.94E-01 G
AM-241	T	-1.2778E+00					1.58E+05	
			59.54	-1.278E+00	@(	4.580E+00	1.08E+02	3.59E+01 G
Np-237	F	-2.3625E+00					2.14E+06	
			86.49	-2.362E+00	&(	1.486E+01	1.89E+02	1.31E+01 G
Ir-192	F	4.9119E-01					7.40E+01	
			316.49	2.987E-01	?(	2.579E+00	2.58E+02	8.70E+01 G
			468.06	6.257E-01	?(	1.878E+00	8.93E+01	5.18E+01 G
			308.44	7.997E-01	&(	6.800E+00	2.54E+02	3.18E+01 G
Cs-136	F	-4.6945E-01					1.30E+01	
			818.50	-4.695E-01	?(	1.499E+00	9.47E+01	1.00E+02 G
			1048.07	-4.006E-01	+	1.618E+00	1.17E+02	8.00E+01 G
			340.57	-3.913E-01	&	3.120E+00	2.36E+02	4.69E+01 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

Np-239   T   4.8251E-01                                      2.36E+00
                          103.70 0.000E+00 &   6.041E+00 1.00E+03 2.40E+01 X
                          106.13 4.825E-01 ?(  3.469E+00 2.13E+02 2.27E+01 G
                           99.50 5.367E-07 %   1.147E+01 6.38E+08 1.50E+01 X

Nd-147      -2.2735E+00                                     1.11E+01
                          531.00-2.273E+00 &(  7.560E+00 1.38E+02 1.30E+01 G
                           91.10 0.000E+00 +   6.249E+00 1.00E+03 2.83E+01 G

TL-210   N   3.6713E-01                                      5.84E+05
                          799.60 4.131E-01 ?(  1.084E+00 7.83E+01 9.90E+01 G
                          296.00 3.096E-01 ?(  2.450E+00 2.36E+02 7.90E+01 G
                         1313.00 4.979E-01 ?   5.458E+00 4.89E+02 2.10E+01 GA
   ( - 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

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********** 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	
AM-241	59.54	513.	-30.	-0.017	107.61	-1.278E+00	
Sn-126	64.28	542.	-24.	-0.013	140.58	-3.400E+00	
BA-133	80.99	1219.	-31.	-0.017	84.87	-1.053E+00	P
Np-237	86.49	1375.	-28.	-0.016	188.93	-2.362E+00	
EU-155	86.54	1375.	-29.	-0.016	182.97	-1.041E+00	
Sn-126	86.94	1347.	-29.	-0.016	181.02	-3.528E+00	
Sn-126	87.57	1207.	-22.	-0.012	222.41	-6.526E-01	
EU-155	105.31	202.	23.	0.013	89.12	1.142E+00	
Np-239	106.13	244.	10.	0.006	212.58	4.825E-01	
EU-152	121.78	245.	-15.	-0.009	146.70	-5.618E-01	
EU-154	123.10	254.	-27.	-0.015	85.32	-6.971E-01	
PA-234	131.29	809.	-28.	-0.016	143.31	-1.675E+00	
HF-181	133.02	815.	-28.	-0.016	143.64	-7.003E-01	
CE-144	133.54	844.	-28.	-0.016	146.02	-2.739E+00	
HF-181	136.30	872.	-28.	-0.016	148.06	-5.241E+00	
CO-57	136.47	900.	-8.	-0.004	564.77	-7.606E-01	
CE-141	145.44	786.	27.	0.015	146.10	6.296E-01	
Ba-140	162.66	244.	18.	0.010	128.31	3.341E+00	P
U-235	163.38	240.	-5.	-0.003	440.45	-1.170E+00	
U-235	185.72	132.	124.	0.069	19.52	2.898E+00	
TH-229	193.51	148.	7.	0.004	342.36	2.062E+00	
TH-229	210.85	244.	-21.	-0.012	105.09	-9.859E+00	
Cf-251	227.00	128.	-4.	-0.002	556.03	-9.142E-01	
TH-227	235.97	933.	-25.	-0.014	174.79	-2.988E+00	
EU-152	244.69	722.	18.	0.010	207.71	3.678E+00	
TH-227	256.24	116.	-11.	-0.006	194.06	-2.454E+00	
Cd-113m	263.70	146.	5.	0.003	333.46	1.371E+03	
BI-210M	265.83	182.	-24.	-0.013	93.06	-7.716E-01	P
Hg-203	279.20	111.	19.	0.011	80.14	3.936E-01	
I-131	284.30	72.	13.	0.007	130.77	3.548E+00	
TL-210	296.00	554.	14.	0.008	235.89	3.096E-01	
PA-231	300.07	568.	14.	0.008	238.11	1.007E+01	
PA-233	300.18	582.	14.	0.008	241.05	3.995E+00	
PA-231	302.65	596.	14.	0.008	243.50	8.665E+00	
BA-133	302.85	611.	14.	0.008	246.31	1.362E+00	
Ba-140	304.85	625.	14.	0.008	248.78	5.856E+00	
BI-210M	304.90	639.	14.	0.008	251.58	8.973E-01	
Ir-192	308.44	653.	14.	0.008	253.70	7.997E-01	
PA-233	312.01	668.	14.	0.008	255.79	7.127E-01	
Ir-192	316.49	682.	14.	0.008	257.66	2.987E-01	
La-140	328.76	424.	-17.	-0.009	176.36	-1.521E+00	
Cs-136	340.57	255.	-10.	-0.005	235.67	-3.913E-01	
EU-152	344.29	254.	-20.	-0.011	115.79	-1.431E+00	
HF-181	345.83	225.	18.	0.010	118.33	2.329E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
BA-133	356.00	558.	-21.	-0.012	157.43	-6.762E-01		
I-131	364.48	44.	3.	0.002	436.74	7.310E-02		
BA-133	383.84	167.	-8.	-0.005	226.61	-1.886E+00		
Cf-249	387.95	106.	16.	0.009	95.47	4.987E-01		
SN-113	391.69	160.	-6.	-0.003	318.76	-1.851E-01		
SB-125	427.88	82.	-7.	-0.004	255.25	-5.526E-01		
PM-146	453.88	44.	15.	0.008	96.49	5.199E-01		P
SB-125	463.37	72.	7.	0.004	175.55	1.579E+00		
Ir-192	468.06	67.	14.	0.008	89.26	6.257E-01		
BE-7	477.60	92.	14.	0.008	102.69	3.142E+00		
HF-181	482.00	106.	14.	0.008	109.29	4.144E-01		
La-140	487.02	112.	7.	0.004	202.99	4.027E-01		P
RU-103	497.05	78.	-21.	-0.012	89.46	-5.683E-01		
RH-106	511.86	91.	52.	0.029	29.42	6.601E+00		
Nd-147	531.00	56.	-11.	-0.006	138.41	-2.273E+00		
Ba-140	537.26	27.	5.	0.003	203.24	5.696E-01		P
CS-134	563.24	52.	2.	0.001	833.18	5.996E-01		P
CS-134	569.32	51.	-2.	-0.001	439.16	-4.164E-01		
BI-207	569.70	70.	-13.	-0.007	92.87	-3.746E-01		
SB-125	600.50	418.	12.	0.006	250.12	1.861E+00		
SB-124	602.73	429.	12.	0.006	253.22	3.395E-01		
CS-134	604.71	441.	6.	0.003	507.13	1.728E-01		
RH-106	621.92	465.	-13.	-0.007	238.05	-3.808E+00		
SB-125	635.89	57.	-12.	-0.006	95.83	-3.074E+00		
I-131	636.97	54.	10.	0.006	108.93	4.161E+00		
AG-110M	657.76	34.	12.	0.007	74.54	3.875E-01		
CS-137	661.66	100.	-19.	-0.010	79.32	-6.716E-01		
PM-144	696.54	85.	-20.	-0.011	109.25	-6.453E-01		P
NB-94	702.63	63.	12.	0.006	101.40	3.798E-01		P
SB-124	722.79	123.	-25.	-0.014	66.32	-7.540E+00		
AG-108M	722.94	148.	-25.	-0.014	72.14	-8.975E-01		
EU-154	723.36	173.	-15.	-0.008	129.69	-2.378E+00		
PM-146	735.72	19.	10.	0.006	98.27	1.465E+00		P
PM-146	747.16	42.	-12.	-0.007	81.04	-1.191E+00		P
ZR-95	756.73	25.	4.	0.002	279.32	2.495E-01		
NB-95	765.79	51.	19.	0.010	59.06	6.368E-01		
PA-234M	766.41	59.	14.	0.008	82.30	1.622E+02		
EU-152	778.92	40.	-5.	-0.003	281.66	-1.342E+00		
CS-134	795.87	54.	5.	0.003	212.60	2.064E-01		
TL-210	799.60	35.	12.	0.006	78.26	4.131E-01		
CS-134	801.95	89.	-16.	-0.009	85.14	-6.675E+00		
CO-58	810.78	26.	10.	0.006	79.04	3.617E-01		
La-140	815.77	37.	9.	0.005	96.10	1.461E+00		
Cs-136	818.50	70.	-13.	-0.007	94.73	-4.695E-01		
MN-54	834.85	30.	-5.	-0.003	202.10	-1.966E-01		P
NB-94	871.10	38.	-9.	-0.005	102.44	-3.409E-01		
EU-154	873.23	53.	-6.	-0.004	167.84	-1.957E+00		
PA-234	880.53	75.	-10.	-0.005	130.44	-6.147E+00		

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
Y-88	898.04	20.	11.	0.006	94.33	4.548E-01		
AG-110M	937.49	50.	-16.	-0.009	100.32	-1.865E+00		
PA-234	946.02	10.	17.	0.009	47.55	5.117E+00		
EU-154	996.33	53.	-14.	-0.008	78.06	-5.578E+00		
EU-154	1004.77	27.	-2.	-0.001	493.68	-5.657E-01		
Co-56	1037.84	43.	-16.	-0.009	98.08	-4.808E+00		
Cs-136	1048.07	33.	-7.	-0.004	117.30	-4.006E-01		
RH-106	1050.36	48.	-7.	-0.004	152.48	-1.871E+01		
BI-207	1063.66	21.	4.	0.002	291.05	2.176E-01		
Ga-68	1077.40	32.	-10.	-0.006	132.41	-1.583E+01		
FE-59	1099.25	22.	-4.	-0.002	288.29	-2.952E-01	P	
EU-152	1112.07	122.	11.	0.006	139.74	3.831E+00		
ZN-65	1115.55	133.	4.	0.002	402.12	3.707E-01		
Ta-182	1121.30	126.	9.	0.005	172.86	1.235E+00		
CO-60	1173.24	16.	5.	0.003	201.07	2.233E-01	P	
Ta-182	1189.05	34.	-13.	-0.007	108.79	-3.875E+00		
Ta-182	1221.41	23.	-2.	-0.001	674.39	-3.045E-01		
Co-56	1238.28	40.	10.	0.006	148.79	7.674E-01	P	
NA-22	1274.53	11.	10.	0.005	58.82	4.937E-01		
TL-210	1313.00	17.	2.	0.001	488.62	4.979E-01		
CO-60	1332.50	6.	7.	0.004	86.88	3.769E-01		
AG-110M	1384.30	11.	3.	0.001	302.33	5.989E-01		
EU-152	1408.00	23.	-4.	-0.002	308.96	-9.655E-01		
La-140	1596.21	18.	-3.	-0.002	346.41	-1.927E-01		
SB-124	1690.98	13.	-3.	-0.001	337.04	-3.584E-01		
Co-56	1771.35	78.	-8.	-0.004	158.64	-3.478E+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
BE-7	#A	3.1419E+00	3.1419E+00	1.027E+02%	1.09E+01
NA-22	#A	4.9374E-01	4.9374E-01	5.882E+01%	9.40E-01
K-40		1.7795E+02	1.7795E+02	5.609E+00%	8.41E+00
Sc-46	#A	3.2045E-02	3.2045E-02	1.573E+03%	1.76E+00
CR-51	#A	2.2411E-01	2.2411E-01	3.051E+03%	2.30E+01
MN-54	#A	-1.9661E-01	-1.9661E-01	2.021E+02%	1.04E+00
FE-59	#A	-2.9520E-01	-2.9520E-01	2.883E+02%	1.96E+00
Co-56	#A	3.2015E-01	3.2015E-01	1.488E+02%	1.05E+00
CO-57	#A	0.0000E+00	0.0000E+00	1.000E+03%	9.54E-01
CO-58	#A	3.6167E-01	3.6167E-01	7.904E+01%	9.61E-01
CO-60	#A	3.0009E-01	3.0009E-01	8.688E+01%	7.30E-01
ZN-65	#A	3.7067E-01	3.7067E-01	4.021E+02%	5.12E+00
NB-94	#A	3.7977E-01	3.7977E-01	1.014E+02%	1.30E+00
ZR-95	#A	2.4951E-01	2.4952E-01	2.793E+02%	1.62E+00

NB-95 #A	6.3678E-01	6.3679E-01	5.906E+01%		1.23E+00
RU-103 #A	-5.6826E-01	-5.6827E-01	8.946E+01%		1.20E+00
RH-106 #A	-3.8077E+00	-3.8077E+00	2.381E+02%		3.05E+01
AG-108M#A	1.6600E-02	1.6600E-02	2.301E+03%		9.38E-01
AG-110M#A	2.6732E-01	2.6732E-01	7.454E+01%		2.40E+00
SN-113 #A	-1.8506E-01	-1.8507E-01	3.188E+02%		2.02E+00
SB-124 #A	3.3954E-01	3.3954E-01	2.532E+02%		2.89E+00
SB-125 #A	5.7666E-01	5.7666E-01	1.327E+02%		3.39E+00
I-131 #A	6.0617E-01	6.0619E-01	1.089E+02%		8.19E-01
Gd-153 #A	8.0415E-01	8.0415E-01	2.129E+02%		5.71E+00
Ga-68 #A	-1.5718E+01	-1.5828E+01	1.324E+02%		4.60E+01
Tc-99m #A	1.3834E-01	1.3852E-01	3.909E+02%		1.81E+00
BA-133 #A	-2.1133E-01	-2.1133E-01	1.462E+02%		3.56E+00
CS-134 #A	2.0640E-01	2.0640E-01	2.126E+02%		1.53E+00
CS-137 #A	-6.7156E-01	-6.7156E-01	7.932E+01%		1.78E+00
CE-139 #A	3.1851E-01	3.1851E-01	9.613E+01%		1.02E+00
Ba-140 #A	1.7133E+00	1.7134E+00	1.153E+02%		2.89E+00
La-140 #A	2.0681E-01	2.0682E-01	9.610E+01%		1.44E+00
CE-141 #A	6.2955E-01	6.2956E-01	1.461E+02%		3.07E+00
CE-144 #A	-2.7387E+00	-2.7387E+00	1.460E+02%		1.33E+01
PM-144 #A	-6.4529E-01	-6.4529E-01	1.093E+02%		1.47E+00
EU-152 #A	1.2868E+00	1.2868E+00	9.672E+01%		2.77E+00
EU-154 #A	-6.9705E-01	-6.9705E-01	8.532E+01%		1.98E+00
EU-155 #A	1.1419E+00	1.1419E+00	8.912E+01%		3.39E+00
HF-181 #A	7.1637E-01	7.1638E-01	8.054E+01%		1.53E+00
Ta-182 #A	1.2352E+00	1.2352E+00	1.729E+02%		7.27E+00
Hg-203 #A	3.9362E-01	3.9363E-01	8.014E+01%		1.05E+00
TL-208	3.7784E+00	3.7784E+00	1.425E+01%		9.15E-01
PM-146 #A	7.6289E-01	7.6289E-01	6.886E+01%		1.20E+00
Y-88 #A	2.4200E-01	2.4200E-01	9.433E+01%		1.01E+00
Cd-113m#A	1.3711E+03	1.3711E+03	3.335E+02%		1.57E+04
Cd-109 #A	0.0000E+00	0.0000E+00	1.000E+03%		4.99E+01
Cf-251 #A	-1.4369E-01	-1.4369E-01	1.121E+03%		4.20E+00
Cf-249 #A	4.9867E-01	4.9867E-01	9.547E+01%		1.60E+00
Sn-126 #A	-3.4001E+00	-3.4001E+00	1.406E+02%		1.60E+01
PB-210 #A	1.1495E+01	1.1495E+01	1.166E+02%		4.48E+01
PB-212	1.3324E+01	1.3324E+01	5.779E+00%		1.30E+00
PB-214	2.0542E+01	2.0542E+01	6.094E+00%		1.80E+00
BI-207 #A	2.1760E-01	2.1760E-01	2.911E+02%		1.44E+00
BI-212 A	6.8743E+00	6.8743E+00	1.027E+02%		2.37E+01
U-235 #A	0.0000E+00	0.0000E+00	1.000E+03%		1.44E+01
BI-214	1.9582E+01	1.9582E+01	6.978E+00%		1.80E+00
BI-210M#A	-1.7249E-01	-1.7249E-01	9.306E+01%		2.10E+00
AC-228	1.2877E+01	1.2877E+01	9.610E+00%		1.83E+00
TH-227 #A	-2.4540E+00	-2.4540E+00	1.941E+02%		1.18E+01
TH-229 #A	2.0619E+00	2.0619E+00	3.424E+02%		1.75E+01
TH-234	1.7748E+01	1.7748E+01	2.285E+01%		1.24E+01
PA-231 #A	9.3107E+00	9.3107E+00	1.703E+02%		7.08E+01
PA-233 #A	1.1950E+00	1.1950E+00	1.757E+02%		6.11E+00

PA-234 #A	1.2236E+00	1.2236E+00	4.755E+01%	8.00E+00
PA-234M#A	4.0836E+01	4.0836E+01	8.230E+01%	2.06E+02
AM-241 #A	-1.2778E+00	-1.2778E+00	1.076E+02%	4.58E+00
Np-237 #A	-2.3625E+00	-2.3625E+00	1.889E+02%	1.49E+01
Ir-192 #A	4.9119E-01	4.9119E-01	8.926E+01%	2.58E+00
Cs-136 #A	-4.6944E-01	-4.6945E-01	9.473E+01%	1.50E+00
Np-239 #A	4.8244E-01	4.8251E-01	2.126E+02%	3.47E+00
Nd-147 #A	-2.2734E+00	-2.2735E+00	1.384E+02%	7.56E+00
TL-210 #A	3.6713E-01	3.6713E-01	7.826E+01%	1.08E+00
Kr-85 #A	0.0000E+00	0.0000E+00	1.000E+03%	3.46E+02

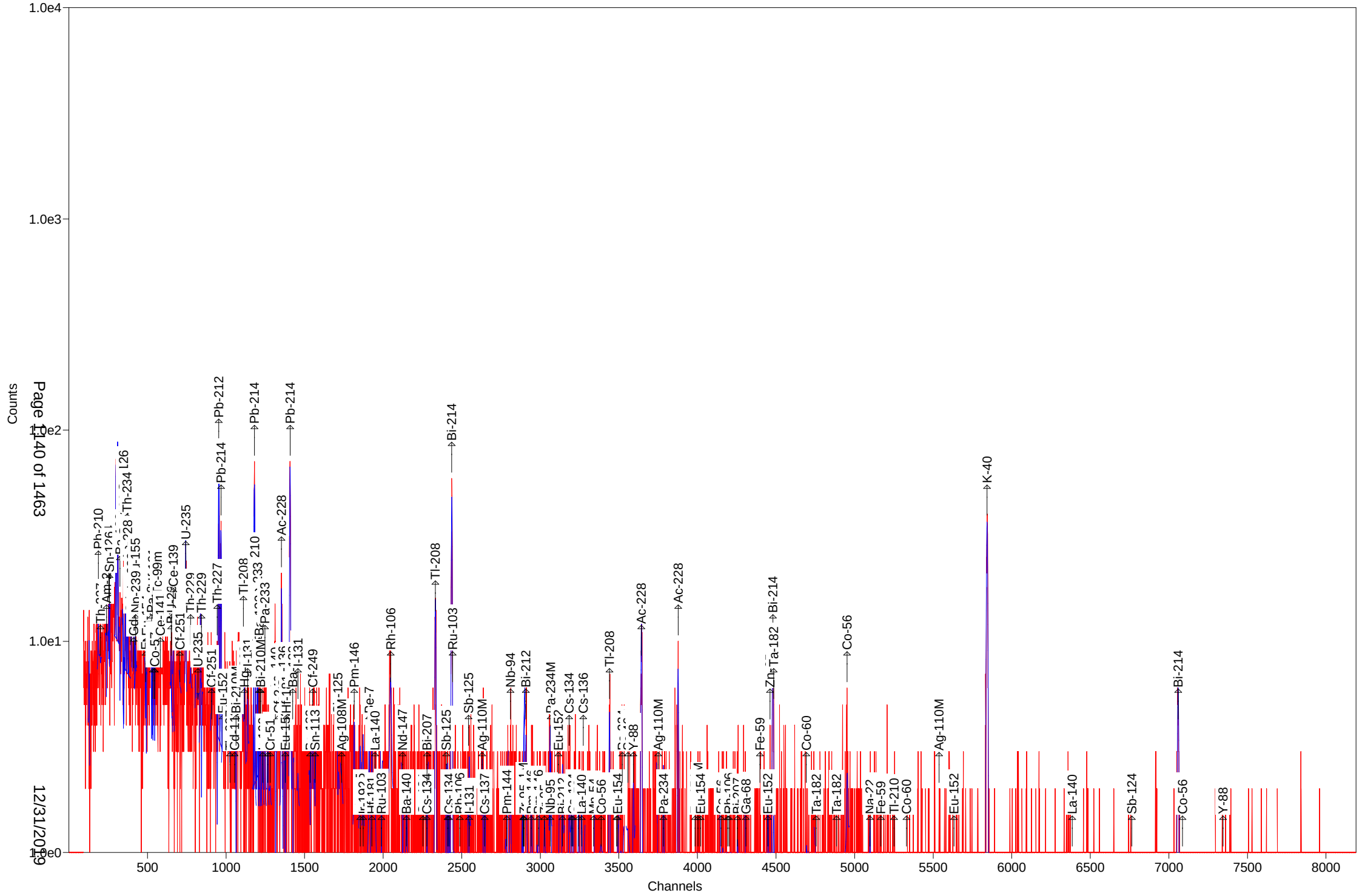
- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (25.1 to 1999.3 keV) 2.658E+02 Bq/Sample
Total Decayed Activity (25.1 to 1999.3 keV) 2.6580173E+02 Bq/Sample

(Page 22 of 22)

452567_Gamma_160-36526-A-18-B. 9_Gamma_20193840.spc.



Sample Description: 452567_Gamma_160-36526-A-19-B
Detector: Detector #12
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-19-B

Decay to Time: 12/25/2019 10:43 Live Time: 1800 sec
Acquisition Time: 12/25/2019 10:43:13 Real Time: 1802 sec
Analysis Time: 12/25/2019 11:13 Dead Time: 0.11 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 12_Soil_TunaCan.Clb
Efficiency Cal Desc: 12_TunaCan_108513
Efficiency Cal Date: 4/20/2018 11:53
Energy Cal Date: 4/20/2018 11:13
Library: Client_Long_Rev15.lib
Bkgd Correction File: 12_2019-12-07_1443.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	-6.288E+00	108.9	6.847E+00	6.855E+00	2.295E+01
NA-22	6.556E-01	79.2	5.193E-01	5.204E-01	1.749E+00
K-40	2.980E+02	5.0	1.477E+01	2.109E+01	5.395E+00
Sc-46	-4.484E-02	1472.1	6.601E-01	6.601E-01	2.315E+00
CR-51	-6.566E+00	190.9	1.253E+01	1.254E+01	4.176E+01
MN-54	-3.256E-01	243.2	7.920E-01	7.922E-01	1.856E+00
FE-59	-1.445E+00	124.3	1.796E+00	1.797E+00	3.890E+00
Co-56	2.483E+00	27.4	6.805E-01	6.921E-01	1.672E+00
CO-57	0.000E+00	1.#INF	2.895E-01	2.895E-01	1.605E+00
CO-58	-5.060E-02	1236.9	6.259E-01	6.259E-01	2.193E+00
CO-60	2.991E-01	145.1	4.339E-01	4.341E-01	1.999E+00
ZN-65	0.000E+00	1.#INF	3.549E-01	3.549E-01	9.111E+00
NB-94	-3.708E-01	201.6	7.474E-01	7.476E-01	1.742E+00
ZR-95	1.128E+00	92.2	1.039E+00	1.041E+00	2.742E+00
NB-95	-1.610E+00	71.2	1.146E+00	1.149E+00	3.794E+00
RU-103	-2.321E-01	264.2	6.132E-01	6.133E-01	1.547E+00
RH-106	6.533E+00	137.3	8.972E+00	8.978E+00	1.527E+01
AG-108M	2.455E-01	270.9	6.651E-01	6.652E-01	1.662E+00
AG-110M	-1.766E-01	503.2	8.886E-01	8.887E-01	3.104E+00
SN-113	9.722E-01	115.4	1.122E+00	1.123E+00	3.755E+00
SB-124	-7.243E-01	247.1	1.790E+00	1.790E+00	5.982E+00
SB-125	1.745E+00	46.1	8.043E-01	8.091E-01	5.229E+00
I-131	9.675E-01	64.0	6.191E-01	6.210E-01	1.398E+00
Gd-153	-1.640E+00	143.6	2.355E+00	2.357E+00	7.837E+00
Ga-68	1.673E+01	141.6	2.370E+01	2.372E+01	5.289E+01
Tc-99m	-5.234E-01	159.7	8.357E-01	8.362E-01	2.783E+00
BA-133	-1.079E+00	199.2	2.149E+00	2.150E+00	7.165E+00
CS-134	1.239E+00	83.7	1.038E+00	1.040E+00	2.524E+00
CS-137	-4.689E-01	180.2	8.451E-01	8.454E-01	2.876E+00
CE-139	-2.995E-01	200.9	6.016E-01	6.018E-01	2.021E+00
Ba-140	3.176E+00	71.8	2.279E+00	2.285E+00	4.861E+00
La-140	1.070E+00	67.8	7.248E-01	7.270E-01	1.659E+00
CE-141	-1.025E+00	154.2	1.581E+00	1.582E+00	5.261E+00

CE-144	3.756E+00	163.7	6.150E+00	6.153E+00	2.050E+01
PM-144	6.225E-01	98.6	6.139E-01	6.147E-01	1.420E+00
EU-152	2.040E+00	115.6	2.359E+00	2.362E+00	4.723E+00
EU-154	2.783E+00	39.8	1.107E+00	1.117E+00	3.015E+00
EU-155	2.077E+00	143.3	2.976E+00	2.978E+00	9.917E+00
HF-181	4.505E-01	71.1	3.201E-01	3.209E-01	3.037E+00
Ta-182	1.899E+00	167.7	3.185E+00	3.187E+00	1.303E+01
Hg-203	-3.177E-01	214.4	6.813E-01	6.815E-01	2.299E+00
TL-208	6.091E+00	13.1	7.961E-01	8.542E-01	1.282E+00
PM-146	5.051E-01	159.8	8.071E-01	8.075E-01	2.020E+00
Y-88	4.375E-01	111.0	4.856E-01	4.863E-01	1.407E+00
Cd-113m	2.417E+03	325.7	7.870E+03	7.871E+03	2.673E+04
Cd-109	0.000E+00	1.#INF	1.849E+01	1.849E+01	6.203E+01
Cf-251	1.187E+00	249.7	2.964E+00	2.965E+00	7.603E+00
Cf-249	-1.019E+00	110.3	1.123E+00	1.124E+00	3.754E+00
Sn-126	4.276E+00	178.2	7.621E+00	7.624E+00	2.545E+01
PB-210	4.557E+01	38.4	1.748E+01	1.771E+01	4.571E+01
PB-212	1.114E+01	9.1	1.010E+00	1.165E+00	2.452E+00
PB-214	6.428E+01	3.6	2.335E+00	4.010E+00	3.391E+00
BI-207	1.344E+00	51.7	6.955E-01	6.987E-01	1.475E+00
BI-212	-1.558E+01	80.3	1.251E+01	1.254E+01	4.161E+01
U-235	-7.041E-01	927.8	6.533E+00	6.533E+00	2.188E+01
BI-214	6.282E+01	4.5	2.823E+00	4.266E+00	3.251E+00
BI-210M	-1.220E+00	87.9	1.073E+00	1.075E+00	3.571E+00
AC-228	1.149E+01	19.5	2.241E+00	2.315E+00	7.037E+00
TH-227	3.326E-01	175.4	5.836E-01	5.838E-01	1.924E+01
TH-229	9.881E+00	105.0	1.038E+01	1.039E+01	2.646E+01
TH-234	1.454E+01	37.9	5.511E+00	5.570E+00	1.997E+01
PA-231	-2.115E+01	205.1	4.338E+01	4.339E+01	1.445E+02
PA-233	-4.771E-01	705.8	3.367E+00	3.367E+00	1.127E+01
PA-234	5.579E+00	32.1	1.793E+00	1.816E+00	9.721E+00
PA-234M	1.343E+02	71.1	9.544E+01	9.568E+01	2.297E+02
AM-241	-1.910E+00	117.3	2.240E+00	2.242E+00	7.451E+00
Np-237	0.000E+00	1.#INF	6.578E+00	6.578E+00	2.187E+01
Ir-192	6.468E-01	125.7	8.134E-01	8.142E-01	4.193E+00
Cs-136	6.305E-01	71.6	4.517E-01	4.531E-01	1.504E+00
Np-239	1.849E+00	138.8	2.566E+00	2.569E+00	8.556E+00
Nd-147	6.396E-01	139.1	8.895E-01	8.902E-01	1.108E+01
TL-210	0.000E+00	1.#INF	1.424E-01	1.424E-01	2.387E+00
Kr-85	-5.450E+01	297.3	1.620E+02	1.621E+02	5.520E+02
Total	3.143E+03				

Analyst: Caleb Quinn

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Sample description
452567_Gamma_160-36526-A-19-B

Spectrum Filename: C:\User\SPC\Det12\12_Gamma_20193696.An1

Acquisition information
Start time: 12/25/2019 10:43:13 AM
Live time: 1800
Real time: 1802
Dead time: 0.11 %
Detector ID: 12

Detector system
Ge12 S/N10034336

Calibration
Filename: 12_Soil_TunaCan.Clb
12_TunaCan_108513

Energy Calibration
Created: 4/20/2018 11:13:27 AM
Zero offset: 0.059 keV
Gain: 0.250 keV/channel
Quadratic: -3.735E-08 keV/channel^2

Efficiency Calibration
Created: 4/20/2018 11:53:09 AM
Type: Polynomial
Uncertainty: 1.020 %
Coefficients: -0.363508 -4.707999 0.462125
-0.051256 0.002384 -0.000043

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.08keV)
Stop channel: 8000 (1999.13keV)
Peak rejection level: 1000.000%
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

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Activity range factor: 2.000
Min. step backg. energy 0.000
Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	YES	12/25/2019 10:43:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	12_2019-12-07_1443.PBC 12/7/2019 2:43:53 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 27 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1278

***** 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
46.48	63.	38.36	0.78	1.801E-02	46.54	4.250	PBC<MDA	PB210
63.27	24.	86.08	0.87	2.978E-02	63.29	3.810	PBC<MDA	TH234
64.26	23.	178.23	0.87	3.015E-02	64.28	9.700	PBC<MDA	Sn126
74.82	298.	9.76	0.88	3.332E-02				
77.16	456.	6.86	0.88	3.386E-02				
87.17	169.	16.85	1.28	3.569E-02	86.49	13.100	2.018E+01	Np237
					86.54	30.700	8.608E+00	EU155
					86.94	9.040	2.918E+01	Sn126
					87.57	37.500	7.017E+00	Sn126
					88.04	3.790	6.930E+01	Cd109
91.10	33.	139.06	0.90	3.621E-02	91.10	28.300	PBC<MDA	Nd147
92.49	66.	37.98	0.95	3.636E-02	92.59	5.584	PBC<MDA	TH234
					93.35	5.561	1.804E+01	AC228
103.70	29.	145.92	0.91	3.720E-02	103.70	24.000	PBC<MDA	Np239
105.31	30.	143.30	0.91	3.726E-02	105.31	21.200	PBC<MDA	EU155
106.13	28.	138.81	0.91	3.729E-02	106.13	22.700	PBC<MDA	Np239
121.78	13.	206.84	0.93	3.725E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	2.266E-01	CO57
123.10	9.	275.72	0.93	3.721E-02	123.10	40.790	PBC<MDA	EU154
131.29	10.	346.26	0.94	3.683E-02	131.29	18.000	PBC<MDA	PA234
133.02	14.	115.22	0.94	3.673E-02	133.02	43.300	PBC<MDA	HF181
133.54	28.	163.73	0.94	3.670E-02	133.54	11.090	PBC<MDA	CE144
136.30	28.	164.89	0.94	3.652E-02	136.30	5.850	PBC<MDA	HF181
					136.47	10.680	3.932E+00	CO57
162.66	28.	107.36	0.97	3.435E-02	162.66	6.220	PBC<MDA	Ba140
176.60	12.	249.65	0.98	3.303E-02	176.60	17.000	PBC<MDA	Cf251
186.14	184.	12.89	0.98	3.211E-02	185.72	54.000	5.303E+00	U235

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
193.51	25.	105.03	1.00	3.140E-02	193.51	4.400	PBC<MDA	TH229
235.97	16.	280.89	1.04	2.764E-02	235.97	12.300	PBC<MDA	TH227
238.48	227.	9.90	1.05	2.745E-02	238.63	43.300	1.060E+01	PB212
241.98	205.	10.48	1.05	2.717E-02	242.00	7.430	5.649E+01	PB214
263.70	7.	325.65	1.07	2.554E-02	263.70	0.006	PBC<MDA	Cd113m
295.09	518.	5.97	1.14	2.350E-02	295.09	19.300	6.345E+01	PB214
					296.00	79.000	1.554E+01	TL210
316.49	22.	195.74	1.12	2.229E-02	316.49	87.040	PBC<MDA	Ir192
328.76	17.	127.57	1.13	2.165E-02	328.76	20.300	PBC<MDA	La140
338.47	69.	20.48	1.32	2.118E-02	338.32	12.010	1.514E+01	AC228
343.99	17.	117.44	1.15	2.083E-02	344.29	26.500	PBC<MDA	EU152
					345.83	15.070	3.087E+00	HF181
351.76	890.	4.20	1.13	2.056E-02	351.93	37.600	6.400E+01	PB214
364.48	17.	99.36	1.17	2.001E-02	364.48	81.700	PBC<MDA	I131
391.69	21.	115.39	1.20	1.893E-02	391.69	64.000	PBC<MDA	SN113
433.94	7.	270.93	1.24	1.751E-02	433.94	90.480	PBC<MDA	AG108M
453.88	10.	159.79	1.26	1.692E-02	453.88	65.000	PBC<MDA	PM146
463.37	29.	46.08	1.27	1.666E-02	463.37	10.470	PBC<MDA	SB125
468.06	10.	157.91	1.27	1.653E-02	468.06	51.750	PBC<MDA	Ir192
487.02	18.	113.44	1.29	1.604E-02	487.02	45.500	PBC<MDA	La140
511.86	72.	23.26	2.56	1.546E-02	511.86	20.000	1.285E+01	RH106
537.26	14.	95.27	1.34	1.491E-02	537.26	24.390	PBC<MDA	Ba140
563.24	13.	122.35	1.36	1.439E-02	563.24	8.350	PBC<MDA	CS134
569.32	2.	514.78	1.37	1.428E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	9.490E-01	PA234
					569.70	97.740	7.965E-02	BI207
569.70	7.	138.17	1.37	1.427E-02	569.32	15.380	1.855E+00	CS134
					569.47	8.200	3.480E+00	PA234
					569.70	97.740	2.920E-01	BI207
582.96	130.	13.07	2.00	1.403E-02	583.02	84.500	6.091E+00	TL208
609.32	699.	4.49	1.47	1.358E-02	609.31	46.090	6.203E+01	BI214
					610.30	5.750	4.978E+02	RU103
621.92	9.	174.27	1.42	1.338E-02	621.92	9.930	PBC<MDA	RH106
635.89	3.	268.74	1.43	1.317E-02	635.89	11.310	PBC<MDA	SB125
636.97	9.	80.65	1.43	1.315E-02	636.97	7.170	PBC<MDA	I131
696.54	14.	98.62	1.49	1.232E-02	696.54	99.000	PBC<MDA	PM144
724.20	9.	193.84	1.51	1.198E-02	724.20	44.150	PBC<MDA	ZR95
756.73	15.	92.15	1.54	1.160E-02	756.73	54.460	PBC<MDA	ZR95
766.41	21.	89.35	1.55	1.150E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	3.436E+02	PA234M
785.42	13.	88.29	1.57	1.129E-02	785.42	1.280	PBC<MDA	BI212
795.87	16.	83.75	1.58	1.119E-02	795.87	85.530	PBC<MDA	CS134
801.95	2.	692.82	1.58	1.113E-02	801.95	8.690	PBC<MDA	CS134
818.50	12.	71.64	1.60	1.096E-02	818.50	100.000	PBC<MDA	Cs136
846.77	4.	351.19	1.63	1.070E-02	846.77	99.935	PBC<MDA	Co56
859.26	22.	49.52	1.64	1.057E-02	860.56	12.420	PBC<MDA	TL208
873.23	12.	90.58	1.65	1.046E-02	873.23	12.270	PBC<MDA	EU154
880.53	12.	84.83	1.66	1.040E-02	880.53	6.000	PBC<MDA	PA234

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
883.24	12.	94.37	1.66	1.038E-02	883.24	9.600	PBC<MDA	PA234
898.04	8.	154.62	1.67	1.025E-02	898.04	93.700	PBC<MDA	Y88
911.13	32.	53.93	1.68	1.015E-02	911.07	29.000	PBC<MDA	AC228
946.02	27.	32.15	1.72	9.873E-03	946.02	13.400	1.134E+01	PA234
964.11	12.	115.62	1.73	9.739E-03	964.11	14.605	PBC<MDA	EU152
969.06	55.	19.50	1.34	9.703E-03	968.97	17.460	1.804E+01	AC228
996.33	20.	39.79	1.76	9.508E-03	996.33	10.600	PBC<MDA	EU154
1001.00	9.	110.51	1.76	9.476E-03	1001.00	0.837	PBC<MDA	PA234M
1004.77	6.	149.49	1.77	9.450E-03	1004.77	18.010	PBC<MDA	EU154
1050.36	6.	212.29	1.81	9.147E-03	1050.36	1.560	PBC<MDA	RH106
1063.66	16.	51.75	1.82	9.063E-03	1063.66	74.500	PBC<MDA	BI207
1077.40	8.	141.62	1.83	8.978E-03	1077.40	3.300	PBC<MDA	Ga68
1120.47	152.	9.70	1.49	8.721E-03	1120.29	15.100	6.391E+01	BI214
					1120.55	99.987	9.653E+00	Sc46
					1121.30	34.900	2.767E+01	Ta182
1173.24	8.	145.05	1.92	8.426E-03	1173.24	99.900	PBC<MDA	CO60
1189.05	5.	261.02	1.93	8.342E-03	1189.05	16.200	PBC<MDA	Ta182
1238.28	57.	27.40	1.97	8.090E-03	1238.28	66.070	5.924E+00	Co56
1274.53	9.	79.22	2.00	7.914E-03	1274.53	99.940	PBC<MDA	NA22
					1274.54	35.190	1.862E+00	EU154
1408.00	15.	84.50	2.12	7.324E-03	1408.00	21.005	PBC<MDA	EU152
1460.90	407.	4.96	1.78	7.112E-03	1460.83	10.670	2.980E+02	K40
1596.21	8.	110.40	2.27	6.616E-03	1596.21	95.400	PBC<MDA	La140
1764.53	108.	9.62	2.47	6.075E-03	1764.49	15.400	6.413E+01	BI214
1836.06	4.	159.33	2.46	5.866E-03	1836.06	99.200	PBC<MDA	Y88

********** 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	
298.83	74.81	273.	298.	8.944E+03	9.76	0.880	-	D
308.20	77.15	261.	456.	1.347E+04	6.86	0.883	-	D
743.87	186.14	119.	184.	5.726E+03	12.89	0.983	-	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: Client_Long_Rev15.lib

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********** 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	185.57	46.48	168.	63.	0.035	38.36	0.783
TH-227	200.18	50.14	546.	-7.	-0.004	497.04	0.855s
AM-241	237.74	59.54	814.	-35.	-0.019	117.25	0.865s
TH-234	252.74	63.29	201.	24.	0.013	86.08	0.868D
Sn-126	256.71	64.28	793.	23.	0.013	178.23	0.869s
BA-133	323.50	80.99	1994.	-39.	-0.022	160.88	0.887s
Np-237	345.49	86.49	1505.	0.	0.000	148.46	0.892A
Sn-126	347.29	86.94	1051.	25.	0.014	105.51	0.892D
Sn-126	349.81	87.57	987.	103.	0.057	23.84	0.893D
Cd-109	351.68	88.04	1020.	0.	0.000	1000.00	0.894A
Nd-147	363.92	91.10	1053.	33.	0.018	139.06	0.897s
TH-234	369.87	92.59	227.	60.	0.033	37.91	0.898D
AC-228	372.91	93.35	1116.	17.	0.009	286.55	0.899s
Gd-153	389.50	97.50	1080.	-33.	-0.018	143.55	0.903s
Np-239	397.50	99.50	1113.	-33.	-0.018	145.39	0.905
Gd-153	412.29	103.20	1145.	-33.	-0.018	146.86	0.909
Np-239	414.29	103.70	910.	29.	0.016	145.92	0.909s
EU-155	420.73	105.31	881.	30.	0.016	143.30	0.911s
Np-239	424.00	106.13	750.	28.	0.016	138.81	0.912
EU-152	486.56	121.78	355.	13.	0.007	206.84	0.928s
CO-57	487.69	122.06	368.	0.	0.000	1000.00	0.928s
EU-154	491.84	123.10	292.	9.	0.005	275.72	0.929s
PA-234	524.60	131.29	591.	10.	0.006	346.26	0.938s
HF-181	531.51	133.02	123.	14.	0.008	115.22	0.939D
CE-144	533.57	133.54	1001.	28.	0.015	163.73	0.940s
HF-181	544.61	136.30	1022.	28.	0.015	164.89	0.943
CO-57	545.30	136.47	1132.	-29.	-0.016	162.46	0.943
Tc-99m	561.44	140.51	1103.	-30.	-0.016	159.67	0.947s
U-235	574.53	143.79	1073.	-5.	-0.003	927.83	0.950s
CE-141	581.15	145.44	1193.	-32.	-0.018	154.17	0.952s
Ba-140	649.99	162.66	437.	28.	0.016	107.36	0.969s
CE-139	662.76	165.85	427.	-15.	-0.008	200.88	0.973s
Cf-251	705.72	176.60	253.	12.	0.007	249.65	0.983s
U-235	742.18	185.72	499.	-49.	-0.027	48.08	0.992s
TH-229	773.32	193.51	183.	25.	0.014	105.03	1.000s
U-235	820.59	205.33	249.	-21.	-0.012	140.16	1.012s
TH-229	842.65	210.85	238.	-22.	-0.012	131.04	1.018s
Cf-251	907.22	227.00	202.	-22.	-0.012	124.49	1.034s
TH-227	943.09	235.97	947.	16.	0.009	280.89	1.043s
PB-212	953.73	238.63	114.	238.	0.132	9.06	1.045D
PB-214	967.18	242.00	126.	208.	0.115	10.33	1.049D
EU-152	977.96	244.69	965.	-17.	-0.009	259.56	1.051s
TH-227	1024.13	256.24	169.	-12.	-0.006	210.31	1.063s
Cd-113m	1053.96	263.70	232.	7.	0.004	325.65	1.070s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
BI-210M	1062.48	265.83	287.	-28.	-0.015	87.92	1.072s
TL-208	1108.27	277.28	205.	-24.	-0.013	88.19	1.084
Hg-203	1115.93	279.20	294.	-11.	-0.006	214.41	1.086s
I-131	1136.32	284.30	136.	-20.	-0.011	113.07	1.091s
PB-214	1179.47	295.09	101.	518.	0.288	5.97	1.141s
TL-210	1183.11	296.00	1432.	-25.	-0.014	213.98	1.102s
PB-212	1199.22	300.03	1407.	-25.	-0.014	211.36	1.106
PA-231	1199.38	300.07	1382.	-25.	-0.014	209.47	1.106s
PA-233	1199.82	300.18	1357.	-25.	-0.014	207.52	1.107s
PA-231	1209.70	302.65	1332.	-25.	-0.014	205.15	1.109s
BA-133	1210.50	302.85	1306.	-25.	-0.014	203.16	1.109
Ba-140	1218.49	304.85	1281.	-25.	-0.014	200.90	1.111s
BI-210M	1218.68	304.90	1256.	-25.	-0.014	198.88	1.111s
Ir-192	1232.85	308.44	1230.	-25.	-0.014	196.27	1.115s
PA-233	1247.13	312.01	1205.	-7.	-0.004	705.83	1.118s
Ir-192	1265.04	316.49	951.	22.	0.012	195.74	1.123s
CR-51	1279.41	320.08	1215.	-26.	-0.014	190.87	1.126s
La-140	1314.10	328.76	222.	17.	0.009	127.57	1.135s
Cf-249	1332.81	333.44	248.	-10.	-0.005	228.64	1.139s
AC-228	1352.94	338.47	40.	69.	0.039	20.48	1.316
Cs-136	1361.32	340.57	312.	-8.	-0.004	320.80	1.146s
EU-152	1376.18	344.29	291.	-22.	-0.012	112.20	1.150s
HF-181	1382.35	345.83	201.	17.	0.010	117.44	1.151s
PB-214	1406.08	351.76	91.	900.	0.500	4.14	1.130
BA-133	1423.02	356.00	1184.	-25.	-0.014	199.17	1.162s
I-131	1456.95	364.48	68.	17.	0.009	99.36	1.170s
BA-133	1534.35	383.84	289.	-23.	-0.013	106.63	1.189s
Cf-249	1550.79	387.95	312.	-23.	-0.013	110.26	1.193
SN-113	1565.74	391.69	289.	21.	0.012	115.39	1.196
SB-125	1710.45	427.88	100.	-6.	-0.003	328.86	1.232s
AG-108M	1734.69	433.94	92.	7.	0.004	270.93	1.238s
PM-146	1814.45	453.88	64.	10.	0.006	159.79	1.257s
SB-125	1852.39	463.37	73.	29.	0.016	46.08	1.266s
Ir-192	1871.16	468.06	122.	10.	0.006	157.91	1.271s
BE-7	1909.29	477.60	213.	-19.	-0.011	108.89	1.280s
HF-181	1926.90	482.00	216.	-13.	-0.007	162.86	1.284s
La-140	1946.98	487.02	198.	18.	0.010	113.44	1.289
RU-103	1987.11	497.05	64.	-6.	-0.003	264.22	1.298s
RH-106	2046.35	511.86	102.	72.	0.040	23.26	2.563s
Kr-85	2054.81	513.98	184.	-6.	-0.004	297.33	1.315s
Nd-147	2122.88	531.00	61.	-7.	-0.004	241.61	1.331s
Ba-140	2147.92	537.26	39.	14.	0.008	95.27	1.337s
CS-134	2251.82	563.24	61.	13.	0.007	122.35	1.362s
CS-134	2276.15	569.32	52.	2.	0.001	514.78	1.367
BI-207	2277.68	569.70	48.	7.	0.004	138.17	1.368s
TL-208	2330.70	582.96	28.	130.	0.072	13.07	1.996s
SB-125	2400.87	600.50	933.	-17.	-0.009	257.89	1.397s
SB-124	2409.79	602.73	931.	-18.	-0.010	247.13	1.399s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
CS-134	2417.71	604.71	913.	-6.	-0.003	697.81	1.401s
BI-214	2436.16	609.32	53.	699.	0.388	4.49	1.468
RU-103	2440.06	610.30	907.	0.	0.000	1000.00	1.406s
AG-108M	2455.99	614.28	907.	0.	0.000	1000.00	1.410s
RH-106	2486.54	621.92	53.	9.	0.005	174.27	1.417
SB-125	2542.43	635.89	31.	3.	0.002	268.74	1.430s
I-131	2546.77	636.97	24.	9.	0.005	80.65	1.432s
AG-110M	2629.92	657.76	122.	-21.	-0.012	78.18	1.451s
CS-137	2645.51	661.66	133.	-9.	-0.005	180.22	1.455s
PM-144	2785.05	696.54	37.	14.	0.008	98.62	1.487s
NB-94	2809.41	702.63	56.	-8.	-0.004	201.56	1.493s
SB-124	2890.04	722.79	132.	-22.	-0.012	75.87	1.512s
AG-108M	2890.65	722.94	154.	-4.	-0.002	477.80	1.512s
EU-154	2892.34	723.36	158.	0.	0.000	1000.00	1.512s
ZR-95	2895.69	724.20	142.	9.	0.005	193.84	1.513s
BI-212	2907.58	727.17	194.	-25.	-0.014	80.32	1.516
PM-146	2941.78	735.72	51.	-10.	-0.006	150.34	1.524s
PM-146	2987.55	747.16	37.	-1.	-0.001	975.96	1.535s
ZR-95	3025.83	756.73	37.	15.	0.008	92.15	1.543s
AG-110M	3054.69	763.94	257.	-36.	-0.020	65.54	1.550s
NB-95	3062.08	765.79	264.	-33.	-0.018	71.20	1.552s
PA-234M	3064.57	766.41	164.	21.	0.012	89.35	1.552s
EU-152	3114.61	778.92	51.	-12.	-0.007	126.48	1.564s
BI-212	3140.62	785.42	28.	13.	0.007	88.29	1.570s
CS-134	3182.43	795.87	76.	16.	0.009	83.75	1.579s
TL-210	3197.35	799.60	92.	0.	0.000	1000.00	1.583s
CS-134	3206.76	801.95	95.	2.	0.001	692.82	1.585s
La-140	3262.05	815.77	77.	0.	0.000	1000.00	1.598s
Cs-136	3272.97	818.50	34.	12.	0.007	71.64	1.600s
MN-54	3338.38	834.85	51.	-6.	-0.004	243.25	1.615s
Co-56	3386.08	846.77	40.	4.	0.002	351.19	1.626s
TL-208	3441.27	860.56	20.	22.	0.012	49.52	1.638
NB-94	3483.41	871.10	54.	-3.	-0.002	351.19	1.648s
EU-154	3491.95	873.23	48.	12.	0.006	90.58	1.650s
PA-234	3521.16	880.53	42.	12.	0.006	84.83	1.657s
PA-234	3532.00	883.24	54.	12.	0.006	94.37	1.659s
AG-110M	3537.78	884.68	71.	-2.	-0.001	503.20	1.660s
Y-88	3591.22	898.04	30.	8.	0.004	154.62	1.672s
AC-228	3643.36	911.07	55.	32.	0.018	53.93	1.684s
AG-110M	3749.09	937.49	105.	-27.	-0.015	84.95	1.708
PA-234	3783.21	946.02	10.	27.	0.015	32.15	1.716s
EU-152	3855.60	964.11	91.	12.	0.007	115.62	1.732s
AC-228	3875.42	969.06	12.	55.	0.031	19.50	1.343
EU-154	3984.54	996.33	22.	20.	0.011	39.79	1.761s
PA-234M	4003.22	1001.00	42.	9.	0.005	110.51	1.765s
EU-154	4018.33	1004.77	39.	6.	0.003	149.49	1.768s
Co-56	4150.66	1037.84	32.	0.	0.000	1000.00	1.798s
Cs-136	4191.60	1048.07	64.	-22.	-0.012	56.22	1.807s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
RH-106	4200.76	1050.36	90.	6.	0.004	212.29	1.809s
BI-207	4253.99	1063.66	11.	16.	0.009	51.75	1.820
Ga-68	4308.98	1077.40	21.	8.	0.004	141.62	1.833s
FE-59	4396.44	1099.25	48.	-13.	-0.007	124.27	1.852
EU-152	4447.76	1112.07	228.	-4.	-0.002	613.12	1.863
ZN-65	4461.66	1115.55	225.	0.	0.000	1000.00	1.866s
BI-214	4481.36	1120.47	12.	152.	0.084	9.70	1.488
Sc-46	4481.68	1120.55	225.	0.	0.000	1000.00	1.870
Ta-182	4484.69	1121.30	217.	10.	0.006	210.71	1.871
CO-60	4692.57	1173.24	27.	8.	0.005	145.05	1.916s
Ta-182	4755.86	1189.05	32.	5.	0.003	261.02	1.930
Ta-182	4885.39	1221.41	45.	-5.	-0.003	299.22	1.957
Co-56	4952.92	1238.28	34.	57.	0.032	27.40	1.972s
NA-22	5098.03	1274.53	23.	9.	0.005	79.22	2.003s
EU-154	5098.08	1274.54	32.	0.	0.000	1000.00	2.003s
FE-59	5166.35	1291.60	40.	-3.	-0.001	557.27	2.017
TL-210	5252.04	1313.00	57.	-21.	-0.011	88.21	2.036s
AG-110M	5537.48	1384.30	28.	-6.	-0.004	201.07	2.096s
EU-152	5632.39	1408.00	24.	15.	0.008	84.50	2.115s
K-40	5844.18	1460.90	0.	407.	0.226	4.96	1.780
La-140	6386.02	1596.21	12.	8.	0.004	110.40	2.269s
SB-124	6765.58	1690.98	19.	-5.	-0.003	221.06	2.345s
BI-214	7060.15	1764.53	0.	108.	0.060	9.62	2.465
Co-56	7087.48	1771.35	108.	0.	0.000	1000.00	2.408s
Y-88	7346.69	1836.06	7.	4.	0.002	159.33	2.459s

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
BE-7	C	-6.2885E+00				5.31E+01	
			477.60	-6.288E+00	?(	2.295E+01 1.09E+02 1.05E+01	G
NA-22	C	6.5559E-01				9.50E+02	
			1274.53	6.556E-01	?(	1.749E+00 7.92E+01 9.99E+01	G
K-40	N	2.9796E+02				4.66E+11	
			1460.83	2.980E+02	(	5.395E+00 4.96E+00 1.07E+01	G
Sc-46	F	-4.4842E-02				8.38E+01	
			889.28	-4.484E-02	%(	2.315E+00 1.47E+03 1.00E+02	G
			1120.55	0.000E+00	+	4.626E+00 1.00E+03 1.00E+02	G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CR-51	F	-6.5661E+00					2.77E+01	
			320.08	-6.566E+00	?(	4.176E+01	1.91E+02	9.94E+00 G
MN-54	C	-3.2561E-01					3.12E+02	
			834.85	-3.256E-01	?(	1.856E+00	2.43E+02	1.00E+02 G
FE-59	F	-1.4451E+00					4.45E+01	
			1099.25	-1.445E+00	(	3.890E+00	1.24E+02	5.65E+01 G
			1291.60	-4.378E-01	+	5.263E+00	5.57E+02	4.32E+01 G
Co-56	C	2.4830E+00					7.73E+01	
			846.77	2.079E-01	&(	1.672E+00	3.51E+02	9.99E+01 G
			1238.28	5.924E+00	?(	3.106E+00	2.74E+01	6.61E+01 G
			1037.84	0.000E+00	-	1.239E+01	1.00E+03	1.41E+01 G
			1771.35	0.000E+00	-	3.031E+01	1.00E+03	1.55E+01 A
CO-58	C	-5.0601E-02					7.09E+01	
			810.78	-5.060E-02	&(	2.193E+00	1.24E+03	9.95E+01 G
CO-60	F	2.9910E-01					1.93E+03	
			1332.50	4.844E-02	%(	1.999E+00	1.88E+03	1.00E+02 G
			1173.24	5.500E-01	?(	1.767E+00	1.45E+02	9.99E+01 G
NB-94	I	-3.7082E-01					7.41E+06	
			702.63	-3.708E-01	?(	1.742E+00	2.02E+02	9.79E+01 G
			871.10	-1.592E-01	&	1.961E+00	3.51E+02	9.99E+01 G
ZR-95	I	1.1277E+00					6.40E+01	
			756.73	1.290E+00	?(	2.742E+00	9.22E+01	5.45E+01 G
			724.20	9.280E-01	?(	6.122E+00	1.94E+02	4.42E+01 G
NB-95	I	-1.6096E+00					6.40E+01	
			765.79	-1.610E+00	?(	3.794E+00	7.12E+01	9.98E+01 G
RU-103	I	-2.3208E-01					3.93E+01	
			497.05	-2.321E-01	?(	1.547E+00	2.64E+02	9.09E+01 G
			610.30	0.000E+00	+	1.019E+02	1.00E+03	5.75E+00 GA
RH-106	I	6.5332E+00					3.74E+02	
			621.92	3.624E+00	?(	1.527E+01	1.74E+02	9.93E+00 G
			1050.36	2.505E+01	&(	1.828E+02	2.12E+02	1.56E+00 G
			511.86	1.285E+01	?	8.966E+00	2.33E+01	2.00E+01 GA
AG-108M	C	2.4547E-01					1.53E+05	
			433.94	2.455E-01	?(	1.662E+00	2.71E+02	9.05E+01 G
			722.94	-1.886E-01	+	3.090E+00	4.78E+02	9.08E+01 G
			614.28	0.000E+00	-	6.551E+00	1.00E+03	8.98E+01 G

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
AG-110M	F -1.7659E-01					2.50E+02	
		884.68	-1.766E-01	?(	3.104E+00	5.03E+02	7.27E+01 G
		657.76	-9.507E-01	+	2.475E+00	7.82E+01	9.46E+01 G
		937.49	-4.429E+00	+	8.209E+00	8.49E+01	3.44E+01 G
		1384.30	-1.952E+00	+	8.478E+00	2.01E+02	2.43E+01 G
		763.94	-7.736E+00	+	1.674E+01	6.55E+01	2.23E+01 G
SN-113	F 9.7218E-01					1.15E+02	
		391.69	9.722E-01	&(	3.755E+00	1.15E+02	6.40E+01 G
SB-124	F -7.2426E-01					6.02E+01	
		602.73	-7.243E-01	?(	5.982E+00	2.47E+02	9.83E+01 G
		1690.98	-9.223E-01	+	4.247E+00	2.21E+02	4.78E+01 G
		722.79	-9.556E+00	+	2.410E+01	7.59E+01	1.08E+01 G
SB-125	I 1.7454E+00					1.01E+03	
		427.88	-6.363E-01	&(	5.229E+00	3.29E+02	2.96E+01 G
		600.50	-3.812E+00	+	3.286E+01	2.58E+02	1.79E+01 G
		635.89	1.119E+00	(	1.069E+01	2.69E+02	1.13E+01 G
		463.37	9.155E+00	&(	1.357E+01	4.61E+01	1.05E+01 G
I-131	I 9.6753E-01					8.02E+00	
		364.48	5.698E-01	?(	1.398E+00	9.94E+01	8.17E+01 G
		284.30	-7.364E+00	&	2.134E+01	1.13E+02	6.14E+00 G
		636.97	5.500E+00	&(	1.496E+01	8.07E+01	7.17E+00 G
Gd-153	F -1.6402E+00					2.42E+02	
		97.50	-1.640E+00	?(	7.837E+00	1.44E+02	3.00E+01 G
		103.20	-2.250E+00	&	1.100E+01	1.47E+02	2.18E+01 G
Ga-68	C 1.6733E+01					4.71E-02	
		1077.40	1.673E+01	&(	5.289E+01	1.42E+02	3.30E+00 G
Tc-99m	I -5.2337E-01					2.51E-01	
		140.51	-5.234E-01	(	2.783E+00	1.60E+02	8.93E+01 G
BA-133	F -1.0792E+00					3.85E+03	
		356.00	-1.079E+00	?(	7.165E+00	1.99E+02	6.20E+01 G
		302.85	-3.325E+00	&	2.251E+01	2.03E+02	1.83E+01 G
		383.84	-7.434E+00	+	2.649E+01	1.07E+02	8.94E+00 GA
		80.99	-1.856E+00	+	9.921E+00	1.61E+02	3.41E+01 GA
CS-134	I 1.2395E+00					7.54E+02	
		795.87	8.999E-01	&(	2.524E+00	8.37E+01	8.55E+01 G
		604.71	-2.556E-01	-	5.980E+00	6.98E+02	9.76E+01 G
		569.32	5.059E-01	(	9.185E+00	5.15E+02	1.54E+01 G
		801.95	1.149E+00	@(	2.766E+01	6.93E+02	8.69E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			563.24	6.163E+00	?(	1.803E+01	1.22E+02	8.35E+00 G
CS-137	I	-4.6893E-01					1.10E+04	
			661.66	-4.689E-01	?(	2.876E+00	1.80E+02	8.52E+01 G
CE-139	F	-2.9948E-01					1.38E+02	
			165.85	-2.995E-01	&(	2.021E+00	2.01E+02	7.99E+01 G
Ba-140	I	3.1756E+00					1.28E+01	
			537.26	2.130E+00	&(	4.861E+00	9.53E+01	2.44E+01 G
			162.66	7.274E+00	&(	2.603E+01	1.07E+02	6.22E+00 G
			304.85	-1.430E+01	+	9.573E+01	2.01E+02	4.29E+00 G
La-140	I	1.0696E+00					1.28E+01	
			1596.21	7.042E-01	?(	1.659E+00	1.10E+02	9.54E+01 G
			487.02	1.364E+00	?(	5.192E+00	1.13E+02	4.55E+01 G
			328.76	2.128E+00	?(	9.122E+00	1.28E+02	2.03E+01 G
			815.77	0.000E+00	-	9.468E+00	1.00E+03	2.33E+01 G
CE-141	I	-1.0252E+00					3.25E+01	
			145.44	-1.025E+00	?(	5.261E+00	1.54E+02	4.82E+01 G
CE-144	I	3.7564E+00					2.85E+02	
			133.54	3.756E+00	&(	2.050E+01	1.64E+02	1.11E+01 G
PM-144	C	6.2250E-01					3.63E+02	
			696.54	6.225E-01	?(	1.420E+00	9.86E+01	9.90E+01 G
			618.06	-2.780E-02	%	5.952E+00	6.37E+03	9.91E+01 G
EU-152	F	2.0405E+00					4.94E+03	
			121.78	6.784E-01	&(	4.723E+00	2.07E+02	2.86E+01 G
			344.29	-2.196E+00	+	8.241E+00	1.12E+02	2.65E+01 G
			1112.07	-1.625E+00	+	3.396E+01	6.13E+02	1.36E+01 G
			778.92	-4.660E+00	+	1.364E+01	1.26E+02	1.29E+01 G
			964.11	4.706E+00	?(	1.842E+01	1.16E+02	1.46E+01 G
			244.69	-4.623E+00	+	4.010E+01	2.60E+02	7.58E+00 G
			1408.00	5.316E+00	?	9.223E+00	8.45E+01	2.10E+01 GA
EU-154	I	2.7829E+00					3.14E+03	
			123.10	3.234E-01	&(	3.015E+00	2.76E+02	4.08E+01 G
			1274.54	0.000E+00	-	5.799E+00	1.00E+03	3.52E+01 G
			723.36	0.000E+00	-	1.405E+01	1.00E+03	2.02E+01 G
			873.23	4.977E+00	?(	1.522E+01	9.06E+01	1.23E+01 G
			1004.77	2.007E+00	?(	1.041E+01	1.49E+02	1.80E+01 G
			996.33	1.103E+01	?(	1.345E+01	3.98E+01	1.06E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
EU-155	I	2.0770E+00					1.81E+03	
			105.31	2.077E+00	@(	9.917E+00	1.43E+02	2.12E+01 G
			86.54	1.936E-01	&	8.041E+00	1.24E+03	3.07E+01 G
HF-181	F	4.5054E-01					4.24E+01	
			482.00	-5.524E-01	?(	3.037E+00	1.63E+02	8.05E+01 G
			133.02	4.889E-01	(	1.900E+00	1.15E+02	4.33E+01 G
			345.83	3.087E+00	&(	1.218E+01	1.17E+02	1.51E+01 G
			136.30	7.176E+00	&(	3.944E+01	1.65E+02	5.85E+00 G
Ta-182	F	1.8989E+00					1.14E+02	
			1121.30	1.826E+00	(	1.303E+01	2.11E+02	3.49E+01 G
			1221.41	-1.342E+00	+	8.580E+00	2.99E+02	2.70E+01 G
			1189.05	2.055E+00	(	1.195E+01	2.61E+02	1.62E+01 G
Hg-203	F	-3.1775E-01					4.66E+01	
			279.20	-3.177E-01	?(	2.299E+00	2.14E+02	8.15E+01 G
TL-208	N	6.0912E+00					6.98E+02	
			583.02	6.091E+00	*(	1.282E+00	1.31E+01	8.45E+01 G
			277.28	-8.437E+00	&	2.481E+01	8.82E+01	6.31E+00 G
			860.56	9.307E+00	&	9.962E+00	4.95E+01	1.24E+01 G
PM-146	C	5.0509E-01					2.02E+03	
			453.88	5.051E-01	&(	2.020E+00	1.60E+02	6.50E+01 G
			747.16	-1.861E-01	-	4.351E+00	9.76E+02	3.40E+01 G
			735.72	-2.155E+00	+	7.527E+00	1.50E+02	2.25E+01 G
Y-88	F	4.3746E-01					1.07E+02	
			1836.06	4.137E-01	?(	1.407E+00	1.59E+02	9.92E+01 G
			898.04	4.626E-01	(	1.633E+00	1.55E+02	9.37E+01 G
Cd-113m		2.4167E+03					5.33E+03	
			263.70	2.417E+03	?(	2.673E+04	3.26E+02	6.00E-03 K
Cf-251	T	1.1874E+00					3.28E+05	
			176.60	1.187E+00	?(	7.603E+00	2.50E+02	1.70E+01 G
			227.00	-6.731E+00	+	2.140E+01	1.24E+02	6.30E+00 GA
Cf-249	T	-1.0187E+00					1.28E+05	
			387.95	-1.019E+00	&(	3.754E+00	1.10E+02	6.60E+01 G
			333.44	-1.644E+00	+	1.272E+01	2.29E+02	1.55E+01 G
Sn-126		4.2757E+00					3.65E+07	
			87.57	4.269E+00	}	6.179E+00	2.38E+01	3.75E+01 GA
			64.28	4.276E+00	?(	2.545E+01	1.78E+02	9.70E+00 G
			86.94	4.276E+00	}	2.651E+01	1.06E+02	9.04E+00 GA

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PB-210	N	4.5571E+01					8.14E+03	
			46.54	4.557E+01	(P	4.571E+01	3.84E+01	4.25E+00 G
PB-212	N	1.1141E+01					6.98E+02	
			238.63	1.114E+01	(	2.452E+00	9.06E+00	4.33E+01 G
			300.03	-1.840E+01	-	1.296E+02	2.11E+02	3.28E+00 GA
PB-214	N	6.4277E+01					5.84E+05	
			351.93	6.470E+01	(	3.391E+00	4.14E+00	3.76E+01 G
			295.09	6.345E+01	@(P	6.069E+00	5.97E+00	1.93E+01 G
			242.00	5.720E+01	-	1.516E+01	1.03E+01	7.43E+00 GA
BI-207	C	1.3439E+00					1.18E+04	
			1063.66	1.344E+00	?(	1.475E+00	5.17E+01	7.45E+01 G
			569.70	2.920E-01	-	1.389E+00	1.38E+02	9.77E+01 G
BI-212	N	-1.5577E+01					6.98E+02	
			727.17	-1.558E+01	(	4.161E+01	8.03E+01	7.55E+00 G
			785.42	5.138E+01	&	1.052E+02	8.83E+01	1.28E+00 GA
U-235	N	-7.0410E-01					2.57E+11	
			143.79	-7.041E-01	*(	2.188E+01	9.28E+02	1.10E+01 G
			205.33	-7.808E+00	&	2.792E+01	1.40E+02	5.01E+00 G
			163.38	8.585E-01	%	3.064E+01	1.05E+03	5.08E+00 G
			185.72	-1.573E+00	+ P	3.418E+00	4.81E+01	5.40E+01 GA
BI-214	N	6.2820E+01					5.84E+05	
			609.31	6.203E+01	(P	3.251E+00	4.49E+00	4.61E+01 G
			1120.29	6.391E+01	(	8.093E+00	9.70E+00	1.51E+01 G
			1764.49	6.413E+01	(	4.376E+00	9.62E+00	1.54E+01 G
BI-210M	T	-1.2203E+00					1.10E+09	
			265.83	-1.220E+00	*(	3.571E+00	8.79E+01	5.00E+01 G
			304.90	-2.192E+00	+	1.452E+01	1.99E+02	2.80E+01 G
AC-228	N	1.1492E+01					2.10E+03	
			911.07	6.042E+00	?(	7.037E+00	5.39E+01	2.90E+01 G
			968.97	1.804E+01	(	6.182E+00	1.95E+01	1.75E+01 G
			338.32	1.514E+01	(	7.001E+00	2.05E+01	1.20E+01 G
			93.35	4.536E+00	-	4.341E+01	2.87E+02	5.56E+00 XA
TH-227	N	3.3262E-01					7.95E+03	
			256.24	-3.550E+00	(	1.924E+01	2.10E+02	7.00E+00 G
			235.97	2.543E+00	?(	2.388E+01	2.81E+02	1.23E+01 G
			50.14	-2.111E+00	+	3.532E+01	4.97E+02	8.00E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
TH-229	N	9.8810E+00					2.68E+06	
			193.51	9.881E+00	?(	2.646E+01	1.05E+02	4.40E+00 G
			210.85	-1.393E+01	+	4.655E+01	1.31E+02	2.99E+00 G
TH-234	N	1.4538E+01					1.63E+12	
			92.59	1.641E+01	(P	1.997E+01	3.79E+01	5.58E+00 G
			63.29	1.180E+01	(P	3.369E+01	8.61E+01	3.81E+00 G
PA-231	N	-2.1146E+01					1.20E+07	
			302.65	-2.115E+01	?(	1.445E+02	2.05E+02	2.88E+00 G
			300.07	-2.454E+01	+	1.712E+02	2.09E+02	2.46E+00 G
PA-233	C	-4.7707E-01					7.82E+08	
			312.01	-4.771E-01	?(	1.127E+01	7.06E+02	3.60E+01 G
			300.18	-9.740E+00	+	6.735E+01	2.08E+02	6.20E+00 G
PA-234	N	5.5790E+00					1.63E+12	
			131.29	8.356E-01	?(	9.721E+00	3.46E+02	1.80E+01 G
			946.02	1.134E+01	?(	7.326E+00	3.21E+01	1.34E+01 G
			569.47	-4.745E-01	%	1.783E+01	1.06E+03	8.20E+00 G
			883.24	6.435E+00	?(	2.052E+01	9.44E+01	9.60E+00 G
			880.53	1.026E+01	?	2.930E+01	8.48E+01	6.00E+00 GA
PA-234M	N	1.3432E+02					1.63E+12	
			1001.00	6.081E+01	*(	2.297E+02	1.11E+02	8.37E-01 G
			766.41	3.436E+02	?(	1.025E+03	8.94E+01	2.94E-01 G
AM-241	T	-1.9101E+00					1.58E+05	
			59.54	-1.910E+00	?(	7.451E+00	1.17E+02	3.59E+01 G
Ir-192	F	6.4685E-01					7.40E+01	
			316.49	6.419E-01	&(	4.193E+00	1.96E+02	8.70E+01 G
			468.06	6.553E-01	?(	3.517E+00	1.58E+02	5.18E+01 G
			308.44	-1.956E+00	&	1.279E+01	1.96E+02	3.18E+01 G
Cs-136	F	6.3047E-01					1.30E+01	
			818.50	6.305E-01	?(	1.504E+00	7.16E+01	1.00E+02 G
			1048.07	-1.650E+00	+	3.031E+00	5.62E+01	8.00E+01 G
			340.57	-4.403E-01	-	4.778E+00	3.21E+02	4.69E+01 G
Np-239	T	1.8488E+00					2.36E+00	
			103.70	1.834E+00	?	8.918E+00	1.46E+02	2.40E+01 X
			106.13	1.849E+00	(	8.556E+00	1.39E+02	2.27E+01 G
			99.50	-3.274E+00	&	1.584E+01	1.45E+02	1.50E+01 X

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

Nd-147       6.3962E-01                                      1.11E+01
                            531.00-1.894E+00 ?(  1.108E+01 2.42E+02 1.30E+01 G
                             91.10 1.804E+00 ?(  8.347E+00 1.39E+02 2.83E+01 G

Kr-85    I  -5.4500E+01                                      3.92E+03
                            513.98-5.450E+01 &(  5.520E+02 2.97E+02 4.30E-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

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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********** 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
TH-227	50.14	546.	-7.	-0.004	497.04	-2.111E+00
AM-241	59.54	814.	-35.	-0.019	117.25	-1.910E+00
BA-133	80.99	1994.	-39.	-0.022	160.88	-1.856E+00
Nd-147	91.10	1053.	33.	0.018	139.06	1.804E+00
Gd-153	97.50	1080.	-33.	-0.018	143.55	-1.640E+00
Np-239	99.50	1113.	-33.	-0.018	145.39	-3.274E+00
Gd-153	103.20	1145.	-33.	-0.018	146.86	-2.250E+00
Np-239	103.70	910.	29.	0.016	145.92	1.834E+00

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
EU-155	105.31	881.	30.	0.016	143.30	2.077E+00	
Np-239	106.13	750.	28.	0.016	138.81	1.849E+00	
EU-152	121.78	355.	13.	0.007	206.84	6.784E-01	
EU-154	123.10	292.	9.	0.005	275.72	3.234E-01	
PA-234	131.29	591.	10.	0.006	346.26	8.356E-01	
CE-144	133.54	1001.	28.	0.015	163.73	3.756E+00	
CO-57	136.47	1132.	-29.	-0.016	162.46	-4.200E+00	
Tc-99m	140.51	1103.	-30.	-0.016	159.67	-5.234E-01	
U-235	143.79	1073.	-5.	-0.003	927.83	-7.041E-01	
CE-141	145.44	1193.	-32.	-0.018	154.17	-1.025E+00	
Ba-140	162.66	437.	28.	0.016	107.36	7.274E+00	
CE-139	165.85	427.	-15.	-0.008	200.88	-2.995E-01	
Cf-251	176.60	253.	12.	0.007	249.65	1.187E+00	
U-235	185.72	499.	-49.	-0.027	48.08	-1.573E+00	P
TH-229	193.51	183.	25.	0.014	105.03	9.881E+00	
U-235	205.33	249.	-21.	-0.012	140.16	-7.808E+00	
TH-229	210.85	238.	-22.	-0.012	131.04	-1.393E+01	
Cf-251	227.00	202.	-22.	-0.012	124.49	-6.731E+00	
TH-227	235.97	947.	16.	0.009	280.89	2.543E+00	
EU-152	244.69	965.	-17.	-0.009	259.56	-4.623E+00	
TH-227	256.24	169.	-12.	-0.006	210.31	-3.550E+00	
Cd-113m	263.70	232.	7.	0.004	325.65	2.417E+03	
BI-210M	265.83	287.	-28.	-0.015	87.92	-1.220E+00	
Hg-203	279.20	294.	-11.	-0.006	214.41	-3.177E-01	
I-131	284.30	136.	-20.	-0.011	113.07	-7.364E+00	
TL-210	296.00	1432.	-25.	-0.014	213.98	-7.535E-01	
PA-231	300.07	1382.	-25.	-0.014	209.47	-2.454E+01	
PA-233	300.18	1357.	-25.	-0.014	207.52	-9.740E+00	
PA-231	302.65	1332.	-25.	-0.014	205.15	-2.115E+01	
BA-133	302.85	1306.	-25.	-0.014	203.16	-3.325E+00	
Ba-140	304.85	1281.	-25.	-0.014	200.90	-1.430E+01	
BI-210M	304.90	1256.	-25.	-0.014	198.88	-2.192E+00	
Ir-192	308.44	1230.	-25.	-0.014	196.27	-1.956E+00	
PA-233	312.01	1205.	-7.	-0.004	705.83	-4.771E-01	
Ir-192	316.49	951.	22.	0.012	195.74	6.419E-01	
CR-51	320.08	1215.	-26.	-0.014	190.87	-6.566E+00	
La-140	328.76	222.	17.	0.009	127.57	2.128E+00	
Cf-249	333.44	248.	-10.	-0.005	228.64	-1.644E+00	
Cs-136	340.57	312.	-8.	-0.004	320.80	-4.403E-01	
EU-152	344.29	291.	-22.	-0.012	112.20	-2.196E+00	
BA-133	356.00	1184.	-25.	-0.014	199.17	-1.079E+00	
I-131	364.48	68.	17.	0.009	99.36	5.698E-01	
BA-133	383.84	289.	-23.	-0.013	106.63	-7.434E+00	
Cf-249	387.95	312.	-23.	-0.013	110.26	-1.019E+00	
SN-113	391.69	289.	21.	0.012	115.39	9.722E-01	
SB-125	427.88	100.	-6.	-0.003	328.86	-6.363E-01	
AG-108M	433.94	92.	7.	0.004	270.93	2.455E-01	
PM-146	453.88	64.	10.	0.006	159.79	5.051E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
SB-125	463.37	73.	29.	0.016	46.08	9.155E+00	
Ir-192	468.06	122.	10.	0.006	157.91	6.553E-01	
BE-7	477.60	213.	-19.	-0.011	108.89	-6.288E+00	
La-140	487.02	198.	18.	0.010	113.44	1.364E+00	
RU-103	497.05	64.	-6.	-0.003	264.22	-2.321E-01	
RH-106	511.86	102.	72.	0.040	23.26	1.285E+01	
Kr-85	513.98	184.	-6.	-0.004	297.33	-5.450E+01	
Nd-147	531.00	61.	-7.	-0.004	241.61	-1.894E+00	
Ba-140	537.26	39.	14.	0.008	95.27	2.130E+00	
CS-134	563.24	61.	13.	0.007	122.35	6.163E+00	
CS-134	569.32	52.	2.	0.001	514.78	5.059E-01	
BI-207	569.70	48.	7.	0.004	138.17	2.920E-01	
SB-125	600.50	933.	-17.	-0.009	257.89	-3.812E+00	
SB-124	602.73	931.	-18.	-0.010	247.13	-7.243E-01	
CS-134	604.71	913.	-6.	-0.003	697.81	-2.556E-01	
RH-106	621.92	53.	9.	0.005	174.27	3.624E+00	
SB-125	635.89	31.	3.	0.002	268.74	1.119E+00	
I-131	636.97	24.	9.	0.005	80.65	5.500E+00	
AG-110M	657.76	122.	-21.	-0.012	78.18	-9.507E-01	
CS-137	661.66	133.	-9.	-0.005	180.22	-4.689E-01	
PM-144	696.54	37.	14.	0.008	98.62	6.225E-01	
NB-94	702.63	56.	-8.	-0.004	201.56	-3.708E-01	
SB-124	722.79	132.	-22.	-0.012	75.87	-9.556E+00	
AG-108M	722.94	154.	-4.	-0.002	477.80	-1.886E-01	
ZR-95	724.20	142.	9.	0.005	193.84	9.280E-01	
BI-212	727.17	194.	-25.	-0.014	80.32	-1.558E+01	
PM-146	735.72	51.	-10.	-0.006	150.34	-2.155E+00	
PM-146	747.16	37.	-1.	-0.001	975.96	-1.861E-01	
ZR-95	756.73	37.	15.	0.008	92.15	1.290E+00	
AG-110M	763.94	257.	-36.	-0.020	65.54	-7.736E+00	
NB-95	765.79	264.	-33.	-0.018	71.20	-1.610E+00	
PA-234M	766.41	164.	21.	0.012	89.35	3.436E+02	
EU-152	778.92	51.	-12.	-0.007	126.48	-4.660E+00	
BI-212	785.42	28.	13.	0.007	88.29	5.138E+01	
CS-134	795.87	76.	16.	0.009	83.75	8.999E-01	
CS-134	801.95	95.	2.	0.001	692.82	1.149E+00	
Cs-136	818.50	34.	12.	0.007	71.64	6.305E-01	
MN-54	834.85	51.	-6.	-0.004	243.25	-3.256E-01	
NB-94	871.10	54.	-3.	-0.002	351.19	-1.592E-01	
EU-154	873.23	48.	12.	0.006	90.58	4.977E+00	
PA-234	880.53	42.	12.	0.006	84.83	1.026E+01	
PA-234	883.24	54.	12.	0.006	94.37	6.435E+00	
AG-110M	884.68	71.	-2.	-0.001	503.20	-1.766E-01	
Y-88	898.04	30.	8.	0.004	154.62	4.626E-01	
AG-110M	937.49	105.	-27.	-0.015	84.95	-4.429E+00	
PA-234	946.02	10.	27.	0.015	32.15	1.134E+01	
EU-152	964.11	91.	12.	0.007	115.62	4.706E+00	
EU-154	996.33	22.	20.	0.011	39.79	1.103E+01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
PA-234M	1001.00	42.	9.	0.005	110.51	6.081E+01	
EU-154	1004.77	39.	6.	0.003	149.49	2.007E+00	
Cs-136	1048.07	64.	-22.	-0.012	56.22	-1.650E+00	
RH-106	1050.36	90.	6.	0.004	212.29	2.505E+01	
BI-207	1063.66	11.	16.	0.009	51.75	1.344E+00	
Ga-68	1077.40	21.	8.	0.004	141.62	1.673E+01	
FE-59	1099.25	48.	-13.	-0.007	124.27	-1.445E+00	
EU-152	1112.07	228.	-4.	-0.002	613.12	-1.625E+00	
Ta-182	1121.30	217.	10.	0.006	210.71	1.826E+00	
CO-60	1173.24	27.	8.	0.005	145.05	5.500E-01	
Ta-182	1189.05	32.	5.	0.003	261.02	2.055E+00	
Ta-182	1221.41	45.	-5.	-0.003	299.22	-1.342E+00	
NA-22	1274.53	23.	9.	0.005	79.22	6.556E-01	
FE-59	1291.60	40.	-3.	-0.001	557.27	-4.378E-01	
TL-210	1313.00	57.	-21.	-0.011	88.21	-7.068E+00	
AG-110M	1384.30	28.	-6.	-0.004	201.07	-1.952E+00	
EU-152	1408.00	24.	15.	0.008	84.50	5.316E+00	
La-140	1596.21	12.	8.	0.004	110.40	7.042E-01	
SB-124	1690.98	19.	-5.	-0.003	221.06	-9.223E-01	
Y-88	1836.06	7.	4.	0.002	159.33	4.137E-01	

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 Counting 1 Sigma	MDA Bq/Sample
BE-7	#A	-6.2885E+00	-6.2885E+00	1.089E+02%	2.29E+01
NA-22	#A	6.5559E-01	6.5559E-01	7.922E+01%	1.75E+00
K-40		2.9796E+02	2.9796E+02	4.957E+00%	5.40E+00
Sc-46	#A	-4.4842E-02	-4.4842E-02	1.472E+03%	2.32E+00
CR-51	#A	-6.5660E+00	-6.5661E+00	1.909E+02%	4.18E+01
MN-54	#A	-3.2561E-01	-3.2561E-01	2.432E+02%	1.86E+00
FE-59	#A	-1.4451E+00	-1.4451E+00	1.243E+02%	3.89E+00
Co-56	#C	2.4830E+00	2.4830E+00	2.740E+01%	1.67E+00
CO-57	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.61E+00
CO-58	#A	-5.0601E-02	-5.0601E-02	1.237E+03%	2.19E+00
CO-60	#A	2.9910E-01	2.9910E-01	1.451E+02%	2.00E+00
ZN-65	#A	0.0000E+00	0.0000E+00	1.000E+03%	9.11E+00
NB-94	#A	-3.7082E-01	-3.7082E-01	2.016E+02%	1.74E+00
ZR-95	#A	1.1277E+00	1.1277E+00	9.215E+01%	2.74E+00
NB-95	#A	-1.6096E+00	-1.6096E+00	7.120E+01%	3.79E+00
RU-103	#A	-2.3208E-01	-2.3208E-01	2.642E+02%	1.55E+00
RH-106	#A	6.5332E+00	6.5332E+00	1.373E+02%	1.53E+01
AG-108M	#A	2.4547E-01	2.4547E-01	2.709E+02%	1.66E+00
AG-110M	#A	-1.7659E-01	-1.7659E-01	5.032E+02%	3.10E+00
SN-113	#A	9.7218E-01	9.7218E-01	1.154E+02%	3.75E+00

SB-124	#A	-7.2425E-01	-7.2426E-01	2.471E+02%	5.98E+00
SB-125	#A	1.7454E+00	1.7454E+00	4.608E+01%	5.23E+00
I-131	#A	9.6751E-01	9.6753E-01	6.399E+01%	1.40E+00
Gd-153	#A	-1.6402E+00	-1.6402E+00	1.436E+02%	7.84E+00
Ga-68	#A	1.6696E+01	1.6733E+01	1.416E+02%	5.29E+01
Tc-99m	#A	-5.2315E-01	-5.2337E-01	1.597E+02%	2.78E+00
BA-133	#A	-1.0792E+00	-1.0792E+00	1.992E+02%	7.17E+00
CS-134	#A	1.2395E+00	1.2395E+00	8.375E+01%	2.52E+00
CS-137	#A	-4.6893E-01	-4.6893E-01	1.802E+02%	2.88E+00
CE-139	#A	-2.9948E-01	-2.9948E-01	2.009E+02%	2.02E+00
Ba-140	#A	3.1756E+00	3.1756E+00	7.176E+01%	4.86E+00
La-140	#A	1.0696E+00	1.0696E+00	6.777E+01%	1.66E+00
CE-141	#A	-1.0252E+00	-1.0252E+00	1.542E+02%	5.26E+00
CE-144	#A	3.7564E+00	3.7564E+00	1.637E+02%	2.05E+01
PM-144	#A	6.2250E-01	6.2250E-01	9.862E+01%	1.42E+00
EU-152	#A	2.0405E+00	2.0405E+00	1.156E+02%	4.72E+00
EU-154	#A	2.7829E+00	2.7829E+00	3.979E+01%	3.02E+00
EU-155	#A	2.0770E+00	2.0770E+00	1.433E+02%	9.92E+00
HF-181	A	4.5054E-01	4.5054E-01	7.105E+01%	3.04E+00
Ta-182	#A	1.8989E+00	1.8989E+00	1.677E+02%	1.30E+01
Hg-203	#A	-3.1775E-01	-3.1775E-01	2.144E+02%	2.30E+00
TL-208	#	6.0912E+00	6.0912E+00	1.307E+01%	1.28E+00
PM-146	#A	5.0509E-01	5.0509E-01	1.598E+02%	2.02E+00
Y-88	#A	4.3746E-01	4.3746E-01	1.110E+02%	1.41E+00
Cd-113m	#A	2.4167E+03	2.4167E+03	3.257E+02%	2.67E+04
Cd-109	#A	0.0000E+00	0.0000E+00	1.000E+03%	6.20E+01
Cf-251	#A	1.1874E+00	1.1874E+00	2.497E+02%	7.60E+00
Cf-249	#A	-1.0187E+00	-1.0187E+00	1.103E+02%	3.75E+00
Sn-126	#A	4.2757E+00	4.2757E+00	1.782E+02%	2.54E+01
PB-210	A	4.5571E+01	4.5571E+01	3.836E+01%	4.57E+01
PB-212		1.1141E+01	1.1141E+01	9.062E+00%	2.45E+00
PB-214		6.4277E+01	6.4277E+01	3.633E+00%	3.39E+00
BI-207	#A	1.3439E+00	1.3439E+00	5.175E+01%	1.48E+00
BI-212	#A	-1.5577E+01	-1.5577E+01	8.032E+01%	4.16E+01
U-235	#A	-7.0410E-01	-7.0410E-01	9.278E+02%	2.19E+01
BI-214		6.2820E+01	6.2820E+01	4.494E+00%	3.25E+00
BI-210M	#A	-1.2203E+00	-1.2203E+00	8.792E+01%	3.57E+00
AC-228		1.1492E+01	1.1492E+01	1.950E+01%	7.04E+00
TH-227	#A	3.3262E-01	3.3262E-01	1.754E+02%	1.92E+01
TH-229	#A	9.8810E+00	9.8810E+00	1.050E+02%	2.65E+01
TH-234	A	1.4538E+01	1.4538E+01	3.791E+01%	2.00E+01
PA-231	#A	-2.1146E+01	-2.1146E+01	2.051E+02%	1.45E+02
PA-233	#A	-4.7707E-01	-4.7707E-01	7.058E+02%	1.13E+01
PA-234	#A	5.5790E+00	5.5790E+00	3.215E+01%	9.72E+00
PA-234M	#A	1.3432E+02	1.3432E+02	7.106E+01%	2.30E+02
AM-241	#A	-1.9101E+00	-1.9101E+00	1.173E+02%	7.45E+00
Np-237	#A	0.0000E+00	0.0000E+00	1.000E+03%	2.19E+01
Ir-192	#A	6.4685E-01	6.4685E-01	1.257E+02%	4.19E+00
Cs-136	#A	6.3047E-01	6.3047E-01	7.164E+01%	1.50E+00

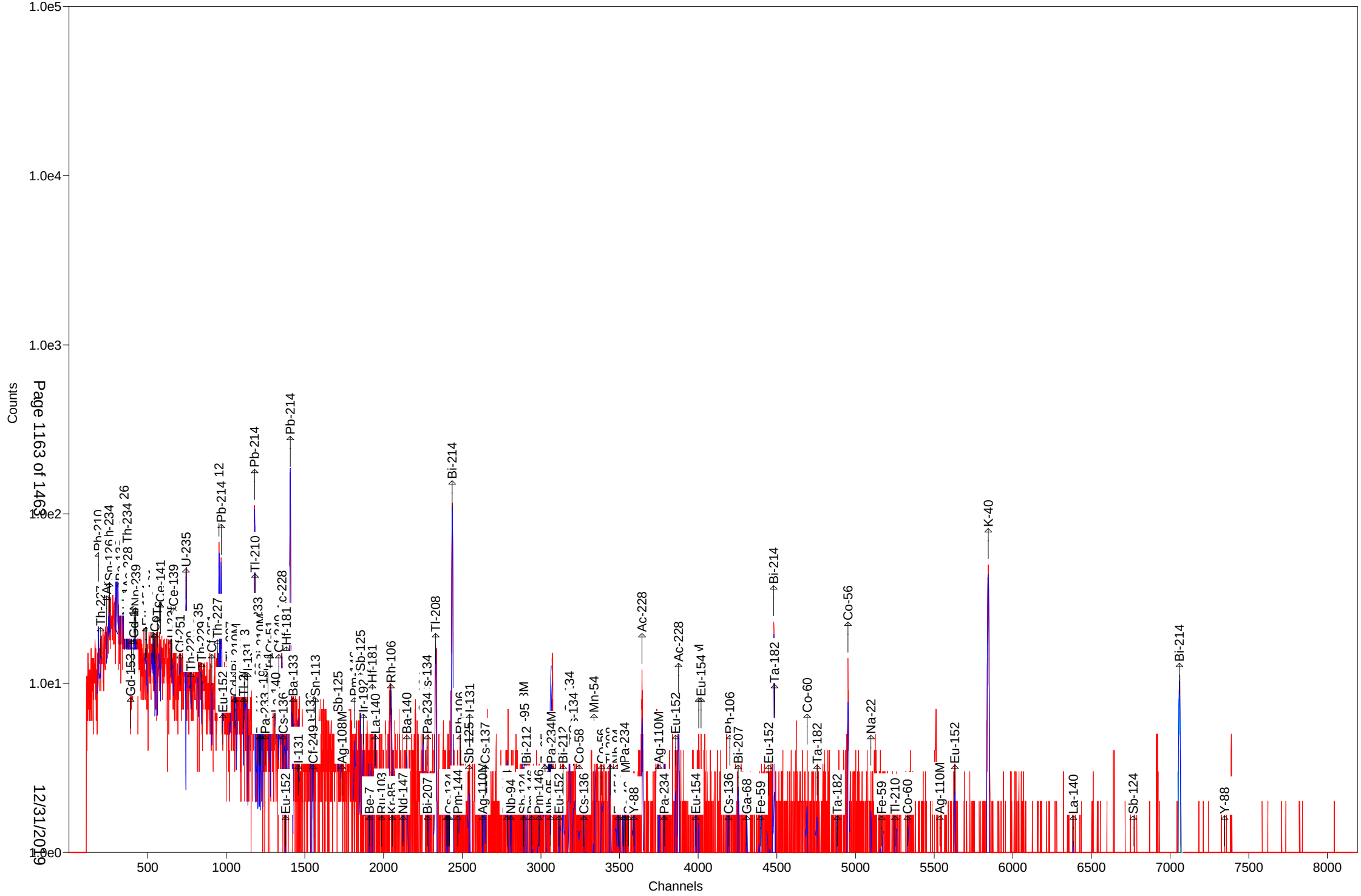
Np-239	#A	1.8487E+00	1.8488E+00	1.388E+02%	8.56E+00
Nd-147	#A	6.3962E-01	6.3962E-01	1.391E+02%	1.11E+01
TL-210	#A	0.0000E+00	0.0000E+00	1.000E+03%	2.39E+00
Kr-85	#A	-5.4500E+01	-5.4500E+01	2.973E+02%	5.52E+02

- 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 (25.1 to 1999.1 keV) 5.139E+02 Bq/Sample
Total Decayed Activity (25.1 to 1999.1 keV) 5.1388782E+02 Bq/Sample

452567_Gamma_160-36526-A-19-B. 12_Gamma_20193696.spc.



Test America St. Louis Spectrum ID: 14_Gamma_20192823

Sample Description: 452567_Gamma_160-36526-A-20-B
Detector: Detector #14
Batch ID: 452567
Work Order Number: Gamma
Lot Number: 160-36526-A-20-B

Decay to Time: 12/25/2019 10:43 Live Time: 1800 sec
Acquisition Time: 12/25/2019 10:43:50 Real Time: 1802 sec
Analysis Time: 12/25/2019 11:14 Dead Time: 0.09 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 14_Soil_TunaCan.Clb
Efficiency Cal Desc: 14_TunaCan_90099_042312
Efficiency Cal Date: 4/23/2012 11:29
Energy Cal Date: 2/28/2012 10:48
Library: Client_Long_Rev15.lib
Bkgd Correction File: 14_2019-12-07_1445.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	4.138E+00	84.7	3.507E+00	3.514E+00	1.178E+01
NA-22	-7.941E-01	78.7	6.252E-01	6.264E-01	2.099E+00
K-40	3.344E+02	5.0	1.661E+01	2.385E+01	1.216E+01
Sc-46	8.120E-01	103.8	8.432E-01	8.443E-01	2.838E+00
CR-51	-2.921E+00	192.3	5.618E+00	5.620E+00	1.895E+01
MN-54	-1.071E+00	21.6	2.318E-01	2.383E-01	2.198E+00
FE-59	-5.782E-01	223.4	1.292E+00	1.292E+00	3.643E+00
Co-56	1.998E+00	40.1	8.006E-01	8.071E-01	1.041E+00
CO-57	0.000E+00	1.#INF	1.292E-01	1.292E-01	1.310E+00
CO-58	-1.838E-01	326.1	5.993E-01	5.994E-01	2.085E+00
CO-60	4.798E-01	89.7	4.302E-01	4.308E-01	1.009E+00
ZN-65	-2.639E+00	112.8	2.976E+00	2.979E+00	9.964E+00
NB-94	-9.225E-01	91.4	8.428E-01	8.442E-01	1.989E+00
ZR-95	-1.119E+00	89.5	1.002E+00	1.003E+00	3.027E+00
NB-95	-1.280E+00	71.6	9.160E-01	9.184E-01	3.036E+00
RU-103	-7.406E-02	709.5	5.254E-01	5.254E-01	1.345E+00
RH-106	5.474E+00	70.4	3.852E+00	3.862E+00	5.506E+01
AG-108M	-4.408E-01	259.2	1.142E+00	1.143E+00	1.395E+00
AG-110M	1.245E-02	24.8	3.090E-03	3.155E-03	4.753E+00
SN-113	-2.772E-01	336.0	9.314E-01	9.315E-01	3.166E+00
SB-124	-6.209E-01	266.1	1.652E+00	1.652E+00	5.527E+00
SB-125	1.521E+00	89.1	1.355E+00	1.357E+00	4.097E+00
I-131	1.505E-01	371.1	5.584E-01	5.585E-01	1.468E+00
Gd-153	1.138E+00	117.1	1.333E+00	1.334E+00	4.446E+00
Ga-68	-4.015E+01	93.6	3.758E+01	3.764E+01	8.312E+01
Tc-99m	3.314E-02	1629.1	5.398E-01	5.398E-01	1.819E+00
BA-133	-8.555E-01	234.4	2.005E+00	2.006E+00	6.691E+00
CS-134	1.249E+00	38.3	4.778E-01	4.821E-01	1.700E+00
CS-137	-1.062E+00	88.0	9.353E-01	9.370E-01	3.122E+00
CE-139	1.228E-01	425.4	5.225E-01	5.226E-01	1.763E+00
Ba-140	2.084E+00	95.3	1.985E+00	1.988E+00	4.936E+00
La-140	-1.715E+00	81.8	1.403E+00	1.406E+00	2.921E+00
CE-141	7.525E-01	105.3	7.921E-01	7.931E-01	2.642E+00

CE-144	-3.578E+00	131.9	4.721E+00	4.724E+00	1.573E+01
PM-144	1.781E-01	322.6	5.747E-01	5.747E-01	1.417E+00
EU-152	1.871E+00	93.7	1.754E+00	1.756E+00	3.897E+00
EU-154	4.941E-01	112.2	5.542E-01	5.548E-01	2.968E+00
EU-155	-9.460E-01	234.7	2.221E+00	2.221E+00	7.437E+00
HF-181	5.022E-01	104.4	5.242E-01	5.248E-01	1.772E+00
Ta-182	2.942E+00	119.3	3.511E+00	3.514E+00	1.181E+01
Hg-203	-4.554E-01	125.3	5.707E-01	5.713E-01	1.917E+00
TL-208	5.327E+00	15.5	8.246E-01	8.696E-01	1.443E+00
PM-146	1.515E-01	175.6	2.661E-01	2.662E-01	2.094E+00
Y-88	4.533E-01	90.7	4.110E-01	4.119E-01	1.391E+00
Cd-113m	1.990E+03	283.9	5.650E+03	5.651E+03	1.934E+04
Cd-109	1.078E+01	153.9	1.659E+01	1.660E+01	5.524E+01
Cf-251	2.036E+00	116.6	2.375E+00	2.382E+00	6.359E+00
Cf-249	6.361E-01	123.8	7.872E-01	7.879E-01	2.651E+00
Sn-126	-2.491E+00	232.2	5.783E+00	5.785E+00	1.940E+01
PB-210	6.265E+01	22.0	1.381E+01	1.429E+01	3.553E+01
PB-212	1.059E+01	9.2	9.782E-01	1.194E+00	2.428E+00
PB-214	6.294E+01	3.7	2.330E+00	4.016E+00	2.640E+00
BI-207	-3.339E-01	329.0	1.098E+00	1.098E+00	2.527E+00
BI-212	8.867E+00	89.2	7.914E+00	7.927E+00	2.657E+01
U-235	4.743E-01	79.8	3.785E-01	3.793E-01	1.235E+01
BI-214	5.451E+01	4.3	2.330E+00	3.668E+00	2.174E+00
BI-210M	-9.561E-01	96.5	9.230E-01	9.248E-01	3.014E+00
AC-228	1.467E+01	11.6	1.700E+00	1.858E+00	3.267E+00
TH-227	-6.980E+00	91.7	6.402E+00	6.416E+00	1.818E+01
TH-229	-1.038E+01	105.6	1.096E+01	1.100E+01	2.925E+01
TH-234	4.424E+00	119.8	5.300E+00	5.305E+00	1.771E+01
PA-231	0.000E+00	1.#INF	3.356E+00	3.357E+00	1.208E+02
PA-233	1.468E+00	199.4	2.927E+00	2.929E+00	9.768E+00
PA-234	-2.377E+00	131.4	3.125E+00	3.127E+00	1.040E+01
PA-234M	3.635E+01	152.0	5.525E+01	5.528E+01	3.387E+02
AM-241	-1.658E+00	111.6	1.849E+00	1.851E+00	5.194E+00
Np-237	-3.137E+00	164.5	5.162E+00	5.165E+00	1.718E+01
Ir-192	-8.136E-02	77.9	6.334E-02	6.353E-02	2.057E+00
Cs-136	6.363E-01	44.8	2.851E-01	2.875E-01	6.767E-01
Np-239	7.222E-01	272.3	1.967E+00	1.967E+00	6.597E+00
Nd-147	1.402E+00	149.8	2.099E+00	2.101E+00	9.910E+00
TL-210	-8.398E-01	78.5	6.589E-01	6.606E-01	2.199E+00
Kr-85	0.000E+00	1.#INF	4.548E+01	4.548E+01	5.015E+02
Total	2.630E+03				

Analyst: Caleb Quinn

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Sample description
452567_Gamma_160-36526-A-20-B

Spectrum Filename: C:\User\SPC\Det14\14_Gamma_20192823.An1

Acquisition information
Start time: 12/25/2019 10:43:50 AM
Live time: 1800
Real time: 1802
Dead time: 0.09 %
Detector ID: 14

Detector system
Ge14 SN/11080670

Calibration
Filename: 14_Soil_TunaCan.Clb
14_TunaCan_90099_042312

Energy Calibration
Created: 2/28/2012 10:48:23 AM
Zero offset: 0.130 keV
Gain: 0.250 keV/channel
Quadratic: -2.050E-08 keV/channel^2

Efficiency Calibration
Created: 4/23/2012 11:29:47 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.02 %
Log(Eff): 2.101260E-01 + (-5.951973E-01*Log(E)) + (-1.605331E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.28 %
Log(Eff): -2.391492E+01 + (8.828985E+00*Log(E)) + (-9.371496E-01*Log(E)^2)

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.14keV)
Stop channel: 8000 (1999.51keV)
Peak rejection level: 1000.000%
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:	YES	12/25/2019 10:43:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	14_2019-12-07_1445.PBC 12/7/2019 2:45:57 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 30 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1782

***** 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
46.53	104.	22.05	0.99	2.170E-02	46.54	4.250	6.265E+01	PB210
74.80	253.	12.00	0.78	3.811E-02				
77.16	476.	6.92	0.78	3.897E-02				
87.20	200.	16.65	1.00	4.178E-02	86.54	30.700	8.692E+00	EU155
					86.94	9.040	2.946E+01	Sn126
					87.57	37.500	7.078E+00	Sn126
					88.04	3.790	6.987E+01	Cd109
91.10	31.	149.80	0.79	4.255E-02	91.10	28.300	PBC<MDA	Nd147
92.41	19.	119.79	0.80	4.279E-02	92.59	5.584	PBC<MDA	TH234
93.17	31.	151.60	0.80	4.291E-02	93.35	5.561	PBC<MDA	AC228
97.50	27.	117.10	0.80	4.345E-02	97.50	30.000	PBC<MDA	Gd153
106.13	13.	272.29	0.81	4.406E-02	106.13	22.700	PBC<MDA	Np239
121.78	4.	575.85	0.83	4.380E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	6.670E-02	CO57
145.44	27.	105.27	0.85	4.125E-02	145.44	48.200	PBC<MDA	CE141
163.38	25.	115.17	0.87	3.841E-02	163.38	5.080	PBC<MDA	U235
165.85	7.	425.40	0.87	3.872E-02	165.85	79.900	PBC<MDA	CE139
176.60	23.	116.64	0.88	3.692E-02	176.60	17.000	PBC<MDA	Cf251
185.80	182.	16.67	0.98	3.551E-02	185.72	54.000	5.274E+00	U235
205.33	6.	414.86	0.91	3.290E-02	205.33	5.010	PBC<MDA	U235
227.00	3.	711.69	0.93	3.046E-02	227.00	6.300	PBC<MDA	Cf251
235.97	23.	195.71	0.94	2.957E-02	235.97	12.300	PBC<MDA	TH227

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
238.18	255.	8.48	0.94	2.936E-02	238.63	43.300	1.083E+01	PB212
241.47	244.	9.12	0.95	2.905E-02	242.00	7.430	6.288E+01	PB214
244.69	24.	174.97	0.95	2.875E-02	244.69	7.580	PBC<MDA	EU152
264.38	6.	283.85	0.97	2.714E-02	263.70	0.006	PBC<MDA	Cd113m
277.12	19.	92.99	1.79	2.610E-02	277.28	6.310	PBC<MDA	TL208
294.82	488.	5.69	1.13	2.489E-02	295.09	19.300	5.595E+01	PB214
311.71	23.	199.45	1.02	2.381E-02	312.01	36.000	PBC<MDA	PA233
328.76	19.	102.24	1.03	2.286E-02	328.76	20.300	PBC<MDA	La140
351.48	930.	3.66	1.15	2.169E-02	351.93	37.600	6.294E+01	PB214
364.48	5.	371.05	1.07	2.109E-02	364.48	81.700	PBC<MDA	I131
383.84	25.	71.62	1.09	2.025E-02	383.84	8.940	PBC<MDA	BA133
387.95	15.	123.75	1.09	2.008E-02	387.95	66.000	PBC<MDA	Cf249
427.88	6.	256.58	1.13	1.859E-02	427.88	29.600	PBC<MDA	SB125
463.37	14.	89.07	1.16	1.745E-02	463.37	10.470	PBC<MDA	SB125
468.06	13.	118.44	1.17	1.731E-02	468.06	51.750	PBC<MDA	Ir192
477.60	13.	84.75	1.18	1.704E-02	477.60	10.520	PBC<MDA	BE7
482.00	12.	104.38	1.18	1.691E-02	482.00	80.500	PBC<MDA	HF181
487.02	14.	106.18	1.18	1.677E-02	487.02	45.500	PBC<MDA	La140
512.11	64.	25.39	2.46	1.612E-02	511.86	20.000	1.103E+01	RH106
531.00	5.	285.89	1.23	1.566E-02	531.00	13.000	PBC<MDA	Nd147
537.26	14.	95.26	1.23	1.551E-02	537.26	24.390	PBC<MDA	Ba140
563.24	29.	38.26	1.25	1.494E-02	563.24	8.350	1.282E+01	CS134
569.47	2.	759.74	1.26	1.481E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	PBC<MDA	PA234
					569.70	97.740	PBC<MDA	BI207
582.85	116.	15.48	1.62	1.453E-02	583.02	84.500	5.236E+00	TL208
608.98	641.	4.21	1.36	1.404E-02	609.31	46.090	5.451E+01	BI214
635.89	4.	215.06	1.32	1.356E-02	635.89	11.310	PBC<MDA	SB125
696.54	4.	322.59	1.37	1.260E-02	696.54	99.000	PBC<MDA	PM144
727.80	15.	89.25	1.40	1.217E-02	727.17	7.550	PBC<MDA	BI212
735.72	7.	175.58	1.41	1.206E-02	735.72	22.500	PBC<MDA	PM146
766.41	9.	152.00	1.43	1.167E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	1.484E+02	PA234M
778.92	10.	93.75	1.44	1.151E-02	778.92	12.940	PBC<MDA	EU152
785.45	11.	119.74	1.45	1.144E-02	785.42	1.280	PBC<MDA	BI212
795.87	2.	400.34	1.46	1.131E-02	795.87	85.530	PBC<MDA	CS134
818.84	13.	44.81	3.14	1.106E-02	818.50	100.000	PBC<MDA	Cs136
846.77	9.	93.87	1.50	1.076E-02	846.77	99.935	PBC<MDA	Co56
860.19	32.	31.95	1.16	1.062E-02	860.56	12.420	1.365E+01	TL208
871.10	10.	67.74	1.52	1.052E-02	871.10	99.890	PBC<MDA	NB94
889.28	15.	103.85	1.54	1.034E-02	889.28	99.984	PBC<MDA	Sc46
898.04	11.	90.67	1.54	1.026E-02	898.04	93.700	PBC<MDA	Y88
910.69	80.	14.15	1.64	1.014E-02	911.07	29.000	1.516E+01	AC228
964.11	4.	387.94	1.60	9.682E-03	964.11	14.605	PBC<MDA	EU152
968.97	42.	18.37	1.67	9.642E-03	968.97	17.460	1.386E+01	AC228
1004.77	8.	112.15	1.63	9.360E-03	1004.77	18.010	PBC<MDA	EU154
1050.36	13.	70.37	1.66	9.027E-03	1050.36	1.560	PBC<MDA	RH106
1120.21	151.	9.41	1.96	8.562E-03	1120.29	15.100	6.507E+01	BI214

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
					1120.55	99.987	9.829E+00	Sc46
					1121.30	34.900	2.817E+01	Ta182
1121.11	16.	119.33	1.72	8.556E-03	1120.55	99.987	PBC<MDA	Sc46
					1121.30	34.900	2.942E+00	Ta182
1173.24	7.	161.52	1.76	8.244E-03	1173.24	99.900	PBC<MDA	CO60
1238.28	40.	40.06	1.80	7.886E-03	1238.28	66.070	4.314E+00	Co56
1313.00	7.	135.27	1.86	7.514E-03	1313.00	21.000	PBC<MDA	TL210
1332.50	7.	89.66	1.87	7.423E-03	1332.50	99.980	PBC<MDA	CO60
1384.30	16.	24.81	1.91	7.192E-03	1384.30	24.290	5.167E+00	AG110M
1408.00	16.	52.58	1.92	7.092E-03	1408.00	21.005	PBC<MDA	EU152
1460.75	442.	4.97	1.77	6.879E-03	1460.83	10.670	3.344E+02	K40
1764.47	113.	9.63	1.71	5.878E-03	1764.49	15.400	6.952E+01	BI214
1836.06	3.	205.48	2.19	5.686E-03	1836.06	99.200	PBC<MDA	Y88

********** 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
298.58	74.78	334.	253.	6.636E+03	12.00	0.777	- sD
308.03	77.14	304.	476.	1.222E+04	6.92	0.780	- D
347.82	87.20	235.	141.	3.380E+03	17.50	0.790	- sD
742.48	185.80	187.	193.	5.434E+03	15.63	0.979	- s
963.53	241.46	331.	79.	2.703E+03	34.64	0.947	- sD

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: Client_Long_Rev15.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	185.54	46.53	146.	104.	0.058	22.05	0.994s
AM-241	237.55	59.54	462.	-33.	-0.018	111.55	0.761s
TH-234	252.55	63.29	458.	-25.	-0.014	113.11	0.765
Sn-126	256.52	64.28	560.	-14.	-0.008	232.19	0.766s
BA-133	323.33	80.99	423.	-19.	-0.011	183.65	0.784
Np-237	345.33	86.49	1268.	-31.	-0.017	164.54	0.789s
EU-155	345.54	86.54	1238.	-31.	-0.017	162.50	0.790
Sn-126	347.13	86.94	1207.	-31.	-0.017	160.44	0.790
Sn-126	349.65	87.57	1176.	-24.	-0.013	203.13	0.791
Cd-109	351.53	88.04	1112.	31.	0.017	153.87	0.791A

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Nd-147	363.77	91.10	1045.	31.	0.017	149.80	0.794s
TH-234	369.72	92.59	249.	19.	0.011	119.79	0.796D
AC-228	372.76	93.35	1103.	31.	0.017	151.60	0.797s
Gd-153	389.36	97.50	475.	27.	0.015	117.10	0.801s
Np-239	397.36	99.50	516.	-30.	-0.016	109.88	0.803s
Gd-153	412.15	103.20	629.	-30.	-0.016	121.46	0.807s
Np-239	414.15	103.70	659.	-30.	-0.016	124.13	0.807s
EU-155	420.60	105.31	688.	-16.	-0.009	234.75	0.809s
Np-239	423.87	106.13	620.	13.	0.007	272.29	0.810s
EU-152	486.45	121.78	334.	4.	0.002	575.85	0.826s
CO-57	487.58	122.06	338.	0.	0.000	1000.00	0.826s
EU-154	491.73	123.10	394.	-14.	-0.008	195.49	0.828s
PA-234	524.50	131.29	932.	-33.	-0.018	131.44	0.836s
HF-181	531.42	133.02	766.	-31.	-0.017	129.50	0.838s
CE-144	533.47	133.54	797.	-31.	-0.017	131.93	0.838s
HF-181	544.52	136.30	828.	-31.	-0.017	133.90	0.841
CO-57	545.21	136.47	858.	-10.	-0.006	397.49	0.841
U-235	574.45	143.79	446.	-21.	-0.012	110.51	0.849s
CE-141	581.07	145.44	388.	27.	0.015	105.27	0.850
Ba-140	649.93	162.66	510.	-28.	-0.015	116.36	0.868s
U-235	652.81	163.38	387.	25.	0.014	115.17	0.869s
CE-139	662.70	165.85	420.	7.	0.004	425.40	0.871s
Cf-251	705.68	176.60	220.	23.	0.013	116.64	0.882s
U-235	742.15	185.72	491.	-36.	-0.020	78.88	0.892s
TH-229	773.30	193.51	273.	-28.	-0.016	105.61	0.899s
U-235	820.58	205.33	207.	6.	0.003	414.86	0.912s
TH-229	842.65	210.85	240.	-27.	-0.015	94.42	0.917s
Cf-251	907.23	227.00	177.	3.	0.002	711.69	0.933s
TH-227	943.11	235.97	975.	23.	0.013	195.71	0.942s
PB-212	953.75	238.63	128.	242.	0.134	9.24	0.945D
PB-214	967.21	242.00	807.	23.	0.013	177.16	0.948s
EU-152	977.99	244.69	841.	24.	0.013	174.97	0.951
TH-227	1024.17	256.24	171.	-24.	-0.014	91.72	0.962s
Cd-113m	1054.01	263.70	134.	6.	0.003	283.85	0.970s
BI-210M	1062.53	265.83	228.	-23.	-0.013	96.54	0.972s
TL-208	1107.68	277.12	88.	19.	0.011	92.99	1.790s
Hg-203	1115.99	279.20	227.	-17.	-0.010	125.34	0.985s
I-131	1136.39	284.30	158.	-18.	-0.010	100.78	0.990s
PB-214	1178.47	294.82	82.	483.	0.269	5.77	1.135
TL-210	1183.18	296.00	1118.	-22.	-0.012	213.16	1.002s
PB-212	1199.30	300.03	1096.	-23.	-0.013	122.79	1.006
PA-231	1199.46	300.07	1074.	-22.	-0.012	208.09	1.006
PA-233	1199.90	300.18	1051.	-15.	-0.008	301.45	1.006
PA-231	1209.78	302.65	1036.	0.	0.000	1000.00	1.008s
BA-133	1210.59	302.85	1036.	0.	0.000	1000.00	1.009s
Ba-140	1218.57	304.85	1036.	0.	0.000	1000.00	1.011s
BI-210M	1218.76	304.90	1036.	0.	0.000	1000.00	1.011s
Ir-192	1232.94	308.44	1130.	-25.	-0.014	189.88	1.014s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
PA-233	1247.22	312.01	1009.	23.	0.013	199.45	1.018s
Ir-192	1265.13	316.49	247.	-22.	-0.012	101.09	1.022
CR-51	1279.51	320.08	269.	-12.	-0.007	192.31	1.026s
La-140	1314.21	328.76	106.	19.	0.011	102.24	1.034s
Cf-249	1332.92	333.44	139.	-20.	-0.011	110.85	1.039s
AC-228	1352.44	338.32	348.	-22.	-0.012	63.48	1.043s
EU-152	1376.30	344.29	96.	-14.	-0.008	97.02	1.049s
HF-181	1382.47	345.83	163.	-21.	-0.011	90.05	1.050s
PB-214	1405.08	351.48	60.	923.	0.513	3.70	1.147s
BA-133	1423.15	356.00	1147.	-21.	-0.011	234.39	1.060
I-131	1457.08	364.48	84.	5.	0.003	371.05	1.069s
BA-133	1534.50	383.84	144.	25.	0.014	71.62	1.087s
Cf-249	1550.94	387.95	169.	15.	0.008	123.75	1.091s
SN-113	1565.90	391.69	225.	-6.	-0.004	336.03	1.095s
SB-125	1710.63	427.88	66.	6.	0.003	256.58	1.129s
AG-108M	1734.87	433.94	70.	-13.	-0.007	259.20	1.135s
PM-146	1814.64	453.88	76.	-5.	-0.003	629.12	1.154
SB-125	1852.59	463.37	68.	14.	0.008	89.07	1.163s
Ir-192	1871.36	468.06	112.	13.	0.007	118.44	1.167s
BE-7	1909.50	477.60	57.	13.	0.007	84.75	1.176s
HF-181	1927.10	482.00	76.	12.	0.007	104.38	1.180s
La-140	1947.19	487.02	52.	14.	0.008	106.18	1.185
RU-103	1987.33	497.05	52.	-2.	-0.001	709.46	1.194s
RH-106	2046.57	511.86	100.	64.	0.036	25.39	2.458s
Kr-85	2055.03	513.98	164.	0.	0.000	1000.00	1.210s
Nd-147	2123.11	531.00	52.	5.	0.003	285.89	1.225s
Ba-140	2148.15	537.26	44.	14.	0.008	95.26	1.231s
CS-134	2252.06	563.24	24.	29.	0.016	38.26	1.255s
CS-134	2276.40	569.32	72.	-7.	-0.004	175.55	1.260s
PA-234	2276.99	569.47	80.	2.	0.001	759.74	1.261s
TL-208	2330.50	582.85	39.	116.	0.064	15.48	1.623s
SB-125	2401.12	600.50	863.	-16.	-0.009	268.89	1.289s
SB-124	2410.04	602.73	847.	-16.	-0.009	266.06	1.291s
CS-134	2417.96	604.71	832.	-16.	-0.009	263.27	1.292s
BI-214	2435.02	608.98	24.	634.	0.352	4.27	1.359
RU-103	2440.31	610.30	816.	-6.	-0.003	652.14	1.297s
AG-108M	2456.25	614.28	810.	0.	0.000	1000.00	1.301s
PM-144	2471.37	618.06	809.	-13.	-0.007	211.15	1.304s
RH-106	2486.79	621.92	816.	-4.	-0.002	970.88	1.308s
SB-125	2542.69	635.89	35.	4.	0.002	215.06	1.320s
AG-110M	2630.18	657.76	120.	-20.	-0.011	81.57	1.339s
CS-137	2645.77	661.66	167.	-21.	-0.012	88.04	1.343s
PM-144	2785.32	696.54	39.	4.	0.002	322.59	1.374s
NB-94	2809.67	702.63	78.	-20.	-0.011	91.36	1.379s
SB-124	2890.31	722.79	85.	-5.	-0.003	264.58	1.396
AG-108M	2890.91	722.94	80.	0.	0.000	1000.00	1.397
EU-154	2892.60	723.36	80.	0.	0.000	1000.00	1.397s
ZR-95	2895.96	724.20	80.	0.	0.000	1000.00	1.398s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
BI-212	2907.84	727.17	78.	15.	0.008	89.25	1.400s
PM-146	2942.05	735.72	30.	7.	0.004	175.58	1.408
PM-146	2987.81	747.16	48.	-11.	-0.006	135.62	1.417s
ZR-95	3026.09	756.73	48.	-13.	-0.007	89.51	1.426
AG-110M	3054.96	763.94	68.	-12.	-0.007	98.90	1.432s
NB-95	3062.34	765.79	171.	-27.	-0.015	71.56	1.433s
PA-234M	3064.83	766.41	92.	9.	0.005	152.00	1.434s
EU-152	3114.87	778.92	18.	10.	0.005	93.75	1.444s
BI-212	3140.88	785.42	39.	11.	0.006	119.74	1.450s
CS-134	3182.68	795.87	33.	2.	0.001	400.34	1.459s
TL-210	3197.61	799.60	79.	-17.	-0.009	78.46	1.462s
CS-134	3207.01	801.95	117.	-12.	-0.007	128.40	1.464s
CO-58	3242.31	810.77	70.	-4.	-0.002	326.13	1.471s
Cs-136	3274.59	818.84	5.	13.	0.007	44.81	3.142s
MN-54	3338.63	834.85	75.	-21.	-0.012	21.65	1.492s
Co-56	3386.32	846.77	14.	9.	0.005	93.87	1.501s
TL-208	3440.00	860.19	16.	32.	0.018	31.95	1.156s
NB-94	3483.65	871.10	19.	10.	0.006	67.74	1.522s
EU-154	3492.19	873.23	52.	-10.	-0.006	103.78	1.523s
PA-234	3521.39	880.53	81.	-8.	-0.005	83.12	1.529s
AG-110M	3538.01	884.68	176.	-23.	-0.013	83.42	1.533s
Sc-46	3556.40	889.28	116.	15.	0.008	103.85	1.536s
Y-88	3591.45	898.04	19.	11.	0.006	90.67	1.543s
AC-228	3642.05	910.69	10.	80.	0.045	14.15	1.635
AG-110M	3749.30	937.49	65.	-20.	-0.011	86.51	1.576s
PA-234	3783.42	946.02	47.	-7.	-0.004	168.96	1.582s
EU-152	3855.80	964.11	99.	4.	0.002	387.94	1.597s
AC-228	3875.26	968.97	5.	42.	0.023	18.37	1.673
EU-154	3984.71	996.33	85.	-8.	-0.005	160.55	1.622s
EU-154	4018.51	1004.77	15.	8.	0.004	112.15	1.629s
Co-56	4150.81	1037.84	50.	-18.	-0.010	89.52	1.655s
Cs-136	4191.74	1048.07	33.	-3.	-0.001	326.77	1.663s
RH-106	4200.91	1050.36	35.	13.	0.007	70.37	1.665s
BI-207	4254.12	1063.66	35.	-4.	-0.002	328.98	1.675s
Ga-68	4309.10	1077.40	55.	-18.	-0.010	93.60	1.685s
FE-59	4396.54	1099.25	40.	-5.	-0.003	223.40	1.702s
EU-152	4447.85	1112.07	282.	-21.	-0.011	117.15	1.712s
ZN-65	4461.74	1115.55	261.	-21.	-0.011	112.76	1.714s
BI-214	4480.42	1120.21	13.	151.	0.084	9.41	1.961
Sc-46	4481.77	1120.55	240.	-20.	-0.011	110.64	1.718
Ta-182	4484.77	1121.30	170.	16.	0.009	119.33	1.719
CO-60	4692.60	1173.24	25.	7.	0.004	161.52	1.757s
Ta-182	4755.88	1189.05	25.	-2.	-0.001	554.15	1.769
Co-56	4952.89	1238.28	44.	40.	0.022	40.06	1.805s
NA-22	5097.96	1274.53	32.	-11.	-0.006	78.73	1.831s
EU-154	5098.00	1274.54	43.	0.	0.000	1000.00	1.831s
TL-210	5251.92	1313.00	16.	7.	0.004	135.27	1.858s
CO-60	5329.96	1332.50	5.	7.	0.004	89.66	1.871s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
AG-110M	5537.26	1384.30	0.	16.	0.009	24.81	1.907s
EU-152	5632.13	1408.00	11.	16.	0.009	52.58	1.923s
K-40	5843.23	1460.75	8.	442.	0.245	4.97	1.774
La-140	6385.44	1596.21	40.	-19.	-0.010	81.81	2.044s
BI-214	7058.97	1764.47	3.	113.	0.063	9.63	1.711
Y-88	7345.59	1836.06	6.	3.	0.002	205.48	2.185s

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
BE-7	C	4.1384E+00				5.31E+01	
			477.60	4.138E+00	&(	1.178E+01 8.47E+01 1.05E+01	G
NA-22	C	-7.9410E-01				9.50E+02	
			1274.53	-7.941E-01	?(	2.099E+00 7.87E+01 9.99E+01	G
K-40	N	3.3440E+02				4.66E+11	
			1460.83	3.344E+02	(P	1.216E+01 4.97E+00 1.07E+01	G
Sc-46	F	8.1200E-01				8.38E+01	
			889.28	8.120E-01	&(	2.838E+00 1.04E+02 1.00E+02	G
			1120.55	-1.313E+00	+	4.864E+00 1.11E+02 1.00E+02	G
CR-51	F	-2.9214E+00				2.77E+01	
			320.08	-2.921E+00	?(	1.895E+01 1.92E+02 9.94E+00	G
MN-54	C	-1.0709E+00				3.12E+02	
			834.85	-1.071E+00	?(P	2.198E+00 2.16E+01 1.00E+02	G
FE-59	F	-5.7818E-01				4.45E+01	
			1099.25	-5.782E-01	?(P	3.643E+00 2.23E+02 5.65E+01	G
			1291.60	5.628E-02	&	4.521E+00 3.53E+03 4.32E+01	G
Co-56	C	1.9983E+00				7.73E+01	
			846.77	4.672E-01	(	1.041E+00 9.39E+01 9.99E+01	G
			1238.28	4.314E+00	(P	3.568E+00 4.01E+01 6.61E+01	G
			1037.84	-7.764E+00	+	1.538E+01 8.95E+01 1.41E+01	G
			1771.35	-6.125E-01	%	3.370E+01 1.59E+03 1.55E+01	A
CO-58	C	-1.8376E-01				7.09E+01	
			810.78	-1.838E-01	?(	2.085E+00 3.26E+02 9.95E+01	G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CO-60	F	4.7975E-01					1.93E+03	
			1332.50	4.873E-01	?(	1.009E+00	8.97E+01	1.00E+02 G
			1173.24	4.722E-01	?(	1.755E+00	1.62E+02	9.99E+01 G
ZN-65	F	-2.6392E+00					2.44E+02	
			1115.55	-2.639E+00	?(	9.964E+00	1.13E+02	5.06E+01 G
NB-94	I	-9.2255E-01					7.41E+06	
			702.63	-9.225E-01	?(	1.989E+00	9.14E+01	9.79E+01 G
			871.10	5.401E-01	+ P	1.212E+00	6.77E+01	9.99E+01 G
ZR-95	I	-1.1193E+00					6.40E+01	
			756.73	-1.119E+00	(P	3.027E+00	8.95E+01	5.45E+01 G
			724.20	0.000E+00	+	4.574E+00	1.00E+03	4.42E+01 G
NB-95	I	-1.2800E+00					6.40E+01	
			765.79	-1.280E+00	?(	3.036E+00	7.16E+01	9.98E+01 G
RU-103	I	-7.4060E-02					3.93E+01	
			497.05	-7.406E-02	?(	1.345E+00	7.09E+02	9.09E+01 G
			610.30	-4.280E+00	+	9.367E+01	6.52E+02	5.75E+00 GA
RH-106	I	5.4737E+00					3.74E+02	
			621.92	-1.689E+00	?(	5.506E+01	9.71E+02	9.93E+00 G
			1050.36	5.107E+01	?(	1.195E+02	7.04E+01	1.56E+00 G
			511.86	1.103E+01	?	8.495E+00	2.54E+01	2.00E+01 GA
AG-108M	C	-4.4078E-01					1.53E+05	
			433.94	-4.408E-01	(P	1.395E+00	2.59E+02	9.05E+01 G
			722.94	0.000E+00	+	2.220E+00	1.00E+03	9.08E+01 G
			614.28	0.000E+00	+	6.003E+00	1.00E+03	8.98E+01 G
AG-110M	F	1.2454E-02					2.50E+02	
			884.68	-1.710E+00	?(	4.753E+00	8.34E+01	7.27E+01 G
			657.76	-8.791E-01	+	2.392E+00	8.16E+01	9.46E+01 G
			937.49	-3.346E+00	+	6.591E+00	8.65E+01	3.44E+01 G
			1384.30	5.167E+00	&(	2.344E+00	2.48E+01	2.43E+01 G
			763.94	-2.501E+00	& P	8.754E+00	9.89E+01	2.23E+01 G
SN-113	F	-2.7717E-01					1.15E+02	
			391.69	-2.772E-01	?(	3.166E+00	3.36E+02	6.40E+01 G
SB-124	F	-6.2094E-01					6.02E+01	
			602.73	-6.209E-01	&(	5.527E+00	2.66E+02	9.83E+01 G
			1690.98	-6.362E-02	%	3.511E+00	2.37E+03	4.78E+01 G
			722.79	-2.101E+00	+	1.919E+01	2.65E+02	1.08E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
SB-125	I	1.5211E+00					1.01E+03	
			427.88	6.059E-01	?(	4.097E+00	2.57E+02	2.96E+01 G
			600.50	-3.401E+00	+	3.059E+01	2.69E+02	1.79E+01 G
			635.89	1.449E+00	&(	1.097E+01	2.15E+02	1.13E+01 G
			463.37	4.186E+00	&(P	1.253E+01	8.91E+01	1.05E+01 G
I-131	I	1.5050E-01					8.02E+00	
			364.48	1.505E-01	?(	1.468E+00	3.71E+02	8.17E+01 G
			284.30	-6.342E+00	+ P	2.166E+01	1.01E+02	6.14E+00 G
			636.97	-1.028E-01	% P	1.824E+01	1.51E+04	7.17E+00 G
Gd-153	F	1.1379E+00					2.42E+02	
			97.50	1.138E+00	&(	4.446E+00	1.17E+02	3.00E+01 G
			103.20	-1.714E+00	+	6.938E+00	1.21E+02	2.18E+01 G
Ga-68	C	-4.0146E+01					4.71E-02	
			1077.40	-4.015E+01	&(	8.312E+01	9.36E+01	3.30E+00 G
Tc-99m	I	3.3138E-02					2.51E-01	
			140.51	3.314E-02	%(	1.819E+00	1.63E+03	8.93E+01 G
BA-133	F	-8.5548E-01					3.85E+03	
			356.00	-8.555E-01	?(	6.691E+00	2.34E+02	6.20E+01 G
			302.85	0.000E+00	+	1.899E+01	1.00E+03	1.83E+01 G
			383.84	7.578E+00	?	1.800E+01	7.16E+01	8.94E+00 GA
			80.99	-7.710E-01	+	3.999E+00	1.84E+02	3.41E+01 GA
CS-134	I	1.2487E+00					7.54E+02	
			795.87	1.189E-01	?(	1.700E+00	4.00E+02	8.55E+01 G
			604.71	-6.275E-01	&	5.528E+00	2.63E+02	9.76E+01 G
			569.32	-1.707E+00	+	1.030E+01	1.76E+02	1.54E+01 G
			801.95	-6.942E+00	+	3.017E+01	1.28E+02	8.69E+00 G
			563.24	1.282E+01	(P	1.142E+01	3.83E+01	8.35E+00 G
CS-137	I	-1.0624E+00					1.10E+04	
			661.66	-1.062E+00	?(	3.122E+00	8.80E+01	8.52E+01 G
CE-139	F	1.2281E-01					1.38E+02	
			165.85	1.228E-01	*(	1.763E+00	4.25E+02	7.99E+01 G
Ba-140	I	2.0842E+00					1.28E+01	
			537.26	2.084E+00	?(	4.936E+00	9.53E+01	2.44E+01 G
			162.66	-6.449E+00	+	2.502E+01	1.16E+02	6.22E+00 G
			304.85	0.000E+00	-	8.156E+01	1.00E+03	4.29E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
La-140	I	-1.7148E+00					1.28E+01	
			1596.21	-1.715E+00	?(	2.921E+00	8.18E+01	9.54E+01 G
			487.02	1.002E+00	+ P	2.649E+00	1.06E+02	4.55E+01 G
			328.76	2.317E+00	+	6.078E+00	1.02E+02	2.03E+01 G
			815.77	-9.637E-02	% P	8.757E+00	2.04E+03	2.33E+01 G
CE-141	I	7.5249E-01					3.25E+01	
			145.44	7.525E-01	(	2.642E+00	1.05E+02	4.82E+01 G
CE-144	I	-3.5783E+00					2.85E+02	
			133.54	-3.578E+00	(	1.573E+01	1.32E+02	1.11E+01 G
PM-144	C	1.7814E-01					3.63E+02	
			696.54	1.781E-01	?(	1.417E+00	3.23E+02	9.90E+01 G
			618.06	-5.192E-01	+ P	5.466E+00	2.11E+02	9.91E+01 G
EU-152	F	1.8706E+00					4.94E+03	
			121.78	1.997E-01	?(	3.897E+00	5.76E+02	2.86E+01 G
			344.29	-1.359E+00	+ P	4.605E+00	9.70E+01	2.65E+01 G
			1112.07	-9.748E+00	+	3.824E+01	1.17E+02	1.36E+01 G
			778.92	3.617E+00	?(P	8.317E+00	9.37E+01	1.29E+01 G
			964.11	1.441E+00	(	1.931E+01	3.88E+02	1.46E+01 G
			244.69	6.018E+00	?(	3.514E+01	1.75E+02	7.58E+00 G
			1408.00	6.007E+00	& P	6.746E+00	5.26E+01	2.10E+01 GA
EU-154	I	4.9411E-01					3.14E+03	
			123.10	-4.518E-01	(	2.968E+00	1.95E+02	4.08E+01 G
			1274.54	0.000E+00	+	6.821E+00	1.00E+03	3.52E+01 G
			723.36	0.000E+00	+	9.979E+00	1.00E+03	2.02E+01 G
			873.23	-4.458E+00	+	1.571E+01	1.04E+02	1.23E+01 G
			1004.77	2.636E+00	?(	6.841E+00	1.12E+02	1.80E+01 G
			996.33	-4.634E+00	+	2.544E+01	1.61E+02	1.06E+01 G
EU-155	I	-9.4600E-01					1.81E+03	
			105.31	-9.460E-01	?(	7.437E+00	2.35E+02	2.12E+01 G
			86.54	-1.339E+00	+	7.243E+00	1.63E+02	3.07E+01 G
HF-181	F	5.0219E-01					4.24E+01	
			482.00	5.022E-01	(	1.772E+00	1.04E+02	8.05E+01 G
			133.02	-9.147E-01	+	3.946E+00	1.30E+02	4.33E+01 G
			345.83	-3.466E+00	+	1.043E+01	9.01E+01	1.51E+01 G
			136.30	-6.859E+00	&	3.059E+01	1.34E+02	5.85E+00 G
Ta-182	F	2.9423E+00					1.14E+02	
			1121.30	2.942E+00	(	1.181E+01	1.19E+02	3.49E+01 G
			1221.41	8.600E-02	%	8.552E+00	4.46E+03	2.70E+01 G
			1189.05	-8.412E-01	-	1.094E+01	5.54E+02	1.62E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Hg-203	F	-4.5536E-01					4.66E+01	
			279.20	-4.554E-01	&(	1.917E+00	1.25E+02	8.15E+01 G
TL-208	N	5.3272E+00					6.98E+02	
			583.02	5.236E+00	(P	1.443E+00	1.55E+01	8.45E+01 G
			277.28	6.550E+00	(P	1.563E+01	9.30E+01	6.31E+00 G
			860.56	1.365E+01	+ P	8.894E+00	3.19E+01	1.24E+01 G
PM-146	C	1.5154E-01					2.02E+03	
			453.88	-2.621E-01	?(P	2.094E+00	6.29E+02	6.50E+01 G
			747.16	-1.464E+00	+	4.787E+00	1.36E+02	3.40E+01 G
			735.72	1.346E+00	&(P	5.819E+00	1.76E+02	2.25E+01 G
Y-88	F	4.5333E-01					1.07E+02	
			1836.06	2.955E-01	?(	1.391E+00	2.05E+02	9.92E+01 G
			898.04	6.205E-01	?(	1.320E+00	9.07E+01	9.37E+01 G
Cd-113m		1.9904E+03					5.33E+03	
			263.70	1.990E+03	&(	1.934E+04	2.84E+02	6.00E-03 K
Cd-109	F	1.0783E+01					4.53E+02	
							Derived Ave Activity	
			88.04	1.078E+01	}(	5.524E+01	1.54E+02	3.79E+00 G
Cf-251	T	2.0360E+00					3.28E+05	
			176.60	2.036E+00	?(	6.359E+00	1.17E+02	1.70E+01 G
			227.00	9.649E-01	&	1.871E+01	7.12E+02	6.30E+00 GA
Cf-249	T	6.3613E-01					1.28E+05	
			387.95	6.361E-01	?(	2.651E+00	1.24E+02	6.60E+01 G
			333.44	-3.222E+00	&	9.144E+00	1.11E+02	1.55E+01 G
Sn-126		-2.4907E+00					3.65E+07	
			87.57	-8.492E-01	}	5.751E+00	2.03E+02	3.75E+01 GA
			64.28	-2.491E+00	?(	1.940E+01	2.32E+02	9.70E+00 G
			86.94	-4.539E+00	+	2.424E+01	1.60E+02	9.04E+00 GA
PB-210	N	6.2649E+01					8.14E+03	
			46.54	6.265E+01	(P	3.553E+01	2.20E+01	4.25E+00 G
PB-212	N	1.0585E+01					6.98E+02	
			238.63	1.059E+01	(P	2.428E+00	9.24E+00	4.33E+01 G
			300.03	-1.567E+01	- P	1.083E+02	1.23E+02	3.28E+00 GA
PB-214	N	6.2944E+01					5.84E+05	
			351.93	6.294E+01	@(P	2.640E+00	3.70E+00	3.76E+01 G
			295.09	5.595E+01	- P	5.187E+00	5.77E+00	1.93E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			242.00	5.888E+00	&	3.483E+01	1.77E+02	7.43E+00 GA
BI-207	C	-3.3386E-01					1.18E+04	
			1063.66	-3.339E-01	?(	2.527E+00	3.29E+02	7.45E+01 G
			569.70	4.799E-04	% P	1.650E+00	9.79E+04	9.77E+01 G
BI-212	N	8.8673E+00					6.98E+02	
			727.17	8.867E+00	?(	2.657E+01	8.92E+01	7.55E+00 G
			785.42	4.175E+01	?	1.207E+02	1.20E+02	1.28E+00 GA
U-235	N	4.7430E-01					2.57E+11	
			143.79	-2.545E+00	*(P	1.235E+01	1.11E+02	1.10E+01 G
			205.33	2.089E+00	+ P	2.350E+01	4.15E+02	5.01E+00 G
			163.38	6.988E+00	?(P	2.687E+01	1.15E+02	5.08E+00 G
			185.72	-1.053E+00	+ P	3.070E+00	7.89E+01	5.40E+01 GA
BI-214	N	5.4512E+01					5.84E+05	
			609.31	5.451E+01	(P	2.174E+00	4.27E+00	4.61E+01 G
			1120.29	6.507E+01	+ P	8.263E+00	9.41E+00	1.51E+01 G
			1764.49	6.952E+01	+ P	6.380E+00	9.63E+00	1.54E+01 G
BI-210M	T	-9.5612E-01					1.10E+09	
			265.83	-9.561E-01	?(P	3.014E+00	9.65E+01	5.00E+01 G
			304.90	0.000E+00	+	1.250E+01	1.00E+03	2.80E+01 G
AC-228	N	1.4669E+01					2.10E+03	
			911.07	1.516E+01	(P	3.267E+00	1.41E+01	2.90E+01 G
			968.97	1.386E+01	(	4.333E+00	1.84E+01	1.75E+01 G
			338.32	-4.511E+00	& P	1.855E+01	6.35E+01	1.20E+01 G
			93.35	7.265E+00	-	3.667E+01	1.52E+02	5.56E+00 XA
TH-227	N	-6.9799E+00					7.95E+03	
			256.24	-6.980E+00	(P	1.818E+01	9.17E+01	7.00E+00 G
			235.97	3.466E+00	+	2.264E+01	1.96E+02	1.23E+01 G
			50.14	4.946E-01	% P	2.271E+01	1.60E+03	8.00E+00 G
TH-229	N	-1.0381E+01					2.68E+06	
			193.51	-1.038E+01	?(	2.925E+01	1.06E+02	4.40E+00 G
			210.85	-1.571E+01	+ P	4.319E+01	9.44E+01	2.99E+00 G
TH-234	N	4.4242E+00					1.63E+12	
			92.59	4.424E+00	(P	1.771E+01	1.20E+02	5.58E+00 G
			63.29	-1.120E+01	+ P	4.554E+01	1.13E+02	3.81E+00 G
PA-233	C	1.4678E+00					7.82E+08	
			312.01	1.468E+00	?(	9.768E+00	1.99E+02	3.60E+01 G
			300.18	-5.575E+00	+	5.616E+01	3.01E+02	6.20E+00 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

PA-234   N  -2.3775E+00                                     1.63E+12
                         131.29-2.377E+00  (  1.040E+01 1.31E+02 1.80E+01 G
                         946.02-2.835E+00 + P 1.457E+01 1.69E+02 1.34E+01 G
                         569.47 7.682E-01 + P 2.035E+01 7.60E+02 8.20E+00 G
                         883.24-1.694E-01 % P 2.611E+01 2.30E+03 9.60E+00 G
                         880.53-7.407E+00 + P 3.974E+01 8.31E+01 6.00E+00 GA

PA-234M  N   3.6347E+01                                     1.63E+12
                        1001.00-3.002E+00 %(P 3.387E+02 2.69E+03 8.37E-01 G
                         766.41 1.484E+02 ?(  7.693E+02 1.52E+02 2.94E-01 G

AM-241   T  -1.6579E+00                                     1.58E+05
                          59.54-1.658E+00 ?(  5.194E+00 1.12E+02 3.59E+01 G

Np-237   F  -3.1375E+00                                     2.14E+06
                          86.49-3.137E+00 &(  1.718E+01 1.65E+02 1.31E+01 G

Ir-192   F  -8.1356E-02                                     7.40E+01
                         316.49-6.090E-01 ?(  2.057E+00 1.01E+02 8.70E+01 G
                         468.06 8.060E-01 ?(  3.226E+00 1.18E+02 5.18E+01 G
                         308.44-1.833E+00 +   1.161E+01 1.90E+02 3.18E+01 G

Cs-136   F   6.3626E-01                                     1.30E+01
                         818.50 6.363E-01  (  6.767E-01 4.48E+01 1.00E+02 G
                        1048.07-1.932E-01 -   2.249E+00 3.27E+02 8.00E+01 G
                         340.57 4.029E-02 %   4.720E+00 3.45E+03 4.69E+01 G

Np-239   T   7.2222E-01                                     2.36E+00
                         103.70-1.557E+00 +   6.442E+00 1.24E+02 2.40E+01 X
                         106.13 7.222E-01 ?(  6.597E+00 2.72E+02 2.27E+01 G
                          99.50-2.518E+00 &   9.217E+00 1.10E+02 1.50E+01 X

Nd-147       1.4015E+00                                     1.11E+01
                         531.00 1.365E+00 ?(  9.910E+00 2.86E+02 1.30E+01 G
                          91.10 1.419E+00 ?(  7.076E+00 1.50E+02 2.83E+01 G

TL-210   N  -8.3976E-01                                     5.84E+05
                         799.60-8.398E-01 ?(  2.199E+00 7.85E+01 9.90E+01 G
                         296.00-6.321E-01 +   4.494E+00 2.13E+02 7.90E+01 G
                        1313.00 2.465E+00 ?   7.517E+00 1.35E+02 2.10E+01 GA
   ( - 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.
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@ - 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	
AM-241	59.54	462.	-33.	-0.018	111.55	-1.658E+00	
Sn-126	64.28	560.	-14.	-0.008	232.19	-2.491E+00	
BA-133	80.99	423.	-19.	-0.011	183.65	-7.710E-01	
Np-237	86.49	1268.	-31.	-0.017	164.54	-3.137E+00	
EU-155	86.54	1238.	-31.	-0.017	162.50	-1.339E+00	
Sn-126	86.94	1207.	-31.	-0.017	160.44	-4.539E+00	
Sn-126	87.57	1176.	-24.	-0.013	203.13	-8.492E-01	
Nd-147	91.10	1045.	31.	0.017	149.80	1.419E+00	
Gd-153	97.50	475.	27.	0.015	117.10	1.138E+00	
Np-239	99.50	516.	-30.	-0.016	109.88	-2.518E+00	
Gd-153	103.20	629.	-30.	-0.016	121.46	-1.714E+00	
Np-239	103.70	659.	-30.	-0.016	124.13	-1.557E+00	
EU-155	105.31	688.	-16.	-0.009	234.75	-9.460E-01	
Np-239	106.13	620.	13.	0.007	272.29	7.222E-01	
EU-152	121.78	334.	4.	0.002	575.85	1.997E-01	
EU-154	123.10	394.	-14.	-0.008	195.49	-4.518E-01	
PA-234	131.29	932.	-33.	-0.018	131.44	-2.377E+00	
HF-181	133.02	766.	-31.	-0.017	129.50	-9.147E-01	
CE-144	133.54	797.	-31.	-0.017	131.93	-3.578E+00	
HF-181	136.30	828.	-31.	-0.017	133.90	-6.859E+00	
CO-57	136.47	858.	-10.	-0.006	397.49	-1.282E+00	
U-235	143.79	446.	-21.	-0.012	110.51	-2.545E+00	P
CE-141	145.44	388.	27.	0.015	105.27	7.525E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Ba-140	162.66	510.	-28.	-0.015	116.36	-6.449E+00	
U-235	163.38	387.	25.	0.014	115.17	6.988E+00	P
CE-139	165.85	420.	7.	0.004	425.40	1.228E-01	
Cf-251	176.60	220.	23.	0.013	116.64	2.036E+00	
U-235	185.72	491.	-36.	-0.020	78.88	-1.053E+00	P
TH-229	193.51	273.	-28.	-0.016	105.61	-1.038E+01	
U-235	205.33	207.	6.	0.003	414.86	2.089E+00	P
TH-229	210.85	240.	-27.	-0.015	94.42	-1.571E+01	P
Cf-251	227.00	177.	3.	0.002	711.69	9.649E-01	
TH-227	235.97	975.	23.	0.013	195.71	3.466E+00	
EU-152	244.69	841.	24.	0.013	174.97	6.018E+00	
TH-227	256.24	171.	-24.	-0.014	91.72	-6.980E+00	P
BI-210M	265.83	228.	-23.	-0.013	96.54	-9.561E-01	P
Hg-203	279.20	227.	-17.	-0.010	125.34	-4.554E-01	
I-131	284.30	158.	-18.	-0.010	100.78	-6.342E+00	P
TL-210	296.00	1118.	-22.	-0.012	213.16	-6.321E-01	
PA-231	300.07	1074.	-22.	-0.012	208.09	-2.060E+01	
Ir-192	308.44	1130.	-25.	-0.014	189.88	-1.833E+00	
Ir-192	316.49	247.	-22.	-0.012	101.09	-6.090E-01	
CR-51	320.08	269.	-12.	-0.007	192.31	-2.921E+00	
La-140	328.76	106.	19.	0.011	102.24	2.317E+00	
Cf-249	333.44	139.	-20.	-0.011	110.85	-3.222E+00	
EU-152	344.29	96.	-14.	-0.008	97.02	-1.359E+00	P
HF-181	345.83	163.	-21.	-0.011	90.05	-3.466E+00	
BA-133	356.00	1147.	-21.	-0.011	234.39	-8.555E-01	
I-131	364.48	84.	5.	0.003	371.05	1.505E-01	
BA-133	383.84	144.	25.	0.014	71.62	7.578E+00	
Cf-249	387.95	169.	15.	0.008	123.75	6.361E-01	
SN-113	391.69	225.	-6.	-0.004	336.03	-2.772E-01	
SB-125	427.88	66.	6.	0.003	256.58	6.059E-01	
AG-108M	433.94	70.	-13.	-0.007	259.20	-4.408E-01	P
PM-146	453.88	76.	-5.	-0.003	629.12	-2.621E-01	P
SB-125	463.37	68.	14.	0.008	89.07	4.186E+00	P
Ir-192	468.06	112.	13.	0.007	118.44	8.060E-01	
BE-7	477.60	57.	13.	0.007	84.75	4.138E+00	
HF-181	482.00	76.	12.	0.007	104.38	5.022E-01	
La-140	487.02	52.	14.	0.008	106.18	1.002E+00	P
RU-103	497.05	52.	-2.	-0.001	709.46	-7.406E-02	
Nd-147	531.00	52.	5.	0.003	285.89	1.365E+00	
Ba-140	537.26	44.	14.	0.008	95.26	2.084E+00	
CS-134	563.24	24.	29.	0.016	38.26	1.282E+01	P
CS-134	569.32	72.	-7.	-0.004	175.55	-1.707E+00	
PA-234	569.47	80.	2.	0.001	759.74	7.682E-01	P
SB-125	600.50	863.	-16.	-0.009	268.89	-3.401E+00	
SB-124	602.73	847.	-16.	-0.009	266.06	-6.209E-01	
CS-134	604.71	832.	-16.	-0.009	263.27	-6.275E-01	
RU-103	610.30	816.	-6.	-0.003	652.14	-4.280E+00	
PM-144	618.06	809.	-13.	-0.007	211.15	-5.192E-01	P

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
SB-125	635.89	35.	4.	0.002	215.06	1.449E+00		
AG-110M	657.76	120.	-20.	-0.011	81.57	-8.791E-01		
CS-137	661.66	167.	-21.	-0.012	88.04	-1.062E+00		
PM-144	696.54	39.	4.	0.002	322.59	1.781E-01		
NB-94	702.63	78.	-20.	-0.011	91.36	-9.225E-01		
SB-124	722.79	85.	-5.	-0.003	264.58	-2.101E+00		
PM-146	735.72	30.	7.	0.004	175.58	1.346E+00		P
PM-146	747.16	48.	-11.	-0.006	135.62	-1.464E+00		
ZR-95	756.73	48.	-13.	-0.007	89.51	-1.119E+00		P
AG-110M	763.94	68.	-12.	-0.007	98.90	-2.501E+00		P
NB-95	765.79	171.	-27.	-0.015	71.56	-1.280E+00		
PA-234M	766.41	92.	9.	0.005	152.00	1.484E+02		
EU-152	778.92	18.	10.	0.005	93.75	3.617E+00		P
CS-134	795.87	33.	2.	0.001	400.34	1.189E-01		
TL-210	799.60	79.	-17.	-0.009	78.46	-8.398E-01		
CS-134	801.95	117.	-12.	-0.007	128.40	-6.942E+00		
CO-58	810.77	70.	-4.	-0.002	326.13	-1.838E-01		
MN-54	834.85	75.	-21.	-0.012	21.65	-1.071E+00		P
NB-94	871.10	19.	10.	0.006	67.74	5.401E-01		P
EU-154	873.23	52.	-10.	-0.006	103.78	-4.458E+00		
PA-234	880.53	81.	-8.	-0.005	83.12	-7.407E+00		P
AG-110M	884.68	176.	-23.	-0.013	83.42	-1.710E+00		
Sc-46	889.28	116.	15.	0.008	103.85	8.120E-01		
Y-88	898.04	19.	11.	0.006	90.67	6.205E-01		
AG-110M	937.49	65.	-20.	-0.011	86.51	-3.346E+00		
PA-234	946.02	47.	-7.	-0.004	168.96	-2.835E+00		P
EU-152	964.11	99.	4.	0.002	387.94	1.441E+00		
EU-154	996.33	85.	-8.	-0.005	160.55	-4.634E+00		
EU-154	1004.77	15.	8.	0.004	112.15	2.636E+00		
BI-207	1063.66	35.	-4.	-0.002	328.98	-3.339E-01		
Ga-68	1077.40	55.	-18.	-0.010	93.60	-4.015E+01		
FE-59	1099.25	40.	-5.	-0.003	223.40	-5.782E-01		P
EU-152	1112.07	282.	-21.	-0.011	117.15	-9.748E+00		
ZN-65	1115.55	261.	-21.	-0.011	112.76	-2.639E+00		
Sc-46	1120.55	240.	-20.	-0.011	110.64	-1.313E+00		
Ta-182	1121.30	170.	16.	0.009	119.33	2.942E+00		
CO-60	1173.24	25.	7.	0.004	161.52	4.722E-01		
Ta-182	1189.05	25.	-2.	-0.001	554.15	-8.412E-01		
NA-22	1274.53	32.	-11.	-0.006	78.73	-7.941E-01		
TL-210	1313.00	16.	7.	0.004	135.27	2.465E+00		
CO-60	1332.50	5.	7.	0.004	89.66	4.873E-01		
AG-110M	1384.30	0.	16.	0.009	24.81	5.167E+00		
EU-152	1408.00	11.	16.	0.009	52.58	6.007E+00		P
La-140	1596.21	40.	-19.	-0.010	81.81	-1.715E+00		
Y-88	1836.06	6.	3.	0.002	205.48	2.955E-01		

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
BE-7	#A	4.1383E+00	4.1384E+00	8.475E+01%	1.18E+01
NA-22	#A	-7.9410E-01	-7.9410E-01	7.873E+01%	2.10E+00
K-40		3.3440E+02	3.3440E+02	4.968E+00%	1.22E+01
Sc-46	#A	8.1200E-01	8.1200E-01	1.038E+02%	2.84E+00
CR-51	#A	-2.9213E+00	-2.9214E+00	1.923E+02%	1.90E+01
MN-54	#A	-1.0709E+00	-1.0709E+00	2.165E+01%	2.20E+00
FE-59	#A	-5.7817E-01	-5.7818E-01	2.234E+02%	3.64E+00
Co-56	#	1.9983E+00	1.9983E+00	4.006E+01%	1.04E+00
CO-57	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.31E+00
CO-58	#A	-1.8376E-01	-1.8376E-01	3.261E+02%	2.09E+00
CO-60	#A	4.7975E-01	4.7975E-01	8.966E+01%	1.01E+00
ZN-65	#A	-2.6392E+00	-2.6392E+00	1.128E+02%	9.96E+00
NB-94	#A	-9.2255E-01	-9.2255E-01	9.136E+01%	1.99E+00
ZR-95	#A	-1.1193E+00	-1.1193E+00	8.951E+01%	3.03E+00
NB-95	#A	-1.2800E+00	-1.2800E+00	7.156E+01%	3.04E+00
RU-103	#A	-7.4059E-02	-7.4060E-02	7.095E+02%	1.34E+00
RH-106	#A	5.4737E+00	5.4737E+00	7.037E+01%	5.51E+01
AG-108M	#A	-4.4078E-01	-4.4078E-01	2.592E+02%	1.39E+00
AG-110M	#A	1.2454E-02	1.2454E-02	2.481E+01%	4.75E+00
SN-113	#A	-2.7717E-01	-2.7717E-01	3.360E+02%	3.17E+00
SB-124	#A	-6.2094E-01	-6.2094E-01	2.661E+02%	5.53E+00
SB-125	#A	1.5211E+00	1.5211E+00	8.907E+01%	4.10E+00
I-131	#A	1.5050E-01	1.5050E-01	3.711E+02%	1.47E+00
Gd-153	#A	1.1379E+00	1.1379E+00	1.171E+02%	4.45E+00
Ga-68	#A	-3.9805E+01	-4.0146E+01	9.360E+01%	8.31E+01
Tc-99m	#A	3.3085E-02	3.3138E-02	1.629E+03%	1.82E+00
BA-133	#A	-8.5548E-01	-8.5548E-01	2.344E+02%	6.69E+00
CS-134	#A	1.2487E+00	1.2487E+00	3.826E+01%	1.70E+00
CS-137	#A	-1.0624E+00	-1.0624E+00	8.804E+01%	3.12E+00
CE-139	#A	1.2281E-01	1.2281E-01	4.254E+02%	1.76E+00
Ba-140	#A	2.0841E+00	2.0842E+00	9.526E+01%	4.94E+00
La-140	#A	-1.7148E+00	-1.7148E+00	8.181E+01%	2.92E+00
CE-141	#A	7.5248E-01	7.5249E-01	1.053E+02%	2.64E+00
CE-144	#A	-3.5783E+00	-3.5783E+00	1.319E+02%	1.57E+01
PM-144	#A	1.7814E-01	1.7814E-01	3.226E+02%	1.42E+00
EU-152	#A	1.8706E+00	1.8706E+00	9.375E+01%	3.90E+00
EU-154	#A	4.9411E-01	4.9411E-01	1.122E+02%	2.97E+00
EU-155	#A	-9.4600E-01	-9.4600E-01	2.347E+02%	7.44E+00
HF-181	#A	5.0218E-01	5.0219E-01	1.044E+02%	1.77E+00
Ta-182	#A	2.9423E+00	2.9423E+00	1.193E+02%	1.18E+01
Hg-203	#A	-4.5535E-01	-4.5536E-01	1.253E+02%	1.92E+00
TL-208		5.3272E+00	5.3272E+00	1.548E+01%	1.44E+00
PM-146	#A	1.5154E-01	1.5154E-01	1.756E+02%	2.09E+00

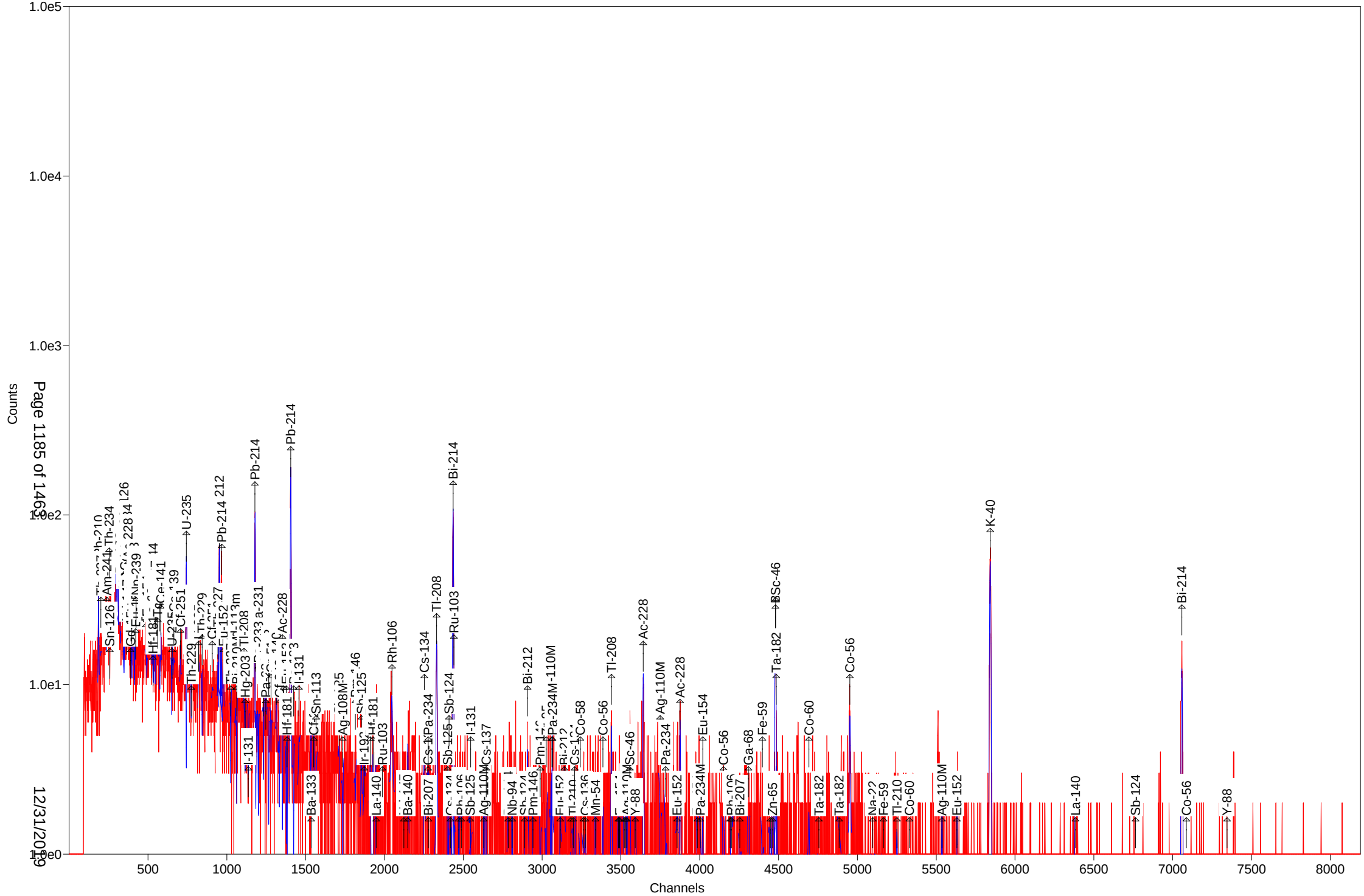
Y-88 #A	4.5333E-01	4.5333E-01	9.067E+01%		1.39E+00
Cd-113m A	1.9904E+03	1.9904E+03	2.839E+02%		1.93E+04
Cd-109 #A	1.0783E+01	1.0783E+01	1.539E+02%		5.52E+01
Cf-251 #A	2.0360E+00	2.0360E+00	1.166E+02%		6.36E+00
Cf-249 #A	6.3613E-01	6.3613E-01	1.238E+02%		2.65E+00
Sn-126 #A	-2.4907E+00	-2.4907E+00	2.322E+02%		1.94E+01
PB-210 #	6.2649E+01	6.2649E+01	2.205E+01%		3.55E+01
PB-212	1.0585E+01	1.0585E+01	9.241E+00%		2.43E+00
PB-214	6.2944E+01	6.2944E+01	3.702E+00%		2.64E+00
BI-207 #A	-3.3386E-01	-3.3386E-01	3.290E+02%		2.53E+00
BI-212 #A	8.8673E+00	8.8673E+00	8.925E+01%		2.66E+01
U-235 #A	4.7430E-01	4.7430E-01	7.980E+01%		1.24E+01
BI-214	5.4512E+01	5.4512E+01	4.274E+00%		2.17E+00
BI-210M#A	-9.5612E-01	-9.5612E-01	9.654E+01%		3.01E+00
AC-228	1.4669E+01	1.4669E+01	1.159E+01%		3.27E+00
TH-227 #A	-6.9799E+00	-6.9799E+00	9.172E+01%		1.82E+01
TH-229 #A	-1.0381E+01	-1.0381E+01	1.056E+02%		2.92E+01
TH-234 #A	4.4242E+00	4.4242E+00	1.198E+02%		1.77E+01
PA-231 #A	0.0000E+00	0.0000E+00	1.000E+03%		1.21E+02
PA-233 #A	1.4678E+00	1.4678E+00	1.994E+02%		9.77E+00
PA-234 #A	-2.3775E+00	-2.3775E+00	1.314E+02%		1.04E+01
PA-234M#A	3.6347E+01	3.6347E+01	1.520E+02%		3.39E+02
AM-241 #A	-1.6579E+00	-1.6579E+00	1.116E+02%		5.19E+00
Np-237 #A	-3.1375E+00	-3.1375E+00	1.645E+02%		1.72E+01
Ir-192 #A	-8.1355E-02	-8.1356E-02	7.786E+01%		2.06E+00
Cs-136 #A	6.3624E-01	6.3626E-01	4.481E+01%		6.77E-01
Np-239 #A	7.2210E-01	7.2222E-01	2.723E+02%		6.60E+00
Nd-147 #A	1.4015E+00	1.4015E+00	1.498E+02%		9.91E+00
TL-210 #A	-8.3976E-01	-8.3976E-01	7.846E+01%		2.20E+00
Kr-85 #A	0.0000E+00	0.0000E+00	1.000E+03%		5.02E+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 (25.1 to 1999.5 keV) 5.457E+02 Bq/Sample
Total Decayed Activity (25.1 to 1999.5 keV) 5.4572626E+02 Bq/Sample

452567_Gamma_160-36526-A-20-B. 14_Gamma_20192823.spc.



Prep Batch: 452568

Fill Geometry, 21-Day In-Growth

Gamma Spectroscopy Analysis Detail Report
Prep Batch: 452568

Lab Id: MB 160-452568/1-A | Analyzed: 12/25/19 11:24 | Ts: 30 | Sigma: 2
Client ID: | Detector: GV16 | Decay Corrected: No | Ingrowth:

Analyte	MB Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	-0.008814	0.159	0.159	U	pCi/g	1.00	0.281	455099
Radium-228	0.02422	0.174	0.174	U	pCi/g	1.00	0.249	455099

Lab Id: LCS 160-452568/2-A | Analyzed: 12/25/19 11:26 | Ts: 30 | Sigma: 2
Client ID: | Detector: GV17 | Decay Corrected: No | Ingrowth:

Analyte	LCS Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Americium-241	93.75	1.60	9.86		pCi/g		1.18	455100
Cesium-137	27.44	0.652	2.93		pCi/g		0.196	455100
Cobalt-60	10.71	0.339	1.13		pCi/g		0.0911	455100

Lab Id: 160-36526-21 | Analyzed: 12/25/19 10:46 | Ts: 30 | Sigma: 2
Client ID: STSB31_3-6 | Detector: GV5 | Decay Corrected: No | Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	4.63	0.433	0.648		pCi/g	1.00	0.247	455104
Radium-228	0.947	0.312	0.326		pCi/g	1.00	0.302	455104

Lab Id: 160-36526-21 DU | Analyzed: 12/25/19 11:22 | Ts: 30 | Sigma: 2
Client ID: STSB31_3-6 | Detector: GV9 | Decay Corrected: No | Ingrowth:

Analyte	DU Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	4.568	0.315	0.570		pCi/g	1.00	0.146	455101
Radium-228	0.9845	0.308	0.324		pCi/g	1.00	0.234	455101

Lab Id: 160-36526-22 | Analyzed: 12/25/19 11:23 | Ts: 30 | Sigma: 2
Client ID: STSB31_6-15 | Detector: GV12 | Decay Corrected: No | Ingrowth:

Analyte	Result	Count Unc	Total Unc	Qualifier	Unit	RL	MDC	Anly Batch
Radium-226	2.45	0.384	0.458		pCi/g	1.00	0.271	455102
Radium-228	1.55	0.612	0.632		pCi/g	1.00	0.569	455102

Gamma Spectroscopy Analysis Detail Report
Prep Batch: 452568

Quality Control Summary

Method Blank ID:	Analyte	Parent Result	Spike Added	MB Result	Qualifier	Unit	% Rec	% Rec Limits	RPD	RER	DER	DER Limit	Z Factor
MB 160-452568/1-A	Radium-226			-0.008814	U	pCi/g							-.1108
MB 160-452568/1-A	Radium-228			0.02422	U	pCi/g							.278
Lab Control Sample ID:	**Analyte**	**Parent Result**	**Spike Added**	**LCS Result**	**Qualifier**	**Unit**	**% Rec**	**% Rec Limits**	**RPD**	**RER**	**DER**	**DER Limit**	**Z Factor**
LCS 160-452568/2-A	Americium-241		96.6	93.75		pCi/g	97	75 - 125					-.5405
LCS 160-452568/2-A	Cesium-137		27.3	27.44		pCi/g	100	75 - 125					.071
LCS 160-452568/2-A	Cobalt-60		10.8	10.71		pCi/g	100	75 - 125					-.0799
Duplicate ID:	**Analyte**	**Parent Result**	**Spike Added**	**DU Result**	**Qualifier**	**Unit**	**% Rec**	**% Rec Limits**	**RPD**	**RER**	**DER**	**DER Limit**	**Z Factor**
160-36526-21	Radium-226	4.63		4.568		pCi/g			1	0.05	0.14	2	.1437
160-36526-21	Radium-228	0.947		0.9845		pCi/g			4	0.06	0.16	2	.1618

Glossary:

Ts = Count Duration, Sample

GAMMA SPECTROSCOPY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, St. Loui Job No.: 160-36526-1

SDG No.:

Batch Number: 452568 Batch Start Date: 12/01/19 10:17 Batch Analyst: Small, Sean J

Batch Method: Fill_Geo-21 Batch End Date: 12/01/19 10:23

Lab Sample ID	Client Sample ID	Method Chain	Basis	TareWeight	GrossWeight	InitialAmount	IngDecDate1	IngDecDate3	Geometry
MB 160-452568/1		Fill_Geo-21, 901.1				291.18 g	12/1/19 10:21	12/22/19 10:21	Tuna Can
LCS 160-452568/2		Fill_Geo-21, 901.1				341.9 g	12/1/19 10:21	12/22/19 10:21	Tuna Can
160-36526-A-21-A	STSB31_3-6	Fill_Geo-21, 901.1	T	46.2 g	428.4 g	382.2 g	12/1/19 10:21	12/22/19 10:21	Tuna Can
160-36526-A-21-A DU	STSB31_3-6	Fill_Geo-21, 901.1	T	46.2 g	428.4 g	382.2 g	12/1/19 10:21	12/22/19 10:21	Tuna Can
160-36526-A-22-A	STSB31_6-15	Fill_Geo-21, 901.1	T	46.1 g	257.3 g	211.2 g	12/1/19 10:21	12/22/19 10:21	Tuna Can

Lab Sample ID	Client Sample ID	Method Chain	Basis	Tuna Can LCS 00009					
MB 160-452568/1		Fill_Geo-21, 901.1							
LCS 160-452568/2		Fill_Geo-21, 901.1		# g					
160-36526-A-21-A	STSB31_3-6	Fill_Geo-21, 901.1	T						
160-36526-A-21-A DU	STSB31_3-6	Fill_Geo-21, 901.1	T						
160-36526-A-22-A	STSB31_6-15	Fill_Geo-21, 901.1	T						

Batch Notes	
Balance ID	1121432711
SOP Number	ST-RC-0003, ST-RC-0025

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.

Test America St. Louis Spectrum ID: 16_Gamma_20192293

Sample Description: 452568_Gamma_MB 160-452568~1-A
Detector: Detector #16
Batch ID: 452568
Work Order Number: Gamma
Lot Number: MB 160-452568~1-A

Decay to Time: 12/25/2019 11:24 Live Time: 1800 sec
Acquisition Time: 12/25/2019 11:24:36 Real Time: 1805 sec
Analysis Time: 12/25/2019 11:55 Dead Time: 0.30 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 16_Soil_TunaCan.Clb
Efficiency Cal Desc: 16_TunaCan_90099_071012
Efficiency Cal Date: 7/13/2012 09:47
Energy Cal Date: 2/28/2012 09:35
Library: Client_Long_Rev15.lib
Bkgd Correction File: 16_2019-12-07_1450.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	-9.017E-01	284.6	2.566E+00	2.567E+00	9.031E+00
NA-22	3.197E-01	47.9	1.531E-01	1.539E-01	4.354E-01
K-40	1.732E+00	172.8	2.993E+00	2.994E+00	1.079E+01
Sc-46	-2.545E-02	1239.9	3.156E-01	3.156E-01	1.162E+00
CR-51	-2.947E+00	84.5	2.489E+00	2.494E+00	1.807E+01
MN-54	1.719E-01	180.9	3.108E-01	3.110E-01	7.497E-01
FE-59	-1.933E-01	350.6	6.779E-01	6.780E-01	1.702E+00
Co-56	-1.303E-01	173.7	2.264E-01	2.265E-01	5.704E-01
CO-57	0.000E+00	1.#INF	1.148E-01	1.148E-01	5.723E-01
CO-58	2.393E-01	120.4	2.880E-01	2.883E-01	1.003E+00
CO-60	-6.613E-02	278.9	1.844E-01	1.844E-01	4.617E-01
ZN-65	0.000E+00	1.#INF	2.585E-01	2.585E-01	2.126E+00
NB-94	-5.287E-01	100.4	5.307E-01	5.314E-01	1.789E+00
ZR-95	5.026E-01	39.4	1.980E-01	1.997E-01	5.404E-01
NB-95	2.125E-01	101.9	2.164E-01	2.167E-01	7.539E-01
RU-103	-4.328E-02	465.1	2.013E-01	2.013E-01	7.128E-01
RH-106	4.234E+00	87.2	3.692E+00	3.699E+00	1.574E+01
AG-108M	2.499E-01	100.1	2.502E-01	2.505E-01	5.769E-01
AG-110M	1.792E-01	76.0	1.361E-01	1.364E-01	1.532E+00
SN-113	5.685E-02	706.6	4.017E-01	4.017E-01	1.417E+00
SB-124	3.790E-01	103.9	3.938E-01	3.943E-01	1.169E+00
SB-125	1.011E+00	62.8	6.344E-01	6.365E-01	1.757E+00
I-131	4.627E-01	98.7	4.569E-01	4.575E-01	7.311E-01
Gd-153	0.000E+00	1.#INF	1.363E-01	1.363E-01	3.873E+00
Ga-68	-1.044E+01	137.6	1.436E+01	1.437E+01	3.303E+01
Tc-99m	0.000E+00	1.#INF	1.118E-01	1.118E-01	1.129E+00
BA-133	3.199E-01	103.6	3.314E-01	3.318E-01	1.132E+00
CS-134	2.984E-01	114.1	3.405E-01	3.409E-01	1.081E+00
CS-137	-5.517E-01	47.6	2.625E-01	2.640E-01	1.348E+00
CE-139	2.203E-01	116.6	2.568E-01	2.576E-01	8.674E-01
Ba-140	5.510E-01	146.8	8.087E-01	8.092E-01	2.089E+00
La-140	-9.867E-02	364.4	3.596E-01	3.596E-01	1.061E+00
CE-141	3.791E-01	152.9	5.797E-01	5.800E-01	1.952E+00

CE-144	-4.610E-01	547.5	2.524E+00	2.524E+00	8.577E+00
PM-144	-6.437E-01	74.6	4.802E-01	4.814E-01	1.599E+00
EU-152	8.895E-01	100.1	8.903E-01	8.915E-01	1.578E+00
EU-154	1.359E+00	25.0	3.397E-01	3.471E-01	1.165E+00
EU-155	-3.221E-03	21505.2	6.926E-01	6.926E-01	5.413E+00
HF-181	2.528E-01	172.2	4.354E-01	4.356E-01	1.229E+00
Ta-182	-1.764E+00	80.5	1.420E+00	1.423E+00	4.769E+00
Hg-203	1.932E-01	90.8	1.756E-01	1.759E-01	5.980E-01
TL-208	-4.680E-01	67.4	3.156E-01	3.166E-01	1.014E+00
PM-146	2.349E-01	163.9	3.848E-01	3.850E-01	8.579E-01
Y-88	-3.849E-01	108.8	4.188E-01	4.193E-01	1.175E+00
Cd-113m	4.121E+02	729.7	3.007E+03	3.007E+03	1.068E+04
Cd-109	-5.118E+00	176.6	9.039E+00	9.044E+00	3.036E+01
Cf-251	-8.765E-01	137.8	1.208E+00	1.210E+00	3.156E+00
Cf-249	0.000E+00	1.#INF	2.224E-01	2.224E-01	1.393E+00
Sn-126	-2.146E+00	130.7	2.805E+00	2.807E+00	9.471E+00
PB-210	2.451E+01	32.3	7.918E+00	8.047E+00	2.104E+01
PB-212	-1.081E+00	39.6	4.276E-01	4.333E-01	2.470E+00
PB-214	-3.131E-01	206.5	6.465E-01	6.467E-01	2.320E+00
BI-207	-4.845E-01	102.4	4.963E-01	4.969E-01	1.592E+00
BI-212	-6.867E+00	80.3	5.515E+00	5.527E+00	1.848E+01
U-235	-1.729E-01	837.6	1.448E+00	1.449E+00	9.055E+00
BI-214	-9.496E-02	902.5	8.571E-01	8.571E-01	3.023E+00
BI-210M	-5.189E-01	81.0	4.201E-01	4.212E-01	1.474E+00
AC-228	2.609E-01	359.7	9.384E-01	9.385E-01	2.682E+00
TH-227	7.787E-01	350.1	2.726E+00	2.727E+00	7.104E+00
TH-229	2.849E+00	104.3	2.973E+00	2.981E+00	1.094E+01
TH-234	4.262E+00	65.5	2.792E+00	2.802E+00	7.756E+00
PA-231	-9.777E+00	178.0	1.740E+01	1.741E+01	5.861E+01
PA-233	0.000E+00	1.#INF	1.162E-01	1.162E-01	4.998E+00
PA-234	8.685E-01	68.8	5.975E-01	5.992E-01	4.963E+00
PA-234M	-1.695E+01	230.5	3.907E+01	3.908E+01	1.350E+02
AM-241	-4.395E-01	156.5	6.876E-01	6.879E-01	2.767E+00
Np-237	-1.982E+00	74.2	1.469E+00	1.473E+00	8.895E+00
Ir-192	3.351E-01	105.7	3.544E-01	3.549E-01	1.983E+00
Cs-136	-4.022E-01	95.6	3.845E-01	3.852E-01	1.307E+00
Np-239	7.460E-01	183.5	1.369E+00	1.370E+00	4.603E+00
Nd-147	6.308E-01	170.7	1.077E+00	1.077E+00	2.936E+00
TL-210	-5.847E-01	74.2	4.340E-01	4.353E-01	1.447E+00
Kr-85	0.000E+00	1.#INF	2.208E+01	2.208E+01	3.207E+02
Total	4.618E+02				

Analyst: Caleb Quinn

Sample description
452568_Gamma_MB 160-452568~1-A

Spectrum Filename: C:\User\SPC\Det16\16_Gamma_20192293.An1

Acquisition information
Start time: 12/25/2019 11:24:36 AM
Live time: 1800
Real time: 1805
Dead time: 0.30 %
Detector ID: 16

Detector system
Ge16 SN/11012217

Calibration
Filename: 16_Soil_TunaCan.Clb
16_TunaCan_90099_071012

Energy Calibration
Created: 2/28/2012 9:35:31 AM
Zero offset: 0.050 keV
Gain: 0.250 keV/channel
Quadratic: -2.285E-08 keV/channel^2

Efficiency Calibration
Created: 7/13/2012 9:47:24 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.01 %
Log(Eff): 1.477416E-02 + (-5.514266E-01*Log(E)) + (-1.443482E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.17 %
Log(Eff): -2.408438E+01 + (8.948554E+00*Log(E)) + (-9.513599E-01*Log(E)^2)

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.06keV)
Stop channel: 8000 (1999.64keV)
Peak rejection level: 1000.000%
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

(Page 3 of 21)

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	12/25/2019 11:24:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	16_2019-12-07_1450.PBC 12/7/2019 2:50:17 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 5 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. Bq/Sampl	Nuc
46.62	44.	32.30	1.21	2.352E-02	46.54	4.250	2.451E+01	PB210
63.41	23.	65.50	0.53	3.561E-02	63.29	3.810	PBC<MDA	TH234
92.54	3.	337.84	0.85	4.638E-02	92.59	5.584	PBC<MDA	TH234
106.13	15.	183.50	1.01	4.769E-02	106.13	22.700	PBC<MDA	Np239
121.78	11.	100.09	1.03	4.731E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	1.555E-01	CO57
143.79	-2.	837.63	1.05	4.466E-02	143.79	10.960	PBC<MDA	U235
145.44	15.	152.92	1.05	4.440E-02	145.44	48.200	PBC<MDA	CE141
165.25	13.	116.55	1.07	4.156E-02	165.85	79.900	PBC<MDA	CE139
185.72	5.	307.25	1.09	3.839E-02	185.72	54.000	PBC<MDA	U235
193.51	5.	258.77	1.09	3.730E-02	193.51	4.400	PBC<MDA	TH229
210.85	9.	104.33	1.11	3.511E-02	210.85	2.990	PBC<MDA	TH229
227.00	2.	541.99	1.13	3.332E-02	227.00	6.300	PBC<MDA	Cf251
244.69	11.	133.59	1.14	3.160E-02	244.69	7.580	PBC<MDA	EU152
256.24	3.	350.13	1.15	3.058E-02	256.24	7.000	PBC<MDA	TH227
263.70	1.	729.73	1.16	2.996E-02	263.70	0.006	PBC<MDA	Cd113m
279.20	8.	90.84	1.17	2.876E-02	279.20	81.460	PBC<MDA	Hg203
284.30	10.	113.57	1.18	2.839E-02	284.30	6.140	PBC<MDA	I131
316.49	13.	182.89	1.21	2.629E-02	316.49	87.040	PBC<MDA	Ir192
345.83	11.	172.24	1.23	2.467E-02	345.83	15.070	PBC<MDA	HF181
351.93	-5.	206.49	1.24	2.436E-02	351.93	37.600	PBC<MDA	PB214
356.00	9.	103.59	1.24	2.416E-02	356.00	62.050	PBC<MDA	BA133

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
364.48	3.	324.89	1.25	2.375E-02	364.48	81.700	PBC<MDA	I131
383.84	7.	139.86	1.27	2.288E-02	383.84	8.940	PBC<MDA	BA133
391.69	1.	706.57	1.27	2.255E-02	391.69	64.000	PBC<MDA	SN113
427.88	5.	170.38	1.31	2.115E-02	427.88	29.600	PBC<MDA	SB125
433.94	8.	103.38	1.31	2.093E-02	433.94	90.480	PBC<MDA	AG108M
453.88	4.	211.17	1.33	2.026E-02	453.88	65.000	PBC<MDA	PM146
463.37	6.	110.02	1.34	1.996E-02	463.37	10.470	PBC<MDA	SB125
468.06	7.	106.19	1.34	1.981E-02	468.06	51.750	PBC<MDA	Ir192
511.86	51.	21.57	2.63	1.856E-02	511.86	20.000	7.633E+00	RH106
531.00	3.	170.71	1.40	1.807E-02	531.00	13.000	PBC<MDA	Nd147
537.26	4.	146.76	1.40	1.791E-02	537.26	24.390	PBC<MDA	Ba140
569.47	5.	157.47	1.43	1.716E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	1.842E+00	PA234
					569.70	97.740	PBC<MDA	BI207
600.50	7.	126.08	1.46	1.651E-02	600.50	17.860	PBC<MDA	SB125
602.73	7.	150.90	1.46	1.646E-02	602.73	98.260	PBC<MDA	SB124
604.71	7.	146.18	1.46	1.642E-02	604.71	97.620	PBC<MDA	CS134
609.31	-1.	902.55	1.47	1.633E-02	609.31	46.090	PBC<MDA	BI214
610.30	7.	163.59	1.47	1.631E-02	610.30	5.750	PBC<MDA	RU103
614.28	7.	171.45	1.47	1.623E-02	614.28	89.850	PBC<MDA	AG108M
618.06	2.	522.89	1.47	1.616E-02	618.06	99.100	PBC<MDA	PM144
635.89	5.	77.62	1.49	1.583E-02	635.89	11.310	PBC<MDA	SB125
636.97	5.	98.74	1.49	1.581E-02	636.97	7.170	PBC<MDA	I131
657.76	1.	717.33	1.51	1.543E-02	657.76	94.640	PBC<MDA	AG110M
722.79	5.	142.83	1.57	1.439E-02	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	2.125E-01	AG108M
					723.36	20.220	9.549E-01	EU154
735.72	3.	250.62	1.58	1.421E-02	735.72	22.500	PBC<MDA	PM146
756.73	7.	39.40	1.60	1.391E-02	756.73	54.460	PBC<MDA	ZR95
763.94	6.	75.96	1.60	1.381E-02	763.94	22.280	PBC<MDA	AG110M
765.79	5.	101.87	1.60	1.379E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	PBC<MDA	PA234M
778.92	2.	396.48	1.62	1.362E-02	778.92	12.940	PBC<MDA	EU152
795.87	2.	263.03	1.63	1.340E-02	795.87	85.530	PBC<MDA	CS134
801.95	6.	163.17	1.64	1.332E-02	801.95	8.690	PBC<MDA	CS134
810.78	6.	120.36	1.64	1.322E-02	810.78	99.460	PBC<MDA	CO58
834.85	4.	180.85	1.66	1.293E-02	834.85	99.980	PBC<MDA	MN54
871.10	3.	160.62	1.69	1.253E-02	871.10	99.890	PBC<MDA	NB94
880.53	6.	88.18	1.70	1.243E-02	880.53	6.000	PBC<MDA	PA234
883.24	6.	105.48	1.71	1.240E-02	883.24	9.600	PBC<MDA	PA234
884.68	1.	459.34	1.71	1.238E-02	884.68	72.680	PBC<MDA	AG110M
911.07	2.	359.66	1.73	1.211E-02	911.07	29.000	PBC<MDA	AC228
946.02	4.	132.68	1.76	1.178E-02	946.02	13.400	PBC<MDA	PA234
996.33	16.	25.00	1.80	1.133E-02	996.33	10.600	7.402E+00	EU154
1050.36	9.	87.21	1.85	1.089E-02	1050.36	1.560	PBC<MDA	RH106
1112.07	3.	166.67	1.90	1.043E-02	1112.07	13.644	PBC<MDA	EU152
1189.05	5.	44.72	1.96	9.916E-03	1189.05	16.200	PBC<MDA	Ta182
1221.41	5.	113.28	1.99	9.717E-03	1221.41	27.000	PBC<MDA	Ta182

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
1274.53	5.	47.87	2.03	9.409E-03	1274.53	99.940	PBC<MDA	NA22
					1274.54	35.190	9.080E-01	EU154
1313.00	2.	248.05	2.07	9.199E-03	1313.00	21.000	PBC<MDA	TL210
1332.50	-1.	278.85	2.08	9.097E-03	1332.50	99.980	PBC<MDA	CO60
1384.30	1.	600.00	2.12	8.837E-03	1384.30	24.290	PBC<MDA	AG110M
1408.00	5.	44.72	2.14	8.723E-03	1408.00	21.005	PBC<MDA	EU152
1460.47	3.	172.85	2.19	8.482E-03	1460.83	10.670	PBC<MDA	K40
1764.49	-1.	355.17	2.43	7.342E-03	1764.49	15.400	PBC<MDA	BI214

No unknown peaks passed sensitivity test.

This section based on library: Client_Long_Rev15.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	186.19	46.62	57.	44.	0.025	32.30	1.206s
TH-227	200.26	50.14	173.	-13.	-0.007	141.82	0.963s
AM-241	237.83	59.54	148.	-9.	-0.005	156.45	0.971s
TH-234	253.31	63.41	57.	23.	0.013	65.50	0.533s
Sn-126	256.79	64.28	150.	-14.	-0.008	130.70	0.976s
BA-133	323.60	80.99	70.	-3.	-0.002	435.28	0.991s
Np-237	345.59	86.49	390.	-21.	-0.012	74.15	0.996s
EU-155	345.80	86.54	369.	-15.	-0.009	177.17	0.996s
Sn-126	347.39	86.94	360.	-16.	-0.009	170.94	0.997s
Sn-126	349.91	87.57	370.	-16.	-0.009	173.08	0.997
Cd-109	351.79	88.04	386.	-16.	-0.009	176.60	0.998s
Nd-147	364.02	91.10	402.	-16.	-0.009	179.64	1.001s
TH-234	369.76	92.54	52.	3.	0.002	337.84	0.847s
AC-228	373.02	93.35	424.	-11.	-0.006	113.22	1.003s
Gd-153	389.61	97.50	422.	0.	0.000	1000.00	1.007s
Np-239	397.61	99.50	422.	0.	0.000	1000.00	1.008s
Gd-153	412.40	103.20	422.	0.	0.000	1000.00	1.012s
Np-239	414.40	103.70	422.	0.	0.000	1000.00	1.012s
Np-239	424.11	106.13	348.	15.	0.008	183.50	1.014s
EU-152	486.69	121.78	59.	11.	0.006	100.09	1.029s
CO-57	487.81	122.06	70.	0.	0.000	1000.00	1.029s
EU-154	491.96	123.10	65.	-7.	-0.004	160.19	1.030s
PA-234	524.73	131.29	238.	-15.	-0.008	149.03	1.038s
HF-181	531.64	133.02	253.	-15.	-0.008	153.24	1.039s
CE-144	533.70	133.54	268.	-4.	-0.002	547.47	1.040s
HF-181	544.74	136.30	272.	0.	0.000	1000.00	1.042s
CO-57	545.43	136.47	272.	0.	0.000	1000.00	1.042s
Tc-99m	561.57	140.51	272.	0.	0.000	1000.00	1.046
U-235	574.67	143.79	274.	-2.	-0.001	837.63	1.049s
CE-141	581.29	145.44	242.	15.	0.008	152.92	1.050s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Ba-140	650.14	162.66	128.	-15.	-0.008	108.00	1.066s
U-235	653.01	163.38	70.	-8.	-0.005	145.60	1.067s
CE-139	662.90	165.85	111.	13.	0.007	116.55	1.069s
Cf-251	705.88	176.60	59.	-11.	-0.006	137.78	1.079s
U-235	742.34	185.72	66.	5.	0.003	307.25	1.087s
TH-229	773.49	193.51	40.	5.	0.003	258.77	1.094s
U-235	820.76	205.33	37.	-8.	-0.004	166.47	1.105s
TH-229	842.82	210.85	22.	9.	0.005	104.33	1.110s
Cf-251	907.40	227.00	33.	2.	0.001	541.99	1.125s
TH-227	943.27	235.97	134.	-14.	-0.008	118.44	1.133s
PB-212	953.91	238.63	161.	-27.	-0.015	39.55	1.136s
PB-214	967.37	242.00	167.	-5.	-0.003	231.69	1.139
EU-152	978.14	244.69	107.	11.	0.006	133.59	1.141s
TH-227	1024.32	256.24	28.	3.	0.002	350.13	1.152s
Cd-113m	1054.15	263.70	47.	1.	0.001	729.73	1.158
BI-210M	1062.67	265.83	62.	-14.	-0.008	80.95	1.160s
TL-208	1108.46	277.28	36.	-2.	-0.001	512.75	1.171s
Hg-203	1116.13	279.20	23.	8.	0.005	90.84	1.173s
I-131	1136.52	284.30	28.	10.	0.005	113.57	1.177
PB-214	1179.67	295.09	154.	-17.	-0.009	67.59	1.187s
TL-210	1183.31	296.00	238.	-14.	-0.008	161.72	1.188s
PB-212	1199.42	300.03	252.	-14.	-0.008	165.67	1.191s
PA-231	1199.58	300.07	266.	-14.	-0.008	169.98	1.192s
PA-233	1200.02	300.18	279.	-14.	-0.008	174.21	1.192s
PA-231	1209.90	302.65	293.	-14.	-0.008	178.01	1.194s
BA-133	1210.70	302.85	307.	-13.	-0.007	196.10	1.194s
Ba-140	1218.69	304.85	320.	0.	0.000	1000.00	1.196s
BI-210M	1218.88	304.90	320.	0.	0.000	1000.00	1.196s
Ir-192	1233.05	308.44	320.	0.	0.000	1000.00	1.199s
PA-233	1247.34	312.01	320.	0.	0.000	1000.00	1.202s
Ir-192	1265.24	316.49	287.	13.	0.007	182.89	1.206s
CR-51	1279.62	320.08	307.	-14.	-0.008	84.48	1.210s
La-140	1314.31	328.76	124.	-12.	-0.007	96.74	1.217s
Cf-249	1333.02	333.44	136.	-12.	-0.007	140.32	1.222s
AC-228	1352.54	338.32	152.	-10.	-0.006	116.58	1.226s
Cs-136	1361.54	340.57	154.	0.	0.000	1000.00	1.228s
EU-152	1376.40	344.29	160.	-12.	-0.007	102.88	1.231s
HF-181	1382.56	345.83	165.	11.	0.006	172.24	1.233s
PB-214	1406.97	351.93	58.	-5.	-0.003	206.49	1.238s
BA-133	1423.24	356.00	36.	9.	0.005	103.59	1.242s
I-131	1457.16	364.48	24.	3.	0.002	324.89	1.250s
BA-133	1534.57	383.84	49.	7.	0.004	139.86	1.267s
Cf-249	1551.01	387.95	56.	0.	0.000	1000.00	1.271s
SN-113	1565.96	391.69	54.	1.	0.001	706.57	1.274s
SB-125	1710.67	427.88	13.	5.	0.003	170.38	1.307s
AG-108M	1734.91	433.94	13.	8.	0.004	103.38	1.312s
PM-146	1814.67	453.88	14.	4.	0.002	211.17	1.330s
SB-125	1852.61	463.37	16.	6.	0.003	110.02	1.338s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Ir-192	1871.38	468.06	21.	7.	0.004	106.19	1.342s
BE-7	1909.51	477.60	43.	-3.	-0.002	284.61	1.351s
HF-181	1927.12	482.00	47.	0.	0.000	1000.00	1.355s
La-140	1947.21	487.02	77.	-12.	-0.007	103.13	1.359s
RU-103	1987.33	497.05	17.	-1.	-0.001	465.09	1.368s
RH-106	2046.57	511.86	35.	51.	0.028	21.57	2.631s
Kr-85	2055.03	513.98	86.	0.	0.000	1000.00	1.383s
Nd-147	2123.10	531.00	4.	3.	0.001	170.71	1.398s
Ba-140	2148.14	537.26	9.	4.	0.002	146.76	1.404s
CS-134	2252.03	563.24	17.	-4.	-0.002	201.91	1.427s
CS-134	2276.36	569.32	22.	-7.	-0.004	106.07	1.432s
PA-234	2276.96	569.47	25.	5.	0.003	157.47	1.432s
BI-207	2277.89	569.70	28.	-7.	-0.004	92.18	1.432s
TL-208	2331.16	583.02	25.	-12.	-0.007	67.44	1.444s
SB-125	2401.07	600.50	37.	7.	0.004	126.08	1.460s
SB-124	2409.99	602.73	45.	7.	0.004	150.90	1.462
CS-134	2417.91	604.71	52.	7.	0.004	146.18	1.463s
BI-214	2436.31	609.31	67.	-1.	-0.001	902.55	1.467
RU-103	2440.26	610.30	66.	7.	0.004	163.59	1.468
AG-108M	2456.19	614.28	73.	7.	0.004	171.45	1.472s
PM-144	2471.31	618.06	81.	2.	0.001	522.89	1.475s
SB-125	2542.62	635.89	6.	5.	0.003	77.62	1.491s
I-131	2546.96	636.97	11.	5.	0.003	98.74	1.492s
AG-110M	2630.10	657.76	17.	1.	0.000	717.33	1.510s
CS-137	2645.69	661.66	39.	-13.	-0.007	47.57	1.513s
PM-144	2785.22	696.54	72.	-17.	-0.009	74.61	1.544s
NB-94	2809.57	702.63	88.	-14.	-0.008	100.37	1.549s
SB-124	2890.19	722.79	23.	5.	0.003	142.83	1.567s
AG-108M	2890.80	722.94	28.	0.	0.000	1000.00	1.567s
EU-154	2892.49	723.36	28.	0.	0.000	1000.00	1.567s
ZR-95	2895.84	724.20	28.	0.	0.000	1000.00	1.568s
BI-212	2907.73	727.17	51.	-13.	-0.007	80.32	1.570s
PM-146	2941.93	735.72	9.	3.	0.001	250.62	1.578s
PM-146	2987.69	747.16	9.	-1.	-0.001	417.35	1.588s
ZR-95	3025.97	756.73	0.	7.	0.004	39.40	1.596s
AG-110M	3054.82	763.94	6.	6.	0.003	75.96	1.602s
NB-95	3062.21	765.79	12.	5.	0.003	101.87	1.604s
PA-234M	3064.70	766.41	19.	-3.	-0.001	127.39	1.605s
EU-152	3114.73	778.92	9.	2.	0.001	396.48	1.615s
BI-212	3140.74	785.42	19.	-7.	-0.004	142.83	1.621s
CS-134	3182.54	795.87	18.	2.	0.001	263.03	1.630s
TL-210	3197.46	799.60	46.	-14.	-0.008	74.23	1.633s
CS-134	3206.86	801.95	39.	6.	0.003	163.17	1.635s
CO-58	3242.16	810.78	20.	6.	0.003	120.36	1.643
La-140	3262.14	815.77	26.	0.	0.000	1000.00	1.647s
Cs-136	3273.06	818.50	36.	-10.	-0.005	95.61	1.649s
MN-54	3338.46	834.85	10.	4.	0.002	180.85	1.663s
Co-56	3386.15	846.77	5.	-3.	-0.002	173.74	1.674s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
TL-208	3441.33	860.56	26.	-13.	-0.007	55.36	1.685s
NB-94	3483.47	871.10	13.	3.	0.002	160.62	1.695s
PA-234	3521.21	880.53	11.	6.	0.003	88.18	1.703s
PA-234	3532.05	883.24	17.	6.	0.003	105.48	1.705s
AG-110M	3537.82	884.68	23.	1.	0.001	459.34	1.706s
Y-88	3591.26	898.04	16.	-3.	-0.001	269.87	1.718s
AC-228	3643.38	911.07	9.	2.	0.001	359.66	1.729s
AG-110M	3749.09	937.49	30.	-15.	-0.008	84.78	1.751s
PA-234	3783.21	946.02	5.	4.	0.002	132.68	1.759
EU-152	3855.58	964.11	13.	-3.	-0.001	198.43	1.774s
AC-228	3875.02	968.97	20.	-2.	-0.001	356.47	1.778s
EU-154	3984.48	996.33	0.	16.	0.009	25.00	1.801s
PA-234M	4003.15	1001.00	19.	-3.	-0.002	230.50	1.805s
EU-154	4018.27	1004.77	38.	-9.	-0.005	103.60	1.808s
Co-56	4150.56	1037.84	27.	-14.	-0.008	86.35	1.836s
Cs-136	4191.49	1048.07	26.	-13.	-0.007	62.75	1.845s
RH-106	4200.65	1050.36	27.	9.	0.005	87.21	1.847s
BI-207	4253.86	1063.66	19.	-7.	-0.004	102.42	1.858s
Ga-68	4308.84	1077.40	11.	-6.	-0.003	137.58	1.870s
FE-59	4396.27	1099.25	11.	-2.	-0.001	350.65	1.888s
EU-152	4447.58	1112.07	11.	3.	0.002	166.67	1.899s
ZN-65	4461.46	1115.55	14.	0.	0.000	1000.00	1.901s
BI-214	4480.43	1120.29	18.	-4.	-0.002	193.81	1.906s
Ta-182	4484.49	1121.30	37.	-11.	-0.006	80.52	1.906s
Ta-182	4755.57	1189.05	0.	5.	0.003	44.72	1.963s
Ta-182	4885.06	1221.41	6.	5.	0.003	113.28	1.990s
Co-56	4952.57	1238.28	18.	-8.	-0.004	105.02	2.004s
NA-22	5097.62	1274.53	1.	5.	0.003	47.87	2.034s
EU-154	5097.66	1274.54	6.	0.	0.000	1000.00	2.034s
FE-59	5165.91	1291.60	11.	-4.	-0.002	188.42	2.048s
TL-210	5251.57	1313.00	6.	2.	0.001	248.05	2.066s
CO-60	5329.61	1332.50	1.	-1.	-0.001	278.85	2.081s
AG-110M	5536.89	1384.30	6.	1.	0.001	600.00	2.124s
EU-152	5631.75	1408.00	0.	5.	0.003	44.72	2.143s
K-40	5843.19	1460.83	10.	3.	0.002	172.85	2.186s
La-140	6385.02	1596.21	6.	-1.	-0.001	364.42	2.294s
SB-124	6764.37	1690.98	20.	-14.	-0.008	37.09	2.369s
BI-214	7058.61	1764.49	14.	-1.	-0.001	355.17	2.427s
Y-88	7345.12	1836.06	7.	-5.	-0.003	108.80	2.483s

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	Activity Bq/Sample	Code	MDA Value Bq/Sample	COMMENTS
BE-7	C	-9.0165E-01				5.31E+01	
			477.60	-9.017E-01	?(	9.031E+00 2.85E+02 1.05E+01	G
NA-22	C	3.1972E-01				9.50E+02	
			1274.53	3.197E-01	?(P	4.354E-01 4.79E+01 9.99E+01	G
K-40	N	1.7315E+00				4.66E+11	
			1460.83	1.732E+00	?(P	1.079E+01 1.73E+02 1.07E+01	G
Sc-46	F	-2.5451E-02				8.38E+01	
			889.28	-2.545E-02	%(P	1.162E+00 1.24E+03 1.00E+02	G
			1120.55	1.277E-08	%	1.079E+00 2.22E+09 1.00E+02	G
CR-51	F	-2.9468E+00				2.77E+01	
			320.08	-2.947E+00	&(P	1.807E+01 8.45E+01 9.94E+00	G
MN-54	C	1.7188E-01				3.12E+02	
			834.85	1.719E-01	&(	7.497E-01 1.81E+02 1.00E+02	G
FE-59	F	-1.9334E-01				4.45E+01	
			1099.25	-1.933E-01	?(P	1.702E+00 3.51E+02 5.65E+01	G
			1291.60	-5.983E-01	+	2.540E+00 1.88E+02 4.32E+01	G
Co-56	C	-1.3034E-01				7.73E+01	
			846.77	-1.303E-01	?(	5.704E-01 1.74E+02 9.99E+01	G
			1238.28	-6.725E-01	+ P	1.951E+00 1.05E+02 6.61E+01	G
			1037.84	-5.110E+00	+	9.581E+00 8.64E+01 1.41E+01	G
			1771.35	-2.451E-01	%	9.723E+00 1.05E+03 1.55E+01	A
CO-58	C	2.3931E-01				7.09E+01	
			810.78	2.393E-01	?(P	1.003E+00 1.20E+02 9.95E+01	G
CO-60	F	-6.6129E-02				1.93E+03	
			1332.50	-6.613E-02	?(P	4.617E-01 2.79E+02 1.00E+02	G
			1173.24	-3.784E-02	% P	1.035E+00 1.17E+03 9.99E+01	G
NB-94	I	-5.2873E-01				7.41E+06	
			702.63	-5.287E-01	?(	1.789E+00 1.00E+02 9.79E+01	G
			871.10	1.480E-01	&	8.566E-01 1.61E+02 9.99E+01	G

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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
ZR-95	I	5.0261E-01					6.40E+01	
			756.73	5.026E-01	?(P	5.404E-01	3.94E+01	5.45E+01 G
			724.20	0.000E+00	-	2.396E+00	1.00E+03	4.42E+01 G
NB-95	I	2.1246E-01					6.40E+01	
			765.79	2.125E-01	?(	7.539E-01	1.02E+02	9.98E+01 G
RU-103	I	-4.3284E-02					3.93E+01	
			497.05	-4.328E-02	?(P	7.128E-01	4.65E+02	9.09E+01 G
			610.30	4.275E+00	&	2.405E+01	1.64E+02	5.75E+00 GA
RH-106	I	4.2340E+00					3.74E+02	
			621.92	2.319E-01	%(	1.574E+01	1.94E+03	9.93E+00 G
			1050.36	2.971E+01	?(	8.781E+01	8.72E+01	1.56E+00 G
			511.86	7.633E+00	?	4.532E+00	2.16E+01	2.00E+01 GA
AG-108M	C	2.4992E-01					1.53E+05	
			433.94	2.245E-01	&(P	5.769E-01	1.03E+02	9.05E+01 G
			722.94	0.000E+00	&	1.163E+00	1.00E+03	9.08E+01 G
			614.28	2.756E-01	?(	1.623E+00	1.71E+02	8.98E+01 G
AG-110M	F	1.7922E-01					2.50E+02	
			884.68	9.165E-02	?(	1.532E+00	4.59E+02	7.27E+01 G
			657.76	3.152E-02	?(P	8.375E-01	7.17E+02	9.46E+01 G
			937.49	-2.034E+00	+	3.850E+00	8.48E+01	3.44E+01 G
			1384.30	2.588E-01	?(	3.656E+00	6.00E+02	2.43E+01 G
			763.94	1.005E+00	&(	2.578E+00	7.60E+01	2.23E+01 G
SN-113	F	5.6847E-02					1.15E+02	
			391.69	5.685E-02	?(P	1.417E+00	7.07E+02	6.40E+01 G
SB-124	F	3.7902E-01					6.02E+01	
			602.73	2.243E-01	?(P	1.169E+00	1.51E+02	9.83E+01 G
			1690.98	-2.074E+00	+ P	3.572E+00	3.71E+01	4.78E+01 G
			722.79	1.785E+00	?(	8.947E+00	1.43E+02	1.08E+01 G
SB-125	I	1.0105E+00					1.01E+03	
			427.88	4.032E-01	?(P	1.757E+00	1.70E+02	2.96E+01 G
			600.50	1.352E+00	?(	5.876E+00	1.26E+02	1.79E+01 G
			635.89	1.609E+00	&(	4.233E+00	7.76E+01	1.13E+01 G
			463.37	1.499E+00	&(P	5.718E+00	1.10E+02	1.05E+01 G
I-131	I	4.6273E-01					8.02E+00	
			364.48	8.588E-02	?(	7.311E-01	3.25E+02	8.17E+01 G
			284.30	3.049E+00	&(P	8.782E+00	1.14E+02	6.14E+00 G
			636.97	2.542E+00	?(	8.737E+00	9.87E+01	7.17E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Ga-68	C	-1.0438E+01					4.71E-02	
			1077.40	-1.044E+01	?(	3.303E+01	1.38E+02	3.30E+00 G
BA-133	F	3.1991E-01					3.85E+03	
			356.00	3.199E-01	?(	1.132E+00	1.04E+02	6.20E+01 G
			302.85	-1.426E+00	+	9.420E+00	1.96E+02	1.83E+01 G
			383.84	1.990E+00	& P	9.565E+00	1.40E+02	8.94E+00 GA
			80.99	-1.303E-01	- P	1.564E+00	4.35E+02	3.41E+01 GA
CS-134	I	2.9842E-01					7.54E+02	
			795.87	1.131E-01	?(	1.081E+00	2.63E+02	8.55E+01 G
			604.71	2.493E-01	?(	1.255E+00	1.46E+02	9.76E+01 G
			569.32	-1.403E+00	+	5.134E+00	1.06E+02	1.54E+01 G
			801.95	2.674E+00	?(	1.519E+01	1.63E+02	8.69E+00 G
			563.24	-1.666E+00	&	8.502E+00	2.02E+02	8.35E+00 G
CS-137	I	-5.5169E-01					1.10E+04	
			661.66	-5.517E-01	?(P	1.348E+00	4.76E+01	8.52E+01 G
CE-139	F	2.2030E-01					1.38E+02	
			165.85	2.203E-01	&(	8.674E-01	1.17E+02	7.99E+01 G
Ba-140	I	5.5103E-01					1.28E+01	
			537.26	5.510E-01	&(	2.089E+00	1.47E+02	2.44E+01 G
			162.66	-3.299E+00	+	1.199E+01	1.08E+02	6.22E+00 G
			304.85	0.000E+00	-	4.125E+01	1.00E+03	4.29E+00 G
La-140	I	-9.8674E-02					1.28E+01	
			1596.21	-9.867E-02	?(P	1.061E+00	3.64E+02	9.54E+01 G
			487.02	-7.930E-01	+	2.763E+00	1.03E+02	4.55E+01 G
			328.76	-1.288E+00	+ P	5.842E+00	9.67E+01	2.03E+01 G
			815.77	0.000E+00	+	4.802E+00	1.00E+03	2.33E+01 G
CE-141	I	3.7907E-01					3.25E+01	
			145.44	3.791E-01	&(	1.952E+00	1.53E+02	4.82E+01 G
CE-144	I	-4.6095E-01					2.85E+02	
			133.54	-4.610E-01	?(	8.577E+00	5.47E+02	1.11E+01 G
PM-144	C	-6.4370E-01					3.63E+02	
			696.54	-6.437E-01	?(	1.599E+00	7.46E+01	9.90E+01 G
			618.06	8.484E-02	+	1.545E+00	5.23E+02	9.91E+01 G
EU-152	F	8.8952E-01					4.94E+03	
			121.78	4.657E-01	(	1.578E+00	1.00E+02	2.86E+01 G
			344.29	-1.007E+00	+ P	5.221E+00	1.03E+02	2.65E+01 G
			1112.07	1.171E+00	?(	7.092E+00	1.67E+02	1.36E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			778.92	5.255E-01	?(	5.343E+00	3.96E+02	1.29E+01 G
			964.11	-8.735E-01	+	6.321E+00	1.98E+02	1.46E+01 G
			244.69	2.602E+00	?(	1.179E+01	1.34E+02	7.58E+00 G
			1408.00	1.516E+00	?	2.235E+00	4.47E+01	2.10E+01 GA
EU-154	I	1.3588E+00					3.14E+03	
			123.10	-2.116E-01	&(	1.165E+00	1.60E+02	4.08E+01 G
			1274.54	0.000E+00	+	2.370E+00	1.00E+03	3.52E+01 G
			723.36	0.000E+00	+	5.227E+00	1.00E+03	2.02E+01 G
			873.23	-1.207E-01	%	7.800E+00	1.72E+03	1.23E+01 G
			1004.77	-2.437E+00	+	8.614E+00	1.04E+02	1.80E+01 G
			996.33	7.402E+00	?(	3.409E+00	2.50E+01	1.06E+01 G
EU-155	I	-3.2206E-03					1.81E+03	
			105.31	-3.221E-03	%(P	5.413E+00	2.15E+04	2.12E+01 G
			86.54	-6.205E-01	+	3.693E+00	1.77E+02	3.07E+01 G
HF-181	F	2.5280E-01					4.24E+01	
			482.00	0.000E+00	?(	1.229E+00	1.00E+03	8.05E+01 G
			133.02	-4.137E-01	+	2.134E+00	1.53E+02	4.33E+01 G
			345.83	1.603E+00	?(P	9.357E+00	1.72E+02	1.51E+01 G
			136.30	0.000E+00	-	1.651E+01	1.00E+03	5.85E+00 G
Ta-182	F	-1.7635E+00					1.14E+02	
			1121.30	-1.764E+00	?(	4.769E+00	8.05E+01	3.49E+01 G
			1221.41	1.129E+00	+	2.923E+00	1.13E+02	2.70E+01 G
			1189.05	1.729E+00	+	2.549E+00	4.47E+01	1.62E+01 G
Hg-203	F	1.9325E-01					4.66E+01	
			279.20	1.932E-01	?(	5.980E-01	9.08E+01	8.15E+01 G
TL-208	N	-4.6800E-01					6.98E+02	
			583.02	-4.680E-01	?(P	1.014E+00	6.74E+01	8.45E+01 G
			277.28	-6.717E-01	& P	9.366E+00	5.13E+02	6.31E+00 G
			860.56	-4.426E+00	+ P	9.286E+00	5.54E+01	1.24E+01 G
PM-146	C	2.3485E-01					2.02E+03	
			453.88	1.557E-01	?(P	8.579E-01	2.11E+02	6.50E+01 G
			747.16	-1.738E-01	+ P	1.986E+00	4.17E+02	3.40E+01 G
			735.72	4.635E-01	?(	2.945E+00	2.51E+02	2.25E+01 G
Y-88	F	-3.8487E-01					1.07E+02	
			1836.06	-3.849E-01	?(P	1.175E+00	1.09E+02	9.92E+01 G
			898.04	-1.279E-01	+ P	1.024E+00	2.70E+02	9.37E+01 G
Cd-113m		4.1209E+02					5.33E+03	
			263.70	4.121E+02	?(	1.068E+04	7.30E+02	6.00E-03 K

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Cd-109	F	-5.1183E+00					4.53E+02	
			88.04	-5.118E+00	?(	3.036E+01	1.77E+02	3.79E+00 G
Cf-251	T	-8.7651E-01					3.28E+05	
			176.60	-8.765E-01	?(	3.156E+00	1.38E+02	1.70E+01 G
			227.00	5.293E-01	?	7.801E+00	5.42E+02	6.30E+00 GA
Sn-126		-2.1463E+00					3.65E+07	
			87.57	-5.182E-01	+	3.013E+00	1.73E+02	3.75E+01 GA
			64.28	-2.146E+00	?(	9.471E+00	1.31E+02	9.70E+00 G
			86.94	-2.155E+00	+	1.238E+01	1.71E+02	9.04E+00 GA
PB-210	N	2.4512E+01					8.14E+03	
			46.54	2.451E+01	*(P	2.104E+01	3.23E+01	4.25E+00 G
PB-212	N	-1.0811E+00					6.98E+02	
			238.63	-1.081E+00	(P	2.470E+00	3.96E+01	4.33E+01 G
			300.03	-8.514E+00	-	4.754E+01	1.66E+02	3.28E+00 GA
PB-214	N	-3.1311E-01					5.84E+05	
			351.93	-3.131E-01	?(P	2.320E+00	2.06E+02	3.76E+01 G
			295.09	-1.779E+00	+ P	6.310E+00	6.76E+01	1.93E+01 G
			242.00	-1.133E+00	& P	1.476E+01	2.32E+02	7.43E+00 GA
BI-207	C	-4.8455E-01					1.18E+04	
			1063.66	-4.845E-01	?(P	1.592E+00	1.02E+02	7.45E+01 G
			569.70	-2.457E-01	& P	9.127E-01	9.22E+01	9.77E+01 G
BI-212	N	-6.8671E+00					6.98E+02	
			727.17	-6.867E+00	&(	1.848E+01	8.03E+01	7.55E+00 G
			785.42	-2.138E+01	+	7.326E+01	1.43E+02	1.28E+00 GA
U-235	N	-1.7293E-01					2.57E+11	
			143.79	-1.729E-01	&(P	9.055E+00	8.38E+02	1.10E+01 G
			205.33	-2.383E+00	& P	9.590E+00	1.66E+02	5.01E+00 G
			163.38	-2.225E+00	+	1.109E+01	1.46E+02	5.08E+00 G
			185.72	1.340E-01		1.087E+00	3.07E+02	5.40E+01 GA
BI-214	N	-9.4962E-02					5.84E+05	
			609.31	-9.496E-02	?(P	3.023E+00	9.03E+02	4.61E+01 G
			1120.29	-1.447E+00	+ P	7.989E+00	1.94E+02	1.51E+01 G
			1764.49	-7.289E-01	+ P	1.005E+01	3.55E+02	1.54E+01 G
BI-210M	T	-5.1890E-01					1.10E+09	
			265.83	-5.189E-01	?(P	1.474E+00	8.10E+01	5.00E+01 G
			304.90	0.000E+00	+	6.320E+00	1.00E+03	2.80E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
AC-228	N	2.6091E-01					2.10E+03	
			911.07	2.609E-01	?(P	2.682E+00	3.60E+02	2.90E+01 G
			968.97	-4.740E-01	+ P	6.486E+00	3.56E+02	1.75E+01 G
			338.32	-1.921E+00	+ P	1.112E+01	1.17E+02	1.20E+01 G
			93.35	-2.380E+00	+ P	2.120E+01	1.13E+02	5.56E+00 XA
TH-227	N	7.7867E-01					7.95E+03	
			256.24	7.787E-01	(	7.104E+00	3.50E+02	7.00E+00 G
			235.97	-1.978E+00	+	7.902E+00	1.18E+02	1.23E+01 G
			50.14	-3.514E+00	+	1.682E+01	1.42E+02	8.00E+00 G
TH-229	N	2.8492E+00					2.68E+06	
			193.51	1.580E+00	?(	1.094E+01	2.59E+02	4.40E+00 G
			210.85	4.717E+00	&(P	1.302E+01	1.04E+02	2.99E+00 G
TH-234	N	4.2617E+00					1.63E+12	
			92.59	7.437E-01	(P	7.756E+00	3.38E+02	5.58E+00 G
			63.29	9.418E+00	@(P	1.552E+01	6.55E+01	3.81E+00 G
PA-231	N	-9.7770E+00					1.20E+07	
			302.65	-9.777E+00	?(	5.861E+01	1.78E+02	2.88E+00 G
			300.07	-1.135E+01	+	6.503E+01	1.70E+02	2.46E+00 G
PA-234	N	8.6853E-01					1.63E+12	
			131.29	-9.891E-01	(	4.963E+00	1.49E+02	1.80E+01 G
			946.02	1.408E+00	?(	4.622E+00	1.33E+02	1.34E+01 G
			569.47	1.842E+00	&(	1.021E+01	1.57E+02	8.20E+00 G
			883.24	2.767E+00	?(	1.012E+01	1.05E+02	9.60E+00 G
			880.53	4.411E+00	?	1.336E+01	8.82E+01	6.00E+00 GA
PA-234M	N	-1.6952E+01					1.63E+12	
			1001.00	-1.695E+01	?(P	1.350E+02	2.30E+02	8.37E-01 G
			766.41	-3.513E+01	+ P	3.124E+02	1.27E+02	2.94E-01 G
AM-241	T	-4.3948E-01					1.58E+05	
			59.54	-4.395E-01	&(P	2.767E+00	1.56E+02	3.59E+01 G
Np-237	F	-1.9815E+00					2.14E+06	
			86.49	-1.982E+00	?(P	8.895E+00	7.42E+01	1.31E+01 G
Ir-192	F	3.3513E-01					7.40E+01	
			316.49	3.218E-01	?(	1.983E+00	1.83E+02	8.70E+01 G
			468.06	3.575E-01	?(	1.311E+00	1.06E+02	5.18E+01 G
			308.44	0.000E+00	-	5.620E+00	1.00E+03	3.18E+01 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

Cs-136   F  -4.0216E-01                                     1.30E+01
                         818.50-4.022E-01 ?(  1.307E+00 9.56E+01 1.00E+02 G
                        1048.07-8.170E-01 +   1.686E+00 6.28E+01 8.00E+01 G
                         340.57 0.000E+00 +   2.875E+00 1.00E+03 4.69E+01 G

Np-239   T   7.4597E-01                                     2.36E+00
                         103.70 0.000E+00 -   4.790E+00 1.00E+03 2.40E+01 X
                         106.13 7.460E-01  (  4.603E+00 1.83E+02 2.27E+01 G
                          99.50 0.000E+00 &   7.713E+00 1.00E+03 1.50E+01 X

Nd-147       6.3076E-01                                     1.11E+01
                         531.00 6.308E-01 ?(  2.936E+00 1.71E+02 1.30E+01 G
                          91.10-6.781E-01 &   4.090E+00 1.80E+02 2.83E+01 G

TL-210   N  -5.8465E-01                                     5.84E+05
                         799.60-5.847E-01 ?(  1.447E+00 7.42E+01 9.90E+01 G
                         296.00-3.490E-01 +   1.903E+00 1.62E+02 7.90E+01 G
                        1313.00 6.710E-01 +   3.970E+00 2.48E+02 2.10E+01 GA
   ( - 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

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********** 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	
TH-227	50.14	173.	-13.	-0.007	141.82	-3.514E+00	
AM-241	59.54	148.	-9.	-0.005	156.45	-4.395E-01	P
Sn-126	64.28	150.	-14.	-0.008	130.70	-2.146E+00	
BA-133	80.99	70.	-3.	-0.002	435.28	-1.303E-01	P
Np-237	86.49	390.	-21.	-0.012	74.15	-1.982E+00	P
EU-155	86.54	369.	-15.	-0.009	177.17	-6.205E-01	
Sn-126	86.94	360.	-16.	-0.009	170.94	-2.155E+00	
Sn-126	87.57	370.	-16.	-0.009	173.08	-5.182E-01	
Cd-109	88.04	386.	-16.	-0.009	176.60	-5.118E+00	
Nd-147	91.10	402.	-16.	-0.009	179.64	-6.781E-01	
AC-228	93.35	424.	-11.	-0.006	113.22	-2.380E+00	P
Np-239	106.13	348.	15.	0.008	183.50	7.460E-01	
EU-152	121.78	59.	11.	0.006	100.09	4.657E-01	
PA-234	131.29	238.	-15.	-0.008	149.03	-9.891E-01	
HF-181	133.02	253.	-15.	-0.008	153.24	-4.137E-01	
CE-144	133.54	268.	-4.	-0.002	547.47	-4.610E-01	
U-235	143.79	274.	-2.	-0.001	837.63	-1.729E-01	P
CE-141	145.44	242.	15.	0.008	152.92	3.791E-01	
Ba-140	162.66	128.	-15.	-0.008	108.00	-3.299E+00	
U-235	163.38	70.	-8.	-0.005	145.60	-2.225E+00	
Cf-251	176.60	59.	-11.	-0.006	137.78	-8.765E-01	
U-235	185.72	66.	5.	0.003	307.25	1.340E-01	
TH-229	193.51	40.	5.	0.003	258.77	1.580E+00	
U-235	205.33	37.	-8.	-0.004	166.47	-2.383E+00	P
TH-229	210.85	22.	9.	0.005	104.33	4.717E+00	P
Cf-251	227.00	33.	2.	0.001	541.99	5.293E-01	
TH-227	235.97	134.	-14.	-0.008	118.44	-1.978E+00	
PB-212	238.63	161.	-27.	-0.015	39.55	-1.081E+00	P
PB-214	242.00	167.	-5.	-0.003	231.69	-1.133E+00	P
EU-152	244.69	107.	11.	0.006	133.59	2.602E+00	
TH-227	256.24	28.	3.	0.002	350.13	7.787E-01	
Cd-113m	263.70	47.	1.	0.001	729.73	4.121E+02	
BI-210M	265.83	62.	-14.	-0.008	80.95	-5.189E-01	P
TL-208	277.28	36.	-2.	-0.001	512.75	-6.717E-01	P
Hg-203	279.20	23.	8.	0.005	90.84	1.932E-01	
I-131	284.30	28.	10.	0.005	113.57	3.049E+00	P
PB-214	295.09	154.	-17.	-0.009	67.59	-1.779E+00	P
TL-210	296.00	238.	-14.	-0.008	161.72	-3.490E-01	
PB-212	300.03	252.	-14.	-0.008	165.67	-8.514E+00	
PA-231	300.07	266.	-14.	-0.008	169.98	-1.135E+01	
PA-233	300.18	279.	-14.	-0.008	174.21	-4.506E+00	
PA-231	302.65	293.	-14.	-0.008	178.01	-9.777E+00	
BA-133	302.85	307.	-13.	-0.007	196.10	-1.426E+00	
Ir-192	316.49	287.	13.	0.007	182.89	3.218E-01	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
CR-51	320.08	307.	-14.	-0.008	84.48	-2.947E+00	P
La-140	328.76	124.	-12.	-0.007	96.74	-1.288E+00	P
Cf-249	333.44	136.	-12.	-0.007	140.32	-1.698E+00	
AC-228	338.32	152.	-10.	-0.006	116.58	-1.921E+00	P
EU-152	344.29	160.	-12.	-0.007	102.88	-1.007E+00	P
HF-181	345.83	165.	11.	0.006	172.24	1.603E+00	P
PB-214	351.93	58.	-5.	-0.003	206.49	-3.131E-01	P
BA-133	356.00	36.	9.	0.005	103.59	3.199E-01	
I-131	364.48	24.	3.	0.002	324.89	8.588E-02	
BA-133	383.84	49.	7.	0.004	139.86	1.990E+00	P
SN-113	391.69	54.	1.	0.001	706.57	5.685E-02	P
SB-125	427.88	13.	5.	0.003	170.38	4.032E-01	P
AG-108M	433.94	13.	8.	0.004	103.38	2.245E-01	P
PM-146	453.88	14.	4.	0.002	211.17	1.557E-01	P
SB-125	463.37	16.	6.	0.003	110.02	1.499E+00	P
Ir-192	468.06	21.	7.	0.004	106.19	3.575E-01	
BE-7	477.60	43.	-3.	-0.002	284.61	-9.017E-01	
La-140	487.02	77.	-12.	-0.007	103.13	-7.930E-01	
RU-103	497.05	17.	-1.	-0.001	465.09	-4.328E-02	P
RH-106	511.86	35.	51.	0.028	21.57	7.633E+00	
Nd-147	531.00	4.	3.	0.001	170.71	6.308E-01	
Ba-140	537.26	9.	4.	0.002	146.76	5.510E-01	
CS-134	563.24	17.	-4.	-0.002	201.91	-1.666E+00	
CS-134	569.32	22.	-7.	-0.004	106.07	-1.403E+00	
PA-234	569.47	25.	5.	0.003	157.47	1.842E+00	
BI-207	569.70	28.	-7.	-0.004	92.18	-2.457E-01	P
TL-208	583.02	25.	-12.	-0.007	67.44	-4.680E-01	P
SB-125	600.50	37.	7.	0.004	126.08	1.352E+00	
SB-124	602.73	45.	7.	0.004	150.90	2.243E-01	P
CS-134	604.71	52.	7.	0.004	146.18	2.493E-01	
BI-214	609.31	67.	-1.	-0.001	902.55	-9.496E-02	P
RU-103	610.30	66.	7.	0.004	163.59	4.275E+00	
AG-108M	614.28	73.	7.	0.004	171.45	2.756E-01	
PM-144	618.06	81.	2.	0.001	522.89	8.484E-02	
SB-125	635.89	6.	5.	0.003	77.62	1.609E+00	
I-131	636.97	11.	5.	0.003	98.74	2.542E+00	
AG-110M	657.76	17.	1.	0.000	717.33	3.152E-02	P
CS-137	661.66	39.	-13.	-0.007	47.57	-5.517E-01	P
PM-144	696.54	72.	-17.	-0.009	74.61	-6.437E-01	
NB-94	702.63	88.	-14.	-0.008	100.37	-5.287E-01	
SB-124	722.79	23.	5.	0.003	142.83	1.785E+00	
BI-212	727.17	51.	-13.	-0.007	80.32	-6.867E+00	
PM-146	735.72	9.	3.	0.001	250.62	4.635E-01	
PM-146	747.16	9.	-1.	-0.001	417.35	-1.738E-01	P
ZR-95	756.73	0.	7.	0.004	39.40	5.026E-01	P
AG-110M	763.94	6.	6.	0.003	75.96	1.005E+00	
NB-95	765.79	12.	5.	0.003	101.87	2.125E-01	
PA-234M	766.41	19.	-3.	-0.001	127.39	-3.513E+01	P

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
EU-152	778.92	9.	2.	0.001	396.48	5.255E-01		
BI-212	785.42	19.	-7.	-0.004	142.83	-2.138E+01		
CS-134	795.87	18.	2.	0.001	263.03	1.131E-01		
TL-210	799.60	46.	-14.	-0.008	74.23	-5.847E-01		
CS-134	801.95	39.	6.	0.003	163.17	2.674E+00		
CO-58	810.78	20.	6.	0.003	120.36	2.393E-01		P
Cs-136	818.50	36.	-10.	-0.005	95.61	-4.022E-01		
MN-54	834.85	10.	4.	0.002	180.85	1.719E-01		
Co-56	846.77	5.	-3.	-0.002	173.74	-1.303E-01		
TL-208	860.56	26.	-13.	-0.007	55.36	-4.426E+00		P
NB-94	871.10	13.	3.	0.002	160.62	1.480E-01		
PA-234	880.53	11.	6.	0.003	88.18	4.411E+00		
PA-234	883.24	17.	6.	0.003	105.48	2.767E+00		
AG-110M	884.68	23.	1.	0.001	459.34	9.165E-02		
Y-88	898.04	16.	-3.	-0.001	269.87	-1.279E-01		P
AC-228	911.07	9.	2.	0.001	359.66	2.609E-01		P
AG-110M	937.49	30.	-15.	-0.008	84.78	-2.034E+00		
PA-234	946.02	5.	4.	0.002	132.68	1.408E+00		
EU-152	964.11	13.	-3.	-0.001	198.43	-8.735E-01		
AC-228	968.97	20.	-2.	-0.001	356.47	-4.740E-01		P
PA-234M	1001.00	19.	-3.	-0.002	230.50	-1.695E+01		P
Co-56	1037.84	27.	-14.	-0.008	86.35	-5.110E+00		
Cs-136	1048.07	26.	-13.	-0.007	62.75	-8.170E-01		
RH-106	1050.36	27.	9.	0.005	87.21	2.971E+01		
BI-207	1063.66	19.	-7.	-0.004	102.42	-4.845E-01		P
Ga-68	1077.40	11.	-6.	-0.003	137.58	-1.044E+01		
FE-59	1099.25	11.	-2.	-0.001	350.65	-1.933E-01		P
EU-152	1112.07	11.	3.	0.002	166.67	1.171E+00		
BI-214	1120.29	18.	-4.	-0.002	193.81	-1.447E+00		P
Ta-182	1121.30	37.	-11.	-0.006	80.52	-1.764E+00		
Ta-182	1189.05	0.	5.	0.003	44.72	1.729E+00		
Ta-182	1221.41	6.	5.	0.003	113.28	1.129E+00		
Co-56	1238.28	18.	-8.	-0.004	105.02	-6.725E-01		P
NA-22	1274.53	1.	5.	0.003	47.87	3.197E-01		P
FE-59	1291.60	11.	-4.	-0.002	188.42	-5.983E-01		
TL-210	1313.00	6.	2.	0.001	248.05	6.710E-01		
CO-60	1332.50	1.	-1.	-0.001	278.85	-6.613E-02		P
AG-110M	1384.30	6.	1.	0.001	600.00	2.588E-01		
EU-152	1408.00	0.	5.	0.003	44.72	1.516E+00		
La-140	1596.21	6.	-1.	-0.001	364.42	-9.867E-02		P
SB-124	1690.98	20.	-14.	-0.008	37.09	-2.074E+00		P
BI-214	1764.49	14.	-1.	-0.001	355.17	-7.289E-01		P
Y-88	1836.06	7.	-5.	-0.003	108.80	-3.849E-01		P

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
BE-7	#A	-9.0165E-01	-9.0165E-01	2.846E+02%	9.03E+00
NA-22	#A	3.1972E-01	3.1972E-01	4.787E+01%	4.35E-01
K-40	#A	1.7315E+00	1.7315E+00	1.728E+02%	1.08E+01
Sc-46	#A	-2.5451E-02	-2.5451E-02	1.240E+03%	1.16E+00
CR-51	#A	-2.9468E+00	-2.9468E+00	8.448E+01%	1.81E+01
MN-54	#A	1.7188E-01	1.7188E-01	1.809E+02%	7.50E-01
FE-59	#A	-1.9333E-01	-1.9334E-01	3.506E+02%	1.70E+00
Co-56	#A	-1.3034E-01	-1.3034E-01	1.737E+02%	5.70E-01
CO-57	#A	0.0000E+00	0.0000E+00	7.071E+02%	5.72E-01
CO-58	#A	2.3931E-01	2.3931E-01	1.204E+02%	1.00E+00
CO-60	#A	-6.6129E-02	-6.6129E-02	2.789E+02%	4.62E-01
ZN-65	#A	0.0000E+00	0.0000E+00	1.000E+03%	2.13E+00
NB-94	#A	-5.2873E-01	-5.2873E-01	1.004E+02%	1.79E+00
ZR-95	#A	5.0261E-01	5.0261E-01	3.940E+01%	5.40E-01
NB-95	#A	2.1245E-01	2.1246E-01	1.019E+02%	7.54E-01
RU-103	#A	-4.3284E-02	-4.3284E-02	4.651E+02%	7.13E-01
RH-106	#A	4.2340E+00	4.2340E+00	8.721E+01%	1.57E+01
AG-108M	#A	2.4992E-01	2.4992E-01	1.001E+02%	5.77E-01
AG-110M	#A	1.7922E-01	1.7922E-01	7.596E+01%	1.53E+00
SN-113	#A	5.6847E-02	5.6847E-02	7.066E+02%	1.42E+00
SB-124	#A	3.7902E-01	3.7902E-01	1.039E+02%	1.17E+00
SB-125	#A	1.0105E+00	1.0105E+00	6.278E+01%	1.76E+00
I-131	#A	4.6271E-01	4.6273E-01	9.874E+01%	7.31E-01
Gd-153	#A	0.0000E+00	0.0000E+00	7.071E+02%	3.87E+00
Ga-68	#A	-1.0375E+01	-1.0438E+01	1.376E+02%	3.30E+01
Tc-99m	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.13E+00
BA-133	#A	3.1991E-01	3.1991E-01	1.036E+02%	1.13E+00
CS-134	#A	2.9842E-01	2.9842E-01	1.141E+02%	1.08E+00
CS-137	#A	-5.5169E-01	-5.5169E-01	4.757E+01%	1.35E+00
CE-139	A	2.2030E-01	2.2030E-01	1.166E+02%	8.67E-01
Ba-140	#A	5.5102E-01	5.5103E-01	1.468E+02%	2.09E+00
La-140	#A	-9.8672E-02	-9.8674E-02	3.644E+02%	1.06E+00
CE-141	#A	3.7907E-01	3.7907E-01	1.529E+02%	1.95E+00
CE-144	#A	-4.6095E-01	-4.6095E-01	5.475E+02%	8.58E+00
PM-144	#A	-6.4370E-01	-6.4370E-01	7.461E+01%	1.60E+00
EU-152	#A	8.8952E-01	8.8952E-01	1.001E+02%	1.58E+00
EU-154	#C	1.3588E+00	1.3588E+00	2.500E+01%	1.16E+00
EU-155	#A	-3.2206E-03	-3.2206E-03	2.151E+04%	5.41E+00
HF-181	#A	2.5280E-01	2.5280E-01	1.722E+02%	1.23E+00
Ta-182	#A	-1.7635E+00	-1.7635E+00	8.052E+01%	4.77E+00
Hg-203	#A	1.9325E-01	1.9325E-01	9.084E+01%	5.98E-01
TL-208	#A	-4.6800E-01	-4.6800E-01	6.744E+01%	1.01E+00
PM-146	#A	2.3485E-01	2.3485E-01	1.639E+02%	8.58E-01

Y-88	#A	-3.8487E-01	-3.8487E-01	1.088E+02%	1.18E+00
Cd-113m	#A	4.1209E+02	4.1209E+02	7.297E+02%	1.07E+04
Cd-109	#A	-5.1183E+00	-5.1183E+00	1.766E+02%	3.04E+01
Cf-251	#A	-8.7651E-01	-8.7651E-01	1.378E+02%	3.16E+00
Cf-249	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.39E+00
Sn-126	#A	-2.1463E+00	-2.1463E+00	1.307E+02%	9.47E+00
PB-210	#	2.4512E+01	2.4512E+01	3.230E+01%	2.10E+01
PB-212	#A	-1.0811E+00	-1.0811E+00	3.955E+01%	2.47E+00
PB-214	#A	-3.1311E-01	-3.1311E-01	2.065E+02%	2.32E+00
BI-207	#A	-4.8455E-01	-4.8455E-01	1.024E+02%	1.59E+00
BI-212	#A	-6.8671E+00	-6.8671E+00	8.032E+01%	1.85E+01
U-235	#A	-1.7293E-01	-1.7293E-01	8.376E+02%	9.05E+00
BI-214	#A	-9.4962E-02	-9.4962E-02	9.025E+02%	3.02E+00
BI-210M	#A	-5.1890E-01	-5.1890E-01	8.095E+01%	1.47E+00
AC-228	#A	2.6091E-01	2.6091E-01	3.597E+02%	2.68E+00
TH-227	#A	7.7867E-01	7.7867E-01	3.501E+02%	7.10E+00
TH-229	#A	2.8492E+00	2.8492E+00	1.043E+02%	1.09E+01
TH-234	#A	4.2617E+00	4.2617E+00	6.550E+01%	7.76E+00
PA-231	#A	-9.7770E+00	-9.7770E+00	1.780E+02%	5.86E+01
PA-233	#A	0.0000E+00	0.0000E+00	1.000E+03%	5.00E+00
PA-234	#A	8.6853E-01	8.6853E-01	6.880E+01%	4.96E+00
PA-234M	#A	-1.6952E+01	-1.6952E+01	2.305E+02%	1.35E+02
AM-241	#A	-4.3948E-01	-4.3948E-01	1.565E+02%	2.77E+00
Np-237	#A	-1.9815E+00	-1.9815E+00	7.415E+01%	8.90E+00
Ir-192	#A	3.3513E-01	3.3513E-01	1.057E+02%	1.98E+00
Cs-136	#A	-4.0215E-01	-4.0216E-01	9.561E+01%	1.31E+00
Np-239	#A	7.4588E-01	7.4597E-01	1.835E+02%	4.60E+00
Nd-147	#A	6.3074E-01	6.3076E-01	1.707E+02%	2.94E+00
TL-210	#A	-5.8465E-01	-5.8465E-01	7.423E+01%	1.45E+00
Kr-85	#A	0.0000E+00	0.0000E+00	1.000E+03%	3.21E+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 (25.1 to 1999.6 keV) 2.451E+01 Bq/Sample
Total Decayed Activity (25.1 to 1999.6 keV) 2.4512436E+01 Bq/Sample

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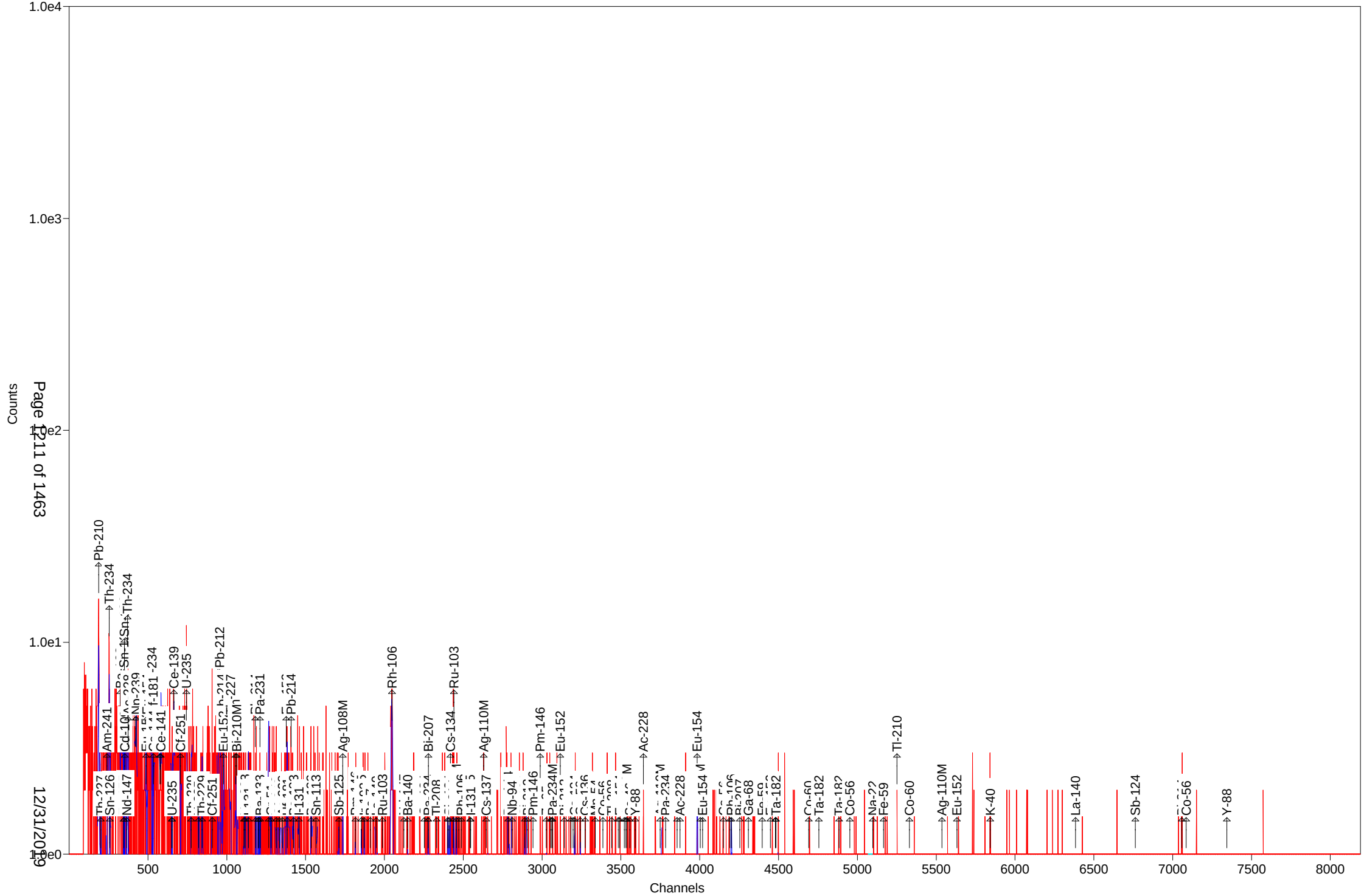
452568_Gamma_MB 160-452568~1-A. 16_Gamma_20192293.spc.



Test America St. Louis Spectrum ID: 17_Gamma_20192438

Sample Description: 452568_Gamma_LCS 160-452568~2-A
Detector: Detector #17
Batch ID: 452568
Work Order Number: Gamma
Lot Number: LCS 160-452568~2-A

Decay to Time: 12/25/2019 11:25 Live Time: 1800 sec
Acquisition Time: 12/25/2019 11:26:15 Real Time: 1811 sec
Analysis Time: 12/25/2019 11:56 Dead Time: 0.62 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 17_Soil_TunaCan.Clb
Efficiency Cal Desc: 17_TunaCan_90099_032612
Efficiency Cal Date: 4/12/2012 09:28
Energy Cal Date: 2/29/2012 10:33
Library: Client_Long_Rev15.lib
Bkgd Correction File: 17_2019-12-07_1454.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	1.076E+01	93.4	1.004E+01	1.006E+01	3.336E+01
NA-22	3.166E-01	121.7	3.852E-01	3.855E-01	1.352E+00
K-40	-1.294E+00	599.0	7.753E+00	7.753E+00	1.861E+01
Sc-46	1.141E+00	100.3	1.145E+00	1.146E+00	3.823E+00
CR-51	8.240E+00	99.7	8.214E+00	8.226E+00	2.730E+01
MN-54	1.145E+00	97.3	1.115E+00	1.116E+00	2.521E+00
FE-59	1.365E+00	174.8	2.386E+00	2.387E+00	5.272E+00
Co-56	-1.575E+00	90.0	1.418E+00	1.421E+00	3.184E+00
CO-57	4.623E+00	80.6	3.728E+00	3.736E+00	1.076E+01
CO-58	-1.295E+00	87.1	1.127E+00	1.129E+00	3.751E+00
CO-60	1.354E+02	1.6	2.144E+00	7.130E+00	1.152E+00
ZN-65	0.000E+00	1.#INF	1.604E+00	1.604E+00	9.728E+00
NB-94	2.056E-01	418.7	8.610E-01	8.611E-01	2.066E+00
ZR-95	1.713E+00	91.4	1.565E+00	1.568E+00	3.687E+00
NB-95	1.106E+00	76.5	8.461E-01	8.480E-01	2.810E+00
RU-103	-1.308E+00	96.2	1.258E+00	1.260E+00	3.044E+00
RH-106	1.361E+01	131.7	1.793E+01	1.795E+01	4.797E+01
AG-108M	9.353E-01	93.4	8.734E-01	8.747E-01	2.693E+00
AG-110M	6.210E-02	2480.2	1.540E+00	1.540E+00	5.249E+00
SN-113	1.547E+00	117.0	1.810E+00	1.812E+00	6.019E+00
SB-124	4.732E-01	94.3	4.464E-01	4.470E-01	2.709E+00
SB-125	3.052E+00	122.7	3.745E+00	3.748E+00	9.358E+00
I-131	6.100E-01	199.9	1.219E+00	1.220E+00	2.603E+00
Gd-153	1.960E+00	91.6	1.795E+00	1.799E+00	6.902E+00
Ga-68	5.059E+01	86.3	4.366E+01	4.376E+01	9.546E+01
Tc-99m	-6.997E-01	127.1	8.892E-01	8.901E-01	2.952E+00
BA-133	-7.212E-01	102.2	7.374E-01	7.383E-01	5.254E+00
CS-134	-1.517E+00	83.5	1.266E+00	1.269E+00	4.209E+00
CS-137	3.471E+02	1.2	4.124E+00	1.852E+01	2.477E+00
CE-139	1.030E-01	780.7	8.042E-01	8.043E-01	2.152E+00
Ba-140	-3.251E+00	129.1	4.196E+00	4.199E+00	1.023E+01
La-140	-5.241E-02	108.6	5.693E-02	5.700E-02	1.969E+00
CE-141	-1.256E+00	123.0	1.545E+00	1.546E+00	5.129E+00

CE-144	7.521E-01	855.4	6.433E+00	6.433E+00	2.150E+01
PM-144	-1.117E+00	91.7	1.023E+00	1.025E+00	2.395E+00
EU-152	1.027E+00	107.2	1.100E+00	1.102E+00	1.308E+01
EU-154	3.118E+00	86.1	2.684E+00	2.689E+00	4.900E+00
EU-155	2.195E+00	103.2	2.266E+00	2.269E+00	1.086E+01
HF-181	-1.572E+00	95.2	1.497E+00	1.499E+00	4.970E+00
Ta-182	1.738E+00	192.1	3.338E+00	3.339E+00	1.411E+01
Hg-203	7.122E-01	127.9	9.108E-01	9.117E-01	3.037E+00
TL-208	4.679E+00	29.4	1.377E+00	1.399E+00	2.408E+00
PM-146	-2.429E-01	627.9	1.525E+00	1.525E+00	4.773E+00
Y-88	0.000E+00	1.#INF	8.495E-02	8.495E-02	6.260E-01
Cd-113m	3.762E+03	323.6	1.217E+04	1.217E+04	4.084E+04
Cd-109	1.194E+01	209.8	2.505E+01	2.506E+01	8.324E+01
Cf-251	3.357E+00	105.5	3.541E+00	3.553E+00	9.402E+00
Cf-249	0.000E+00	1.#INF	8.302E-01	8.302E-01	6.110E+00
Sn-126	5.194E+00	175.0	9.089E+00	9.093E+00	3.026E+01
PB-210	9.462E+03	1.0	9.176E+01	5.631E+02	1.674E+02
PB-212	6.507E+00	18.6	1.213E+00	1.284E+00	3.708E+00
PB-214	6.178E+00	27.7	1.712E+00	1.742E+00	4.804E+00
BI-207	-2.585E+00	67.3	1.740E+00	1.744E+00	4.764E+00
BI-212	-3.695E+00	487.7	1.802E+01	1.802E+01	3.787E+01
U-235	6.024E+00	105.5	6.357E+00	6.364E+00	2.157E+01
BI-214	3.147E+00	38.4	1.210E+00	1.221E+00	8.675E+00
BI-210M	1.053E+00	153.5	1.617E+00	1.618E+00	4.800E+00
AC-228	1.518E+01	27.1	4.109E+00	4.181E+00	9.118E+00
TH-227	-7.716E+00	141.7	1.093E+01	1.094E+01	2.913E+01
TH-229	5.004E+00	326.2	1.632E+01	1.633E+01	4.359E+01
TH-234	2.255E+00	712.8	1.607E+01	1.607E+01	5.352E+01
PA-231	5.807E-06	754319083.5	4.380E+01	4.380E+01	1.464E+02
PA-233	2.166E+00	162.5	3.520E+00	3.521E+00	1.170E+01
PA-234	2.405E+00	96.1	2.311E+00	2.314E+00	1.404E+01
PA-234M	-1.554E+01	949.9	1.476E+02	1.476E+02	5.326E+02
AM-241	1.186E+03	0.9	1.011E+01	6.238E+01	1.492E+01
Np-237	4.851E+00	149.9	7.273E+00	7.278E+00	2.414E+01
Ir-192	6.200E-01	201.9	1.252E+00	1.252E+00	3.295E+00
Cs-136	1.104E+00	92.8	1.025E+00	1.027E+00	2.321E+00
Np-239	-2.584E+00	119.6	3.090E+00	3.094E+00	1.026E+01
Nd-147	5.040E+00	130.3	6.568E+00	6.574E+00	1.608E+01
TL-210	-2.079E-01	495.0	1.029E+00	1.029E+00	3.497E+00
Kr-85	1.389E+02	173.0	2.403E+02	2.404E+02	8.049E+02
Total	1.523E+04				

Analyst: Caleb Quinn

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Sample description
452568_Gamma_LCS 160-452568~2-A

Spectrum Filename: C:\User\SPC\Det17\17_Gamma_20192438.An1

Acquisition information
Start time: 12/25/2019 11:26:15 AM
Live time: 1800
Real time: 1811
Dead time: 0.62 %
Detector ID: 17

Detector system
Ge17 SN/11080671

Calibration
Filename: 17_Soil_TunaCan.Clb
17_TunaCan_90099_032612

Energy Calibration
Created: 2/29/2012 10:33:23 AM
Zero offset: 0.108 keV
Gain: 0.250 keV/channel
Quadratic: -2.584E-08 keV/channel^2

Efficiency Calibration
Created: 4/12/2012 9:28:42 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.91 %
Log(Eff): -5.264190E-01 + (-4.024164E-01*Log(E)) + (-2.604461E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.00 %
Log(Eff): -2.343889E+01 + (8.582715E+00*Log(E)) + (-9.075430E-01*Log(E)^2)

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.12keV)
Stop channel: 8000 (1999.54keV)
Peak rejection level: 1000.000%
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

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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	12/25/2019 11:25:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	17_2019-12-07_1454.PBC 12/7/2019 2:54:46 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 27 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1467

***** 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
36.59	350.	15.56	0.80	1.352E-02				
46.65	15203.	0.97	0.77	2.106E-02	46.54	4.250	9.462E+03	PB210
49.62	122.	64.16	0.78	2.318E-02	50.14	8.000	3.584E+01	TH227
59.60	22662.	0.85	0.75	2.961E-02	59.54	35.900	1.186E+03	AM241
65.71	29.	174.99	0.79	3.216E-02	64.28	9.700	PBC<MDA	Sn126
77.11	127.	34.62	0.99	3.761E-02				
80.91	22.	154.28	1.31	3.884E-02	80.99	34.060	PBC<MDA	BA133
86.49	46.	149.93	0.81	4.026E-02	86.49	13.100	PBC<MDA	Np237
					86.54	30.700	2.069E+00	EU155
					86.94	9.040	7.012E+00	Sn126
86.54	42.	164.69	0.81	4.027E-02	86.49	13.100	PBC<MDA	Np237
					86.54	30.700	1.898E+00	EU155
					86.94	9.040	6.431E+00	Sn126
87.37	37.	90.58	0.81	4.050E-02	87.57	37.500	PBC<MDA	Sn126
87.84	33.	209.80	0.81	4.060E-02	88.04	3.790	PBC<MDA	Cd109
90.23	68.	51.38	1.42	4.103E-02				
92.59	9.	712.80	0.82	4.144E-02	92.59	5.584	PBC<MDA	TH234
93.15	42.	78.59	0.82	4.156E-02	93.35	5.561	PBC<MDA	AC228
97.50	34.	140.15	0.82	4.213E-02	97.50	30.000	PBC<MDA	Gd153
99.50	18.	272.17	0.82	4.234E-02	99.50	15.000	PBC<MDA	Np239
103.20	44.	117.93	0.83	4.265E-02	103.20	21.800	PBC<MDA	Gd153
103.70	44.	119.78	0.83	4.269E-02	103.70	24.000	PBC<MDA	Np239

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
105.31	43.	124.51	0.83	4.278E-02	105.31	21.200	PBC<MDA	EU155
133.54	6.	855.40	0.86	4.192E-02	133.54	11.090	PBC<MDA	CE144
136.37	37.	80.64	1.27	4.163E-02	136.30	5.850	PBC<MDA	HF181
					136.47	10.680	4.623E+00	CO57
143.79	21.	249.15	0.87	4.080E-02	143.79	10.960	PBC<MDA	U235
165.85	6.	780.75	0.89	3.825E-02	165.85	79.900	PBC<MDA	CE139
176.60	38.	105.48	0.90	3.667E-02	176.60	17.000	PBC<MDA	Cf251
185.72	89.	50.19	0.91	3.545E-02	185.72	54.000	PBC<MDA	U235
193.51	14.	326.21	0.91	3.448E-02	193.51	4.400	PBC<MDA	TH229
205.33	40.	105.53	0.92	3.312E-02	205.33	5.010	PBC<MDA	U235
238.37	164.	22.74	0.87	2.991E-02	238.63	43.300	6.679E+00	PB212
241.88	19.	301.76	0.96	2.960E-02	242.00	7.430	PBC<MDA	PB214
263.58	36.	46.80	0.76	2.791E-02	263.70	0.006	1.206E+04	Cd113m
279.20	28.	127.88	0.99	2.681E-02	279.20	81.460	PBC<MDA	Hg203
284.30	6.	718.88	1.00	2.648E-02	284.30	6.140	PBC<MDA	I131
294.92	73.	46.87	2.32	2.580E-02	295.09	19.300	PBC<MDA	PB214
					296.00	79.000	PBC<MDA	TL210
302.52	17.	331.15	1.01	2.533E-02	302.65	2.880	PBC<MDA	PA231
					302.85	18.330	2.074E+00	BA133
304.90	37.	153.51	1.02	2.521E-02	304.85	4.290	1.901E+01	Ba140
					304.90	28.000	2.913E+00	BI210M
308.44	28.	201.90	1.02	2.501E-02	308.44	31.750	PBC<MDA	Ir192
312.01	35.	162.51	1.02	2.481E-02	312.01	36.000	PBC<MDA	PA233
316.81	5.	780.52	1.03	2.456E-02	316.49	87.040	PBC<MDA	Ir192
320.08	36.	99.69	1.03	2.437E-02	320.08	9.940	PBC<MDA	CR51
338.19	61.	45.91	2.32	2.344E-02	338.32	12.010	PBC<MDA	AC228
352.30	124.	25.24	0.54	2.277E-02	351.93	37.600	7.555E+00	PB214
364.48	17.	199.91	1.07	2.223E-02	364.48	81.700	PBC<MDA	I131
391.69	38.	117.03	1.09	2.112E-02	391.69	64.000	PBC<MDA	SN113
433.94	30.	112.63	1.13	1.963E-02	433.94	90.480	PBC<MDA	AG108M
463.37	35.	122.70	1.16	1.872E-02	463.37	10.470	PBC<MDA	SB125
477.60	37.	93.36	1.17	1.832E-02	477.60	10.520	PBC<MDA	BE7
487.02	19.	171.63	1.18	1.806E-02	487.02	45.500	PBC<MDA	La140
511.86	48.	66.15	2.45	1.742E-02	511.86	20.000	PBC<MDA	RH106
513.98	19.	173.04	1.20	1.737E-02	513.98	0.430	PBC<MDA	Kr85
531.00	20.	130.32	1.22	1.696E-02	531.00	13.000	PBC<MDA	Nd147
583.32	95.	29.44	1.18	1.584E-02	583.02	84.500	3.952E+00	TL208
600.50	25.	123.58	1.28	1.550E-02	600.50	17.860	PBC<MDA	SB125
604.71	23.	140.84	1.28	1.542E-02	604.71	97.620	PBC<MDA	CS134
609.31	14.	234.02	1.29	1.533E-02	609.31	46.090	PBC<MDA	BI214
610.30	23.	146.41	1.29	1.531E-02	610.30	5.750	PBC<MDA	RU103
614.28	23.	148.97	1.29	1.524E-02	614.28	89.850	PBC<MDA	AG108M
618.06	23.	151.50	1.30	1.517E-02	618.06	99.100	PBC<MDA	PM144
621.92	25.	156.86	1.30	1.510E-02	621.92	9.930	PBC<MDA	RH106
635.89	12.	150.02	1.31	1.486E-02	635.89	11.310	PBC<MDA	SB125
661.67	7681.	1.19	1.32	1.443E-02	661.66	85.210	3.471E+02	CS137
702.63	5.	418.73	1.37	1.380E-02	702.63	97.900	PBC<MDA	NB94
722.79	20.	94.34	1.39	1.351E-02	722.79	10.810	PBC<MDA	SB124

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
					722.94	90.840	9.055E-01	AG108M
					723.36	20.220	4.070E+00	EU154
756.73	22.	91.39	1.41	1.306E-02	756.73	54.460	PBC<MDA	ZR95
765.79	26.	76.51	1.42	1.294E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	PBC<MDA	PA234M
781.35	8.	246.98	1.43	1.278E-02	778.92	12.940	PBC<MDA	EU152
818.50	24.	92.84	1.47	1.231E-02	818.50	100.000	PBC<MDA	Cs136
834.85	25.	97.32	1.48	1.213E-02	834.85	99.980	PBC<MDA	MN54
860.56	26.	98.81	1.50	1.185E-02	860.56	12.420	PBC<MDA	TL208
880.53	38.	54.95	1.52	1.165E-02	880.53	6.000	PBC<MDA	PA234
883.24	23.	96.07	1.52	1.162E-02	883.24	9.600	PBC<MDA	PA234
889.28	24.	100.34	1.53	1.156E-02	889.28	99.984	PBC<MDA	Sc46
910.72	98.	28.69	2.18	1.135E-02	911.07	29.000	1.648E+01	AC228
946.02	9.	312.25	1.57	1.103E-02	946.02	13.400	PBC<MDA	PA234
964.11	17.	138.69	1.59	1.088E-02	964.11	14.605	PBC<MDA	EU152
996.33	16.	158.10	1.62	1.061E-02	996.33	10.600	PBC<MDA	EU154
1001.00	-2.	949.90	1.62	1.057E-02	1001.00	0.837	PBC<MDA	PA234M
1004.77	26.	86.10	1.62	1.054E-02	1004.77	18.010	PBC<MDA	EU154
1050.36	12.	211.67	1.66	1.019E-02	1050.36	1.560	PBC<MDA	RH106
1077.40	26.	86.32	1.68	9.992E-03	1077.40	3.300	PBC<MDA	Ga68
1099.25	14.	174.83	1.70	9.840E-03	1099.25	56.500	PBC<MDA	FE59
1121.30	8.	311.18	1.72	9.691E-03	1120.55	99.987	PBC<MDA	Sc46
					1121.30	34.900	1.342E+00	Ta182
1173.27	2278.	2.25	1.62	9.359E-03	1173.24	99.900	1.353E+02	CO60
1189.05	7.	225.27	1.77	9.263E-03	1189.05	16.200	PBC<MDA	Ta182
1238.28	12.	96.01	1.81	8.977E-03	1238.28	66.070	PBC<MDA	Co56
1274.53	5.	121.66	1.84	8.779E-03	1274.53	99.940	PBC<MDA	NA22
					1274.54	35.190	8.992E-01	EU154
1313.00	9.	87.15	1.87	8.579E-03	1313.00	21.000	PBC<MDA	TL210
1332.52	2069.	2.23	1.78	8.481E-03	1332.50	99.980	1.355E+02	CO60
1460.83	-2.	598.97	1.98	7.894E-03	1460.83	10.670	PBC<MDA	K40
1690.98	1.	600.00	2.16	7.037E-03	1690.98	47.790	PBC<MDA	SB124
1764.49	17.	38.45	2.21	6.804E-03	1764.49	15.400	PBC<MDA	BI214

********** 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
145.84	36.59	872.	350.	2.589E+04	15.56	0.799	- s
198.24	49.58	2983.	145.	6.243E+03	54.03	0.778	- sD
307.85	77.11	602.	127.	3.376E+03	34.62	0.992	- s
359.50	90.23	535.	52.	1.256E+03	65.02	0.816	- sc

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: Client_Long_Rev15.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	185.63	46.54	3265.	15203.	8.446	0.97	0.775D
TH-227	200.03	50.14	26073.	-114.	-0.063	200.20	0.778s
AM-241	237.85	59.60	3672.	22662.	12.590	0.85	0.754
TH-234	252.59	63.29	1368.	-51.	-0.028	290.45	0.791s
Sn-126	256.56	64.28	1288.	29.	0.016	174.99	0.792s
BA-133	323.04	80.91	434.	22.	0.012	154.28	1.306s
Np-237	345.35	86.49	2360.	46.	0.026	149.93	0.813s
EU-155	345.56	86.54	2398.	42.	0.023	164.69	0.813s
Sn-126	347.15	86.94	2440.	0.	0.000	1000.00	0.813D
Sn-126	349.67	87.57	2440.	37.	0.021	90.58	0.814D
Cd-109	351.55	88.04	2390.	33.	0.018	209.80	0.814A
TH-234	369.74	92.59	2234.	9.	0.005	712.80	0.818s
AC-228	372.78	93.35	529.	42.	0.023	78.59	0.819D
Gd-153	389.37	97.50	1096.	34.	0.019	140.15	0.823s
Np-239	397.37	99.50	1191.	18.	0.010	272.17	0.825s
Gd-153	412.16	103.20	1315.	44.	0.024	117.93	0.828
Np-239	414.16	103.70	1359.	44.	0.024	119.78	0.829
EU-155	420.61	105.31	1403.	43.	0.024	124.51	0.830s
Np-239	423.88	106.13	1438.	-45.	-0.025	119.56	0.831s
PA-234	524.49	131.29	1642.	-44.	-0.025	120.07	0.855
HF-181	531.41	133.02	1613.	-45.	-0.025	128.41	0.856s
CE-144	533.46	133.54	1446.	6.	0.003	855.40	0.857s
HF-181	544.50	136.30	1556.	-13.	-0.007	435.51	0.859s
CO-57	544.77	136.37	320.	37.	0.021	80.64	1.274s
Tc-99m	561.34	140.51	1605.	-45.	-0.025	127.09	0.863
U-235	574.43	143.79	1345.	21.	0.012	249.15	0.866s
CE-141	581.05	145.44	1457.	-44.	-0.025	123.00	0.868s
CE-139	662.67	165.85	616.	6.	0.003	780.75	0.887s
Cf-251	705.64	176.60	487.	38.	0.021	105.48	0.897
U-235	742.10	185.72	607.	89.	0.050	50.19	0.905s
TH-229	773.25	193.51	623.	14.	0.008	326.21	0.913s
U-235	820.52	205.33	561.	40.	0.022	105.53	0.924s
TH-229	842.58	210.85	680.	-46.	-0.026	101.72	0.929s
TH-227	943.03	235.97	1650.	-42.	-0.023	137.30	0.952s
PB-212	953.67	238.63	322.	152.	0.084	18.64	0.954D
PB-214	967.13	242.00	1584.	19.	0.010	301.76	0.958s
EU-152	977.91	244.69	1667.	-40.	-0.022	144.87	0.960s
TH-227	1024.08	256.24	477.	-28.	-0.015	141.71	0.971s
Cd-113m	1053.91	263.70	667.	11.	0.006	323.56	0.978
TL-208	1108.23	277.28	650.	-12.	-0.007	301.85	0.990s
Hg-203	1115.89	279.20	627.	28.	0.016	127.88	0.992s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
I-131	1136.28	284.30	477.	6.	0.003	718.88	0.996
PB-214	1178.76	294.92	305.	73.	0.041	46.87	2.324s
TL-210	1183.07	296.00	1702.	-37.	-0.021	157.67	1.007s
PB-212	1199.19	300.03	1666.	-10.	-0.006	336.93	1.011
BA-133	1210.47	302.85	1639.	17.	0.010	331.15	1.013
Ba-140	1218.46	304.85	1656.	0.	0.000	1000.00	1.015s
BI-210M	1218.64	304.90	1596.	37.	0.021	153.51	1.015s
Ir-192	1232.82	308.44	1611.	28.	0.016	201.90	1.019s
PA-233	1247.10	312.01	1583.	35.	0.019	162.51	1.022s
Ir-192	1265.01	316.49	709.	5.	0.003	780.52	1.026
CR-51	1279.38	320.08	623.	36.	0.020	99.69	1.029s
La-140	1314.07	328.76	451.	-40.	-0.022	100.64	1.037s
Cf-249	1332.79	333.44	422.	-35.	-0.019	112.11	1.041s
AC-228	1351.77	338.19	217.	61.	0.034	45.91	2.317s
Cs-136	1361.30	340.57	983.	-37.	-0.021	119.42	1.048s
EU-152	1376.16	344.29	925.	-29.	-0.016	152.00	1.051s
HF-181	1382.33	345.83	1002.	-39.	-0.022	115.21	1.053s
PB-214	1406.74	351.93	235.	79.	0.044	29.58	1.058D
BA-133	1423.00	356.00	778.	-39.	-0.022	102.24	1.062
I-131	1456.93	364.48	312.	17.	0.009	199.91	1.070
BA-133	1534.34	383.84	1027.	-33.	-0.018	139.81	1.087
Cf-249	1550.77	387.95	1059.	0.	0.000	1000.00	1.091
SN-113	1565.73	391.69	951.	38.	0.021	117.03	1.094s
SB-125	1710.44	427.88	426.	-10.	-0.005	452.17	1.127s
AG-108M	1734.69	433.94	320.	30.	0.017	112.63	1.132s
PM-146	1814.44	453.88	492.	-5.	-0.003	627.92	1.150s
SB-125	1852.38	463.37	472.	35.	0.019	122.70	1.158s
Ir-192	1871.15	468.06	960.	-46.	-0.026	96.57	1.163
BE-7	1909.29	477.59	588.	37.	0.021	93.36	1.171
HF-181	1926.89	482.00	758.	-41.	-0.023	95.22	1.175s
La-140	1946.98	487.02	268.	19.	0.010	171.63	1.180s
RU-103	1987.11	497.05	340.	-38.	-0.021	96.16	1.188s
RH-106	2046.35	511.86	473.	48.	0.026	66.15	2.452
Kr-85	2054.81	513.98	512.	19.	0.010	173.04	1.203s
Nd-147	2122.88	531.00	172.	20.	0.011	130.32	1.219s
Ba-140	2147.92	537.26	244.	-24.	-0.013	129.05	1.224
CS-134	2251.82	563.24	192.	-11.	-0.006	248.47	1.247s
CS-134	2276.15	569.32	204.	-7.	-0.004	305.20	1.252
PA-234	2276.75	569.47	210.	0.	0.000	1000.00	1.253
BI-207	2277.67	569.70	210.	0.	0.000	1000.00	1.253
TL-208	2332.15	583.32	141.	95.	0.053	29.44	1.178s
SB-125	2400.86	600.50	481.	25.	0.014	123.58	1.280s
SB-124	2409.78	602.73	234.	-4.	-0.002	491.30	1.282s
CS-134	2417.70	604.71	502.	23.	0.013	140.84	1.284
BI-214	2436.10	609.31	534.	14.	0.008	234.02	1.287s
RU-103	2440.05	610.30	548.	23.	0.013	146.41	1.288s
AG-108M	2455.98	614.28	570.	23.	0.013	148.97	1.292s
PM-144	2471.11	618.06	593.	23.	0.013	151.50	1.295

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
RH-106	2486.52	621.92	740.	25.	0.014	156.86	1.299s
SB-125	2542.41	635.89	147.	12.	0.006	150.02	1.311
I-131	2546.75	636.97	218.	-22.	-0.012	95.93	1.312s
AG-110M	2629.90	657.76	7958.	-14.	-0.008	870.48	1.330
CS-137	2645.52	661.67	125.	7681.	4.267	1.19	1.322
PM-144	2785.03	696.54	147.	-28.	-0.015	91.65	1.363s
NB-94	2809.38	702.63	104.	5.	0.003	418.73	1.368
SB-124	2890.01	722.79	168.	20.	0.011	94.34	1.386s
AG-108M	2890.61	722.94	188.	0.	0.000	1000.00	1.386s
EU-154	2892.30	723.36	188.	0.	0.000	1000.00	1.386s
BI-212	2907.54	727.17	204.	-7.	-0.004	487.71	1.390s
PM-146	2941.74	735.72	134.	-10.	-0.006	231.06	1.397s
PM-146	2987.51	747.16	121.	-3.	-0.002	676.76	1.407s
ZR-95	3025.79	756.73	91.	22.	0.012	91.39	1.415s
AG-110M	3054.64	763.94	182.	-28.	-0.015	71.86	1.421s
NB-95	3062.03	765.79	180.	26.	0.014	76.51	1.423s
PA-234M	3064.52	766.41	180.	-6.	-0.003	338.82	1.423s
EU-152	3114.56	778.92	100.	8.	0.005	246.98	1.434
BI-212	3140.56	785.42	165.	-13.	-0.007	208.69	1.440s
CS-134	3182.36	795.87	286.	-29.	-0.016	83.48	1.448
TL-210	3197.29	799.60	261.	-5.	-0.003	495.01	1.451
CS-134	3206.69	801.95	366.	-32.	-0.018	87.50	1.454s
CO-58	3241.99	810.78	299.	-29.	-0.016	87.08	1.461s
Cs-136	3272.90	818.50	109.	24.	0.014	92.84	1.467s
MN-54	3338.30	834.85	126.	25.	0.014	97.32	1.481s
Co-56	3385.99	846.77	201.	-34.	-0.019	90.02	1.491s
TL-208	3441.18	860.56	135.	26.	0.014	98.81	1.503
EU-154	3491.85	873.23	170.	-4.	-0.002	639.46	1.514s
PA-234	3521.06	880.53	196.	38.	0.021	54.95	1.520s
PA-234	3531.90	883.24	234.	23.	0.013	96.07	1.522s
Sc-46	3556.06	889.28	272.	24.	0.013	100.34	1.527s
Y-88	3591.11	898.04	177.	-7.	-0.004	386.98	1.534s
AC-228	3641.84	910.72	121.	98.	0.054	28.69	2.182s
AG-110M	3748.95	937.49	205.	-17.	-0.010	177.01	1.567s
PA-234	3783.07	946.02	187.	9.	0.005	312.25	1.574
EU-152	3855.45	964.11	275.	17.	0.010	138.69	1.589
AC-228	3874.90	968.97	305.	-5.	-0.003	480.18	1.593s
EU-154	3984.36	996.33	292.	16.	0.009	158.10	1.616s
PA-234M	4003.04	1001.00	310.	-2.	-0.001	949.90	1.620s
EU-154	4018.15	1004.77	246.	26.	0.015	86.10	1.623
Co-56	4150.45	1037.84	180.	-34.	-0.019	87.35	1.650s
RH-106	4200.55	1050.36	131.	12.	0.007	211.67	1.661s
BI-207	4253.77	1063.66	176.	-35.	-0.019	67.30	1.671s
Ga-68	4308.74	1077.40	95.	26.	0.014	86.32	1.683s
FE-59	4396.18	1099.25	115.	14.	0.008	174.83	1.700
EU-152	4447.49	1112.07	292.	-28.	-0.016	86.91	1.711s
ZN-65	4461.38	1115.55	321.	0.	0.000	1000.00	1.713s
BI-214	4480.35	1120.29	324.	-3.	-0.002	723.55	1.717s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Sc-46	4481.41	1120.55	321.	0.	0.000	1000.00	1.717s
Ta-182	4484.41	1121.30	319.	8.	0.005	311.18	1.718
CO-60	4692.35	1173.27	51.	2278.	1.265	2.25	1.625
Ta-182	4755.52	1189.05	50.	7.	0.004	225.27	1.772s
Ta-182	4885.02	1221.41	48.	-19.	-0.010	87.05	1.798s
Co-56	4952.53	1238.28	22.	12.	0.006	96.01	1.812s
NA-22	5097.60	1274.53	16.	5.	0.003	121.66	1.840s
EU-154	5097.64	1274.54	21.	0.	0.000	1000.00	1.840s
TL-210	5251.56	1313.00	11.	9.	0.005	87.15	1.870s
CO-60	5329.67	1332.52	10.	2069.	1.149	2.23	1.780
EU-152	5631.79	1408.00	27.	-6.	-0.003	211.36	1.944s
K-40	5843.25	1460.83	30.	-2.	-0.001	598.97	1.985s
La-140	6385.15	1596.21	23.	-9.	-0.005	133.23	2.087s
SB-124	6764.55	1690.98	6.	1.	0.001	600.00	2.157s
BI-214	7058.84	1764.49	14.	17.	0.010	38.45	2.211s
Y-88	7345.39	1836.06	0.	0.	0.000	1000.00	2.262s

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
BE-7	C	1.0757E+01					5.31E+01	
			477.60	1.076E+01	(	3.336E+01	9.34E+01	1.05E+01 G
NA-22	C	3.1661E-01					9.50E+02	
			1274.53	3.166E-01	&(	1.352E+00	1.22E+02	9.99E+01 G
K-40	N	-1.2944E+00					4.66E+11	
			1460.83	-1.294E+00	&(P	1.861E+01	5.99E+02	1.07E+01 G
Sc-46	F	1.1411E+00					8.38E+01	
			889.28	1.141E+00	?(	3.823E+00	1.00E+02	1.00E+02 G
			1120.55	0.000E+00	-	4.940E+00	1.00E+03	1.00E+02 G
CR-51	F	8.2399E+00					2.77E+01	
			320.08	8.240E+00	?(P	2.730E+01	9.97E+01	9.94E+00 G
MN-54	C	1.1454E+00					3.12E+02	
			834.85	1.145E+00	&(	2.521E+00	9.73E+01	1.00E+02 G
FE-59	F	1.3650E+00					4.45E+01	
			1099.25	1.365E+00	&(P	5.272E+00	1.75E+02	5.65E+01 G
			1291.60	-5.244E-02	% P	3.190E+00	3.15E+03	4.32E+01 G

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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Co-56	C	-1.5755E+00					7.73E+01	
			846.77	-1.575E+00	?(	3.184E+00	9.00E+01	9.99E+01 G
			1238.28	1.086E+00	+ P	2.317E+00	9.60E+01	6.61E+01 G
			1037.84	-1.317E+01	+	2.494E+01	8.73E+01	1.41E+01 G
			1771.35	1.764E-01	%	1.531E+01	2.39E+03	1.55E+01 A
CO-57	C	4.6234E+00					2.72E+02	
			122.06	0.000E+00	}	2.196E+00	2.90E+03	8.56E+01 G
			136.47	4.623E+00	(	1.076E+01	8.06E+01	1.07E+01 G
CO-58	C	-1.2946E+00					7.09E+01	
			810.78	-1.295E+00	&(	3.751E+00	8.71E+01	9.95E+01 G
CO-60	F	1.3544E+02					1.93E+03	
			1332.50	1.355E+02	(P	1.152E+00	2.23E+00	1.00E+02 G
			1173.24	1.353E+02	(P	2.147E+00	2.25E+00	9.99E+01 G
NB-94	I	2.0563E-01					7.41E+06	
			702.63	2.056E-01	(	2.066E+00	4.19E+02	9.79E+01 G
			871.10	-7.892E-02	%	3.191E+00	1.18E+03	9.99E+01 G
ZR-95	I	1.7129E+00					6.40E+01	
			756.73	1.713E+00	&(P	3.687E+00	9.14E+01	5.45E+01 G
			724.20	-5.226E-02	& P	6.221E+00	5.88E+03	4.42E+01 G
NB-95	I	1.1058E+00					6.40E+01	
			765.79	1.106E+00	?(	2.810E+00	7.65E+01	9.98E+01 G
RU-103	I	-1.3082E+00					3.93E+01	
			497.05	-1.308E+00	?(	3.044E+00	9.62E+01	9.09E+01 G
			610.30	1.441E+01	&	7.051E+01	1.46E+02	5.75E+00 GA
RH-106	I	1.3613E+01					3.74E+02	
			621.92	9.162E+00	?(	4.797E+01	1.57E+02	9.93E+00 G
			1050.36	4.194E+01	&(	1.959E+02	2.12E+02	1.56E+00 G
			511.86	7.601E+00	?	1.660E+01	6.62E+01	2.00E+01 GA
AG-108M	C	9.3529E-01					1.53E+05	
			433.94	9.416E-01	*(P	2.693E+00	1.13E+02	9.05E+01 G
			722.94	0.000E+00	-	3.015E+00	1.00E+03	9.08E+01 G
			614.28	9.290E-01	?(	4.625E+00	1.49E+02	8.98E+01 G
AG-110M	F	6.2101E-02					2.50E+02	
			884.68	6.210E-02	%(P	5.249E+00	2.48E+03	7.27E+01 G
			657.76	-5.874E-01	+	1.695E+01	8.70E+02	9.46E+01 G
			937.49	-2.523E+00	+	1.011E+01	1.77E+02	3.44E+01 G
			1384.30	-1.149E+00	% P	5.953E+00	1.12E+03	2.43E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			763.94	-5.290E+00	+	1.260E+01	7.19E+01	2.23E+01 G
SN-113	F	1.5471E+00					1.15E+02	
			391.69	1.547E+00	&(P	6.019E+00	1.17E+02	6.40E+01 G
SB-124	F	4.7315E-01					6.02E+01	
			602.73	-1.620E-01	?(	2.709E+00	4.91E+02	9.83E+01 G
			1690.98	1.652E-01	?(	2.333E+00	6.00E+02	4.78E+01 G
			722.79	7.608E+00	?(	2.401E+01	9.43E+01	1.08E+01 G
SB-125	I	3.0521E+00					1.01E+03	
			427.88	-9.225E-01	?(P	9.358E+00	4.52E+02	2.96E+01 G
			600.50	5.104E+00	&(	2.106E+01	1.24E+02	1.79E+01 G
			635.89	3.857E+00	&(	1.960E+01	1.50E+02	1.13E+01 G
			463.37	9.920E+00	?(	2.946E+01	1.23E+02	1.05E+01 G
I-131	I	6.1003E-01					8.02E+00	
			364.48	5.096E-01	&(P	2.603E+00	2.00E+02	8.17E+01 G
			284.30	1.946E+00	&(P	3.572E+01	7.19E+02	6.14E+00 G
			636.97	-1.166E+01	+	3.737E+01	9.59E+01	7.17E+00 G
Gd-153	F	1.9595E+00					2.42E+02	
			97.50	1.480E+00	&(	6.902E+00	1.40E+02	3.00E+01 G
			103.20	2.619E+00	?(	1.026E+01	1.18E+02	2.18E+01 G
Ga-68	C	5.0586E+01					4.71E-02	
			1077.40	5.059E+01	?(	9.546E+01	8.63E+01	3.30E+00 G
Tc-99m	I	-6.9968E-01					2.51E-01	
			140.51	-6.997E-01	(	2.952E+00	1.27E+02	8.93E+01 G
BA-133	F	-7.2120E-01					3.85E+03	
			356.00	-1.547E+00	&(	5.254E+00	1.02E+02	6.20E+01 G
			302.85	2.074E+00	?(	2.289E+01	3.31E+02	1.83E+01 G
			383.84	-9.473E+00	+	4.409E+01	1.40E+02	8.94E+00 GA
			80.99	9.059E-01	P	4.193E+00	1.54E+02	3.41E+01 GA
CS-134	I	-1.5170E+00					7.54E+02	
			795.87	-1.517E+00	?(	4.209E+00	8.35E+01	8.55E+01 G
			604.71	8.397E-01	+	3.954E+00	1.41E+02	9.76E+01 G
			569.32	-1.494E+00	+	1.551E+01	3.05E+02	1.54E+01 G
			801.95	-1.614E+01	+	4.695E+01	8.75E+01	8.69E+00 G
			563.24	-4.505E+00	+	2.756E+01	2.48E+02	8.35E+00 G
CS-137	I	3.4711E+02					1.10E+04	
			661.66	3.471E+02	(	2.477E+00	1.19E+00	8.52E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CE-139	F	1.0301E-01					1.38E+02	
			165.85	1.030E-01	&(	2.152E+00	7.81E+02	7.99E+01 G
Ba-140	I	-3.2512E+00					1.28E+01	
			537.26	-3.251E+00	?(	1.023E+01	1.29E+02	2.44E+01 G
			162.66	-7.027E-01	%	3.710E+01	1.58E+03	6.22E+00 G
			304.85	0.000E+00	+	9.878E+01	1.00E+03	4.29E+00 G
La-140	I	-5.2407E-02					1.28E+01	
			1596.21	-6.854E-01	?(	1.969E+00	1.33E+02	9.54E+01 G
			487.02	1.275E+00	@(P	5.345E+00	1.72E+02	4.55E+01 G
			328.76	-4.575E+00	+	1.164E+01	1.01E+02	2.03E+01 G
			815.77	-3.736E-01	&	1.683E+01	1.33E+03	2.33E+01 G
CE-141	I	-1.2559E+00					3.25E+01	
			145.44	-1.256E+00	&(	5.129E+00	1.23E+02	4.82E+01 G
CE-144	I	7.5206E-01					2.85E+02	
			133.54	7.521E-01	?(P	2.150E+01	8.55E+02	1.11E+01 G
PM-144	C	-1.1167E+00					3.63E+02	
			696.54	-1.117E+00	&(	2.395E+00	9.17E+01	9.90E+01 G
			618.06	8.482E-01	+	4.294E+00	1.51E+02	9.91E+01 G
EU-152	F	1.0270E+00					4.94E+03	
			121.78	0.000E+00	}	6.530E+00	2.84E+03	2.86E+01 G
			344.29	-2.582E+00	&(	1.308E+01	1.52E+02	2.65E+01 G
			1112.07	-1.190E+01	+	3.441E+01	8.69E+01	1.36E+01 G
			778.92	2.800E+00	&(	1.654E+01	2.47E+02	1.29E+01 G
			964.11	6.004E+00	(	2.797E+01	1.39E+02	1.46E+01 G
			244.69	-1.000E+01	&	4.815E+01	1.45E+02	7.58E+00 G
			1408.00	-1.845E+00	+	8.716E+00	2.11E+02	2.10E+01 GA
EU-154	I	3.1179E+00					3.14E+03	
			123.10	-1.063E-01	%(	4.900E+00	1.38E+03	4.08E+01 G
			1274.54	0.000E+00	&	4.328E+00	1.00E+03	3.52E+01 G
			723.36	0.000E+00	+	1.355E+01	1.00E+03	2.02E+01 G
			873.23	-1.674E+00	+	2.449E+01	6.39E+02	1.23E+01 G
			1004.77	7.748E+00	?(	2.221E+01	8.61E+01	1.80E+01 G
			996.33	7.658E+00	(	4.072E+01	1.58E+02	1.06E+01 G
EU-155	I	2.1954E+00					1.81E+03	
			105.31	2.626E+00	?(P	1.086E+01	1.25E+02	2.12E+01 G
			86.54	1.898E+00	?(	1.038E+01	1.65E+02	3.07E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
HF-181	F	-1.5724E+00					4.24E+01	
			482.00	-1.572E+00	?(	4.970E+00	9.52E+01	8.05E+01 G
			133.02	-1.361E+00	+	5.804E+00	1.28E+02	4.33E+01 G
			345.83	-6.267E+00	+	2.400E+01	1.15E+02	1.51E+01 G
			136.30	-2.926E+00	&	4.253E+01	4.36E+02	5.85E+00 G
Ta-182	F	1.7378E+00					1.14E+02	
			1121.30	1.342E+00	?(	1.411E+01	3.11E+02	3.49E+01 G
			1221.41	-4.255E+00	+	7.937E+00	8.70E+01	2.70E+01 G
			1189.05	2.592E+00	&(	1.320E+01	2.25E+02	1.62E+01 G
Hg-203	F	7.1222E-01					4.66E+01	
			279.20	7.122E-01	?(	3.037E+00	1.28E+02	8.15E+01 G
TL-208	N	4.6790E+00					6.98E+02	
			583.02	3.952E+00	(P	2.408E+00	2.94E+01	8.45E+01 G
			277.28	-3.922E+00	&	3.971E+01	3.02E+02	6.31E+00 G
			860.56	9.623E+00	(P	2.149E+01	9.88E+01	1.24E+01 G
PM-146	C	-2.4293E-01					2.02E+03	
			453.88	-2.429E-01	&(P	4.773E+00	6.28E+02	6.50E+01 G
			747.16	-4.132E-01	&	6.699E+00	6.77E+02	3.40E+01 G
			735.72	-1.914E+00	+	1.050E+01	2.31E+02	2.25E+01 G
Cd-113m		3.7617E+03					5.33E+03	
			263.70	3.762E+03	?(	4.084E+04	3.24E+02	6.00E-03 K
Cd-109	F	1.1940E+01					4.53E+02	
								Derived Ave Activity
			88.04	1.194E+01	}(	8.324E+01	2.10E+02	3.79E+00 G
Cf-251	T	3.3565E+00					3.28E+05	
			176.60	3.357E+00	&(	9.402E+00	1.05E+02	1.70E+01 G
			227.00	1.901E-01	%	3.231E+01	6.34E+03	6.30E+00 GA
Sn-126		5.1943E+00					3.65E+07	
			87.57	1.371E+00	}	8.520E+00	9.06E+01	3.75E+01 GA
			64.28	5.194E+00	&(	3.026E+01	1.75E+02	9.70E+00 G
			86.94	0.000E+00	-	3.546E+01	1.00E+03	9.04E+00 GA
PB-210	N	9.4615E+03					8.14E+03	
			46.54	9.462E+03	(P	1.674E+02	9.70E-01	4.25E+00 G
PB-212	N	6.5068E+00					6.98E+02	
			238.63	6.507E+00	(P	3.708E+00	1.86E+01	4.33E+01 G
			300.03	-6.797E+00	- P	1.282E+02	3.37E+02	3.28E+00 GA

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PB-214	N	6.1779E+00					5.84E+05	
			351.93	5.140E+00	(P	4.804E+00	2.96E+01	3.76E+01 G
			295.09	8.199E+00	*(P	9.376E+00	4.69E+01	1.93E+01 G
			242.00	4.726E+00	&	4.754E+01	3.02E+02	7.43E+00 GA
BI-207	C	-2.5849E+00					1.18E+04	
			1063.66	-2.585E+00	?(P	4.764E+00	6.73E+01	7.45E+01 G
			569.70	0.000E+00	&	2.480E+00	1.00E+03	9.77E+01 G
BI-212	N	-3.6950E+00					6.98E+02	
			727.17	-3.695E+00	(P	3.787E+01	4.88E+02	7.55E+00 G
			785.42	-4.330E+01	+	2.137E+02	2.09E+02	1.28E+00 GA
U-235	N	6.0237E+00					2.57E+11	
			143.79	2.597E+00	?(	2.157E+01	2.49E+02	1.10E+01 G
			205.33	1.352E+01	(P	3.787E+01	1.06E+02	5.01E+00 G
			163.38	-5.356E-01	% P	4.565E+01	2.89E+03	5.08E+00 G
			185.72	2.592E+00	*	3.409E+00	5.02E+01	5.40E+01 GA
BI-214	N	3.1466E+00					5.84E+05	
			609.31	1.105E+00	(P	8.675E+00	2.34E+02	4.61E+01 G
			1120.29	-1.262E+00	& P	3.287E+01	7.24E+02	1.51E+01 G
			1764.49	9.256E+00	?(P	1.053E+01	3.84E+01	1.54E+01 G
BI-210M	T	1.0533E+00					1.10E+09	
			265.83	1.208E-02	%(P	4.800E+00	1.18E+04	5.00E+01 G
			304.90	2.913E+00	(	1.486E+01	1.54E+02	2.80E+01 G
AC-228	N	1.5179E+01					2.10E+03	
			911.07	1.648E+01	(	9.118E+00	2.87E+01	2.90E+01 G
			968.97	-1.517E+00	&	2.470E+01	4.80E+02	1.75E+01 G
			338.32	1.204E+01	(	1.408E+01	4.59E+01	1.20E+01 G
			93.35	1.014E+01		2.641E+01	7.86E+01	5.56E+00 XA
TH-227	N	-7.7163E+00					7.95E+03	
			256.24	-7.716E+00	?(	2.913E+01	1.42E+02	7.00E+00 G
			235.97	-6.315E+00	+	2.880E+01	1.37E+02	1.23E+01 G
			50.14	-3.365E+01	+	2.225E+02	2.00E+02	8.00E+00 G
TH-229	N	5.0044E+00					2.68E+06	
			193.51	5.004E+00	&(	4.359E+01	3.26E+02	4.40E+00 G
			210.85	-2.633E+01	+	7.096E+01	1.02E+02	2.99E+00 G
TH-234	N	2.2545E+00					1.63E+12	
			92.59	2.255E+00	*(P	5.352E+01	7.13E+02	5.58E+00 G
			63.29	-2.342E+01	+ P	8.067E+01	2.90E+02	3.81E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PA-231	N	5.8068E-06					1.20E+07	
			302.65	5.807E-06	%(	1.464E+02	7.54E+08	2.88E+00 G
			300.07	6.758E-06	&	1.704E+02	7.54E+08	2.46E+00 G
PA-233	C	2.1657E+00					7.82E+08	
			312.01	2.166E+00	?(P	1.170E+01	1.63E+02	3.60E+01 G
			300.18	-2.682E-06	%	6.761E+01	7.54E+08	6.20E+00 G
PA-234	N	2.4053E+00					1.63E+12	
			131.29	-3.258E+00	?(P	1.404E+01	1.20E+02	1.80E+01 G
			946.02	3.507E+00	?(	2.494E+01	3.12E+02	1.34E+01 G
			569.47	0.000E+00	+	2.955E+01	1.00E+03	8.20E+00 G
			883.24	1.149E+01	?(	3.685E+01	9.61E+01	9.60E+00 G
			880.53	3.001E+01	*	5.405E+01	5.50E+01	6.00E+00 GA
PA-234M	N	-1.5542E+01					1.63E+12	
			1001.00	-1.554E+01	?(P	5.326E+02	9.50E+02	8.37E-01 G
			766.41	-8.740E+01	+ P	9.521E+02	3.39E+02	2.94E-01 G
AM-241	T	1.1860E+03					1.58E+05	
			59.54	1.186E+03	(	1.492E+01	8.53E-01	3.59E+01 G
Np-237	F	4.8509E+00					2.14E+06	
			86.49	4.851E+00	?(	2.414E+01	1.50E+02	1.31E+01 G
Ir-192	F	6.2001E-01					7.40E+01	
			316.49	1.256E-01	?(	3.295E+00	7.81E+02	8.70E+01 G
			468.06	-2.651E+00	+	8.494E+00	9.66E+01	5.18E+01 G
			308.44	1.975E+00	&(	1.327E+01	2.02E+02	3.18E+01 G
Cs-136	F	1.1045E+00					1.30E+01	
			818.50	1.104E+00	?(	2.321E+00	9.28E+01	1.00E+02 G
			1048.07	-6.805E-02	&	3.658E+00	1.55E+03	8.00E+01 G
			340.57	-1.904E+00	+	7.559E+00	1.19E+02	4.69E+01 G
Np-239	T	-2.5843E+00					2.36E+00	
			103.70	2.379E+00	&	9.464E+00	1.20E+02	2.40E+01 X
			106.13	-2.584E+00	&(	1.026E+01	1.20E+02	2.27E+01 G
			99.50	1.575E+00	&	1.431E+01	2.72E+02	1.50E+01 X
Nd-147		5.0400E+00					1.11E+01	
			531.00	5.040E+00	?(	1.608E+01	1.30E+02	1.30E+01 G
			91.10	1.427E-01	&	1.109E+01	2.33E+03	2.83E+01 G
TL-210	N	-2.0789E-01					5.84E+05	
			799.60	-2.079E-01	?(	3.497E+00	4.95E+02	9.90E+01 G
			296.00	-1.017E+00	+	5.327E+00	1.58E+02	7.90E+01 G

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments
                         1313.00 2.838E+00 ?   5.529E+00 8.72E+01 2.10E+01 GA

Kr-85    I   1.3887E+02                                        3.92E+03
                         513.98 1.389E+02  (  8.049E+02 1.73E+02 4.30E-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

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********** 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	
TH-227	50.14	26073.	-114.	-0.063	200.20	-3.365E+01	
TH-234	63.29	1368.	-51.	-0.028	290.45	-2.342E+01	P
Np-237	86.49	2360.	46.	0.026	149.93	4.851E+00	
EU-155	86.54	2398.	42.	0.023	164.69	1.898E+00	
TH-234	92.59	2234.	9.	0.005	712.80	2.255E+00	P
Gd-153	97.50	1096.	34.	0.019	140.15	1.480E+00	
Np-239	99.50	1191.	18.	0.010	272.17	1.575E+00	
Gd-153	103.20	1315.	44.	0.024	117.93	2.619E+00	
Np-239	103.70	1359.	44.	0.024	119.78	2.379E+00	
EU-155	105.31	1403.	43.	0.024	124.51	2.626E+00	P
Np-239	106.13	1438.	-45.	-0.025	119.56	-2.584E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
PA-234	131.29	1642.	-44.	-0.025	120.07	-3.258E+00	P
HF-181	133.02	1613.	-45.	-0.025	128.41	-1.361E+00	
CE-144	133.54	1446.	6.	0.003	855.40	7.521E-01	P
HF-181	136.30	1556.	-13.	-0.007	435.51	-2.926E+00	
Tc-99m	140.51	1605.	-45.	-0.025	127.09	-6.997E-01	
U-235	143.79	1345.	21.	0.012	249.15	2.597E+00	
CE-141	145.44	1457.	-44.	-0.025	123.00	-1.256E+00	
CE-139	165.85	616.	6.	0.003	780.75	1.030E-01	
Cf-251	176.60	487.	38.	0.021	105.48	3.357E+00	
U-235	185.72	607.	89.	0.050	50.19	2.592E+00	
TH-229	193.51	623.	14.	0.008	326.21	5.004E+00	
U-235	205.33	561.	40.	0.022	105.53	1.352E+01	P
TH-229	210.85	680.	-46.	-0.026	101.72	-2.633E+01	
TH-227	235.97	1650.	-42.	-0.023	137.30	-6.315E+00	
TH-227	256.24	477.	-28.	-0.015	141.71	-7.716E+00	
Hg-203	279.20	627.	28.	0.016	127.88	7.122E-01	
I-131	284.30	477.	6.	0.003	718.88	1.946E+00	P
TL-210	296.00	1702.	-37.	-0.021	157.67	-1.017E+00	
BI-210M	304.90	1596.	37.	0.021	153.51	2.913E+00	
CR-51	320.08	623.	36.	0.020	99.69	8.240E+00	P
La-140	328.76	451.	-40.	-0.022	100.64	-4.575E+00	
Cf-249	333.44	422.	-35.	-0.019	112.11	-5.244E+00	
Cs-136	340.57	983.	-37.	-0.021	119.42	-1.904E+00	
HF-181	345.83	1002.	-39.	-0.022	115.21	-6.267E+00	
I-131	364.48	312.	17.	0.009	199.91	5.096E-01	P
SN-113	391.69	951.	38.	0.021	117.03	1.547E+00	P
SB-125	427.88	426.	-10.	-0.005	452.17	-9.225E-01	P
AG-108M	433.94	320.	30.	0.017	112.63	9.416E-01	P
PM-146	453.88	492.	-5.	-0.003	627.92	-2.429E-01	P
SB-125	463.37	472.	35.	0.019	122.70	9.920E+00	
HF-181	482.00	758.	-41.	-0.023	95.22	-1.572E+00	
La-140	487.02	268.	19.	0.010	171.63	1.275E+00	P
RU-103	497.05	340.	-38.	-0.021	96.16	-1.308E+00	
RH-106	511.86	473.	48.	0.026	66.15	7.601E+00	
Kr-85	513.98	512.	19.	0.010	173.04	1.389E+02	
Nd-147	531.00	172.	20.	0.011	130.32	5.040E+00	
Ba-140	537.26	244.	-24.	-0.013	129.05	-3.251E+00	
SB-125	600.50	481.	25.	0.014	123.58	5.104E+00	
SB-124	602.73	234.	-4.	-0.002	491.30	-1.620E-01	
BI-214	609.31	534.	14.	0.008	234.02	1.105E+00	P
RU-103	610.30	548.	23.	0.013	146.41	1.441E+01	
AG-108M	614.28	570.	23.	0.013	148.97	9.290E-01	
PM-144	618.06	593.	23.	0.013	151.50	8.482E-01	
RH-106	621.92	740.	25.	0.014	156.86	9.162E+00	
SB-125	635.89	147.	12.	0.006	150.02	3.857E+00	
I-131	636.97	218.	-22.	-0.012	95.93	-1.166E+01	
AG-110M	657.76	7958.	-14.	-0.008	870.48	-5.874E-01	
PM-144	696.54	147.	-28.	-0.015	91.65	-1.117E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
NB-94	702.63	104.	5.	0.003	418.73	2.056E-01		
SB-124	722.79	168.	20.	0.011	94.34	7.608E+00		
BI-212	727.17	204.	-7.	-0.004	487.71	-3.695E+00		P
PM-146	735.72	134.	-10.	-0.006	231.06	-1.914E+00		
PM-146	747.16	121.	-3.	-0.002	676.76	-4.132E-01		
ZR-95	756.73	91.	22.	0.012	91.39	1.713E+00		P
AG-110M	763.94	182.	-28.	-0.015	71.86	-5.290E+00		
NB-95	765.79	180.	26.	0.014	76.51	1.106E+00		
PA-234M	766.41	180.	-6.	-0.003	338.82	-8.740E+01		P
BI-212	785.42	165.	-13.	-0.007	208.69	-4.330E+01		
TL-210	799.60	261.	-5.	-0.003	495.01	-2.079E-01		
CO-58	810.78	299.	-29.	-0.016	87.08	-1.295E+00		
Cs-136	818.50	109.	24.	0.014	92.84	1.104E+00		
MN-54	834.85	126.	25.	0.014	97.32	1.145E+00		
Co-56	846.77	201.	-34.	-0.019	90.02	-1.575E+00		
EU-154	873.23	170.	-4.	-0.002	639.46	-1.674E+00		
PA-234	880.53	196.	38.	0.021	54.95	3.001E+01		
PA-234	883.24	234.	23.	0.013	96.07	1.149E+01		
Sc-46	889.28	272.	24.	0.013	100.34	1.141E+00		
Y-88	898.04	177.	-7.	-0.004	386.98	-3.788E-01		
AG-110M	937.49	205.	-17.	-0.010	177.01	-2.523E+00		
PA-234	946.02	187.	9.	0.005	312.25	3.507E+00		
EU-154	996.33	292.	16.	0.009	158.10	7.658E+00		
PA-234M	1001.00	310.	-2.	-0.001	949.90	-1.554E+01		P
EU-154	1004.77	246.	26.	0.015	86.10	7.748E+00		
Co-56	1037.84	180.	-34.	-0.019	87.35	-1.317E+01		
RH-106	1050.36	131.	12.	0.007	211.67	4.194E+01		
BI-207	1063.66	176.	-35.	-0.019	67.30	-2.585E+00		P
Ga-68	1077.40	95.	26.	0.014	86.32	5.059E+01		
FE-59	1099.25	115.	14.	0.008	174.83	1.365E+00		P
BI-214	1120.29	324.	-3.	-0.002	723.55	-1.262E+00		P
Ta-182	1121.30	319.	8.	0.005	311.18	1.342E+00		
Ta-182	1189.05	50.	7.	0.004	225.27	2.592E+00		
Ta-182	1221.41	48.	-19.	-0.010	87.05	-4.255E+00		
Co-56	1238.28	22.	12.	0.006	96.01	1.086E+00		P
NA-22	1274.53	16.	5.	0.003	121.66	3.166E-01		
TL-210	1313.00	11.	9.	0.005	87.15	2.838E+00		
K-40	1460.83	30.	-2.	-0.001	598.97	-1.294E+00		P
La-140	1596.21	23.	-9.	-0.005	133.23	-6.854E-01		
SB-124	1690.98	6.	1.	0.001	600.00	1.652E-01		
BI-214	1764.49	14.	17.	0.010	38.45	9.256E+00		P

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
BE-7	A	1.0757E+01	1.0757E+01	9.336E+01%	3.34E+01
NA-22	#A	3.1661E-01	3.1661E-01	1.217E+02%	1.35E+00
K-40	#A	-1.2944E+00	-1.2944E+00	5.990E+02%	1.86E+01
Sc-46	#A	1.1411E+00	1.1411E+00	1.003E+02%	3.82E+00
CR-51	#A	8.2397E+00	8.2399E+00	9.969E+01%	2.73E+01
MN-54	#A	1.1454E+00	1.1454E+00	9.732E+01%	2.52E+00
FE-59	#A	1.3650E+00	1.3650E+00	1.748E+02%	5.27E+00
Co-56	#A	-1.5754E+00	-1.5755E+00	9.002E+01%	3.18E+00
CO-57	A	4.6233E+00	4.6234E+00	8.064E+01%	1.08E+01
CO-58	#A	-1.2946E+00	-1.2946E+00	8.708E+01%	3.75E+00
CO-60		1.3544E+02	1.3544E+02	1.583E+00%	1.15E+00
ZN-65	#A	0.0000E+00	0.0000E+00	1.000E+03%	9.73E+00
NB-94	#A	2.0563E-01	2.0563E-01	4.187E+02%	2.07E+00
ZR-95	#A	1.7129E+00	1.7129E+00	9.139E+01%	3.69E+00
NB-95	#A	1.1058E+00	1.1058E+00	7.651E+01%	2.81E+00
RU-103	#A	-1.3082E+00	-1.3082E+00	9.616E+01%	3.04E+00
RH-106	#A	1.3613E+01	1.3613E+01	1.317E+02%	4.80E+01
AG-108M	#A	9.3529E-01	9.3529E-01	9.338E+01%	2.69E+00
AG-110M	#A	6.2101E-02	6.2101E-02	2.480E+03%	5.25E+00
SN-113	#A	1.5470E+00	1.5471E+00	1.170E+02%	6.02E+00
SB-124	#A	4.7315E-01	4.7315E-01	9.434E+01%	2.71E+00
SB-125	#A	3.0521E+00	3.0521E+00	1.227E+02%	9.36E+00
I-131	#A	6.0998E-01	6.1003E-01	1.999E+02%	2.60E+00
Gd-153	#A	1.9595E+00	1.9595E+00	9.158E+01%	6.90E+00
Ga-68	#A	4.9943E+01	5.0586E+01	8.632E+01%	9.55E+01
Tc-99m	#A	-6.9800E-01	-6.9968E-01	1.271E+02%	2.95E+00
BA-133	A	-7.2120E-01	-7.2120E-01	1.022E+02%	5.25E+00
CS-134	A	-1.5170E+00	-1.5170E+00	8.348E+01%	4.21E+00
CS-137		3.4711E+02	3.4711E+02	1.188E+00%	2.48E+00
CE-139	#A	1.0301E-01	1.0301E-01	7.807E+02%	2.15E+00
Ba-140	#A	-3.2511E+00	-3.2512E+00	1.291E+02%	1.02E+01
La-140	#A	-5.2405E-02	-5.2407E-02	1.086E+02%	1.97E+00
CE-141	#A	-1.2559E+00	-1.2559E+00	1.230E+02%	5.13E+00
CE-144	#A	7.5206E-01	7.5206E-01	8.554E+02%	2.15E+01
PM-144	#A	-1.1167E+00	-1.1167E+00	9.165E+01%	2.40E+00
EU-152	A	1.0270E+00	1.0270E+00	1.072E+02%	1.31E+01
EU-154	#A	3.1179E+00	3.1179E+00	8.610E+01%	4.90E+00
EU-155	#A	2.1954E+00	2.1954E+00	1.032E+02%	1.09E+01
HF-181	#A	-1.5723E+00	-1.5724E+00	9.522E+01%	4.97E+00
Ta-182	#A	1.7378E+00	1.7378E+00	1.921E+02%	1.41E+01
Hg-203	#A	7.1221E-01	7.1222E-01	1.279E+02%	3.04E+00
TL-208		4.6790E+00	4.6790E+00	2.944E+01%	2.41E+00
PM-146	#A	-2.4293E-01	-2.4293E-01	6.279E+02%	4.77E+00

Y-88 #A	0.0000E+00	0.0000E+00	1.000E+03%		6.26E-01
Cd-113m#A	3.7617E+03	3.7617E+03	3.236E+02%		4.08E+04
Cd-109 #A	1.1940E+01	1.1940E+01	2.098E+02%		8.32E+01
Cf-251 #A	3.3565E+00	3.3565E+00	1.055E+02%		9.40E+00
Cf-249 #A	0.0000E+00	0.0000E+00	1.000E+03%		6.11E+00
Sn-126 #A	5.1943E+00	5.1943E+00	1.750E+02%		3.03E+01
PB-210	9.4615E+03	9.4615E+03	9.698E-01%		1.67E+02
PB-212	6.5067E+00	6.5068E+00	1.864E+01%		3.71E+00
PB-214 #	6.1779E+00	6.1779E+00	2.771E+01%		4.80E+00
BI-207 #A	-2.5849E+00	-2.5849E+00	6.730E+01%		4.76E+00
BI-212 #A	-3.6950E+00	-3.6950E+00	4.877E+02%		3.79E+01
U-235 #A	6.0237E+00	6.0237E+00	1.055E+02%		2.16E+01
BI-214 #A	3.1466E+00	3.1466E+00	3.845E+01%		8.67E+00
BI-210M#A	1.0533E+00	1.0533E+00	1.535E+02%		4.80E+00
AC-228	1.5179E+01	1.5179E+01	2.707E+01%		9.12E+00
TH-227 #A	-7.7163E+00	-7.7163E+00	1.417E+02%		2.91E+01
TH-229 #A	5.0044E+00	5.0044E+00	3.262E+02%		4.36E+01
TH-234 #A	2.2545E+00	2.2545E+00	7.128E+02%		5.35E+01
PA-231 #A	5.8068E-06	5.8068E-06	7.543E+08%		1.46E+02
PA-233 #A	2.1657E+00	2.1657E+00	1.625E+02%		1.17E+01
PA-234 #A	2.4053E+00	2.4053E+00	9.607E+01%		1.40E+01
PA-234M#A	-1.5542E+01	-1.5542E+01	9.499E+02%		5.33E+02
AM-241	1.1860E+03	1.1860E+03	8.528E-01%		1.49E+01
Np-237 #A	4.8509E+00	4.8509E+00	1.499E+02%		2.41E+01
Ir-192 #A	6.2000E-01	6.2001E-01	2.019E+02%		3.30E+00
Cs-136 #A	1.1044E+00	1.1045E+00	9.284E+01%		2.32E+00
Np-239 #A	-2.5836E+00	-2.5843E+00	1.196E+02%		1.03E+01
Nd-147 #A	5.0397E+00	5.0400E+00	1.303E+02%		1.61E+01
TL-210 #A	-2.0789E-01	-2.0789E-01	4.950E+02%		3.50E+00
Kr-85 #A	1.3887E+02	1.3887E+02	1.730E+02%		8.05E+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 (25.1 to 1999.5 keV) 1.116E+04 Bq/Sample
Total Decayed Activity (25.1 to 1999.5 keV) 1.1162605E+04 Bq/Sample

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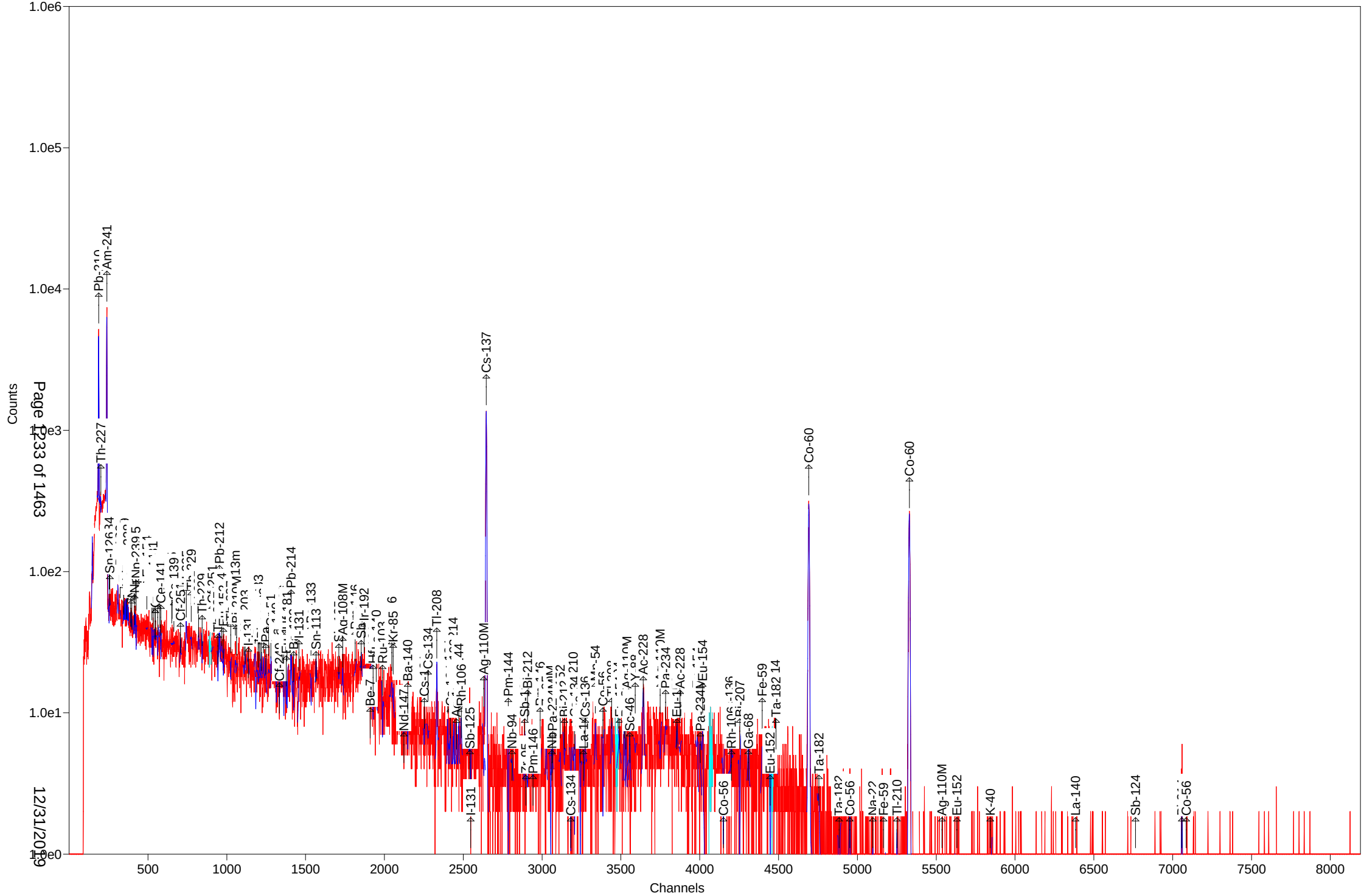
452568_Gamma_LCS 160-452568~2-A. 17_Gamma_20192438.spc.



Test America St. Louis Spectrum ID: 5_Gamma_20193367

Sample Description: 452568_Gamma_160-36526-A-21-B
Detector: Detector # 5
Batch ID: 452568
Work Order Number: Gamma
Lot Number: 160-36526-A-21-B

Decay to Time: 12/25/2019 10:46 Live Time: 1800 sec
Acquisition Time: 12/25/2019 10:46:31 Real Time: 1806 sec
Analysis Time: 12/25/2019 11:16 Dead Time: 0.33 %
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_Long_Rev15.lib
Bkgd Correction File: 5_2019-12-07_1448.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	-6.810E+00	83.1	5.656E+00	5.667E+00	2.073E+01
NA-22	8.739E-01	71.1	6.218E-01	6.233E-01	2.073E+00
K-40	3.032E+02	5.9	1.776E+01	2.358E+01	1.076E+01
Sc-46	6.699E-01	110.4	7.396E-01	7.404E-01	2.522E+00
CR-51	5.167E+00	101.8	5.263E+00	5.270E+00	1.767E+01
MN-54	7.724E-01	95.3	7.361E-01	7.371E-01	1.726E+00
FE-59	6.066E-01	279.3	1.694E+00	1.695E+00	3.945E+00
Co-56	1.669E+00	44.1	7.362E-01	7.412E-01	2.158E+00
CO-57	-1.389E-01	353.6	4.912E-01	4.913E-01	1.659E+00
CO-58	-1.057E+00	89.5	9.458E-01	9.474E-01	3.086E+00
CO-60	4.994E-01	117.7	5.877E-01	5.882E-01	1.427E+00
ZN-65	-5.793E-01	584.6	3.386E+00	3.387E+00	1.157E+01
NB-94	6.120E-01	122.3	7.487E-01	7.494E-01	1.816E+00
ZR-95	-3.067E-01	454.8	1.395E+00	1.395E+00	3.467E+00
NB-95	-1.724E+00	74.6	1.287E+00	1.290E+00	4.270E+00
RU-103	1.203E-01	528.9	6.365E-01	6.365E-01	1.639E+00
RH-106	6.070E+00	96.5	5.856E+00	5.864E+00	1.417E+01
AG-108M	1.273E-01	555.0	7.067E-01	7.067E-01	1.791E+00
AG-110M	4.405E-01	88.6	3.903E-01	3.909E-01	4.361E+00
SN-113	7.326E-01	120.9	8.859E-01	8.867E-01	2.994E+00
SB-124	-8.347E-01	253.0	2.112E+00	2.112E+00	7.067E+00
SB-125	6.049E+00	28.6	1.728E+00	1.756E+00	4.600E+00
I-131	9.797E-01	47.9	4.692E-01	4.719E-01	2.080E+00
Gd-153	2.839E+00	37.9	1.076E+00	1.090E+00	2.774E+00
Ga-68	2.480E+01	90.5	2.244E+01	2.249E+01	5.202E+01
Tc-99m	1.722E-01	363.9	6.268E-01	6.269E-01	2.108E+00
BA-133	-1.080E+00	217.1	2.345E+00	2.346E+00	7.832E+00
CS-134	-1.203E+00	89.8	1.081E+00	1.083E+00	3.504E+00
CS-137	-1.064E+00	168.2	1.790E+00	1.791E+00	3.181E+00
CE-139	4.513E-01	131.9	5.954E-01	5.969E-01	1.994E+00
Ba-140	5.786E-01	395.8	2.290E+00	2.290E+00	5.915E+00
La-140	-4.804E-01	124.7	5.988E-01	5.994E-01	3.073E+00
CE-141	-2.121E-01	529.1	1.122E+00	1.122E+00	3.781E+00

CE-144	0.000E+00	1.#INF	2.387E+00	2.387E+00	1.619E+01
PM-144	1.141E+00	54.2	6.180E-01	6.208E-01	1.440E+00
EU-152	2.703E+00	93.3	2.522E+00	2.526E+00	5.022E+00
EU-154	1.208E+00	97.9	1.182E+00	1.184E+00	3.453E+00
EU-155	-1.207E-02	17878.2	2.158E+00	2.158E+00	7.306E+00
HF-181	6.224E-01	101.6	6.324E-01	6.332E-01	2.546E+00
Ta-182	5.687E+00	43.2	2.456E+00	2.473E+00	1.590E+01
Hg-203	6.810E-01	95.1	6.474E-01	6.486E-01	2.165E+00
TL-208	3.912E+00	23.6	9.249E-01	9.469E-01	2.086E+00
PM-146	3.581E-01	63.4	2.271E-01	2.279E-01	2.863E+00
Y-88	6.291E-01	48.8	3.067E-01	3.088E-01	9.809E-01
Cd-113m	8.385E+03	98.2	8.236E+03	8.254E+03	2.758E+04
Cd-109	0.000E+00	1.#INF	2.276E+01	2.276E+01	7.613E+01
Cf-251	1.428E+00	190.7	2.724E+00	2.727E+00	7.354E+00
Cf-249	-2.870E-01	85.2	2.445E-01	2.449E-01	4.576E+00
Sn-126	6.323E+00	99.7	6.306E+00	6.314E+00	2.099E+01
PB-210	6.507E+01	23.8	1.549E+01	1.595E+01	4.082E+01
PB-212	1.089E+01	9.6	1.046E+00	1.261E+00	2.457E+00
PB-214	6.526E+01	4.2	2.758E+00	4.371E+00	3.614E+00
BI-207	2.195E+00	34.1	7.476E-01	7.556E-01	1.513E+00
BI-212	9.469E+00	143.0	1.355E+01	1.355E+01	4.587E+01
U-235	0.000E+00	1.#INF	3.110E+00	3.110E+00	1.700E+01
BI-214	6.547E+01	4.7	3.064E+00	4.579E+00	3.498E+00
BI-210M	9.513E-01	100.9	9.601E-01	9.617E-01	3.219E+00
AC-228	1.340E+01	16.4	2.203E+00	2.306E+00	4.267E+00
TH-227	-4.235E+00	196.4	8.317E+00	8.321E+00	2.147E+01
TH-229	-1.053E+01	116.6	1.228E+01	1.231E+01	3.288E+01
TH-234	1.417E+01	44.4	6.290E+00	6.339E+00	2.038E+01
PA-231	0.000E+00	1.#INF	7.580E+00	7.580E+00	1.478E+02
PA-233	1.299E+00	271.9	3.531E+00	3.531E+00	1.181E+01
PA-234	3.698E+00	87.9	3.252E+00	3.258E+00	9.591E+00
PA-234M	-1.823E+02	53.7	9.799E+01	9.842E+01	4.812E+02
AM-241	4.220E-01	434.8	1.835E+00	1.835E+00	5.235E+00
Np-237	0.000E+00	1.#INF	7.008E+00	7.008E+00	2.332E+01
Ir-192	-2.956E-01	223.1	6.595E-01	6.597E-01	2.242E+00
Cs-136	9.094E-01	70.1	6.379E-01	6.401E-01	3.423E+00
Np-239	-7.099E-01	282.1	2.003E+00	2.003E+00	6.743E+00
Nd-147	-7.317E+00	92.6	6.777E+00	6.790E+00	1.663E+01
TL-210	2.714E-01	255.2	6.926E-01	6.927E-01	3.269E+00
Kr-85	-1.406E+02	140.3	1.972E+02	1.974E+02	6.659E+02
Total	9.020E+03				

Analyst: Caleb Quinn

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Sample description
452568_Gamma_160-36526-A-21-B

Spectrum Filename: C:\User\SPC\Det5\5_Gamma_20193367.An1

Acquisition information
Start time: 12/25/2019 10:46:31 AM
Live time: 1800
Real time: 1806
Dead time: 0.33 %
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_Long_Rev15.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/(1.0000E+00* 1.0000E+00) = 1.0000E+00
Detection limit method: Reg. Guide 4.16 Method

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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	12/25/2019 10:46:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	5_2019-12-07_1448.PBC 12/7/2019 2:48:46 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 26 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1242

***** 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
46.60	89.	23.80	0.85	1.792E-02	46.54	4.250	6.507E+01	PB210
53.09	53.	38.99	0.71	2.187E-02				
59.54	7.	434.83	0.80	2.533E-02	59.54	35.900	PBC<MDA	AM241
63.29	-7.	394.04	0.80	2.712E-02	63.29	3.810	PBC<MDA	TH234
63.93	30.	99.73	0.80	2.757E-02	64.28	9.700	PBC<MDA	Sn126
74.74	316.	8.86	0.81	3.149E-02				
77.05	500.	6.07	0.81	3.218E-02				
83.67	75.	28.98	0.82	3.379E-02				
87.17	162.	13.92	0.83	3.446E-02	86.49	13.100	1.999E+01	Np237
					86.54	30.700	8.526E+00	EU155
					86.94	9.040	2.889E+01	Sn126
					87.57	37.500	6.943E+00	Sn126
89.80	89.	22.04	0.83	3.488E-02				
91.10	31.	178.74	0.83	3.508E-02	91.10	28.300	PBC<MDA	Nd147
92.65	50.	44.39	0.83	3.527E-02	92.59	5.584	PBC<MDA	TH234
93.41	30.	182.56	0.83	3.536E-02	93.35	5.561	PBC<MDA	AC228
97.29	55.	37.91	0.75	3.576E-02	97.50	30.000	2.839E+00	Gd153
121.78	20.	138.20	0.86	3.584E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	3.624E-01	CO57
124.83	31.	44.43	0.60	3.563E-02				
131.29	26.	127.99	0.87	3.509E-02	131.29	18.000	PBC<MDA	PA234
133.02	11.	307.18	0.87	3.492E-02	133.02	43.300	PBC<MDA	HF181

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
140.51	9.	363.92	0.88	3.411E-02	140.51	89.300	PBC<MDA	Tc99m
165.85	20.	131.93	0.91	3.133E-02	165.85	79.900	PBC<MDA	CE139
176.60	13.	190.71	0.92	2.975E-02	176.60	17.000	PBC<MDA	Cf251
186.13	144.	16.94	1.08	2.848E-02	185.72	54.000	5.205E+00	U235
227.00	9.	248.16	0.97	2.417E-02	227.00	6.300	PBC<MDA	Cf251
238.65	197.	9.62	0.98	2.319E-02	238.63	43.300	1.088E+01	PB212
241.97	197.	9.63	0.98	2.293E-02	242.00	7.430	6.435E+01	PB214
244.69	22.	180.23	0.98	2.272E-02	244.69	7.580	PBC<MDA	EU152
263.70	19.	98.23	1.00	2.135E-02	263.70	0.006	PBC<MDA	Cd113m
265.83	18.	100.92	1.00	2.121E-02	265.83	50.000	PBC<MDA	BI210M
277.10	7.	304.77	1.02	2.048E-02	277.28	6.310	PBC<MDA	TL208
279.20	20.	95.07	1.02	2.036E-02	279.20	81.460	PBC<MDA	Hg203
284.30	37.	47.89	1.02	2.006E-02	284.30	6.140	PBC<MDA	I131
295.13	516.	5.73	0.92	1.945E-02	295.09	19.300	7.637E+01	PB214
					296.00	79.000	1.871E+01	TL210
299.94	45.	33.74	0.49	1.919E-02	300.03	3.280	PBC<MDA	PB212
					300.07	2.460	5.310E+01	PA231
					300.18	6.200	2.107E+01	PA233
312.01	16.	271.86	1.05	1.857E-02	312.01	36.000	PBC<MDA	PA233
320.08	17.	101.85	1.06	1.818E-02	320.08	9.940	PBC<MDA	CR51
333.44	16.	119.00	1.07	1.757E-02	333.44	15.510	PBC<MDA	Cf249
340.57	20.	114.33	1.08	1.727E-02	340.57	46.900	PBC<MDA	Cs136
344.29	20.	109.57	1.08	1.711E-02	344.29	26.500	PBC<MDA	EU152
351.91	742.	4.23	1.01	1.680E-02	351.93	37.600	6.526E+01	PB214
383.84	40.	34.86	1.12	1.563E-02	383.84	8.940	1.589E+01	BA133
391.69	13.	120.92	1.12	1.537E-02	391.69	64.000	PBC<MDA	SN113
427.88	14.	100.83	1.16	1.428E-02	427.88	29.600	PBC<MDA	SB125
433.94	3.	555.04	1.16	1.411E-02	433.94	90.480	PBC<MDA	AG108M
463.37	49.	28.57	1.19	1.336E-02	463.37	10.470	1.933E+01	SB125
482.00	14.	101.60	1.21	1.293E-02	482.00	80.500	PBC<MDA	HF181
487.02	8.	153.05	1.21	1.282E-02	487.02	45.500	PBC<MDA	La140
497.05	2.	528.92	1.22	1.260E-02	497.05	90.900	PBC<MDA	RU103
511.86	86.	17.17	2.48	1.230E-02	511.86	20.000	1.950E+01	RH106
537.26	3.	395.81	1.26	1.181E-02	537.26	24.390	PBC<MDA	Ba140
569.32	4.	259.81	1.29	1.125E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	2.409E+00	PA234
					569.70	97.740	2.022E-01	BI207
583.07	87.	18.89	0.64	1.103E-02	583.02	84.500	5.205E+00	TL208
609.21	578.	4.68	1.17	1.063E-02	609.31	46.090	6.547E+01	BI214
					610.30	5.750	5.255E+02	RU103
621.92	11.	96.46	1.33	1.045E-02	621.92	9.930	PBC<MDA	RH106
635.89	10.	82.46	1.34	1.026E-02	635.89	11.310	PBC<MDA	SB125
636.97	4.	209.00	1.34	1.025E-02	636.97	7.170	PBC<MDA	I131
657.76	3.	436.80	1.36	9.974E-03	657.76	94.640	PBC<MDA	AG110M
696.54	19.	54.15	1.40	9.507E-03	696.54	99.000	PBC<MDA	PM144
702.67	10.	122.34	1.40	9.438E-03	702.63	97.900	PBC<MDA	NB94
727.17	12.	143.05	1.42	9.170E-03	727.17	7.550	PBC<MDA	BI212
735.72	9.	92.14	1.43	9.081E-03	735.72	22.500	PBC<MDA	PM146

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
747.16	8.	122.92	1.44	8.965E-03	747.16	34.000	PBC<MDA	PM146
766.41	18.	91.95	1.45	8.776E-03	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	3.922E+02	PA234M
778.92	3.	378.59	1.46	8.657E-03	778.92	12.940	PBC<MDA	EU152
785.42	9.	162.90	1.47	8.597E-03	785.42	1.280	PBC<MDA	BI212
818.50	5.	288.06	1.50	8.305E-03	818.50	100.000	PBC<MDA	Cs136
834.85	11.	95.29	1.51	8.168E-03	834.85	99.980	PBC<MDA	MN54
880.53	13.	89.71	1.54	7.812E-03	880.53	6.000	PBC<MDA	PA234
883.24	4.	324.55	1.55	7.791E-03	883.24	9.600	PBC<MDA	PA234
889.28	9.	110.42	1.55	7.747E-03	889.28	99.984	PBC<MDA	Sc46
911.13	59.	17.56	2.01	7.591E-03	911.07	29.000	1.482E+01	AC228
946.02	11.	87.95	1.60	7.355E-03	946.02	13.400	PBC<MDA	PA234
964.11	10.	103.10	1.61	7.239E-03	964.11	14.605	PBC<MDA	EU152
968.46	25.	27.81	0.95	7.209E-03	968.97	17.460	1.103E+01	AC228
996.33	9.	114.85	1.63	7.042E-03	996.33	10.600	PBC<MDA	EU154
1004.77	10.	97.87	1.64	6.992E-03	1004.77	18.010	PBC<MDA	EU154
1048.07	13.	70.15	1.67	6.749E-03	1048.07	80.000	PBC<MDA	Cs136
1063.66	20.	34.06	1.68	6.666E-03	1063.66	74.500	2.195E+00	BI207
1077.40	8.	90.50	1.69	6.594E-03	1077.40	3.300	PBC<MDA	Ga68
1099.25	4.	279.32	1.71	6.484E-03	1099.25	56.500	PBC<MDA	FE59
1119.98	132.	10.79	1.18	6.381E-03	1120.29	15.100	7.594E+01	BI214
					1120.55	99.987	PBC<MDA	Sc46
1120.91	13.	140.81	1.72	6.376E-03	1120.55	99.987	PBC<MDA	Sc46
					1121.30	34.900	3.344E+00	Ta182
1189.05	19.	43.19	1.77	6.069E-03	1189.05	16.200	1.074E+01	Ta182
1238.28	36.	44.10	1.80	5.866E-03	1238.28	66.070	5.209E+00	Co56
1274.53	9.	71.15	1.83	5.725E-03	1274.53	99.940	PBC<MDA	NA22
					1274.54	35.190	2.482E+00	EU154
1332.50	5.	117.68	1.87	5.514E-03	1332.50	99.980	PBC<MDA	CO60
1384.30	7.	88.59	1.90	5.340E-03	1384.30	24.290	PBC<MDA	AG110M
1408.00	8.	141.62	1.91	5.264E-03	1408.00	21.005	PBC<MDA	EU152
1460.62	297.	5.86	2.23	5.103E-03	1460.83	10.670	3.032E+02	K40
1764.24	105.	10.08	2.02	4.351E-03	1764.49	15.400	8.685E+01	BI214
1836.06	5.	48.75	2.15	4.208E-03	1836.06	99.200	PBC<MDA	Y88

********** 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
211.91	53.11	132.	53.	2.423E+03	38.99	0.710	- sM
298.57	74.74	232.	316.	1.002E+04	8.86	0.813	- D
307.84	77.06	209.	500.	1.553E+04	6.07	0.815	- sD
334.28	83.60	202.	69.	2.056E+03	31.30	0.822	- sD
358.83	89.73	178.	69.	1.984E+03	29.81	0.828	- sD
499.10	124.83	68.	31.	8.700E+02	44.43	0.603	- s
744.48	186.13	147.	144.	5.068E+03	16.94	1.077	-

Channel	Energy	Background	Net area	Eff*Area	Uncert	FWHM	Suspected
1200.01	299.94	51.	45.	2.363E+03	33.53	0.488	- sM

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: Client_Long_Rev15.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	185.93	46.60	130.	89.	0.049	23.80	0.848s
TH-227	200.11	50.14	474.	-26.	-0.014	82.00	0.787s
AM-241	237.72	59.54	317.	7.	0.004	434.83	0.797s
TH-234	252.74	63.29	412.	-7.	-0.004	394.04	0.801
Sn-126	256.71	64.28	445.	30.	0.017	99.73	0.802s
BA-133	323.61	80.99	1629.	-30.	-0.017	102.11	0.819
Np-237	345.63	86.49	1596.	0.	0.000	192.12	0.825A
EU-155	345.84	86.54	1581.	-30.	-0.017	186.02	0.825D
Sn-126	347.43	86.94	1430.	35.	0.020	71.78	0.825D
Sn-126	349.95	87.57	1414.	93.	0.052	25.50	0.826D
Cd-109	351.83	88.04	1444.	0.	0.000	1000.00	0.826A
Nd-147	364.08	91.10	1475.	31.	0.017	178.74	0.829s
TH-234	370.05	92.59	223.	50.	0.028	44.39	0.831D
AC-228	373.09	93.35	1437.	30.	0.016	182.56	0.832s
Gd-153	388.87	97.29	119.	55.	0.030	37.91	0.755
Gd-153	412.52	103.20	429.	-15.	-0.008	196.98	0.842s
Np-239	414.52	103.70	444.	0.	0.000	1000.00	0.842s
Np-239	424.25	106.13	434.	-10.	-0.006	282.12	0.845s
EU-152	486.90	121.78	372.	20.	0.011	138.20	0.861s
CO-57	488.03	122.06	364.	-8.	-0.004	353.62	0.861
EU-154	492.18	123.10	356.	0.	0.000	1000.00	0.862
PA-234	524.99	131.29	521.	26.	0.014	127.99	0.871s
HF-181	531.91	133.02	546.	11.	0.006	307.18	0.872s
CE-144	533.97	133.54	557.	0.	0.000	1000.00	0.873s
HF-181	545.02	136.30	557.	0.	0.000	1000.00	0.876s
CO-57	545.72	136.47	583.	-27.	-0.015	126.74	0.876s
Tc-99m	561.88	140.51	552.	9.	0.005	363.92	0.880s
U-235	574.99	143.79	561.	0.	0.000	1000.00	0.883s
CE-141	581.61	145.44	529.	-6.	-0.003	529.08	0.885s
Ba-140	650.54	162.66	414.	-3.	-0.002	960.90	0.902
CE-139	663.32	165.85	350.	20.	0.011	131.93	0.905s
Cf-251	706.34	176.60	190.	13.	0.007	190.71	0.916s
U-235	742.85	185.72	400.	-10.	-0.006	270.97	0.925

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
TH-229	774.03	193.51	220.	-23.	-0.013	116.64	0.933s
U-235	821.35	205.33	204.	-23.	-0.013	104.67	0.945s
TH-229	843.44	210.85	183.	-6.	-0.004	382.51	0.950s
Cf-251	908.08	227.00	143.	9.	0.005	248.16	0.966s
TH-227	943.98	235.97	877.	-24.	-0.013	177.54	0.975
PB-212	954.64	238.63	80.	197.	0.109	9.60	0.978D
PB-214	968.10	242.00	81.	198.	0.110	9.62	0.981D
EU-152	978.89	244.69	769.	22.	0.012	180.23	0.984s
TH-227	1025.11	256.24	147.	-12.	-0.006	196.40	0.995s
Cd-113m	1054.97	263.70	171.	19.	0.011	98.23	1.002s
BI-210M	1063.50	265.83	159.	18.	0.010	100.92	1.005s
TL-208	1109.33	277.28	196.	7.	0.004	304.77	1.016s
Hg-203	1117.00	279.20	177.	20.	0.011	95.07	1.017s
I-131	1137.41	284.30	81.	37.	0.021	47.89	1.022s
PB-214	1180.76	295.13	76.	516.	0.287	5.73	0.922
TL-210	1184.24	296.00	918.	17.	0.009	255.19	1.034s
PB-212	1200.37	300.03	935.	10.	0.006	423.75	1.038
PA-231	1200.53	300.07	945.	0.	0.000	1000.00	1.038s
PA-233	1200.97	300.18	945.	0.	0.000	1000.00	1.038s
PA-231	1210.86	302.65	945.	0.	0.000	1000.00	1.040s
BA-133	1211.66	302.85	945.	0.	0.000	1000.00	1.040
Ba-140	1219.66	304.85	945.	0.	0.000	1000.00	1.042s
BI-210M	1219.85	304.90	945.	0.	0.000	1000.00	1.042s
Ir-192	1234.03	308.44	945.	0.	0.000	1000.00	1.046s
PA-233	1248.32	312.01	895.	16.	0.009	271.86	1.049s
Ir-192	1266.25	316.49	176.	-8.	-0.005	223.06	1.053s
CR-51	1280.63	320.08	138.	17.	0.009	101.85	1.057s
Cf-249	1334.08	333.44	99.	16.	0.009	119.00	1.070
AC-228	1353.61	338.32	341.	-24.	-0.014	60.66	1.074s
Cs-136	1362.62	340.57	256.	20.	0.011	114.33	1.077s
EU-152	1377.49	344.29	235.	20.	0.011	109.57	1.080s
HF-181	1383.66	345.83	303.	-22.	-0.012	115.89	1.082s
PB-214	1408.00	351.91	68.	742.	0.412	4.23	1.006
BA-133	1424.36	356.00	940.	-20.	-0.011	217.09	1.091
I-131	1458.32	364.48	103.	-10.	-0.005	198.72	1.099s
BA-133	1535.78	383.84	44.	40.	0.022	34.86	1.117
Cf-249	1552.22	387.95	306.	-21.	-0.011	121.91	1.121
SN-113	1567.19	391.69	117.	13.	0.007	120.92	1.125s
SB-125	1711.99	427.88	48.	14.	0.008	100.83	1.158s
AG-108M	1736.25	433.94	68.	3.	0.002	555.04	1.164s
PM-146	1816.05	453.88	84.	-14.	-0.008	112.30	1.182
SB-125	1854.01	463.37	72.	49.	0.027	28.57	1.191s
Ir-192	1872.79	468.06	121.	0.	0.000	1000.00	1.195s
BE-7	1910.94	477.59	108.	-17.	-0.009	83.06	1.204s
HF-181	1928.56	482.00	93.	14.	0.008	101.60	1.208s
La-140	1948.65	487.02	41.	8.	0.005	153.05	1.212
RU-103	1988.80	497.05	45.	2.	0.001	528.92	1.221s
RH-106	2048.06	511.86	67.	86.	0.048	17.17	2.485s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Kr-85	2056.53	513.98	168.	-13.	-0.007	140.31	1.237s
Nd-147	2124.62	531.00	88.	-20.	-0.011	92.63	1.252
Ba-140	2149.67	537.26	36.	3.	0.002	395.81	1.258s
CS-134	2277.94	569.32	52.	4.	0.002	259.81	1.286s
PA-234	2278.54	569.47	92.	-20.	-0.011	69.61	1.286s
BI-207	2279.47	569.70	104.	-7.	-0.004	209.25	1.286s
TL-208	2332.76	583.02	48.	67.	0.037	23.65	1.298s
SB-125	2402.69	600.50	811.	-16.	-0.009	81.31	1.313s
SB-124	2411.61	602.73	795.	-16.	-0.009	253.01	1.315
CS-134	2419.53	604.71	779.	-12.	-0.007	321.13	1.317s
BI-214	2437.54	609.21	36.	578.	0.321	4.68	1.170
RU-103	2441.89	610.30	767.	0.	0.000	1000.00	1.322s
AG-108M	2457.82	614.28	767.	0.	0.000	1000.00	1.325s
RH-106	2488.37	621.92	26.	11.	0.006	96.46	1.332s
SB-125	2544.26	635.89	29.	10.	0.006	82.46	1.344
I-131	2548.61	636.97	36.	4.	0.002	209.00	1.345s
AG-110M	2631.76	657.76	75.	3.	0.002	436.80	1.362s
CS-137	2647.36	661.66	96.	-16.	-0.009	168.21	1.366s
PM-144	2786.90	696.54	22.	19.	0.011	54.15	1.395s
NB-94	2811.25	702.63	35.	10.	0.006	122.34	1.400s
SB-124	2891.88	722.79	115.	-20.	-0.011	80.08	1.417s
AG-108M	2892.48	722.94	134.	-16.	-0.009	105.73	1.417s
EU-154	2894.17	723.36	150.	0.	0.000	1000.00	1.418s
BI-212	2909.41	727.17	137.	12.	0.007	143.05	1.421s
PM-146	2943.61	735.72	13.	9.	0.005	92.14	1.428s
PM-146	2989.37	747.16	22.	8.	0.004	122.92	1.437s
ZR-95	3027.65	756.73	35.	-3.	-0.001	454.83	1.445s
AG-110M	3056.50	763.94	165.	-28.	-0.016	67.43	1.451s
NB-95	3063.89	765.79	192.	-27.	-0.015	74.64	1.453s
PA-234M	3066.38	766.41	131.	18.	0.010	91.95	1.453s
EU-152	3116.41	778.92	28.	3.	0.002	378.59	1.463s
BI-212	3142.41	785.42	42.	9.	0.005	162.90	1.468s
CS-134	3184.20	795.87	86.	-16.	-0.009	89.84	1.477s
TL-210	3199.12	799.60	100.	0.	0.000	1000.00	1.480
CS-134	3208.53	801.95	112.	-8.	-0.005	186.71	1.482s
CO-58	3243.82	810.78	87.	-16.	-0.009	89.52	1.489s
La-140	3263.80	815.77	97.	-4.	-0.002	340.57	1.493s
Cs-136	3274.72	818.50	108.	5.	0.003	288.06	1.495s
MN-54	3340.10	834.85	24.	11.	0.006	95.29	1.508s
Co-56	3387.78	846.77	38.	-10.	-0.005	111.59	1.518s
TL-208	3442.95	860.56	47.	-9.	-0.005	90.77	1.529s
NB-94	3485.08	871.10	52.	-6.	-0.003	191.13	1.537
EU-154	3493.61	873.23	61.	-2.	-0.001	556.78	1.539s
PA-234	3522.80	880.53	63.	13.	0.007	89.71	1.544s
PA-234	3533.64	883.24	76.	4.	0.002	324.55	1.547s
AG-110M	3539.41	884.68	80.	0.	0.000	1000.00	1.547s
Sc-46	3557.79	889.28	48.	9.	0.005	110.42	1.551s
Y-88	3592.83	898.04	30.	-2.	-0.001	407.24	1.558

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
AC-228	3645.16	911.13	9.	59.	0.033	17.56	2.007s
AG-110M	3750.60	937.49	42.	-11.	-0.006	128.56	1.589s
PA-234	3784.70	946.02	19.	11.	0.006	87.95	1.595s
EU-152	3857.05	964.11	45.	10.	0.005	103.10	1.609s
AC-228	3874.43	968.46	7.	25.	0.014	27.81	0.949s
EU-154	3985.88	996.33	51.	9.	0.005	114.85	1.633s
PA-234M	4004.55	1001.00	107.	-19.	-0.011	53.75	1.636s
EU-154	4019.65	1004.77	42.	10.	0.005	97.87	1.639s
Cs-136	4192.77	1048.07	35.	13.	0.007	70.15	1.671s
RH-106	4201.93	1050.36	52.	-6.	-0.003	175.17	1.673s
BI-207	4255.11	1063.66	5.	20.	0.011	34.06	1.682s
Ga-68	4310.04	1077.40	10.	8.	0.005	90.50	1.692s
FE-59	4397.41	1099.25	25.	4.	0.002	279.32	1.708s
EU-152	4448.68	1112.07	210.	-16.	-0.009	41.65	1.717s
ZN-65	4462.56	1115.55	193.	-3.	-0.002	584.60	1.720s
BI-214	4480.30	1119.98	15.	132.	0.073	10.79	1.178s
Sc-46	4482.57	1120.55	190.	0.	0.000	1000.00	1.723s
Ta-182	4485.56	1121.30	171.	13.	0.007	140.81	1.724s
CO-60	4693.21	1173.24	30.	-10.	-0.006	136.65	1.760s
Ta-182	4756.42	1189.05	10.	19.	0.011	43.19	1.771
Co-56	4953.23	1238.28	43.	36.	0.020	44.10	1.804s
NA-22	5098.13	1274.53	16.	9.	0.005	71.15	1.828s
EU-154	5098.17	1274.54	25.	0.	0.000	1000.00	1.828s
FE-59	5166.35	1291.60	37.	-17.	-0.009	85.66	1.840s
TL-210	5251.91	1313.00	21.	-4.	-0.002	246.99	1.854s
CO-60	5329.85	1332.50	6.	5.	0.003	117.68	1.866s
AG-110M	5536.88	1384.30	5.	7.	0.004	88.59	1.899s
EU-152	5631.62	1408.00	21.	8.	0.004	141.62	1.914s
K-40	5841.90	1460.62	3.	297.	0.165	5.86	2.225
La-140	6383.73	1596.21	23.	-9.	-0.005	196.82	2.024s
SB-124	6762.39	1690.98	11.	-3.	-0.002	243.10	2.076s
BI-214	7055.07	1764.24	3.	105.	0.058	10.08	2.020
Co-56	7083.46	1771.35	108.	0.	0.000	1000.00	2.117s
Y-88	7341.96	1836.06	0.	5.	0.003	48.75	2.149s

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	Peak Code	Peak MDA Value Bq/Sample	COMMENTS
BE-7	C	-6.8101E+00				5.31E+01	
			477.60	-6.810E+00	&(P	2.073E+01 8.31E+01 1.05E+01 G	

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
NA-22	C 8.7391E-01					9.50E+02	
		1274.53	8.739E-01	?(	2.073E+00	7.11E+01	9.99E+01 G
K-40	N 3.0320E+02					4.66E+11	
		1460.83	3.032E+02	(P	1.076E+01	5.86E+00	1.07E+01 G
Sc-46	F 6.6985E-01					8.38E+01	
		889.28	6.699E-01	&(	2.522E+00	1.10E+02	1.00E+02 G
		1120.55	0.000E+00	-	5.830E+00	1.00E+03	1.00E+02 G
CR-51	F 5.1674E+00					2.77E+01	
		320.08	5.167E+00	(P	1.767E+01	1.02E+02	9.94E+00 G
MN-54	C 7.7241E-01					3.12E+02	
		834.85	7.724E-01	&(P	1.726E+00	9.53E+01	1.00E+02 G
FE-59	F 6.0663E-01					4.45E+01	
		1099.25	6.066E-01	?(	3.945E+00	2.79E+02	5.65E+01 G
		1291.60	-3.841E+00	+	7.084E+00	8.57E+01	4.32E+01 G
Co-56	C 1.6693E+00					7.73E+01	
		846.77	-6.706E-01	?(P	2.158E+00	1.12E+02	9.99E+01 G
		1238.28	5.209E+00	(	4.752E+00	4.41E+01	6.61E+01 G
		1037.84	-5.523E-02	% P	1.752E+01	1.09E+04	1.41E+01 G
		1771.35	0.000E+00	-	4.231E+01	1.00E+03	1.55E+01 A
CO-57	C -1.3891E-01					2.72E+02	
		122.06	-1.389E-01	&(	1.659E+00	3.54E+02	8.56E+01 G
		136.47	-4.102E+00	+	1.734E+01	1.27E+02	1.07E+01 G
CO-58	C -1.0565E+00					7.09E+01	
		810.78	-1.057E+00	?(P	3.086E+00	8.95E+01	9.95E+01 G
CO-60	F 4.9943E-01					1.93E+03	
		1332.50	4.994E-01	?(P	1.427E+00	1.18E+02	1.00E+02 G
		1173.24	-9.452E-01	+ P	2.575E+00	1.37E+02	9.99E+01 G
ZN-65	F -5.7927E-01					2.44E+02	
		1115.55	-5.793E-01	?(	1.157E+01	5.85E+02	5.06E+01 G
NB-94	I 6.1198E-01					7.41E+06	
		702.63	6.120E-01	?(P	1.816E+00	1.22E+02	9.79E+01 G
		871.10	-3.881E-01	-	2.574E+00	1.91E+02	9.99E+01 G
ZR-95	I -3.0671E-01					6.40E+01	
		756.73	-3.067E-01	?(	3.467E+00	4.55E+02	5.45E+01 G
		724.20	-2.336E-02	% P	8.188E+00	7.30E+03	4.42E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
NB-95	I	-1.7241E+00					6.40E+01	
			765.79	-1.724E+00	&(	4.270E+00	7.46E+01	9.98E+01 G
RU-103	I	1.2034E-01					3.93E+01	
			497.05	1.203E-01	&(P	1.639E+00	5.29E+02	9.09E+01 G
			610.30	0.000E+00	-	1.199E+02	1.00E+03	5.75E+00 GA
RH-106	I	6.0704E+00					3.74E+02	
			621.92	6.070E+00	?(	1.417E+01	9.65E+01	9.93E+00 G
			1050.36	-3.165E+01	+	1.920E+02	1.75E+02	1.56E+00 G
			511.86	1.950E+01	?	9.206E+00	1.72E+01	2.00E+01 GA
AG-108M	C	1.2732E-01					1.53E+05	
			433.94	1.273E-01	?(P	1.791E+00	5.55E+02	9.05E+01 G
			722.94	-1.059E+00	+	3.765E+00	1.06E+02	9.08E+01 G
			614.28	0.000E+00	&	7.715E+00	1.00E+03	8.98E+01 G
AG-110M	F	4.4052E-01					2.50E+02	
			884.68	0.000E+00	&(	4.361E+00	1.00E+03	7.27E+01 G
			657.76	1.668E-01	?(	2.537E+00	4.37E+02	9.46E+01 G
			937.49	-2.400E+00	+	7.180E+00	1.29E+02	3.44E+01 G
			1384.30	2.825E+00	?(	5.770E+00	8.86E+01	2.43E+01 G
			763.94	-7.960E+00	+	1.775E+01	6.74E+01	2.23E+01 G
SN-113	F	7.3263E-01					1.15E+02	
			391.69	7.326E-01	?(	2.994E+00	1.21E+02	6.40E+01 G
SB-124	F	-8.3472E-01					6.02E+01	
			602.73	-8.347E-01	?(	7.067E+00	2.53E+02	9.83E+01 G
			1690.98	-8.591E-01	+	4.742E+00	2.43E+02	4.78E+01 G
			722.79	-1.099E+01	+	2.934E+01	8.01E+01	1.08E+01 G
SB-125	I	6.0490E+00					1.01E+03	
			427.88	1.834E+00	?(	4.600E+00	1.01E+02	2.96E+01 G
			600.50	-4.680E+00	+ P	3.915E+01	8.13E+01	1.79E+01 G
			635.89	4.788E+00	?(	1.331E+01	8.25E+01	1.13E+01 G
			463.37	1.933E+01	(P	1.681E+01	2.86E+01	1.05E+01 G
I-131	I	9.7974E-01					8.02E+00	
			364.48	-4.028E-01	?(	2.080E+00	1.99E+02	8.17E+01 G
			284.30	1.684E+01	*(	2.010E+01	4.79E+01	6.14E+00 G
			636.97	3.151E+00	?(	2.315E+01	2.09E+02	7.17E+00 G
Gd-153	F	2.8385E+00					2.42E+02	
			97.50	2.839E+00	(	2.774E+00	3.79E+01	3.00E+01 G
			103.20	-1.058E+00	-	7.002E+00	1.97E+02	2.18E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Ga-68	C	2.4799E+01					4.71E-02	
			1077.40	2.480E+01	&(	5.202E+01	9.05E+01	3.30E+00 G
Tc-99m	I	1.7224E-01					2.51E-01	
			140.51	1.722E-01	*(	2.108E+00	3.64E+02	8.93E+01 G
BA-133	F	-1.0803E+00					3.85E+03	
			356.00	-1.080E+00	(	7.832E+00	2.17E+02	6.20E+01 G
			302.85	0.000E+00	+	2.324E+01	1.00E+03	1.83E+01 G
			383.84	1.589E+01	P	1.337E+01	3.49E+01	8.94E+00 GA
			80.99	-1.459E+00	+ P	9.372E+00	1.02E+02	3.41E+01 GA
CS-134	I	-1.2030E+00					7.54E+02	
			795.87	-1.203E+00	&(P	3.504E+00	8.98E+01	8.55E+01 G
			604.71	-6.565E-01	+	7.063E+00	3.21E+02	9.76E+01 G
			569.32	1.284E+00	+	1.166E+01	2.60E+02	1.54E+01 G
			801.95	-6.180E+00	+	3.940E+01	1.87E+02	8.69E+00 G
			563.24	-5.860E-01	%	1.886E+01	1.24E+03	8.35E+00 G
CS-137	I	-1.0640E+00					1.10E+04	
			661.66	-1.064E+00	&(P	3.181E+00	1.68E+02	8.52E+01 G
CE-139	F	4.5126E-01					1.38E+02	
			165.85	4.513E-01	&(	1.994E+00	1.32E+02	7.99E+01 G
Ba-140	I	5.7857E-01					1.28E+01	
			537.26	5.786E-01	(	5.915E+00	3.96E+02	2.44E+01 G
			162.66	-8.608E-01	+	2.798E+01	9.61E+02	6.22E+00 G
			304.85	0.000E+00	-	9.985E+01	1.00E+03	4.29E+00 G
La-140	I	-4.8037E-01					1.28E+01	
			1596.21	-1.089E+00	?(P	3.073E+00	1.97E+02	9.54E+01 G
			487.02	7.948E-01	?(P	3.088E+00	1.53E+02	4.55E+01 G
			328.76	2.565E-01	%	8.187E+00	1.22E+03	2.03E+01 G
			815.77	-1.186E+00	+	1.394E+01	3.41E+02	2.33E+01 G
CE-141	I	-2.1213E-01					3.25E+01	
			145.44	-2.121E-01	?(	3.781E+00	5.29E+02	4.82E+01 G
PM-144	C	1.1412E+00					3.63E+02	
			696.54	1.141E+00	*(	1.440E+00	5.42E+01	9.90E+01 G
			618.06	-3.490E-02	& P	7.034E+00	4.14E+03	9.91E+01 G
EU-152	F	2.7032E+00					4.94E+03	
			121.78	1.085E+00	&(	5.022E+00	1.38E+02	2.86E+01 G
			344.29	2.478E+00	?(	9.093E+00	1.10E+02	2.65E+01 G
			1112.07	-1.029E+01	+ P	4.450E+01	4.16E+01	1.36E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			778.92	1.488E+00	?(	1.357E+01	3.79E+02	1.29E+01 G
			964.11	5.089E+00	?(	1.785E+01	1.03E+02	1.46E+01 G
			244.69	7.070E+00	?(	4.257E+01	1.80E+02	7.58E+00 G
			1408.00	3.852E+00	?	1.218E+01	1.42E+02	2.10E+01 GA
EU-154	I	1.2076E+00					3.14E+03	
			123.10	0.000E+00	?(	3.453E+00	1.00E+03	4.08E+01 G
			1274.54	0.000E+00	?(	7.173E+00	1.00E+03	3.52E+01 G
			723.36	0.000E+00	?(	1.785E+01	1.00E+03	2.02E+01 G
			873.23	-1.151E+00	+	2.251E+01	5.57E+02	1.23E+01 G
			1004.77	4.353E+00	?(	1.447E+01	9.79E+01	1.80E+01 G
			996.33	6.822E+00	&(	2.674E+01	1.15E+02	1.06E+01 G
EU-155	I	-1.2070E-02					1.81E+03	
			105.31	-1.207E-02	%(	7.306E+00	1.79E+04	2.12E+01 G
			86.54	-1.599E+00	&	9.900E+00	1.86E+02	3.07E+01 G
HF-181	F	6.2244E-01					4.24E+01	
			482.00	7.436E-01	&(	2.546E+00	1.02E+02	8.05E+01 G
			133.02	3.972E-01	&(	4.101E+00	3.07E+02	4.33E+01 G
			345.83	-4.673E+00	+	1.812E+01	1.16E+02	1.51E+01 G
			136.30	0.000E+00	-	3.094E+01	1.00E+03	5.85E+00 G
Ta-182	F	5.6872E+00					1.14E+02	
			1121.30	3.344E+00	?(	1.590E+01	1.41E+02	3.49E+01 G
			1221.41	-2.312E-01	%	9.284E+00	1.76E+03	2.70E+01 G
			1189.05	1.074E+01	(	9.858E+00	4.32E+01	1.62E+01 G
Hg-203	F	6.8101E-01					4.66E+01	
			279.20	6.810E-01	?(	2.165E+00	9.51E+01	8.15E+01 G
TL-208	N	3.9115E+00					6.98E+02	
			583.02	3.993E+00	?(	2.086E+00	2.36E+01	8.45E+01 G
			277.28	2.820E+00	?(P	2.924E+01	3.05E+02	6.31E+00 G
			860.56	-4.959E+00	- P	1.943E+01	9.08E+01	1.24E+01 G
PM-146	C	3.5811E-01					2.02E+03	
			453.88	-9.114E-01	?(P	2.863E+00	1.12E+02	6.50E+01 G
			747.16	1.475E+00	&(P	4.470E+00	1.23E+02	3.40E+01 G
			735.72	2.338E+00	&(	5.305E+00	9.21E+01	2.25E+01 G
Y-88	F	6.2909E-01					1.07E+02	
			1836.06	6.291E-01	?(P	9.809E-01	4.88E+01	9.92E+01 G
			898.04	-1.572E-01	- P	2.180E+00	4.07E+02	9.37E+01 G
Cd-113m		8.3845E+03					5.33E+03	
			263.70	8.385E+03	?(	2.758E+04	9.82E+01	6.00E-03 K

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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Cf-251	T	1.4281E+00					3.28E+05	
			176.60	1.428E+00	?(	7.354E+00	1.91E+02	1.70E+01 G
			227.00	3.162E+00	?	2.134E+01	2.48E+02	6.30E+00 GA
Cf-249	T	-2.8705E-01					1.28E+05	
			387.95	-1.121E+00	(	4.576E+00	1.22E+02	6.60E+01 G
			333.44	3.261E+00	(	1.000E+01	1.19E+02	1.55E+01 G
Sn-126		6.3229E+00					3.65E+07	
			87.57	3.984E+00	}	7.632E+00	2.55E+01	3.75E+01 GA
			64.28	6.323E+00	?(	2.099E+01	9.97E+01	9.70E+00 G
			86.94	6.323E+00	}	3.194E+01	7.18E+01	9.04E+00 GA
PB-210	N	6.5074E+01					8.14E+03	
			46.54	6.507E+01	@(P	4.082E+01	2.38E+01	4.25E+00 G
PB-212	N	1.0895E+01					6.98E+02	
			238.63	1.089E+01	(P	2.457E+00	9.60E+00	4.33E+01 G
			300.03	9.034E+00	- P	1.282E+02	4.24E+02	3.28E+00 GA
PB-214	N	6.5264E+01					5.84E+05	
			351.93	6.526E+01	(P	3.614E+00	4.23E+00	3.76E+01 G
			295.09	7.637E+01	+ P	6.413E+00	5.73E+00	1.93E+01 G
			242.00	6.445E+01	P	1.460E+01	9.62E+00	7.43E+00 GA
BI-207	C	2.1948E+00					1.18E+04	
			1063.66	2.195E+00	?(P	1.513E+00	3.41E+01	7.45E+01 G
			569.70	-3.541E-01	-	2.539E+00	2.09E+02	9.77E+01 G
BI-212	N	9.4690E+00					6.98E+02	
			727.17	9.469E+00	(P	4.587E+01	1.43E+02	7.55E+00 G
			785.42	4.366E+01	P	1.668E+02	1.63E+02	1.28E+00 GA
BI-214	N	6.5470E+01					5.84E+05	
			609.31	6.547E+01	(P	3.498E+00	4.68E+00	4.61E+01 G
			1120.29	7.594E+01	+ P	1.207E+01	1.08E+01	1.51E+01 G
			1764.49	8.685E+01	+ P	9.193E+00	1.01E+01	1.54E+01 G
BI-210M	T	9.5130E-01					1.10E+09	
			265.83	9.513E-01	?(	3.219E+00	1.01E+02	5.00E+01 G
			304.90	0.000E+00	-	1.530E+01	1.00E+03	2.80E+01 G
AC-228	N	1.3396E+01					2.10E+03	
			911.07	1.482E+01	(P	4.267E+00	1.76E+01	2.90E+01 G
			968.97	1.103E+01	(	6.638E+00	2.78E+01	1.75E+01 G
			338.32	-6.511E+00	- P	2.364E+01	6.07E+01	1.20E+01 G
			93.35	8.337E+00	-	5.066E+01	1.83E+02	5.56E+00 XA

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
TH-227	N	-4.2349E+00					7.95E+03	
			256.24	-4.235E+00	?(	2.147E+01	1.96E+02	7.00E+00 G
			235.97	-4.582E+00	+	2.715E+01	1.78E+02	1.23E+01 G
			50.14	-8.928E+00	+ P	3.595E+01	8.20E+01	8.00E+00 G
TH-229	N	-1.0528E+01					2.68E+06	
			193.51	-1.053E+01	?(	3.288E+01	1.17E+02	4.40E+00 G
			210.85	-4.580E+00	+	4.759E+01	3.83E+02	2.99E+00 G
TH-234	N	1.4171E+01					1.63E+12	
			92.59	1.417E+01	(P	2.038E+01	4.44E+01	5.58E+00 G
			63.29	-3.904E+00	- P	5.232E+01	3.94E+02	3.81E+00 G
PA-233	C	1.2987E+00					7.82E+08	
			312.01	1.299E+00	&(P	1.181E+01	2.72E+02	3.60E+01 G
			300.18	0.000E+00	-	6.821E+01	1.00E+03	6.20E+00 G
PA-234	N	3.6977E+00					1.63E+12	
			131.29	2.245E+00	?(	9.591E+00	1.28E+02	1.80E+01 G
			946.02	6.250E+00	?(	1.288E+01	8.79E+01	1.34E+01 G
			569.47	-1.234E+01	+	2.848E+01	6.96E+01	8.20E+00 G
			883.24	2.860E+00	*(	3.222E+01	3.25E+02	9.60E+00 G
			880.53	1.559E+01	?	4.705E+01	8.97E+01	6.00E+00 GA
PA-234M	N	-1.8233E+02					1.63E+12	
			1001.00	-1.823E+02	&(P	4.812E+02	5.37E+01	8.37E-01 G
			766.41	3.922E+02	+	1.207E+03	9.19E+01	2.94E-01 G
AM-241	T	4.2201E-01					1.58E+05	
			59.54	4.220E-01	(P	5.235E+00	4.35E+02	3.59E+01 G
Ir-192	F	-2.9565E-01					7.40E+01	
			316.49	-2.956E-01	(	2.242E+00	2.23E+02	8.70E+01 G
			468.06	0.000E+00	+	4.372E+00	1.00E+03	5.18E+01 G
			308.44	0.000E+00	+	1.362E+01	1.00E+03	3.18E+01 G
Cs-136	F	9.0941E-01					1.30E+01	
			818.50	3.456E-01	&(	3.423E+00	2.88E+02	1.00E+02 G
			1048.07	1.336E+00	?(	3.116E+00	7.01E+01	8.00E+01 G
			340.57	1.383E+00	&(	5.298E+00	1.14E+02	4.69E+01 G
Np-239	T	-7.0989E-01					2.36E+00	
			103.70	0.000E+00	+	6.464E+00	1.00E+03	2.40E+01 X
			106.13	-7.099E-01	(	6.743E+00	2.82E+02	2.27E+01 G
			99.50	1.719E-02	%	1.007E+01	1.73E+04	1.50E+01 X

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 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

Nd-147      -7.3166E+00                                      1.11E+01
                          531.00-7.317E+00 &(  1.663E+01 9.26E+01 1.30E+01 G
                           91.10 1.709E+00 +   1.017E+01 1.79E+02 2.83E+01 G

TL-210   N   2.7139E-01                                      5.84E+05
                          799.60 0.000E+00 ?(  3.269E+00 1.00E+03 9.90E+01 G
                          296.00 6.113E-01 ?(  5.216E+00 2.55E+02 7.90E+01 G
                         1313.00-2.053E+00 +   1.148E+01 2.47E+02 2.10E+01 GA

Kr-85    I  -1.4056E+02                                      3.92E+03
                          513.98-1.406E+02 ?(  6.659E+02 1.40E+02 4.30E-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

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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********** 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	
TH-227	50.14	474.	-26.	-0.014	82.00	-8.928E+00	P
AM-241	59.54	317.	7.	0.004	434.83	4.220E-01	P
EU-155	86.54	1581.	-30.	-0.017	186.02	-1.599E+00	
Nd-147	91.10	1475.	31.	0.017	178.74	1.709E+00	
Np-239	106.13	434.	-10.	-0.006	282.12	-7.099E-01	
EU-152	121.78	372.	20.	0.011	138.20	1.085E+00	
CO-57	122.06	364.	-8.	-0.004	353.62	-1.389E-01	
PA-234	131.29	521.	26.	0.014	127.99	2.245E+00	
HF-181	133.02	546.	11.	0.006	307.18	3.972E-01	
CO-57	136.47	583.	-27.	-0.015	126.74	-4.102E+00	
Tc-99m	140.51	552.	9.	0.005	363.92	1.722E-01	
CE-141	145.44	529.	-6.	-0.003	529.08	-2.121E-01	
Ba-140	162.66	414.	-3.	-0.002	960.90	-8.608E-01	
CE-139	165.85	350.	20.	0.011	131.93	4.513E-01	
Cf-251	176.60	190.	13.	0.007	190.71	1.428E+00	
U-235	185.72	400.	-10.	-0.006	270.97	-3.786E-01	
TH-229	193.51	220.	-23.	-0.013	116.64	-1.053E+01	
U-235	205.33	204.	-23.	-0.013	104.67	-9.889E+00	P
TH-229	210.85	183.	-6.	-0.004	382.51	-4.580E+00	
Cf-251	227.00	143.	9.	0.005	248.16	3.162E+00	
TH-227	235.97	877.	-24.	-0.013	177.54	-4.582E+00	
EU-152	244.69	769.	22.	0.012	180.23	7.070E+00	
TH-227	256.24	147.	-12.	-0.006	196.40	-4.235E+00	
Cd-113m	263.70	171.	19.	0.011	98.23	8.385E+03	
BI-210M	265.83	159.	18.	0.010	100.92	9.513E-01	
Hg-203	279.20	177.	20.	0.011	95.07	6.810E-01	
I-131	284.30	81.	37.	0.021	47.89	1.684E+01	
TL-210	296.00	918.	17.	0.009	255.19	6.113E-01	
PA-233	312.01	895.	16.	0.009	271.86	1.299E+00	P
Ir-192	316.49	176.	-8.	-0.005	223.06	-2.956E-01	
CR-51	320.08	138.	17.	0.009	101.85	5.167E+00	P
Cs-136	340.57	256.	20.	0.011	114.33	1.383E+00	
EU-152	344.29	235.	20.	0.011	109.57	2.478E+00	
HF-181	345.83	303.	-22.	-0.012	115.89	-4.673E+00	
I-131	364.48	103.	-10.	-0.005	198.72	-4.028E-01	
SN-113	391.69	117.	13.	0.007	120.92	7.326E-01	
AG-108M	433.94	68.	3.	0.002	555.04	1.273E-01	P
PM-146	453.88	84.	-14.	-0.008	112.30	-9.114E-01	P
BE-7	477.59	108.	-17.	-0.009	83.06	-6.810E+00	P
HF-181	482.00	93.	14.	0.008	101.60	7.436E-01	
La-140	487.02	41.	8.	0.005	153.05	7.948E-01	P
RU-103	497.05	45.	2.	0.001	528.92	1.203E-01	P
RH-106	511.86	67.	86.	0.048	17.17	1.950E+01	
Kr-85	513.98	168.	-13.	-0.007	140.31	-1.406E+02	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
Nd-147	531.00	88.	-20.	-0.011	92.63	-7.317E+00		
Ba-140	537.26	36.	3.	0.002	395.81	5.786E-01		
CS-134	569.32	52.	4.	0.002	259.81	1.284E+00		
PA-234	569.47	92.	-20.	-0.011	69.61	-1.234E+01		
SB-124	602.73	795.	-16.	-0.009	253.01	-8.347E-01		
CS-134	604.71	779.	-12.	-0.007	321.13	-6.565E-01		
RH-106	621.92	26.	11.	0.006	96.46	6.070E+00		
I-131	636.97	36.	4.	0.002	209.00	3.151E+00		
AG-110M	657.76	75.	3.	0.002	436.80	1.668E-01		
CS-137	661.66	96.	-16.	-0.009	168.21	-1.064E+00		P
PM-144	696.54	22.	19.	0.011	54.15	1.141E+00		
SB-124	722.79	115.	-20.	-0.011	80.08	-1.099E+01		
AG-108M	722.94	134.	-16.	-0.009	105.73	-1.059E+00		
BI-212	727.17	137.	12.	0.007	143.05	9.469E+00		P
PM-146	735.72	13.	9.	0.005	92.14	2.338E+00		
PM-146	747.16	22.	8.	0.004	122.92	1.475E+00		P
ZR-95	756.73	35.	-3.	-0.001	454.83	-3.067E-01		
AG-110M	763.94	165.	-28.	-0.016	67.43	-7.960E+00		
NB-95	765.79	192.	-27.	-0.015	74.64	-1.724E+00		
PA-234M	766.41	131.	18.	0.010	91.95	3.922E+02		
EU-152	778.92	28.	3.	0.002	378.59	1.488E+00		
BI-212	785.42	42.	9.	0.005	162.90	4.366E+01		P
CS-134	795.87	86.	-16.	-0.009	89.84	-1.203E+00		P
CS-134	801.95	112.	-8.	-0.005	186.71	-6.180E+00		
CO-58	810.78	87.	-16.	-0.009	89.52	-1.057E+00		P
La-140	815.77	97.	-4.	-0.002	340.57	-1.186E+00		
Cs-136	818.50	108.	5.	0.003	288.06	3.456E-01		
MN-54	834.85	24.	11.	0.006	95.29	7.724E-01		P
Co-56	846.77	38.	-10.	-0.005	111.59	-6.706E-01		P
EU-154	873.23	61.	-2.	-0.001	556.78	-1.151E+00		
PA-234	880.53	63.	13.	0.007	89.71	1.559E+01		
PA-234	883.24	76.	4.	0.002	324.55	2.860E+00		
Sc-46	889.28	48.	9.	0.005	110.42	6.699E-01		
Y-88	898.04	30.	-2.	-0.001	407.24	-1.572E-01		P
AG-110M	937.49	42.	-11.	-0.006	128.56	-2.400E+00		
PA-234	946.02	19.	11.	0.006	87.95	6.250E+00		
EU-152	964.11	45.	10.	0.005	103.10	5.089E+00		
EU-154	996.33	51.	9.	0.005	114.85	6.822E+00		
PA-234M	1001.00	107.	-19.	-0.011	53.75	-1.823E+02		P
EU-154	1004.77	42.	10.	0.005	97.87	4.353E+00		
Cs-136	1048.07	35.	13.	0.007	70.15	1.336E+00		
RH-106	1050.36	52.	-6.	-0.003	175.17	-3.165E+01		
Ga-68	1077.40	10.	8.	0.005	90.50	2.480E+01		
FE-59	1099.25	25.	4.	0.002	279.32	6.066E-01		
EU-152	1112.07	210.	-16.	-0.009	41.65	-1.029E+01		P
ZN-65	1115.55	193.	-3.	-0.002	584.60	-5.793E-01		
Ta-182	1121.30	171.	13.	0.007	140.81	3.344E+00		
CO-60	1173.24	30.	-10.	-0.006	136.65	-9.452E-01		P

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
Ta-182	1189.05	10.	19.	0.011	43.19	1.074E+01		
Co-56	1238.28	43.	36.	0.020	44.10	5.209E+00		
NA-22	1274.53	16.	9.	0.005	71.15	8.739E-01		
FE-59	1291.60	37.	-17.	-0.009	85.66	-3.841E+00		
TL-210	1313.00	21.	-4.	-0.002	246.99	-2.053E+00		
CO-60	1332.50	6.	5.	0.003	117.68	4.994E-01		P
AG-110M	1384.30	5.	7.	0.004	88.59	2.825E+00		
EU-152	1408.00	21.	8.	0.004	141.62	3.852E+00		
La-140	1596.21	23.	-9.	-0.005	196.82	-1.089E+00		P
SB-124	1690.98	11.	-3.	-0.002	243.10	-8.591E-01		
Y-88	1836.06	0.	5.	0.003	48.75	6.291E-01		P

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 Counting 1 Sigma	MDA Bq/Sample
BE-7	#A	-6.8100E+00	-6.8101E+00	8.306E+01%	2.07E+01
NA-22	#A	8.7391E-01	8.7391E-01	7.115E+01%	2.07E+00
K-40		3.0320E+02	3.0320E+02	5.858E+00%	1.08E+01
Sc-46	#A	6.6985E-01	6.6985E-01	1.104E+02%	2.52E+00
CR-51	#A	5.1674E+00	5.1674E+00	1.018E+02%	1.77E+01
MN-54	#A	7.7241E-01	7.7241E-01	9.529E+01%	1.73E+00
FE-59	#A	6.0662E-01	6.0663E-01	2.793E+02%	3.94E+00
Co-56	#A	1.6693E+00	1.6693E+00	4.410E+01%	2.16E+00
CO-57	#A	-1.3891E-01	-1.3891E-01	3.536E+02%	1.66E+00
CO-58	#A	-1.0565E+00	-1.0565E+00	8.952E+01%	3.09E+00
CO-60	#A	4.9943E-01	4.9943E-01	1.177E+02%	1.43E+00
ZN-65	#A	-5.7927E-01	-5.7927E-01	5.846E+02%	1.16E+01
NB-94	#A	6.1198E-01	6.1198E-01	1.223E+02%	1.82E+00
ZR-95	#A	-3.0670E-01	-3.0671E-01	4.548E+02%	3.47E+00
NB-95	#A	-1.7241E+00	-1.7241E+00	7.464E+01%	4.27E+00
RU-103	#A	1.2034E-01	1.2034E-01	5.289E+02%	1.64E+00
RH-106	#A	6.0704E+00	6.0704E+00	9.646E+01%	1.42E+01
AG-108M	#A	1.2732E-01	1.2732E-01	5.550E+02%	1.79E+00
AG-110M	#A	4.4052E-01	4.4052E-01	8.859E+01%	4.36E+00
SN-113	#A	7.3263E-01	7.3263E-01	1.209E+02%	2.99E+00
SB-124	#A	-8.3472E-01	-8.3472E-01	2.530E+02%	7.07E+00
SB-125	#C	6.0490E+00	6.0490E+00	2.857E+01%	4.60E+00
I-131	#A	9.7971E-01	9.7974E-01	4.789E+01%	2.08E+00
Gd-153		2.8385E+00	2.8385E+00	3.791E+01%	2.77E+00
Ga-68	#A	2.4669E+01	2.4799E+01	9.050E+01%	5.20E+01
Tc-99m	#A	1.7206E-01	1.7224E-01	3.639E+02%	2.11E+00
BA-133	A	-1.0803E+00	-1.0803E+00	2.171E+02%	7.83E+00
CS-134	#A	-1.2030E+00	-1.2030E+00	8.984E+01%	3.50E+00
CS-137	#A	-1.0640E+00	-1.0640E+00	1.682E+02%	3.18E+00

CE-139 #A	4.5126E-01	4.5126E-01	1.319E+02%		1.99E+00
Ba-140 #A	5.7856E-01	5.7857E-01	3.958E+02%		5.91E+00
La-140 #A	-4.8036E-01	-4.8037E-01	1.247E+02%		3.07E+00
CE-141 #A	-2.1212E-01	-2.1213E-01	5.291E+02%		3.78E+00
CE-144 #A	0.0000E+00	0.0000E+00	1.000E+03%		1.62E+01
PM-144 #A	1.1412E+00	1.1412E+00	5.415E+01%		1.44E+00
EU-152 #A	2.7032E+00	2.7032E+00	9.328E+01%		5.02E+00
EU-154 #A	1.2076E+00	1.2076E+00	9.787E+01%		3.45E+00
EU-155 #A	-1.2070E-02	-1.2070E-02	1.788E+04%		7.31E+00
HF-181 #A	6.2244E-01	6.2244E-01	1.016E+02%		2.55E+00
Ta-182 #A	5.6872E+00	5.6872E+00	4.319E+01%		1.59E+01
Hg-203 #A	6.8101E-01	6.8101E-01	9.507E+01%		2.17E+00
TL-208 #	3.9115E+00	3.9115E+00	2.365E+01%		2.09E+00
PM-146 #A	3.5811E-01	3.5811E-01	6.343E+01%		2.86E+00
Y-88 #A	6.2909E-01	6.2909E-01	4.875E+01%		9.81E-01
Cd-113m#A	8.3845E+03	8.3845E+03	9.823E+01%		2.76E+04
Cd-109 #A	0.0000E+00	0.0000E+00	1.000E+03%		7.61E+01
Cf-251 #A	1.4281E+00	1.4281E+00	1.907E+02%		7.35E+00
Cf-249 A	-2.8705E-01	-2.8705E-01	8.518E+01%		4.58E+00
Sn-126 #A	6.3229E+00	6.3229E+00	9.973E+01%		2.10E+01
PB-210 #	6.5074E+01	6.5074E+01	2.380E+01%		4.08E+01
PB-212	1.0895E+01	1.0895E+01	9.603E+00%		2.46E+00
PB-214	6.5264E+01	6.5264E+01	4.226E+00%		3.61E+00
BI-207 #	2.1948E+00	2.1948E+00	3.406E+01%		1.51E+00
BI-212 #A	9.4690E+00	9.4690E+00	1.430E+02%		4.59E+01
U-235 #A	0.0000E+00	0.0000E+00	1.000E+03%		1.70E+01
BI-214	6.5470E+01	6.5470E+01	4.680E+00%		3.50E+00
BI-210M#A	9.5130E-01	9.5130E-01	1.009E+02%		3.22E+00
AC-228	1.3396E+01	1.3396E+01	1.644E+01%		4.27E+00
TH-227 #A	-4.2349E+00	-4.2349E+00	1.964E+02%		2.15E+01
TH-229 #A	-1.0528E+01	-1.0528E+01	1.166E+02%		3.29E+01
TH-234 #A	1.4171E+01	1.4171E+01	4.439E+01%		2.04E+01
PA-231 #A	0.0000E+00	0.0000E+00	7.071E+02%		1.48E+02
PA-233 #A	1.2987E+00	1.2987E+00	2.719E+02%		1.18E+01
PA-234 #A	3.6977E+00	3.6977E+00	8.795E+01%		9.59E+00
PA-234M#A	-1.8233E+02	-1.8233E+02	5.375E+01%		4.81E+02
AM-241 #A	4.2201E-01	4.2201E-01	4.348E+02%		5.23E+00
Np-237 #A	0.0000E+00	0.0000E+00	1.000E+03%		2.33E+01
Ir-192 #A	-2.9565E-01	-2.9565E-01	2.231E+02%		2.24E+00
Cs-136 #A	9.0940E-01	9.0941E-01	7.015E+01%		3.42E+00
Np-239 #A	-7.0981E-01	-7.0989E-01	2.821E+02%		6.74E+00
Nd-147 #A	-7.3164E+00	-7.3166E+00	9.263E+01%		1.66E+01
TL-210 #A	2.7139E-01	2.7139E-01	2.552E+02%		3.27E+00
Kr-85 #A	-1.4056E+02	-1.4056E+02	1.403E+02%		6.66E+02

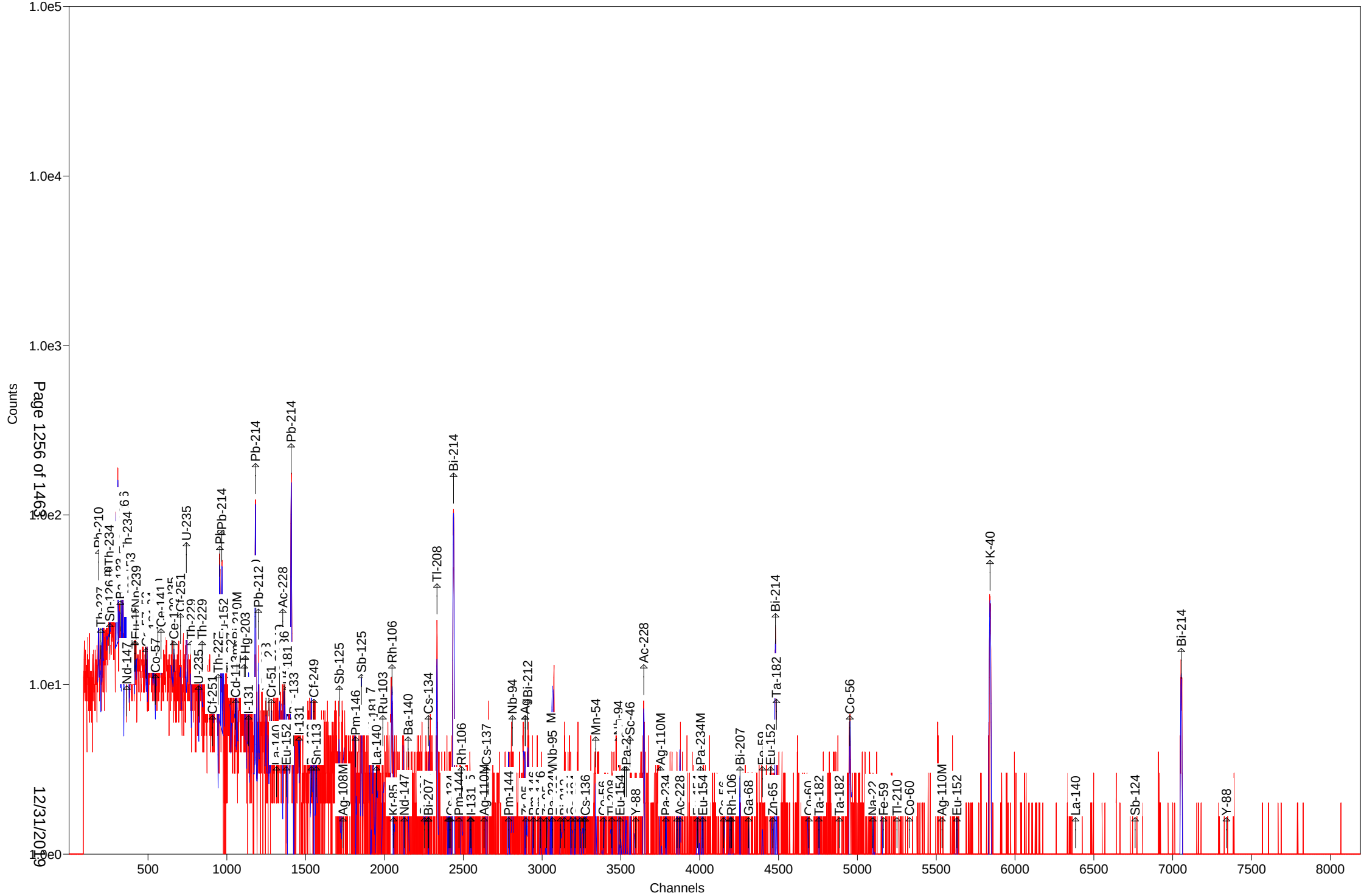
- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.

< - 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 2000.8 keV) 5.442E+02 Bq/Sample
Total Decayed Activity (37.6 to 2000.8 keV) 5.4422040E+02 Bq/Sample

452568_Gamma_160-36526-A-21-B. 5_Gamma_20193367.spc.



Test America St. Louis Spectrum ID: 9_Gamma_20193841

Sample Description: 452568_Gamma_160-36526-A-21-C DU
Detector: Detector # 9
Batch ID: 452568
Work Order Number: Gamma
Lot Number: 160-36526-A-21-C DU

Decay to Time: 12/25/2019 11:22 Live Time: 1800 sec
Acquisition Time: 12/25/2019 11:22:39 Real Time: 1803 sec
Analysis Time: 12/25/2019 11:52 Dead Time: 0.14 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 9_Soil_TunaCan.Clb
Efficiency Cal Desc: 9_Soil_TunaCan_90099_050312
Efficiency Cal Date: 6/14/2012 10:19
Energy Cal Date: 3/1/2012 13:57
Library: Client_Long_Rev15.lib
Bkgd Correction File: 9_2019-12-07_1444.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	4.580E+00	100.2	4.587E+00	4.593E+00	1.536E+01
NA-22	-2.213E-01	224.9	4.978E-01	4.980E-01	1.741E+00
K-40	2.783E+02	4.7	1.304E+01	1.930E+01	1.108E+01
Sc-46	-3.204E-01	194.6	6.236E-01	6.238E-01	2.126E+00
CR-51	8.011E-01	577.0	4.622E+00	4.623E+00	1.567E+01
MN-54	-1.021E+00	60.2	6.149E-01	6.172E-01	1.892E+00
FE-59	3.779E-01	83.8	3.167E-01	3.173E-01	2.960E+00
Co-56	2.669E+00	18.5	4.948E-01	5.134E-01	1.441E+00
CO-57	0.000E+00	1.#INF	1.943E-01	1.943E-01	1.363E+00
CO-58	6.603E-01	80.6	5.320E-01	5.331E-01	1.775E+00
CO-60	3.512E-01	111.2	3.904E-01	3.908E-01	1.317E+00
ZN-65	0.000E+00	1.#INF	3.849E-01	3.849E-01	7.483E+00
NB-94	4.866E-01	91.4	4.447E-01	4.454E-01	1.493E+00
ZR-95	-1.615E+00	89.2	1.441E+00	1.443E+00	3.148E+00
NB-95	0.000E+00	1.#INF	9.716E-02	9.717E-02	2.329E+00
RU-103	5.188E-01	89.7	4.654E-01	4.662E-01	1.101E+00
RH-106	-6.952E+00	220.5	1.533E+01	1.533E+01	5.108E+01
AG-108M	-6.204E-01	92.4	5.735E-01	5.744E-01	1.346E+00
AG-110M	9.888E-01	33.4	3.298E-01	3.337E-01	8.152E-01
SN-113	6.218E-01	147.8	9.192E-01	9.198E-01	3.081E+00
SB-124	1.188E-01	86.7	1.030E-01	1.032E-01	5.056E+00
SB-125	-3.246E-01	63.1	2.049E-01	2.056E-01	4.827E+00
I-131	-2.193E-01	240.6	5.277E-01	5.278E-01	1.310E+00
Gd-153	1.439E+00	155.8	2.242E+00	2.244E+00	7.448E+00
Ga-68	5.327E+01	23.2	1.238E+01	1.274E+01	2.132E+01
Tc-99m	-4.528E-01	166.0	7.516E-01	7.520E-01	2.498E+00
BA-133	-8.100E-01	215.7	1.747E+00	1.747E+00	5.818E+00
CS-134	1.106E+00	77.5	8.569E-01	8.588E-01	1.843E+00
CS-137	-9.297E-01	77.0	7.163E-01	7.179E-01	2.380E+00
CE-139	-1.585E-01	313.1	4.964E-01	4.967E-01	1.647E+00
Ba-140	1.963E+00	97.8	1.919E+00	1.922E+00	4.366E+00
La-140	-3.963E-01	135.1	5.355E-01	5.360E-01	1.970E+00
CE-141	-3.174E-01	443.8	1.408E+00	1.409E+00	4.695E+00

CE-144	-4.007E+00	139.2	5.577E+00	5.581E+00	1.852E+01
PM-144	4.208E-02	168.5	7.092E-02	7.095E-02	1.879E+00
EU-152	1.685E+00	90.3	1.521E+00	1.523E+00	3.963E+00
EU-154	1.229E+00	72.7	8.928E-01	8.952E-01	2.676E+00
EU-155	-1.738E+00	212.9	3.700E+00	3.701E+00	1.229E+01
HF-181	-2.353E-01	263.4	6.197E-01	6.198E-01	2.105E+00
Ta-182	2.555E+00	99.8	2.549E+00	2.552E+00	1.053E+01
Hg-203	-7.187E-01	81.3	5.841E-01	5.855E-01	1.938E+00
TL-208	4.185E+00	15.8	6.619E-01	6.966E-01	1.227E+00
PM-146	1.114E+00	64.6	7.201E-01	7.224E-01	1.492E+00
Y-88	-5.597E-01	165.8	9.281E-01	9.286E-01	1.599E+00
Cd-113m	-4.157E+03	165.1	6.864E+03	6.869E+03	2.307E+04
Cd-109	0.000E+00	1.#INF	2.186E+01	2.186E+01	7.254E+01
Cf-251	-2.107E+00	120.5	2.539E+00	2.545E+00	6.443E+00
Cf-249	-1.593E-01	569.7	9.074E-01	9.075E-01	3.066E+00
Sn-126	6.231E+00	59.7	3.723E+00	3.738E+00	1.225E+01
PB-210	7.151E+01	20.5	1.467E+01	1.526E+01	3.556E+01
PB-212	1.143E+01	7.7	8.853E-01	1.153E+00	2.149E+00
PB-214	6.670E+01	2.6	1.752E+00	3.884E+00	2.587E+00
BI-207	2.532E-01	79.0	2.001E-01	2.005E-01	2.279E+00
BI-212	-1.114E+01	75.1	8.367E+00	8.387E+00	2.778E+01
U-235	-4.480E+00	136.6	6.121E+00	6.125E+00	2.032E+01
BI-214	6.459E+01	3.4	2.228E+00	4.029E+00	2.061E+00
BI-210M	-5.623E-02	1467.7	8.253E-01	8.253E-01	2.773E+00
AC-228	1.392E+01	15.7	2.181E+00	2.293E+00	3.315E+00
TH-227	-8.079E+00	95.7	7.733E+00	7.749E+00	1.873E+01
TH-229	-6.775E+00	158.3	1.073E+01	1.074E+01	2.611E+01
TH-234	1.054E+01	57.5	6.060E+00	6.088E+00	1.628E+01
PA-231	4.730E+00	396.0	1.873E+01	1.873E+01	1.170E+02
PA-233	-6.652E-02	2962.8	1.971E+00	1.971E+00	6.625E+00
PA-234	5.238E-01	199.5	1.045E+00	1.045E+00	1.095E+01
PA-234M	6.284E+01	105.0	6.598E+01	6.606E+01	2.229E+02
AM-241	1.694E+00	106.0	1.795E+00	1.797E+00	5.962E+00
Np-237	0.000E+00	1.#INF	6.678E+00	6.678E+00	2.215E+01
Ir-192	-5.871E-01	139.0	8.161E-01	8.168E-01	2.721E+00
Cs-136	6.728E-01	61.8	4.155E-01	4.173E-01	1.892E+00
Np-239	-1.311E+00	268.6	3.520E+00	3.521E+00	1.169E+01
Nd-147	-5.212E+00	87.2	4.546E+00	4.555E+00	1.066E+01
TL-210	6.000E-01	84.5	5.070E-01	5.081E-01	1.751E+00
Kr-85	0.000E+00	1.#INF	4.737E+01	4.737E+01	4.300E+02
Total	6.753E+02				

Analyst: Caleb Quinn

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Sample description
452568_Gamma_160-36526-A-21-C DU

Spectrum Filename: C:\User\SPC\Det9\9_Gamma_20193841.An1

Acquisition information
Start time: 12/25/2019 11:22:39 AM
Live time: 1800
Real time: 1803
Dead time: 0.14 %
Detector ID: 9

Detector system
Ge9 S/N09363993

Calibration
Filename: 9_Soil_TunaCan.Clb
9_Soil_TunaCan_90099_050312

Energy Calibration
Created: 3/1/2012 1:57:17 PM
Zero offset: 0.074 keV
Gain: 0.250 keV/channel
Quadratic: -2.269E-08 keV/channel^2

Efficiency Calibration
Created: 6/14/2012 10:19:51 AM
Knee Energy: 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.30 %
Log(Eff): -8.079856E-01 + (-2.367265E-01*Log(E)) +
(-3.950640E-02*Log(E)^2)
Below the Knee: Quadratic Uncertainty = 1.42 %
Log(Eff): -2.387916E+01 + (8.875647E+00*Log(E)) +
(-9.401100E-01*Log(E)^2)

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.08keV)
Stop channel: 8000 (1999.34keV)
Peak rejection level: 1000.000%
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

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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	12/25/2019 11:22:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	9_2019-12-07_1444.PBC 12/7/2019 2:44:35 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 31 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1698

***** 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
46.53	141.	20.51	0.86	2.576E-02	46.54	4.250	7.151E+01	PB210
59.54	40.	105.97	1.01	3.659E-02	59.54	35.900	PBC<MDA	AM241
63.14	36.	118.32	1.01	3.921E-02	63.29	3.810	PBC<MDA	TH234
64.13	43.	59.75	1.01	3.987E-02	64.28	9.700	PBC<MDA	Sn126
74.84	438.	7.88	1.03	4.574E-02				
77.24	733.	5.02	1.03	4.681E-02				
87.26	259.	10.70	1.04	5.030E-02	86.49	13.100	2.190E+01	Np237
					86.54	30.700	9.342E+00	EU155
					86.94	9.040	3.166E+01	Sn126
					87.57	37.500	7.605E+00	Sn126
					88.04	3.790	7.506E+01	Cd109
90.04	114.	20.29	1.04	5.101E-02				
92.58	45.	57.51	1.04	5.156E-02	92.59	5.584	PBC<MDA	TH234
97.50	41.	155.80	1.05	5.240E-02	97.50	30.000	PBC<MDA	Gd153
121.78	32.	101.55	1.07	5.305E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	3.916E-01	CO57
162.66	35.	97.77	1.11	4.690E-02	162.66	6.220	PBC<MDA	Ba140
186.00	352.	11.12	1.25	4.398E-02	185.72	54.000	8.225E+00	U235
227.00	30.	98.14	1.17	3.858E-02	227.00	6.300	PBC<MDA	Cf251
238.48	332.	7.77	1.18	3.734E-02	238.63	43.300	1.140E+01	PB212
241.92	317.	7.78	1.18	3.698E-02	242.00	7.430	6.414E+01	PB214
295.01	792.	4.89	1.13	3.232E-02	295.09	19.300	7.056E+01	PB214

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
					296.00	79.000	1.727E+01	TL210
300.03	26.	215.93	1.24	3.195E-02	300.03	3.280	PBC<MDA	PB212
					300.07	2.460	1.871E+01	PA231
					300.18	6.200	7.426E+00	PA233
300.07	15.	395.96	1.24	3.195E-02	300.03	3.280	PBC<MDA	PB212
					300.07	2.460	1.027E+01	PA231
					300.18	6.200	4.075E+00	PA233
320.08	4.	577.02	1.25	3.056E-02	320.08	9.940	PBC<MDA	CR51
338.09	69.	21.35	0.91	2.942E-02	338.32	12.010	PBC<MDA	AC228
340.57	28.	129.31	1.27	2.927E-02	340.57	46.900	PBC<MDA	Cs136
344.29	17.	210.65	1.28	2.905E-02	344.29	26.500	PBC<MDA	EU152
351.79	1276.	3.30	1.08	2.861E-02	351.93	37.600	6.590E+01	PB214
391.69	19.	147.84	1.32	2.653E-02	391.69	64.000	PBC<MDA	SN113
453.88	19.	94.88	1.37	2.388E-02	453.88	65.000	PBC<MDA	PM146
463.37	23.	85.99	1.38	2.352E-02	463.37	10.470	PBC<MDA	SB125
477.60	20.	100.16	1.39	2.301E-02	477.60	10.520	PBC<MDA	BE7
497.05	19.	89.71	1.41	2.236E-02	497.05	90.900	PBC<MDA	RU103
511.86	78.	24.73	2.67	2.188E-02	511.86	20.000	9.901E+00	RH106
537.26	7.	229.69	1.44	2.112E-02	537.26	24.390	PBC<MDA	Ba140
563.24	6.	297.47	1.47	2.040E-02	563.24	8.350	PBC<MDA	CS134
569.32	16.	78.06	1.47	2.024E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	5.357E+00	PA234
					569.70	97.740	4.496E-01	BI207
569.47	6.	199.51	1.47	2.024E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	2.120E+00	PA234
					569.70	97.740	1.779E-01	BI207
569.70	15.	79.02	1.47	2.023E-02	569.32	15.380	2.738E+00	CS134
					569.47	8.200	5.137E+00	PA234
					569.70	97.740	4.311E-01	BI207
583.38	130.	15.16	1.42	1.988E-02	583.02	84.500	4.148E+00	TL208
609.20	1011.	3.45	1.45	1.925E-02	609.31	46.090	6.332E+01	BI214
					610.30	5.750	5.081E+02	RU103
618.06	20.	248.98	1.51	1.904E-02	618.06	99.100	PBC<MDA	PM144
657.53	16.	67.46	1.54	1.818E-02	657.76	94.640	PBC<MDA	AG110M
702.63	15.	91.38	1.58	1.730E-02	702.63	97.900	PBC<MDA	NB94
722.79	10.	159.81	1.60	1.693E-02	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	3.432E-01	AG108M
					723.36	20.220	1.542E+00	EU154
735.72	16.	87.84	1.61	1.671E-02	735.72	22.500	PBC<MDA	PM146
763.94	4.	436.31	1.63	1.624E-02	763.94	22.280	PBC<MDA	AG110M
768.34	114.	13.98	1.08	1.617E-02				
785.42	17.	96.70	1.65	1.590E-02	785.42	1.280	PBC<MDA	BI212
795.87	17.	77.50	1.66	1.574E-02	795.87	85.530	PBC<MDA	CS134
799.60	17.	84.50	1.66	1.568E-02	799.60	98.960	PBC<MDA	TL210
810.78	18.	80.56	1.67	1.551E-02	810.78	99.460	PBC<MDA	CO58
815.77	6.	275.09	1.67	1.544E-02	815.77	23.280	PBC<MDA	La140
818.50	7.	219.00	1.67	1.540E-02	818.50	100.000	PBC<MDA	Cs136
861.17	15.	92.73	1.71	1.482E-02	860.56	12.420	PBC<MDA	TL208

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
873.23	10.	146.61	1.72	1.465E-02	873.23	12.270	PBC<MDA	EU154
880.53	9.	162.11	1.72	1.456E-02	880.53	6.000	PBC<MDA	PA234
884.01	20.	33.35	2.32	1.451E-02	883.24	9.600	8.167E+00	PA234
					884.68	72.680	1.080E+00	AG110M
911.12	103.	15.66	2.39	1.418E-02	911.07	29.000	1.392E+01	AC228
946.02	4.	351.19	1.77	1.377E-02	946.02	13.400	PBC<MDA	PA234
964.11	12.	136.56	1.79	1.357E-02	964.11	14.605	PBC<MDA	EU152
969.36	20.	75.33	1.79	1.352E-02	968.97	17.460	PBC<MDA	AC228
996.33	15.	77.66	1.81	1.323E-02	996.33	10.600	PBC<MDA	EU154
1001.00	12.	104.99	1.81	1.318E-02	1001.00	0.837	PBC<MDA	PA234M
1048.07	17.	61.76	1.85	1.271E-02	1048.07	80.000	PBC<MDA	Cs136
1077.40	34.	23.24	1.87	1.244E-02	1077.40	3.300	5.327E+01	Ga68
1120.09	225.	8.19	1.95	1.206E-02	1120.29	15.100	6.850E+01	BI214
					1120.55	99.987	1.035E+01	Sc46
					1121.30	34.900	2.966E+01	Ta182
1120.16	17.	135.73	1.90	1.205E-02	1120.29	15.100	PBC<MDA	BI214
					1120.55	99.987	8.062E-01	Sc46
					1121.30	34.900	2.311E+00	Ta182
1173.24	11.	111.16	1.94	1.163E-02	1173.24	99.900	PBC<MDA	CO60
1189.05	10.	146.29	1.95	1.150E-02	1189.05	16.200	PBC<MDA	Ta182
1238.28	90.	18.54	1.98	1.114E-02	1238.28	66.070	6.782E+00	Co56
1291.60	14.	83.81	2.02	1.077E-02	1291.60	43.200	PBC<MDA	FE59
1313.00	5.	271.48	2.03	1.063E-02	1313.00	21.000	PBC<MDA	TL210
1332.50	3.	339.41	2.05	1.050E-02	1332.50	99.980	PBC<MDA	CO60
1383.80	2.	687.39	2.08	1.018E-02	1384.30	24.290	PBC<MDA	AG110M
1408.00	16.	103.91	2.10	1.004E-02	1408.00	21.005	PBC<MDA	EU152
1460.61	521.	4.68	1.78	9.750E-03	1460.83	10.670	2.783E+02	K40
1690.98	8.	86.69	2.27	8.649E-03	1690.98	47.790	PBC<MDA	SB124
1764.34	171.	7.81	2.91	8.350E-03	1764.49	15.400	7.402E+01	BI214

********** 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	
298.98	74.82	377.	438.	9.584E+03	7.88	1.025	-	D
308.57	77.22	314.	729.	1.557E+04	5.05	1.027	-	D
359.76	90.05	269.	102.	1.997E+03	24.82	1.040	-	D
743.51	186.00	236.	352.	8.003E+03	11.12	1.254	-	s
3072.81	768.34	28.	114.	7.052E+03	13.98	1.085	-	sM

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: Client_Long_Rev15.lib

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********** 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	185.78	46.53	209.	141.	0.078	20.51	0.863
TH-227	200.20	50.14	808.	-38.	-0.021	76.73	1.001s
AM-241	237.77	59.54	880.	40.	0.022	105.97	1.010s
TH-234	252.77	63.29	885.	36.	0.020	118.32	1.014
Sn-126	256.74	64.28	314.	43.	0.024	59.75	1.015D
BA-133	323.56	80.99	2621.	-48.	-0.027	60.14	1.031
Np-237	345.55	86.49	3087.	0.	0.000	176.43	1.036A
EU-155	345.76	86.54	3043.	-45.	-0.025	175.16	1.036
Sn-126	347.35	86.94	2860.	24.	0.013	132.80	1.037D
Sn-126	349.87	87.57	2621.	159.	0.089	18.91	1.037D
Cd-109	351.75	88.04	2815.	0.	0.000	168.30	1.038A
Nd-147	363.99	91.10	2660.	-45.	-0.025	163.18	1.041D
TH-234	369.94	92.59	307.	45.	0.025	57.51	1.042D
AC-228	372.98	93.35	2741.	-46.	-0.025	56.36	1.043s
Gd-153	389.58	97.50	1993.	41.	0.023	155.80	1.047s
Np-239	397.58	99.50	2702.	-45.	-0.025	163.18	1.049
Gd-153	412.37	103.20	2536.	-46.	-0.025	156.14	1.052s
Np-239	414.37	103.70	2582.	-46.	-0.025	157.46	1.053
EU-155	420.82	105.31	2801.	-35.	-0.020	212.85	1.054
Np-239	424.09	106.13	2915.	-28.	-0.016	268.56	1.055
EU-152	486.67	121.78	512.	32.	0.018	101.55	1.070
CO-57	487.80	122.06	544.	0.	0.000	1000.00	1.070
EU-154	491.95	123.10	473.	-22.	-0.012	141.42	1.071
PA-234	524.72	131.29	1531.	-12.	-0.007	462.03	1.079s
HF-181	531.64	133.02	1519.	0.	0.000	1000.00	1.081s
CE-144	533.69	133.54	1648.	-42.	-0.023	139.19	1.081
HF-181	544.74	136.30	1647.	-42.	-0.023	138.84	1.084s
CO-57	545.43	136.47	1689.	-42.	-0.023	140.56	1.084s
Tc-99m	561.57	140.51	1763.	-36.	-0.020	165.98	1.088s
U-235	574.67	143.79	1829.	-45.	-0.025	136.62	1.091s
CE-141	581.29	145.44	1868.	-14.	-0.008	443.80	1.092s
Ba-140	650.15	162.66	553.	35.	0.019	97.77	1.108s
U-235	653.03	163.38	586.	-39.	-0.021	90.22	1.109s
CE-139	662.92	165.85	552.	-11.	-0.006	313.13	1.111
Cf-251	705.90	176.60	348.	-29.	-0.016	120.46	1.122s
U-235	742.37	185.72	747.	-35.	-0.019	112.02	1.130
TH-229	773.52	193.51	340.	-23.	-0.013	158.34	1.137s
TH-229	842.87	210.85	372.	-13.	-0.007	291.80	1.153
Cf-251	907.45	227.00	220.	30.	0.017	98.14	1.168s
TH-227	943.33	235.97	1306.	-16.	-0.009	319.04	1.176
PB-212	953.97	238.63	165.	332.	0.185	7.75	1.179D
PB-214	967.43	242.00	164.	318.	0.177	7.99	1.182D
EU-152	978.21	244.69	1288.	-33.	-0.018	154.78	1.185s
TH-227	1024.39	256.24	304.	-36.	-0.020	95.72	1.195s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Cd-113m	1054.23	263.70	327.	-16.	-0.009	165.10	1.202s
TL-208	1108.55	277.28	373.	-34.	-0.019	42.82	1.215s
Hg-203	1116.22	279.20	395.	-35.	-0.020	81.27	1.216s
I-131	1136.61	284.30	216.	-18.	-0.010	161.59	1.221s
PB-214	1179.77	295.09	107.	766.	0.426	4.09	1.231D
TL-210	1183.41	296.00	1607.	26.	0.015	215.73	1.231s
PB-212	1199.52	300.03	1620.	26.	0.015	215.93	1.235s
PA-231	1199.68	300.07	1646.	15.	0.008	395.96	1.235s
Ir-192	1233.16	308.44	760.	-28.	-0.016	138.88	1.243s
Ir-192	1265.35	316.49	761.	-28.	-0.016	139.00	1.250s
CR-51	1279.73	320.08	317.	4.	0.002	577.02	1.253s
La-140	1314.43	328.76	693.	-8.	-0.005	448.20	1.261s
Cf-249	1333.15	333.44	685.	0.	0.000	1000.00	1.265s
AC-228	1352.66	338.32	633.	23.	0.013	154.55	1.270s
Cs-136	1361.66	340.57	640.	28.	0.016	129.31	1.272s
EU-152	1376.53	344.29	668.	17.	0.010	210.65	1.275s
HF-181	1382.70	345.83	685.	0.	0.000	1000.00	1.276s
PB-214	1406.56	351.79	103.	1276.	0.709	3.30	1.085
BA-133	1423.37	356.00	1520.	-26.	-0.014	215.67	1.285s
I-131	1457.31	364.48	120.	-9.	-0.005	240.63	1.293s
BA-133	1534.73	383.84	384.	-28.	-0.016	99.15	1.310s
Cf-249	1551.17	387.95	412.	-5.	-0.003	569.71	1.314s
SN-113	1566.12	391.69	385.	19.	0.011	147.84	1.317s
SB-125	1710.86	427.88	173.	-30.	-0.016	92.44	1.349s
AG-108M	1735.10	433.94	121.	-25.	-0.014	92.44	1.354s
PM-146	1814.87	453.88	70.	19.	0.010	94.88	1.372s
SB-125	1852.82	463.37	176.	23.	0.013	85.99	1.380
Ir-192	1871.59	468.06	225.	-25.	-0.014	87.16	1.384s
BE-7	1909.73	477.60	190.	20.	0.011	100.16	1.392s
HF-181	1927.34	482.00	207.	-8.	-0.004	263.41	1.396s
La-140	1947.43	487.02	233.	-19.	-0.010	93.72	1.400s
RU-103	1987.56	497.05	65.	19.	0.011	89.71	1.409s
RH-106	2046.81	511.86	147.	78.	0.043	24.73	2.672s
Kr-85	2055.27	513.98	225.	0.	0.000	1000.00	1.424
Nd-147	2123.35	531.00	117.	-26.	-0.014	87.22	1.438s
Ba-140	2148.39	537.26	66.	7.	0.004	229.69	1.444s
CS-134	2252.30	563.24	66.	6.	0.003	297.47	1.466
CS-134	2276.64	569.32	70.	16.	0.009	78.06	1.471
PA-234	2277.24	569.47	77.	6.	0.004	199.51	1.471s
BI-207	2278.16	569.70	66.	15.	0.009	79.02	1.471
TL-208	2332.90	583.38	55.	125.	0.070	15.82	1.417
SB-125	2401.36	600.50	1365.	-22.	-0.012	237.61	1.497s
SB-124	2410.29	602.73	1343.	-22.	-0.012	235.40	1.499s
CS-134	2418.21	604.71	1321.	-22.	-0.012	233.21	1.500
BI-214	2436.19	609.20	42.	1011.	0.562	3.45	1.450
RU-103	2440.56	610.30	1299.	-17.	-0.009	300.63	1.505s
AG-108M	2456.49	614.28	1282.	0.	0.000	1000.00	1.508s
PM-144	2471.62	618.06	1189.	20.	0.011	248.98	1.512s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
RH-106	2487.04	621.92	1337.	-24.	-0.013	220.47	1.515s
SB-125	2542.94	635.89	51.	-5.	-0.003	206.88	1.526s
I-131	2547.28	636.97	64.	-11.	-0.006	110.13	1.527
AG-110M	2630.43	657.76	51.	16.	0.009	67.46	1.544s
CS-137	2646.03	661.66	185.	-26.	-0.014	77.04	1.548s
PM-144	2785.58	696.54	142.	-15.	-0.009	227.17	1.576s
NB-94	2809.93	702.63	84.	15.	0.008	91.38	1.581s
SB-124	2890.57	722.79	110.	10.	0.005	159.81	1.598s
AG-108M	2891.17	722.94	120.	0.	0.000	1000.00	1.598s
EU-154	2892.86	723.36	120.	0.	0.000	1000.00	1.598s
ZR-95	2896.22	724.20	148.	-23.	-0.013	78.00	1.599s
BI-212	2908.11	727.17	171.	-26.	-0.014	75.13	1.601s
PM-146	2942.31	735.72	42.	16.	0.009	87.84	1.608s
PM-146	2988.08	747.16	65.	-8.	-0.005	171.72	1.617s
ZR-95	3026.36	756.73	105.	-26.	-0.014	89.20	1.625s
AG-110M	3055.23	763.94	190.	4.	0.002	436.31	1.631
NB-95	3062.61	765.79	195.	0.	0.000	1000.00	1.632s
PA-234M	3065.10	766.41	195.	0.	0.000	1000.00	1.633s
EU-152	3115.14	778.92	55.	-10.	-0.006	166.08	1.643s
BI-212	3141.15	785.42	132.	17.	0.010	96.70	1.648
CS-134	3182.96	795.87	81.	17.	0.010	77.50	1.656
TL-210	3197.88	799.60	98.	17.	0.010	84.50	1.659s
CS-134	3207.29	801.95	152.	-21.	-0.012	86.44	1.661
CO-58	3242.59	810.78	100.	18.	0.010	80.56	1.668s
La-140	3262.58	815.77	118.	6.	0.003	275.09	1.672s
Cs-136	3273.50	818.50	114.	7.	0.004	219.00	1.674s
MN-54	3338.91	834.85	110.	-28.	-0.015	60.22	1.687
TL-208	3441.80	860.56	36.	15.	0.008	92.73	1.707s
NB-94	3483.94	871.10	114.	-25.	-0.014	62.90	1.715s
EU-154	3492.47	873.23	95.	10.	0.005	146.61	1.717s
PA-234	3521.68	880.53	106.	9.	0.005	162.11	1.722s
PA-234	3532.53	883.24	120.	-11.	-0.006	148.23	1.724s
AG-110M	3535.59	884.01	8.	20.	0.011	33.35	2.323s
Sc-46	3556.69	889.28	127.	-8.	-0.005	194.61	1.729s
Y-88	3591.74	898.04	70.	-11.	-0.006	169.91	1.736s
AC-228	3644.08	911.12	22.	103.	0.057	15.66	2.394s
AG-110M	3749.60	937.49	145.	-33.	-0.018	81.91	1.766
PA-234	3783.72	946.02	40.	4.	0.002	351.19	1.772s
EU-152	3856.11	964.11	136.	12.	0.007	136.56	1.786s
AC-228	3875.56	968.97	99.	20.	0.011	75.33	1.790s
EU-154	3985.03	996.33	64.	15.	0.009	77.66	1.810s
PA-234M	4003.71	1001.00	80.	12.	0.007	104.99	1.814s
EU-154	4018.82	1004.77	116.	-18.	-0.010	88.47	1.816
Co-56	4151.13	1037.84	48.	-8.	-0.004	200.00	1.841s
Cs-136	4192.07	1048.07	47.	17.	0.009	61.76	1.848s
RH-106	4201.23	1050.36	72.	-5.	-0.003	260.28	1.850s
Ga-68	4309.44	1077.40	5.	34.	0.019	23.24	1.870
FE-59	4396.88	1099.25	54.	-8.	-0.004	171.13	1.886s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
EU-152	4448.20	1112.07	307.	-14.	-0.008	181.08	1.895
ZN-65	4462.09	1115.55	293.	0.	0.000	1000.00	1.897s
BI-214	4480.26	1120.09	19.	225.	0.125	8.19	1.951
Sc-46	4482.12	1120.55	324.	-21.	-0.012	123.65	1.901
Ta-182	4485.12	1121.30	273.	17.	0.010	135.73	1.901
CO-60	4692.96	1173.24	27.	11.	0.006	111.16	1.938s
Ta-182	4756.25	1189.05	40.	10.	0.006	146.29	1.949
Ta-182	4885.75	1221.41	57.	-5.	-0.003	381.12	1.972
Co-56	4953.27	1238.28	34.	90.	0.050	18.54	1.984s
NA-22	5098.35	1274.53	45.	-4.	-0.002	224.93	2.008s
EU-154	5098.39	1274.54	50.	0.	0.000	1000.00	2.008s
FE-59	5166.65	1291.60	23.	14.	0.008	83.81	2.020s
TL-210	5252.32	1313.00	28.	5.	0.003	271.48	2.034s
CO-60	5330.37	1332.50	23.	3.	0.002	339.41	2.047s
AG-110M	5537.69	1384.30	34.	2.	0.001	687.39	2.082s
EU-152	5632.56	1408.00	45.	16.	0.009	103.91	2.097s
K-40	5843.15	1460.61	15.	521.	0.289	4.68	1.782
La-140	6385.95	1596.21	36.	-11.	-0.006	135.15	2.215s
SB-124	6765.35	1690.98	6.	8.	0.004	86.69	2.272s
BI-214	7059.05	1764.34	4.	171.	0.095	7.81	2.913s
Co-56	7087.11	1771.35	198.	-11.	-0.006	176.95	2.318s
Y-88	7346.20	1836.06	19.	-8.	-0.004	165.80	2.354s

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
BE-7	C	4.5801E+00				5.31E+01	
			477.60	4.580E+00	?(	1.536E+01 1.00E+02 1.05E+01	G
NA-22	C	-2.2133E-01				9.50E+02	
			1274.53	-2.213E-01	?(	1.741E+00 2.25E+02 9.99E+01	G
K-40	N	2.7827E+02				4.66E+11	
			1460.83	2.783E+02	(P	1.108E+01 4.68E+00 1.07E+01	G
Sc-46	F	-3.2045E-01				8.38E+01	
			889.28	-3.204E-01	&(	2.126E+00 1.95E+02 1.00E+02	G
			1120.55	-9.633E-01	+	3.988E+00 1.24E+02 1.00E+02	G
CR-51	F	8.0107E-01				2.77E+01	
			320.08	8.011E-01	?(P	1.567E+01 5.77E+02 9.94E+00	G

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Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
MN-54	C	-1.0212E+00					3.12E+02	
			834.85	-1.021E+00	?(P	1.892E+00	6.02E+01	1.00E+02 G
FE-59	F	3.7792E-01					4.45E+01	
			1099.25	-6.164E-01	?(P	2.960E+00	1.71E+02	5.65E+01 G
			1291.60	1.678E+00	?(	2.973E+00	8.38E+01	4.32E+01 G
Co-56	C	2.6693E+00					7.73E+01	
			846.77	-4.965E-02	%(P	1.441E+00	1.25E+03	9.99E+01 G
			1238.28	6.782E+00	(P	2.261E+00	1.85E+01	6.61E+01 G
			1037.84	-2.455E+00	+	1.074E+01	2.00E+02	1.41E+01 G
			1771.35	-4.918E+00	+	2.944E+01	1.77E+02	1.55E+01 A
CO-58	C	6.6032E-01					7.09E+01	
			810.78	6.603E-01	?(	1.775E+00	8.06E+01	9.95E+01 G
CO-60	F	3.5120E-01					1.93E+03	
			1332.50	1.764E-01	?(	1.317E+00	3.39E+02	1.00E+02 G
			1173.24	5.262E-01	?(P	1.288E+00	1.11E+02	9.99E+01 G
NB-94	I	4.8661E-01					7.41E+06	
			702.63	4.866E-01	?(P	1.493E+00	9.14E+01	9.79E+01 G
			871.10	-9.585E-01	+	1.987E+00	6.29E+01	9.99E+01 G
ZR-95	I	-1.6151E+00					6.40E+01	
			756.73	-1.615E+00	?(	3.148E+00	8.92E+01	5.45E+01 G
			724.20	-1.706E+00	+	4.426E+00	7.80E+01	4.42E+01 G
RU-103	I	5.1875E-01					3.93E+01	
			497.05	5.188E-01	?(	1.101E+00	8.97E+01	9.09E+01 G
			610.30	-8.549E+00	+	8.577E+01	3.01E+02	5.75E+00 GA
RH-106	I	-6.9519E+00					3.74E+02	
			621.92	-6.952E+00	&(	5.108E+01	2.20E+02	9.93E+00 G
			1050.36	-1.312E+01	+	1.183E+02	2.60E+02	1.56E+00 G
			511.86	9.901E+00	?	7.516E+00	2.47E+01	2.00E+01 GA
AG-108M	C	-6.2036E-01					1.53E+05	
			433.94	-6.204E-01	?(	1.346E+00	9.24E+01	9.05E+01 G
			722.94	0.000E+00	+	1.942E+00	1.00E+03	9.08E+01 G
			614.28	0.000E+00	+	5.480E+00	1.00E+03	8.98E+01 G
AG-110M	F	9.8884E-01					2.50E+02	
			884.68	1.080E+00	(	8.152E-01	3.34E+01	7.27E+01 G
			657.76	5.202E-01	-	1.162E+00	6.75E+01	9.46E+01 G
			937.49	-3.855E+00	-	6.857E+00	8.19E+01	3.44E+01 G
			1384.30	4.492E-01	-	6.712E+00	6.87E+02	2.43E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			763.94	6.911E-01	(	1.029E+01	4.36E+02	2.23E+01 G
SN-113	F	6.2176E-01					1.15E+02	
			391.69	6.218E-01	&(	3.081E+00	1.48E+02	6.40E+01 G
SB-124	F	1.1884E-01					6.02E+01	
			602.73	-6.442E-01	&(	5.056E+00	2.35E+02	9.83E+01 G
			1690.98	1.062E+00	?(	1.941E+00	8.67E+01	4.78E+01 G
			722.79	2.883E+00	?(	1.569E+01	1.60E+02	1.08E+01 G
SB-125	I	-3.2463E-01					1.01E+03	
			427.88	-2.235E+00	&(	4.827E+00	9.24E+01	2.96E+01 G
			600.50	-3.530E+00	+	2.796E+01	2.38E+02	1.79E+01 G
			635.89	-1.317E+00	+	9.482E+00	2.07E+02	1.13E+01 G
			463.37	5.076E+00	?(	1.456E+01	8.60E+01	1.05E+01 G
I-131	I	-2.1929E-01					8.02E+00	
			364.48	-2.193E-01	?(	1.310E+00	2.41E+02	8.17E+01 G
			284.30	-4.913E+00	+	1.943E+01	1.62E+02	6.14E+00 G
			636.97	-4.439E+00	+	1.660E+01	1.10E+02	7.17E+00 G
Gd-153	F	1.4394E+00					2.42E+02	
			97.50	1.439E+00	?(	7.448E+00	1.56E+02	3.00E+01 G
			103.20	-2.202E+00	&	1.141E+01	1.56E+02	2.18E+01 G
Ga-68	C	5.3273E+01					4.71E-02	
			1077.40	5.327E+01	&(	2.132E+01	2.32E+01	3.30E+00 G
Tc-99m	I	-4.5283E-01					2.51E-01	
			140.51	-4.528E-01	&(	2.498E+00	1.66E+02	8.93E+01 G
BA-133	F	-8.0997E-01					3.85E+03	
			356.00	-8.100E-01	?(	5.818E+00	2.16E+02	6.20E+01 G
			302.85	5.827E-06	%	1.839E+01	9.44E+07	1.83E+01 G
			383.84	-6.569E+00	+	2.170E+01	9.91E+01	8.94E+00 GA
			80.99	-1.627E+00	+ P	8.149E+00	6.01E+01	3.41E+01 GA
CS-134	I	1.1057E+00					7.54E+02	
			795.87	7.131E-01	(	1.843E+00	7.75E+01	8.55E+01 G
			604.71	-6.508E-01	-	5.060E+00	2.33E+02	9.76E+01 G
			569.32	2.855E+00	(	7.442E+00	7.81E+01	1.54E+01 G
			801.95	-8.509E+00	+	2.455E+01	8.64E+01	8.69E+00 G
			563.24	1.904E+00	(P	1.325E+01	2.97E+02	8.35E+00 G
CS-137	I	-9.2973E-01					1.10E+04	
			661.66	-9.297E-01	?(	2.380E+00	7.70E+01	8.52E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CE-139	F	-1.5853E-01					1.38E+02	
			165.85	-1.585E-01	(P	1.647E+00	3.13E+02	7.99E+01 G
Ba-140	I	1.9632E+00					1.28E+01	
			537.26	7.852E-01	?(P	4.366E+00	2.30E+02	2.44E+01 G
			162.66	6.582E+00	&(P	2.139E+01	9.78E+01	6.22E+00 G
			304.85	-2.501E-05	&	7.894E+01	9.44E+07	4.29E+00 G
La-140	I	-3.9627E-01					1.28E+01	
			1596.21	-7.064E-01	?(	1.970E+00	1.35E+02	9.54E+01 G
			487.02	-1.010E+00	+ P	3.972E+00	9.37E+01	4.55E+01 G
			328.76	-7.604E-01	&	1.144E+01	4.48E+02	2.03E+01 G
			815.77	8.746E-01	&(	8.253E+00	2.75E+02	2.33E+01 G
CE-141	I	-3.1736E-01					3.25E+01	
			145.44	-3.174E-01	&(	4.695E+00	4.44E+02	4.82E+01 G
CE-144	I	-4.0068E+00					2.85E+02	
			133.54	-4.007E+00	?(	1.852E+01	1.39E+02	1.11E+01 G
PM-144	C	4.2083E-02					3.63E+02	
			696.54	-4.953E-01	?(P	1.879E+00	2.27E+02	9.90E+01 G
			618.06	5.789E-01	?(	4.810E+00	2.49E+02	9.91E+01 G
EU-152	F	1.6846E+00					4.94E+03	
			121.78	1.173E+00	?(	3.963E+00	1.02E+02	2.86E+01 G
			344.29	1.260E+00	&(	8.886E+00	2.11E+02	2.65E+01 G
			1112.07	-4.643E+00	+	2.831E+01	1.81E+02	1.36E+01 G
			778.92	-2.684E+00	+	1.000E+01	1.66E+02	1.29E+01 G
			964.11	3.457E+00	?(	1.597E+01	1.37E+02	1.46E+01 G
			244.69	-6.591E+00	&	3.394E+01	1.55E+02	7.58E+00 G
			1408.00	4.125E+00	?	8.975E+00	1.04E+02	2.10E+01 GA
EU-154	I	1.2286E+00					3.14E+03	
			123.10	-5.658E-01	&(	2.676E+00	1.41E+02	4.08E+01 G
			1274.54	0.000E+00	+	5.157E+00	1.00E+03	3.52E+01 G
			723.36	0.000E+00	+	8.728E+00	1.00E+03	2.02E+01 G
			873.23	2.977E+00	?(	1.487E+01	1.47E+02	1.23E+01 G
			1004.77	-4.195E+00	+	1.242E+01	8.85E+01	1.80E+01 G
			996.33	6.110E+00	?(	1.585E+01	7.77E+01	1.06E+01 G
EU-155	I	-1.7382E+00					1.81E+03	
			105.31	-1.738E+00	&(	1.229E+01	2.13E+02	2.12E+01 G
			86.54	-1.615E+00	+	9.383E+00	1.75E+02	3.07E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
HF-181	F	-2.3525E-01					4.24E+01	
			482.00	-2.353E-01	?(	2.105E+00	2.63E+02	8.05E+01 G
			133.02	0.000E+00	&	4.552E+00	1.00E+03	4.33E+01 G
			345.83	0.000E+00	+	1.587E+01	1.00E+03	1.51E+01 G
			136.30	-7.668E+00	&	3.536E+01	1.39E+02	5.85E+00 G
Ta-182	F	2.5548E+00					1.14E+02	
			1121.30	2.311E+00	&(	1.053E+01	1.36E+02	3.49E+01 G
			1221.41	-8.527E-01	-	6.905E+00	3.81E+02	2.70E+01 G
			1189.05	3.080E+00	(	9.557E+00	1.46E+02	1.62E+01 G
Hg-203	F	-7.1866E-01					4.66E+01	
			279.20	-7.187E-01	?(	1.938E+00	8.13E+01	8.15E+01 G
TL-208	N	4.1849E+00					6.98E+02	
			583.02	4.148E+00	(P	1.227E+00	1.58E+01	8.45E+01 G
			277.28	-8.860E+00	& P	2.422E+01	4.28E+01	6.31E+00 G
			860.56	4.439E+00	?(P	9.256E+00	9.27E+01	1.24E+01 G
PM-146	C	1.1139E+00					2.02E+03	
			453.88	6.629E-01	?(P	1.492E+00	9.49E+01	6.50E+01 G
			747.16	-8.282E-01	+ P	3.996E+00	1.72E+02	3.40E+01 G
			735.72	2.417E+00	*(P	4.886E+00	8.78E+01	2.25E+01 G
Y-88	F	-5.5975E-01					1.07E+02	
			1836.06	-5.597E-01	?(P	1.599E+00	1.66E+02	9.92E+01 G
			898.04	-4.548E-01	+	1.724E+00	1.70E+02	9.37E+01 G
Cd-113m		-4.1574E+03					5.33E+03	
			263.70	-4.157E+03	?(	2.307E+04	1.65E+02	6.00E-03 K
Cf-251	T	-2.1074E+00					3.28E+05	
			176.60	-2.107E+00	&(	6.443E+00	1.20E+02	1.70E+01 G
			227.00	6.882E+00	?	1.642E+01	9.81E+01	6.30E+00 GA
Cf-249	T	-1.5928E-01					1.28E+05	
			387.95	-1.593E-01	?(	3.066E+00	5.70E+02	6.60E+01 G
			333.44	0.000E+00	&	1.504E+01	1.00E+03	1.55E+01 G
Sn-126		6.2315E+00					3.65E+07	
			87.57	4.687E+00	}	7.095E+00	1.89E+01	3.75E+01 GA
			64.28	6.231E+00	(	1.225E+01	5.97E+01	9.70E+00 G
			86.94	2.923E+00	}	3.083E+01	1.33E+02	9.04E+00 GA
PB-210	N	7.1513E+01					8.14E+03	
			46.54	7.151E+01	(P	3.556E+01	2.05E+01	4.25E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PB-212	N	1.1428E+01					6.98E+02	
			238.63	1.143E+01	(P	2.149E+00	7.75E+00	4.33E+01 G
			300.03	1.403E+01	+	1.009E+02	2.16E+02	3.28E+00 GA
PB-214	N	6.6701E+01					5.84E+05	
			351.93	6.590E+01	(P	2.587E+00	3.30E+00	3.76E+01 G
			295.09	6.827E+01	(P	4.538E+00	4.09E+00	1.93E+01 G
			242.00	6.432E+01		1.262E+01	7.99E+00	7.43E+00 GA
BI-207	C	2.5320E-01					1.18E+04	
			1063.66	1.978E-02	%(	2.279E+00	5.23E+03	7.45E+01 G
			569.70	4.311E-01	(	1.138E+00	7.90E+01	9.77E+01 G
BI-212	N	-1.1138E+01					6.98E+02	
			727.17	-1.114E+01	&(	2.778E+01	7.51E+01	7.55E+00 G
			785.42	4.731E+01	? P	1.534E+02	9.67E+01	1.28E+00 GA
U-235	N	-4.4800E+00					2.57E+11	
			143.79	-4.480E+00	?(	2.032E+01	1.37E+02	1.10E+01 G
			205.33	7.382E-01	& P	2.287E+01	1.26E+03	5.01E+00 G
			163.38	-9.017E+00	+	2.701E+01	9.02E+01	5.08E+00 G
			185.72	-8.157E-01	+	3.039E+00	1.12E+02	5.40E+01 GA
BI-214	N	6.4594E+01					5.84E+05	
			609.31	6.332E+01	(P	2.061E+00	3.45E+00	4.61E+01 G
			1120.29	6.850E+01	(P	7.096E+00	8.19E+00	1.51E+01 G
			1764.49	7.402E+01	+ P	5.021E+00	7.81E+00	1.54E+01 G
BI-210M	T	-5.6228E-02					1.10E+09	
			265.83	-5.623E-02	&(P	2.773E+00	1.47E+03	5.00E+01 G
			304.90	3.832E-06	&	1.210E+01	9.44E+07	2.80E+01 G
AC-228	N	1.3922E+01					2.10E+03	
			911.07	1.392E+01	(P	3.315E+00	1.57E+01	2.90E+01 G
			968.97	4.612E+00	- P	1.156E+01	7.53E+01	1.75E+01 G
			338.32	3.658E+00	- P	1.887E+01	1.55E+02	1.20E+01 G
			93.35	-8.842E+00	- P	4.766E+01	5.64E+01	5.56E+00 XA
TH-227	N	-8.0791E+00					7.95E+03	
			256.24	-8.079E+00	?(	1.873E+01	9.57E+01	7.00E+00 G
			235.97	-1.930E+00	+	2.056E+01	3.19E+02	1.23E+01 G
			50.14	-9.034E+00	& P	3.237E+01	7.67E+01	8.00E+00 G
TH-229	N	-6.7748E+00					2.68E+06	
			193.51	-6.775E+00	?(	2.611E+01	1.58E+02	4.40E+00 G
			210.85	-5.961E+00	&	4.246E+01	2.92E+02	2.99E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
TH-234	N	1.0537E+01					1.63E+12	
			92.59	8.614E+00	(P	1.628E+01	5.75E+01	5.58E+00 G
			63.29	1.336E+01	&(	5.256E+01	1.18E+02	3.81E+00 G
PA-231	N	4.7298E+00					1.20E+07	
			302.65	-3.707E-05	%(	1.170E+02	9.44E+07	2.88E+00 G
			300.07	1.027E+01	?(	1.356E+02	3.96E+02	2.46E+00 G
PA-233	C	-6.6515E-02					7.82E+08	
			312.01	-6.652E-02	&(	6.625E+00	2.96E+03	3.60E+01 G
			300.18	1.712E-05	%	5.404E+01	9.44E+07	6.20E+00 G
PA-234	N	5.2378E-01					1.63E+12	
			131.29	-7.100E-01	?(	1.095E+01	4.62E+02	1.80E+01 G
			946.02	1.204E+00	&(	9.688E+00	3.51E+02	1.34E+01 G
			569.47	2.120E+00	&(	1.457E+01	2.00E+02	8.20E+00 G
			883.24	-4.250E+00	+	2.139E+01	1.48E+02	9.60E+00 G
			880.53	5.829E+00	?	3.221E+01	1.62E+02	6.00E+00 GA
PA-234M	N	6.2844E+01					1.63E+12	
			1001.00	6.284E+01	?(P	2.229E+02	1.05E+02	8.37E-01 G
			766.41	0.000E+00	-	7.908E+02	1.00E+03	2.94E-01 G
AM-241	T	1.6936E+00					1.58E+05	
			59.54	1.694E+00	?(	5.962E+00	1.06E+02	3.59E+01 G
Ir-192	F	-5.8710E-01					7.40E+01	
			316.49	-5.871E-01	?(	2.721E+00	1.39E+02	8.70E+01 G
			468.06	-1.150E+00	+	3.338E+00	8.72E+01	5.18E+01 G
			308.44	-1.581E+00	&	7.320E+00	1.39E+02	3.18E+01 G
Cs-136	F	6.7279E-01					1.30E+01	
			818.50	2.525E-01	?(	1.892E+00	2.19E+02	1.00E+02 G
			1048.07	9.291E-01	?(	1.887E+00	6.18E+01	8.00E+01 G
			340.57	1.132E+00	(	4.880E+00	1.29E+02	4.69E+01 G
Np-239	T	-1.3106E+00					2.36E+00	
			103.70	-2.000E+00	+	1.045E+01	1.57E+02	2.40E+01 X
			106.13	-1.311E+00	(	1.169E+01	2.69E+02	2.27E+01 G
			99.50	-3.182E+00	+	1.723E+01	1.63E+02	1.50E+01 X
Nd-147		-5.2120E+00					1.11E+01	
			531.00	-5.212E+00	&(	1.066E+01	8.72E+01	1.30E+01 G
			91.10	-1.720E+00	+	9.311E+00	1.63E+02	2.83E+01 G

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
TL-210 N	5.9998E-01					5.84E+05	
		799.60	6.196E-01	?(	1.751E+00	8.45E+01	9.90E+01 G
		296.00	5.754E-01	?(	4.132E+00	2.16E+02	7.90E+01 G
		1313.00	1.162E+00	&	6.850E+00	2.71E+02	2.10E+01 GA

(- 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	
TH-227	50.14	808.	-38.	-0.021	76.73	-9.034E+00	P
AM-241	59.54	880.	40.	0.022	105.97	1.694E+00	
BA-133	80.99	2621.	-48.	-0.027	60.14	-1.627E+00	P
EU-155	86.54	3043.	-45.	-0.025	175.16	-1.615E+00	
Nd-147	91.10	2660.	-45.	-0.025	163.18	-1.720E+00	
Gd-153	97.50	1993.	41.	0.023	155.80	1.439E+00	
Np-239	99.50	2702.	-45.	-0.025	163.18	-3.182E+00	
Gd-153	103.20	2536.	-46.	-0.025	156.14	-2.202E+00	
Np-239	103.70	2582.	-46.	-0.025	157.46	-2.000E+00	
EU-155	105.31	2801.	-35.	-0.020	212.85	-1.738E+00	

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Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM	
Np-239	106.13	2915.	-28.	-0.016	268.56	-1.311E+00		
EU-152	121.78	512.	32.	0.018	101.55	1.173E+00		
EU-154	123.10	473.	-22.	-0.012	141.42	-5.658E-01		
PA-234	131.29	1531.	-12.	-0.007	462.03	-7.100E-01		
CE-144	133.54	1648.	-42.	-0.023	139.19	-4.007E+00		
HF-181	136.30	1647.	-42.	-0.023	138.84	-7.668E+00		
CO-57	136.47	1689.	-42.	-0.023	140.56	-4.202E+00		
Tc-99m	140.51	1763.	-36.	-0.020	165.98	-4.528E-01		
U-235	143.79	1829.	-45.	-0.025	136.62	-4.480E+00		
CE-141	145.44	1868.	-14.	-0.008	443.80	-3.174E-01		
Ba-140	162.66	553.	35.	0.019	97.77	6.582E+00		P
U-235	163.38	586.	-39.	-0.021	90.22	-9.017E+00		
CE-139	165.85	552.	-11.	-0.006	313.13	-1.585E-01		P
Cf-251	176.60	348.	-29.	-0.016	120.46	-2.107E+00		
U-235	185.72	747.	-35.	-0.019	112.02	-8.157E-01		
TH-229	193.51	340.	-23.	-0.013	158.34	-6.775E+00		
TH-229	210.85	372.	-13.	-0.007	291.80	-5.961E+00		
Cf-251	227.00	220.	30.	0.017	98.14	6.882E+00		
TH-227	235.97	1306.	-16.	-0.009	319.04	-1.930E+00		
EU-152	244.69	1288.	-33.	-0.018	154.78	-6.591E+00		
TH-227	256.24	304.	-36.	-0.020	95.72	-8.079E+00		
Cd-113m	263.70	327.	-16.	-0.009	165.10	-4.157E+03		
Hg-203	279.20	395.	-35.	-0.020	81.27	-7.187E-01		
I-131	284.30	216.	-18.	-0.010	161.59	-4.913E+00		
TL-210	296.00	1607.	26.	0.015	215.73	5.754E-01		
PA-231	300.07	1646.	15.	0.008	395.96	1.027E+01		
Ir-192	308.44	760.	-28.	-0.016	138.88	-1.581E+00		
Ir-192	316.49	761.	-28.	-0.016	139.00	-5.871E-01		
CR-51	320.08	317.	4.	0.002	577.02	8.011E-01		P
La-140	328.76	693.	-8.	-0.005	448.20	-7.604E-01		
Cs-136	340.57	640.	28.	0.016	129.31	1.132E+00		
EU-152	344.29	668.	17.	0.010	210.65	1.260E+00		
BA-133	356.00	1520.	-26.	-0.014	215.67	-8.100E-01		
I-131	364.48	120.	-9.	-0.005	240.63	-2.193E-01		
BA-133	383.84	384.	-28.	-0.016	99.15	-6.569E+00		
Cf-249	387.95	412.	-5.	-0.003	569.71	-1.593E-01		
SN-113	391.69	385.	19.	0.011	147.84	6.218E-01		
SB-125	427.88	173.	-30.	-0.016	92.44	-2.235E+00		
AG-108M	433.94	121.	-25.	-0.014	92.44	-6.204E-01		
PM-146	453.88	70.	19.	0.010	94.88	6.629E-01		P
SB-125	463.37	176.	23.	0.013	85.99	5.076E+00		
Ir-192	468.06	225.	-25.	-0.014	87.16	-1.150E+00		
BE-7	477.60	190.	20.	0.011	100.16	4.580E+00		
HF-181	482.00	207.	-8.	-0.004	263.41	-2.353E-01		
La-140	487.02	233.	-19.	-0.010	93.72	-1.010E+00		P
RU-103	497.05	65.	19.	0.011	89.71	5.188E-01		
RH-106	511.86	147.	78.	0.043	24.73	9.901E+00		
Nd-147	531.00	117.	-26.	-0.014	87.22	-5.212E+00		

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Ba-140	537.26	66.	7.	0.004	229.69	7.852E-01	P
CS-134	563.24	66.	6.	0.003	297.47	1.904E+00	P
CS-134	569.32	70.	16.	0.009	78.06	2.855E+00	
PA-234	569.47	77.	6.	0.004	199.51	2.120E+00	
BI-207	569.70	66.	15.	0.009	79.02	4.311E-01	
SB-125	600.50	1365.	-22.	-0.012	237.61	-3.530E+00	
SB-124	602.73	1343.	-22.	-0.012	235.40	-6.442E-01	
CS-134	604.71	1321.	-22.	-0.012	233.21	-6.508E-01	
RU-103	610.30	1299.	-17.	-0.009	300.63	-8.549E+00	
PM-144	618.06	1189.	20.	0.011	248.98	5.789E-01	
RH-106	621.92	1337.	-24.	-0.013	220.47	-6.952E+00	
SB-125	635.89	51.	-5.	-0.003	206.88	-1.317E+00	
I-131	636.97	64.	-11.	-0.006	110.13	-4.439E+00	
CS-137	661.66	185.	-26.	-0.014	77.04	-9.297E-01	
PM-144	696.54	142.	-15.	-0.009	227.17	-4.953E-01	P
NB-94	702.63	84.	15.	0.008	91.38	4.866E-01	P
SB-124	722.79	110.	10.	0.005	159.81	2.883E+00	
ZR-95	724.20	148.	-23.	-0.013	78.00	-1.706E+00	
BI-212	727.17	171.	-26.	-0.014	75.13	-1.114E+01	
PM-146	735.72	42.	16.	0.009	87.84	2.417E+00	P
PM-146	747.16	65.	-8.	-0.005	171.72	-8.282E-01	P
ZR-95	756.73	105.	-26.	-0.014	89.20	-1.615E+00	
EU-152	778.92	55.	-10.	-0.006	166.08	-2.684E+00	
BI-212	785.42	132.	17.	0.010	96.70	4.731E+01	P
CS-134	795.87	81.	17.	0.010	77.50	7.131E-01	
TL-210	799.60	98.	17.	0.010	84.50	6.196E-01	
CS-134	801.95	152.	-21.	-0.012	86.44	-8.509E+00	
CO-58	810.78	100.	18.	0.010	80.56	6.603E-01	
La-140	815.77	118.	6.	0.003	275.09	8.746E-01	
Cs-136	818.50	114.	7.	0.004	219.00	2.525E-01	
MN-54	834.85	110.	-28.	-0.015	60.22	-1.021E+00	P
NB-94	871.10	114.	-25.	-0.014	62.90	-9.585E-01	
EU-154	873.23	95.	10.	0.005	146.61	2.977E+00	
PA-234	880.53	106.	9.	0.005	162.11	5.829E+00	
PA-234	883.24	120.	-11.	-0.006	148.23	-4.250E+00	
Sc-46	889.28	127.	-8.	-0.005	194.61	-3.204E-01	
Y-88	898.04	70.	-11.	-0.006	169.91	-4.548E-01	
PA-234	946.02	40.	4.	0.002	351.19	1.204E+00	
EU-152	964.11	136.	12.	0.007	136.56	3.457E+00	
EU-154	996.33	64.	15.	0.009	77.66	6.110E+00	
PA-234M	1001.00	80.	12.	0.007	104.99	6.284E+01	P
EU-154	1004.77	116.	-18.	-0.010	88.47	-4.195E+00	
Cs-136	1048.07	47.	17.	0.009	61.76	9.291E-01	
RH-106	1050.36	72.	-5.	-0.003	260.28	-1.312E+01	
FE-59	1099.25	54.	-8.	-0.004	171.13	-6.164E-01	P
EU-152	1112.07	307.	-14.	-0.008	181.08	-4.643E+00	
Sc-46	1120.55	324.	-21.	-0.012	123.65	-9.633E-01	
Ta-182	1121.30	273.	17.	0.010	135.73	2.311E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
CO-60	1173.24	27.	11.	0.006	111.16	5.262E-01	P
Ta-182	1189.05	40.	10.	0.006	146.29	3.080E+00	
Ta-182	1221.41	57.	-5.	-0.003	381.12	-8.527E-01	
NA-22	1274.53	45.	-4.	-0.002	224.93	-2.213E-01	
FE-59	1291.60	23.	14.	0.008	83.81	1.678E+00	
TL-210	1313.00	28.	5.	0.003	271.48	1.162E+00	
CO-60	1332.50	23.	3.	0.002	339.41	1.764E-01	
EU-152	1408.00	45.	16.	0.009	103.91	4.125E+00	
La-140	1596.21	36.	-11.	-0.006	135.15	-7.064E-01	
SB-124	1690.98	6.	8.	0.004	86.69	1.062E+00	
Y-88	1836.06	19.	-8.	-0.004	165.80	-5.597E-01	P

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 Counting	1 Sigma MDA Bq/Sample
BE-7	#A	4.5801E+00	4.5801E+00	1.002E+02%	1.54E+01
NA-22	#A	-2.2133E-01	-2.2133E-01	2.249E+02%	1.74E+00
K-40		2.7827E+02	2.7827E+02	4.684E+00%	1.11E+01
Sc-46	#A	-3.2045E-01	-3.2045E-01	1.946E+02%	2.13E+00
CR-51	#A	8.0106E-01	8.0107E-01	5.770E+02%	1.57E+01
MN-54	#A	-1.0212E+00	-1.0212E+00	6.022E+01%	1.89E+00
FE-59	#A	3.7792E-01	3.7792E-01	8.381E+01%	2.96E+00
Co-56	#C	2.6693E+00	2.6693E+00	1.854E+01%	1.44E+00
CO-57	#A	0.0000E+00	0.0000E+00	1.000E+03%	1.36E+00
CO-58	#A	6.6032E-01	6.6032E-01	8.056E+01%	1.78E+00
CO-60	#A	3.5120E-01	3.5120E-01	1.112E+02%	1.32E+00
ZN-65	#A	0.0000E+00	0.0000E+00	1.000E+03%	7.48E+00
NB-94	#A	4.8661E-01	4.8661E-01	9.138E+01%	1.49E+00
ZR-95	#A	-1.6151E+00	-1.6151E+00	8.920E+01%	3.15E+00
NB-95	#A	0.0000E+00	0.0000E+00	1.000E+03%	2.33E+00
RU-103	#A	5.1875E-01	5.1875E-01	8.971E+01%	1.10E+00
RH-106	#A	-6.9519E+00	-6.9519E+00	2.205E+02%	5.11E+01
AG-108M	#A	-6.2036E-01	-6.2036E-01	9.244E+01%	1.35E+00
AG-110M		9.8884E-01	9.8884E-01	3.335E+01%	8.15E-01
SN-113	#A	6.2176E-01	6.2176E-01	1.478E+02%	3.08E+00
SB-124	#A	1.1884E-01	1.1884E-01	8.669E+01%	5.06E+00
SB-125	#A	-3.2463E-01	-3.2463E-01	6.313E+01%	4.83E+00
I-131	#A	-2.1929E-01	-2.1929E-01	2.406E+02%	1.31E+00
Gd-153	#A	1.4394E+00	1.4394E+00	1.558E+02%	7.45E+00
Ga-68	#	5.2920E+01	5.3273E+01	2.324E+01%	2.13E+01
Tc-99m	#A	-4.5227E-01	-4.5283E-01	1.660E+02%	2.50E+00
BA-133	#A	-8.0997E-01	-8.0997E-01	2.157E+02%	5.82E+00
CS-134	#A	1.1057E+00	1.1057E+00	7.750E+01%	1.84E+00
CS-137	#A	-9.2973E-01	-9.2973E-01	7.704E+01%	2.38E+00

CE-139 #A	-1.5853E-01	-1.5853E-01	3.131E+02%		1.65E+00
Ba-140 #A	1.9632E+00	1.9632E+00	9.777E+01%		4.37E+00
La-140 #A	-3.9626E-01	-3.9627E-01	1.351E+02%		1.97E+00
CE-141 #A	-3.1736E-01	-3.1736E-01	4.438E+02%		4.69E+00
CE-144 #A	-4.0068E+00	-4.0068E+00	1.392E+02%		1.85E+01
PM-144 #A	4.2083E-02	4.2083E-02	1.685E+02%		1.88E+00
EU-152 #A	1.6846E+00	1.6846E+00	9.027E+01%		3.96E+00
EU-154 #A	1.2286E+00	1.2286E+00	7.267E+01%		2.68E+00
EU-155 #A	-1.7382E+00	-1.7382E+00	2.129E+02%		1.23E+01
HF-181 #A	-2.3525E-01	-2.3525E-01	2.634E+02%		2.10E+00
Ta-182 #A	2.5548E+00	2.5548E+00	9.978E+01%		1.05E+01
Hg-203 #A	-7.1865E-01	-7.1866E-01	8.127E+01%		1.94E+00
TL-208	4.1849E+00	4.1849E+00	1.582E+01%		1.23E+00
PM-146 #A	1.1139E+00	1.1139E+00	6.465E+01%		1.49E+00
Y-88 #A	-5.5974E-01	-5.5975E-01	1.658E+02%		1.60E+00
Cd-113m#A	-4.1574E+03	-4.1574E+03	1.651E+02%		2.31E+04
Cd-109 #A	0.0000E+00	0.0000E+00	1.000E+03%		7.25E+01
Cf-251 #A	-2.1074E+00	-2.1074E+00	1.205E+02%		6.44E+00
Cf-249 #A	-1.5928E-01	-1.5928E-01	5.697E+02%		3.07E+00
Sn-126 #A	6.2315E+00	6.2315E+00	5.975E+01%		1.23E+01
PB-210	7.1513E+01	7.1513E+01	2.051E+01%		3.56E+01
PB-212	1.1428E+01	1.1428E+01	7.747E+00%		2.15E+00
PB-214	6.6701E+01	6.6701E+01	2.627E+00%		2.59E+00
BI-207 #A	2.5320E-01	2.5320E-01	7.902E+01%		2.28E+00
BI-212 #A	-1.1138E+01	-1.1138E+01	7.513E+01%		2.78E+01
U-235 #A	-4.4800E+00	-4.4800E+00	1.366E+02%		2.03E+01
BI-214	6.4594E+01	6.4594E+01	3.450E+00%		2.06E+00
BI-210M#A	-5.6228E-02	-5.6228E-02	1.468E+03%		2.77E+00
AC-228	1.3922E+01	1.3922E+01	1.566E+01%		3.31E+00
TH-227 #A	-8.0791E+00	-8.0791E+00	9.572E+01%		1.87E+01
TH-229 #A	-6.7748E+00	-6.7748E+00	1.583E+02%		2.61E+01
TH-234 A	1.0537E+01	1.0537E+01	5.751E+01%		1.63E+01
PA-231 #A	4.7298E+00	4.7298E+00	3.960E+02%		1.17E+02
PA-233 #A	-6.6515E-02	-6.6515E-02	2.963E+03%		6.63E+00
PA-234 #A	5.2378E-01	5.2378E-01	1.995E+02%		1.09E+01
PA-234M#A	6.2844E+01	6.2844E+01	1.050E+02%		2.23E+02
AM-241 #A	1.6936E+00	1.6936E+00	1.060E+02%		5.96E+00
Np-237 #A	0.0000E+00	0.0000E+00	1.000E+03%		2.22E+01
Ir-192 #A	-5.8709E-01	-5.8710E-01	1.390E+02%		2.72E+00
Cs-136 #A	6.7277E-01	6.7279E-01	6.176E+01%		1.89E+00
Np-239 #A	-1.3104E+00	-1.3106E+00	2.686E+02%		1.17E+01
Nd-147 #A	-5.2118E+00	-5.2120E+00	8.722E+01%		1.07E+01
TL-210 #A	5.9998E-01	5.9998E-01	8.450E+01%		1.75E+00
Kr-85 #A	0.0000E+00	0.0000E+00	1.000E+03%		4.30E+02

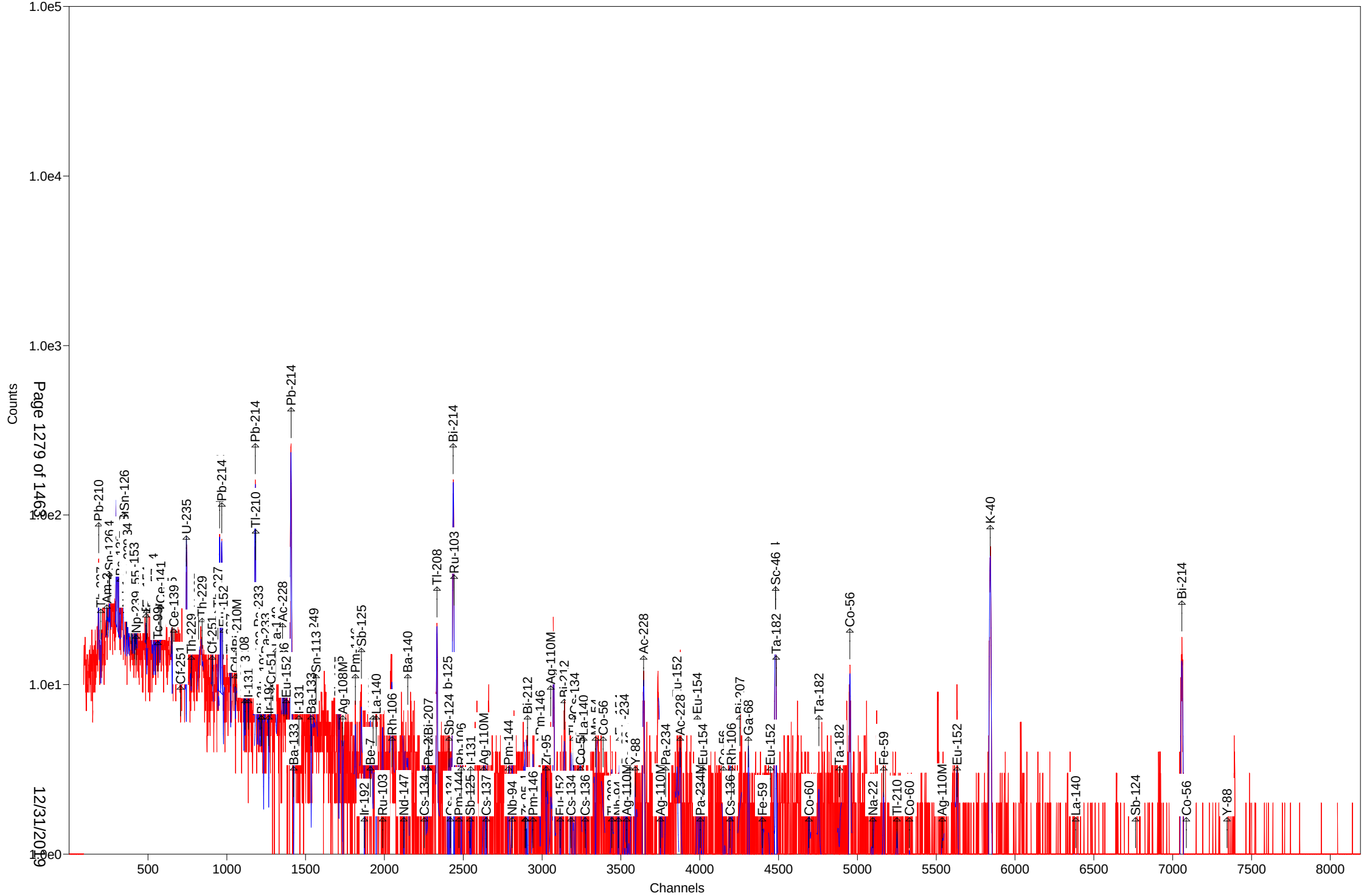
- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.

< - 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 (25.1 to 1999.3 keV) 5.284E+02 Bq/Sample
Total Decayed Activity (25.1 to 1999.3 keV) 5.2837183E+02 Bq/Sample

452568_Gamma_160-36526-A-21-C DU. 9_Gamma_20193841.spc.



Test America St. Louis Spectrum ID: 12_Gamma_20193697

Sample Description: 452568_Gamma_160-36526-A-22-B
Detector: Detector #12
Batch ID: 452568
Work Order Number: Gamma
Lot Number: 160-36526-A-22-B

Decay to Time: 12/25/2019 11:23 Live Time: 1800 sec
Acquisition Time: 12/25/2019 11:23:23 Real Time: 1801 sec
Analysis Time: 12/25/2019 11:53 Dead Time: 0.08 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 12_Soil_TunaCan.Clb
Efficiency Cal Desc: 12_TunaCan_108513
Efficiency Cal Date: 4/20/2018 11:53
Energy Cal Date: 4/20/2018 11:13
Library: Client_Long_Rev15.lib
Bkgd Correction File: 12_2019-12-07_1443.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
BE-7	-1.838E+00	230.8	4.241E+00	4.242E+00	1.462E+01
NA-22	4.895E-01	61.4	3.005E-01	3.015E-01	9.696E-01
K-40	2.204E+02	5.8	1.270E+01	1.689E+01	5.395E+00
Sc-46	-6.965E-01	95.7	6.662E-01	6.671E-01	2.246E+00
CR-51	-3.834E+00	211.7	8.114E+00	8.117E+00	2.723E+01
MN-54	-1.200E-01	444.0	5.326E-01	5.327E-01	1.297E+00
FE-59	7.781E-01	135.3	1.053E+00	1.053E+00	2.373E+00
Co-56	8.592E-01	43.7	3.751E-01	3.777E-01	1.765E+00
CO-57	5.753E-01	100.2	5.763E-01	5.771E-01	1.001E+00
CO-58	-2.024E-01	271.6	5.497E-01	5.498E-01	1.917E+00
CO-60	4.234E-01	88.0	3.725E-01	3.731E-01	1.337E+00
ZN-65	0.000E+00	1.#INF	5.324E-01	5.324E-01	5.888E+00
NB-94	-1.700E-01	398.7	6.775E-01	6.776E-01	1.601E+00
ZR-95	-1.260E+00	109.3	1.377E+00	1.379E+00	3.174E+00
NB-95	4.275E-01	133.9	5.723E-01	5.727E-01	1.956E+00
RU-103	4.276E-01	91.8	3.927E-01	3.933E-01	9.879E-01
RH-106	-3.517E+00	131.9	4.640E+00	4.643E+00	3.847E+01
AG-108M	1.286E-01	90.3	1.162E-01	1.164E-01	1.227E+00
AG-110M	7.376E-01	90.5	6.678E-01	6.689E-01	2.262E+00
SN-113	7.134E-01	116.6	8.315E-01	8.322E-01	2.798E+00
SB-124	-9.644E-02	79.1	7.630E-02	7.645E-02	3.836E+00
SB-125	6.363E-01	200.0	1.273E+00	1.273E+00	3.253E+00
I-131	-2.130E-01	85.9	1.829E-01	1.832E-01	1.473E+00
Gd-153	1.154E+00	100.8	1.164E+00	1.166E+00	4.664E+00
Ga-68	3.789E+01	49.1	1.861E+01	1.873E+01	3.920E+01
Tc-99m	3.679E-01	165.9	6.105E-01	6.109E-01	2.042E+00
BA-133	1.465E-01	812.0	1.190E+00	1.190E+00	4.030E+00
CS-134	1.211E-01	137.3	1.664E-01	1.665E-01	1.921E+00
CS-137	5.098E-02	1228.8	6.264E-01	6.265E-01	2.196E+00
CE-139	-1.191E-01	334.8	3.988E-01	3.989E-01	1.359E+00
Ba-140	3.328E-01	102.7	3.419E-01	3.423E-01	4.045E+00
La-140	6.711E-01	77.7	5.215E-01	5.226E-01	1.243E+00
CE-141	4.882E-01	136.4	6.661E-01	6.666E-01	1.800E+00

CE-144	-2.957E+00	167.2	4.945E+00	4.947E+00	1.653E+01
PM-144	3.340E-01	169.4	5.659E-01	5.661E-01	1.337E+00
EU-152	6.526E-01	226.5	1.478E+00	1.478E+00	3.665E+00
EU-154	1.534E+00	45.7	7.015E-01	7.059E-01	2.577E+00
EU-155	0.000E+00	1.#INF	1.246E+00	1.246E+00	7.073E+00
HF-181	4.605E-01	110.0	5.066E-01	5.071E-01	1.985E+00
Ta-182	8.241E-01	50.6	4.172E-01	4.193E-01	9.125E+00
Hg-203	-6.036E-01	89.7	5.416E-01	5.425E-01	1.808E+00
TL-208	4.791E+00	13.5	6.490E-01	6.932E-01	1.128E+00
PM-146	2.207E+00	27.5	6.068E-01	6.169E-01	1.189E+00
Y-88	-1.415E+00	81.2	1.149E+00	1.152E+00	2.248E+00
Cd-113m	5.560E+03	84.6	4.703E+03	4.714E+03	1.576E+04
Cd-109	0.000E+00	1.#INF	1.578E+01	1.578E+01	5.292E+01
Cf-251	1.622E+00	107.7	1.747E+00	1.749E+00	4.503E+00
Cf-249	1.338E-01	101.8	1.362E-01	1.364E-01	2.805E+00
Sn-126	-3.795E+00	155.4	5.898E+00	5.901E+00	1.975E+01
PB-210	2.831E+01	43.5	1.232E+01	1.245E+01	3.518E+01
PB-212	1.474E+01	6.5	9.573E-01	1.228E+00	1.696E+00
PB-214	1.938E+01	6.9	1.336E+00	1.658E+00	2.260E+00
BI-207	6.535E-01	57.2	3.735E-01	3.749E-01	1.757E+00
BI-212	-7.956E+00	94.9	7.553E+00	7.564E+00	2.546E+01
U-235	2.306E+00	104.8	2.416E+00	2.419E+00	1.598E+01
BI-214	1.911E+01	7.9	1.500E+00	1.788E+00	2.121E+00
BI-210M	3.353E-01	188.4	6.316E-01	6.318E-01	2.161E+00
AC-228	1.208E+01	19.8	2.393E+00	2.470E+00	4.446E+00
TH-227	-6.555E+00	99.3	6.512E+00	6.521E+00	1.666E+01
TH-229	4.773E+00	140.6	6.711E+00	6.716E+00	2.138E+01
TH-234	1.787E+01	26.5	4.736E+00	4.839E+00	1.745E+01
PA-231	6.450E+00	213.2	1.375E+01	1.376E+01	8.848E+01
PA-233	6.371E-01	276.9	1.764E+00	1.765E+00	7.244E+00
PA-234	-1.872E+00	120.7	2.260E+00	2.262E+00	7.559E+00
PA-234M	4.891E+01	113.8	5.567E+01	5.572E+01	1.697E+02
AM-241	1.155E+00	132.7	1.533E+00	1.534E+00	5.131E+00
Np-237	2.763E+00	167.0	4.613E+00	4.616E+00	1.541E+01
Ir-192	2.542E-01	127.4	3.238E-01	3.241E-01	3.029E+00
Cs-136	-7.975E-01	85.5	6.819E-01	6.834E-01	2.284E+00
Np-239	-1.380E+00	146.5	2.021E+00	2.023E+00	6.765E+00
Nd-147	-3.221E+00	122.2	3.936E+00	3.941E+00	9.487E+00
TL-210	5.587E-02	399.0	2.230E-01	2.230E-01	1.589E+00
Kr-85	-1.118E+01	1362.4	1.523E+02	1.523E+02	5.236E+02
Total	6.020E+03				

Analyst: Caleb Quinn

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Sample description
452568_Gamma_160-36526-A-22-B

Spectrum Filename: C:\User\SPC\Det12\12_Gamma_20193697.An1

Acquisition information
Start time: 12/25/2019 11:23:23 AM
Live time: 1800
Real time: 1801
Dead time: 0.08 %
Detector ID: 12

Detector system
Ge12 S/N10034336

Calibration
Filename: 12_Soil_TunaCan.Clb
12_TunaCan_108513

Energy Calibration
Created: 4/20/2018 11:13:27 AM
Zero offset: 0.059 keV
Gain: 0.250 keV/channel
Quadratic: -3.735E-08 keV/channel^2

Efficiency Calibration
Created: 4/20/2018 11:53:09 AM
Type: Polynomial
Uncertainty: 1.020 %
Coefficients: -0.363508 -4.707999 0.462125
-0.051256 0.002384 -0.000043

Library Files
Main analysis library: Client_Long_Rev15.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 100 (25.08keV)
Stop channel: 8000 (1999.13keV)
Peak rejection level: 1000.000%
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

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Activity range factor: 2.000
Min. step backg. energy 0.000
Multiplet shift channel 2.000

Corrections	Status	Comments
Decay correct to date:	YES	12/25/2019 11:23:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	12_2019-12-07_1443.PBC 12/7/2019 2:43:53 PM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 25 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1185

***** 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
46.56	39.	43.53	1.04	1.802E-02	46.54	4.250	PBC<MDA	PB210
59.54	21.	132.70	0.86	2.817E-02	59.54	35.900	PBC<MDA	AM241
63.36	43.	39.64	0.87	2.978E-02	63.29	3.810	PBC<MDA	TH234
74.91	202.	10.18	0.88	3.334E-02				
77.19	312.	7.30	0.88	3.387E-02				
87.19	99.	18.96	0.95	3.570E-02	86.49	13.100	1.182E+01	Np237
					86.54	30.700	5.041E+00	EU155
					86.94	9.040	1.709E+01	Sn126
					87.57	37.500	4.110E+00	Sn126
					88.04	3.790	4.059E+01	Cd109
92.52	57.	35.21	0.90	3.637E-02	92.59	5.584	PBC<MDA	TH234
93.28	26.	142.17	0.90	3.645E-02	93.35	5.561	PBC<MDA	AC228
97.50	20.	139.47	0.90	3.683E-02	97.50	30.000	PBC<MDA	Gd153
99.50	20.	142.76	0.91	3.697E-02	99.50	15.000	PBC<MDA	Np239
103.20	20.	145.63	0.91	3.717E-02	103.20	21.800	PBC<MDA	Gd153
103.70	8.	371.82	0.91	3.720E-02	103.70	24.000	PBC<MDA	Np239
122.06	16.	106.80	0.93	3.724E-02	121.78	28.580	PBC<MDA	EU152
					122.06	85.600	2.788E-01	CO57
136.47	21.	169.53	0.94	3.651E-02	136.30	5.850	PBC<MDA	HF181
					136.47	10.680	2.951E+00	CO57
140.51	21.	165.95	0.95	3.623E-02	140.51	89.300	PBC<MDA	Tc99m
145.44	15.	136.43	0.95	3.586E-02	145.44	48.200	PBC<MDA	CE141
162.66	18.	102.73	0.97	3.435E-02	162.66	6.220	PBC<MDA	Ba140
163.38	11.	181.36	0.97	3.428E-02	163.38	5.080	PBC<MDA	U235
176.60	16.	107.71	0.98	3.303E-02	176.60	17.000	PBC<MDA	Cf251
185.72	71.	32.58	0.99	3.215E-02	185.72	54.000	2.268E+00	U235
193.51	15.	140.62	1.00	3.140E-02	193.51	4.400	PBC<MDA	TH229

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
205.33	16.	104.78	1.01	3.030E-02	205.33	5.010	PBC<MDA	U235
210.85	5.	394.97	1.02	2.980E-02	210.85	2.990	PBC<MDA	TH229
227.00	16.	112.50	1.03	2.839E-02	227.00	6.300	PBC<MDA	Cf251
235.97	14.	231.52	1.04	2.764E-02	235.97	12.300	PBC<MDA	TH227
238.54	270.	10.44	0.98	2.744E-02	238.63	43.300	1.261E+01	PB212
241.90	83.	18.15	1.05	2.716E-02	242.00	7.430	2.294E+01	PB214
244.69	15.	226.46	1.05	2.695E-02	244.69	7.580	PBC<MDA	EU152
263.70	15.	84.60	1.07	2.554E-02	263.70	0.006	PBC<MDA	Cd113m
265.83	8.	188.36	1.07	2.539E-02	265.83	50.000	PBC<MDA	BI210M
277.25	24.	37.24	1.40	2.462E-02	277.28	6.310	PBC<MDA	TL208
295.15	148.	11.56	0.81	2.350E-02	295.09	19.300	1.819E+01	PB214
					296.00	79.000	4.454E+00	TL210
299.91	14.	209.96	1.11	2.321E-02	300.03	3.280	PBC<MDA	PB212
					300.07	2.460	1.400E+01	PA231
					300.18	6.200	5.557E+00	PA233
300.07	14.	213.25	1.11	2.321E-02	300.03	3.280	PBC<MDA	PB212
					300.07	2.460	1.400E+01	PA231
					300.18	6.200	5.557E+00	PA233
300.18	11.	276.93	1.11	2.320E-02	300.03	3.280	PBC<MDA	PB212
					300.07	2.460	1.093E+01	PA231
					300.18	6.200	4.337E+00	PA233
333.44	14.	101.81	1.14	2.142E-02	333.44	15.510	PBC<MDA	Cf249
338.32	4.	563.15	1.14	2.118E-02	338.32	12.010	PBC<MDA	AC228
345.83	16.	110.01	1.15	2.083E-02	345.83	15.070	PBC<MDA	HF181
351.82	268.	7.89	1.44	2.056E-02	351.93	37.600	1.929E+01	PB214
356.00	3.	812.03	1.16	2.037E-02	356.00	62.050	PBC<MDA	BA133
391.69	16.	116.55	1.20	1.893E-02	391.69	64.000	PBC<MDA	SN113
427.88	6.	200.00	1.23	1.770E-02	427.88	29.600	PBC<MDA	SB125
453.88	35.	30.19	1.26	1.692E-02	453.88	65.000	1.768E+00	PM146
468.06	10.	127.36	1.27	1.653E-02	468.06	51.750	PBC<MDA	Ir192
487.02	10.	124.81	1.29	1.604E-02	487.02	45.500	PBC<MDA	La140
497.05	11.	91.82	1.30	1.580E-02	497.05	90.900	PBC<MDA	RU103
511.86	73.	21.42	2.56	1.546E-02	511.86	20.000	1.318E+01	RH106
569.32	6.	137.35	1.37	1.428E-02	569.32	15.380	PBC<MDA	CS134
					569.47	8.200	3.005E+00	PA234
					569.70	97.740	2.522E-01	BI207
569.70	12.	72.66	1.37	1.427E-02	569.32	15.380	2.947E+00	CS134
					569.47	8.200	5.528E+00	PA234
					569.70	97.740	4.639E-01	BI207
583.16	104.	13.55	1.32	1.403E-02	583.02	84.500	4.873E+00	TL208
609.41	215.	7.85	1.42	1.358E-02	609.31	46.090	1.911E+01	BI214
					610.30	5.750	1.533E+02	RU103
636.97	7.	140.17	1.43	1.315E-02	636.97	7.170	PBC<MDA	I131
696.54	7.	169.41	1.49	1.232E-02	696.54	99.000	PBC<MDA	PM144
722.79	11.	79.12	1.51	1.199E-02	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	5.361E-01	AG108M
					723.36	20.220	2.410E+00	EU154
722.94	11.	90.33	1.51	1.199E-02	722.79	10.810	4.505E+00	SB124

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
					722.94	90.840	5.362E-01	AG108M
					723.36	20.220	2.410E+00	EU154
723.36	2.	617.26	1.51	1.199E-02	722.79	10.810	PBC<MDA	SB124
					722.94	90.840	8.359E-02	AG108M
					723.36	20.220	3.757E-01	EU154
735.72	17.	45.96	1.52	1.184E-02	735.72	22.500	PBC<MDA	PM146
765.79	9.	133.87	1.55	1.150E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	1.452E+02	PA234M
766.41	4.	289.40	1.55	1.150E-02	765.79	99.790	PBC<MDA	NB95
					766.41	0.294	6.575E+01	PA234M
785.42	8.	149.56	1.57	1.129E-02	785.42	1.280	PBC<MDA	BI212
860.89	10.	114.38	1.64	1.057E-02	860.56	12.420	PBC<MDA	TL208
873.23	11.	86.20	1.65	1.046E-02	873.23	12.270	PBC<MDA	EU154
880.53	6.	158.11	1.66	1.040E-02	880.53	6.000	PBC<MDA	PA234
884.68	10.	90.54	1.66	1.036E-02	884.68	72.680	PBC<MDA	AG110M
898.04	7.	106.27	1.67	1.025E-02	898.04	93.700	PBC<MDA	Y88
911.01	64.	19.81	1.68	1.015E-02	911.07	29.000	1.208E+01	AC228
968.97	16.	81.20	1.74	9.703E-03	968.97	17.460	PBC<MDA	AC228
996.33	12.	50.12	1.76	9.508E-03	996.33	10.600	PBC<MDA	EU154
1001.00	6.	113.81	1.76	9.476E-03	1001.00	0.837	PBC<MDA	PA234M
1048.07	2.	399.50	1.81	9.162E-03	1048.07	80.000	PBC<MDA	Cs136
1050.36	4.	196.85	1.81	9.147E-03	1050.36	1.560	PBC<MDA	RH106
1063.66	11.	88.23	1.82	9.063E-03	1063.66	74.500	PBC<MDA	BI207
1077.40	17.	49.10	1.83	8.978E-03	1077.40	3.300	PBC<MDA	Ga68
1099.25	7.	135.27	1.85	8.846E-03	1099.25	56.500	PBC<MDA	FE59
1120.79	55.	15.56	2.45	8.722E-03	1120.29	15.100	2.327E+01	BI214
					1120.55	99.987	3.515E+00	Sc46
					1121.30	34.900	1.008E+01	Ta182
1173.24	11.	87.98	1.92	8.426E-03	1173.24	99.900	PBC<MDA	CO60
1221.41	18.	50.63	1.96	8.175E-03	1221.41	27.000	PBC<MDA	Ta182
1238.28	28.	43.66	1.97	8.090E-03	1238.28	66.070	2.945E+00	Co56
1274.53	7.	61.39	2.00	7.914E-03	1274.53	99.940	PBC<MDA	NA22
					1274.54	35.190	1.390E+00	EU154
1274.54	3.	159.04	2.00	7.914E-03	1274.53	99.940	PBC<MDA	NA22
					1274.54	35.190	6.712E-01	EU154
1313.00	3.	176.21	2.04	7.735E-03	1313.00	21.000	PBC<MDA	TL210
1332.50	2.	480.00	2.05	7.647E-03	1332.50	99.980	PBC<MDA	CO60
1408.00	15.	25.82	2.12	7.324E-03	1408.00	21.005	5.417E+00	EU152
1460.79	301.	5.76	1.85	7.112E-03	1460.83	10.670	2.204E+02	K40
1596.21	7.	92.58	2.27	6.616E-03	1596.21	95.400	PBC<MDA	La140
1764.38	42.	15.43	2.40	6.075E-03	1764.49	15.400	2.494E+01	BI214

********** 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	
299.21	74.89	110.	202.	6.063E+03	10.18	0.880	-	D
308.33	77.17	103.	312.	9.212E+03	7.30	0.883	-	D

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: Client_Long_Rev15.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	185.86	46.56	97.	39.	0.022	43.53	1.040s
TH-227	200.18	50.14	317.	-20.	-0.011	127.00	0.855s
AM-241	237.74	59.54	379.	21.	0.012	132.70	0.865s
TH-234	252.74	63.29	124.	43.	0.024	39.64	0.868D
Sn-126	256.71	64.28	472.	-20.	-0.011	155.39	0.869s
BA-133	323.50	80.99	1133.	-28.	-0.016	170.65	0.887s
Np-237	345.49	86.49	738.	23.	0.013	166.97	0.892
EU-155	345.70	86.54	828.	-26.	-0.014	159.25	0.892s
Sn-126	347.29	86.94	131.	68.	0.038	26.62	0.893D
Sn-126	349.81	87.57	764.	-26.	-0.014	152.88	0.893s
Cd-109	351.68	88.04	738.	0.	0.000	354.85	0.894A
Nd-147	363.92	91.10	727.	0.	0.000	1000.00	0.897s
TH-234	369.87	92.59	172.	57.	0.032	35.21	0.898D
AC-228	372.91	93.35	667.	26.	0.014	142.17	0.899s
Gd-153	389.50	97.50	373.	20.	0.011	139.47	0.903s
Np-239	397.50	99.50	393.	20.	0.011	142.76	0.905s
Gd-153	412.29	103.20	413.	20.	0.011	145.63	0.909s
Np-239	414.29	103.70	433.	8.	0.004	371.82	0.909s
EU-155	420.73	105.31	441.	0.	0.000	1000.00	0.911s
Np-239	424.00	106.13	464.	-21.	-0.012	146.51	0.912s
EU-152	486.56	121.78	210.	-5.	-0.003	412.31	0.928s
CO-57	487.69	122.06	138.	16.	0.009	106.80	0.928s
EU-154	491.84	123.10	211.	-22.	-0.012	94.23	0.929s
PA-234	524.60	131.29	352.	-22.	-0.012	120.75	0.938s
HF-181	531.51	133.02	624.	-22.	-0.012	164.53	0.939s
CE-144	533.57	133.54	645.	-22.	-0.012	167.22	0.940
HF-181	544.61	136.30	667.	-21.	-0.011	177.95	0.943s
CO-57	545.30	136.47	606.	21.	0.012	169.53	0.943s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
Tc-99m	561.44	140.51	586.	21.	0.012	165.95	0.947s
CE-141	581.15	145.44	131.	15.	0.008	136.43	0.952
Ba-140	649.99	162.66	159.	18.	0.010	102.73	0.969s
U-235	652.87	163.38	176.	11.	0.006	181.36	0.970s
CE-139	662.76	165.85	188.	-6.	-0.003	334.83	0.973s
Cf-251	705.72	176.60	84.	16.	0.009	107.71	0.983s
U-235	742.18	185.72	139.	71.	0.039	32.58	0.992s
TH-229	773.32	193.51	117.	15.	0.008	140.62	1.000s
U-235	820.59	205.33	81.	16.	0.009	104.78	1.012
TH-229	842.65	210.85	110.	5.	0.003	394.97	1.018s
Cf-251	907.22	227.00	88.	16.	0.009	112.50	1.034s
TH-227	943.09	235.97	556.	14.	0.008	231.52	1.043s
PB-212	953.73	238.63	52.	315.	0.175	6.49	1.045D
PB-214	967.18	242.00	73.	83.	0.046	18.15	1.049D
EU-152	977.96	244.69	574.	15.	0.008	226.46	1.051s
TH-227	1024.13	256.24	125.	-22.	-0.012	99.35	1.063
Cd-113m	1053.96	263.70	76.	15.	0.009	84.60	1.070s
BI-210M	1062.48	265.83	100.	8.	0.004	188.36	1.072s
TL-208	1108.15	277.25	22.	24.	0.014	37.24	1.396s
Hg-203	1115.93	279.20	178.	-22.	-0.012	89.74	1.086s
I-131	1136.32	284.30	114.	-21.	-0.012	96.98	1.091s
PB-214	1179.70	295.15	40.	148.	0.082	11.56	0.808s
TL-210	1183.11	296.00	482.	7.	0.004	445.16	1.102s
PB-212	1199.22	300.03	449.	14.	0.008	209.96	1.106
PA-231	1199.38	300.07	463.	14.	0.008	213.25	1.106
PA-233	1199.82	300.18	478.	11.	0.006	276.93	1.107
PA-231	1209.70	302.65	489.	0.	0.000	1000.00	1.109s
BA-133	1210.50	302.85	489.	0.	0.000	1000.00	1.109s
Ba-140	1218.49	304.85	489.	0.	0.000	1000.00	1.111s
BI-210M	1218.68	304.90	489.	0.	0.000	1000.00	1.111s
Ir-192	1232.85	308.44	489.	0.	0.000	1000.00	1.115s
PA-233	1247.13	312.01	489.	0.	0.000	1000.00	1.118s
Ir-192	1265.04	316.49	489.	0.	0.000	1000.00	1.123s
CR-51	1279.41	320.08	507.	-15.	-0.008	211.65	1.126s
La-140	1314.10	328.76	117.	-7.	-0.004	232.38	1.135s
Cf-249	1332.81	333.44	91.	14.	0.008	101.81	1.139s
AC-228	1352.33	338.32	192.	4.	0.002	563.15	1.144
Cs-136	1361.32	340.57	196.	0.	0.000	1000.00	1.146s
EU-152	1376.18	344.29	196.	0.	0.000	1000.00	1.150s
HF-181	1382.35	345.83	156.	16.	0.009	110.01	1.151s
PB-214	1406.30	351.82	38.	278.	0.154	7.51	1.435s
BA-133	1423.02	356.00	365.	3.	0.002	812.03	1.162s
I-131	1456.95	364.48	76.	-18.	-0.010	99.20	1.170
BA-133	1534.35	383.84	168.	-18.	-0.010	107.27	1.189s
Cf-249	1550.79	387.95	171.	-8.	-0.005	220.68	1.193s
SN-113	1565.74	391.69	157.	16.	0.009	116.55	1.196s
SB-125	1710.45	427.88	36.	6.	0.003	200.00	1.232s
AG-108M	1734.69	433.94	48.	-8.	-0.004	173.21	1.238s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
PM-146	1814.45	453.88	20.	35.	0.019	30.19	1.257s
SB-125	1852.39	463.37	82.	-5.	-0.003	244.47	1.266s
Ir-192	1871.16	468.06	84.	10.	0.006	127.36	1.271s
BE-7	1909.29	477.60	83.	-6.	-0.003	230.77	1.280s
HF-181	1926.90	482.00	88.	0.	0.000	1000.00	1.284s
La-140	1946.98	487.02	78.	10.	0.006	124.81	1.289s
RU-103	1987.11	497.05	24.	11.	0.006	91.82	1.298s
RH-106	2046.35	511.86	87.	73.	0.041	21.42	2.563s
Nd-147	2122.88	531.00	43.	-11.	-0.006	122.23	1.331s
Ba-140	2147.92	537.26	26.	-5.	-0.003	212.92	1.337s
CS-134	2251.82	563.24	39.	-2.	-0.001	641.29	1.362s
CS-134	2276.15	569.32	35.	6.	0.004	137.35	1.367s
PA-234	2276.75	569.47	51.	-8.	-0.005	126.43	1.368s
BI-207	2277.68	569.70	30.	12.	0.006	72.66	1.368s
TL-208	2331.49	583.16	21.	104.	0.058	13.55	1.324
SB-125	2400.87	600.50	412.	-15.	-0.009	188.54	1.397s
SB-124	2409.79	602.73	374.	-15.	-0.008	189.34	1.399s
CS-134	2417.71	604.71	360.	-13.	-0.007	210.16	1.401s
BI-214	2436.49	609.41	21.	215.	0.120	7.85	1.420
AG-108M	2455.99	614.28	347.	0.	0.000	1000.00	1.410s
PM-144	2471.12	618.06	347.	0.	0.000	1000.00	1.414s
RH-106	2486.54	621.92	367.	-16.	-0.009	175.73	1.417s
I-131	2546.77	636.97	23.	7.	0.004	140.17	1.432s
AG-110M	2629.92	657.76	55.	-5.	-0.003	214.48	1.451
PM-144	2785.05	696.54	33.	7.	0.004	169.41	1.487s
NB-94	2809.41	702.63	47.	-4.	-0.002	398.65	1.493s
SB-124	2890.04	722.79	29.	11.	0.006	79.12	1.512s
AG-108M	2890.65	722.94	40.	11.	0.006	90.33	1.512s
EU-154	2892.34	723.36	50.	2.	0.001	617.26	1.512s
BI-212	2907.58	727.17	69.	-13.	-0.007	94.94	1.516s
PM-146	2941.78	735.72	9.	17.	0.009	45.96	1.524s
ZR-95	3025.83	756.73	51.	-14.	-0.008	109.28	1.543s
AG-110M	3054.69	763.94	64.	-7.	-0.004	162.42	1.550s
NB-95	3062.08	765.79	66.	9.	0.005	133.87	1.552s
PA-234M	3064.57	766.41	65.	4.	0.002	289.40	1.552
EU-152	3114.61	778.92	19.	-4.	-0.002	255.36	1.564s
BI-212	3140.62	785.42	33.	8.	0.005	149.56	1.570
CS-134	3182.43	795.87	42.	-2.	-0.001	374.17	1.579s
TL-210	3197.35	799.60	38.	-1.	-0.001	662.38	1.583s
CS-134	3206.76	801.95	66.	-15.	-0.008	82.84	1.585s
CO-58	3242.06	810.78	57.	-4.	-0.002	271.57	1.593s
La-140	3262.05	815.77	61.	0.	0.000	1000.00	1.598s
Cs-136	3272.97	818.50	83.	-16.	-0.009	85.50	1.600s
MN-54	3338.38	834.85	23.	-2.	-0.001	444.01	1.615s
Co-56	3386.08	846.77	45.	-10.	-0.006	150.83	1.626s
TL-208	3441.27	860.56	25.	10.	0.006	114.38	1.638s
NB-94	3483.41	871.10	54.	-17.	-0.010	65.08	1.648s
EU-154	3491.95	873.23	43.	11.	0.006	86.20	1.650s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
PA-234	3521.16	880.53	42.	6.	0.003	158.11	1.657s
PA-234	3532.00	883.24	48.	0.	0.000	1000.00	1.659s
AG-110M	3537.78	884.68	36.	10.	0.006	90.54	1.660s
Sc-46	3556.17	889.28	70.	-13.	-0.007	95.65	1.664s
Y-88	3591.22	898.04	10.	7.	0.004	106.27	1.672s
AC-228	3643.36	911.07	20.	64.	0.036	19.81	1.684s
AG-110M	3749.09	937.49	30.	-5.	-0.003	244.95	1.708
PA-234	3783.21	946.02	25.	-13.	-0.007	86.82	1.716s
EU-152	3855.60	964.11	60.	-19.	-0.011	92.52	1.732s
AC-228	3875.05	968.97	76.	16.	0.009	81.20	1.736
EU-154	3984.54	996.33	5.	12.	0.007	50.12	1.761s
PA-234M	4003.22	1001.00	21.	6.	0.003	113.81	1.765
EU-154	4018.33	1004.77	18.	0.	0.000	1000.00	1.768s
Co-56	4150.66	1037.84	27.	-5.	-0.003	255.75	1.798s
Cs-136	4191.60	1048.07	21.	2.	0.001	399.50	1.807s
RH-106	4200.76	1050.36	29.	4.	0.002	196.85	1.809s
BI-207	4253.99	1063.66	16.	11.	0.006	88.23	1.820s
Ga-68	4308.98	1077.40	11.	17.	0.010	49.10	1.833s
FE-59	4396.44	1099.25	16.	7.	0.004	135.27	1.852s
EU-152	4447.76	1112.07	100.	-10.	-0.005	147.19	1.863s
ZN-65	4461.66	1115.55	90.	0.	0.000	1000.00	1.866s
BI-214	4482.63	1120.79	4.	55.	0.031	15.56	2.451s
Sc-46	4481.68	1120.55	90.	0.	0.000	1000.00	1.870s
Ta-182	4484.69	1121.30	103.	-11.	-0.006	135.82	1.871s
CO-60	4692.57	1173.24	16.	11.	0.006	87.98	1.916s
Ta-182	4755.86	1189.05	32.	-14.	-0.008	95.65	1.930
Ta-182	4885.39	1221.41	11.	18.	0.010	50.63	1.957
Co-56	4952.92	1238.28	23.	28.	0.016	43.66	1.972s
NA-22	5098.03	1274.53	6.	7.	0.004	61.39	2.003s
EU-154	5098.08	1274.54	13.	3.	0.002	159.04	2.003s
FE-59	5166.35	1291.60	28.	-9.	-0.005	137.70	2.017s
TL-210	5252.04	1313.00	6.	3.	0.002	176.21	2.036s
CO-60	5330.11	1332.50	11.	2.	0.001	480.00	2.052s
AG-110M	5537.48	1384.30	11.	-2.	-0.001	344.64	2.096s
EU-152	5632.39	1408.00	0.	15.	0.008	25.82	2.115s
K-40	5843.75	1460.79	0.	301.	0.167	5.76	1.849
La-140	6386.02	1596.21	6.	7.	0.004	92.58	2.269s
SB-124	6765.58	1690.98	13.	-7.	-0.004	138.11	2.345s
BI-214	7060.00	1764.49	0.	42.	0.023	15.43	2.403s
Co-56	7087.48	1771.35	42.	0.	0.000	1000.00	2.408s
Y-88	7346.69	1836.06	20.	-15.	-0.008	81.17	2.459s

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
BE-7	C	-1.8379E+00				5.31E+01	
			477.60	-1.838E+00	?(	1.462E+01	2.31E+02 1.05E+01 G
NA-22	C	4.8950E-01				9.50E+02	
			1274.53	4.895E-01	&(	9.696E-01	6.14E+01 9.99E+01 G
K-40	N	2.2036E+02				4.66E+11	
			1460.83	2.204E+02	(	5.395E+00	5.76E+00 1.07E+01 G
Sc-46	F	-6.9650E-01				8.38E+01	
			889.28	-6.965E-01	?(	2.246E+00	9.57E+01 1.00E+02 G
			1120.55	0.000E+00	+	2.989E+00	1.00E+03 1.00E+02 G
CR-51	F	-3.8338E+00				2.77E+01	
			320.08	-3.834E+00	(	2.723E+01	2.12E+02 9.94E+00 G
MN-54	C	-1.1996E-01				3.12E+02	
			834.85	-1.200E-01	?(	1.297E+00	4.44E+02 1.00E+02 G
FE-59	F	7.7813E-01				4.45E+01	
			1099.25	7.781E-01	?(	2.373E+00	1.35E+02 5.65E+01 G
			1291.60	-1.532E+00	+	4.517E+00	1.38E+02 4.32E+01 G
Co-56	C	8.5924E-01				7.73E+01	
			846.77	-5.196E-01	?(	1.765E+00	1.51E+02 9.99E+01 G
			1238.28	2.945E+00	?(	2.588E+00	4.37E+01 6.61E+01 G
			1037.84	-1.988E+00	+	1.141E+01	2.56E+02 1.41E+01 G
			1771.35	0.000E+00	-	1.951E+01	1.00E+03 1.55E+01 A
CO-57	C	5.7530E-01				2.72E+02	
			122.06	2.788E-01	&(	1.001E+00	1.07E+02 8.56E+01 G
			136.47	2.951E+00	?(	1.673E+01	1.70E+02 1.07E+01 G
CO-58	C	-2.0240E-01				7.09E+01	
			810.78	-2.024E-01	?(	1.917E+00	2.72E+02 9.95E+01 G
CO-60	F	4.2341E-01				1.93E+03	
			1332.50	1.211E-01	?(	1.337E+00	4.80E+02 1.00E+02 G
			1173.24	7.260E-01	?(	1.409E+00	8.80E+01 9.99E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
NB-94	I	-1.6996E-01					7.41E+06	
			702.63	-1.700E-01	?(	1.601E+00	3.99E+02	9.79E+01 G
			871.10	-9.123E-01	+	1.961E+00	6.51E+01	9.99E+01 G
ZR-95	I	-1.2602E+00					6.40E+01	
			756.73	-1.260E+00	?(	3.174E+00	1.09E+02	5.45E+01 G
			724.20	-2.004E-07	%	3.815E+00	5.35E+08	4.42E+01 G
NB-95	I	4.2751E-01					6.40E+01	
			765.79	4.275E-01	?(	1.956E+00	1.34E+02	9.98E+01 G
RU-103	I	4.2764E-01					3.93E+01	
			497.05	4.276E-01	?(	9.879E-01	9.18E+01	9.09E+01 G
			610.30	-1.087E-05	%	6.375E+01	1.73E+08	5.75E+00 GA
RH-106	I	-3.5166E+00					3.74E+02	
			621.92	-6.516E+00	?(	3.847E+01	1.76E+02	9.93E+00 G
			1050.36	1.557E+01	?(	1.082E+02	1.97E+02	1.56E+00 G
			511.86	1.318E+01	?	8.283E+00	2.14E+01	2.00E+01 GA
AG-108M	C	1.2865E-01					1.53E+05	
			433.94	-2.805E-01	?(	1.227E+00	1.73E+02	9.05E+01 G
			722.94	5.362E-01	?(	1.638E+00	9.03E+01	9.08E+01 G
			614.28	0.000E+00	-	4.099E+00	1.00E+03	8.98E+01 G
AG-110M	F	7.3760E-01					2.50E+02	
			884.68	7.376E-01	?(	2.262E+00	9.05E+01	7.27E+01 G
			657.76	-2.285E-01	-	1.703E+00	2.14E+02	9.46E+01 G
			937.49	-8.134E-01	&	4.593E+00	2.45E+02	3.44E+01 G
			1384.30	-7.190E-01	-	5.669E+00	3.45E+02	2.43E+01 G
			763.94	-1.551E+00	+	8.664E+00	1.62E+02	2.23E+01 G
SN-113	F	7.1339E-01					1.15E+02	
			391.69	7.134E-01	?(	2.798E+00	1.17E+02	6.40E+01 G
SB-124	F	-9.6437E-02					6.02E+01	
			602.73	-6.026E-01	?(	3.836E+00	1.89E+02	9.83E+01 G
			1690.98	-1.230E+00	+	3.559E+00	1.38E+02	4.78E+01 G
			722.79	4.505E+00	?(	1.198E+01	7.91E+01	1.08E+01 G
SB-125	I	6.3631E-01					1.01E+03	
			427.88	6.363E-01	&(	3.253E+00	2.00E+02	2.96E+01 G
			600.50	-3.480E+00	+	2.203E+01	1.89E+02	1.79E+01 G
			635.89	-3.109E-01	%	1.212E+01	1.09E+03	1.13E+01 G
			463.37	-1.699E+00	+	1.433E+01	2.44E+02	1.05E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
I-131	I	-2.1302E-01					8.02E+00	
			364.48	-6.023E-01	?(	1.473E+00	9.92E+01	8.17E+01 G
			284.30	-7.903E+00	+	1.962E+01	9.70E+01	6.14E+00 G
			636.97	4.223E+00	&(	1.462E+01	1.40E+02	7.17E+00 G
Gd-153	F	1.1544E+00					2.42E+02	
			97.50	9.982E-01	?(	4.664E+00	1.39E+02	3.00E+01 G
			103.20	1.369E+00	?(	6.678E+00	1.46E+02	2.18E+01 G
Ga-68	C	3.7894E+01					4.71E-02	
			1077.40	3.789E+01	?(	3.920E+01	4.91E+01	3.30E+00 G
Tc-99m	I	3.6790E-01					2.51E-01	
			140.51	3.679E-01	&(	2.042E+00	1.66E+02	8.93E+01 G
BA-133	F	1.4650E-01					3.85E+03	
			356.00	1.465E-01	&(	4.030E+00	8.12E+02	6.20E+01 G
			302.85	0.000E+00	-	1.391E+01	1.00E+03	1.83E+01 G
			383.84	-5.664E+00	+	2.039E+01	1.07E+02	8.94E+00 GA
			80.99	-1.321E+00	+	7.509E+00	1.71E+02	3.41E+01 GA
CS-134	I	1.2114E-01					7.54E+02	
			795.87	-1.451E-01	&(	1.921E+00	3.74E+02	8.55E+01 G
			604.71	-5.366E-01	+	3.796E+00	2.10E+02	9.76E+01 G
			569.32	1.602E+00	&(	7.626E+00	1.37E+02	1.54E+01 G
			801.95	-8.379E+00	+	2.325E+01	8.28E+01	8.69E+00 G
			563.24	-9.244E-01	+	1.470E+01	6.41E+02	8.35E+00 G
CS-137	I	5.0979E-02					1.10E+04	
			661.66	5.098E-02	%(	2.196E+00	1.23E+03	8.52E+01 G
CE-139	F	-1.1911E-01					1.38E+02	
			165.85	-1.191E-01	&(	1.359E+00	3.35E+02	7.99E+01 G
Ba-140	I	3.3285E-01					1.28E+01	
			537.26	-7.640E-01	?(	4.045E+00	2.13E+02	2.44E+01 G
			162.66	4.634E+00	?(	1.597E+01	1.03E+02	6.22E+00 G
			304.85	0.000E+00	-	5.973E+01	1.00E+03	4.29E+00 G
La-140	I	6.7112E-01					1.28E+01	
			1596.21	6.161E-01	?(	1.243E+00	9.26E+01	9.54E+01 G
			487.02	7.864E-01	&(	3.338E+00	1.25E+02	4.55E+01 G
			328.76	-8.427E-01	+	6.705E+00	2.32E+02	2.03E+01 G
			815.77	0.000E+00	&	8.492E+00	1.00E+03	2.33E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
CE-141	I	4.8825E-01					3.25E+01	
			145.44	4.882E-01	&(	1.800E+00	1.36E+02	4.82E+01 G
CE-144	I	-2.9571E+00					2.85E+02	
			133.54	-2.957E+00	(	1.653E+01	1.67E+02	1.11E+01 G
PM-144	C	3.3402E-01					3.63E+02	
			696.54	3.340E-01	?(	1.337E+00	1.69E+02	9.90E+01 G
			618.06	0.000E+00	-	3.733E+00	1.00E+03	9.91E+01 G
EU-152	F	6.5261E-01					4.94E+03	
			121.78	-2.609E-01	&(	3.665E+00	4.12E+02	2.86E+01 G
			344.29	0.000E+00	+	6.816E+00	1.00E+03	2.65E+01 G
			1112.07	-4.566E+00	+	2.288E+01	1.47E+02	1.36E+01 G
			778.92	-1.385E+00	+	8.631E+00	2.55E+02	1.29E+01 G
			964.11	-7.421E+00	&	1.516E+01	9.25E+01	1.46E+01 G
			244.69	4.097E+00	?(	3.111E+01	2.26E+02	7.58E+00 G
			1408.00	5.417E+00	?	2.662E+00	2.58E+01	2.10E+01 GA
EU-154	I	1.5339E+00					3.14E+03	
			123.10	-8.189E-01	?(	2.577E+00	9.42E+01	4.08E+01 G
			1274.54	6.712E-01	&	3.845E+00	1.59E+02	3.52E+01 G
			723.36	3.757E-01	+	8.201E+00	6.17E+02	2.02E+01 G
			873.23	4.966E+00	?(	1.443E+01	8.62E+01	1.23E+01 G
			1004.77	0.000E+00	-	7.363E+00	1.00E+03	1.80E+01 G
			996.33	6.615E+00	?(	7.238E+00	5.01E+01	1.06E+01 G
HF-181	F	4.6048E-01					4.24E+01	
			482.00	0.000E+00	?(	1.985E+00	1.00E+03	8.05E+01 G
			133.02	-7.563E-01	&	4.160E+00	1.65E+02	4.33E+01 G
			345.83	2.920E+00	?(	1.080E+01	1.10E+02	1.51E+01 G
			136.30	-5.378E+00	+	3.200E+01	1.78E+02	5.85E+00 G
Ta-182	F	8.2412E-01					1.14E+02	
			1121.30	-1.979E+00	?(	9.125E+00	1.36E+02	3.49E+01 G
			1221.41	4.447E+00	(	4.631E+00	5.06E+01	2.70E+01 G
			1189.05	-5.755E+00	+	1.195E+01	9.57E+01	1.62E+01 G
Hg-203	F	-6.0360E-01					4.66E+01	
			279.20	-6.036E-01	(	1.808E+00	8.97E+01	8.15E+01 G
TL-208	N	4.7906E+00					6.98E+02	
			583.02	4.873E+00	(	1.128E+00	1.35E+01	8.45E+01 G
			277.28	8.703E+00	+	8.727E+00	3.72E+01	6.31E+00 G
			860.56	4.230E+00	?(	1.100E+01	1.14E+02	1.24E+01 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
PM-146	C	2.2069E+00					2.02E+03	
			453.88	1.768E+00	&(	1.189E+00	3.02E+01	6.50E+01 G
			747.16	-9.303E-02	%	4.095E+00	1.82E+03	3.40E+01 G
			735.72	3.475E+00	?(	3.534E+00	4.60E+01	2.25E+01 G
Y-88	F	-1.4155E+00					1.07E+02	
			1836.06	-1.415E+00	?(	2.248E+00	8.12E+01	9.92E+01 G
			898.04	4.048E-01	+	1.009E+00	1.06E+02	9.37E+01 G
Cd-113m		5.5597E+03					5.33E+03	
			263.70	5.560E+03	?(	1.576E+04	8.46E+01	6.00E-03 K
Cf-251	T	1.6215E+00					3.28E+05	
			176.60	1.622E+00	&(	4.503E+00	1.08E+02	1.70E+01 G
			227.00	4.971E+00		1.442E+01	1.12E+02	6.30E+00 GA
Cf-249	T	1.3377E-01					1.28E+05	
			387.95	-3.739E-01	&(	2.805E+00	2.21E+02	6.60E+01 G
			333.44	2.294E+00	?(	7.874E+00	1.02E+02	1.55E+01 G
Sn-126		-3.7952E+00					3.65E+07	
			87.57	-1.068E+00	}	5.449E+00	1.53E+02	3.75E+01 GA
			64.28	-3.795E+00	?(	1.975E+01	1.55E+02	9.70E+00 G
			86.94	1.179E+01		9.676E+00	2.66E+01	9.04E+00 GA
PB-210	N	2.8312E+01					8.14E+03	
			46.54	2.831E+01	(P	3.518E+01	4.35E+01	4.25E+00 G
PB-212	N	1.4742E+01					6.98E+02	
			238.63	1.474E+01	(	1.696E+00	6.49E+00	4.33E+01 G
			300.03	1.050E+01	-	7.404E+01	2.10E+02	3.28E+00 GA
PB-214	N	1.9376E+01					5.84E+05	
			351.93	1.999E+01	(	2.260E+00	7.51E+00	3.76E+01 G
			295.09	1.819E+01	(P	3.920E+00	1.16E+01	1.93E+01 G
			242.00	2.294E+01	+	1.168E+01	1.81E+01	7.43E+00 GA
BI-207	C	6.5354E-01					1.18E+04	
			1063.66	9.024E-01	?(	1.757E+00	8.82E+01	7.45E+01 G
			569.70	4.639E-01	(	1.124E+00	7.27E+01	9.77E+01 G
BI-212	N	-7.9558E+00					6.98E+02	
			727.17	-7.956E+00	(	2.546E+01	9.49E+01	7.55E+00 G
			785.42	3.202E+01	?	1.128E+02	1.50E+02	1.28E+00 GA

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
U-235	N	2.3059E+00					2.57E+11	
			143.79	1.143E-01	%(	1.598E+01	4.14E+03	1.10E+01 G
			205.33	6.038E+00	?(	1.631E+01	1.05E+02	5.01E+00 G
			163.38	3.353E+00	?(	2.061E+01	1.81E+02	5.08E+00 G
			185.72	2.268E+00	* P	1.846E+00	3.26E+01	5.40E+01 GA
BI-214	N	1.9106E+01					5.84E+05	
			609.31	1.911E+01	(P	2.121E+00	7.85E+00	4.61E+01 G
			1120.29	2.327E+01	+	4.992E+00	1.56E+01	1.51E+01 G
			1764.49	2.494E+01	+	4.376E+00	1.54E+01	1.54E+01 G
BI-210M	T	3.3531E-01					1.10E+09	
			265.83	3.353E-01	(	2.161E+00	1.88E+02	5.00E+01 G
			304.90	0.000E+00	-	9.152E+00	1.00E+03	2.80E+01 G
AC-228	N	1.2083E+01					2.10E+03	
			911.07	1.208E+01	?(	4.446E+00	1.98E+01	2.90E+01 G
			968.97	5.239E+00	-	1.423E+01	8.12E+01	1.75E+01 G
			338.32	7.643E-01	-	1.471E+01	5.63E+02	1.20E+01 G
			93.35	7.111E+00	-	3.373E+01	1.42E+02	5.56E+00 XA
TH-227	N	-6.5547E+00					7.95E+03	
			256.24	-6.555E+00	?(	1.666E+01	9.93E+01	7.00E+00 G
			235.97	2.368E+00	+	1.839E+01	2.32E+02	1.23E+01 G
			50.14	-6.378E+00	&	2.713E+01	1.27E+02	8.00E+00 G
TH-229	N	4.7726E+00					2.68E+06	
			193.51	5.897E+00	?(	2.138E+01	1.41E+02	4.40E+00 G
			210.85	3.118E+00	?(	3.217E+01	3.95E+02	2.99E+00 G
TH-234	N	1.7867E+01					1.63E+12	
			92.59	1.560E+01	(P	1.745E+01	3.52E+01	5.58E+00 G
			63.29	2.119E+01	(P	2.670E+01	3.96E+01	3.81E+00 G
PA-231	N	6.4497E+00					1.20E+07	
			302.65	0.000E+00	?(	8.848E+01	1.00E+03	2.88E+00 G
			300.07	1.400E+01	?(	1.003E+02	2.13E+02	2.46E+00 G
PA-233	C	6.3714E-01					7.82E+08	
			312.01	0.000E+00	*(	7.244E+00	1.00E+03	3.60E+01 G
			300.18	4.337E+00	?(	4.039E+01	2.77E+02	6.20E+00 G
PA-234	N	-1.8717E+00					1.63E+12	
			131.29	-1.872E+00	&(	7.559E+00	1.21E+02	1.80E+01 G
			946.02	-5.603E+00	+	1.092E+01	8.68E+01	1.34E+01 G
			569.47	-3.954E+00	&	1.713E+01	1.26E+02	8.20E+00 G
			883.24	0.000E+00	&	1.952E+01	1.00E+03	9.60E+00 G

Nuclide		Ave activity	Energy	Activity	Code	Peak	MDA	Comments
			880.53	5.342E+00	?	2.930E+01	1.58E+02	6.00E+00 GA
PA-234M	N	4.8910E+01					1.63E+12	
			1001.00	4.300E+01	(	1.697E+02	1.14E+02	8.37E-01 G
			766.41	6.575E+01	(	6.621E+02	2.89E+02	2.94E-01 G
AM-241	T	1.1551E+00					1.58E+05	
			59.54	1.155E+00	?(	5.131E+00	1.33E+02	3.59E+01 G
Np-237	F	2.7631E+00					2.14E+06	
			86.49	2.763E+00	(	1.541E+01	1.67E+02	1.31E+01 G
Ir-192	F	2.5423E-01					7.40E+01	
			316.49	0.000E+00	&(	3.029E+00	1.00E+03	8.70E+01 G
			468.06	6.818E-01	&(	2.952E+00	1.27E+02	5.18E+01 G
			308.44	0.000E+00	-	8.142E+00	1.00E+03	3.18E+01 G
Cs-136	F	-7.9750E-01					1.30E+01	
			818.50	-7.975E-01	?(	2.284E+00	8.55E+01	1.00E+02 G
			1048.07	1.263E-01	+	1.837E+00	3.99E+02	8.00E+01 G
			340.57	0.000E+00	&	3.819E+00	1.00E+03	4.69E+01 G
Np-239	T	-1.3798E+00					2.36E+00	
			103.70	4.949E-01	+	6.204E+00	3.72E+02	2.40E+01 X
			106.13	-1.380E+00	*(	6.765E+00	1.47E+02	2.27E+01 G
			99.50	1.993E+00	*	9.529E+00	1.43E+02	1.50E+01 X
Nd-147		-3.2206E+00					1.11E+01	
			531.00	-3.221E+00	?(	9.487E+00	1.22E+02	1.30E+01 G
			91.10	0.000E+00	+	6.960E+00	1.00E+03	2.83E+01 G
TL-210	N	5.5875E-02					5.84E+05	
			799.60	-6.713E-02	?(	1.589E+00	6.62E+02	9.90E+01 G
			296.00	2.100E-01	?(	3.150E+00	4.45E+02	7.90E+01 G
			1313.00	1.140E+00	?	4.721E+00	1.76E+02	2.10E+01 GA
Kr-85	I	-1.1180E+01					3.92E+03	
			513.98	-1.118E+01	%(	5.236E+02	1.36E+03	4.30E-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
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	
TH-227	50.14	317.	-20.	-0.011	127.00	-6.378E+00	
AM-241	59.54	379.	21.	0.012	132.70	1.155E+00	
BA-133	80.99	1133.	-28.	-0.016	170.65	-1.321E+00	
EU-155	86.54	828.	-26.	-0.014	159.25	-1.309E+00	
Gd-153	97.50	373.	20.	0.011	139.47	9.982E-01	
Np-239	99.50	393.	20.	0.011	142.76	1.993E+00	
Gd-153	103.20	413.	20.	0.011	145.63	1.369E+00	
Np-239	103.70	433.	8.	0.004	371.82	4.949E-01	
Np-239	106.13	464.	-21.	-0.012	146.51	-1.380E+00	
EU-152	121.78	210.	-5.	-0.003	412.31	-2.609E-01	
CO-57	122.06	138.	16.	0.009	106.80	2.788E-01	
EU-154	123.10	211.	-22.	-0.012	94.23	-8.189E-01	
PA-234	131.29	352.	-22.	-0.012	120.75	-1.872E+00	
HF-181	133.02	624.	-22.	-0.012	164.53	-7.563E-01	
CE-144	133.54	645.	-22.	-0.012	167.22	-2.957E+00	
HF-181	136.30	667.	-21.	-0.011	177.95	-5.378E+00	
CO-57	136.47	606.	21.	0.012	169.53	2.951E+00	
Tc-99m	140.51	586.	21.	0.012	165.95	3.679E-01	
CE-141	145.44	131.	15.	0.008	136.43	4.882E-01	
Ba-140	162.66	159.	18.	0.010	102.73	4.634E+00	
U-235	163.38	176.	11.	0.006	181.36	3.353E+00	
CE-139	165.85	188.	-6.	-0.003	334.83	-1.191E-01	
Cf-251	176.60	84.	16.	0.009	107.71	1.622E+00	
U-235	185.72	139.	71.	0.039	32.58	2.268E+00	P
TH-229	193.51	117.	15.	0.008	140.62	5.897E+00	
U-235	205.33	81.	16.	0.009	104.78	6.038E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
TH-229	210.85	110.	5.	0.003	394.97	3.118E+00	
Cf-251	227.00	88.	16.	0.009	112.50	4.971E+00	
TH-227	235.97	556.	14.	0.008	231.52	2.368E+00	
EU-152	244.69	574.	15.	0.008	226.46	4.097E+00	
TH-227	256.24	125.	-22.	-0.012	99.35	-6.555E+00	
Cd-113m	263.70	76.	15.	0.009	84.60	5.560E+03	
BI-210M	265.83	100.	8.	0.004	188.36	3.353E-01	
Hg-203	279.20	178.	-22.	-0.012	89.74	-6.036E-01	
I-131	284.30	114.	-21.	-0.012	96.98	-7.903E+00	
TL-210	296.00	482.	7.	0.004	445.16	2.100E-01	
PA-231	300.07	463.	14.	0.008	213.25	1.400E+01	
PA-233	300.18	478.	11.	0.006	276.93	4.337E+00	
CR-51	320.08	507.	-15.	-0.008	211.65	-3.834E+00	
La-140	328.76	117.	-7.	-0.004	232.38	-8.427E-01	
Cf-249	333.44	91.	14.	0.008	101.81	2.294E+00	
HF-181	345.83	156.	16.	0.009	110.01	2.920E+00	
BA-133	356.00	365.	3.	0.002	812.03	1.465E-01	
I-131	364.48	76.	-18.	-0.010	99.20	-6.023E-01	
BA-133	383.84	168.	-18.	-0.010	107.27	-5.664E+00	
Cf-249	387.95	171.	-8.	-0.005	220.68	-3.739E-01	
SN-113	391.69	157.	16.	0.009	116.55	7.134E-01	
SB-125	427.88	36.	6.	0.003	200.00	6.363E-01	
AG-108M	433.94	48.	-8.	-0.004	173.21	-2.805E-01	
SB-125	463.37	82.	-5.	-0.003	244.47	-1.699E+00	
Ir-192	468.06	84.	10.	0.006	127.36	6.818E-01	
BE-7	477.60	83.	-6.	-0.003	230.77	-1.838E+00	
La-140	487.02	78.	10.	0.006	124.81	7.864E-01	
RU-103	497.05	24.	11.	0.006	91.82	4.276E-01	
RH-106	511.86	87.	73.	0.041	21.42	1.318E+01	
Nd-147	531.00	43.	-11.	-0.006	122.23	-3.221E+00	
Ba-140	537.26	26.	-5.	-0.003	212.92	-7.640E-01	
CS-134	563.24	39.	-2.	-0.001	641.29	-9.244E-01	
CS-134	569.32	35.	6.	0.004	137.35	1.602E+00	
PA-234	569.47	51.	-8.	-0.005	126.43	-3.954E+00	
BI-207	569.70	30.	12.	0.006	72.66	4.639E-01	
SB-125	600.50	412.	-15.	-0.009	188.54	-3.480E+00	
SB-124	602.73	374.	-15.	-0.008	189.34	-6.026E-01	
CS-134	604.71	360.	-13.	-0.007	210.16	-5.366E-01	
RH-106	621.92	367.	-16.	-0.009	175.73	-6.516E+00	
I-131	636.97	23.	7.	0.004	140.17	4.223E+00	
AG-110M	657.76	55.	-5.	-0.003	214.48	-2.285E-01	
PM-144	696.54	33.	7.	0.004	169.41	3.340E-01	
NB-94	702.63	47.	-4.	-0.002	398.65	-1.700E-01	
SB-124	722.79	29.	11.	0.006	79.12	4.505E+00	
AG-108M	722.94	40.	11.	0.006	90.33	5.362E-01	
EU-154	723.36	50.	2.	0.001	617.26	3.757E-01	
BI-212	727.17	69.	-13.	-0.007	94.94	-7.956E+00	
ZR-95	756.73	51.	-14.	-0.008	109.28	-1.260E+00	

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
AG-110M	763.94	64.	-7.	-0.004	162.42	-1.551E+00	
NB-95	765.79	66.	9.	0.005	133.87	4.275E-01	
EU-152	778.92	19.	-4.	-0.002	255.36	-1.385E+00	
BI-212	785.42	33.	8.	0.005	149.56	3.202E+01	
CS-134	795.87	42.	-2.	-0.001	374.17	-1.451E-01	
TL-210	799.60	38.	-1.	-0.001	662.38	-6.713E-02	
CS-134	801.95	66.	-15.	-0.008	82.84	-8.379E+00	
CO-58	810.78	57.	-4.	-0.002	271.57	-2.024E-01	
Cs-136	818.50	83.	-16.	-0.009	85.50	-7.975E-01	
MN-54	834.85	23.	-2.	-0.001	444.01	-1.200E-01	
Co-56	846.77	45.	-10.	-0.006	150.83	-5.196E-01	
NB-94	871.10	54.	-17.	-0.010	65.08	-9.123E-01	
EU-154	873.23	43.	11.	0.006	86.20	4.966E+00	
PA-234	880.53	42.	6.	0.003	158.11	5.342E+00	
AG-110M	884.68	36.	10.	0.006	90.54	7.376E-01	
Sc-46	889.28	70.	-13.	-0.007	95.65	-6.965E-01	
Y-88	898.04	10.	7.	0.004	106.27	4.048E-01	
AG-110M	937.49	30.	-5.	-0.003	244.95	-8.134E-01	
PA-234	946.02	25.	-13.	-0.007	86.82	-5.603E+00	
EU-152	964.11	60.	-19.	-0.011	92.52	-7.421E+00	
EU-154	996.33	5.	12.	0.007	50.12	6.615E+00	
Co-56	1037.84	27.	-5.	-0.003	255.75	-1.988E+00	
Cs-136	1048.07	21.	2.	0.001	399.50	1.263E-01	
RH-106	1050.36	29.	4.	0.002	196.85	1.557E+01	
BI-207	1063.66	16.	11.	0.006	88.23	9.024E-01	
Ga-68	1077.40	11.	17.	0.010	49.10	3.789E+01	
FE-59	1099.25	16.	7.	0.004	135.27	7.781E-01	
EU-152	1112.07	100.	-10.	-0.005	147.19	-4.566E+00	
Ta-182	1121.30	103.	-11.	-0.006	135.82	-1.979E+00	
CO-60	1173.24	16.	11.	0.006	87.98	7.260E-01	
Ta-182	1189.05	32.	-14.	-0.008	95.65	-5.755E+00	
Ta-182	1221.41	11.	18.	0.010	50.63	4.447E+00	
Co-56	1238.28	23.	28.	0.016	43.66	2.945E+00	
NA-22	1274.53	6.	7.	0.004	61.39	4.895E-01	
EU-154	1274.54	13.	3.	0.002	159.04	6.712E-01	
FE-59	1291.60	28.	-9.	-0.005	137.70	-1.532E+00	
TL-210	1313.00	6.	3.	0.002	176.21	1.140E+00	
CO-60	1332.50	11.	2.	0.001	480.00	1.211E-01	
AG-110M	1384.30	11.	-2.	-0.001	344.64	-7.190E-01	
EU-152	1408.00	0.	15.	0.008	25.82	5.417E+00	
La-140	1596.21	6.	7.	0.004	92.58	6.161E-01	
SB-124	1690.98	13.	-7.	-0.004	138.11	-1.230E+00	
Y-88	1836.06	20.	-15.	-0.008	81.17	-1.415E+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
BE-7	#A	-1.8379E+00	-1.8379E+00	2.308E+02%	1.46E+01
NA-22	#A	4.8950E-01	4.8950E-01	6.139E+01%	9.70E-01
K-40		2.2036E+02	2.2036E+02	5.764E+00%	5.40E+00
Sc-46	#A	-6.9650E-01	-6.9650E-01	9.565E+01%	2.25E+00
CR-51	#A	-3.8337E+00	-3.8338E+00	2.117E+02%	2.72E+01
MN-54	#A	-1.1996E-01	-1.1996E-01	4.440E+02%	1.30E+00
FE-59	#A	7.7813E-01	7.7813E-01	1.353E+02%	2.37E+00
Co-56	#A	8.5923E-01	8.5924E-01	4.366E+01%	1.77E+00
CO-57	#A	5.7530E-01	5.7530E-01	1.002E+02%	1.00E+00
CO-58	#A	-2.0240E-01	-2.0240E-01	2.716E+02%	1.92E+00
CO-60	#A	4.2341E-01	4.2341E-01	8.798E+01%	1.34E+00
ZN-65	#A	0.0000E+00	0.0000E+00	1.000E+03%	5.89E+00
NB-94	#A	-1.6996E-01	-1.6996E-01	3.987E+02%	1.60E+00
ZR-95	#A	-1.2602E+00	-1.2602E+00	1.093E+02%	3.17E+00
NB-95	#A	4.2751E-01	4.2751E-01	1.339E+02%	1.96E+00
RU-103	#A	4.2764E-01	4.2764E-01	9.182E+01%	9.88E-01
RH-106	#A	-3.5166E+00	-3.5166E+00	1.319E+02%	3.85E+01
AG-108M	#A	1.2865E-01	1.2865E-01	9.033E+01%	1.23E+00
AG-110M	#A	7.3760E-01	7.3760E-01	9.054E+01%	2.26E+00
SN-113	#A	7.1339E-01	7.1339E-01	1.166E+02%	2.80E+00
SB-124	#A	-9.6437E-02	-9.6437E-02	7.912E+01%	3.84E+00
SB-125	#A	6.3631E-01	6.3631E-01	2.000E+02%	3.25E+00
I-131	#A	-2.1302E-01	-2.1302E-01	8.586E+01%	1.47E+00
Gd-153	#A	1.1544E+00	1.1544E+00	1.008E+02%	4.66E+00
Ga-68	#A	3.7746E+01	3.7894E+01	4.910E+01%	3.92E+01
Tc-99m	#A	3.6763E-01	3.6790E-01	1.659E+02%	2.04E+00
BA-133	#A	1.4650E-01	1.4650E-01	8.120E+02%	4.03E+00
CS-134	#A	1.2114E-01	1.2114E-01	1.373E+02%	1.92E+00
CS-137	#A	5.0979E-02	5.0979E-02	1.229E+03%	2.20E+00
CE-139	#A	-1.1911E-01	-1.1911E-01	3.348E+02%	1.36E+00
Ba-140	#A	3.3284E-01	3.3285E-01	1.027E+02%	4.04E+00
La-140	#A	6.7111E-01	6.7112E-01	7.770E+01%	1.24E+00
CE-141	#A	4.8824E-01	4.8825E-01	1.364E+02%	1.80E+00
CE-144	#A	-2.9571E+00	-2.9571E+00	1.672E+02%	1.65E+01
PM-144	#A	3.3402E-01	3.3402E-01	1.694E+02%	1.34E+00
EU-152	#A	6.5261E-01	6.5261E-01	2.265E+02%	3.67E+00
EU-154	#A	1.5339E+00	1.5339E+00	4.573E+01%	2.58E+00
EU-155	#A	0.0000E+00	0.0000E+00	1.000E+03%	7.07E+00
HF-181	#A	4.6048E-01	4.6048E-01	1.100E+02%	1.98E+00
Ta-182	#A	8.2412E-01	8.2412E-01	5.063E+01%	9.13E+00
Hg-203	#A	-6.0359E-01	-6.0360E-01	8.974E+01%	1.81E+00
TL-208		4.7906E+00	4.7906E+00	1.355E+01%	1.13E+00
PM-146	#	2.2069E+00	2.2069E+00	2.749E+01%	1.19E+00

Y-88	#A	-1.4155E+00	-1.4155E+00	8.117E+01%	2.25E+00
Cd-113m	#A	5.5597E+03	5.5597E+03	8.460E+01%	1.58E+04
Cd-109	#A	0.0000E+00	0.0000E+00	1.000E+03%	5.29E+01
Cf-251	#A	1.6215E+00	1.6215E+00	1.077E+02%	4.50E+00
Cf-249	#A	1.3377E-01	1.3377E-01	1.018E+02%	2.81E+00
Sn-126	A	-3.7952E+00	-3.7952E+00	1.554E+02%	1.97E+01
PB-210	A	2.8312E+01	2.8312E+01	4.353E+01%	3.52E+01
PB-212		1.4742E+01	1.4742E+01	6.494E+00%	1.70E+00
PB-214		1.9376E+01	1.9376E+01	6.895E+00%	2.26E+00
BI-207	#A	6.5354E-01	6.5354E-01	5.715E+01%	1.76E+00
BI-212	#A	-7.9558E+00	-7.9558E+00	9.494E+01%	2.55E+01
U-235	#A	2.3059E+00	2.3059E+00	1.048E+02%	1.60E+01
BI-214		1.9106E+01	1.9106E+01	7.853E+00%	2.12E+00
BI-210M	#A	3.3531E-01	3.3531E-01	1.884E+02%	2.16E+00
AC-228		1.2083E+01	1.2083E+01	1.981E+01%	4.45E+00
TH-227	#A	-6.5547E+00	-6.5547E+00	9.935E+01%	1.67E+01
TH-229	#A	4.7726E+00	4.7726E+00	1.406E+02%	2.14E+01
TH-234		1.7867E+01	1.7867E+01	2.651E+01%	1.75E+01
PA-231	#A	6.4497E+00	6.4497E+00	2.132E+02%	8.85E+01
PA-233	#A	6.3714E-01	6.3714E-01	2.769E+02%	7.24E+00
PA-234	#A	-1.8717E+00	-1.8717E+00	1.207E+02%	7.56E+00
PA-234M	A	4.8910E+01	4.8910E+01	1.138E+02%	1.70E+02
AM-241	#A	1.1551E+00	1.1551E+00	1.327E+02%	5.13E+00
Np-237	A	2.7631E+00	2.7631E+00	1.670E+02%	1.54E+01
Ir-192	#A	2.5423E-01	2.5423E-01	1.274E+02%	3.03E+00
Cs-136	#A	-7.9748E-01	-7.9750E-01	8.550E+01%	2.28E+00
Np-239	#A	-1.3797E+00	-1.3798E+00	1.465E+02%	6.76E+00
Nd-147	#A	-3.2206E+00	-3.2206E+00	1.222E+02%	9.49E+00
TL-210	#A	5.5875E-02	5.5875E-02	3.990E+02%	1.59E+00
Kr-85	#A	-1.1180E+01	-1.1180E+01	1.362E+03%	5.24E+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 (25.1 to 1999.1 keV) 3.366E+02 Bq/Sample
Total Decayed Activity (25.1 to 1999.1 keV) 3.3663348E+02 Bq/Sample

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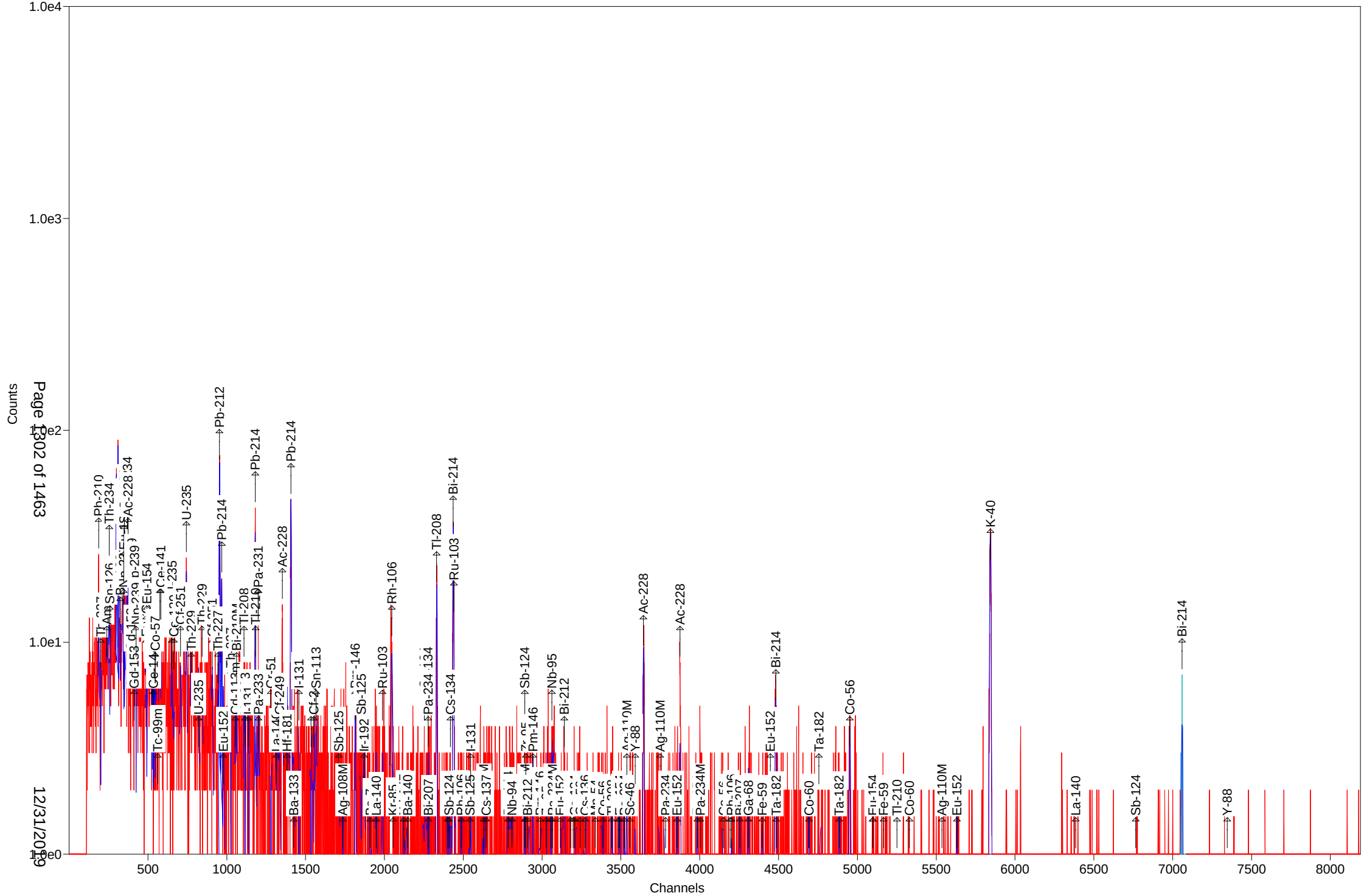
452568_Gamma_160-36526-A-22-B. 12_Gamma_20193697.spc.



Daily Checks

Test America
St. Louis
Quality Control Check

Spectrum: 5_20191225001_QCAsLeft
Description: Quality control Check (QC Source 'A') Post Stabilization
Acquired: 12/25/2019 5:07:21 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	237.80	239.00	240.00	PASS
Energy	59.54	59.04	59.29	59.58	59.79	60.04	PASS
FWHM	0.74	0.00	0.00	0.73	1.84	1.94	PASS
ActivityDiff	636.60	-5.00	-4.00	1.25	4.00	5.00	PASS
QA-662							
FWHM	1.36	0.00	0.00	1.31	3.06	3.16	PASS
ActivityDiff	596.80	-5.00	-4.00	1.81	4.00	5.00	PASS
QA-1332							
Channel	5330.00	5327.00	5328.00	5328.80	5332.00	5333.00	PASS
Energy	1332.51	1331.76	1332.01	1332.26	1333.01	1333.26	PASS
FWHM	1.90	0.00	0.00	1.90	4.10	4.20	PASS
ActivityDiff	1164.20	-5.00	-4.00	-1.37	4.00	5.00	PASS

Analyst: Caleb Quinn Reviewer: kody Saulters

Test America
St. Louis
Background Check

Spectrum: 5_20191225002_BG
Description: Background Contamination Check
Acquired: 12/25/2019 5:29:36 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	1.45	1.55	1.60	PASS

Analyst: Caleb Quinn Reviewer: kody Saulters

Test America
St. Louis
Background Check

Spectrum: 9_20191225001_BG
Description: Background Contamination Check
Acquired: 12/25/2019 4:44:53 AM
Detector: Detector # 9
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	1.89	1.53	1.65	1.81	2.14	2.26	PASS

Analyst: Caleb Quinn Reviewer: kody Saulters

Test America
St. Louis
Quality Control Check

Spectrum: 9_20191225002_QCAsLeft
Description: Quality control Check (QC Source 'E') Post Stabilization
Acquired: 12/25/2019 5:45:19 AM
Detector: Detector # 9
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	59.61	59.79	60.04	PASS
FWHM	1.08	0.00	0.00	0.94	2.18	2.28	PASS
ActivityDiff	649.44	-5.00	-4.00	-0.33	4.00	5.00	PASS
QA-662							
FWHM	1.62	0.00	0.00	1.51	3.32	3.42	PASS
ActivityDiff	607.56	-5.00	-4.00	0.71	4.00	5.00	PASS
QA-1332							
Channel	5330.00	5327.00	5328.00	5329.70	5332.00	5333.00	PASS
Energy	1332.51	1331.76	1332.01	1332.34	1333.01	1333.26	PASS
FWHM	2.12	0.00	0.00	1.95	4.32	4.42	PASS
ActivityDiff	1191.31	-5.00	-4.00	0.02	4.00	5.00	PASS

Analyst: Caleb Quinn Reviewer: kody Saulters

Test America
St. Louis
Background Check

Spectrum: 12_20191225001_BG
Description: Background Contamination Check
Acquired: 12/25/2019 4:45:26 AM
Detector: Detector #12
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	2.00	1.89	1.93	1.99	2.07	2.10	PASS

Analyst: Caleb Quinn Reviewer: kody Saulters

Test America
St. Louis
Quality Control Check

Spectrum: 12_20191225002_QCAsLeft
Description: Quality control Check (QC Source 'H') Post Stabilization
Acquired: 12/25/2019 5:45:50 AM
Detector: Detector #12
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	59.60	59.79	60.04	PASS
FWHM	0.90	0.00	0.00	0.85	2.00	2.10	PASS
ActivityDiff	691.00	-5.00	-4.00	-0.34	4.00	5.00	PASS
QA-662							
FWHM	1.48	0.00	0.00	1.48	3.18	3.28	PASS
ActivityDiff	659.00	-5.00	-4.00	0.20	4.00	5.00	PASS
QA-1332							
Channel	5330.00	5327.00	5328.00	5330.10	5332.00	5333.00	PASS
Energy	1332.51	1331.76	1332.01	1332.51	1333.01	1333.26	PASS
FWHM	2.00	0.00	0.00	1.96	4.20	4.30	PASS
ActivityDiff	1274.00	-5.00	-4.00	1.01	4.00	5.00	PASS

Analyst: Caleb Quinn Reviewer: kody Saulters

Test America
St. Louis
Quality Control Check

Spectrum: 14_20191225001_QCAsLeft
Description: Quality control Check (QC Source 'E') Post Stabilization
Acquired: 12/25/2019 5:05:49 AM
Detector: Detector #14
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	59.64	59.79	60.04	PASS
FWHM	0.76	0.00	0.00	0.90	1.86	1.96	PASS
ActivityDiff	671.90	-5.00	-4.00	-3.38	4.00	5.00	PASS
QA-662							
FWHM	1.35	0.00	0.00	1.39	3.05	3.15	PASS
ActivityDiff	628.85	-5.00	-4.00	-2.62	4.00	5.00	PASS
QA-1332							
Channel	5330.00	5327.00	5328.00	5329.80	5332.00	5333.00	PASS
Energy	1332.51	1331.76	1332.01	1332.46	1333.01	1333.26	PASS
FWHM	1.91	0.00	0.00	1.91	4.11	4.21	PASS
ActivityDiff	1224.59	-5.00	-4.00	-2.45	4.00	5.00	PASS

Analyst: Caleb Quinn Reviewer: kody Saulters

Test America
St. Louis
Background Check

Spectrum: 14_20191225002_BG
Description: Background Contamination Check
Acquired: 12/25/2019 5:26:35 AM
Detector: Detector #14
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	1.80	1.66	1.71	1.77	1.90	1.94	PASS

Analyst: Caleb Quinn Reviewer: kody Saulters

Test America
St. Louis
Quality Control Check

Spectrum: 16_20191225001_QCAsLeft
Description: Quality control Check (QC Source 'G') Post Stabilization
Acquired: 12/25/2019 5:07:08 AM
Detector: Detector #16
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	59.54	59.04	59.29	59.54	59.79	60.04	PASS
FWHM	0.96	0.00	0.00	1.01	2.06	2.16	PASS
ActivityDiff	602.10	-5.00	-4.00	3.74	4.00	5.00	PASS
QA-662							
FWHM	1.53	0.00	0.00	1.73	3.23	3.33	PASS
ActivityDiff	571.13	-5.00	-4.00	1.24	4.00	5.00	PASS
QA-1332							
Channel	5330.00	5327.00	5328.00	5331.00	5332.00	5333.00	PASS
Energy	1332.51	1331.76	1332.01	1332.86	1333.01	1333.26	PASS
FWHM	2.09	0.00	0.00	2.67	4.29	4.39	PASS
ActivityDiff	1139.05	-5.00	-4.00	3.20	4.00	5.00	PASS

Analyst: Caleb Quinn Reviewer: kody Saulters

Test America
St. Louis
Background Check

Spectrum: 16_20191225002_BG
Description: Background Contamination Check
Acquired: 12/25/2019 5:26:04 AM
Detector: Detector #16
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	2.68	2.51	2.56	2.76	2.80	2.86	PASS

Analyst: Caleb Quinn Reviewer: kody Saulters

Test America
St. Louis
Quality Control Check

Spectrum: 17_20191225001_QCAsLeft
Description: Quality control Check (QC Source 'H') Post Stabilization
Acquired: 12/25/2019 5:06:25 AM
Detector: Detector #17
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	59.64	59.79	60.04	PASS
FWHM	0.77	0.00	0.00	0.76	1.87	1.97	PASS
ActivityDiff	691.00	-5.00	-4.00	2.33	4.00	5.00	PASS
QA-662							
FWHM	1.37	0.00	0.00	1.37	3.07	3.17	PASS
ActivityDiff	659.00	-5.00	-4.00	-0.03	4.00	5.00	PASS
QA-1332							
Channel	5330.00	5327.00	5328.00	5329.50	5332.00	5333.00	PASS
Energy	1332.51	1331.76	1332.01	1332.47	1333.01	1333.26	PASS
FWHM	1.88	0.00	0.00	1.83	4.08	4.18	PASS
ActivityDiff	1274.00	-5.00	-4.00	-1.23	4.00	5.00	PASS

Analyst: Caleb Quinn Reviewer: kody Saulters

Test America
St. Louis
Background Check

Spectrum: 17_20191225002_BG
Description: Background Contamination Check
Acquired: 12/25/2019 5:27:29 AM
Detector: Detector #17
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	2.32	2.18	2.23	2.32	2.42	2.46	PASS

Analyst: Caleb Quinn 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 Centroid Channel	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	-

ORTEC g v - i (1087) Env32 G53W4.25 3/27/2012 5:22:03 PM
TestAmerica Spectrum name: 5_TunaCan_20120810.An1

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	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.
\- - 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 3/27/2012 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:	Ge9
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	14240	95.4
Am-241	2037	418	0.3590	1163	1244.5	107.0
Cd-109	2881	591	0.0361	16363	15902	97.2
Co-57	1511	310	0.8560	362	347.48	96.0
Ce-139	2139	439	0.7990	549	535.87	97.6
Hg-203	4651	954	0.8146	1171	1216.7	103.9
Sn-113	3015	618	0.6400	966	970.65	100.5
Cs-137	1938	397	0.8510	467	466.58	99.9
Y-88	7264	1489	0.9370	1589	1552.5	97.7
Co-60	3580	734	0.9997	734	727.12	99.0
Co-60	3581	734	0.9999	734	719.75	98.0
Y-88	7690	1577	0.9920	1589	1638.8	103.1

Reviewed By: Jody Watson

Date: 6/14/2012

Calibration Data from file: 9_Soil_TunaCan.Clb
Energy Calibration Date: 6/14/2012 Time: 10:19:40 AM
Efficiency Calibration Date: 6/14/2012 Time: 10:19:51 AM

Calibration Description:
9_Soil_TunaCan_90099_050312

Energy Calibration Fit
Energy = 0.0875 +0.250109*Channel -2.0385e-008*Channel**2
FWHM (ch) = 4.1690 +0.000934*Channel -2.36522e-008*Channel**2

Energy/FWHM Table

Channel	Energy(keV)	Fit(keV)	Delta	FWHM(keV)	Fit(keV)	Delta
185.85	46.54	46.57	-0.06%	1.07	1.09	-1.37%
237.85	59.54	59.58	-0.06%	1.08	1.10	-1.96%
351.79	88.03	88.07	-0.05%	1.12	1.12	-0.18%
487.79	122.06	122.08	-0.02%	1.14	1.16	-1.17%
662.64	165.85	165.81	0.02%	1.23	1.19	2.51%
1115.53	279.17	279.07	0.04%	1.30	1.30	0.44%
1565.74	391.69	391.64	0.01%	1.43	1.39	2.81%
2645.81	661.66	661.69	-0.00%	1.60	1.62	-0.83%
3591.21	898.02	898.02	0.00%	1.80	1.80	-0.02%
4692.44	1173.24	1173.26	-0.00%	2.01	2.01	0.18%
5329.80	1332.50	1332.54	-0.00%	2.09	2.12	-1.38%
7344.77	1836.01	1835.98	0.00%	2.45	2.44	0.55%

Efficiency Calibration Fit
Knee Energy = 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.3038 %
Ln(Eff) = -0.8080 -0.236727*Ln(Eng) -0.0395064*(Ln(Eng))**2
Below the Knee: Quadratic Uncertainty = 1.4241 %
Ln(Eff) = -23.8792 +8.875647*Ln(Eng) -0.94011*(Ln(Eng))**2

Efficiency Table

Energy	Efficiency	Fit	Delta
46.54	2.4596E-002	2.5767E-002	-4.76%
59.54	3.8891E-002	3.6589E-002	5.92%
88.03	4.9059E-002	5.0504E-002	-2.95%
122.06	5.0886E-002	5.3031E-002	-4.22%
165.85	========== Knee ==========		
165.85	4.6197E-002	4.7361E-002	-2.52%
279.17	3.4900E-002	3.3566E-002	3.82%
391.69	2.6668E-002	2.6526E-002	0.53%
661.66	1.8125E-002	1.8099E-002	0.14%
898.02	1.4012E-002	1.4341E-002	-2.34%
1173.24	1.1507E-002	1.1627E-002	-1.05%
1332.50	1.0296E-002	1.0501E-002	-2.00%
1836.01	8.3305E-003	8.0796E-003	3.01%

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  6/14/2012 10:20:07 AM
TestAmerica, Inc                Spectrum name: 9_TunaCan_20120147.An1

Sample description
     9_TunaCan_90099_050312


Spectrum Filename: C:\User\SPC\Det9\9_TunaCan_20120147.An1

Acquisition information
       Start time:                 5/3/2012 1:37:42 PM
       Live time:               3600
       Real time:               3661
       Dead time:                  1.65 %
       Detector ID:                    9

Detector system
     Ge 9 SN/100113


Calibration
       Filename:                   9_Soil_TunaCan.Clb
     9_Soil_TunaCan_90099_050312


       Energy Calibration
            Created:               6/14/2012 10:19:40 AM
            Zero offset:           0.088 keV
            Gain:                  0.250 keV/channel
            Quadratic:            -2.039E-08 keV/channel^2

       Efficiency Calibration
            Created:               6/14/2012 10:19:51 AM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   1.30 %
            Log(Eff):             -8.079856E-01 + (-2.367265E-01*Log(E) ) +
                                   ( -3.950640E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.42 %
            Log(Eff):             -2.387916E+01 + ( 8.875647E+00*Log(E) ) +
                                   ( -9.401100E-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 (    37.60keV )
       Stop channel:            8000 (  1999.66keV )
       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 6/14/2012 10:20:07 AM
TestAmerica, Inc Spectrum name: 9_TunaCan_20120147.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:	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. 12 cutoff: 5.00E+01%
Energy Calibration
Normalized diff: 0.0265

***** 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
46.57	55553.	0.67	1.07	2.579E-02	46.54	4.250	1.424E+04	Pb210
59.56	58492.	0.66	1.08	3.660E-02	59.54	35.700	1.245E+03	AM241
88.07	86792.	0.48	1.12	5.052E-02	88.03	3.610	1.590E+04	CD109
122.08	41484.	0.73	1.14	5.303E-02	122.06	85.600	3.475E+02	CO57
136.48	5266.	4.55	1.22	5.150E-02				
165.81	39272.	0.74	1.23	4.626E-02	165.85	79.900	5.359E+02	Ce139
279.06	19221.	1.24	1.30	3.358E-02	279.17	81.500	1.217E+03	Hg203
391.64	28263.	0.86	1.43	2.653E-02	391.69	64.000	9.707E+02	SN113
661.69	25703.	0.90	1.61	1.810E-02	661.66	85.210	4.666E+02	CS137
898.02	33728.	0.69	1.80	1.434E-02	898.02	93.700	1.552E+03	Y898
1173.24	29087.	0.72	2.01	1.163E-02	1173.24	99.900	7.271E+02	Co1173
1332.54	26026.	0.70	2.09	1.050E-02	1332.50	99.982	7.198E+02	Co1332
1835.94	21237.	0.73	2.46	8.080E-03	1836.01	99.200	1.639E+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
545.34	136.48	10776.	5266.	1.023E+05	4.55	1.225	-

ORTEC g v - i (1087) Env32 G53W4.25 6/14/2012 10:20:07 AM
TestAmerica, Inc Spectrum name: 9_TunaCan_20120147.An1

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	185.85	46.57	18837.	55553.	15.431	0.67	1.071
AM-241	237.79	59.56	19448.	58492.	16.248	0.66	1.078
CD-109	351.79	88.07	19261.	86792.	24.109	0.48	1.122
CO-57	487.79	122.08	11232.	41484.	11.523	0.73	1.142
Ce-139	662.64	165.81	9084.	39272.	10.909	0.74	1.225
Hg-203	1115.51	279.06	6250.	19221.	5.339	1.24	1.302
SN-113	1565.73	391.64	4864.	28263.	7.851	0.86	1.434
CS-137	2645.81	661.69	4037.	25703.	7.140	0.90	1.605
Y-898	3591.21	898.02	2958.	33728.	9.369	0.69	1.803
Co-1173	4692.36	1173.24	1710.	29087.	8.080	0.72	2.014
Co-1332	5329.80	1332.54	1048.	26026.	7.229	0.70	2.088
Y-1836	7344.62	1835.94	304.	21237.	5.899	0.73	2.457

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	MDA Value Bq			COMMENTS
Pb-210	N	1.4240E+04					8.15E+03		
			46.54	1.424E+04	(	1.646E+02	6.67E-01	4.25E+00	G
AM-241		1.2445E+03					1.58E+05		
			59.54	1.245E+03	(	1.388E+01	6.60E-01	3.57E+01	G
CD-109		1.5902E+04					4.63E+02		
			88.03	1.590E+04	(	1.190E+02	4.84E-01	3.61E+00	G
CO-57		3.4748E+02					2.72E+02		
			122.06	3.475E+02	(	4.159E+00	7.31E-01	8.56E+01	G

ORTEC g v - i (1087) Env32 G53W4.25 6/14/2012 10:20:07 AM
TestAmerica, Inc Spectrum name: 9_TunaCan_20120147.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Ce-139	5.3587E+02					1.38E+02	
		165.85	5.359E+02	(	6.097E+00	7.41E-01	7.99E+01 G
Hg-203	1.2167E+03					4.66E+01	
		279.17	1.217E+03	(	2.349E+01	1.24E+00	8.15E+01 G
SN-113	9.7065E+02					1.15E+02	
		391.69	9.707E+02	(	1.125E+01	8.60E-01	6.40E+01 G
CS-137	4.6658E+02					1.10E+04	
		661.66	4.666E+02	(	5.424E+00	8.98E-01	8.52E+01 G
Y-898	1.5525E+03					1.07E+02	
		898.02	1.552E+03	(	1.179E+01	6.92E-01	9.37E+01 G
Co-1173	7.2712E+02					1.93E+03	
		1173.24	7.271E+02	(	4.884E+00	7.20E-01	9.99E+01 G
Co-1332	7.1975E+02					1.93E+03	
		1332.50	7.198E+02	(	4.248E+00	6.98E-01	1.00E+02 G
Y-1836	1.6388E+03					1.07E+02	
		1836.01	1.639E+03	(	6.479E+00	7.29E-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 6/14/2012 10:20:07 AM
TestAmerica, Inc Spectrum name: 9_TunaCan_20120147.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	1.4091E+04	1.4240E+04	6.667E-01%	1.65E+02
AM-241	1.2439E+03	1.2445E+03	6.605E-01%	1.39E+01
CD-109	1.3223E+04	1.5902E+04	4.843E-01%	1.19E+02
CO-57	2.5385E+02	3.4748E+02	7.313E-01%	4.16E+00
Ce-139	2.8828E+02	5.3587E+02	7.410E-01%	6.10E+00
Hg-203	1.9517E+02	1.2167E+03	1.239E+00%	2.35E+01
SN-113	4.6244E+02	9.7065E+02	8.599E-01%	1.13E+01
CS-137	4.6297E+02	4.6658E+02	8.981E-01%	5.42E+00
Y-898	6.9723E+02	1.5525E+03	6.917E-01%	1.18E+01
Co-1173	6.9559E+02	7.2712E+02	7.204E-01%	4.88E+00
Co-1332	6.8854E+02	7.1975E+02	6.982E-01%	4.25E+00
Y-1836	7.3602E+02	1.6388E+03	7.291E-01%	6.48E+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 1999.7 keV) 3.304E+04 Bq
Total Decayed Activity (37.6 to 1999.7 keV) 3.9561668E+04 Bq

Analyzed by: _____
admin

Reviewed by: _____
Supervisor

Laboratory: TestAmerica, Inc

Gamma Verification per Geometry

Detector: **Ge12**
Geometry: **Tuna Can**
Reference date: **1/1/2018**
Calibration Standard: **108513**
Standard volume g / vial: **1550**
Standard volume transferred in g / geometry: **342.2**
lab ID# of cal standard: **#1402359 / Tuna Can_2018_00001**

Isotope	Certified Activity - Bq	Geometry Activity - Bq	Count Results	%recovery
Pb-210	72410	15986	16000	100.1
Am-241	5770	1274	1261	99.0
Cd-109	79700	17596	18250	103.7
Co-57	1809	399	393.1	98.4
Ce-139	2723	601	585.9	97.5
Hg-203	5868	1296	1312	101.3
Sn-113	4658	1028	1059	103.0
Cs-137	2283	504	509.8	101.1
Y-88	7810	1724	1705	98.9
Co-60	3574	789	776.5	98.4
Co-60	3574	789	765.4	97.0
Y-88	7810	1724	1769	102.6

Reviewed By: Jody Watson

Date: 4/23/2018

Calibration Data from file: 12_Soil_TunaCan.Clb
Energy Calibration Date: 4/20/2018 Time: 11:53:01 AM
Efficiency Calibration Date: 4/20/2018 Time: 11:53:09 AM

Calibration Description:
12_TunaCan_108513

Energy Calibration Fit
Energy = 0.0591 +0.250183*Channel -3.73476e-008*Channel**2
FWHM (ch) = 3.2115 +0.001032*Channel -1.75096e-008*Channel**2

Energy/FWHM Table

Channel	Energy(keV)	Fit(keV)	Delta	FWHM(keV)	Fit(keV)	Delta
185.95	46.54	46.58	-0.09%	0.84	0.85	-1.23%
237.82	59.54	59.56	-0.03%	0.86	0.86	-0.65%
351.66	88.03	88.03	-0.01%	0.89	0.89	-0.96%
487.75	122.06	122.08	-0.01%	0.92	0.93	-0.62%
662.97	165.85	165.91	-0.03%	0.97	0.97	0.22%
1115.42	279.17	279.07	0.04%	1.11	1.09	2.13%
1565.35	391.69	391.59	0.02%	1.20	1.20	0.60%
2645.53	661.66	661.66	-0.00%	1.49	1.45	2.30%
3591.22	898.02	898.04	-0.00%	1.66	1.67	-0.91%
4692.62	1173.24	1173.25	-0.00%	1.85	1.92	-3.60%
5330.40	1332.50	1332.57	-0.01%	2.09	2.05	1.92%
7346.34	1836.01	1835.97	0.00%	2.46	2.46	0.18%

Efficiency Calibration Fit
Polynomial Uncertainty = 1.0201 %
Coefficients:
-0.363508 -4.707999 0.462125 -0.051256 0.002384 -0.000043

Efficiency Table

Energy	Efficiency	Fit	Delta
46.54	1.8052E-002	1.7999E-002	0.29%
59.54	2.7878E-002	2.8172E-002	-1.06%
88.03	3.7143E-002	3.5814E-002	3.58%
122.06	3.6658E-002	3.7240E-002	-1.59%
165.85	3.3189E-002	3.4052E-002	-2.60%
279.17	2.4853E-002	2.4494E-002	1.45%
391.69	1.9499E-002	1.8934E-002	2.90%
661.66	1.2936E-002	1.2789E-002	1.13%
898.02	1.0139E-002	1.0253E-002	-1.13%
1173.24	8.2922E-003	8.4265E-003	-1.62%
1332.50	7.4182E-003	7.6470E-003	-3.08%
1836.01	6.0193E-003	5.8663E-003	2.54%

Calibration Certificate Table

Isotope	Energy	Pct	Halflife	Activity	GPS	Error	Date & Time
Pb-210	46.50	4.25	8.11E+003	15986.00	679.41	4.20%	1/1/2018 11:00:00 AM
Am-241	59.50	35.70	1.58E+005	1273.90	454.78	3.60%	1/1/2018 11:00:00 AM
Cd-109	88.00	3.61	4.61E+002	17596.00	635.22	4.10%	1/1/2018 11:00:00 AM
Co-57	122.10	85.60	2.72E+002	399.38	341.87	3.40%	1/1/2018 11:00:00 AM
Ce-139	165.90	79.90	1.38E+002	601.20	480.36	3.60%	1/1/2018 11:00:00 AM
Hg-203	279.20	81.50	4.66E+001	1295.50	1055.83	3.50%	1/1/2018 11:00:00 AM
Sn-113	391.70	64.00	1.15E+002	1028.40	658.18	3.90%	1/1/2018 11:00:00 AM
Cs-137	661.70	85.21	1.10E+004	504.03	429.48	4.10%	1/1/2018 11:00:00 AM
Y-88	898.00	93.70	1.07E+002	1724.30	1615.67	3.70%	1/1/2018 11:00:00 AM
Co-60	1173.20	99.90	1.93E+003	789.05	788.26	3.90%	1/1/2018 11:00:00 AM
Co-60	1332.50	99.98	1.93E+003	789.05	788.89	3.90%	1/1/2018 11:00:00 AM
Y-88	1836.10	99.20	1.07E+002	1724.30	1710.51	3.70%	1/1/2018 11:00:00 AM

Test America St. Louis Spectrum ID: 12_TunaCan_20180005

Sample Description: 12_TunaCan_108513
Detector: Detector #12
Batch ID: 12
Work Order Number: TunaCan
Lot Number: 108513

Decay to Time: 1/1/2018 11:00 Live Time: 3600 sec
Acquisition Time: 4/18/2018 13:54:19 Real Time: 3652 sec
Analysis Time: 4/20/2018 11:55 Dead Time: 1.41 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 12_Soil_TunaCan.Clb
Efficiency Cal Desc: 12_TunaCan_108513
Efficiency Cal Date: 4/20/2018 11:53
Energy Cal Date: 4/20/2018 11:13
Library: DET_EnergyStandardMix & Pb.lib
Bkgd Correction File: 12_2017-05-07_0806.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
Pb-210	1.600E+04	0.6	9.485E+01	1.031E+03	1.853E+02
AM-241	1.261E+03	0.7	9.223E+00	8.039E+01	1.659E+01
CD-109	1.825E+04	0.4	7.598E+01	1.135E+03	1.134E+02
CO-57	3.931E+02	0.8	3.042E+00	2.279E+01	5.110E+00
Ce-139	5.859E+02	0.7	4.357E+00	3.335E+01	6.791E+00
Hg-203	1.312E+03	1.1	1.414E+01	7.659E+01	2.206E+01
SN-113	1.059E+03	0.9	9.013E+00	6.310E+01	1.205E+01
CS-137	5.098E+02	0.9	4.734E+00	2.665E+01	6.233E+00
Y-898	1.705E+03	0.8	1.331E+01	8.765E+01	1.505E+01
Co-1173	7.765E+02	0.9	6.740E+00	3.922E+01	6.891E+00
Co-1332	7.654E+02	0.8	6.419E+00	3.866E+01	6.071E+00
Y-1836	1.769E+03	0.8	1.413E+01	1.018E+02	8.211E+00
Total	4.438E+04				

Analyst: Jody Watson

(Page 1 of 8)

Sample description
12_TunaCan_108513

Spectrum Filename: C:\User\SPC\Det12\12_TunaCan_20180005.An1

Acquisition information

Start time:	4/18/2018 1:54:19 PM
Live time:	3600
Real time:	3652
Dead time:	1.41 %
Detector ID:	12

Detector system
Ge12 S/N10034336

Calibration
Filename: 12_Soil_TunaCan.Clb
12_TunaCan_108513

Energy Calibration

Created:	4/20/2018 11:13:27 AM
Zero offset:	0.059 keV
Gain:	0.250 keV/channel
Quadratic:	-3.735E-08 keV/channel^2

Efficiency Calibration

Created:	4/20/2018 11:53:09 AM
Type:	Polynomial
Uncertainty:	1.020 %
Coefficients:	-0.363508 -4.707999 0.462125
	-0.051256 0.002384 -0.000043

Library Files

Main analysis library:	DET_EnergyStandardMix & Pb.lib
Library Match Width:	0.500
Peak stripping:	Library based

Analysis parameters

Analysis engine:	Env32 G800W064
Start channel:	100 (25.08keV)
Stop channel:	8000 (1999.13keV)
Peak rejection level:	1000.000%
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:	YES	1/1/2018 11:00:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	12_2017-05-07_0806.PBC 5/7/2017 8:06:54 AM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 12 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.0332

***** 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
27.87	601.	9.86	0.70	3.939E-03				
33.44	3191.	3.58	0.84	8.062E-03				
36.78	534.	21.42	0.84	1.059E-02				
38.00	764.	15.14	0.84	1.151E-02				
46.62	43669.	0.59	0.85	1.805E-02	46.54	4.250	1.600E+04	Pb210
49.75	200.	71.91	0.85	2.153E-02				
59.56	45621.	0.73	0.86	2.818E-02	59.54	35.700	1.261E+03	AM241
70.78	903.	16.81	0.88	3.227E-02				
72.97	1715.	8.94	0.88	3.286E-02				
74.88	161.	95.77	0.88	3.334E-02				
77.23	29.	497.10	0.88	3.389E-02				
82.47	1429.	10.54	0.89	3.493E-02				
84.79	2014.	7.84	0.89	3.532E-02				
88.06	72330.	0.42	0.89	3.581E-02	88.03	3.610	1.825E+04	CD109
90.37	144.	87.05	0.90	3.612E-02				
122.08	34326.	0.77	0.92	3.724E-02	122.06	85.600	3.931E+02	CO57
136.51	4200.	4.35	0.96	3.651E-02				
165.91	33460.	0.74	0.97	3.405E-02	165.85	79.900	5.859E+02	Ce139
206.00	117.	63.94	0.45	3.024E-02				
238.46	443.	25.54	0.90	2.744E-02				
255.00	1168.	12.03	0.88	2.617E-02				
279.07	19187.	1.08	1.11	2.450E-02	279.17	81.500	1.312E+03	Hg203
286.67	107.	74.95	0.64	2.401E-02				
351.85	322.	30.50	1.33	2.056E-02				
391.59	24235.	0.85	1.20	1.894E-02	391.69	64.000	1.059E+03	SN113
500.18	113.	56.68	0.53	1.573E-02				
583.01	248.	32.33	0.89	1.403E-02				

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
601.08	176.	44.64	0.64	1.372E-02				
643.04	164.	48.09	0.69	1.306E-02				
661.66	19866.	0.93	1.49	1.279E-02	661.66	85.210	5.098E+02	CS137
695.58	154.	52.24	0.30	1.233E-02				
712.59	169.	39.74	0.69	1.212E-02				
814.18	641.	15.80	1.86	1.101E-02				
890.80	44.	76.23	0.45	1.031E-02				
898.03	29383.	0.78	1.66	1.025E-02	898.02	93.700	1.705E+03	Y898
924.59	170.	51.69	2.08	1.004E-02				
1059.91	148.	40.90	0.51	9.087E-03				
1173.24	22640.	0.87	1.85	8.426E-03	1173.24	99.900	7.765E+02	Co1173
1217.40	45.	61.22	0.33	8.195E-03				
1271.51	36.	60.60	1.04	7.928E-03				
1301.67	34.	60.56	0.43	7.787E-03				
1332.57	20270.	0.84	2.09	7.647E-03	1332.50	99.982	7.654E+02	Co1332
1491.52	180.	28.09	0.33	6.994E-03				
1835.92	18468.	0.80	2.47	5.867E-03	1836.01	99.200	1.769E+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	
111.16	27.87	1248.	601.	1.526E+05	9.86	0.703	-	s
133.41	33.32	4927.	3191.	3.959E+05	3.58	0.838	-	sD
146.77	36.66	6263.	534.	5.040E+04	21.42	0.841	-	sD
151.64	37.88	6317.	764.	6.642E+04	15.14	0.842	-	sD
198.79	49.71	10292.	213.	9.912E+03	67.59	0.855	-	sc
282.69	70.80	11078.	903.	2.799E+04	16.81	0.876	-	D
291.44	72.99	10900.	1715.	5.219E+04	8.94	0.878	-	D
299.07	74.90	11841.	161.	4.837E+03	95.77	0.880	-	c
308.48	77.26	10683.	29.	8.685E+02	497.10	0.883	-	c
329.43	82.44	10620.	1431.	4.097E+04	10.52	0.888	-	D
338.70	84.76	11438.	2016.	5.707E+04	7.83	0.890	-	sD
361.04	90.35	7839.	145.	4.014E+03	86.78	0.896	-	sc
545.45	136.51	7622.	4200.	1.150E+05	4.35	0.964	-	
823.26	206.00	2348.	117.	3.869E+03	63.94	0.454	-	s
953.03	238.46	3718.	443.	1.615E+04	25.54	0.897	-	s
1019.19	255.00	4459.	1168.	4.464E+04	12.03	0.878	-	
1145.82	286.67	2108.	107.	4.456E+03	74.95	0.636	-	s
1406.43	351.85	2440.	322.	1.569E+04	30.50	1.334	-	
1999.63	500.18	1252.	113.	7.164E+03	56.68	0.530	-	s
2330.90	583.01	1545.	248.	1.767E+04	32.33	0.894	-	s
2403.19	601.08	1564.	176.	1.283E+04	44.64	0.638	-	s
2571.03	643.04	1587.	164.	1.258E+04	48.09	0.694	-	s
2781.20	695.58	1652.	154.	1.250E+04	52.24	0.304	-	s
2849.27	712.59	1184.	169.	1.395E+04	39.74	0.695	-	s

Channel	Energy	Background	Net area	Eff*Area	Uncert	FWHM	Suspected	
3255.67	814.18	1648.	641.	5.823E+04	15.80	1.859	-	s
3562.26	890.80	503.	44.	4.283E+03	76.23	0.452	-	sc
3697.47	924.59	1556.	170.	1.690E+04	51.69	2.082	-	s
4239.01	1059.91	879.	148.	1.629E+04	40.90	0.508	-	s
4869.35	1217.40	238.	45.	5.491E+03	61.22	0.330	-	s
5085.97	1271.51	165.	36.	4.541E+03	60.60	1.043	-	s
5206.71	1301.67	156.	34.	4.366E+03	60.56	0.434	-	s
5966.81	1491.52	462.	180.	2.581E+04	28.09	0.329	-	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_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	185.79	46.54	11653.	43669.	12.130	0.59	0.851D
AM-241	237.82	59.56	16449.	45621.	12.672	0.73	0.859
CD-109	351.65	88.03	9195.	72330.	20.092	0.42	0.894D
CO-57	487.75	122.08	9060.	34326.	9.535	0.77	0.923
Ce-139	662.97	165.91	6830.	33460.	9.295	0.74	0.975
Hg-203	1115.42	279.07	4712.	19187.	5.330	1.08	1.109
SN-113	1565.35	391.59	3432.	24235.	6.732	0.85	1.204
CS-137	2645.53	661.66	2656.	19866.	5.518	0.93	1.489
Y-898	3591.19	898.03	3033.	29383.	8.162	0.78	1.658
Co-1173	4692.59	1173.24	1810.	22640.	6.289	0.87	1.852
Co-1332	5330.41	1332.57	1150.	20270.	5.631	0.84	2.092
Y-1836	7346.14	1835.92	317.	18468.	5.130	0.80	2.475

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	Peak Code	Peak MDA Value Bq/Sample	COMMENTS
Pb-210	N	1.6003E+04				8.15E+03	
			46.54	1.600E+04	(P	1.853E+02 5.93E-01 4.25E+00 G	

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
AM-241	1.2606E+03					1.58E+05	
		59.54	1.261E+03	(	1.659E+01	7.32E-01	3.57E+01 G
CD-109	1.8246E+04					4.63E+02	
		88.03	1.825E+04	(	1.134E+02	4.16E-01	3.61E+00 G
CO-57	3.9307E+02					2.72E+02	
		122.06	3.931E+02	(	5.110E+00	7.74E-01	8.56E+01 G
Ce-139	5.8589E+02					1.38E+02	
		165.85	5.859E+02	(	6.791E+00	7.44E-01	7.99E+01 G
Hg-203	1.3123E+03					4.66E+01	
		279.17	1.312E+03	(	2.206E+01	1.08E+00	8.15E+01 G
SN-113	1.0590E+03					1.15E+02	
		391.69	1.059E+03	(	1.205E+01	8.51E-01	6.40E+01 G
CS-137	5.0981E+02					1.10E+04	
		661.66	5.098E+02	(	6.233E+00	9.29E-01	8.52E+01 G
Y-898	1.7049E+03					1.07E+02	
		898.02	1.705E+03	(	1.505E+01	7.81E-01	9.37E+01 G
Co-1173	7.7646E+02					1.93E+03	
		1173.24	7.765E+02	(	6.891E+00	8.68E-01	9.99E+01 G
Co-1332	7.6541E+02					1.93E+03	
		1332.50	7.654E+02	(	6.071E+00	8.39E-01	1.00E+02 G
Y-1836	1.7690E+03					1.07E+02	
		1836.01	1.769E+03	(	8.211E+00	7.99E-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:	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	1.5857E+04	1.6003E+04	5.927E-01%	1.85E+02
AM-241	1.2600E+03	1.2606E+03	7.317E-01%	1.66E+01
CD-109	1.5540E+04	1.8246E+04	4.164E-01%	1.13E+02
CO-57	2.9911E+02	3.9307E+02	7.739E-01%	5.11E+00
Ce-139	3.4161E+02	5.8589E+02	7.437E-01%	6.79E+00
Hg-203	2.6699E+02	1.3123E+03	1.078E+00%	2.21E+01
SN-113	5.5555E+02	1.0590E+03	8.510E-01%	1.20E+01
CS-137	5.0637E+02	5.0981E+02	9.286E-01%	6.23E+00
Y-898	8.4955E+02	1.7049E+03	7.808E-01%	1.50E+01
Co-1173	7.4709E+02	7.7646E+02	8.681E-01%	6.89E+00
Co-1332	7.3646E+02	7.6541E+02	8.386E-01%	6.07E+00
Y-1836	8.8152E+02	1.7690E+03	7.985E-01%	8.21E+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 (25.1 to 1999.1 keV) 3.784E+04 Bq/Sample
Total Decayed Activity (25.1 to 1999.1 keV) 4.4384840E+04 Bq/Sample

Gamma Verification per Geometry

Detector:	Ge14
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	14422	96.6
Am-241	2037	418	0.3590	1163	1222.5	105.1
Cd-109	2881	591	0.0361	16363	16145	98.7
Co-57	1511	310	0.8560	362	349.28	96.5
Ce-139	2139	439	0.7990	549	538.52	98.1
Hg-203	4651	954	0.8146	1171	1205.9	103.0
Sn-113	3015	618	0.6400	966	971.36	100.6
Cs-137	1938	397	0.8510	467	465.65	99.7
Y-88	7264	1489	0.9370	1589	1570	98.8
Co-60	3580	734	0.9997	734	724.16	98.6
Co-60	3581	734	0.9999	734	720.6	98.1
Y-88	7690	1577	0.9920	1589	1634	102.8

Reviewed By: Jody Watson

Date: 4/23/2012

Calibration Data from file: 14_Soil_TunaCan.Clb
Energy Calibration Date: 4/23/2012 Time: 11:29:29 AM
Efficiency Calibration Date: 4/23/2012 Time: 11:29:47 AM

Calibration Description:
14_TunaCan_90099_042312

Energy Calibration Fit
Energy = 0.1578 +0.250077*Channel -1.95882e-008*Channel**2
FWHM (ch) = 2.7879 +0.000947*Channel -1.45727e-008*Channel**2

Energy/FWHM Table

Channel	Energy(keV)	Fit(keV)	Delta	FWHM(keV)	Fit(keV)	Delta
186.01	46.54	46.67	-0.29%	0.73	0.74	-2.18%
237.82	59.54	59.63	-0.15%	0.74	0.75	-1.99%
351.26	88.03	88.00	0.04%	0.78	0.78	-0.25%
487.04	122.06	121.95	0.09%	0.82	0.81	0.58%
662.28	165.85	165.77	0.05%	0.86	0.85	1.23%
1115.71	279.17	279.15	0.01%	0.98	0.96	2.15%
1565.69	391.69	391.65	0.01%	1.09	1.06	2.42%
2645.83	661.66	661.68	-0.00%	1.30	1.30	0.28%
3591.53	898.02	898.06	-0.00%	1.42	1.50	-5.87%
4692.63	1173.24	1173.24	-0.00%	1.76	1.73	2.11%
5329.97	1332.50	1332.50	-0.00%	1.88	1.86	1.08%
7345.32	1836.01	1836.00	0.00%	2.23	2.24	-0.37%

Efficiency Calibration Fit
Knee Energy = 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.0212 %
Ln(Eff) = 0.2101 -0.595197*Ln(Eng) -0.0160533*(Ln(Eng))**2
Below the Knee: Quadratic Uncertainty = 1.2797 %
Ln(Eff) = -23.9149 +8.828985*Ln(Eng) -0.93715*(Ln(Eng))**2

Efficiency Table

Energy	Efficiency	Fit	Delta
46.54	2.0990E-002	2.1711E-002	-3.44%
59.54	3.2006E-002	3.0654E-002	4.23%
88.03	4.1381E-002	4.1960E-002	-1.40%
122.06	4.2230E-002	4.3784E-002	-3.68%
165.85	========== Knee ==========		
165.85	3.7957E-002	3.8722E-002	-2.02%
279.17	2.6754E-002	2.5963E-002	2.96%
391.69	2.0047E-002	1.9926E-002	0.60%
661.66	1.3125E-002	1.3132E-002	-0.05%
898.02	1.0136E-002	1.0258E-002	-1.20%
1173.24	8.1251E-003	8.2437E-003	-1.46%
1332.50	7.2859E-003	7.4227E-003	-1.88%
1836.01	5.8454E-003	5.6863E-003	2.72%

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  7/6/2012 11:13:09 AM    Page  1
TestAmerica, Inc.               Spectrum name: 14_TunaCan_20120385.An1

Sample description
     17_TunaCan_90099_032612


Spectrum Filename: C:\User\Cal\Spectra\Det14\14_TunaCan_20120385.An1

Acquisition information
       Start time:                 4/23/2012 9:56:44 AM
       Live time:               3600
       Real time:               3665
       Dead time:                  1.77 %
       Detector ID:                   14

Detector system
     Ge17 SN/11080671


Calibration
       Filename:                   14_Soil_TunaCan.Clb
     14_TunaCan_90099_042312


       Energy Calibration
            Created:               4/23/2012 11:29:29 AM
            Zero offset:           0.158 keV
            Gain:                  0.250 keV/channel
            Quadratic:            -1.959E-08 keV/channel^2

       Efficiency Calibration
            Created:               4/23/2012 11:29:47 AM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   1.02 %
            Log(Eff):              2.101260E-01 + (-5.951973E-01*Log(E) ) +
                                   ( -1.605331E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.28 %
            Log(Eff):             -2.391492E+01 + ( 8.828985E+00*Log(E) ) +
                                   ( -9.371496E-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 (    37.67keV )
       Stop channel:            8000 (  1999.52keV )
       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  7/6/2012 11:13:09 AM    Page  2
TestAmerica, Inc.               Spectrum name: 14_TunaCan_20120385.An1
                                      Page 1
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       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:      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.   12 cutoff: 5.00E+01%
       Energy Calibration
            Normalized diff:       0.0575
```

***** 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
46.67	47449.	0.64	0.73	2.181E-02	46.54	4.250	1.442E+04	Pb210
59.63	48139.	0.67	0.74	3.071E-02	59.54	35.700	1.223E+03	AM241
72.88	1815.	8.13	0.77	3.737E-02				
88.00	74331.	0.47	0.79	4.195E-02	88.03	3.610	1.614E+04	CD109
121.95	35331.	0.76	0.82	4.379E-02	122.06	85.600	3.493E+02	CO57
136.39	4314.	3.84	0.82	4.244E-02				
165.77	33960.	0.70	0.89	3.800E-02	165.85	79.900	5.385E+02	Ce139
279.15	17136.	1.05	1.00	2.596E-02	279.17	81.500	1.206E+03	Hg203
391.65	22586.	0.85	1.13	1.993E-02	391.69	64.000	9.714E+02	SN113
661.68	18625.	0.92	1.36	1.313E-02	661.66	85.210	4.657E+02	CS137
898.06	26064.	0.74	1.56	1.026E-02	898.02	93.700	1.570E+03	Y898
1173.24	20614.	0.80	1.76	8.244E-03	1173.24	99.900	7.242E+02	Co1173
1332.50	18485.	0.81	1.88	7.423E-03	1332.50	99.982	7.206E+02	Co1332
1835.98	15919.	0.83	2.23	5.686E-03	1836.01	99.200	1.634E+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
290.81	72.88	9094.	1708.	4.569E+04	9.16	0.857	-
544.77	136.39	6618.	4314.	1.017E+05	3.84	0.819	-

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	46.67	13580.	47449.	13.180	0.64	0.728
AM-241	237.82	59.63	14856.	48139.	13.372	0.67	0.736
CD-109	351.26	88.00	13424.	74331.	20.647	0.47	0.793
CO-57	487.04	121.95	9138.	35331.	9.814	0.76	0.820
Ce-139	662.28	165.77	5743.	33960.	9.433	0.70	0.887
Hg-203	1115.71	279.15	3658.	17136.	4.760	1.05	0.998
SN-113	1565.69	391.65	3032.	22586.	6.274	0.85	1.125
CS-137	2645.83	661.68	2231.	18625.	5.174	0.92	1.364
Y-898	3591.53	898.06	1967.	26064.	7.240	0.74	1.562
Co-1173	4692.63	1173.24	1001.	20614.	5.726	0.80	1.765
Co-1332	5329.97	1332.50	650.	18485.	5.135	0.81	1.875
Y-1836	7345.28	1835.98	147.	15919.	4.422	0.83	2.232

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	MDA Value Bq		COMMENTS
Pb-210	N	1.4422E+04					8.15E+03	
			46.54	1.442E+04	(	1.659E+02	6.42E-01 4.25E+00	G
AM-241		1.2225E+03					1.58E+05	
			59.54	1.223E+03	(	1.449E+01	6.65E-01 3.57E+01	G
CD-109		1.6145E+04					4.63E+02	
			88.03	1.614E+04	(	1.179E+02	4.73E-01 3.61E+00	G
CO-57		3.4928E+02					2.72E+02	
			122.06	3.493E+02	(	4.431E+00	7.59E-01 8.56E+01	G

ORTEC g v - i (1087) Env32 G53W4.25 7/6/2012 11:13:09 AM Page 4
TestAmerica, Inc. Spectrum name: 14_TunaCan_20120385.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak MDA		Comments
Ce-139	5.3852E+02					1.38E+02	
		165.85	5.385E+02	(	5.643E+00	6.97E-01 7.99E+01	G
Hg-203	1.2059E+03					4.66E+01	
		279.17	1.206E+03	(	2.002E+01	1.05E+00 8.15E+01	G
SN-113	9.7136E+02					1.15E+02	
		391.69	9.714E+02	(	1.115E+01	8.54E-01 6.40E+01	G
CS-137	4.6565E+02					1.10E+04	
		661.66	4.657E+02	(	5.571E+00	9.21E-01 8.52E+01	G
Y-898	1.5700E+03					1.07E+02	

```
                          898.02 1.570E+03  (  1.261E+01 7.43E-01 9.37E+01 G

Co-1173      7.2416E+02                                        1.93E+03
                         1173.24 7.242E+02  (  5.275E+00 7.99E-01 9.99E+01 G

Co-1332      7.2060E+02                                        1.93E+03
                         1332.50 7.206E+02  (  4.737E+00 8.09E-01 1.00E+02 G

Y-1836       1.6340E+03                                        1.07E+02
                         1836.01 1.634E+03  (  6.084E+00 8.27E-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:                      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  Background  Net Area   Intensity   Uncert   Activity
           Energy   Counts     Counts     Cts/Sec  1 Sigma %
 ____________________________________________________________________________
   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   *****
         Time of Count  Time Corrected  Uncertainty  1 Sigma
 Nuclide     Activity       Activity       Counting                   MDA
               Bq             Bq

 ____________________________________________________________________________
 Pb-210       1.4284E+04    1.4422E+04    6.417E-01%                1.66E+02
 AM-241       1.2219E+03    1.2225E+03    6.654E-01%                1.45E+01
 CD-109       1.3631E+04    1.6145E+04    4.729E-01%                1.18E+02
```

CO-57	2.6186E+02	3.4928E+02	7.589E-01%	4.43E+00
Ce-139	3.0490E+02	5.3852E+02	6.967E-01%	5.64E+00
Hg-203	2.2495E+02	1.2059E+03	1.050E+00%	2.00E+01
SN-113	4.9196E+02	9.7136E+02	8.544E-01%	1.12E+01
CS-137	4.6235E+02	4.6565E+02	9.207E-01%	5.57E+00
Y-898	7.5323E+02	1.5700E+03	7.434E-01%	1.26E+01
Co-1173	6.9530E+02	7.2416E+02	7.989E-01%	5.27E+00
Co-1332	6.9188E+02	7.2060E+02	8.094E-01%	4.74E+00
Y-1836	7.8390E+02	1.6340E+03	8.273E-01%	6.08E+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 (37.7 to 1999.5 keV) 3.381E+04 Bq
Total Decayed Activity (37.7 to 1999.5 keV) 3.9968746E+04 Bq

Gamma Verification per Geometry

Detector:	Ge16
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	14377	96.3
Am-241	2037	418	0.3590	1163	1228.5	105.6
Cd-109	2881	591	0.0361	16363	16032	98.0
Co-57	1511	310	0.8560	362	349.8	96.7
Ce-139	2139	439	0.7990	549	538.18	98.0
Sn-113	3015	618	0.6400	966	969.68	100.4
Cs-137	1938	397	0.8510	467	468.24	100.3
Y-88	7264	1489	0.9370	1589	1552.4	97.7
Co-60	3580	734	0.9997	734	725.6	98.8
Co-60	3581	734	0.9999	734	726.23	98.9
Y-88	7690	1577	0.9920	1589	1629.1	102.5

Reviewed By: Jody Watson

Date: 7/13/2012

Calibration Data from file: 16_Soil_TunaCan.Clb
Energy Calibration Date: 7/13/2012 Time: 9:47:11 AM
Efficiency Calibration Date: 7/13/2012 Time: 9:47:24 AM

Calibration Description:
16_TunaCan_90099_071012

Energy Calibration Fit
Energy = 0.1106 +0.250095*Channel -1.95476e-008*Channel**2
FWHM (ch) = 3.6339 +0.000937*Channel -2.1273e-008*Channel**2

Energy/FWHM Table

Channel	Energy(keV)	Fit(keV)	Delta	FWHM(keV)	Fit(keV)	Delta
185.57	46.54	46.52	0.04%	0.97	0.95	1.52%
237.71	59.54	59.56	-0.03%	0.95	0.96	-1.11%
351.71	88.03	88.07	-0.05%	1.00	0.99	0.52%
487.80	122.06	122.10	-0.04%	1.03	1.02	1.07%
662.91	165.85	165.89	-0.03%	1.08	1.06	1.71%
1115.49	279.17	279.06	0.04%	1.13	1.16	-3.06%
1565.59	391.69	391.61	0.02%	1.25	1.26	-0.74%
2645.84	661.66	661.68	-0.00%	1.44	1.49	-3.61%
3591.32	898.02	898.03	-0.00%	1.74	1.68	3.44%
4692.55	1173.24	1173.26	-0.00%	1.94	1.89	2.70%
5329.87	1332.50	1332.53	-0.00%	1.95	2.01	-2.97%
7344.93	1836.01	1835.99	0.00%	2.34	2.34	0.11%

Efficiency Calibration Fit
Knee Energy = 165.85 keV
Above the Knee: Quadratic Uncertainty = 1.0068 %
Ln(Eff) = 0.0148 -0.551427*Ln(Eng) -0.0144348*(Ln(Eng))**2
Below the Knee: Quadratic Uncertainty = 1.1708 %
Ln(Eff) = -24.0844 +8.948554*Ln(Eng) -0.95136*(Ln(Eng))**2

Efficiency Table

Energy	Efficiency	Fit	Delta
46.54	2.2670E-002	2.3523E-002	-3.76%
59.54	3.4907E-002	3.3268E-002	4.69%
88.03	4.4561E-002	4.5501E-002	-2.11%
122.06	4.5678E-002	4.7288E-002	-3.52%
165.85	========== Knee	==========	
165.85	4.0710E-002	4.1557E-002	-2.08%
279.17	2.9697E-002	2.8765E-002	3.14%
391.69	2.2647E-002	2.2549E-002	0.43%
661.66	1.5445E-002	1.5368E-002	0.50%
898.02	1.1965E-002	1.2246E-002	-2.35%
1173.24	9.8925E-003	1.0017E-002	-1.26%
1332.50	8.9987E-003	9.0965E-003	-1.09%
1836.01	7.2985E-003	7.1212E-003	2.43%

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  7/13/2012 9:50:48 AM
TestAmerica, Inc.                Spectrum name: 16_Soil_TunaCan_90099_20120752.A

Sample description
     16_Soil_TunaCan_90099_071012


Spectrum Filename: C:\User\SPC\Det16\16_Soil_TunaCan_90099_20120752.A

Acquisition information
       Start time:                 7/10/2012 10:35:34 AM
       Live time:               3600
       Real time:               3674
       Dead time:                  2.03 %
       Detector ID:                   16

Detector system
     Ge16 SN/11012217


Calibration
       Filename:                   16_Soil_TunaCan.Clb
     16_TunaCan_90099_071012


       Energy Calibration
            Created:               7/13/2012 9:47:11 AM
            Zero offset:           0.111 keV
            Gain:                  0.250 keV/channel
            Quadratic:            -1.955E-08 keV/channel^2

       Efficiency Calibration
            Created:               7/13/2012 9:47:24 AM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   1.01 %
            Log(Eff):              1.477416E-02 + (-5.514266E-01*Log(E) ) +
                                   ( -1.443482E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.17 %
            Log(Eff):             -2.408438E+01 + ( 8.948554E+00*Log(E) ) +
                                   ( -9.513599E-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 (    37.62keV )
       Stop channel:            8000 (  1999.62keV )
       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 7/13/2012 9:50:48 AM
TestAmerica, Inc. Spectrum name: 16_Soil_TunaCan_90099_20120752.A

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:	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. 12 cutoff: 5.00E+01%
Energy Calibration
Normalized diff: 0.0309

***** 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
46.52	50908.	0.67	0.97	2.351E-02	46.54	4.250	1.438E+04	Pb210
59.56	52484.	0.66	0.95	3.328E-02	59.54	35.700	1.229E+03	AM241
88.07	71211.	0.52	1.00	4.551E-02	88.03	3.610	1.603E+04	CD109
122.10	31320.	0.80	1.03	4.728E-02	122.06	85.600	3.498E+02	CO57
136.55	3896.	3.92	1.12	4.572E-02				
165.89	24588.	0.86	1.08	4.155E-02	165.85	79.900	5.382E+02	Ce139
279.05	6035.	2.82	1.13	2.877E-02	279.17	81.500	1.223E+03	Hg203
391.61	15948.	1.14	1.25	2.255E-02	391.69	64.000	9.697E+02	SN113
661.68	21809.	0.83	1.44	1.537E-02	661.66	85.210	4.682E+02	CS137
898.03	18524.	0.90	1.74	1.225E-02	898.02	93.700	1.552E+03	Y898
1173.26	24403.	0.75	1.94	1.002E-02	1173.24	99.900	7.256E+02	Co1173
1332.53	22198.	0.75	1.95	9.096E-03	1332.50	99.982	7.262E+02	Co1332
1835.98	11967.	0.97	2.34	7.121E-03	1836.01	99.200	1.629E+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
545.57	136.55	5299.	3896.	8.521E+04	3.92	1.117	-

ORTEC g v - i (1087) Env32 G53W4.25 7/13/2012 9:50:48 AM
TestAmerica, Inc. Spectrum name: 16_Soil_TunaCan_90099_20120752.A

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	185.57	46.52	16008.	50908.	14.141	0.67	0.967
AM-241	237.71	59.56	16109.	52484.	14.579	0.66	0.954
CD-109	351.71	88.07	14747.	71211.	19.781	0.52	0.996
CO-57	487.80	122.10	7590.	31320.	8.700	0.80	1.033
Ce-139	662.91	165.89	4947.	24588.	6.830	0.86	1.080
Hg-203	1115.49	279.06	4192.	5963.	1.656	2.79	1.129
SN-113	1565.60	391.61	3105.	15948.	4.430	1.14	1.253
CS-137	2645.84	661.68	2129.	21809.	6.058	0.83	1.439
Y-898	3591.32	898.03	1720.	18524.	5.145	0.90	1.741
Co-1173	4692.53	1173.26	1220.	24403.	6.779	0.75	1.944
Co-1332	5329.86	1332.53	680.	22198.	6.166	0.75	1.948
Y-1836	7344.92	1835.98	144.	11967.	3.324	0.97	2.344

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	MDA Value Bq			COMMENTS
Pb-210	N	1.4377E+04					8.15E+03		
			46.54	1.438E+04	(	1.673E+02	6.66E-01	4.25E+00	G
AM-241		1.2285E+03					1.58E+05		
			59.54	1.229E+03	(	1.391E+01	6.59E-01	3.57E+01	G
CD-109		1.6032E+04					4.63E+02		
			88.03	1.603E+04	(	1.280E+02	5.16E-01	3.61E+00	G
CO-57		3.4980E+02					2.72E+02		
			122.06	3.498E+02	(	4.565E+00	8.01E-01	8.56E+01	G

ORTEC g v - i (1087) Env32 G53W4.25 7/13/2012 9:50:48 AM
TestAmerica, Inc. Spectrum name: 16_Soil_TunaCan_90099_20120752.A

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Ce-139	5.3818E+02					1.38E+02	
		165.85	5.382E+02	(	7.233E+00	8.57E-01	7.99E+01 G
Hg-203	1.2081E+03					4.66E+01	
		279.17	1.208E+03	(	6.167E+01	2.79E+00	8.15E+01 G
SN-113	9.6968E+02					1.15E+02	
		391.69	9.697E+02	(	1.595E+01	1.14E+00	6.40E+01 G
CS-137	4.6824E+02					1.10E+04	
		661.66	4.682E+02	(	4.675E+00	8.31E-01	8.52E+01 G
Y-898	1.5524E+03					1.07E+02	
		898.02	1.552E+03	(	1.643E+01	8.98E-01	9.37E+01 G
Co-1173	7.2560E+02					1.93E+03	
		1173.24	7.256E+02	(	4.920E+00	7.53E-01	9.99E+01 G
Co-1332	7.2623E+02					1.93E+03	
		1332.50	7.262E+02	(	4.064E+00	7.46E-01	1.00E+02 G
Y-1836	1.6291E+03					1.07E+02	
		1836.01	1.629E+03	(	7.981E+00	9.68E-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 7/13/2012 9:50:48 AM
TestAmerica, Inc. Spectrum name: 16_Soil_TunaCan_90099_20120752.A

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	1.4145E+04	1.4377E+04	6.660E-01%	1.67E+02
AM-241	1.2275E+03	1.2285E+03	6.589E-01%	1.39E+01
CD-109	1.2043E+04	1.6032E+04	5.162E-01%	1.28E+02
CO-57	2.1493E+02	3.4980E+02	8.011E-01%	4.56E+00
Ce-139	2.0570E+02	5.3818E+02	8.567E-01%	7.23E+00
Hg-203	7.0659E+01	1.2081E+03	2.787E+00%	6.17E+01
SN-113	3.0697E+02	9.6968E+02	1.140E+00%	1.60E+01
CS-137	4.6263E+02	4.6824E+02	8.306E-01%	4.67E+00
Y-898	4.4842E+02	1.5524E+03	8.985E-01%	1.64E+01
Co-1173	6.7738E+02	7.2560E+02	7.529E-01%	4.92E+00
Co-1332	6.7797E+02	7.2623E+02	7.458E-01%	4.06E+00
Y-1836	4.7056E+02	1.6291E+03	9.676E-01%	7.98E+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 1999.6 keV) 3.095E+04 Bq
Total Decayed Activity (37.6 to 1999.6 keV) 3.9805016E+04 Bq

Analyzed by: _____
403135

Reviewed by: _____
Supervisor

Laboratory: TestAmerica, Inc.

Gamma Verification per Geometry

Detector:	Ge17
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	14476	97.0
Am-241	2037	418	0.3590	1163	1217.3	104.6
Cd-109	2881	591	0.0361	16363	16121	98.5
Co-57	1511	310	0.8560	362	351.58	97.1
Ce-139	2139	439	0.7990	549	540.43	98.5
Hg-203	4651	954	0.8146	1171	1200.7	102.6
Sn-113	3015	618	0.6400	966	969.38	100.4
Cs-137	1938	397	0.8510	467	466.08	99.8
Y-88	7264	1489	0.9370	1589	1562.4	98.3
Co-60	3580	734	0.9997	734	724.88	98.7
Co-60	3581	734	0.9999	734	733.12	99.8
Y-88	7690	1577	0.9920	1589	1616.3	101.7

Reviewed By: Megan McAfee

Date: 4/13/2012

Calibration Data from file: 17_Soil_TunaCan.Clb
Energy Calibration Date: 4/12/2012 Time: 9:28:30 AM
Efficiency Calibration Date: 4/12/2012 Time: 9:28:42 AM

Calibration Description:
17_TunaCan_90099_032612

Energy Calibration Fit
Energy = 0.1178 +0.250077*Channel -2.37566e-008*Channel**2
FWHM (ch) = 2.9772 +0.000994*Channel -3.22638e-008*Channel**2

Energy/FWHM Table

Channel	Energy(keV)	Fit(keV)	Delta	FWHM(keV)	Fit(keV)	Delta
185.96	46.54	46.62	-0.17%	0.77	0.79	-3.16%
237.92	59.54	59.61	-0.12%	0.78	0.80	-3.33%
351.79	88.03	88.09	-0.07%	0.82	0.83	-1.16%
487.44	122.06	122.01	0.04%	0.89	0.86	3.09%
662.32	165.85	165.74	0.07%	0.93	0.91	2.22%
1115.65	279.17	279.09	0.03%	1.03	1.01	2.15%
1565.90	391.69	391.66	0.01%	1.10	1.11	-0.78%
2646.02	661.66	661.66	-0.00%	1.37	1.35	1.74%
3591.93	898.02	898.07	-0.01%	1.52	1.53	-0.67%
4693.19	1173.24	1173.25	-0.00%	1.72	1.73	-0.81%
5330.69	1332.50	1332.53	-0.00%	1.82	1.84	-0.74%
7346.32	1836.01	1835.98	0.00%	2.14	2.13	0.55%

Efficiency Calibration Fit
Knee Energy = 165.85 keV
Above the Knee: Quadratic Uncertainty = 0.9072 %
Ln(Eff) = -0.5264 -0.402416*Ln(Eng) -0.0260446*(Ln(Eng))**2
Below the Knee: Quadratic Uncertainty = 1.0020 %
Ln(Eff) = -23.4389 +8.582715*Ln(Eng) -0.907543*(Ln(Eng))**2

Efficiency Table

Energy	Efficiency	Fit	Delta
46.54	2.0383E-002	2.1004E-002	-3.05%
59.54	3.0743E-002	2.9571E-002	3.81%
88.03	3.9976E-002	4.0594E-002	-1.55%
122.06	4.1510E-002	4.2756E-002	-3.00%
165.85	========== Knee ==========		
165.85	3.7629E-002	3.8252E-002	-1.65%
279.17	2.7514E-002	2.6814E-002	2.54%
391.69	2.1207E-002	2.1122E-002	0.40%
661.66	1.4433E-002	1.4427E-002	0.04%
898.02	1.1287E-002	1.1478E-002	-1.69%
1173.24	9.2333E-003	9.3589E-003	-1.36%
1332.50	8.4692E-003	8.4809E-003	-0.14%
1836.01	6.7041E-003	6.5931E-003	1.66%

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  7/6/2012 10:31:21 AM    Page  1
TestAmerica, Inc.               Spectrum name: 17_TunaCan_20120263.An1

Sample description
     17_TunaCan_90099_032612


Spectrum Filename: C:\User\SPC\Det17\17_TunaCan_20120263.An1

Acquisition information
       Start time:                 3/26/2012 6:29:58 AM
       Live time:               3600
       Real time:               3672
       Dead time:                  1.95 %
       Detector ID:                   17

Detector system
     Ge17 SN/11080671


Calibration
       Filename:                   17_Soil_TunaCan.Clb
     17_TunaCan_90099_032612


       Energy Calibration
            Created:               4/12/2012 9:28:30 AM
            Zero offset:           0.118 keV
            Gain:                  0.250 keV/channel
            Quadratic:            -2.376E-08 keV/channel^2

       Efficiency Calibration
            Created:               4/12/2012 9:28:42 AM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   0.91 %
            Log(Eff):             -5.264190E-01 + (-4.024164E-01*Log(E) ) +
                                   ( -2.604461E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.00 %
            Log(Eff):             -2.343889E+01 + ( 8.582715E+00*Log(E) ) +
                                   ( -9.075430E-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 (    37.63keV )
       Stop channel:            8000 (  1999.21keV )
       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

     ORTEC g v - i (1087) Env32  G53W4.25  7/6/2012 10:31:21 AM    Page  2
TestAmerica, Inc.               Spectrum name: 17_TunaCan_20120263.An1
                                      Page 1
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       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:      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.   12 cutoff: 5.00E+01%
       Energy Calibration
            Normalized diff:       0.0522
```

***** 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
46.62	46187.	0.69	0.77	2.106E-02	46.54	4.250	1.448E+04	Pb210
59.61	46245.	0.74	0.78	2.961E-02	59.54	35.700	1.217E+03	AM241
72.97	2852.	5.64	0.82	3.610E-02				
88.09	74900.	0.46	0.82	4.061E-02	88.03	3.610	1.612E+04	CD109
122.01	37313.	0.73	0.89	4.276E-02	122.06	85.600	3.516E+02	CO57
136.40	4536.	4.09	0.81	4.164E-02				
165.74	38793.	0.66	0.93	3.765E-02	165.85	79.900	5.404E+02	Ce139
255.04	1259.	9.59	1.07	2.855E-02				
279.09	26776.	0.82	1.03	2.682E-02	279.17	81.500	1.201E+03	Hg203
391.66	28306.	0.76	1.11	2.112E-02	391.69	64.000	9.694E+02	SN113
661.66	20517.	0.91	1.37	1.443E-02	661.66	85.210	4.661E+02	CS137
898.07	34851.	0.63	1.52	1.148E-02	898.02	93.700	1.562E+03	Y898
1173.25	23664.	0.80	1.72	9.359E-03	1173.24	99.900	7.249E+02	Co1173
1332.52	21706.	0.78	1.83	8.481E-03	1332.50	99.982	7.331E+02	Co1332
1835.97	21924.	0.70	2.15	6.593E-03	1836.01	99.200	1.616E+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	
291.30	72.97	10374.	2884.	7.989E+04	5.33	0.816	-	D
544.98	136.40	8136.	4536.	1.089E+05	4.09	0.813	-	
1019.46	255.04	3805.	1259.	4.410E+04	9.59	1.072	-	

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	185.96	46.62	15035.	46187.	12.830	0.69	0.766
AM-241	237.92	59.61	17361.	46245.	12.846	0.74	0.777
CD-109	351.79	88.09	12661.	74900.	20.806	0.46	0.821
CO-57	487.44	122.01	9755.	37313.	10.365	0.73	0.891
Ce-139	662.32	165.74	6828.	38793.	10.776	0.66	0.926
Hg-203	1115.65	279.09	4528.	26776.	7.438	0.82	1.034
SN-113	1565.90	391.66	3496.	28306.	7.863	0.76	1.105
CS-137	2646.02	661.66	2816.	20517.	5.699	0.91	1.369
Y-898	3591.91	898.07	2257.	34851.	9.681	0.63	1.523
Co-1173	4693.17	1173.25	1531.	23664.	6.573	0.80	1.720
Co-1332	5330.69	1332.52	1002.	21706.	6.029	0.78	1.825
Y-1836	7346.26	1835.97	205.	21924.	6.090	0.70	2.146

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	MDA Value Bq	COMMENTS
Pb-210	N	1.4476E+04				8.15E+03	
			46.54	1.448E+04	(	1.799E+02 6.89E-01 4.25E+00	G
AM-241		1.2173E+03				1.58E+05	
			59.54	1.217E+03	(	1.623E+01 7.35E-01 3.57E+01	G
CD-109		1.6121E+04				4.63E+02	
			88.03	1.612E+04	(	1.134E+02 4.57E-01 3.61E+00	G
CO-57		3.5158E+02				2.72E+02	
			122.06	3.516E+02	(	4.362E+00 7.33E-01 8.56E+01	G

ORTEC g v - i (1087) Env32 G53W4.25 7/6/2012 10:31:21 AM Page 4
TestAmerica, Inc. Spectrum name: 17_TunaCan_20120263.An1

Nuclide	Ave activity	Energy	Activity	Code	Peak MDA	Comments
Ce-139	5.4043E+02				1.38E+02	
		165.85	5.404E+02	(	5.402E+00 6.57E-01 7.99E+01	G
Hg-203	1.2007E+03				4.66E+01	
		279.17	1.201E+03	(	1.418E+01 8.17E-01 8.15E+01	G
SN-113	9.6938E+02				1.15E+02	
		391.69	9.694E+02	(	9.529E+00 7.56E-01 6.40E+01	G
CS-137	4.6608E+02				1.10E+04	
		661.66	4.661E+02	(	5.679E+00 9.07E-01 8.52E+01	G

```
Y-898        1.5624E+03                                        1.07E+02
                          898.02 1.562E+03  (  1.005E+01 6.29E-01 9.37E+01 G

Co-1173      7.2488E+02                                        1.93E+03
                         1173.24 7.249E+02  (  5.668E+00 7.98E-01 9.99E+01 G

Co-1332      7.3312E+02                                        1.93E+03
                         1332.50 7.331E+02  (  5.074E+00 7.81E-01 1.00E+02 G

Y-1836       1.6163E+03                                        1.07E+02
                         1836.01 1.616E+03  (  5.123E+00 7.01E-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:                      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  Background  Net Area   Intensity   Uncert   Activity
           Energy   Counts     Counts     Cts/Sec  1 Sigma %
 ____________________________________________________________________________
   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   *****
         Time of Count  Time Corrected  Uncertainty  1 Sigma
 Nuclide     Activity       Activity       Counting                   MDA
                Bq             Bq

 ____________________________________________________________________________
 Pb-210       1.4372E+04    1.4476E+04    6.891E-01%                1.80E+02
```

AM-241	1.2168E+03	1.2173E+03	7.355E-01%	1.62E+01
CD-109	1.4197E+04	1.6121E+04	4.569E-01%	1.13E+02
CO-57	2.8320E+02	3.5158E+02	7.325E-01%	4.36E+00
Ce-139	3.5257E+02	5.4043E+02	6.571E-01%	5.40E+00
Hg-203	3.4034E+02	1.2007E+03	8.175E-01%	1.42E+01
SN-113	5.8164E+02	9.6938E+02	7.559E-01%	9.53E+00
CS-137	4.6359E+02	4.6608E+02	9.066E-01%	5.68E+00
Y-898	9.0011E+02	1.5624E+03	6.288E-01%	1.00E+01
Co-1173	7.0308E+02	7.2488E+02	7.979E-01%	5.67E+00
Co-1332	7.1107E+02	7.3312E+02	7.808E-01%	5.07E+00
Y-1836	9.3113E+02	1.6163E+03	7.012E-01%	5.12E+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 (77.1 to 1999.2 keV) 3.505E+04 Bq
Total Decayed Activity (77.1 to 1999.2 keV) 3.9979633E+04 Bq

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

ORTEC g v - i (3263) Env32 G53W4.25 3/28/2012 7:35:49 AM Page 3
TestAmerica Spectrum name: 5_TunaCan2nd_20120813.An1

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.

ORTEC g v - i (3263) Env32 G53W4.25 3/28/2012 7:35:49 AM Page 4
TestAmerica Spectrum name: 5_TunaCan2nd_20120813.An1

***** 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 Counting	1 Sigma	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:	Ge9
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	1169.4	100.4
Cs-137	1926	396	0.851	465	444.52	95.6
Co-60	3611	742	0.99974	742	687.72	92.7
Co-60	3612	742	0.999856	742	692.56	93.3

Reviewed By: Jody Watson

Date: 6/14/2012

```
     ORTEC g v - i (3263) Env32  G53W4.25  6/14/2012 1:20:45 PM    Page  1
TestAmerica, Inc                Spectrum name: 9_TunaCan_20120371.An1

Sample description
     9_TunaCan_90099_061412


Spectrum Filename: C:\User\SPC\Det9\9_TunaCan_20120371.An1

Acquisition information
       Start time:                 6/14/2012 10:54:15 AM
       Live time:               3600
       Real time:               3629
       Dead time:                  0.81 %
       Detector ID:                    9

Detector system
     Ge 9 SN/100113


Calibration
       Filename:                   9_Soil_TunaCan.Clb
     9_Soil_TunaCan_90099_050312


       Energy Calibration
            Created:               6/14/2012 10:19:40 AM
            Zero offset:           0.088 keV
            Gain:                  0.250 keV/channel
            Quadratic:            -2.039E-08 keV/channel^2

       Efficiency Calibration
            Created:               6/14/2012 10:19:51 AM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   1.30 %
            Log(Eff):             -8.079856E-01 + (-2.367265E-01*Log(E) ) +
                                   ( -3.950640E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.42 %
            Log(Eff):             -2.387916E+01 + ( 8.875647E+00*Log(E) ) +
                                   ( -9.401100E-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 (    37.60keV )
       Stop channel:            8000 (  1999.66keV )
       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  6/14/2012 1:20:45 PM    Page  2
TestAmerica, Inc                Spectrum name: 9_TunaCan_20120371.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	9_2012-05-27_0502.PBC 5/27/2012 5:02:59 AM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 11 cutoff: 5.00E+01%
Energy Calibration
Normalized diff: 0.0390

***** 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
36.54	860.	12.66	1.34	1.634E-02				
46.62	48876.	0.54	1.09	2.580E-02	46.54	4.250	1.338E+04	Pb210
50.03	116.	122.12	1.09	2.886E-02				
59.57	54776.	0.62	1.11	3.661E-02	59.54	35.700	1.169E+03	AM241
63.90	47.	193.18	0.35	3.962E-02				
88.09	26880.	0.87	1.14	5.052E-02	88.03	3.610	1.566E+04	CD109
122.10	5522.	2.86	1.15	5.303E-02	122.06	85.600	3.312E+02	CO57
136.38	729.	11.64	1.25	5.151E-02				
165.67	814.	10.74	1.30	4.629E-02	165.85	79.900	5.417E+02	Ce139
295.46	252.	33.13	0.56	3.229E-02				
316.16	66.	75.82	0.25	3.082E-02				
356.41	45.	97.50	1.36	2.835E-02				
358.68	42.	110.02	1.37	2.822E-02				
379.76	37.	75.05	0.46	2.711E-02				
391.75	310.	24.80	1.08	2.652E-02	391.69	64.000	1.113E+03	SN113
454.98	83.	53.05	0.37	2.383E-02				
568.66	103.	37.41	0.47	2.026E-02				
626.42	84.	49.00	0.45	1.885E-02				
661.66	23324.	0.76	1.61	1.810E-02	661.66	85.210	4.445E+02	CS137
821.54	239.	27.43	0.39	1.536E-02				
876.16	66.	52.19	0.61	1.462E-02				
898.25	346.	23.61	1.52	1.434E-02	898.02	93.700	2.406E+03	Y898
937.90	34.	79.64	0.44	1.387E-02				
1071.41	38.	61.01	0.57	1.249E-02				
1085.31	68.	35.74	1.00	1.237E-02				
1098.64	14.	140.33	0.47	1.225E-02				
1173.23	20836.	0.81	2.05	1.163E-02	1173.24	99.900	6.877E+02	Co1173
1332.49	18966.	0.75	2.11	1.050E-02	1332.50	99.982	6.926E+02	Co1332
1835.90	150.	10.23	1.72	8.080E-03	1836.01	99.200	1.745E+03	Y1836

9_TunaCan_20120371

********** 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
145.76	36.54	3297.	860.	5.262E+04	12.66	1.336	- s
199.48	49.98	8660.	956.	3.313E+04	18.50	0.958	- sM
255.13	63.90	2893.	47.	1.186E+03	193.18	0.347	- sc
544.97	136.38	1941.	729.	1.415E+04	11.64	1.247	-

ORTEC g v - i (3263) Env32 G53W4.25 6/14/2012 1:20:45 PM Page 3

TestAmerica, Inc Spectrum name: 9_TunaCan_20120371.An1

Channel	Energy	Background	Net area	Eff*Area	Uncert	FWHM	Suspected
1181.07	295.46	1550.	252.	7.804E+03	33.13	0.562	- s
1263.87	316.16	856.	66.	2.136E+03	75.82	0.245	- sc
1424.84	356.47	930.	45.	1.579E+03	97.50	1.363	- sc
1433.89	358.73	1025.	42.	1.473E+03	110.02	1.365	- sc
1518.22	379.76	367.	37.	1.365E+03	75.05	0.460	- sc
1819.03	454.98	702.	83.	3.496E+03	53.05	0.375	- s
2273.73	568.66	433.	103.	5.068E+03	37.41	0.468	- s
2504.73	626.42	460.	84.	4.455E+03	49.00	0.451	- s
3285.25	821.54	812.	239.	1.556E+04	27.43	0.391	- s
3503.76	876.16	400.	66.	4.538E+03	52.19	0.608	- s
3750.76	937.90	332.	34.	2.488E+03	79.64	0.436	- sc
4284.91	1071.41	226.	38.	3.015E+03	61.01	0.571	- s
4340.51	1085.31	224.	68.	5.498E+03	35.74	1.000	- s
4393.86	1098.64	186.	14.	1.143E+03	140.33	0.472	- sc

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	185.86	46.57	13300.	51041.	14.178	0.65	1.116
AM-241	237.82	59.57	11784.	54776.	15.216	0.62	1.111
CD-109	351.87	88.09	5995.	26880.	7.467	0.87	1.137
CO-57	487.85	122.10	3767.	5522.	1.534	2.86	1.155
Ce-139	662.09	165.67	1864.	814.	0.226	10.74	1.299
Hg-203	1120.44	280.29	2362.	-52.	-0.014	133.84	1.296s
SN-113	1565.85	391.67	1962.	266.	0.074	24.38	1.393
CS-137	2645.72	661.66	1258.	23324.	6.479	0.76	1.614
Y-898	3592.12	898.25	1148.	346.	0.096	23.61	1.524s
Co-1173	4692.30	1173.23	840.	20836.	5.788	0.81	2.049
Co-1332	5329.58	1332.49	131.	18966.	5.268	0.75	2.109
Y-1836	7344.43	1835.90	14.	150.	0.042	10.23	1.719s

s - Peak fails shape tests.
D - Peak area deconvoluted.
A Derived peak area.

ORTEC g v - i (3263) Env32 G53W4.25 6/14/2012 1:20:45 PM Page 4

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```
 *****   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 -  Average     ------------- Peak --------------
Name   Code  Activity     Energy   Activity Code MDA Value
             Bq/Sample     keV     Bq/Sample     Bq/Sample      COMMENTS
 ____________________________________________________________________________

Pb-210   N   1.3971E+04                                     8.15E+03
                            46.54 1.397E+04  (  1.478E+02 6.46E-01 4.25E+00 G

AM-241       1.1694E+03                                     1.58E+05
                            59.54 1.169E+03  (  1.086E+01 6.16E-01 3.57E+01 G

CD-109       1.5657E+04                                     4.63E+02
                            88.03 1.566E+04  (  2.117E+02 8.71E-01 3.61E+00 G

CO-57        3.3118E+02                                     2.72E+02
                           122.06 3.312E+02  (  1.731E+01 2.86E+00 8.56E+01 G

Ce-139       5.4173E+02                                     1.38E+02
                           165.85 5.417E+02  (  1.357E+02 1.07E+01 7.99E+01 G

Hg-203      -5.2429E-01                                     4.66E+01
                           279.17-5.243E-01 ?(  2.327E+00 1.34E+02 8.15E+01 G

SN-113       9.5260E+02                                     1.15E+02
                           391.69 9.526E+02 ?(  7.503E+02 2.44E+01 6.40E+01 G

CS-137       4.4452E+02                                     1.10E+04
                           661.66 4.445E+02  (  3.202E+00 7.63E-01 8.52E+01 G

Y-898        2.4057E+03                                     1.07E+02
                           898.02 2.406E+03 @(  1.118E+03 2.36E+01 9.37E+01 G

Co-1173      6.8772E+02                                     1.93E+03
                          1173.24 6.877E+02  (  4.547E+00 8.09E-01 9.99E+01 G

Co-1332      6.9256E+02                                     1.93E+03
                          1332.50 6.926E+02  (  2.044E+00 7.49E-01 1.00E+02 G

Y-1836       1.7452E+03                                     1.07E+02
                          1836.01 1.745E+03  (  2.388E+02 1.02E+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:                      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  Background  Net Area   Intensity   Uncert   Activity
          Energy   Counts     Counts     Cts/Sec  1 Sigma %
_____________________________________________________________________________
Hg-203     280.29      2362.       -52.    -0.014   133.84   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   *****
        Time of Count  Time Corrected  Uncertainty  1 Sigma
Nuclide     Activity       Activity       Counting                    MDA
               Bq/Sample     Bq/Sample                                 Bq/Sample

_____________________________________________________________________________
Pb-210       1.2947E+04    1.3971E+04    6.459E-01%                 1.48E+02
AM-241       1.1648E+03    1.1694E+03    6.156E-01%                 1.09E+01
CD-109       4.0954E+03    1.5657E+04    8.713E-01%                 2.12E+02
CO-57        3.3792E+01    3.3118E+02    2.862E+00%                 1.73E+01
Ce-139       5.9752E+00    5.4173E+02    1.074E+01%                 1.36E+02
Hg-203 #A   -5.2429E-01 >12 Halflives   1.3384E+02%   2.3272E+00
SN-113 #     4.3447E+00    9.5260E+02    2.438E+01%                 7.50E+02
CS-137       4.2011E+02    4.4452E+02    7.635E-01%                 3.20E+00
Y-898  #     7.1422E+00    2.4057E+03    2.361E+01%                 1.12E+03
Co-1173      4.9827E+02    6.8772E+02    8.087E-01%                 4.55E+00
Co-1332      5.0178E+02    6.9256E+02    7.487E-01%                 2.04E+00
Y-1836       5.1813E+00    1.7452E+03    1.023E+01%                 2.39E+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 (  379.7 to  1999.7 keV)     1.968E+04  Bq/Sample
Total Decayed Activity (  379.7 to  1999.7 keV) 3.8598309E+04  Bq/Sample
```

2nd Source Verification

Detector: **Ge12**
Geometry: **Tunacan**
Reference date: **10/1/2006**
Calibration Standard: **74139-334**
Standard volume g / vial: **1550**
Standard volume transferred in g / geometry: **341.9**
lab ID# of cal standard: **1282974**

Isotope	Certified Activity gammas/sec	Geometry Activity	γ abundance	Bq/sample	Count Results	%recovery
Am-241	2034	449	0.359	1250	1288	103.1
Cs-137	1926	425	0.851	499	509.9	102.1
Co-60	3612	797	0.999856	797	833.8	104.6

Reviewed By: Jody Watson

Date: 4/24/2018

Test America St. Louis Spectrum ID: 12_TunaCan_20180012

Sample Description: 12_TunaCan_ICV
Detector: Detector #12
Batch ID: 12
Work Order Number: TunaCan
Lot Number: ICV

Decay to Time: 10/1/2006 11:00 Live Time: 5000 sec
Acquisition Time: 4/24/2018 09:26:18 Real Time: 5018 sec
Analysis Time: 4/24/2018 10:50 Dead Time: 0.36 %
Analysis Quantity: 1.000E+00 Sample

Efficiency Cal File: 12_Soil_TunaCan.Clb
Efficiency Cal Desc: 12_TunaCan_108513
Efficiency Cal Date: 4/20/2018 11:53
Energy Cal Date: 4/20/2018 11:13
Library: DET_EnergyStandardMix & Pb.lib
Bkgd Correction File: 12_2017-05-07_0806.PBC

Nuclide	Activity Bq/Sample	1-Sigma Counting Uncert %	1-Sigma Counting Uncert Bq/Sample	1-Sigma Total Uncert Bq/Sample	Minimum Detectable Activity Bq/Sample
Pb-210	1.634E+04	0.6	9.464E+01	1.053E+03	1.764E+02
AM-241	1.288E+03	0.4	5.772E+00	8.177E+01	8.914E+00
CD-109	2.726E+04	25.0	6.823E+03	7.030E+03	1.764E+04
CO-57	1.000E+100	153.6	5.398E-01	5.402E-01	1.425E+00
Ce-139	1.000E+100	106.9	5.267E-01	5.274E-01	1.390E+00
Hg-203	1.000E+100	297.5	6.855E-01	6.856E-01	1.730E+00
SN-113	1.000E+100	692.4	1.143E+00	1.143E+00	2.762E+00
CS-137	5.099E+02	0.8	3.904E+00	2.652E+01	3.285E+00
Y-898	1.000E+100	140.9	1.086E+00	1.086E+00	2.342E+00
Co-1173	8.106E+02	1.3	1.069E+01	4.173E+01	9.187E+00
Co-1332	8.338E+02	1.3	1.078E+01	4.290E+01	6.803E+00
Y-1836	1.000E+100	127.2	4.662E-01	4.667E-01	9.202E-01
Total	6.000E+100				

Analyst: Jody Watson

(Page 1 of 7)

Sample description
12_TunaCan_ICV

Spectrum Filename: C:\User\SPC\Det12\12_TunaCan_20180012.An1

Acquisition information

Start time:	4/24/2018 9:26:18 AM
Live time:	5000
Real time:	5018
Dead time:	0.36 %
Detector ID:	12

Detector system
Ge12 S/N10034336

Calibration

Filename:	12_Soil_TunaCan.Clb

12_TunaCan_108513

Energy Calibration

Created:	4/20/2018 11:13:27 AM
Zero offset:	0.059 keV
Gain:	0.250 keV/channel
Quadratic:	-3.735E-08 keV/channel^2

Efficiency Calibration

Created:	4/20/2018 11:53:09 AM
Type:	Polynomial
Uncertainty:	1.020 %
Coefficients:	-0.363508 -4.707999 0.462125
	-0.051256 0.002384 -0.000043

Library Files

Main analysis library:	DET_EnergyStandardMix & Pb.lib
Library Match Width:	0.500
Peak stripping:	Library based

Analysis parameters

Analysis engine:	Env32 G800W064
Start channel:	100 (25.08keV)
Stop channel:	8000 (1999.13keV)
Peak rejection level:	1000.000%
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:	YES	10/1/2006 11:00:00 AM
Decay during acquisition:	YES	
Decay during collection:	NO	
True coincidence correction:	NO	
Peaked background correction:	YES	12_2017-05-07_0806.PBC 5/7/2017 8:06:54 AM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 7 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 25.3541

***** 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
28.13	58.	46.71	0.75	4.137E-03				
32.13	394.	18.65	0.81	7.163E-03				
36.69	330.	25.31	0.84	1.059E-02				
46.66	43625.	0.58	0.85	1.811E-02	46.54	4.250	1.634E+04	Pb210
49.83	321.	44.33	0.85	2.160E-02				
59.65	63562.	0.45	0.86	2.820E-02	59.54	35.700	1.288E+03	AM241
70.53	127.	49.58	1.39	3.219E-02				
74.86	220.	28.10	0.88	3.333E-02				
77.21	369.	16.72	0.88	3.387E-02				
87.68	350.	23.71	0.81	3.578E-02	88.03	3.610	3.034E+04	CD109
93.18	213.	27.98	1.16	3.644E-02				
165.85	67.	106.94	0.97	3.405E-02	165.85	79.900	HL>Cutoff	Ce139
238.54	388.	19.10	0.88	2.744E-02				
279.17	23.	297.48	1.09	2.449E-02	279.17	81.500	HL>Cutoff	Hg203
307.48	44.	92.73	0.49	2.278E-02				
312.92	63.	62.15	0.30	2.248E-02				
320.20	50.	55.24	0.61	2.209E-02				
355.42	79.	51.62	0.51	2.040E-02				
384.05	22.	98.42	0.50	1.922E-02				
428.92	42.	63.02	0.59	1.766E-02				
454.01	126.	41.89	2.09	1.692E-02				
493.21	76.	56.00	0.64	1.589E-02				
583.05	231.	19.93	1.19	1.403E-02				
609.57	255.	15.76	1.66	1.358E-02				
661.72	21282.	0.77	1.42	1.279E-02	661.66	85.210	5.099E+02	CS137
898.02	37.	140.94	1.67	1.025E-02	898.02	93.700	HL>Cutoff	Y898
1173.31	7459.	1.32	1.92	8.426E-03	1173.24	99.900	8.106E+02	Co1173

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
1332.58	6951.	1.30	1.98	7.647E-03	1332.50	99.982	8.318E+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 Channel	Energy	Background Counts	Net Area Counts	Efficiency * Area	Uncert 1 Sigma %	FWHM keV	Suspected Nuclide	
112.21	28.13	314.	58.	1.406E+04	46.71	0.750	-	s
128.21	32.13	1577.	394.	5.496E+04	18.65	0.810	-	
146.44	36.67	3332.	330.	3.120E+04	25.31	0.841	-	sD
199.29	49.79	9113.	333.	1.539E+04	40.96	0.855	-	sD
281.70	70.53	1447.	127.	3.956E+03	49.58	1.387	-	s
299.02	74.84	1784.	220.	6.587E+03	28.10	0.880	-	D
308.40	77.19	1706.	369.	1.088E+04	16.72	0.883	-	sD
372.24	93.18	1248.	213.	5.837E+03	27.98	1.163	-	sM
953.35	238.54	1339.	388.	1.414E+04	19.10	0.882	-	s
1229.01	307.48	572.	44.	1.931E+03	92.73	0.491	-	sc
1250.75	312.92	513.	63.	2.788E+03	62.15	0.295	-	s
1279.88	320.20	329.	50.	2.263E+03	55.24	0.611	-	s
1420.71	355.42	528.	79.	3.873E+03	51.62	0.511	-	s
1535.20	384.00	232.	22.	1.118E+03	98.42	0.497	-	sc
1714.62	428.92	312.	42.	2.406E+03	63.02	0.590	-	s
1814.96	454.01	760.	126.	7.448E+03	41.89	2.094	-	s
1971.76	493.21	502.	76.	4.813E+03	56.00	0.640	-	s
2331.07	583.05	403.	231.	1.644E+04	19.93	1.194	-	
2437.14	609.57	326.	255.	1.877E+04	15.76	1.660	-	

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	185.79	46.54	10103.	43625.	8.725	0.58	0.851D
AM-241	237.76	59.54	8808.	63562.	12.712	0.45	0.865D
CD-109	350.62	87.77	1861.	315.	0.063	25.03	0.760s
CO-57	487.68	122.06	2320.	-56.	-0.011	153.64	0.928
Ce-139	662.74	165.85	1600.	67.	0.013	106.94	0.973s
Hg-203	1115.81	279.17	1331.	23.	0.005	297.48	1.086s
SN-113	1565.74	391.69	1248.	-10.	-0.002	692.39	1.196s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
CS-137	2645.75	661.72	832.	21282.	4.256	0.77	1.422
Y-898	3591.15	898.02	555.	37.	0.007	140.94	1.672s
Co-1173	4692.85	1173.31	308.	7459.	1.492	1.32	1.921
Co-1332	5330.42	1332.58	135.	6968.	1.394	1.29	1.978
Y-1836	7346.49	1836.01	27.	-11.	-0.002	127.17	2.459s

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	1.6338E+04				8.15E+03	
			46.54	1.634E+04	(P	1.764E+02 5.79E-01 4.25E+00	G
AM-241		1.2876E+03				1.58E+05	
			59.54	1.288E+03	(	8.914E+00 4.48E-01 3.57E+01	G
CD-109		2.7262E+04				4.63E+02	
			88.03	2.726E+04	*(	1.764E+04 2.50E+01 3.61E+00	G
CO-57		-3.5134E-01				2.72E+02	
			122.06	-3.513E-01	(	1.425E+00 1.54E+02 8.56E+01	G
Ce-139		4.9250E-01				1.38E+02	
			165.85	4.925E-01	?(	1.390E+00 1.07E+02 7.99E+01	G
Hg-203		2.3043E-01				4.66E+01	
			279.17	2.304E-01	&(	1.730E+00 2.97E+02 8.15E+01	G
SN-113		-1.6505E-01				1.15E+02	
			391.69	-1.650E-01	&(	2.762E+00 6.92E+02 6.40E+01	G
CS-137		5.0987E+02				1.10E+04	
			661.66	5.099E+02	(	3.285E+00 7.66E-01 8.52E+01	G
Y-898		7.7025E-01				1.07E+02	
			898.02	7.703E-01	&(	2.342E+00 1.41E+02 9.37E+01	G
Co-1173		8.1058E+02				1.93E+03	
			1173.24	8.106E+02	(	9.187E+00 1.32E+00 9.99E+01	G
Co-1332		8.3376E+02				1.93E+03	
			1332.50	8.338E+02	(	6.803E+00 1.29E+00 1.00E+02	G

Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
Y-1836	-3.6659E-01					1.07E+02	
		1836.01	-3.666E-01	?(	9.202E-01	1.27E+02	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
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
CO-57	122.06	2320.	-56.	-0.011	153.64	0.000E+00
Ce-139	165.85	1600.	67.	0.013	106.94	0.000E+00
Hg-203	279.17	1331.	23.	0.005	297.48	0.000E+00
SN-113	391.69	1248.	-10.	-0.002	692.39	0.000E+00
Y-898	898.02	555.	37.	0.007	140.94	0.000E+00
Y-1836	1836.01	27.	-11.	-0.002	127.17	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	1.1406E+04	1.6338E+04	5.793E-01%	1.76E+02
AM-241	1.2640E+03	1.2876E+03	4.483E-01%	8.91E+00
CD-109 #	4.8702E+01	2.7262E+04	2.503E+01%	1.76E+04
CO-57 #A	-3.5134E-01	>12 Halflives	1.536E+02%	1.43E+00
Ce-139 #A	4.9250E-01	>12 Halflives	1.069E+02%	1.39E+00
Hg-203 #A	2.3043E-01	>12 Halflives	2.975E+02%	1.73E+00
SN-113 #A	-1.6505E-01	>12 Halflives	6.924E+02%	2.76E+00
CS-137	3.9058E+02	5.0987E+02	7.657E-01%	3.29E+00
Y-898 #A	7.7025E-01	>12 Halflives	1.409E+02%	2.34E+00
Co-1173	1.7721E+02	8.1058E+02	1.318E+00%	9.19E+00
Co-1332	1.8227E+02	8.3376E+02	1.293E+00%	6.80E+00
Y-1836 #A	-3.6659E-01	>12 Halflives	1.272E+02%	9.20E-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 (25.1 to 1999.1 keV) 1.347E+04 Bq/Sample
Total Decayed Activity (25.1 to 1999.1 keV) 4.7041629E+04 Bq/Sample

2nd Source Verification

Detector:	Ge14
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	1140.8	98.0
Cs-137	1926	396	0.851	465	447.55	96.2
Co-60	3611	742	0.99974	742	690.01	93.0
Co-60	3612	742	0.999856	742	699.61	94.2

Reviewed By: Jody Watson

Date: 4/24/2012

14_TunaCan2nd_20120390

```
     ORTEC g v - i (3263) Env32  G53W4.25  7/6/2012 9:20:28 AM     Page  1
TestAmerica, Inc.               Spectrum name: 14_TunaCan2nd_20120390.An1

Sample description
     14_TunaCan2nd_rad10_042412


Spectrum Filename: C:\User\SPC\Det14\14_TunaCan2nd_20120390.An1

Acquisition information
       Start time:                 4/24/2012 8:12:45 AM
       Live time:               3600
       Real time:               3635
       Dead time:                  0.95 %
       Detector ID:                   14

Detector system
     Ge14 SN/11080670


Calibration
       Filename:                   14_Soil_TunaCan.Clb
     14_TunaCan_90099_042312


       Energy Calibration
            Created:               4/23/2012 11:29:29 AM
            Zero offset:           0.158 keV
            Gain:                  0.250 keV/channel
            Quadratic:            -1.959E-08 keV/channel^2

       Efficiency Calibration
            Created:               4/23/2012 11:29:47 AM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   1.02 %
            Log(Eff):              2.101260E-01 + (-5.951973E-01*Log(E) ) +
                                   ( -1.605331E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.28 %
            Log(Eff):             -2.391492E+01 + ( 8.828985E+00*Log(E) ) +
                                   ( -9.371496E-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 (    37.67keV )
       Stop channel:            8000 (  1999.52keV )
       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  7/6/2012 9:20:28 AM     Page  2
TestAmerica, Inc.               Spectrum name: 14_TunaCan2nd_20120390.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       14_2012-04-01_0328.PBC
                                                 4/1/2012 3:28:19 AM

       Absorption (Internal):          NO
       Geometry correction:            NO
       Random summing:                 NO


total peaks alloc.   11 cutoff: 5.00E+01%
       Energy Calibration
            Normalized diff:       0.0804
```

***** 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	636.	14.35	0.68	1.394E-02				
46.70	42844.	0.65	0.73	2.183E-02	46.54	4.250	1.384E+04	Pb210
49.57	579.	23.20	1.08	2.397E-02				
59.66	44776.	0.62	0.73	3.072E-02	59.54	35.700	1.141E+03	AM241
88.02	24143.	0.88	0.79	4.196E-02	88.03	3.610	1.568E+04	CD109
121.97	5150.	2.07	0.81	4.379E-02	122.06	85.600	3.284E+02	CO57
136.39	594.	12.74	0.84	4.244E-02				
165.76	922.	8.50	0.93	3.800E-02	165.85	79.900	5.802E+02	Ce139
238.43	269.	23.37	0.71	2.933E-02				
315.48	114.	42.70	0.42	2.361E-02				
327.51	51.	61.93	0.45	2.293E-02				
351.90	216.	23.90	0.91	2.167E-02				
364.95	52.	64.29	0.48	2.106E-02				
374.52	129.	45.68	0.49	2.064E-02				
391.67	297.	17.91	1.16	1.993E-02	391.69	64.000	1.044E+03	SN113
510.55	153.	33.44	0.60	1.616E-02				
661.74	16713.	0.81	1.30	1.313E-02	661.66	85.210	4.376E+02	CS137
665.93	55.	47.01	1.30	1.306E-02				
682.98	51.	73.33	0.31	1.280E-02				
802.77	123.	33.88	0.65	1.124E-02				
897.96	328.	20.32	1.77	1.026E-02	898.02	93.700	2.290E+03	Y898
978.13	53.	59.31	0.31	9.568E-03				
1173.32	15097.	0.91	1.81	8.243E-03	1173.24	99.900	6.900E+02	Co1173
1332.58	13794.	0.88	1.91	7.422E-03	1332.50	99.982	6.996E+02	Co1332
1836.21	153.	8.94	1.16	5.686E-03	1836.01	99.200	1.816E+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

145.93	36.65	2712.	636.	4.559E+04	14.35	0.681	-	s
197.59	49.57	6158.	579.	2.414E+04	23.20	1.078	-	s
544.79	136.39	1623.	594.	1.400E+04	12.74	0.836	-	
952.87	238.43	1166.	269.	9.182E+03	23.37	0.709	-	

Channel	Energy	Background	Net area	Eff*Area	Uncert	FWHM	Suspected	
1261.02	315.48	752.	114.	4.829E+03	42.70	0.415	-	s
1309.15	327.51	440.	51.	2.232E+03	61.93	0.449	-	s
1406.69	351.90	776.	216.	9.981E+03	23.90	0.914	-	
1458.89	364.95	463.	52.	2.484E+03	64.29	0.475	-	s
1497.18	374.52	912.	129.	6.250E+03	45.68	0.487	-	s
2041.26	510.55	669.	153.	9.449E+03	33.44	0.603	-	s
2662.75	665.91	160.	40.	3.074E+03	48.94	0.586	-	sM
2731.03	682.98	385.	51.	3.984E+03	73.33	0.306	-	s
3210.25	802.77	443.	123.	1.098E+04	33.88	0.654	-	s
3911.87	978.13	330.	53.	5.539E+03	59.31	0.307	-	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	186.10	46.70	10276.	42803.	11.890	0.65	0.733
AM-241	237.93	59.66	8589.	44776.	12.438	0.62	0.733
CD-109	351.36	88.02	4956.	24143.	6.706	0.88	0.785
CO-57	487.12	121.97	1860.	5150.	1.431	2.07	0.805
Ce-139	662.24	165.76	1490.	922.	0.256	8.50	0.930s
Hg-203	1114.33	278.80	1377.	-40.	-0.011	133.76	0.957s
SN-113	1565.78	391.67	802.	297.	0.083	17.91	1.165
CS-137	2645.99	661.72	749.	17094.	4.748	0.86	1.367
Y-898	3591.10	897.96	851.	328.	0.091	20.32	1.769s
Co-1173	4692.93	1173.32	513.	15097.	4.194	0.91	1.810
Co-1332	5330.26	1332.58	105.	13794.	3.832	0.88	1.907
Y-1836	7346.17	1836.21	5.	153.	0.042	8.94	1.165s

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	Activity Bq/Sample	Code	MDA Value Bq/Sample	COMMENTS

```
Pb-210   N   1.3845E+04                                        8.15E+03
                            46.54 1.384E+04  (P 1.537E+02 6.55E-01 4.25E+00 G

AM-241       1.1408E+03                                        1.58E+05
                            59.54 1.141E+03  (  1.107E+01 6.17E-01 3.57E+01 G

CD-109       1.5678E+04                                        4.63E+02
                            88.03 1.568E+04  (  2.148E+02 8.77E-01 3.61E+00 G

CO-57        3.2838E+02                                        2.72E+02
                           122.06 3.284E+02  (  1.299E+01 2.07E+00 8.56E+01 G

Ce-139       5.8018E+02                                        1.38E+02
                           165.85 5.802E+02 *(  1.149E+02 8.50E+00 7.99E+01 G

Hg-203      -5.1862E-01                                        4.66E+01
                           279.17-5.186E-01 ?(  2.305E+00 1.34E+02 8.15E+01 G

SN-113       1.0438E+03                                        1.15E+02
                           391.69 1.044E+03  (  4.727E+02 1.79E+01 6.40E+01 G

CS-137       4.4755E+02                                        1.10E+04
                           661.66 4.475E+02  (  3.410E+00 8.57E-01 8.52E+01 G

Y-898        2.2899E+03                                        1.07E+02
                           898.02 2.290E+03 *(  9.680E+02 2.03E+01 9.37E+01 G

Co-1173      6.9001E+02                                        1.93E+03
                          1173.24 6.900E+02  (  4.948E+00 9.10E-01 9.99E+01 G

Co-1332      6.9961E+02                                        1.93E+03
                          1332.50 6.996E+02  (  2.559E+00 8.77E-01 1.00E+02 G

Y-1836       1.8162E+03                                        1.07E+02
                          1836.01 1.816E+03  (  1.603E+02 8.94E+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
                                       Page 4
```

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
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
Hg-203	278.80	1377.	-40.	-0.011	133.76	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 Counting 1 Sigma	MDA Bq/Sample
Pb-210	1.2885E+04	1.3845E+04	6.553E-01%	1.54E+02
AM-241	1.1366E+03	1.1408E+03	6.168E-01%	1.11E+01
CD-109	4.4274E+03	1.5678E+04	8.766E-01%	2.15E+02
CO-57	3.8172E+01	3.2838E+02	2.068E+00%	1.30E+01
Ce-139 #	8.2779E+00	5.8018E+02	8.497E+00%	1.15E+02
Hg-203 #A	-5.1862E-01	>12 Halflives	1.3376E+02%	2.3053E+00
SN-113	6.4765E+00	1.0438E+03	1.791E+01%	4.73E+02
CS-137	4.2434E+02	4.4755E+02	8.571E-01%	3.41E+00
Y-898 #	9.4790E+00	2.2899E+03	2.032E+01%	9.68E+02
Co-1173	5.0921E+02	6.9001E+02	9.096E-01%	4.95E+00
Co-1332	5.1630E+02	6.9961E+02	8.770E-01%	2.56E+00
Y-1836	7.5179E+00	1.8162E+03	8.944E+00%	1.60E+02

ORTEC g v - i (3263) Env32 G53W4.25 7/6/2012 9:20:28 AM Page 6
TestAmerica, Inc. Spectrum name: 14_TunaCan2nd_20120390.An1

- 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 (37.7 to 1999.5 keV) 1.997E+04 Bq/Sample
Total Decayed Activity (37.7 to 1999.5 keV) 3.8559289E+04 Bq/Sample

2nd Source Verification

Detector:	Ge16
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	1175.5	101.0
Cs-137	1926	396	0.851	465	456.26	98.1
Co-60	3611	742	0.99974	742	696.55	93.8
Co-60	3612	742	0.999856	742	694.91	93.6

Reviewed By: Jody Watson

Date: 7/17/2012

16_TunaCan2nd_81427_071712

```
     ORTEC g v - i (3263) Env32  G53W4.25  7/17/2012 12:43:11 PM   Page  1
TestAmerica, Inc.               Spectrum name: 16_TunaCan2nd_81427_071712.An1

Sample description
     16_Soil_TunaCan2nd_81427


Spectrum Filename: C:\User\SPC\Det16\16_TunaCan2nd_81427_071712.An1

Acquisition information
       Start time:                 7/17/2012 11:27:38 AM
       Live time:               3600
       Real time:               3637
       Dead time:                  1.01 %
       Detector ID:                   16

Detector system
     Ge16 SN/11012217


Calibration
       Filename:                   16_Soil_TunaCan.Clb
     16_TunaCan_90099_071012


       Energy Calibration
            Created:               7/13/2012 9:47:11 AM
            Zero offset:           0.111 keV
            Gain:                  0.250 keV/channel
            Quadratic:            -1.955E-08 keV/channel^2

       Efficiency Calibration
            Created:               7/13/2012 9:47:24 AM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   1.01 %
            Log(Eff):              1.477416E-02 + (-5.514266E-01*Log(E) ) +
                                   ( -1.443482E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.17 %
            Log(Eff):             -2.408438E+01 + ( 8.948554E+00*Log(E) ) +
                                   ( -9.513599E-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 (    37.62keV )
       Stop channel:            8000 (  1999.62keV )
       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  7/17/2012 12:43:11 PM   Page  2
TestAmerica, Inc.               Spectrum name: 16_TunaCan2nd_81427_071712.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	16_2012-07-01_0410.PBC 7/1/2012 4:10:46 AM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 11 cutoff: 5.00E+01%
Energy Calibration
Normalized diff: 0.0735

***** 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	662.	16.00	0.95	1.502E-02				
46.61	44788.	0.57	0.95	2.354E-02	46.54	4.250	1.344E+04	Pb210
49.73	846.	14.98	0.96	2.615E-02				
51.93	67.	175.93	0.96	2.781E-02				
59.60	50058.	0.62	0.95	3.331E-02	59.54	35.700	1.176E+03	AM241
67.02	327.	40.04	0.43	3.772E-02				
77.05	248.	35.16	0.66	4.226E-02				
88.11	23229.	0.97	1.00	4.552E-02	88.03	3.610	1.578E+04	CD109
92.72	154.	41.19	0.62	4.641E-02				
102.49	234.	36.86	0.72	4.751E-02				
122.18	4603.	2.65	1.08	4.728E-02	122.06	85.600	3.368E+02	CO57
136.63	690.	11.63	1.03	4.571E-02				
165.89	573.	14.69	0.88	4.155E-02	165.85	79.900	5.132E+02	Ce139
279.05	48.	131.87	1.16	2.876E-02	279.17	81.500	HL>Cutoff	Hg203
383.49	28.	109.64	0.60	2.290E-02				
391.47	391.	21.81	0.93	2.256E-02	391.69	64.000	2.012E+03	SN113
416.76	115.	47.52	0.73	2.156E-02				
454.44	148.	42.64	0.71	2.024E-02				
470.03	138.	36.11	1.33	1.974E-02				
471.50	87.	46.19	1.33	1.970E-02				
609.23	184.	25.35	0.44	1.633E-02				
661.72	20285.	0.80	1.52	1.537E-02	661.66	85.210	4.563E+02	CS137
688.53	70.	44.77	0.67	1.492E-02				
756.44	34.	63.94	0.34	1.392E-02				
891.54	148.	42.73	0.38	1.231E-02				
898.03	342.	24.68	0.43	1.225E-02	898.02	93.700	3.456E+03	Y898
1092.88	180.	35.97	0.46	1.057E-02				
1173.34	17966.	0.81	1.90	1.002E-02	1173.24	99.900	6.965E+02	Co1173
1332.62	16290.	0.80	2.05	9.096E-03	1332.50	99.982	6.949E+02	Co1332
1836.30	109.	12.59	1.70	7.121E-03	1836.01	99.200	1.789E+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
145.94	36.61	3330.	662.	4.407E+04	16.00	0.954	-
198.40	49.77	7608.	846.	3.236E+04	14.98	0.955	- D
206.87	51.89	6455.	301.	1.081E+04	38.23	0.957	- D

ORTEC g v - i (3263) Env32 G53W4.25 7/17/2012 12:43:11 PM Page 3
TestAmerica, Inc. Spectrum name: 16_TunaCan2nd_81427_071712.An1

Channel	Energy	Background	Net area	Eff*Area	Uncert	FWHM	Suspected
267.54	67.02	4805.	327.	8.670E+03	40.04	0.431	- s
307.65	77.05	2954.	248.	5.881E+03	35.16	0.659	- s
370.31	92.72	1548.	154.	3.319E+03	41.19	0.623	- s
409.40	102.49	2168.	234.	4.932E+03	36.86	0.719	- s
545.90	136.63	1724.	690.	1.509E+04	11.63	1.033	-
1533.12	383.49	438.	28.	1.245E+03	109.64	0.596	- c
1666.20	416.76	856.	115.	5.319E+03	47.52	0.732	- s
1816.90	454.44	1051.	148.	7.328E+03	42.64	0.711	- s
1879.23	470.27	1171.	138.	6.985E+03	36.11	1.330	- D
1885.13	471.75	760.	87.	4.406E+03	46.19	1.331	- D
2436.00	609.23	541.	184.	1.125E+04	25.35	0.437	- s
2753.21	688.53	304.	70.	4.691E+03	44.77	0.673	- s
3024.88	756.44	198.	34.	2.419E+03	63.94	0.336	- s
3565.37	891.54	821.	148.	1.199E+04	42.73	0.382	- sM
4370.93	1092.88	734.	180.	1.708E+04	35.97	0.458	- 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	185.74	46.56	12987.	46638.	12.955	0.67	0.934
AM-241	237.89	59.60	10773.	50058.	13.905	0.62	0.952
CD-109	351.86	88.11	5903.	23229.	6.452	0.97	0.996
CO-57	488.11	122.18	2577.	4603.	1.279	2.65	1.080
Ce-139	662.88	165.89	1776.	573.	0.159	14.69	0.876
Hg-203	1115.44	279.05	1953.	48.	0.013	131.87	1.164s
SN-113	1566.59	391.86	1251.	282.	0.078	26.27	0.890s
CS-137	2645.99	661.72	1025.	20285.	5.635	0.80	1.515
Y-898	3591.33	898.03	1130.	342.	0.095	24.68	0.434s
Co-1173	4692.85	1173.34	496.	17966.	4.991	0.81	1.896
Co-1332	5330.25	1332.62	94.	16290.	4.525	0.80	2.052
Y-1836	7346.21	1836.30	14.	109.	0.030	12.59	1.698s

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	1.4024E+04				8.15E+03	
			46.54	1.402E+04	(P	1.605E+02 6.71E-01 4.25E+00	G
AM-241		1.1755E+03				1.58E+05	
			59.54	1.176E+03	(	1.142E+01 6.21E-01 3.57E+01	G
CD-109		1.5779E+04				4.63E+02	
			88.03	1.578E+04	(	2.451E+02 9.70E-01 3.61E+00	G
CO-57		3.3677E+02				2.72E+02	
			122.06	3.368E+02	(	1.751E+01 2.65E+00 8.56E+01	G
Ce-139		5.1324E+02				1.38E+02	
			165.85	5.132E+02	(	1.783E+02 1.47E+01 7.99E+01	G
Hg-203		5.6505E-01				4.66E+01	
			279.17	5.651E-01	*(	2.473E+00 1.32E+02 8.15E+01	G
SN-113		1.4529E+03				1.15E+02	
			391.69	1.453E+03	(	8.626E+02 2.63E+01 6.40E+01	G
CS-137		4.5626E+02				1.10E+04	
			661.66	4.563E+02	(	3.417E+00 8.02E-01 8.52E+01	G
Y-898		3.4565E+03				1.07E+02	
			898.02	3.456E+03	*(	1.611E+03 2.47E+01 9.37E+01	G
Co-1173		6.9655E+02				1.93E+03	
			1173.24	6.965E+02	(	4.129E+00 8.09E-01 9.99E+01	G
Co-1332		6.9491E+02				1.93E+03	
			1332.50	6.949E+02	(	2.043E+00 8.03E-01 1.00E+02	G
Y-1836		1.7894E+03				1.07E+02	
			1836.01	1.789E+03	(	3.307E+02 1.26E+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:	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	279.05	1953.	48.	0.013	131.87	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 Counting	1 Sigma	MDA Bq/Sample
Pb-210	1.2959E+04	1.4024E+04	6.724E-01%		1.60E+02
AM-241	1.1708E+03	1.1755E+03	6.214E-01%		1.14E+01
CD-109	3.9282E+03	1.5779E+04	9.701E-01%		2.45E+02
CO-57	3.1587E+01	3.3677E+02	2.653E+00%		1.75E+01
Ce-139	4.7936E+00	5.1324E+02	1.469E+01%		1.78E+02
Hg-203 #A	5.6505E-01	>12 Halflives	1.3187E+02%	2.4725E+00	
SN-113	5.4311E+00	1.4529E+03	2.627E+01%		8.63E+02
CS-137	4.3030E+02	4.5626E+02	8.015E-01%		3.42E+00
Y-898 #	8.2791E+00	3.4565E+03	2.468E+01%		1.61E+03
Co-1173	4.9870E+02	6.9655E+02	8.087E-01%		4.13E+00
Co-1332	4.9753E+02	6.9491E+02	8.032E-01%		2.04E+00
Y-1836	4.2861E+00	1.7894E+03	1.259E+01%		3.31E+02

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TestAmerica, Inc. Spectrum name: 16_TunaCan2nd_81427_071712.An1

- 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 (609.2 to 1999.6 keV) 1.954E+04 Bq/Sample
Total Decayed Activity (609.2 to 1999.6 keV) 4.0374930E+04 Bq/Sample

2nd Source Verification

Detector:	Ge17
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	1140.2	97.9
Cs-137	1926	396	0.851	465	440.98	94.8
Co-60	3611	742	0.99974	742	682.05	91.9
Co-60	3612	742	0.999856	742	689.63	92.9

Reviewed By: Megan McAfee

Date: 4/13/2012

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     ORTEC g v - i (3263) Env32  G53W4.25  7/6/2012 9:25:36 AM     Page  1
TestAmerica, Inc.               Spectrum name: 17_Tuna2nd_20120265.An1

Sample description
     17_Tuna2nd_81427_032612


Spectrum Filename: C:\User\SPC\Det17\17_Tuna2nd_20120265.An1

Acquisition information
       Start time:                 3/26/2012 9:29:21 AM
       Live time:               3600
       Real time:               3637
       Dead time:                  1.02 %
       Detector ID:                   17

Detector system
     Ge17 SN/11080671


Calibration
       Filename:                   17_Soil_TunaCan.Clb
     17_TunaCan_90099_032612


       Energy Calibration
            Created:               4/12/2012 9:28:30 AM
            Zero offset:           0.118 keV
            Gain:                  0.250 keV/channel
            Quadratic:            -2.376E-08 keV/channel^2

       Efficiency Calibration
            Created:               4/12/2012 9:28:42 AM
            Knee Energy:         165.85 keV
            Above the Knee:        Quadratic        Uncertainty =   0.91 %
            Log(Eff):             -5.264190E-01 + (-4.024164E-01*Log(E) ) +
                                   ( -2.604461E-02*Log(E)^2 )
            Below the Knee:        Quadratic        Uncertainty =   1.00 %
            Log(Eff):             -2.343889E+01 + ( 8.582715E+00*Log(E) ) +
                                   ( -9.075430E-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 (    37.63keV )
       Stop channel:            8000 (  1999.21keV )
       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  7/6/2012 9:25:36 AM     Page  2
TestAmerica, Inc.               Spectrum name: 17_Tuna2nd_20120265.An1
                                      Page 1
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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	17_2012-02-26_0520.PBC 2/26/2012 5:20:29 AM
Absorption (Internal):	NO	
Geometry correction:	NO	
Random summing:	NO	

total peaks alloc. 11 cutoff: 5.00E+01%
Energy Calibration
Normalized diff: 0.0590

***** 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
36.64	681.	13.12	0.69	1.356E-02				
40.87	116.	86.09	0.16	1.677E-02				
46.62	41004.	0.69	0.76	2.106E-02	46.54	4.250	1.365E+04	Pb210
49.59	775.	17.97	0.63	2.318E-02				
59.61	43179.	0.65	0.77	2.961E-02	59.54	35.700	1.140E+03	AM241
77.20	214.	40.60	1.02	3.765E-02				
88.08	23344.	0.86	0.81	4.060E-02	88.03	3.610	1.500E+04	CD109
121.99	5536.	2.31	0.89	4.276E-02	122.06	85.600	3.357E+02	CO57
136.39	771.	11.84	0.71	4.164E-02				
162.22	87.	50.79	0.72	3.820E-02				
165.73	964.	7.35	1.09	3.765E-02	165.85	79.900	5.310E+02	Ce139
216.43	116.	39.82	0.95	3.196E-02				
217.94	83.	57.15	0.95	3.181E-02				
238.21	247.	27.84	0.94	2.992E-02				
265.99	94.	61.67	0.61	2.773E-02				
301.12	44.	67.34	0.41	2.544E-02				
340.53	91.	61.26	0.55	2.333E-02				
351.73	148.	32.96	0.62	2.280E-02				
391.54	336.	18.56	0.91	2.113E-02	391.69	64.000	9.356E+02	SN113
464.58	72.	65.99	1.18	1.868E-02				
466.04	44.	93.25	1.18	1.864E-02				
582.96	167.	29.62	0.45	1.584E-02				
661.66	18538.	0.82	1.37	1.443E-02	661.66	85.210	4.410E+02	CS137
738.88	57.	57.41	0.44	1.329E-02				
833.91	110.	41.26	0.51	1.214E-02				
856.69	111.	46.51	0.75	1.189E-02				
898.10	352.	17.10	1.23	1.148E-02	898.02	93.700	1.818E+03	Y898
1026.09	89.	47.19	0.52	1.037E-02				
1173.27	17119.	0.83	1.74	9.359E-03	1173.24	99.900	6.820E+02	Co1173
1332.53	15698.	0.82	1.79	8.481E-03	1332.50	99.982	6.896E+02	Co1332
1835.81	220.	7.55	1.96	6.593E-03	1836.01	99.200	1.873E+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
146.04	36.64	2578.	681.	5.025E+04	13.12	0.695	-
162.95	40.87	4224.	116.	6.916E+03	86.09	0.161	- c
197.82	49.59	6204.	775.	3.343E+04	17.97	0.635	- sM
308.25	77.20	2934.	214.	5.685E+03	40.60	1.020	- s

ORTEC g v - i (3263) Env32 G53W4.25 7/6/2012 9:25:36 AM Page 3
TestAmerica, Inc. Spectrum name: 17_Tuna2nd_20120265.An1

Channel	Energy	Background	Net area	Eff*Area	Uncert	FWHM	Suspected
544.96	136.39	1975.	771.	1.852E+04	11.84	0.713	-
648.26	162.22	793.	87.	2.269E+03	50.79	0.719	- s
865.04	216.40	1003.	116.	3.620E+03	39.82	0.953	- D
871.09	217.91	1078.	83.	2.603E+03	57.15	0.955	- D
952.16	238.21	1349.	247.	8.265E+03	27.84	0.937	- s
1063.26	265.99	1020.	94.	3.372E+03	61.67	0.615	- s
1203.77	301.12	417.	44.	1.730E+03	67.34	0.412	- sc
1361.41	340.53	898.	91.	3.887E+03	61.26	0.553	- s
1406.20	351.73	744.	148.	6.491E+03	32.96	0.618	- s
1857.60	464.69	1086.	72.	3.842E+03	65.99	1.178	- sc
1863.46	466.15	839.	44.	2.387E+03	93.25	1.179	- sc
2331.15	582.96	570.	167.	1.054E+04	29.62	0.448	- s
2954.96	738.88	338.	57.	4.289E+03	57.41	0.442	- s
3335.20	833.91	507.	110.	9.049E+03	41.26	0.506	- s
3426.35	856.69	611.	111.	9.318E+03	46.51	0.755	- s
4104.24	1026.09	453.	89.	8.549E+03	47.19	0.517	- 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	185.95	46.62	10512.	40927.	11.369	0.69	0.761
AM-241	237.89	59.61	9192.	43179.	11.994	0.65	0.771
CD-109	351.75	88.08	4394.	23344.	6.484	0.86	0.812
CO-57	487.38	121.99	2606.	5536.	1.538	2.31	0.891
Ce-139	662.30	165.73	1283.	964.	0.268	7.35	1.085
Hg-203	1119.82	280.13	1632.	-52.	-0.015	109.81	1.012s
SN-113	1565.42	391.54	971.	336.	0.093	18.56	0.910s
CS-137	2646.04	661.66	840.	18538.	5.149	0.82	1.373
Y-898	3592.05	898.10	753.	352.	0.098	17.10	1.228
Co-1173	4693.24	1173.27	496.	17119.	4.755	0.83	1.743
Co-1332	5330.69	1332.53	136.	15698.	4.361	0.82	1.789
Y-1836	7345.64	1835.81	10.	220.	0.061	7.55	1.956s

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	1.3650E+04				8.15E+03	
			46.54	1.365E+04	(P	1.603E+02 6.87E-01 4.25E+00	G
AM-241		1.1402E+03				1.58E+05	
			59.54	1.140E+03	(	1.187E+01 6.55E-01 3.57E+01	G
CD-109		1.5004E+04				4.63E+02	
			88.03	1.500E+04	(	2.003E+02 8.59E-01 3.61E+00	G
CO-57		3.3573E+02				2.72E+02	
			122.06	3.357E+02	(	1.459E+01 2.31E+00 8.56E+01	G
Ce-139		5.3096E+02				1.38E+02	
			165.85	5.310E+02	(	9.338E+01 7.35E+00 7.99E+01	G
Hg-203		-6.6653E-01				4.66E+01	
			279.17	-6.665E-01	?(	2.427E+00 1.10E+02 8.15E+01	G
SN-113		9.3563E+02				1.15E+02	
			391.69	9.356E+02	@(	4.114E+02 1.86E+01 6.40E+01	G
CS-137		4.4098E+02				1.10E+04	
			661.66	4.410E+02	(	3.277E+00 8.23E-01 8.52E+01	G
Y-898		1.8177E+03				1.07E+02	
			898.02	1.818E+03	(	6.751E+02 1.71E+01 9.37E+01	G
Co-1173		6.8205E+02				1.93E+03	
			1173.24	6.820E+02	(	4.243E+00 8.31E-01 9.99E+01	G
Co-1332		6.8963E+02				1.93E+03	
			1332.50	6.896E+02	(	2.503E+00 8.22E-01 1.00E+02	G
Y-1836		1.8728E+03				1.07E+02	
			1836.01	1.873E+03	(	1.462E+02 7.55E+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	280.13	1632.	-52.	-0.015	109.81	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 Counting 1 Sigma		MDA Bq/Sample
Pb-210	1.2735E+04	1.3650E+04	6.879E-01%		1.60E+02
AM-241	1.1361E+03	1.1402E+03	6.548E-01%		1.19E+01
CD-109	4.4248E+03	1.5004E+04	8.588E-01%		2.00E+02
CO-57	4.2016E+01	3.3573E+02	2.313E+00%		1.46E+01
Ce-139	8.7645E+00	5.3096E+02	7.352E+00%		9.34E+01
Hg-203 #A	-6.6653E-01	>12 Halflives	1.0981E+02%	2.4271E+00	
SN-113 #	6.9111E+00	9.3563E+02	1.856E+01%		4.11E+02
CS-137	4.1887E+02	4.4098E+02	8.234E-01%		3.28E+00
Y-898	9.0827E+00	1.8177E+03	1.710E+01%		6.75E+02
Co-1173	5.0861E+02	6.8205E+02	8.315E-01%		4.24E+00
Co-1332	5.1427E+02	6.8963E+02	8.225E-01%		2.50E+00
Y-1836 #	9.3579E+00	1.8728E+03	7.550E+00%		1.46E+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

17_Tuna2nd_20120265

---------- S U M M A R Y ----------

Total Activity (582.9 to 1999.2 keV) 1.981E+04 Bq/Sample

Total Decayed Activity (582.9 to 1999.2 keV) 3.7099195E+04 Bq/Sample

Monthly Backgrounds

Test America
St. Louis
Background Check

Spectrum: 5_20191206006_BGLong
Description: Background Long PBC Count
Acquired: 12/6/2019 6:41:26 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	1.48	1.55	1.60	PASS

Analyst: Shiloh Smith Reviewer: Shiloh Smith

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Sample description
Background Long PBC Count

Spectrum Filename: C:\User\SPC\Det5\5_20191206006_BGLong.An1

Acquisition information
Start time: 12/6/2019 6:41:26 PM
Live time: 72000
Real time: 72388
Dead time: 0.54 %
Detector ID: 5

Detector system
Ge 5 SN/157

Calibration
Filename: 5_QC.Clb
Ge5_QC

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: 1/6/2011 8:03:22 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 (37.62keV)
Stop channel: 8000 (2000.81keV)
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

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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. 19 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1147

***** 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
46.60	506.	11.54	0.73	5.683E-02	46.54	4.250	2.914E+00	PB210
59.65	204.	22.12	0.74	7.435E-02	59.54	35.900	1.062E-01	AM241
63.29	650.	7.95	0.78	7.923E-02	63.29	3.810	2.993E+00	TH234
74.89	237.	16.62	0.81	9.478E-02				
77.10	347.	10.66	0.81	9.774E-02				
92.53	766.	7.13	1.02	1.129E-01	92.59	5.584	1.687E+00	TH234
					93.35	5.561	1.693E+00	AC228
185.79	406.	11.97	0.92	9.606E-02	185.72	54.000	1.086E-01	U235
					185.99	3.280	1.788E+00	Ra226
238.61	187.	16.74	0.98	8.325E-02	238.63	43.300	7.204E-02	PB212
241.95	162.	19.09	0.98	8.244E-02	240.99	4.100	6.645E-01	RA224
					242.00	7.430	3.678E-01	PB214
295.27	319.	12.80	1.10	6.949E-02	295.09	19.300	3.302E-01	PB214
351.87	448.	11.72	0.92	5.575E-02	351.93	37.600	2.969E-01	PB214
609.36	460.	8.56	1.40	3.199E-02	609.31	46.090	4.328E-01	BI214
					610.30	5.750	3.476E+00	RU103
661.71	181.	14.74	1.19	2.860E-02	661.66	85.210	1.032E-01	CS137
898.56	82.	25.67	1.60	2.045E-02	898.04	93.700	5.909E-02	y88
1120.30	111.	19.82	0.72	1.646E-02	1120.29	15.100	6.220E-01	BI214
					1120.55	99.987	9.396E-02	Sc46
1460.76	113.	17.54	1.82	1.300E-02	1460.83	10.670	1.132E+00	K40
1764.75	129.	18.85	1.72	1.105E-02	1764.49	15.400	1.055E+00	BI214

********** 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	
299.19	74.87	659.	237.	2.503E+03	16.62	0.813	-	D
308.03	77.08	512.	347.	3.554E+03	10.66	0.815	-	D

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
PB-210	185.91	46.60	792.	506.	0.007	11.54	0.733
AM-241	238.18	59.65	576.	204.	0.003	22.12	0.737
TH-234	252.74	63.29	578.	650.	0.009	7.95	0.779s
TH-234	369.81	92.53	665.	766.	0.011	7.13	1.019s
Ra-226	743.11	185.79	558.	406.	0.006	11.97	0.920
PB-212	954.64	238.63	396.	187.	0.003	16.76	0.978D
PB-214	968.10	242.00	398.	162.	0.002	19.16	0.981D
PB-214	1181.31	295.27	385.	319.	0.004	12.80	1.098
PB-214	1407.83	351.87	495.	448.	0.006	11.72	0.920
BI-214	2438.12	609.36	242.	460.	0.006	8.56	1.401
CS-137	2647.57	661.71	139.	181.	0.003	14.74	1.194
y-88	3594.92	898.56	86.	82.	0.001	25.67	1.603
BI-214	4481.57	1120.30	87.	111.	0.002	19.82	0.721s
K-40	5842.48	1460.76	56.	113.	0.002	17.54	1.818
BI-214	7057.09	1764.75	54.	129.	0.002	18.85	1.722s

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	Peak Code	MDA Value DPS	COMMENTS
K-40	N	1.1316E+00				4.66E+11	
			1460.83	1.132E+00	(	3.764E-01 1.75E+01 1.07E+01	G

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```
 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

CS-137   I   1.0324E-01                                      1.10E+04
                          661.66 1.032E-01  (  3.283E-02 1.47E+01 8.52E+01 G

y-88     F   5.9087E-02                                      1.07E+02
                          898.04 5.909E-02  (  3.320E-02 2.57E+01 9.37E+01 G
                         1836.06 0.000E+00 %   2.860E-02 6.94E+01 9.92E+01 G

PB-210   N   2.9136E+00                                      8.14E+03
                           46.54 2.914E+00  (  7.707E-01 1.15E+01 4.25E+00 G

PB-212   N   7.1950E-02                                      6.98E+02
                          238.63 7.195E-02  (  3.680E-02 1.68E+01 4.33E+01 G
                          300.03 0.000E+00 %   3.461E-01 1.66E+02 3.28E+00 GA

PB-214   N   3.0820E-01                                      5.84E+05
                          351.93 2.969E-01  (  7.051E-02 1.17E+01 3.76E+01 G
                          295.09 3.302E-01  (  9.744E-02 1.28E+01 1.93E+01 G
                          242.00 3.665E-01     2.171E-01 1.92E+01 7.43E+00 GA

BI-214   N   4.3280E-01                                      5.84E+05
                          609.31 4.328E-01  (  7.076E-02 8.56E+00 4.61E+01 G
                         1120.29 6.220E-01 +   2.575E-01 1.98E+01 1.51E+01 G
                         1764.49 1.055E+00 +   3.007E-01 1.89E+01 1.54E+01 G

TH-234   N   2.9928E+00                                      1.63E+12
                           63.29 2.993E+00 *(  5.277E-01 7.95E+00 3.81E+00 G
                           92.59 1.687E+00 -   2.707E-01 7.13E+00 5.58E+00 G

Ra-226       1.7884E+00                                      5.84E+05
                          185.99 1.788E+00  (  4.972E-01 1.20E+01 3.28E+00 G

AM-241   T   1.0619E-01                                      1.58E+05
                           59.54 1.062E-01  (  5.974E-02 2.21E+01 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.
```

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& - 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	<	1.3279E-01		
NA-22	<	3.2700E-02		
K-40		1.1316E+00	1.7544E+01%	3.764E-01
Sc-46	<	2.4742E-02		
CR-51	<	1.2591E-01		
MN-54	<	2.5199E-02		
FE-59	<	4.9586E-02		
Co-56	<	2.4403E-02		
CO-57	<	1.5761E-02		
CO-58	<	2.2156E-02		
CO-60	<	3.3080E-02		
ZN-65	<	7.0081E-02		
NB-94	<	2.3387E-02		
ZR-95	<	4.2965E-02		
NB-95	<	2.9559E-02		
RU-103	<	1.6760E-02		
RH-106	<	3.6323E-01		
AG-108M	<	1.6759E-02		
AG-110M	<	4.1284E-02		
SN-113	<	2.4894E-02		
SB-124	<	2.3345E-02		
SB-125	<	5.1843E-02		

I-131	<	1.7685E-02		
BA-133	<	3.8297E-02		
CS-134	<	2.9939E-02		
CS-137		1.0324E-01	1.4743E+01%	3.283E-02
CE-139	<	1.7250E-02		
Ba-140	<	8.9143E-02		
La-140	<	3.2313E-02		
CE-141	<	2.4030E-02		
CE-144	<	8.0138E-02		
PM-144	<	2.4725E-02		
EU-152	<	7.1894E-02		
EU-154	<	2.7412E-01		
EU-155	<	4.1262E-02		
HF-181	<	2.0206E-02		
Ta-182	<	1.1154E-01		
Hg-203	<	2.8232E-02		
TL-208	<	2.3419E-02		
pm-146	<	6.5882E-02		
y-88		5.9087E-02	2.5672E+01%	3.320E-02
PB-210		2.9136E+00	1.1541E+01%	7.707E-01
PB-212		7.1950E-02	1.6762E+01%	3.680E-02
PB-214		3.0820E-01	8.6773E+00%	7.051E-02
BI-207	<	3.0426E-02		
BI-212	<	2.7482E-01		
BI-214		4.3280E-01	8.5576E+00%	7.076E-02
BI-210M	<	2.2571E-02		
RA-224	<	4.2528E-01		
AC-228	<	9.4073E-02		
TH-227	<	1.2880E-01		
TH-229	<	2.3853E-01		
TH-234	#	2.9928E+00	7.9460E+00%	5.277E-01
PA-231	<	2.8695E-01		
PA-233	<	3.1280E-02		
PA-234	<	4.6071E-02		
PA-234M	<	3.1862E+00		
Ra-226		1.7884E+00	1.1972E+01%	4.972E-01
U-235	<	8.0925E-02		
AM-241		1.0619E-01	2.2115E+01%	5.974E-02
Np-237	<	1.0691E-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

TestAmerica Inc Spectrum name: 5_20191206006_BGLong.An1

---------- S U M M A R Y ----------
Total Activity (37.6 to 2000.8 keV) 9.908E+00 DPS

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Test America
St. Louis
Background Check

Spectrum: 9_20191206007_BGLong
Description: Background Long PBC Count
Acquired: 12/6/2019 6:43:28 PM
Detector: Detector # 9
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	1.89	1.53	1.65	1.77	2.14	2.26	PASS

Analyst: Shiloh Smith Reviewer: Shiloh Smith

(Page 1 of 7)

Sample description
Background Long PBC Count

Spectrum Filename: C:\User\SPC\Det9\9_20191206007_BGLong.An1

Acquisition information
Start time: 12/6/2019 6:43:28 PM
Live time: 72000
Real time: 72056
Dead time: 0.08 %
Detector ID: 9

Detector system
Ge9 S/N09363993

Calibration
Filename: 9_QC.Clb
9_QC-E_79670-334_060211

Energy Calibration
Created: 3/1/2012 1:57:17 PM
Zero offset: 0.074 keV
Gain: 0.250 keV/channel
Quadratic: -2.269E-08 keV/channel^2

Efficiency Calibration
Created: 6/3/2011 12:03:10 PM
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 (37.59keV)
Stop channel: 8000 (1999.34keV)
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

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```
       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.   12 cutoff: 5.00E+01 %
       Energy Calibration
            Normalized diff:       0.1621
```

***** 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
238.67	186.	26.00	1.24	1.228E-01	238.63	43.300	4.856E-02	PB212
295.12	154.	22.60	1.23	1.047E-01	295.09	19.300	1.057E-01	PB214
338.25	187.	28.54	1.82	9.078E-02	338.32	12.010	2.378E-01	AC228
351.63	294.	16.94	1.37	8.650E-02	351.93	37.600	1.255E-01	PB214
510.96	2215.	4.93	2.60	6.208E-02	511.86	20.000	2.481E+00	RH106
582.41	182.	20.02	1.41	5.512E-02	583.02	84.500	5.417E-02	TL208
609.15	372.	14.51	1.75	5.260E-02	609.31	46.090	2.135E-01	BI214
					610.30	5.750	1.714E+00	RU103
911.11	78.	29.03	0.77	3.085E-02	911.16	29.000	1.203E-01	AC228
1120.11	118.	23.33	1.13	2.761E-02	1120.29	15.100	3.931E-01	BI214
					1120.55	99.987	5.937E-02	Sc46
					1121.30	34.900	1.702E-01	Ta182
1460.88	313.	8.81	1.91	2.339E-02	1460.83	10.670	1.740E+00	K40
1764.70	146.	16.38	2.15	2.159E-02	1764.49	15.400	6.111E-01	BI214

********** 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
2043.20	510.96	953.	2215.	3.567E+04	4.93	2.599	-

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

(Page 3 of 7)

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
PB-212	954.13	238.67	615.	186.	0.003	26.00	1.236s
PB-214	1179.87	295.12	372.	154.	0.002	22.60	1.226
AC-228	1352.39	338.25	568.	187.	0.003	28.54	1.822s
PB-214	1405.92	351.63	522.	294.	0.004	16.94	1.373
TL-208	2329.01	582.41	263.	182.	0.003	20.02	1.412
BI-214	2435.95	609.15	464.	372.	0.005	14.51	1.755s
AC-228	3644.06	911.11	122.	78.	0.001	29.03	0.771s
BI-214	4480.37	1120.11	128.	118.	0.002	23.33	1.132s
K-40	5844.23	1460.88	72.	313.	0.004	8.81	1.912
BI-214	7060.48	1764.70	55.	146.	0.002	16.38	2.152

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	Peak Code	Peak MDA Value DPS	COMMENTS
K-40	N	1.7398E+00				4.66E+11	
			1460.83	1.740E+00	(	2.356E-01 8.81E+00 1.07E+01	G
TL-208	N	5.4171E-02				6.98E+02	
			583.02	5.417E-02	(	2.336E-02 2.00E+01 8.45E+01	G
			277.28	0.000E+00	&	1.351E-01 2.96E+02 6.31E+00	G
			860.56	0.000E+00	%	1.607E-01 4.20E+01 1.24E+01	G
PB-212	N	4.8565E-02				6.98E+02	
			238.63	4.856E-02	(	3.088E-02 2.60E+01 4.33E+01	G
			300.03	0.000E+00	%	4.563E-01 0.00E+00 3.28E+00	GA
PB-214	N	1.1879E-01				5.84E+05	
			351.93	1.255E-01	(	4.670E-02 1.69E+01 3.76E+01	G
			295.09	1.057E-01	?(	6.366E-02 2.26E+01 1.93E+01	G
			242.00	0.000E+00	?	1.858E-01 0.00E+00 7.43E+00	GA
BI-214	N	2.1348E-01				5.84E+05	
			609.31	2.135E-01	*(	5.905E-02 1.45E+01 4.61E+01	G
			1120.29	3.931E-01	+	1.846E-01 2.33E+01 1.51E+01	G
			1764.49	6.111E-01	+	1.552E-01 1.64E+01 1.54E+01	G

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Nuclide	Ave activity	Energy	Activity	Code	Peak	MDA	Comments
AC-228	N 1.5473E-01					2.10E+03	
		911.16	1.203E-01	?(	8.428E-02	2.90E+01	2.90E+01 G
		968.97	0.000E+00	%	1.265E-01	4.41E+02	1.75E+01 G
		338.32	2.378E-01	(	1.450E-01	2.85E+01	1.20E+01 G
		93.35	0.000E+00	%	1.242E-01	7.13E+01	5.56E+00 XA

(- 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

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***** 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	<	1.2194E-01		
NA-22	<	2.5827E-02		
K-40		1.7398E+00	8.8097E+00%	2.356E-01
Sc-46	<	2.1839E-02		
CR-51	<	9.9356E-02		
MN-54	<	1.9503E-02		
FE-59	<	3.4538E-02		
Co-56	<	2.0528E-02		
CO-57	<	1.3635E-02		
CO-58	<	1.8457E-02		
CO-60	<	1.4273E-02		
ZN-65	<	5.3505E-02		
NB-94	<	1.5943E-02		
ZR-95	<	2.4968E-02		
NB-95	<	1.7125E-02		
RU-103	<	1.3599E-02		
RH-106	<	8.8635E-02		
AG-108M	<	1.3366E-02		
AG-110M	<	2.9535E-02		
SN-113	<	2.0090E-02		
SB-124	<	2.0844E-02		
SB-125	<	4.1096E-02		
I-131	<	1.4381E-02		
BA-133	<	2.5290E-02		
CS-134	<	1.2914E-02		
CS-137	<	1.7217E-02		
CE-139	<	8.8272E-03		
Ba-140	<	4.9263E-02		
La-140	<	1.8998E-02		
CE-141	<	1.8044E-02		
CE-144	<	8.5214E-02		
PM-144	<	1.5946E-02		
EU-152	<	5.1452E-02		
EU-154	<	1.6580E-01		
EU-155	<	3.2512E-02		
HF-181	<	1.5744E-02		
Ta-182	<	6.8827E-02		
Hg-203	<	1.8526E-02		
TL-208		5.4171E-02	2.0020E+01%	2.336E-02
pm-146	<	4.2547E-02		
y-88	<	2.3761E-02		
PB-210	<	3.3480E-01		
PB-212	#	4.8565E-02	2.5999E+01%	3.088E-02

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PB-214		1.1879E-01	1.4119E+01%	4.670E-02
BI-207	<	2.3657E-02		
BI-212	<	3.2903E-01		
BI-214		2.1348E-01	1.4511E+01%	5.905E-02
BI-210M	<	1.5488E-02		
RA-224	<	2.9344E-01		
AC-228		1.5473E-01	2.0357E+01%	8.428E-02
TH-227	<	7.7246E-02		
TH-229	<	1.8110E-01		
TH-234	<	4.7720E-01		
PA-231	<	3.4463E-01		
PA-233	<	2.4499E-02		
PA-234	<	2.9942E-02		
PA-234M	<	2.4031E+00		
Ra-226	<	3.4047E-01		
U-235	<	4.7317E-02		
AM-241	<	5.0235E-02		
Np-237	<	8.0237E-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 1999.3 keV) 2.330E+00 DPS

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Test America
St. Louis
Background Check

Spectrum: 12_20191206008_BGLong
Description: Background Long PBC Count
Acquired: 12/6/2019 6:42:59 PM
Detector: Detector #12
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	2.00	1.89	1.93	1.94	2.07	2.10	PASS

Analyst: Shiloh Smith Reviewer: Shiloh Smith

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Sample description
Background Long PBC Count

Spectrum Filename: C:\User\SPC\Det12\12_20191206008_BGLong.An1

Acquisition information
Start time: 12/6/2019 6:42:59 PM
Live time: 72000
Real time: 72037
Dead time: 0.05 %
Detector ID: 12

Detector system
Ge12 S/N10034336

Calibration
Filename: 12_QC.Clb
12_SourceCheck_H_2018

Energy Calibration
Created: 4/20/2018 11:13:27 AM
Zero offset: 0.059 keV
Gain: 0.250 keV/channel
Quadratic: -3.735E-08 keV/channel^2

Efficiency Calibration
Created: 4/24/2018 2:08:25 PM
Knee Energy: 0.00 keV
Above the Knee: Interpolative Uncertainty = 0.00 %
Below the Knee: Interpolative Uncertainty = 0.00 %

Library Files
Main analysis library: Null.lib
Library Match Width: 0.500
Peak stripping: Library based

Analysis parameters
Analysis engine: Env32 G800W064
Start channel: 150 (37.59keV)
Stop channel: 8000 (1999.13keV)
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

(Page 2 of 5)

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	

***** 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
46.57	1310.	5.51	0.84	5.835E-02				
63.29	967.	7.99	0.94	7.854E-02				
74.95	197.	23.77	0.88	9.254E-02				
77.13	198.	23.63	0.88	9.518E-02				
84.18	424.	15.64	2.59	1.038E-01				
92.60	1167.	5.20	1.09	1.066E-01				
185.76	725.	8.78	0.90	8.763E-02				
198.31	216.	24.12	1.32	8.618E-02				
238.40	404.	11.64	0.98	8.153E-02				
294.98	260.	17.25	1.02	7.497E-02				
351.69	390.	14.18	0.94	6.840E-02				
510.82	2198.	4.80	2.48	4.995E-02				
609.19	321.	16.55	1.31	3.855E-02				

********** 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	
185.91	46.57	1112.	1310.	2.244E+04	5.51	0.837	-	
252.73	63.29	1251.	967.	1.231E+04	7.99	0.937	-	s
299.34	74.88	993.	197.	2.124E+03	23.77	0.880	-	D
308.08	77.06	997.	198.	2.082E+03	23.63	0.883	-	D
336.25	84.18	1037.	424.	4.086E+03	15.64	2.594	-	s
369.91	92.60	793.	1167.	1.095E+04	5.20	1.090	-	s
742.35	185.76	867.	725.	8.273E+03	8.78	0.902	-	
792.50	198.31	718.	216.	2.512E+03	24.12	1.324	-	s

TestAmerica Inc Spectrum name: 12_20191206008_BGLong.An1

Channel	Energy	Background	Net area	Eff*Area	Uncert	FWHM	Suspected	
952.81	238.40	544.	404.	4.959E+03	11.64	0.976	-	s
1179.02	294.98	502.	260.	3.475E+03	17.25	1.019	-	
1405.79	351.69	592.	390.	5.695E+03	14.18	0.941	-	s
2042.19	510.82	880.	2198.	4.401E+04	4.80	2.475	-	
2435.61	609.19	483.	321.	8.319E+03	16.55	1.312	-	

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.

This section based on library: Null.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

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	Peak Code	Peak MDA Value DPS	COMMENTS

(- 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

Peak Codes:
G - Gamma Ray

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  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  Background  Net Area   Intensity   Uncert   Activity
          Energy   Counts     Counts     Cts/Sec  1 Sigma %
_____________________________________________________________________________
  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   *****
        Time of Count   Uncertainty  1 Sigma
Nuclide    Activity        Counting                  MDA
              DPS
_____________________________________________________________________________
DUMMY    No in-range peaks
  < - 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  1999.1 keV)     0.000E+00  DPS
```

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Test America
St. Louis
Background Check

Spectrum: 14_20191206007_BGLong
Description: Background Long PBC Count
Acquired: 12/6/2019 6:44:03 PM
Detector: Detector #14
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	1.80	1.66	1.71	1.74	1.90	1.94	PASS

Analyst: Shiloh Smith Reviewer: kody Saulters

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Sample description
Background Long PBC Count

Spectrum Filename: C:\User\SPC\Det14\14_20191206007_BGLong.An1

Acquisition information
Start time: 12/6/2019 6:44:03 PM
Live time: 72000
Real time: 72024
Dead time: 0.03 %
Detector ID: 14

Detector system
Ge14 SN/11080670

Calibration
Filename: 14_QC.Clb
14_QC_79670-334_SOURCE E_042211

Energy Calibration
Created: 2/28/2012 10:48:23 AM
Zero offset: 0.130 keV
Gain: 0.250 keV/channel
Quadratic: -2.050E-08 keV/channel^2

Efficiency Calibration
Created: 5/1/2011 8:43:09 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 (37.64keV)
Stop channel: 8000 (1999.51keV)
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

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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. 20 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.2153

***** 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
46.63	718.	8.29	0.89	6.134E-02	46.54	4.250	3.833E+00	PB210
63.38	628.	10.23	0.86	8.550E-02	63.29	3.810	2.682E+00	TH234
74.92	203.	21.04	0.78	1.022E-01				
77.27	160.	26.88	0.78	1.056E-01				
84.79	180.	27.19	1.04	1.164E-01				
92.66	964.	7.69	1.18	1.215E-01	92.59	5.584	1.973E+00	TH234
					93.35	5.561	1.980E+00	AC228
143.54	153.	28.24	1.10	1.183E-01	143.79	10.960	1.640E-01	U235
185.42	539.	10.70	0.83	1.072E-01	185.72	54.000	1.294E-01	U235
					185.99	3.280	2.131E+00	Ra226
238.28	313.	14.29	1.08	9.398E-02	238.63	43.300	1.069E-01	PB212
294.77	171.	25.13	0.84	7.981E-02	295.09	19.300	1.546E-01	PB214
351.40	255.	16.80	1.18	6.560E-02	351.93	37.600	1.441E-01	PB214
510.78	1795.	4.87	2.45	4.542E-02	511.86	20.000	2.750E+00	RH106
569.41	100.	26.32	1.80	4.043E-02	569.70	97.740	3.497E-02	BI207
					569.32	15.380	2.221E-01	CS134
					569.47	8.200	4.166E-01	PA234
582.82	130.	26.01	1.52	3.931E-02	583.02	84.500	5.443E-02	TL208
609.08	274.	16.42	1.41	3.710E-02	609.31	46.090	2.223E-01	BI214
					610.30	5.750	1.786E+00	RU103
1120.30	83.	26.70	1.19	1.998E-02	1120.29	15.100	3.806E-01	BI214
					1120.55	99.987	5.749E-02	Sc46
					1121.30	34.900	1.649E-01	Ta182
1460.61	115.	20.28	1.72	1.557E-02	1460.83	10.670	9.612E-01	K40
1764.09	109.	16.13	0.56	1.327E-02	1764.49	15.400	7.397E-01	BI214

********** 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
299.05	74.94	814.	203.	1.990E+03	21.04	0.777	- sD
308.44	77.29	846.	160.	1.517E+03	26.88	0.780	- D
338.53	84.79	786.	180.	1.551E+03	27.19	1.044	- sM
2042.22	510.78	648.	1795.	3.952E+04	4.87	2.453	- 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_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
PB-210	185.92	46.63	847.	718.	0.010	8.29	0.894
TH-234	252.93	63.38	1000.	628.	0.009	10.23	0.860s
TH-234	370.00	92.66	1182.	964.	0.013	7.69	1.181s
U-235	573.49	143.54	605.	153.	0.002	28.24	1.101s
U-235	742.15	185.72	760.	435.	0.006	9.70	0.827D
PB-212	952.35	238.28	533.	313.	0.004	14.29	1.082s
PB-214	1178.27	294.77	459.	171.	0.002	25.13	0.845
PB-214	1404.77	351.40	414.	255.	0.004	16.80	1.183
BI-207	2276.77	569.41	168.	100.	0.001	26.32	1.795s
TL-208	2330.41	582.82	244.	130.	0.002	26.01	1.525
BI-214	2435.44	609.08	338.	274.	0.004	16.42	1.408s
BI-214	4480.76	1120.30	93.	83.	0.001	26.70	1.191s
K-40	5842.70	1460.61	66.	115.	0.002	20.28	1.715
BI-214	7057.49	1764.09	29.	109.	0.002	16.13	0.561s

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	9.6116E-01					4.66E+11	
			1460.83	9.612E-01	?(	3.391E-01	2.03E+01	1.07E+01 G
TL-208	N	5.4432E-02					6.98E+02	
			583.02	5.443E-02	(	3.156E-02	2.60E+01	8.45E+01 G
			277.28	0.000E+00	&	1.655E-01	5.41E+02	6.31E+00 G
			860.56	0.000E+00	%	1.769E-01	1.20E+02	1.24E+01 G
PB-210	N	3.8333E+00					8.14E+03	
			46.54	3.833E+00	(	7.385E-01	8.29E+00	4.25E+00 G
PB-212	N	1.0693E-01					6.98E+02	
			238.63	1.069E-01	(	3.768E-02	1.43E+01	4.33E+01 G
			300.03	0.000E+00	%	3.384E-01	1.37E+02	3.28E+00 GA
PB-214	N	1.4766E-01					5.84E+05	
			351.93	1.441E-01	(	5.501E-02	1.68E+01	3.76E+01 G
			295.09	1.546E-01	(	9.253E-02	2.51E+01	1.93E+01 G
			242.00	0.000E+00	?	2.075E-01	0.00E+00	7.43E+00 GA
BI-207	C	3.4969E-02					1.18E+04	
			569.70	3.497E-02	(	2.215E-02	2.63E+01	9.77E+01 G
			1063.66	0.000E+00	%	3.502E-02	1.00E+03	7.45E+01 G
BI-214	N	2.2226E-01					5.84E+05	
			609.31	2.223E-01	*(	7.177E-02	1.64E+01	4.61E+01 G
			1120.29	3.806E-01	+	2.197E-01	2.67E+01	1.51E+01 G
			1764.49	7.397E-01	+	1.895E-01	1.61E+01	1.54E+01 G
TH-234	N	2.6817E+00					1.63E+12	
			63.29	2.682E+00	@(	6.408E-01	1.02E+01	3.81E+00 G
			92.59	1.973E+00	-	3.336E-01	7.69E+00	5.58E+00 G
U-235	N	1.6404E-01					2.57E+11	
			185.72	1.043E-01	}	3.148E-02	9.70E+00	5.40E+01 GA
			143.79	1.640E-01	(	1.258E-01	2.82E+01	1.10E+01 G
			205.33	0.000E+00	&	2.048E-01	3.94E+02	5.01E+00 G
			163.38	0.000E+00	%	2.043E-01	4.33E+01	5.08E+00 G

(- This peak used in the nuclide activity average.

* - Peak is too wide, but only one peak in library.

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```
  ! - 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  Background  Net Area   Intensity   Uncert   Activity
          Energy   Counts     Counts     Cts/Sec  1 Sigma %
_____________________________________________________________________________
  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   *****
         Time of Count   Uncertainty  1 Sigma
Nuclide    Activity        Counting                    MDA
              DPS
_____________________________________________________________________________
BE-7    <    1.2446E-01
NA-22   <    2.8072E-02
K-40   #     9.6116E-01   2.0282E+01%               3.391E-01
Sc-46   <    1.9924E-02
CR-51   <    1.1432E-01
MN-54   <    2.0843E-02
FE-59   <    4.7616E-02
Co-56   <    2.2130E-02
CO-57   <    1.1318E-02
CO-58   <    2.2131E-02
CO-60   <    2.7016E-02
ZN-65   <    7.0156E-02
```

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NB-94	<	2.2678E-02		
ZR-95	<	3.4035E-02		
NB-95	<	1.5200E-02		
RU-103	<	1.5723E-02		
RH-106	<	1.6408E-01		
AG-108M	<	1.3873E-02		
AG-110M	<	2.8336E-02		
SN-113	<	2.1024E-02		
SB-124	<	1.2887E-02		
SB-125	<	4.2896E-02		
I-131	<	1.4665E-02		
BA-133	<	2.0229E-02		
CS-134	<	2.9940E-02		
CS-137	<	2.1764E-02		
CE-139	<	1.7063E-02		
Ba-140	<	5.8832E-02		
La-140	<	2.6263E-02		
CE-141	<	2.7239E-02		
CE-144	<	1.3023E-01		
PM-144	<	2.5073E-02		
EU-152	<	4.5502E-02		
EU-154	<	1.7745E-01		
EU-155	<	3.9166E-02		
HF-181	<	1.6917E-02		
Ta-182	<	9.5192E-02		
Hg-203	<	1.3197E-02		
TL-208		5.4432E-02	2.6009E+01%	3.156E-02
pm-146	<	6.1767E-02		
y-88	<	2.6996E-02		
PB-210		3.8333E+00	8.2882E+00%	7.385E-01
PB-212	#	1.0693E-01	1.4291E+01%	3.768E-02
PB-214		1.4766E-01	1.5113E+01%	5.501E-02
BI-207		3.4969E-02	2.6318E+01%	2.215E-02
BI-212	<	2.6902E-01		
BI-214		2.2226E-01	1.6422E+01%	7.177E-02
BI-210M	<	2.0249E-02		
RA-224	<	4.1022E-01		
AC-228	<	7.7677E-02		
TH-227	<	1.3374E-01		
TH-229	<	2.2918E-01		
TH-234	#	2.6817E+00	1.0231E+01%	6.408E-01
PA-231	<	6.1833E-01		
PA-233	<	3.1670E-02		
PA-234	<	5.8975E-02		
PA-234M	<	2.8010E+00		
U-235	#	1.6404E-01	2.8242E+01%	1.258E-01
AM-241	<	6.6856E-02		
Np-237	<	1.2812E-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  1999.5 keV)     8.207E+00  DPS
```

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Test America
St. Louis
Background Check

Spectrum: 16_20191206007_BGLong
Description: Background Long PBC Count
Acquired: 12/6/2019 6:45:28 PM
Detector: Detector #16
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	2.68	2.51	2.56	2.63	2.80	2.86	PASS

Analyst: Shiloh Smith Reviewer: kody Saulters

(Page 1 of 8)

Sample description
Background Long PBC Count

Spectrum Filename: C:\User\SPC\Det16\16_20191206007_BGLong.An1

Acquisition information

Start time:	12/6/2019 6:45:28 PM
Live time:	72000
Real time:	72237
Dead time:	0.33 %
Detector ID:	16

Detector system
Ge16 SN/11012217

Calibration

Filename:	16_QC.Clb

16_QC-G_081311

Energy Calibration

Created:	2/28/2012 9:35:31 AM
Zero offset:	0.050 keV
Gain:	0.250 keV/channel
Quadratic:	-2.285E-08 keV/channel^2

Efficiency Calibration

Created:	8/14/2011 1:15:14 PM
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 (37.57keV)
Stop channel:	8000 (1999.64keV)
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. 27 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1415

***** 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
46.52	1436.	4.90	0.86	7.069E-02	46.54	4.250	6.634E+00	PB210
59.21	241.	21.04	0.97	8.901E-02	59.54	35.900	1.040E-01	AM241
63.31	959.	5.69	0.97	9.493E-02	63.29	3.810	3.680E+00	TH234
74.89	439.	12.34	0.99	1.119E-01				
77.39	347.	16.42	0.99	1.155E-01				
84.53	276.	18.41	0.99	1.258E-01				
87.27	224.	23.87	1.00	1.297E-01	86.49	13.100	1.850E-01	Np237
					86.54	30.700	7.891E-02	EU155
92.71	1499.	6.17	1.22	1.312E-01	92.59	5.584	2.842E+00	TH234
					93.35	5.561	2.852E+00	AC228
185.70	812.	8.14	1.15	1.130E-01	185.72	54.000	1.848E-01	U235
					185.99	3.280	3.044E+00	Ra226
238.57	542.	12.79	1.21	9.904E-02	238.63	43.300	1.756E-01	PB212
242.05	157.	27.36	1.14	9.813E-02	242.00	7.430	2.990E-01	PB214
295.13	247.	19.90	1.37	8.408E-02	295.09	19.300	2.114E-01	PB214
338.71	175.	27.16	1.70	7.266E-02	338.32	12.010	2.791E-01	AC228
351.73	566.	11.10	1.50	6.911E-02	351.93	37.600	3.030E-01	PB214
510.99	2531.	4.62	2.58	4.934E-02	511.86	20.000	3.568E+00	RH106
570.10	123.	28.64	1.52	4.477E-02	569.70	97.740	3.912E-02	BI207
					569.32	15.380	2.484E-01	CS134
					569.47	8.200	4.661E-01	PA234
583.61	307.	17.25	2.12	4.377E-02	583.02	84.500	1.153E-01	TL208
609.50	340.	13.68	1.34	4.173E-02	609.31	46.090	2.454E-01	BI214
					610.30	5.750	1.971E+00	RU103
911.73	174.	19.22	1.04	2.646E-02	911.16	29.000	3.150E-01	AC228
1001.29	115.	20.07	1.77	2.468E-02	1001.00	0.837	7.751E+00	PA234M
1063.51	120.	27.16	3.22	2.346E-02	1063.66	74.500	9.563E-02	BI207

pk energy	area	uncert	fwhm	corr	nuclide	brnch.	act.	nuc
1120.94	163.	22.73	1.99	2.235E-02	1120.29	15.100	6.716E-01	BI214
					1120.55	99.987	1.015E-01	Sc46
					1121.30	34.900	2.908E-01	Ta182
1461.34	407.	7.57	2.50	1.797E-02	1460.83	10.670	2.950E+00	K40
1765.23	166.	12.58	1.84	1.550E-02	1764.49	15.400	9.658E-01	BI214

********** 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	
299.23	74.95	1251.	439.	3.928E+03	12.34	0.986	-	D
309.22	77.45	1447.	347.	3.002E+03	16.42	0.988	-	D
337.73	84.56	1153.	276.	2.194E+03	18.41	0.994	-	D
2043.07	510.99	1131.	2531.	5.131E+04	4.62	2.579	-	

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
PB-210	185.77	46.52	1109.	1436.	0.020	4.90	0.864
AM-241	237.83	59.54	1174.	245.	0.003	20.82	0.971D
TH-234	252.82	63.29	1100.	960.	0.013	5.85	0.975D
Np-237	345.59	86.49	1322.	224.	0.003	23.87	0.997D
TH-234	369.98	92.59	1541.	1221.	0.017	5.37	1.002D
AC-228	373.02	93.35	2637.	265.	0.004	28.11	1.003D
Ra-226	742.28	185.70	1015.	812.	0.011	8.14	1.153s
PB-212	953.91	238.63	825.	515.	0.007	9.04	1.136D
PB-214	967.37	242.00	844.	157.	0.002	27.36	1.139D
PB-214	1179.82	295.13	651.	247.	0.003	19.90	1.368
AC-228	1354.08	338.71	571.	175.	0.002	27.16	1.698s
PB-214	1406.15	351.73	752.	566.	0.008	11.10	1.503s
BI-207	2279.47	570.10	307.	123.	0.002	28.64	1.523
TL-208	2333.53	583.61	468.	307.	0.004	17.25	2.123s
BI-214	2437.07	609.50	456.	340.	0.005	13.68	1.344
AC-228	3646.03	911.73	210.	174.	0.002	19.22	1.043s
PA-234M	4004.32	1001.29	115.	115.	0.002	20.07	1.767
BI-207	4253.28	1063.51	178.	120.	0.002	27.16	3.224s
BI-214	4483.07	1120.94	208.	163.	0.002	22.73	1.985s

Nuclide	Channel	Energy	Background	Net area	Cnts/sec	Uncert	FWHM
K-40	5845.20	1461.34	88.	407.	0.006	7.57	2.504s
BI-214	7061.58	1765.23	45.	166.	0.002	12.58	1.841s

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	Peak Code	MDA Value DPS			COMMENTS
K-40	N	2.9498E+00					4.66E+11		
			1460.83	2.950E+00	*(	3.360E-01	7.57E+00	1.07E+01	G
TL-208	N	1.1528E-01					6.98E+02		
			583.02	1.153E-01	(	3.887E-02	1.72E+01	8.45E+01	G
			277.28	0.000E+00	&	1.974E-01	2.74E+02	6.31E+00	G
			860.56	0.000E+00	%	2.327E-01	9.67E+01	1.24E+01	G
PB-210	N	6.6340E+00					8.14E+03		
			46.54	6.634E+00	(	7.297E-01	4.90E+00	4.25E+00	G
PB-212	N	1.6677E-01					6.98E+02		
			238.63	1.668E-01	(	4.424E-02	9.04E+00	4.33E+01	G
			300.03	0.000E+00	%	3.654E-01	0.00E+00	3.28E+00	GA
PB-214	N	3.0301E-01					5.84E+05		
			351.93	3.030E-01	@(	6.982E-02	1.11E+01	3.76E+01	G
			295.09	2.114E-01	-	1.041E-01	1.99E+01	1.93E+01	G
			242.00	2.990E-01		2.631E-01	2.74E+01	7.43E+00	GA
BI-207	C	3.9119E-02					1.18E+04		
			569.70	3.912E-02	(	2.674E-02	2.86E+01	9.77E+01	G
			1063.66	9.563E-02	+	5.152E-02	2.72E+01	7.45E+01	G
BI-214	N	2.4545E-01					5.84E+05		
			609.31	2.454E-01	(	7.379E-02	1.37E+01	4.61E+01	G
			1120.29	6.716E-01	+	2.877E-01	2.27E+01	1.51E+01	G
			1764.49	9.658E-01	+	1.976E-01	1.26E+01	1.54E+01	G
AC-228	N	3.0447E-01					2.10E+03		
			911.16	3.150E-01	?(	1.272E-01	1.92E+01	2.90E+01	G
			968.97	0.000E+00	%	1.638E-01	4.26E+01	1.75E+01	G
			338.32	2.791E-01	(	1.815E-01	2.72E+01	1.20E+01	G
			93.35	5.038E-01	+	4.604E-01	2.81E+01	5.56E+00	XA

```
 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

TH-234   N   3.6849E+00                                      1.63E+12
                           63.29 3.685E+00  (  6.035E-01 5.85E+00 3.81E+00 G
                           92.59 2.315E+00 -   3.519E-01 5.37E+00 5.58E+00 G

PA-234M  N   7.7514E+00                                      1.63E+12
                         1001.00 7.751E+00  (  3.536E+00 2.01E+01 8.37E-01 G
                          766.41 0.000E+00 &   7.412E+00 3.82E+01 2.94E-01 G

Ra-226       3.0444E+00                                      5.84E+05
                          185.99 3.044E+00  (  5.668E-01 8.14E+00 3.28E+00 G

AM-241   T   1.0566E-01                                      1.58E+05
                           59.54 1.057E-01  (  7.017E-02 2.08E+01 3.59E+01 G

Np-237   F   1.8504E-01                                      2.14E+06
                           86.49 1.850E-01 &(  1.419E-01 2.39E+01 1.31E+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	<	2.3206E-01		
NA-22	<	3.7195E-02		
K-40	#	2.9498E+00	7.5651E+00%	3.360E-01
Sc-46	<	2.5138E-02		
CR-51	<	1.2859E-01		
MN-54	<	2.5087E-02		
FE-59	<	5.0277E-02		
Co-56	<	3.0274E-02		
CO-57	<	1.8772E-02		
CO-58	<	2.0067E-02		
CO-60	<	2.8026E-02		
ZN-65	<	8.3729E-02		
NB-94	<	1.5260E-02		
ZR-95	<	3.9072E-02		
NB-95	<	3.3339E-02		
RU-103	<	2.0477E-02		
RH-106	<	2.9928E-01		
AG-108M	<	1.9293E-02		
AG-110M	<	3.5516E-02		
SN-113	<	2.8487E-02		
SB-124	<	2.3119E-02		
SB-125	<	5.9897E-02		
I-131	<	1.8163E-02		
BA-133	<	3.9888E-02		
CS-134	<	1.5773E-02		
CS-137	<	2.5011E-02		
CE-139	<	2.6045E-02		
Ba-140	<	7.6722E-02		
La-140	<	3.0107E-02		
CE-141	<	2.4301E-02		
CE-144	<	1.5300E-01		
PM-144	<	1.9533E-02		
EU-152	<	5.0691E-02		
EU-154	<	2.3095E-01		
EU-155	<	5.2922E-02		
HF-181	<	2.3063E-02		

Ta-182	<	1.2458E-01		
Hg-203	<	2.6308E-02		
TL-208	#	1.1528E-01	1.7245E+01%	3.887E-02
pm-146	<	5.8825E-02		
y-88	<	3.1380E-02		
PB-210		6.6340E+00	4.8999E+00%	7.297E-01
PB-212		1.6677E-01	9.0382E+00%	4.424E-02
PB-214		3.0301E-01	1.1098E+01%	6.982E-02
BI-207		3.9119E-02	2.8641E+01%	2.674E-02
BI-212	<	5.3679E-01		
BI-214		2.4545E-01	1.3682E+01%	7.379E-02
BI-210M	<	2.4618E-02		
RA-224	<	5.3194E-01		
AC-228		3.0447E-01	1.6638E+01%	1.272E-01
TH-227	<	1.3498E-01		
TH-229	<	2.6215E-01		
TH-234		3.6849E+00	5.8546E+00%	6.035E-01
PA-231	<	7.3866E-01		
PA-233	<	3.6898E-02		
PA-234	<	5.1630E-02		
PA-234M		7.7514E+00	2.0070E+01%	3.536E+00
Ra-226	#	3.0444E+00	8.1360E+00%	5.668E-01
U-235	<	1.0540E-01		
AM-241	#	1.0566E-01	2.0824E+01%	7.017E-02
Np-237	#	1.8504E-01	2.3866E+01%	1.419E-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  1999.6 keV)     2.553E+01  DPS
```

Test America
St. Louis
Background Check

Spectrum: 17_20191206005_BGLong
Description: Background Long PBC Count
Acquired: 12/6/2019 6:46:43 PM
Detector: Detector #17
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	2.32	2.18	2.23	2.27	2.42	2.46	PASS

Analyst: Shiloh Smith Reviewer: kody Saulters

(Page 1 of 8)

Sample description
Background Long PBC Count

Spectrum Filename: C:\User\SPC\Det17\17_20191206005_BGLong.An1

Acquisition information
Start time: 12/6/2019 6:46:43 PM
Live time: 72000
Real time: 72440
Dead time: 0.61 %
Detector ID: 17

Detector system
Ge17 SN/11080671

Calibration
Filename: 17_QC.Clb
17_QC_83725-334_SOURCE H_042211

Energy Calibration
Created: 2/29/2012 10:33:23 AM
Zero offset: 0.108 keV
Gain: 0.250 keV/channel
Quadratic: -2.584E-08 keV/channel^2

Efficiency Calibration
Created: 5/1/2011 11:17:56 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 (37.63keV)
Stop channel: 8000 (1999.54keV)
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

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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. 21 cutoff: 5.00E+01 %
Energy Calibration
Normalized diff: 0.1381

***** 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
46.66	1120.	7.05	1.16	5.956E-02	46.54	4.250	6.164E+00	PB210
63.35	973.	7.56	1.36	8.045E-02	63.29	3.810	4.414E+00	TH234
84.48	274.	22.99	1.03	1.069E-01				
92.62	1466.	5.67	1.32	1.119E-01	92.59	5.584	3.258E+00	TH234
					93.35	5.561	3.269E+00	AC228
185.67	842.	7.59	1.07	9.857E-02	185.72	54.000	2.197E-01	U235
					185.99	3.280	3.620E+00	Ra226
238.53	324.	15.63	1.63	8.654E-02	238.63	43.300	1.200E-01	PB212
351.87	312.	15.08	1.36	6.082E-02	351.93	37.600	1.893E-01	PB214
510.97	2266.	4.61	2.52	4.373E-02	511.86	20.000	3.604E+00	RH106
583.50	192.	19.67	2.03	3.887E-02	583.02	84.500	8.097E-02	TL208
609.19	350.	13.46	1.72	3.711E-02	609.31	46.090	2.847E-01	BI214
					610.30	5.750	2.286E+00	RU103
766.37	151.	24.94	1.00	2.923E-02	766.41	0.294	2.443E+01	PA234M
					765.79	99.790	7.192E-02	NB95
1000.68	99.	22.14	2.03	2.198E-02	1001.00	0.837	7.475E+00	PA234M
1120.55	133.	29.05	0.89	1.989E-02	1120.29	15.100	6.150E-01	BI214
					1120.55	99.987	9.290E-02	Sc46
1461.10	292.	12.84	2.18	1.608E-02	1460.83	10.670	2.362E+00	K40
1764.91	148.	19.31	1.86	1.381E-02	1764.49	15.400	9.689E-01	BI214

********** 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
337.32	84.48	1168.	274.	2.565E+03	22.99	1.030	- sM
2042.76	510.97	893.	2266.	5.183E+04	4.61	2.520	-

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_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
PB-210	186.12	46.66	1334.	1120.	0.016	7.05	1.158s
TH-234	252.85	63.35	1270.	973.	0.014	7.56	1.361s
TH-234	369.86	92.62	1485.	1466.	0.020	5.67	1.316s
Ra-226	741.91	185.67	925.	842.	0.012	7.59	1.070s
PB-212	953.27	238.53	706.	324.	0.004	15.63	1.632s
PB-214	1406.48	351.87	517.	312.	0.004	15.08	1.362s
TL-208	2332.85	583.50	294.	192.	0.003	19.67	2.029s
BI-214	2435.64	609.19	416.	350.	0.005	13.46	1.723s
PA-234M	3064.34	766.37	246.	151.	0.002	24.94	1.001s
PA-234M	4001.79	1000.68	104.	99.	0.001	22.14	2.031s
BI-214	4481.42	1120.55	204.	133.	0.002	29.05	0.888s
K-40	5844.34	1461.10	136.	292.	0.004	12.84	2.184
BI-214	7060.54	1764.91	81.	148.	0.002	19.31	1.863

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	Peak Code	MDA Value DPS	COMMENTS
K-40	N	2.3617E+00				4.66E+11	
			1460.83	2.362E+00	(	4.620E-01 1.28E+01 1.07E+01	G

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```
 Nuclide  Ave activity   Energy    Activity  Code Peak MDA  Comments

TL-208   N   8.0975E-02                                      6.98E+02
                          583.02 8.097E-02 *(  3.496E-02 1.97E+01 8.45E+01 G
                          277.28 0.000E+00 &   2.109E-01 1.00E+03 6.31E+00 G
                          860.56 0.000E+00 &   2.044E-01 2.11E+02 1.24E+01 G

PB-210   N   6.1640E+00                                      8.14E+03
                           46.54 6.164E+00 *(  9.514E-01 7.05E+00 4.25E+00 G

PB-212   N   1.1996E-01                                      6.98E+02
                          238.63 1.200E-01 *(  4.691E-02 1.56E+01 4.33E+01 G
                          300.03 0.000E+00 %   3.994E-01 4.69E+01 3.28E+00 GA

PB-214   N   1.8934E-01                                      5.84E+05
                          351.93 1.893E-01  (  6.604E-02 1.51E+01 3.76E+01 G
                          295.09 0.000E+00 %   7.385E-02 3.40E+01 1.93E+01 G
                          242.00 0.000E+00     2.717E-01 0.00E+00 7.43E+00 GA

BI-214   N   2.8470E-01                                      5.84E+05
                          609.31 2.847E-01  (  7.945E-02 1.35E+01 4.61E+01 G
                         1120.29 6.150E-01 +   3.203E-01 2.91E+01 1.51E+01 G
                         1764.49 9.689E-01 +   2.911E-01 1.93E+01 1.54E+01 G

TH-234   N   4.4136E+00                                      1.63E+12
                           63.29 4.414E+00 *(  7.656E-01 7.56E+00 3.81E+00 G
                           92.59 3.258E+00 -   4.053E-01 5.67E+00 5.58E+00 G

PA-234M  N   7.4748E+00                                      1.63E+12
                         1001.00 7.475E+00  (  3.793E+00 2.21E+01 8.37E-01 G
                          766.41 2.443E+01 +   1.225E+01 2.49E+01 2.94E-01 G

Ra-226       3.6197E+00                                      5.84E+05
                          185.99 3.620E+00 *(  6.209E-01 7.59E+00 3.28E+00 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	<	1.5436E-01		
NA-22	<	3.5371E-02		
K-40		2.3617E+00	1.2839E+01%	4.620E-01
Sc-46	<	2.6974E-02		
CR-51	<	1.4034E-01		
MN-54	<	2.5267E-02		
FE-59	<	4.5979E-02		
Co-56	<	2.6789E-02		
CO-57	<	1.0373E-02		
CO-58	<	2.5491E-02		
CO-60	<	2.8925E-02		
ZN-65	<	8.5734E-02		
NB-94	<	2.5953E-02		
ZR-95	<	4.1080E-02		
NB-95	<	3.1115E-02		
RU-103	<	1.8206E-02		
RH-106	<	4.2127E-01		
AG-108M	<	1.5713E-02		
AG-110M	<	3.4727E-02		
SN-113	<	2.4317E-02		
SB-124	<	3.2941E-02		
SB-125	<	5.2462E-02		
I-131	<	1.7905E-02		

BA-133	<	3.6199E-02		
CS-134	<	3.4751E-02		
CS-137	<	3.2257E-02		
CE-139	<	1.8787E-02		
Ba-140	<	6.1125E-02		
La-140	<	2.9879E-02		
CE-141	<	3.4157E-02		
CE-144	<	1.0560E-01		
PM-144	<	2.7285E-02		
EU-152	<	5.2889E-02		
EU-154	<	2.9367E-01		
EU-155	<	4.4157E-02		
HF-181	<	1.3089E-02		
Ta-182	<	1.2123E-01		
Hg-203	<	1.2131E-02		
TL-208	#	8.0975E-02	1.9668E+01%	3.496E-02
pm-146	<	6.4548E-02		
y-88	<	3.9341E-02		
PB-210	#	6.1640E+00	7.0476E+00%	9.514E-01
PB-212	#	1.1996E-01	1.5633E+01%	4.691E-02
PB-214		1.8934E-01	1.5079E+01%	6.604E-02
BI-207	<	3.3169E-02		
BI-212	<	2.9606E-01		
BI-214		2.8470E-01	1.3457E+01%	7.945E-02
BI-210M	<	2.5008E-02		
RA-224	<	2.4998E-01		
AC-228	<	1.2476E-01		
TH-227	<	8.9541E-02		
TH-229	<	2.7998E-01		
TH-234	#	4.4136E+00	7.5650E+00%	7.656E-01
PA-231	<	6.2178E-01		
PA-233	<	3.8111E-02		
PA-234	<	6.5028E-02		
PA-234M		7.4748E+00	2.2138E+01%	3.793E+00
Ra-226	#	3.6197E+00	7.5856E+00%	6.209E-01
U-235	<	1.1273E-01		
AM-241	<	8.1581E-02		
Np-237	<	1.5018E-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

TestAmerica Inc Spectrum name: 17_20191206005_BGLong.An1

---------- S U M M A R Y ----------

Total Activity (37.6 to 1999.5 keV) 2.471E+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
12/06/19 18:41		ICB 160-453835/1		453835			JLW
12/25/19 04:46		CCV 160-455104/1		455104			
12/25/19 05:07		CCV 160-455104/2		455104			KLS
12/25/19 05:29		CCB 160-455104/3		455104			KLS
12/25/19 06:03	30	ZZZZZ		455104			
12/25/19 06:37	30	ZZZZZ		455104			
12/25/19 07:09	30	ZZZZZ		455104			
12/25/19 07:47	30	ZZZZZ		455104			
12/25/19 08:20	30	160-36526-3	STSB27_3-6	455104	452567	901.1	KLS
12/25/19 09:03	30	160-36526-6	STSB28-FD_0-0.5	455104	452567	901.1	KLS
12/25/19 09:37	30	160-36526-12	STSB29_3-6	455104	452567	901.1	KLS
12/25/19 10:14	30	160-36526-17	STSB30_3-6	455104	452567	901.1	KLS
12/25/19 10:46	30	160-36526-21	STSB31_3-6	455104	452568	901.1	KLS
12/25/19 11:26	30	ZZZZZ		455104			
12/25/19 12:00	30	ZZZZZ		455104			
12/25/19 12:33	30	ZZZZZ		455104			
12/25/19 13:07	30	ZZZZZ		455104			
12/25/19 13:41	30	ZZZZZ		455104			
12/25/19 14:42	30	ZZZZZ		455104			
12/25/19 15:16	30	ZZZZZ		455104			
12/25/19 16:19	30	ZZZZZ		455104			
12/25/19 16:56	30	ZZZZZ		455104			
12/25/19 17:32	30	ZZZZZ		455104			
12/25/19 18:08	30	ZZZZZ		455104			

Detector: GV9

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
05/03/12 13:37		IC 160-12326/1		12326			JLW
06/14/12 10:54		ICV 160-12326/2		12326			JLW
12/06/19 18:43		ICB 160-453837/1		453837			JLW
12/25/19 04:44		CCB 160-455101/1		455101			KLS
12/25/19 05:24		CCV 160-455101/2		455101			
12/25/19 05:45		CCV 160-455101/3		455101			KLS
12/25/19 06:07	30	ZZZZZ		455101			
12/25/19 06:43	30	ZZZZZ		455101			
12/25/19 07:14	30	ZZZZZ		455101			
12/25/19 07:48	30	ZZZZZ		455101			
12/25/19 08:21	30	ZZZZZ		455101			
12/25/19 08:59	30	ZZZZZ		455101			
12/25/19 09:34	30	160-36526-7	STSB28_0.5-3	455101	452567	901.1	KLS
12/25/19 10:10	30	160-36526-11 DU	STSB29_0.5-3 DU	455101	452567	901.1	KLS
12/25/19 10:42	30	160-36526-18	STSB30_6-15	455101	452567	901.1	KLS
12/25/19 11:22	30	160-36526-21 DU	STSB31_3-6 DU	455101	452568	901.1	KLS
12/25/19 11:57	30	ZZZZZ		455101			
12/25/19 12:28	30	ZZZZZ		455101			
12/25/19 13:02	30	ZZZZZ		455101			
12/25/19 13:34	30	ZZZZZ		455101			
12/25/19 14:15	30	ZZZZZ		455101			
12/25/19 14:57	30	ZZZZZ		455101			
12/25/19 15:33	30	ZZZZZ		455101			

Gamma Spectroscopy Run Log

Detector: GV9 (Continued)

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
12/25/19 16:13	30	ZZZZZ		455101			
12/25/19 16:50	30	ZZZZZ		455101			
12/25/19 17:26	30	ZZZZZ		455101			
12/25/19 18:03	30	ZZZZZ		455101			
12/25/19 18:41	30	ZZZZZ		455101			

Detector: GV12

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
04/18/18 13:54		IC 160-364854/1		364854			JLW
04/24/18 09:26		ICV 160-364854/2		364854			JLW
12/06/19 18:42		ICB 160-453836/1		453836			JLW
12/25/19 04:45		CCB 160-455102/1		455102			KLS
12/25/19 05:25		CCV 160-455102/2		455102			
12/25/19 05:45		CCV 160-455102/3		455102			KLS
12/25/19 06:08	30	ZZZZZ		455102			
12/25/19 06:43	30	ZZZZZ		455102			
12/25/19 07:15	30	ZZZZZ		455102			
12/25/19 07:48	30	ZZZZZ		455102			
12/25/19 08:22	30	ZZZZZ		455102			
12/25/19 09:00	30	ZZZZZ		455102			
12/25/19 09:35	30	160-36526-8	STSB28_3-6	455102	452567	901.1	KLS
12/25/19 10:11	30	160-36526-13	STSB29_6-15	455102	452567	901.1	KLS
12/25/19 10:43	30	160-36526-19	STSB31_0-0.5	455102	452567	901.1	KLS
12/25/19 11:23	30	160-36526-22	STSB31_6-15	455102	452568	901.1	KLS
12/25/19 11:58	30	ZZZZZ		455102			
12/25/19 12:30	30	ZZZZZ		455102			
12/25/19 13:02	30	ZZZZZ		455102			
12/25/19 13:41	30	ZZZZZ		455102			
12/25/19 14:15	30	ZZZZZ		455102			
12/25/19 14:58	30	ZZZZZ		455102			
12/25/19 15:34	30	ZZZZZ		455102			
12/25/19 16:13	30	ZZZZZ		455102			
12/25/19 16:51	30	ZZZZZ		455102			
12/25/19 17:27	30	ZZZZZ		455102			
12/25/19 18:04	30	ZZZZZ		455102			

Detector: GV14

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
04/23/12 09:56		IC 160-12359/1		12359			JLW
04/24/12 08:12		ICV 160-12359/2		12359			JLW
12/06/19 18:44		ICB 160-453839/1		453839			JLW
12/25/19 04:43		CCV 160-455098/1		455098			
12/25/19 05:05		CCV 160-455098/2		455098			KLS
12/25/19 05:26		CCB 160-455098/3		455098			KLS
12/25/19 06:00	30	ZZZZZ		455098			
12/25/19 06:34	30	ZZZZZ		455098			
12/25/19 07:07	30	ZZZZZ		455098			
12/25/19 07:43	30	ZZZZZ		455098			
12/25/19 08:18	30	ZZZZZ		455098			
12/25/19 09:00	30	ZZZZZ		455098			

Gamma Spectroscopy Run Log

Detector: GV14 (Continued)

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
12/25/19 09:35	30	160-36526-9	STSB28_6-15	455098	452567	901.1	KLS
12/25/19 10:11	30	160-36526-14	STSB29-FD_6-15	455098	452567	901.1	KLS
12/25/19 10:43	30	160-36526-20	STSB31_0.5-3	455098	452567	901.1	KLS
12/25/19 11:23	30	ZZZZZ		455098			
12/25/19 11:59	30	ZZZZZ		455098			
12/25/19 12:30	30	ZZZZZ		455098			
12/25/19 13:05	30	ZZZZZ		455098			
12/25/19 13:38	30	ZZZZZ		455098			
12/25/19 14:17	30	ZZZZZ		455098			
12/25/19 14:59	30	ZZZZZ		455098			
12/25/19 15:35	30	ZZZZZ		455098			
12/25/19 16:14	30	ZZZZZ		455098			
12/25/19 16:52	30	ZZZZZ		455098			
12/25/19 17:29	30	ZZZZZ		455098			
12/25/19 18:05	30	ZZZZZ		455098			
12/25/19 18:46	30	ZZZZZ		455098			

Detector: GV16

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
07/10/12 10:35		IC 160-12382/1		12382			JLW
07/17/12 11:27		ICV 160-12382/2		12382			JLW
12/06/19 18:45		ICB 160-453840/1		453840			JLW
12/25/19 04:45		CCV 160-455099/1		455099			
12/25/19 05:07		CCV 160-455099/2		455099			KLS
12/25/19 05:26		CCB 160-455099/3		455099			KLS
12/25/19 06:01	30	ZZZZZ		455099			
12/25/19 06:35	30	ZZZZZ		455099			
12/25/19 07:08	30	ZZZZZ		455099			
12/25/19 07:44	30	ZZZZZ		455099			
12/25/19 08:19	30	160-36526-1	STSB27_0-0.5	455099	452567	901.1	KLS
12/25/19 09:01	30	160-36526-4	STSB27_6-15	455099	452567	901.1	KLS
12/25/19 09:36	30	160-36526-10	STSB29_0-0.5	455099	452567	901.1	KLS
12/25/19 10:12	30	160-36526-15	STSB30_0-0.5	455099	452567	901.1	KLS
12/25/19 10:44	30	MB 160-452567/1-A		455099	452567	901.1	KLS
12/25/19 11:24	30	MB 160-452568/1-A		455099	452568	901.1	KLS
12/25/19 11:59	30	ZZZZZ		455099			
12/25/19 12:31	30	ZZZZZ		455099			
12/25/19 13:05	30	ZZZZZ		455099			
12/25/19 13:39	30	ZZZZZ		455099			
12/25/19 14:18	30	ZZZZZ		455099			
12/25/19 15:00	30	ZZZZZ		455099			
12/25/19 15:36	30	ZZZZZ		455099			
12/25/19 16:15	30	ZZZZZ		455099			
12/25/19 16:53	30	ZZZZZ		455099			
12/25/19 17:29	30	ZZZZZ		455099			
12/25/19 18:05	30	ZZZZZ		455099			

Detector: GV17

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
03/26/12 06:29		IC 160-12390/1		12390			JLW

Gamma Spectroscopy Run Log

Detector: GV17 (Continued)

Analysis Date	Count Minutes	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Method	Analyst Initials
03/26/12 09:29		ICV 160-12390/2		12390			JLW
12/06/19 18:46		ICB 160-453841/1		453841			AJD
12/25/19 04:44		CCV 160-455100/1		455100			
12/25/19 05:06		CCV 160-455100/2		455100			KLS
12/25/19 05:27		CCB 160-455100/3		455100			KLS
12/25/19 06:02	30	ZZZZZ		455100			
12/25/19 06:36	30	ZZZZZ		455100			
12/25/19 07:09	30	ZZZZZ		455100			
12/25/19 07:45	30	ZZZZZ		455100			
12/25/19 08:19	30	160-36526-2	STSB27_0.5-3	455100	452567	901.1	KLS
12/25/19 09:02	30	160-36526-5	STSB28_0-0.5	455100	452567	901.1	KLS
12/25/19 09:36	30	160-36526-11	STSB29_0.5-3	455100	452567	901.1	KLS
12/25/19 10:13	30	160-36526-16	STSB30_0.5-3	455100	452567	901.1	KLS
12/25/19 10:46	30	LCS 160-452567/2-A		455100	452567	901.1	KLS
12/25/19 11:26	30	LCS 160-452568/2-A		455100	452568	901.1	KLS
12/25/19 12:00	30	ZZZZZ		455100			
12/25/19 12:32	30	ZZZZZ		455100			
12/25/19 13:07	30	ZZZZZ		455100			
12/25/19 13:40	30	ZZZZZ		455100			
12/25/19 14:19	30	ZZZZZ		455100			
12/25/19 15:01	30	ZZZZZ		455100			
12/25/19 15:36	30	ZZZZZ		455100			
12/25/19 16:16	30	ZZZZZ		455100			
12/25/19 16:54	30	ZZZZZ		455100			
12/25/19 17:31	30	ZZZZZ		455100			
12/25/19 18:07	30	ZZZZZ		455100			

Shipping and Receiving Documents

Atlantic Richfield Company
A BP affiliated company

Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Site Node Path: NV_YERINGTON
Req Due Date (mm/dd/yy): STD TAT
Rush TAT: Yes ___ No X
BP/ARC Facility Name: Anaconda Copper Mine Site
Lab Work Order Number:

Lab Name:	TestAmerica, Inc.	BP/ARC Facility Address:	1 Austin Circle	Consultant/Contractor:	Wood - E&I Solutions, Inc.
Lab Address:	13715 Rider Trail N., Earth City, MO 63045	City, State, ZIP Code:	Yerington, Nevada 89447	Consultant/Contractor Project No:	SA18170340.005.055B
Lab PM:	Jayna Awalt	Lead Regulatory Agency:	NDEP Abandoned Mine Lands Program	Address:	10940 White Rock Rd, Ste 190 Rancho Cordova, CA 95670
Lab Phone:	314-298-8566	California Global ID No.:		Consultant/Contractor PM:	Kent Parrish
Lab Shipping Accnt:	1955-3772-0 (TAL Acct #)	Enfos Proposal No: D019Q-0047	Work Release No: WR331232	Phone: 916-636-3200	Email: Kent.Parrish@woodplc.com
Lab Bottle Order No:	NA	Accounting Mode:	Provision X OOC-BU ___ OOC-RM ___	Email Report/EDD To:	lynda.lombardi@woodplc.com
Other Info:	OU-4b_OU-5_Soil	Stage: Appraise	Activity: Field Work/Remedial Investigation	Invoice To:	BP/ARC X Contractor ___

BP/ARC EBM: Chuck Stilwell
EBM Phone: 713-998-2443
EBM Email: Chuck.Stilwell@bp.com

Report Type & QC Level: Standard ___ Full Data Package X

Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H_2SO_4	HNO_3	Thorium, Uranium (SW6020A)	Radium-226 (HASL 300)	Radium-228 (HASL 300)	MS/MSD or LD	Comments
STSB27_0-0.5	11/21/19	0915	X			2	2			X	X	X		Report soil on dry weight basis.
STSB27_0.5-3	11/21/19	0925	X			2	2			X	X	X		
STSB27_3-6	11/21/19	0931	X			2	2			X	X	X		
STSB27_6-15	11/21/19	0955	X			2	2			X	X	X		
STSB28X_0-0.5	11/21/19	1145	X			2	2			X	X	X		STSB28_0-0.5 Sample ID
STSB28-FD_0-0.5	11/21/19	1150	X			2	2			X	X	X		
STSB28_0.5-3	11/21/19	1155	X			2	2			X	X	X		
STSB28_3-6	11/21/19	1215	X			2	2			X	X	X		
STSB28_6-15	11/21/19	1225	X			2	2			X	X	X		
STSB29_0-0.5	11/21/19	1500	X			2	2			X	X	X		

160-36526 Chain of Custody

Sampler's Name: Bryce Johnson
Sampler's Company: Wood
Shipment Method: Fed EX Ship Date: 11/25/19
Shipment Tracking No: 8137 9414 1730, 1740

Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
/ Wood	11/25/19	1030	/ ETAS TL	11/26/19	08:15

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: ____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

BP/ARC LaMP COC Rev. 7, Jul 29, 2010

Atlantic Richfield Company
A BP affiliated company

Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Site Node Path: NV_YERINGTON
BP/ARC Facility Name: Anaconda Copper Mine Site
Req Due Date (mm/dd/yy): STD TAT
Rush TAT: Yes ___ No X
Lab Work Order Number:

Lab Name:	TestAmerica, Inc.	BP/ARC Facility Address:	1 Austin Circle	Consultant/Contractor:	Wood - E&I Solutions, Inc.
Lab Address:	13715 Rider Trail N., Earth City, MO 63045	City, State, ZIP Code:	Yerington, Nevada 89447	Consultant/Contractor Project No:	SA18170340.005.055B
Lab PM:	Jayna Awalt	Lead Regulatory Agency:	NDEP Abandoned Mine Lands Program	Address:	10940 White Rock Rd, Ste 190 Rancho Cordova, CA 95670
Lab Phone:	314-298-8566	California Global ID No.:		Consultant/Contractor PM:	Kent Parrish
Lab Shipping Accnt:	1955-3772-0 (TAL Acct #)	Enfos Proposal No: D019Q-0047	Work Release No: WR331232	Phone: 916-636-3200	Email: Kent.Parrish@woodplc.com
Lab Bottle Order No:	NA	Accounting Mode:	Provision X OOC-BU ___ OOC-RM ___	Email Report/EDD To:	lynda.lombardi@woodplc.com
Other Info:	OU-4b_OU-5_Soil	Stage: Appraise	Activity: Field Work/Remedial Investigation	Invoice To:	BP/ARC X Contractor ___

BP/ARC EBM: Chuck Stilwell
EBM Phone: 713-998-2443
EBM Email: Chuck.Stilwell@bp.com

Report Type & QC Level: Standard ___ Full Data Package X

Lab ID	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H_2SO_4	HNO_3	Thorium, Uranium (SW6020A)	Radium-226 (HASL 300)	Radium-228 (HASL 300)	MS/MSD or LD	Comments
	STSB29_0.5-3	11/21/19	1510	X			~~2~~	~~2~~			X	X	X	X	Report soil on dry weight basis 4 containers (BJ 11/21/19)
	STSB29_3-6	11/21/19	1530	X			2	2			X	X	X		
	STSB29_6-15	11/21/19	1545	X			2	2			X	X	X		
	STSB29-FD_6-15	11/21/19	1550	X			2	2			X	X	X		
	STSB30_0-0.5	11/22/19	0855	X			2	2			X	X	X		
	STSB30_0.5-3	11/22/19	0902	X			2	2			X	X	X		
	STSB30_3-6	11/22/19	0910	X			2	2			X	X	X		
	STSB30_6-15	11/22/19	0925	X			2	2			X	X	X		

BJ 11/25/19

Page 1455 of 1463

Sampler's Name: Bryce Johnson
Sampler's Company: Wood
Shipment Method: Fed Ex Ship Date: 11/25/19
Shipment Tracking No:

Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
[signature] / Wood	11/25/19	1030	[signature] / ETAS TL	11/26/19	0915

Special Instructions: 8137 9414 1730, 1740

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: ____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

Atlantic Richfield Company
A BP affiliated company

Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Site Node Path: NV_YERINGTON
BP/ARC Facility Name: Anaconda Copper Mine Site
Req Due Date (mm/dd/yy): STD TAT
Rush TAT: Yes ___ No X
Lab Work Order Number:

Lab Name:	TestAmerica, Inc.	BP/ARC Facility Address:	1 Austin Circle	Consultant/Contractor:	Wood - E&I Solutions, Inc.
Lab Address:	13715 Rider Trail N., Earth City, MO 63045	City, State, ZIP Code:	Yerington, Nevada 89447	Consultant/Contractor Project No:	SA18170340.005.055B
Lab PM:	Jayna Awalt	Lead Regulatory Agency:	NDEP Abandoned Mine Lands Program	Address:	10940 White Rock Rd, Ste 190 Rancho Cordova, CA 95670
Lab Phone:	314-298-8566	California Global ID No.:		Consultant/Contractor PM:	Kent Parrish
Lab Shipping Accnt:	1955-3772-0 (TAL Acct #)	Enfos Proposal No: D019Q-0047	Work Release No: WR331232	Phone: 916-636-3200	Email: Kent.Parrish@woodplc.com
Lab Bottle Order No:	NA	Accounting Mode:	Provision X OOC-BU ___ OOC-RM ___	Email Report/EDD To:	lynda.lombardi@woodplc.com
Other Info:	OU-4b_OU-5_Soil	Stage: Appraise	Activity: Field Work/Remedial Investigation	Invoice To:	BP/ARC X Contractor ___
BP/ARC EBM:	Chuck Stilwell				
EBM Phone:	713-998-2443				
EBM Email:	Chuck.Stilwell@bp.com				

Report Type & QC Level: Standard ___ Full Data Package X

Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	No. Containers / Preservative: Total Number of Containers	Unpreserved	H_2SO_4	HNO_3	Requested Analyses: Thorium, Uranium (SW6020A)	Radium-226 (HASL 300)	Radium-228 (HASL 300)	MS/MSD or LD	Comments
STSB31_0-0.5	11/22/19	1156	X			2	2			X	X	X		Report soil on dry weight basis.
STSB31_0.5-3	11/22/19	1203	X			2	2			X	X	X		
STSB31_3-6	11/22/19	1210	X			2	2			X	X	X		
STSB31_6-15	11/22/19	1220	X			2	2			X	X	X		

BJ 11/25/19

Comments: Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.

Sampler's Name: Bryce Johnson	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date / Time
Sampler's Company: Wood	/ Wood	11/25/19	1030	/ ETASTL	11-26-19 0515
Shipment Method: Fed Ex Ship Date: 11/25/19					
Shipment Tracking No: 8137 9414 1730, 1740					

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: ____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

Login Sample Receipt Checklist

Client: Wood E&I Solutions Inc

Job Number: 160-36526-1

Login Number: 36526
List Number: 1
Creator: Press, Nicholas B

List Source: Eurofins 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.	True	
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.	N/A	
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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Internal Chain of Custody Tracking

Login	Smp	Customer Sample ID	Matrix	Container ID	Lab Sample ID	Container Type	Location	Custody User	I/O	ICOC ID	ICOC Date
160-36526	1	STSB27_0-0.5	Solid	160-1842871	160-36526-A-1	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	1	STSB27_0-0.5	Solid	160-1842871	160-36526-A-1	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	1	STSB27_0-0.5	Solid	160-1842871	160-36526-A-1	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	1	STSB27_0-0.5	Solid	160-1842871	160-36526-A-1	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	1	STSB27_0-0.5	Solid	160-1842871	160-36526-A-1	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	1	STSB27_0-0.5	Solid	160-1842872	160-36526-B-1	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	1	STSB27_0-0.5	Solid	160-1842872	160-36526-B-1	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	1	STSB27_0-0.5	Solid	160-1842872	160-36526-B-1	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	1	STSB27_0-0.5	Solid	160-1842872	160-36526-B-1	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	2	STSB27_0.5-3	Solid	160-1842873	160-36526-A-2	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	2	STSB27_0.5-3	Solid	160-1842873	160-36526-A-2	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	2	STSB27_0.5-3	Solid	160-1842873	160-36526-A-2	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	2	STSB27_0.5-3	Solid	160-1842873	160-36526-A-2	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	2	STSB27_0.5-3	Solid	160-1842873	160-36526-A-2	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	2	STSB27_0.5-3	Solid	160-1842874	160-36526-B-2	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	2	STSB27_0.5-3	Solid	160-1842874	160-36526-B-2	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	2	STSB27_0.5-3	Solid	160-1842874	160-36526-B-2	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	2	STSB27_0.5-3	Solid	160-1842874	160-36526-B-2	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	3	STSB27_3-6	Solid	160-1842875	160-36526-A-3	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	3	STSB27_3-6	Solid	160-1842875	160-36526-A-3	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	3	STSB27_3-6	Solid	160-1842875	160-36526-A-3	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	3	STSB27_3-6	Solid	160-1842875	160-36526-A-3	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	3	STSB27_3-6	Solid	160-1842875	160-36526-A-3	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	3	STSB27_3-6	Solid	160-1842876	160-36526-B-3	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	3	STSB27_3-6	Solid	160-1842876	160-36526-B-3	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	3	STSB27_3-6	Solid	160-1842876	160-36526-B-3	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	3	STSB27_3-6	Solid	160-1842876	160-36526-B-3	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	4	STSB27_6-15	Solid	160-1842877	160-36526-A-4	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	4	STSB27_6-15	Solid	160-1842877	160-36526-A-4	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	4	STSB27_6-15	Solid	160-1842877	160-36526-A-4	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	4	STSB27_6-15	Solid	160-1842877	160-36526-A-4	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	4	STSB27_6-15	Solid	160-1842877	160-36526-A-4	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	4	STSB27_6-15	Solid	160-1842878	160-36526-B-4	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	4	STSB27_6-15	Solid	160-1842878	160-36526-B-4	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	4	STSB27_6-15	Solid	160-1842878	160-36526-B-4	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	4	STSB27_6-15	Solid	160-1842878	160-36526-B-4	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	5	STSB28_0-0.5	Solid	160-1842879	160-36526-A-5	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	5	STSB28_0-0.5	Solid	160-1842879	160-36526-A-5	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	5	STSB28_0-0.5	Solid	160-1842879	160-36526-A-5	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	5	STSB28_0-0.5	Solid	160-1842879	160-36526-A-5	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34

Internal Chain of Custody Tracking

Login	Smp	Customer Sample ID	Matrix	Container ID	Lab Sample ID	Container Type	Location	Custody User	I/O	ICOC ID	ICOC Date
160-36526	5	STSB28_0-0.5	Solid	160-1842879	160-36526-A-5	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	5	STSB28_0-0.5	Solid	160-1842880	160-36526-B-5	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	5	STSB28_0-0.5	Solid	160-1842880	160-36526-B-5	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	5	STSB28_0-0.5	Solid	160-1842880	160-36526-B-5	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	5	STSB28_0-0.5	Solid	160-1842880	160-36526-B-5	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	6	STSB28-FD_0-0.5	Solid	160-1842881	160-36526-A-6	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	6	STSB28-FD_0-0.5	Solid	160-1842881	160-36526-A-6	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	6	STSB28-FD_0-0.5	Solid	160-1842881	160-36526-A-6	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	6	STSB28-FD_0-0.5	Solid	160-1842881	160-36526-A-6	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	6	STSB28-FD_0-0.5	Solid	160-1842881	160-36526-A-6	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	6	STSB28-FD_0-0.5	Solid	160-1842882	160-36526-B-6	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	6	STSB28-FD_0-0.5	Solid	160-1842882	160-36526-B-6	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	6	STSB28-FD_0-0.5	Solid	160-1842882	160-36526-B-6	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	6	STSB28-FD_0-0.5	Solid	160-1842882	160-36526-B-6	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	7	STSB28_0.5-3	Solid	160-1842883	160-36526-A-7	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	7	STSB28_0.5-3	Solid	160-1842883	160-36526-A-7	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	7	STSB28_0.5-3	Solid	160-1842883	160-36526-A-7	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	7	STSB28_0.5-3	Solid	160-1842883	160-36526-A-7	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	7	STSB28_0.5-3	Solid	160-1842883	160-36526-A-7	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	7	STSB28_0.5-3	Solid	160-1842884	160-36526-B-7	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	7	STSB28_0.5-3	Solid	160-1842884	160-36526-B-7	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	7	STSB28_0.5-3	Solid	160-1842884	160-36526-B-7	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	7	STSB28_0.5-3	Solid	160-1842884	160-36526-B-7	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	8	STSB28_3-6	Solid	160-1842885	160-36526-A-8	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	8	STSB28_3-6	Solid	160-1842885	160-36526-A-8	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	8	STSB28_3-6	Solid	160-1842885	160-36526-A-8	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	8	STSB28_3-6	Solid	160-1842885	160-36526-A-8	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	8	STSB28_3-6	Solid	160-1842885	160-36526-A-8	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	8	STSB28_3-6	Solid	160-1842886	160-36526-B-8	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	8	STSB28_3-6	Solid	160-1842886	160-36526-B-8	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	8	STSB28_3-6	Solid	160-1842886	160-36526-B-8	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	8	STSB28_3-6	Solid	160-1842886	160-36526-B-8	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	9	STSB28_6-15	Solid	160-1842887	160-36526-A-9	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	9	STSB28_6-15	Solid	160-1842887	160-36526-A-9	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	9	STSB28_6-15	Solid	160-1842887	160-36526-A-9	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	9	STSB28_6-15	Solid	160-1842887	160-36526-A-9	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	9	STSB28_6-15	Solid	160-1842887	160-36526-A-9	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	9	STSB28_6-15	Solid	160-1842888	160-36526-B-9	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	9	STSB28_6-15	Solid	160-1842888	160-36526-B-9	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	9	STSB28_6-15	Solid	160-1842888	160-36526-B-9	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46

Internal Chain of Custody Tracking

Login	Smp	Customer Sample ID	Matrix	Container ID	Lab Sample ID	Container Type	Location	Custody User	I/O	ICOC ID	ICOC Date
160-36526	9	STSB28_6-15	Solid	160-1842888	160-36526-B-9	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	10	STSB29_0-0.5	Solid	160-1842889	160-36526-A-10	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	10	STSB29_0-0.5	Solid	160-1842889	160-36526-A-10	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	10	STSB29_0-0.5	Solid	160-1842889	160-36526-A-10	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	10	STSB29_0-0.5	Solid	160-1842889	160-36526-A-10	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	10	STSB29_0-0.5	Solid	160-1842889	160-36526-A-10	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	10	STSB29_0-0.5	Solid	160-1842890	160-36526-B-10	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	10	STSB29_0-0.5	Solid	160-1842890	160-36526-B-10	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	10	STSB29_0-0.5	Solid	160-1842890	160-36526-B-10	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	10	STSB29_0-0.5	Solid	160-1842890	160-36526-B-10	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	11	STSB29_0.5-3	Solid	160-1842891	160-36526-A-11	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	11	STSB29_0.5-3	Solid	160-1842891	160-36526-A-11	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	11	STSB29_0.5-3	Solid	160-1842891	160-36526-A-11	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	11	STSB29_0.5-3	Solid	160-1842891	160-36526-A-11	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	11	STSB29_0.5-3	Solid	160-1842891	160-36526-A-11	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	11	STSB29_0.5-3	Solid	160-1842925	160-36526-A-11	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	11	STSB29_0.5-3	Solid	160-1842925	160-36526-A-11	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	11	STSB29_0.5-3	Solid	160-1842925	160-36526-A-11	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	11	STSB29_0.5-3	Solid	160-1842925	160-36526-A-11	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	11	STSB29_0.5-3	Solid	160-1842925	160-36526-A-11	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	11	STSB29_0.5-3	Solid	160-1842892	160-36526-B-11	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	11	STSB29_0.5-3	Solid	160-1842892	160-36526-B-11	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	11	STSB29_0.5-3	Solid	160-1842892	160-36526-B-11	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	11	STSB29_0.5-3	Solid	160-1842892	160-36526-B-11	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	11	STSB29_0.5-3	Solid	160-1842922	160-36526-B-11	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	11	STSB29_0.5-3	Solid	160-1842922	160-36526-B-11	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	11	STSB29_0.5-3	Solid	160-1842922	160-36526-B-11	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	11	STSB29_0.5-3	Solid	160-1842922	160-36526-B-11	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	11	STSB29_0.5-3	Solid	160-1842924	160-36526-B-11	No Container	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	11	STSB29_0.5-3	Solid	160-1842924	160-36526-B-11	No Container	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	12	STSB29_3-6	Solid	160-1842893	160-36526-A-12	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	12	STSB29_3-6	Solid	160-1842893	160-36526-A-12	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	12	STSB29_3-6	Solid	160-1842893	160-36526-A-12	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	12	STSB29_3-6	Solid	160-1842893	160-36526-A-12	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	12	STSB29_3-6	Solid	160-1842893	160-36526-A-12	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	12	STSB29_3-6	Solid	160-1842894	160-36526-B-12	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	12	STSB29_3-6	Solid	160-1842894	160-36526-B-12	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	12	STSB29_3-6	Solid	160-1842894	160-36526-B-12	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	12	STSB29_3-6	Solid	160-1842894	160-36526-B-12	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	13	STSB29_6-15	Solid	160-1842895	160-36526-A-13	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13

Internal Chain of Custody Tracking

Login	Smp	Customer Sample ID	Matrix	Container ID	Lab Sample ID	Container Type	Location	Custody User	I/O	ICOC ID	ICOC Date
160-36526	13	STSB29_6-15	Solid	160-1842895	160-36526-A-13	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	13	STSB29_6-15	Solid	160-1842895	160-36526-A-13	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	13	STSB29_6-15	Solid	160-1842895	160-36526-A-13	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	13	STSB29_6-15	Solid	160-1842895	160-36526-A-13	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	13	STSB29_6-15	Solid	160-1842896	160-36526-B-13	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	13	STSB29_6-15	Solid	160-1842896	160-36526-B-13	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	13	STSB29_6-15	Solid	160-1842896	160-36526-B-13	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	13	STSB29_6-15	Solid	160-1842896	160-36526-B-13	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	14	STSB29-FD_6-15	Solid	160-1842897	160-36526-A-14	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	14	STSB29-FD_6-15	Solid	160-1842897	160-36526-A-14	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	14	STSB29-FD_6-15	Solid	160-1842897	160-36526-A-14	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	14	STSB29-FD_6-15	Solid	160-1842897	160-36526-A-14	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	14	STSB29-FD_6-15	Solid	160-1842897	160-36526-A-14	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	14	STSB29-FD_6-15	Solid	160-1842898	160-36526-B-14	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	14	STSB29-FD_6-15	Solid	160-1842898	160-36526-B-14	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	14	STSB29-FD_6-15	Solid	160-1842898	160-36526-B-14	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	14	STSB29-FD_6-15	Solid	160-1842898	160-36526-B-14	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	15	STSB30_0-0.5	Solid	160-1842899	160-36526-A-15	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	15	STSB30_0-0.5	Solid	160-1842899	160-36526-A-15	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	15	STSB30_0-0.5	Solid	160-1842899	160-36526-A-15	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	15	STSB30_0-0.5	Solid	160-1842899	160-36526-A-15	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	15	STSB30_0-0.5	Solid	160-1842899	160-36526-A-15	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	15	STSB30_0-0.5	Solid	160-1842900	160-36526-B-15	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	15	STSB30_0-0.5	Solid	160-1842900	160-36526-B-15	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	15	STSB30_0-0.5	Solid	160-1842900	160-36526-B-15	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	15	STSB30_0-0.5	Solid	160-1842900	160-36526-B-15	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	16	STSB30_0.5-3	Solid	160-1842901	160-36526-A-16	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	16	STSB30_0.5-3	Solid	160-1842901	160-36526-A-16	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	16	STSB30_0.5-3	Solid	160-1842901	160-36526-A-16	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	16	STSB30_0.5-3	Solid	160-1842901	160-36526-A-16	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	16	STSB30_0.5-3	Solid	160-1842901	160-36526-A-16	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	16	STSB30_0.5-3	Solid	160-1842902	160-36526-B-16	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	16	STSB30_0.5-3	Solid	160-1842902	160-36526-B-16	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	16	STSB30_0.5-3	Solid	160-1842902	160-36526-B-16	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	16	STSB30_0.5-3	Solid	160-1842902	160-36526-B-16	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	17	STSB30_3-6	Solid	160-1842903	160-36526-A-17	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	17	STSB30_3-6	Solid	160-1842903	160-36526-A-17	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	17	STSB30_3-6	Solid	160-1842903	160-36526-A-17	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	17	STSB30_3-6	Solid	160-1842903	160-36526-A-17	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	17	STSB30_3-6	Solid	160-1842903	160-36526-A-17	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12

Internal Chain of Custody Tracking

Login	Smp	Customer Sample ID	Matrix	Container ID	Lab Sample ID	Container Type	Location	Custody User	I/O	ICOC ID	ICOC Date
160-36526	17	STSB30_3-6	Solid	160-1842904	160-36526-B-17	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	17	STSB30_3-6	Solid	160-1842904	160-36526-B-17	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	17	STSB30_3-6	Solid	160-1842904	160-36526-B-17	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	17	STSB30_3-6	Solid	160-1842904	160-36526-B-17	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	18	STSB30_6-15	Solid	160-1842905	160-36526-A-18	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	18	STSB30_6-15	Solid	160-1842905	160-36526-A-18	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	18	STSB30_6-15	Solid	160-1842905	160-36526-A-18	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	18	STSB30_6-15	Solid	160-1842905	160-36526-A-18	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	18	STSB30_6-15	Solid	160-1842905	160-36526-A-18	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	18	STSB30_6-15	Solid	160-1842906	160-36526-B-18	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	18	STSB30_6-15	Solid	160-1842906	160-36526-B-18	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	18	STSB30_6-15	Solid	160-1842906	160-36526-B-18	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	18	STSB30_6-15	Solid	160-1842906	160-36526-B-18	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	19	STSB31_0-0.5	Solid	160-1842907	160-36526-A-19	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	19	STSB31_0-0.5	Solid	160-1842907	160-36526-A-19	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	19	STSB31_0-0.5	Solid	160-1842907	160-36526-A-19	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	19	STSB31_0-0.5	Solid	160-1842907	160-36526-A-19	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	19	STSB31_0-0.5	Solid	160-1842907	160-36526-A-19	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	19	STSB31_0-0.5	Solid	160-1842908	160-36526-B-19	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	19	STSB31_0-0.5	Solid	160-1842908	160-36526-B-19	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	19	STSB31_0-0.5	Solid	160-1842908	160-36526-B-19	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	19	STSB31_0-0.5	Solid	160-1842908	160-36526-B-19	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	20	STSB31_0.5-3	Solid	160-1842909	160-36526-A-20	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	20	STSB31_0.5-3	Solid	160-1842909	160-36526-A-20	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	20	STSB31_0.5-3	Solid	160-1842909	160-36526-A-20	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	20	STSB31_0.5-3	Solid	160-1842909	160-36526-A-20	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	20	STSB31_0.5-3	Solid	160-1842909	160-36526-A-20	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	20	STSB31_0.5-3	Solid	160-1842910	160-36526-B-20	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	20	STSB31_0.5-3	Solid	160-1842910	160-36526-B-20	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	20	STSB31_0.5-3	Solid	160-1842910	160-36526-B-20	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	20	STSB31_0.5-3	Solid	160-1842910	160-36526-B-20	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35
160-36526	21	STSB31_3-6	Solid	160-1842911	160-36526-A-21	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	21	STSB31_3-6	Solid	160-1842911	160-36526-A-21	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	21	STSB31_3-6	Solid	160-1842911	160-36526-A-21	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	21	STSB31_3-6	Solid	160-1842911	160-36526-A-21	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	21	STSB31_3-6	Solid	160-1842911	160-36526-A-21	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	21	STSB31_3-6	Solid	160-1842912	160-36526-B-21	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	21	STSB31_3-6	Solid	160-1842912	160-36526-B-21	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	21	STSB31_3-6	Solid	160-1842912	160-36526-B-21	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	21	STSB31_3-6	Solid	160-1842912	160-36526-B-21	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35

Internal Chain of Custody Tracking

Login	Smp	Customer Sample ID	Matrix	Container ID	Lab Sample ID	Container Type	Location	Custody User	I/O	ICOC ID	ICOC Date
160-36526	22	STSB31_6-15	Solid	160-1842913	160-36526-A-22	Plastic Bag - 500g	Rad Soil Storage 4	Moore, Octavia R	I	160-187105	12/03/19 16:13
160-36526	22	STSB31_6-15	Solid	160-1842913	160-36526-A-22	Plastic Bag - 500g	Rad Cart	Quinn, Erin J	I	160-186876	11/29/19 12:32
160-36526	22	STSB31_6-15	Solid	160-1842913	160-36526-A-22	Plastic Bag - 500g	DRY AND GRIND	Quinn, Erin J	I	160-186874	11/29/19 12:31
160-36526	22	STSB31_6-15	Solid	160-1842913	160-36526-A-22	Plastic Bag - 500g	Rad Cart	Patel, Kaushal P	I	160-186823	11/28/19 11:34
160-36526	22	STSB31_6-15	Solid	160-1842913	160-36526-A-22	Plastic Bag - 500g	Pre-Prep	Patel, Kaushal P	I	160-186822	11/28/19 11:12
160-36526	22	STSB31_6-15	Solid	160-1842914	160-36526-B-22	Clear Glass 4oz Wide -	1-40	Mazariegos, Leonel	I	160-187462	12/05/19 18:29
160-36526	22	STSB31_6-15	Solid	160-1842914	160-36526-B-22	Clear Glass 4oz Wide -	METALS	Mazariegos, Leonel	I	160-186946	12/02/19 10:07
160-36526	22	STSB31_6-15	Solid	160-1842914	160-36526-B-22	Clear Glass 4oz Wide -	1-40	Patel, Kaushal P	I	160-186838	11/28/19 12:46
160-36526	22	STSB31_6-15	Solid	160-1842914	160-36526-B-22	Clear Glass 4oz Wide -	Pre-Prep	Patel, Kaushal P	I	160-186824	11/28/19 11:35