

RESL CUSTOMER EXPORT CONTROL AGREEMENT

It is the Radiological and Environmental Sciences Laboratory's (RESL) policy to conduct business in accordance with all applicable U.S. export control laws and regulations. It is also RESL's policy that its Customers comply with U.S. export control laws and regulations. Therefore, Customer agrees to the following:

1. Because products, technical data, and technical assistance (i.e., services) provided to Customer by RESL may be subject to U.S. export control laws and regulations, (i) transactions with certain persons and companies and (ii) the export or reexport of certain types and levels of products, technical data, and services are prohibited or restricted.
2. Customer acknowledges that it is responsible for its own compliance with U.S. export control laws and regulations. Customer further agrees that it assumes the responsibility to obtain all necessary U.S. export licenses or other U.S. governmental authorizations, as well as all liability for the failure to do so.
3. Customer acknowledges that export control requirements may change and that the export or reexport of RESL products, technical data, and services without an export license or other appropriate governmental authorization may result in criminal and/or civil liability.
4. The obligations and requirements described herein shall survive the expiration or termination of any agreement or contract between RESL and Customer.

MaW49 Participating Laboratories

Lab Code	Lab Name	Matrix Code
ADEM01	Alabama Department of Environmental Management	MaW
AFOH01	USAFSAM/OEA	MaW
ALIN01	Anatek Labs Inc.	MaW
AMEC99	Jacobs Clean Energy Limited - Analytical Services	MaW
ANLB01	Argonne National Laboratory	MaW
AREV01	Framatome - CMC	MaW
ARPL01	Analytical Support Operations - Radiochemical Processing Lab	MaW
ARSL01	ARS	MaW
ASUK99	AWE (Aldermaston)	MaW
AY1201	Consolidated Nuclear Security, LLC, ACO Laboratory	MaW
BY1201	Consolidated Nuclear Security, LLC, ACO, Production Laboratory	MaW
CDHS01	California Department of Public Health	MaW
CESL01	Lawrence Livermore National Laboratory - EMRL	MaW
CMRC01	Carlsbad Environmental Monitoring and Research Center	MaW
DEHS01	Department of Environmental Health & Safety	MaW
DLEA01	DLE Associates	MaW
EFGS01	Eurofins Frontier Global Sciences, LLC.	MaW
ELIW01	Energy Laboratories, Inc.	MaW
ERCL01	Washington State Public Health Laboratories	MaW
ERHD99	National Monitoring Section, Radiation Protection Bureau, Health Canada	MaW
ESDE01	Region 5 EQC Tritium Lab	MaW
ETTP01	MCLinc	MaW
FDHE01	Florida Dept of Health Environmental Laboratory	MaW
FDOH01	Florida Dept. of Health, Mobile Environmental Radiological Lab	MaW
FERM01	Fernald Project	MaW
FNAL01	Fermi National Accelerator Laboratory (FermiLab)	MaW
GENE01	GEL Laboratories, LLC	MaW
GPCL01	Georgia Power Company Environmental Laboratory	MaW
HCAL01	Lawrence Livermore National Laboratory	MaW
HECR01	SC Dept. Health and Environmental Control Radiological Laboratory	MaW
HPAC99	UKHSA, RCE Glasgow	MaW
IAEA99	International Atomic Energy Agency	MaW
IEMA01	Illinois Emergency Management Agency Radiochemistry Laboratory	MaW
ISUE01	ISU Environmental Monitoring Laboratory	MaW
ISUP01	ISU - Department of Physics/Health Physics/EAL	MaW
JAEC99	Research Laboratories and Information Directorate	MaW
JLNN01	Jefferson Laboratory	MaW
LOCK03	Advanced Test Reactor (ATR) Complex Radioanalytical Laboratory	MaW
LZCA01	ACZ Laboratories, Inc	MaW
MART01	Fluor-BWXT Portsmouth LLC, Analytical Laboratory	MaW
MART03	Radioactive Material Analysis Laboratory	MaW
MNDH01	Minnesota Department of Health, Public Health Lab. Division	MaW
NARL01	National Analytical Radiation Environmental Laboratory	MaW
NESI01	BWXT-Radioisotope & Analytical Chemistry Laboratory	MaW

NJDH01	New Jersey Dept. of Health, ECLS	MaW
ODHL01	Ohio Department of Health Laboratory	MaW
OTLI01	Pace Analytical National Center for Testing & Innovation	MaW
QUAN01	Eurofins St. Louis	MaW
RPSC01	Radiation Protection Service	MaW
SANC99	RadioAnalysis, South Africa Nuclear Energy Corp.	MaW
SAVA01	Battelle Savannah River Alliance	MaW
SEML01	SRS Environmental Monitoring Laboratory	MaW
SLAC01	SLAC DOE National Accelerator Laboratory	MaW
SOUT01	Southwest Research Institute	MaW
SRPD01	Sandia National Laboratories, Radiation Protection Sample Diagnostics	MaW
STRL01	South Texas Project Radiological Laboratory	MaW
TDHL01	Texas Department of State Health Services Laboratory	MaW
TELE01	Teledyne Brown Engineering - Environmental Services	MaW
TELE02	Microbac Laboratories Inc. - Northbrook	MaW
TMAO01	EBERLINE Analytical Corporation	MaW
TNUT01	St. Louis USACE FUSRAP Laboratory	MaW
UNTE01	UniTech-235	MaW
WEST04	PACE ANALYTICAL SERVICES, PITTSBURGH	MaW
WIPH01	WI, DPH, Radiation Protection Section	MaW
WIPP01	WIPP Laboratories	MaW
WSHL01	Wisconsin State Laboratory of Hygiene	MaW
WSTP99	Cavendish Nuclear Limited	MaW
WVDP01	WVDP Environmental Laboratory	MaW
YPGA01	US Army Yuma Proving Ground / Material Analysis Lab	MaW

Laboratories Not Reporting

Lab Code	Lab Name	Matrix Code
ERAD01	Lawrence Livermore National Laboratory	MaW
LAWR01	LAWRENCE BERKELEY NATIONAL LABORATORY	MaW
MDPH01	MDPH-Radiation Control Program	MaW
NNRL99	National Nuclear Regulator	MaW
RJLG01	RJ Lee Group - Columbia Basin Analytical Laboratories (CBAL)	MaW

Study Reference Values

MAPEP-23-MaW49

Radiological Reference Date: 08/01/2023

Analyte	Ref Value	Ref Unc
Inorganic Units: (mg/L)		
Arsenic	4.01	0.08
Barium	5.91	0.12
Beryllium	1.40	0.03
Cadmium	0.315	0.006
Chromium	2.07	0.04
Cobalt	6.02	0.12
Copper	4.93	0.10
Lead	2.83	0.06
Mercury	0.124	0.002
Nickel	5.24	0.10
Selenium	0.369	0.007
Technetium-99	1.40E-5	0.03E-5
Thallium	1.97	0.04
Uranium-235	3.94E-4	1.1E-5
Uranium-238	0.0542	0.0018
Uranium-Total	0.0546	0.0018
Vanadium	5.01	0.10
Zinc	5.55	0.11

Analyte	Ref Value	Ref Unc
Radiological Units: (Bq/L)		
Cesium-134	11.3	0.2
Cesium-137	8.7	0.2
Cobalt-57	19.3	0.4
Iron-55	41.1	0.9
Manganese-54	12.7	0.3
Nickel-63	1.11	0.15
Plutonium-238	0.726	0.011
Plutonium-239/240	0.784	0.012
Radium-226	0.650	0.013
Strontium-90	7.31	0.15
Technetium-99	8.85	0.18
Uranium-234	0.67	0.02
Uranium-238	0.67	0.02
Zinc-65	19.1	0.4

Sample Statistical Summary

MAPEP-23-MaW49

Radiological Reference Date: 08/01/2023

Analyte	T(1)	A(2)	Grand(3) Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
							Units: (mg/L)
Inorganic							
Antimony	10	6					False Positive Test
Arsenic	13	13	3.92	0.10	4.01	0.08	2.81 - 5.21
Barium	13	13	5.98	0.35	5.91	0.12	4.14 - 7.68
Beryllium	13	13	1.41	0.09	1.40	0.03	0.98 - 1.82
Cadmium	13	13	0.312	0.013	0.315	0.006	0.221 - 0.410
Chromium	13	13	2.08	0.14	2.07	0.04	1.45 - 2.69
Cobalt	13	13	5.96	0.31	6.02	0.12	4.21 - 7.83
Copper	13	13	4.89	0.34	4.93	0.10	3.45 - 6.41
Lead	13	13	2.83	0.16	2.83	0.06	1.98 - 3.68
Mercury	11	11	0.124	0.013	0.124	0.002	0.087 - 0.161
Nickel	12	12	5.26	0.36	5.24	0.10	3.67 - 6.81
Selenium	12	12	0.369	0.048	0.369	0.007	0.258 - 0.480
Technetium-99	2	2			1.40E-5	0.03E-5	9.80E-6 - 1.82E-5
Thallium	12	12	1.95	0.07	1.97	0.04	1.38 - 2.56
Uranium-235	11	11	3.93E-4	4.00E-5	3.94E-4	1.1E-5	2.76E-4 - 5.12E-4
Uranium-238	12	12	0.0534	0.0053	0.0542	0.0018	0.0379 - 0.0705
Uranium-Total	14	13	0.0542	0.0052	0.0546	0.0018	0.0382 - 0.0710
Vanadium	13	13	5.01	0.24	5.01	0.10	3.51 - 6.51
Zinc	13	13	5.54	0.52	5.55	0.11	3.89 - 7.22

Analyte	T(1)	A(2)	Grand(3) Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
							Units: (Bq/L)
Radiological							
Americium-241	33	30					False Positive Test
Cesium-134	53	50	10.7	0.8	11.3	0.2	7.9 - 14.7
Cesium-137	53	53	9.0	0.7	8.7	0.2	6.1 - 11.3
Cobalt-57	53	52	19.0	1.5	19.3	0.4	13.5 - 25.1
Cobalt-60	49	49					False Positive Test
Hydrogen-3	39	30					False Positive Test
Iron-55	6	6	38.0	3.5	41.1	0.9	28.8 - 53.4
Manganese-54	53	52	12.8	0.9	12.7	0.3	8.9 - 16.5
Nickel-63	9	7	0.41	1.63	1.11	0.15	Sensitivity Evaluation
Plutonium-238	29		0.659	0.045	0.726	0.011	0.508 - 0.944
Plutonium-239/240	29		0.699	0.054	0.784	0.012	0.549 - 1.019
Potassium-40	53						False Positive Test
Radium-226	22	19	0.651	0.082	0.650	0.013	0.455 - 0.845
Strontium-90	32	29	7.00	0.70	7.31	0.15	5.12 - 9.50
Technetium-99	15	15	8.67	0.50	8.85	0.18	6.20 - 11.51
Uranium-234	30	28	0.64	0.03	0.67	0.02	0.47 - 0.87
Uranium-238	31	29	0.65	0.04	0.67	0.02	0.47 - 0.87
Zinc-65	53	52	19.4	1.5	19.1	0.4	13.4 - 24.8

Note: (1) T = Total number of laboratories reporting analyte.
 (2) A = Number of laboratories with 'Acceptable' performance.
 (3) Mean excludes values derived as total metals and values indicated as "Not Acceptable".

Results Flags:

A = Result acceptable.....|Bias| ≤ 20%
W = Result acceptable with warning.....20% < |Bias| ≤ 30%
N = Result not acceptable.....|Bias| > 30%
RW = Report Warning
NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP < 2%
ACCEPTABLE.....2% ≤ RP ≤ 15%
ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
NOT ACCEPTABLE.....RP > 30%

Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Flag Summary Report

MAPEP-23-MaW49

Inorganic				
Analyte	A	W	RW	N
Antimony	6			4
Arsenic	13			
Barium	13			
Beryllium	13			
Cadmium	13			
Chromium	13			
Cobalt	13			
Copper	13			
Lead	13			
Mercury	10	1		
Nickel	12			
Selenium	9	3		
Thallium	12			
Uranium-Total	12	1		1
Uranium-235	10	1		
Uranium-238	11	1		
Vanadium	13			
Zinc	12	1		
Technetium-99	2			
Radiological				
Analyte	A	W	RW	N
Americium-241	30			3
Cesium-134	48	2		1
Cesium-137	50	3		
Cobalt-57	50	2		1
Cobalt-60	49			4
Hydrogen-3	30			10
Iron-55	6			
Manganese-54	52			1
Nickel-63	7			2
Radium-226	17	2		3
Strontium-90	27	2		3
Technetium-99	15			
Uranium-234	28			2
Uranium-238	29			2
Zinc-65	52			1



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (ADEM01) Alabama Department of Environmental Management
 1350 Coliseum Blvd.
 Montgomery, AL 36110

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	10.900	11.3	A		-3.5	7.9 - 14.7	0.275	A
Cesium-137	9.490	8.7	A		9.1	6.1 - 11.3	0.264	A
Cobalt-57	20.000	19.3	A		3.6	13.5 - 25.1	0.452	A
Cobalt-60	NR		N	(11)		False Positive Test		
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	13.700	12.7	A		7.9	8.9 - 16.5	0.649	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR			(6)		False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	21.400	19.1	A		12.0	13.4 - 24.8	0.750	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(AFOH01) USAFSAM/OEA

2510 Fifth Street, Area B

Wright-Patterson AFB, OH 45433-7913

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	0.000372	3.94E-4	A		-5.6	2.76E-4 - 5.12E-4	0.000011	A
Uranium-238	0.054	0.0542	A		-0.4	0.0379 - 0.0705	0.002	A
Uranium-Total	0.054	0.0546	A		-1.1	0.0382 - 0.0710	0.002	A
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0005		A			False Positive Test	0.0004	
Cesium-134	10.40	11.3	A		-8.0	7.9 - 14.7	0.34	A
Cesium-137	8.50	8.7	A		-2.3	6.1 - 11.3	0.30	A
Cobalt-57	17.5	19.3	A		-9.3	13.5 - 25.1	0.7	A
Cobalt-60	-0.003		A			False Positive Test	0.035	
Hydrogen-3	-0.6		A			False Positive Test	4.1	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	11.9	12.7	A		-6.3	8.9 - 16.5	0.4	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.67	0.726		(6)	-7.7	0.508 - 0.944	0.04	A
Plutonium-239/240	0.72	0.784		(6)	-8.2	0.549 - 1.019	0.04	A
Potassium-40	-0.6			(6)		False Positive Test	0.4	
Radium-226	0.70	0.650	A		7.7	0.455 - 0.845	0.06	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	8.3	7.31	A		13.5	5.12 - 9.50	0.3	A
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	0.65	0.67	A		-3.0	0.47 - 0.87	0.03	A
Uranium-238	0.67	0.67	A		0.0	0.47 - 0.87	0.03	A
Zinc-65	18.2	19.1	A		-4.7	13.4 - 24.8	0.5	A

Radiological Reference Date: August 1, 2023

Results Flags:

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- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(ALIN01) Anatek Labs Inc.
504 E. Sprague Ave Ste D
Spokane, WA 99202

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	NR	11.3				7.9 - 14.7		
Cesium-137	NR	8.7				6.1 - 11.3		
Cobalt-57	NR	19.3				13.5 - 25.1		
Cobalt-60	NR					False Positive Test		
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	NR	12.7				8.9 - 16.5		
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR					False Positive Test		
Radium-226	0.6105	0.650	A		-6.1	0.455 - 0.845	0.047767	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	NR	19.1				13.4 - 24.8		

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(AMEC99) Jacobs Clean Energy Limited - Analytical Services

612 Faraday Street

Birchwood Park, Warrington WA3 6GN

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	4.1	4.01	A		2.2	2.81 - 5.21	0.04	N
Barium	5.7	5.91	A		-3.6	4.14 - 7.68	0.03	N
Beryllium	1.41	1.40	A		0.7	0.98 - 1.82	0.01	N
Cadmium	0.32	0.315	A		1.6	0.221 - 0.410	0.01	A
Chromium	2.09	2.07	A		1.0	1.45 - 2.69	0.01	N
Cobalt	5.98	6.02	A		-0.7	4.21 - 7.83	0.07	N
Copper	5.03	4.93	A		2.0	3.45 - 6.41	0.07	N
Lead	2.87	2.83	A		1.4	1.98 - 3.68	0.03	N
Mercury	NR	0.124				0.087 - 0.161		
Nickel	5.42	5.24	A		3.4	3.67 - 6.81	0.04	N
Selenium	0.34	0.369	A		-7.9	0.258 - 0.480	0.03	A
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	1.87	1.97	A		-5.1	1.38 - 2.56	0.07	A
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	0.12	0.0546	N		119.8	0.0382 - 0.0710	0.03	W
Vanadium	5.01	5.01	A		0.0	3.51 - 6.51	0.01	N
Zinc	5.43	5.55	A		-2.2	3.89 - 7.22	0.06	N

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	NR	11.3				7.9 - 14.7		
Cesium-137	NR	8.7				6.1 - 11.3		
Cobalt-57	NR	19.3				13.5 - 25.1		
Cobalt-60	NR					False Positive Test		
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	NR	12.7				8.9 - 16.5		
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR					False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	NR	19.1				13.4 - 24.8		

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(ANLB01) Argonne National Laboratory

9700 S. Cass Ave

Argonne, IL 60439

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.002		A			False Positive Test	0.001	
Cesium-134	11.13	11.3	A		-1.5	7.9 - 14.7	0.79	A
Cesium-137	9.08	8.7	A		4.4	6.1 - 11.3	0.402	A
Cobalt-57	18.4	19.3	A		-4.7	13.5 - 25.1	0.83	A
Cobalt-60	0.26		A			False Positive Test	0.198	
Hydrogen-3	0.29		A			False Positive Test	2.07	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	13.19	12.7	A		3.9	8.9 - 16.5	0.51	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.699	0.726		(6)	-3.7	0.508 - 0.944	0.061	A
Plutonium-239/240	0.72	0.784		(6)	-8.2	0.549 - 1.019	0.06	A
Potassium-40	NR			(6)		False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	7.02	7.31	A		-4.0	5.12 - 9.50	0.080	N
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	0.58	0.67	A		-13.4	0.47 - 0.87	0.039	A
Uranium-238	0.586	0.67	A		-12.5	0.47 - 0.87	0.039	A
Zinc-65	20.59	19.1	A		7.8	13.4 - 24.8	1.27	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(AREV01) Framatome - CMC

1724 Mount Athos Road

Lynchburg, VA 24504

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	10.6	11.3	A		-6.2	7.9 - 14.7	0.143	N
Cesium-137	8.35	8.7	A		-4.0	6.1 - 11.3	0.254	A
Cobalt-57	17.0	19.3	A		-11.9	13.5 - 25.1	0.424	A
Cobalt-60	0.154			A		False Positive Test	0.154	
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.5	12.7	A		-1.6	8.9 - 16.5	0.405	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	4.17			(6)		False Positive Test	4.17	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	19.5	19.1	A		2.1	13.4 - 24.8	0.609	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(ARPL01) Analytical Support Operations - Radiochemical Processing Lab

PO Box 999

Richland, WA 99354

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.00196		N	(1)		False Positive Test	0.000374	
Cesium-134	10.88	11.3	A		-3.7	7.9 - 14.7	0.51	A
Cesium-137	8.71	8.7	A		0.1	6.1 - 11.3	0.43	A
Cobalt-57	18.78	19.3	A		-2.7	13.5 - 25.1	0.41	A
Cobalt-60	1.04		A			False Positive Test	0.94	
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.54	12.7	A		-1.3	8.9 - 16.5	0.50	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.588	0.726		(6)	-19.0	0.508 - 0.944	0.0231	A
Plutonium-239/240	0.661	0.784		(6)	-15.7	0.549 - 1.019	0.0302	A
Potassium-40	3.75			(6)		False Positive Test	3.60	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	6.99	7.31	A		-4.4	5.12 - 9.50	0.34	A
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	19.21	19.1	A		0.6	13.4 - 24.8	1.43	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (1) = False Positive
- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(ARSL01) ARS
2609 North River Road
Port Allen, LA 70767

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	0.00387		N	(1)		False Positive Test	0.0003	
Arsenic	3.99	4.01	A		-0.5	2.81 - 5.21	0.339	A
Barium	6.01	5.91	A		1.7	4.14 - 7.68	0.511	A
Beryllium	1.46	1.40	A		4.3	0.98 - 1.82	0.124	A
Cadmium	0.316	0.315	A		0.3	0.221 - 0.410	0.027	A
Chromium	2.16	2.07	A		4.3	1.45 - 2.69	0.184	A
Cobalt	6.23	6.02	A		3.5	4.21 - 7.83	0.530	A
Copper	4.84	4.93	A		-1.8	3.45 - 6.41	0.411	A
Lead	2.86	2.83	A		1.1	1.98 - 3.68	0.243	A
Mercury	0.111	0.124	A		-10.5	0.087 - 0.161	0.009	A
Nickel	5.54	5.24	A		5.7	3.67 - 6.81	0.471	A
Selenium	0.451	0.369	W		22.2	0.258 - 0.480	0.038	A
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	2.02	1.97	A		2.5	1.38 - 2.56	0.172	A
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	0.0576	0.0546	A		5.5	0.0382 - 0.0710	0.005	A
Vanadium	5.07	5.01	A		1.2	3.51 - 6.51	0.431	A
Zinc	5.91	5.55	A		6.5	3.89 - 7.22	0.502	A

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.008		A			False Positive Test	0.006	
Cesium-134	10.277	11.3	A		-9.1	7.9 - 14.7	0.345	A
Cesium-137	8.835	8.7	A		1.6	6.1 - 11.3	0.219	A
Cobalt-57	18.639	19.3	A		-3.4	13.5 - 25.1	0.645	A
Cobalt-60	0.059		A			False Positive Test	0.054	
Hydrogen-3	5.118		A			False Positive Test	5.882	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.571	12.7	A		-1.0	8.9 - 16.5	0.424	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.697	0.726		(6)	-4.0	0.508 - 0.944	0.054	A
Plutonium-239/240	0.752	0.784		(6)	-4.1	0.549 - 1.019	0.058	A
Potassium-40	5.886			(6)		False Positive Test	0.777	
Radium-226	0.702	0.650	A		8.0	0.455 - 0.845	0.063	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	6.822	7.31	A		-6.7	5.12 - 9.50	0.534	A
Technetium-99	8.277	8.85	A		-6.5	6.20 - 11.51	0.985	A
Uranium-234	0.643	0.67	A		-4.0	0.47 - 0.87	0.048	A
Uranium-238	0.691	0.67	A		3.1	0.47 - 0.87	0.051	A
Zinc-65	19.676	19.1	A		3.0	13.4 - 24.8	0.679	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (1) = False Positive
- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(ASUK99) AWE (Aldermaston)

A38.1 AWE

Reading, Berkshire RG7 4PR

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	NR	11.3				7.9 - 14.7		
Cesium-137	NR	8.7				6.1 - 11.3		
Cobalt-57	NR	19.3				13.5 - 25.1		
Cobalt-60	NR					False Positive Test		
Hydrogen-3	1.7398		A			False Positive Test	1.266	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	NR	12.7				8.9 - 16.5		
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.63	0.726		(6)	-13.2	0.508 - 0.944	0.046	A
Plutonium-239/240	0.67	0.784		(6)	-14.5	0.549 - 1.019	0.051	A
Potassium-40	NR					False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	0.65	0.67	A		-3.0	0.47 - 0.87	0.051	A
Uranium-238	0.64	0.67	A		-4.5	0.47 - 0.87	0.046	A
Zinc-65	NR	19.1				13.4 - 24.8		

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (AY1201) Consolidated Nuclear Security, LLC, ACO Laboratory
 Y12, NSC, Bldg. 9995, Rm 142
 Oak Ridge, TN 37831-8189

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	3.99	4.01	A		-0.5	2.81 - 5.21	0.224	A
Barium	5.91	5.91	A		0.0	4.14 - 7.68	0.241	A
Beryllium	1.41	1.40	A		0.7	0.98 - 1.82	0.088	A
Cadmium	0.316	0.315	A		0.3	0.221 - 0.410	0.019	A
Chromium	2.07	2.07	A		0.0	1.45 - 2.69	0.065	A
Cobalt	5.99	6.02	A		-0.5	4.21 - 7.83	0.300	A
Copper	4.96	4.93	A		0.6	3.45 - 6.41	0.204	A
Lead	2.80	2.83	A		-1.1	1.98 - 3.68	0.183	A
Mercury	0.119	0.124	A		-4.0	0.087 - 0.161	0.0091	A
Nickel	5.13	5.24	A		-2.1	3.67 - 6.81	0.253	A
Selenium	0.364	0.369	A		-1.4	0.258 - 0.480	0.019	A
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	1.92	1.97	A		-2.5	1.38 - 2.56	0.131	A
Uranium-235	0.0003813	3.94E-4	A		-3.2	2.76E-4 - 5.12E-4	0.00004	A
Uranium-238	0.054	0.0542	A		-0.4	0.0379 - 0.0705	0.0054	A
Uranium-Total	0.054	0.0546	A		-1.1	0.0382 - 0.0710	0.0054	A
Vanadium	5.03	5.01	A		0.4	3.51 - 6.51	0.191	A
Zinc	5.49	5.55	A		-1.1	3.89 - 7.22	0.344	A

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	-0.00508			A		False Positive Test	0.0060	
Cesium-134	NR	11.3		(6)		7.9 - 14.7		
Cesium-137	8.33	8.7	A		-4.3	6.1 - 11.3	0.35	A
Cobalt-57	18.9	19.3	A		-2.1	13.5 - 25.1	0.45	A
Cobalt-60	-0.0241			A		False Positive Test	0.075	
Hydrogen-3	-1.79			A		False Positive Test	4.8	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.0	12.7	A		-5.5	8.9 - 16.5	0.46	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.651	0.726		(6)	-10.3	0.508 - 0.944	0.046	A
Plutonium-239/240	0.656	0.784		(6)	-16.3	0.549 - 1.019	0.046	A
Potassium-40	3.30			(6)		False Positive Test	1.0	
Radium-226	0.426	0.650	N		-34.5	0.455 - 0.845	0.11	W

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	7.59	7.31	A		3.8	5.12 - 9.50	0.25	A
Technetium-99	9.34	8.85	A		5.5	6.20 - 11.51	0.43	A
Uranium-234	0.657	0.67	A		-1.9	0.47 - 0.87	0.037	A
Uranium-238	0.664	0.67	A		-0.9	0.47 - 0.87	0.037	A
Zinc-65	18.7	19.1	A		-2.1	13.4 - 24.8	0.81	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(BY1201) Consolidated Nuclear Security, LLC, ACO, Production Laboratory
 Y12, NSC, Bldg. 9995, Rm 142
 Oak Ridge, TN 37831-8189

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.00387		A			False Positive Test	0.0048	
Cesium-134	NR	11.3		(6)		7.9 - 14.7		
Cesium-137	9.41	8.7	A		8.2	6.1 - 11.3	0.251	A
Cobalt-57	20.425	19.3	A		5.8	13.5 - 25.1	0.3213	N
Cobalt-60	0.04		A			False Positive Test	0.022	
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	13.15	12.7	A		3.5	8.9 - 16.5	0.47	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.703	0.726		(6)	-3.2	0.508 - 0.944	0.055	A
Plutonium-239/240	0.678	0.784		(6)	-13.5	0.549 - 1.019	0.053	A
Potassium-40	3.34			(6)		False Positive Test	0.737	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	8.26	7.31	A		13.0	5.12 - 9.50	0.678	A
Technetium-99	8.88	8.85	A		0.3	6.20 - 11.51	0.12	N
Uranium-234	0.604	0.67	A		-9.9	0.47 - 0.87	0.0364	A
Uranium-238	0.617	0.67	A		-7.9	0.47 - 0.87	0.0364	A
Zinc-65	19.08	19.1	A		-0.1	13.4 - 24.8	0.831	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (CDHS01) California Department of Public Health
 Drinking Water & Radiation Lab.
 Richmond, CA 94804-6403

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	-0.00114		A			False Positive Test	0.00513	
Cesium-134	11.4	11.3	A		0.9	7.9 - 14.7	0.301	A
Cesium-137	9.24	8.7	A		6.2	6.1 - 11.3	0.254	A
Cobalt-57	19.2	19.3	A		-0.5	13.5 - 25.1	0.363	N
Cobalt-60	0.0223		A			False Positive Test	0.0588	
Hydrogen-3	1.66		A			False Positive Test	3.10	
Iron-55	37.6	41.1	A		-8.5	28.8 - 53.4	1.17	A
Manganese-54	13.3	12.7	A		4.7	8.9 - 16.5	0.304	A
Nickel-63	0.391	1.11	A	(17)		Sensitivity Evaluation	0.833	
Plutonium-238	0.727	0.726		(6)	0.1	0.508 - 0.944	0.0258	A
Plutonium-239/240	0.679	0.784		(6)	-13.4	0.549 - 1.019	0.0250	A
Potassium-40	0.429			(6)		False Positive Test	0.840	
Radium-226	0.580	0.650	A		-10.8	0.455 - 0.845	0.0649	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	7.40	7.31	A		1.2	5.12 - 9.50	0.203	A
Technetium-99	8.64	8.85	A		-2.4	6.20 - 11.51	0.465	A
Uranium-234	0.646	0.67	A		-3.6	0.47 - 0.87	0.0277	A
Uranium-238	0.617	0.67	A		-7.9	0.47 - 0.87	0.0262	A
Zinc-65	19.5	19.1	A		2.1	13.4 - 24.8	0.476	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated
- (17) = NOT DETECTED - reported a statistically zero result



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (CESL01) Lawrence Livermore National Laboratory - EMRL
 7000 East Avenue
 Livermore, CA 94551

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	9.55E+00	11.3	A		-15.5	7.9 - 14.7	5.51E-01	A
Cesium-137	6.88E+00	8.7	W		-20.9	6.1 - 11.3	1.45E+00	W
Cobalt-57	1.95E+01	19.3	A		1.0	13.5 - 25.1	1.13E+00	A
Cobalt-60	-6.05E-01			A		False Positive Test	6.05E-01	
Hydrogen-3	5.06E+00		N	(1)		False Positive Test	1.45E+00	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	1.11E+01	12.7	A		-12.6	8.9 - 16.5	1.48E+00	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	6.42E-01	0.726		(6)	-11.6	0.508 - 0.944	1.29E-02	A
Plutonium-239/240	6.76E-01	0.784		(6)	-13.8	0.549 - 1.019	1.34E-02	N
Potassium-40	8.44E+00			(6)		False Positive Test	1.15E+01	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	1.71E+01	19.1	A		-10.5	13.4 - 24.8	3.32E+00	W

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (1) = False Positive
- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (CMRC01) Carlsbad Environmental Monitoring and Research Center
 1400 University Dr.
 Carlsbad, NM 88220

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	7.22E-03			A		False Positive Test	2.52E-03	
Cesium-134	NR	11.3	N	(25)		7.9 - 14.7		
Cesium-137	9.85E+00	8.7	A		13.2	6.1 - 11.3	5.35E-01	A
Cobalt-57	NR	19.3	N	(25)		13.5 - 25.1		
Cobalt-60	1.59E-04			A		False Positive Test	1.98E-04	
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	NR	12.7	N	(25)		8.9 - 16.5		
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	1.79E-01	0.726		(6)	-75.3	0.508 - 0.944	1.88E-02	A
Plutonium-239/240	1.89E-01	0.784		(6)	-75.9	0.549 - 1.019	1.98E-02	A
Potassium-40	8.99E-01			(6)		False Positive Test	2.10E+00	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	3.52E+00	7.31	N		-51.8	5.12 - 9.50	1.32E-03	N
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	2.94E-01	0.67	N		-56.1	0.47 - 0.87	1.05E-01	N
Uranium-238	2.89E-01	0.67	N		-56.9	0.47 - 0.87	1.00E-01	N
Zinc-65	NR	19.1	N	(25)		13.4 - 24.8		

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated
- (25) = Result not reported with other gamma results



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (DEHS01) Department of Environmental Health & Safety
 North Carolina State Univ.
 Raleigh, NC 27695-8007

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	8.922	11.3	W		-21.0	7.9 - 14.7	0.4	A
Cesium-137	7.455	8.7	A		-14.3	6.1 - 11.3	0.361	A
Cobalt-57	17.052	19.3	A		-11.6	13.5 - 25.1	.742	A
Cobalt-60	NR		N	(11)		False Positive Test		
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	11.168	12.7	A		-12.1	8.9 - 16.5	.442	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR			(6)		False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	17.236	19.1	A		-9.8	13.4 - 24.8	1.022	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(DLEA01) DLE Associates
730 Alfred Nobel Drive
Hercules, CA 94547

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	NR	11.3				7.9 - 14.7		
Cesium-137	NR	8.7				6.1 - 11.3		
Cobalt-57	NR	19.3				13.5 - 25.1		
Cobalt-60	NR					False Positive Test		
Hydrogen-3	NR		N	(11)		False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	NR	12.7				8.9 - 16.5		
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR					False Positive Test		
Radium-226	0.659	0.650	A		1.4	0.455 - 0.845	0.071	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	5.30	7.31	W		-27.5	5.12 - 9.50	0.70	A
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	NR	19.1				13.4 - 24.8		

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (11) = False Positive Test, Result Not Reported



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (EFGS01) Eurofins Frontier Global Sciences, LLC.
 5755 8th St. E
 Tacoma, WA 98424

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	0.12	0.124	A		-3.2	0.087 - 0.161	0.006149364	A
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	NR	11.3				7.9 - 14.7		
Cesium-137	NR	8.7				6.1 - 11.3		
Cobalt-57	NR	19.3				13.5 - 25.1		
Cobalt-60	NR					False Positive Test		
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	NR	12.7				8.9 - 16.5		
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR					False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	NR	19.1				13.4 - 24.8		

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(ELIW01) Energy Laboratories, Inc.

2393 Salt Creek HWY

Casper, Wy 82601

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	NR	11.3				7.9 - 14.7		
Cesium-137	NR	8.7				6.1 - 11.3		
Cobalt-57	NR	19.3				13.5 - 25.1		
Cobalt-60	NR					False Positive Test		
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	NR	12.7				8.9 - 16.5		
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR					False Positive Test		
Radium-226	0.5	0.650	W		-23.1	0.455 - 0.845	0.05	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	0.6	0.67	A		-10.4	0.47 - 0.87	0.05	A
Uranium-238	0.6	0.67	A		-10.4	0.47 - 0.87	0.05	A
Zinc-65	NR	19.1				13.4 - 24.8		

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (ERCL01) Washington State Public Health Laboratories
 1610 N.E. 150th Street
 Shoreline, WA 98155-9701

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	0.000378	3.94E-4	A		-4.1	2.76E-4 - 5.12E-4	0.000024	A
Uranium-238	0.0530	0.0542	A		-2.2	0.0379 - 0.0705	0.0032	A
Uranium-Total	0.0534	0.0546	A		-2.2	0.0382 - 0.0710	0.0032	A
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0081		A			False Positive Test	0.0047	
Cesium-134	11.4	11.3	A		0.9	7.9 - 14.7	0.2	N
Cesium-137	9.18	8.7	A		5.5	6.1 - 11.3	0.23	A
Cobalt-57	19.5	19.3	A		1.0	13.5 - 25.1	0.3	N
Cobalt-60	-0.141		A			False Positive Test	0.058	
Hydrogen-3	-0.92		A			False Positive Test	0.85	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.8	12.7	A		0.8	8.9 - 16.5	0.2	N
Nickel-63	1.59	1.11	A			Sensitivity Evaluation	0.38	
Plutonium-238	0.633	0.726		(6)	-12.8	0.508 - 0.944	0.026	A
Plutonium-239/240	0.714	0.784		(6)	-8.9	0.549 - 1.019	0.030	A
Potassium-40	2.4			(6)		False Positive Test	1.2	
Radium-226	0.736	0.650	A		13.2	0.455 - 0.845	0.064	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	6.92	7.31	A		-5.3	5.12 - 9.50	0.40	A
Technetium-99	8.8	8.85	A		-0.6	6.20 - 11.51	1.3	A
Uranium-234	0.596	0.67	A		-11.0	0.47 - 0.87	0.032	A
Uranium-238	0.633	0.67	A		-5.5	0.47 - 0.87	0.034	A
Zinc-65	19.6	19.1	A		2.6	13.4 - 24.8	0.5	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(ERHD99) National Monitoring Section, Radiation Protection Bureau, Health Canada

775 Brookfield Road AL6302D1

Ottawa, Ontario K1A 1C1

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	0.016		N	(1)		False Positive Test	0.002	
Arsenic	3.85	4.01	A		-4.0	2.81 - 5.21	0.002	N
Barium	5.81	5.91	A		-1.7	4.14 - 7.68	0.105	N
Beryllium	1.42	1.40	A		1.4	0.98 - 1.82	0.017	N
Cadmium	0.31	0.315	A		-1.6	0.221 - 0.410	0.0032	N
Chromium	2.054	2.07	A		-0.8	1.45 - 2.69	0.028	N
Cobalt	6.1	6.02	A		1.3	4.21 - 7.83	0.121	N
Copper	4.85	4.93	A		-1.6	3.45 - 6.41	0.116	A
Lead	2.98	2.83	A		5.3	1.98 - 3.68	0.067	A
Mercury	NR	0.124				0.087 - 0.161		
Nickel	5.41	5.24	A		3.2	3.67 - 6.81	0.078	N
Selenium	0.351	0.369	A		-4.9	0.258 - 0.480	0.001	N
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	2.022	1.97	A		2.6	1.38 - 2.56	0.033	N
Uranium-235	0.0004	3.94E-4	A		1.5	2.76E-4 - 5.12E-4	0.00001	A
Uranium-238	0.0515	0.0542	A		-5.0	0.0379 - 0.0705	0.0007	N
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	5.09	5.01	A		1.6	3.51 - 6.51	0.075	N
Zinc	5.36	5.55	A		-3.4	3.89 - 7.22	0.157	A

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.005		A			False Positive Test	0.005	
Cesium-134	11.45	11.3	A		1.3	7.9 - 14.7	0.47	A
Cesium-137	9.64	8.7	A		10.8	6.1 - 11.3	0.71	A
Cobalt-57	22.37	19.3	A		15.9	13.5 - 25.1	1.16	A
Cobalt-60	0.47		A			False Positive Test	0.94	
Hydrogen-3	0.29		A			False Positive Test	1.57	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	14.53	12.7	A		14.4	8.9 - 16.5	0.73	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.663	0.726		(6)	-8.7	0.508 - 0.944	0.04	A
Plutonium-239/240	0.716	0.784		(6)	-8.7	0.549 - 1.019	0.04	A
Potassium-40	-5.32			(6)		False Positive Test	10.6	
Radium-226	0.63	0.650	A		-3.1	0.455 - 0.845	0.019	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	8.03	7.31	A		9.9	5.12 - 9.50	0.4	A
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	0.622	0.67	A		-7.2	0.47 - 0.87	0.04	A
Uranium-238	0.633	0.67	A		-5.5	0.47 - 0.87	0.04	A
Zinc-65	22.24	19.1	A		16.4	13.4 - 24.8	1.11	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (1) = False Positive
- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (ESDE01) Region 5 EQC Tritium Lab
 206 Beaufort NE
 Aiken, SC 29801

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	NR	11.3				7.9 - 14.7		
Cesium-137	NR	8.7				6.1 - 11.3		
Cobalt-57	NR	19.3				13.5 - 25.1		
Cobalt-60	NR					False Positive Test		
Hydrogen-3	5.96		A			False Positive Test	4.31	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	NR	12.7				8.9 - 16.5		
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR					False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	NR	19.1				13.4 - 24.8		

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(ETTP01) MCLinc
161 Mitchell Road
Oak Ridge, Tennessee 37830

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	0.062		A			False Positive Test	0.19	
Arsenic	3.84	4.01	A		-4.2	2.81 - 5.21	0.19	A
Barium	5.47	5.91	A		-7.4	4.14 - 7.68	0.14	A
Beryllium	1.32	1.40	A		-5.7	0.98 - 1.82	0.09	A
Cadmium	0.30	0.315	A		-4.8	0.221 - 0.410	0.01	A
Chromium	1.86	2.07	A		-10.1	1.45 - 2.69	0.19	A
Cobalt	5.39	6.02	A		-10.5	4.21 - 7.83	0.45	A
Copper	4.56	4.93	A		-7.5	3.45 - 6.41	0.36	A
Lead	2.80	2.83	A		-1.1	1.98 - 3.68	0.19	A
Mercury	0.13	0.124	A		4.8	0.087 - 0.161	0.0065	A
Nickel	4.76	5.24	A		-9.2	3.67 - 6.81	0.10	A
Selenium	0.36	0.369	A		-2.4	0.258 - 0.480	0.05	A
Technetium-99	0.000015	1.40E-5	A		7.1	9.80E-6 - 1.82E-5	0.000001	A
Thallium	1.86	1.97	A		-5.6	1.38 - 2.56	0.21	A
Uranium-235	0.00045	3.94E-4	A		14.2	2.76E-4 - 5.12E-4	0.000022	A
Uranium-238	0.060	0.0542	A		10.7	0.0379 - 0.0705	0.003	A
Uranium-Total	0.060	0.0546	A		9.9	0.0382 - 0.0710	0.003	A
Vanadium	4.61	5.01	A		-8.0	3.51 - 6.51	0.27	A
Zinc	4.89	5.55	A		-11.9	3.89 - 7.22	0.24	A

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	NR	11.3				7.9 - 14.7		
Cesium-137	NR	8.7				6.1 - 11.3		
Cobalt-57	NR	19.3				13.5 - 25.1		
Cobalt-60	NR					False Positive Test		
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	NR	12.7				8.9 - 16.5		
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR					False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	9.06	8.85	A		2.4	6.20 - 11.51	0.91	A
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	NR	19.1				13.4 - 24.8		

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(FDHE01) Florida Dept of Health Environmental Laboratory
 2100 All Childrens Way
 Orlando, FL 32818-5271

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	-0.199		A			False Positive Test	0.258	
Cesium-134	11.074	11.3	A		-2.0	7.9 - 14.7	0.252	A
Cesium-137	8.62	8.7	A		-0.9	6.1 - 11.3	0.247	A
Cobalt-57	17.8	19.3	A		-7.8	13.5 - 25.1	0.562	A
Cobalt-60	0.053		A			False Positive Test	0.119	
Hydrogen-3	0.7		A			False Positive Test	2.29	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.1	12.7	A		-4.7	8.9 - 16.5	0.355	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.678	0.726		(6)	-6.6	0.508 - 0.944	0.2	W
Plutonium-239/240	0.681	0.784		(6)	-13.1	0.549 - 1.019	0.2	W
Potassium-40	0.6			(6)		False Positive Test	0.576	
Radium-226	0.9998	0.650	N		53.8	0.455 - 0.845	0.117	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	7.5	7.31	A		2.6	5.12 - 9.50	0.58	A
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	0.63	0.67	A		-6.0	0.47 - 0.87	0.4	N
Uranium-238	0.677	0.67	A		1.0	0.47 - 0.87	0.4	N
Zinc-65	19	19.1	A		-0.5	13.4 - 24.8	0.674	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(FDOH01) Florida Dept. of Health, Mobile Environmental Radiological Lab
 2100 All Childrens Way
 Orlando, FL 32818-5271

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	-0.064		A			False Positive Test	0.34	
Cesium-134	11.562	11.3	A		2.3	7.9 - 14.7	0.166	N
Cesium-137	8.566	8.7	A		-1.5	6.1 - 11.3	0.184	A
Cobalt-57	17.257	19.3	A		-10.6	13.5 - 25.1	0.289	N
Cobalt-60	0.072		A			False Positive Test	0.186	
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.358	12.7	A		-2.7	8.9 - 16.5	0.252	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	1.11			(6)		False Positive Test	1.11	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	0.716	0.67	A		6.9	0.47 - 0.87	0.42	N
Zinc-65	18.779	19.1	A		-1.7	13.4 - 24.8	0.487	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(FERM01) Fernald Project

7400 Willey Road

Hamilton, OH 45013

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	0.04957	0.0546	A		-9.2	0.0382 - 0.0710	0.01	W
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	NR	11.3				7.9 - 14.7		
Cesium-137	NR	8.7				6.1 - 11.3		
Cobalt-57	NR	19.3				13.5 - 25.1		
Cobalt-60	NR					False Positive Test		
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	NR	12.7				8.9 - 16.5		
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR					False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	NR	19.1				13.4 - 24.8		

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(FNAL01) Fermi National Accelerator Laboratory (FermiLab)

PO Box 500, MS325

Batavia, IL 60510

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	9.96	11.3	A		-11.9	7.9 - 14.7	0.52	A
Cesium-137	8.90	8.7	A		2.3	6.1 - 11.3	0.46	A
Cobalt-57	18.81	19.3	A		-2.5	13.5 - 25.1	0.82	A
Cobalt-60	0.06			A		False Positive Test	0.06	
Hydrogen-3	1.5			A		False Positive Test	2.2	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	13.33	12.7	A		5.0	8.9 - 16.5	0.69	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	-0.84			(6)		False Positive Test	0.73	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	20.51	19.1	A		7.4	13.4 - 24.8	1.08	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(GENE01) GEL Laboratories, LLC

2040 Savage Road

Charleston, SC 29407

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	0.000421		A			False Positive Test	0.000344	
Arsenic	3.84	4.01	A		-4.2	2.81 - 5.21	0.769	W
Barium	5.65	5.91	A		-4.4	4.14 - 7.68	1.13	W
Beryllium	1.32	1.40	A		-5.7	0.98 - 1.82	0.265	W
Cadmium	0.287	0.315	A		-8.9	0.221 - 0.410	0.0574	W
Chromium	2.00	2.07	A		-3.4	1.45 - 2.69	0.4	W
Cobalt	5.88	6.02	A		-2.3	4.21 - 7.83	1.18	W
Copper	4.59	4.93	A		-6.9	3.45 - 6.41	0.918	W
Lead	2.66	2.83	A		-6.0	1.98 - 3.68	0.533	W
Mercury	0.123	0.124	A		-0.8	0.087 - 0.161	0.0246	W
Nickel	5.00	5.24	A		-4.6	3.67 - 6.81	0.999	W
Selenium	0.316	0.369	A		-14.4	0.258 - 0.480	0.0632	W
Technetium-99	1.38E-5	1.40E-5	A		-1.4	9.80E-6 - 1.82E-5	5.15E-7	A
Thallium	1.94	1.97	A		-1.5	1.38 - 2.56	0.389	W
Uranium-235	0.000348	3.94E-4	A		-11.7	2.76E-4 - 5.12E-4	0.0000687	W
Uranium-238	0.0452	0.0542	A		-16.6	0.0379 - 0.0705	0.00905	W
Uranium-Total	0.04555	0.0546	A		-16.6	0.0382 - 0.0710	0.00905	W
Vanadium	4.94	5.01	A		-1.4	3.51 - 6.51	0.988	W
Zinc	5.00	5.55	A		-9.9	3.89 - 7.22	1.00	W

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.00297		A			False Positive Test	0.00384	
Cesium-134	10.1	11.3	A		-10.6	7.9 - 14.7	0.503	A
Cesium-137	9.09	8.7	A		4.5	6.1 - 11.3	0.418	A
Cobalt-57	19.2	19.3	A		-0.5	13.5 - 25.1	0.831	A
Cobalt-60	0.0227		A			False Positive Test	0.0326	
Hydrogen-3	5.01		A			False Positive Test	3.95	
Iron-55	34.4	41.1	A		-16.3	28.8 - 53.4	3.25	A
Manganese-54	13.1	12.7	A		3.2	8.9 - 16.5	0.652	A
Nickel-63	0.842	1.11	A	(17)		Sensitivity Evaluation	0.386	
Plutonium-238	0.690	0.726		(6)	-5.0	0.508 - 0.944	0.0391	A
Plutonium-239/240	0.703	0.784		(6)	-10.3	0.549 - 1.019	0.0396	A
Potassium-40	0.873			(6)		False Positive Test	0.882	
Radium-226	0.813	0.650	W		25.1	0.455 - 0.845	0.101	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	9.52	7.31	N		30.2	5.12 - 9.50	0.783	A
Technetium-99	9.19	8.85	A		3.8	6.20 - 11.51	0.769	A
Uranium-234	0.680	0.67	A		1.5	0.47 - 0.87	0.044	A
Uranium-238	0.659	0.67	A		-1.6	0.47 - 0.87	0.0426	A
Zinc-65	21.1	19.1	A		10.5	13.4 - 24.8	1.02	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated
- (17) = NOT DETECTED - reported a statistically zero result



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (GPCL01) Georgia Power Company Environmental Laboratory
 2480 Maner Road
 Atlanta, GA 30339

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	11.22	11.3	A		-0.7	7.9 - 14.7	0.85	A
Cesium-137	9.38	8.7	A		7.8	6.1 - 11.3	0.84	A
Cobalt-57	19.37	19.3	A		0.4	13.5 - 25.1	1.78	A
Cobalt-60	.0045			A		False Positive Test	0.19	
Hydrogen-3	1.91			A		False Positive Test	3.68	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	13.25	12.7	A		4.3	8.9 - 16.5	1.14	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	0.16			(6)		False Positive Test	2.23	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	6.90	7.31	A		-5.6	5.12 - 9.50	0.267	A
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	19.99	19.1	A		4.7	13.4 - 24.8	1.82	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (HCAL01) Lawrence Livermore National Laboratory
 Analytical Services and Instrumentation Analytical Lab
 Livermore, CA 94550

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	NR	11.3				7.9 - 14.7		
Cesium-137	NR	8.7				6.1 - 11.3		
Cobalt-57	NR	19.3				13.5 - 25.1		
Cobalt-60	NR					False Positive Test		
Hydrogen-3	290		N	(1)		False Positive Test	16	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	NR	12.7				8.9 - 16.5		
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR					False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	NR	19.1				13.4 - 24.8		

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (1) = False Positive



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(HECR01) SC Dept. Health and Environmental Control Radiological Laboratory
 8231 Parklane Road
 Columbia, SC 29223

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	10.96	11.3	A		-3.0	7.9 - 14.7	0.5655	A
Cesium-137	9.310	8.7	A		7.0	6.1 - 11.3	0.9965	A
Cobalt-57	19.80	19.3	A		2.6	13.5 - 25.1	1.177	A
Cobalt-60	0.01690			A		False Positive Test	0.07085	
Hydrogen-3	2.21			A		False Positive Test	3.25	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	13.06	12.7	A		2.8	8.9 - 16.5	1.450	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	11.47			(6)		False Positive Test	1.592	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	17.27	19.1	A		-9.6	13.4 - 24.8	1.820	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(HPAC99) UKHSA, RCE Glasgow

155 Hardgate Road

Glasgow, Scotland G51 4LS

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.041		N	(1)		False Positive Test	0.008	
Cesium-134	10.32	11.3	A		-8.7	7.9 - 14.7	0.63	A
Cesium-137	8.50	8.7	A		-2.3	6.1 - 11.3	0.55	A
Cobalt-57	17.77	19.3	A		-7.9	13.5 - 25.1	1.10	A
Cobalt-60	0.23		A			False Positive Test	0.23	
Hydrogen-3	8.0		A			False Positive Test	8.0	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	11.99	12.7	A		-5.6	8.9 - 16.5	0.76	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.64	0.726		(6)	-11.8	0.508 - 0.944	0.043	A
Plutonium-239/240	0.688	0.784		(6)	-12.2	0.549 - 1.019	0.045	A
Potassium-40	2.47			(6)		False Positive Test	2.47	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	5.95	7.31	A		-18.6	5.12 - 9.50	0.24	A
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	0.666	0.67	A		-0.6	0.47 - 0.87	0.037	A
Uranium-238	0.672	0.67	A		0.3	0.47 - 0.87	0.037	A
Zinc-65	17.62	19.1	A		-7.7	13.4 - 24.8	1.16	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (1) = False Positive
- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (IAEA99) International Atomic Energy Agency
 Agency's Laboratories Seibersdorf
 Seibersdorf, Austria A-2444

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	-1.30		N	(29)		False Positive Test	0.05	
Cesium-134	11.2	11.3	A		-0.9	7.9 - 14.7	0.4	A
Cesium-137	9.17	8.7	A		5.4	6.1 - 11.3	0.25	A
Cobalt-57	19.0	19.3	A		-1.6	13.5 - 25.1	0.6	A
Cobalt-60	0.008		A			False Positive Test	0.053	
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.7	12.7	A		0.0	8.9 - 16.5	0.4	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	1.46			(6)		False Positive Test	0.65	
Radium-226	0.677	0.650	A		4.2	0.455 - 0.845	0.026	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	0.657	0.67	A		-1.9	0.47 - 0.87	0.015	A
Uranium-238	0.673	0.67	A		0.4	0.47 - 0.87	0.015	A
Zinc-65	19.5	19.1	A		2.1	13.4 - 24.8	0.5	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated
- (29) = Statistically significant negative value at 3 standard deviations



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(IEMA01) Illinois Emergency Management Agency Radiochemistry Laboratory
 1301 Knotts St.
 Springfield, IL 62703

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.00877		A			False Positive Test	0.00315	
Cesium-134	10.9	11.3	A		-3.5	7.9 - 14.7	0.117	N
Cesium-137	9.03	8.7	A		3.8	6.1 - 11.3	0.167	N
Cobalt-57	18.9	19.3	A		-2.1	13.5 - 25.1	0.304	N
Cobalt-60	-0.0267		A			False Positive Test	0.0299	
Hydrogen-3	2.13		A			False Positive Test	1.42	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.6	12.7	A		-0.8	8.9 - 16.5	0.201	N
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.646	0.726		(6)	-11.0	0.508 - 0.944	0.030	A
Plutonium-239/240	0.699	0.784		(6)	-10.8	0.549 - 1.019	0.031	A
Potassium-40	0.504			(6)		False Positive Test	0.262	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	6.81	7.31	A		-6.8	5.12 - 9.50	0.46	A
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	0.662	0.67	A		-1.2	0.47 - 0.87	0.030	A
Uranium-238	0.667	0.67	A		-0.4	0.47 - 0.87	0.030	A
Zinc-65	19.7	19.1	A		3.1	13.4 - 24.8	0.357	N

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (ISUE01) ISU Environmental Monitoring Laboratory
 785 5th 8th Ave Rm B107
 Pocatello, Idaho 83209

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	10.09	11.3	A		-10.7	7.9 - 14.7	0.20	N
Cesium-137	9.61	8.7	A		10.5	6.1 - 11.3	0.32	A
Cobalt-57	19.48	19.3	A		0.9	13.5 - 25.1	0.49	A
Cobalt-60	0.03			A		False Positive Test	0.02	
Hydrogen-3	-0.69			A		False Positive Test	1.05	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	13.56	12.7	A		6.8	8.9 - 16.5	0.40	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR			(6)		False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	20.09	19.1	A		5.2	13.4 - 24.8	0.48	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(ISUP01) ISU - Department of Physics/Health Physics/EAL
 785 S. 8th Ave, Rm 120
 Pocatello, ID 83209-8106

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	10.2	11.3	A		-9.7	7.9 - 14.7	0.2	N
Cesium-137	9.5	8.7	A		9.2	6.1 - 11.3	0.3	A
Cobalt-57	19.1	19.3	A		-1.0	13.5 - 25.1	0.3	N
Cobalt-60	0.1			A		False Positive Test	0.2	
Hydrogen-3	0.97			A		False Positive Test	0.98	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	13.3	12.7	A		4.7	8.9 - 16.5	0.4	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	0.7			(6)		False Positive Test	1.02	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	20.2	19.1	A		5.8	13.4 - 24.8	0.6	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(JAEC99) Research Laboratories and Information Directorate

Jordan Atomic Energy Commission

Amman, Jordan 70 (11934)

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	3.97	4.01	A		-1.0	2.81 - 5.21	0.109	A
Barium	6.06	5.91	A		2.5	4.14 - 7.68	0.144	A
Beryllium	1.46	1.40	A		4.3	0.98 - 1.82	0.0204	N
Cadmium	0.31	0.315	A		-1.6	0.221 - 0.410	0.0169	A
Chromium	2.13	2.07	A		2.9	1.45 - 2.69	0.0547	A
Cobalt	6.56	6.02	A		9.0	4.21 - 7.83	0.352	A
Copper	5.18	4.93	A		5.1	3.45 - 6.41	0.313	A
Lead	3.04	2.83	A		7.4	1.98 - 3.68	0.386	A
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	0.05	0.0542	A		-7.7	0.0379 - 0.0705	0.000775	N
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	5.11	5.01	A		2.0	3.51 - 6.51	0.074	N
Zinc	5.94	5.55	A		7.0	3.89 - 7.22	0.370	A

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	12	11.3	A		6.2	7.9 - 14.7	0.2	N
Cesium-137	9.5	8.7	A		9.2	6.1 - 11.3	0.4	A
Cobalt-57	18.9	19.3	A		-2.1	13.5 - 25.1	0.7	A
Cobalt-60	NR		N	(11)		False Positive Test		
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	13.2	12.7	A		3.9	8.9 - 16.5	0.3	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR			(6)		False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	0.685	0.67	A		2.2	0.47 - 0.87	0.036	A
Uranium-238	0.733	0.67	A		9.4	0.47 - 0.87	0.037	A
Zinc-65	19.9	19.1	A		4.2	13.4 - 24.8	0.9	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(JLNN01) Jefferson Laboratory

111 Hadron Drive

Newport News, VA 23606

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0155		A			False Positive Test	0.0587	
Cesium-134	10.25	11.3	A		-9.3	7.9 - 14.7	.257	A
Cesium-137	8.8	8.7	A		1.1	6.1 - 11.3	.234	A
Cobalt-57	18.95	19.3	A		-1.8	13.5 - 25.1	.658	A
Cobalt-60	0.01485		A			False Positive Test	.0505	
Hydrogen-3	127.7		N	(1)		False Positive Test	11.2426	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.7	12.7	A		0.0	8.9 - 16.5	.296	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	.385			(6)		False Positive Test	.104	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	19.4	19.1	A		1.6	13.4 - 24.8	0.552	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (1) = False Positive
- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(LOCK03) Advanced Test Reactor (ATR) Complex Radioanalytical Laboratory

INL/Battelle Energy Alliance, LLC

Idaho Falls, ID 83415-7111

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	0.002		N	(1)		False Positive Test	0.0006	
Arsenic	3.901	4.01	A		-2.7	2.81 - 5.21	0.242	A
Barium	6.838	5.91	A		15.7	4.14 - 7.68	0.079	N
Beryllium	1.655	1.40	A		18.2	0.98 - 1.82	0.057	A
Cadmium	0.332	0.315	A		5.4	0.221 - 0.410	0.006	N
Chromium	2.458	2.07	A		18.7	1.45 - 2.69	0.044	N
Cobalt	6.381	6.02	A		6.0	4.21 - 7.83	0.150	A
Copper	5.836	4.93	A		18.4	3.45 - 6.41	0.101	N
Lead	3.149	2.83	A		11.3	1.98 - 3.68	0.065	A
Mercury	0.129	0.124	A		4.0	0.087 - 0.161	0.003	A
Nickel	6.141	5.24	A		17.2	3.67 - 6.81	0.091	N
Selenium	0.443	0.369	W		20.1	0.258 - 0.480	0.012	A
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	2.027	1.97	A		2.9	1.38 - 2.56	0.499	W
Uranium-235	0.00039	3.94E-4	A		-1.0	2.76E-4 - 5.12E-4	0.00002	A
Uranium-238	0.052	0.0542	A		-4.1	0.0379 - 0.0705	0.003	A
Uranium-Total	0.052	0.0546	A		-4.8	0.0382 - 0.0710	0.003	A
Vanadium	5.386	5.01	A		7.5	3.51 - 6.51	0.082	N
Zinc	6.968	5.55	W		25.6	3.89 - 7.22	0.194	A

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	9.24	11.3	A		-18.2	7.9 - 14.7	0.15	N
Cesium-137	8.59	8.7	A		-1.3	6.1 - 11.3	0.17	N
Cobalt-57	18.28	19.3	A		-5.3	13.5 - 25.1	0.3	N
Cobalt-60	0.03		A			False Positive Test	0.02	
Hydrogen-3	0.04		A			False Positive Test	0.04	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	11.48	12.7	A		-9.6	8.9 - 16.5	0.19	N
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	0.43			(6)		False Positive Test	0.33	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	17.6	19.1	A		-7.9	13.4 - 24.8	0.32	N

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (1) = False Positive
- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(LZCA01) ACZ Laboratories, Inc
2273 Downhill Drive
Steamboat Springs, CO 80487

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	NR	11.3				7.9 - 14.7		
Cesium-137	NR	8.7				6.1 - 11.3		
Cobalt-57	NR	19.3				13.5 - 25.1		
Cobalt-60	NR					False Positive Test		
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	NR	12.7				8.9 - 16.5		
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR					False Positive Test		
Radium-226	0.577	0.650	A		-11.2	0.455 - 0.845	0.048	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	NR	19.1				13.4 - 24.8		

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (MART01) Fluor-BWXT Portsmouth LLC, Analytical Laboratory
 COC, Bldg. X-705, Rm 106
 Piketon, OH 45661

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	0.000485	3.94E-4	W		23.1	2.76E-4 - 5.12E-4	0.000089	W
Uranium-238	0.0660	0.0542	W		21.8	0.0379 - 0.0705	0.012	W
Uranium-Total	0.0665	0.0546	W		21.8	0.0382 - 0.0710	0.0122	W
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0077			A		False Positive Test	0.0041	
Cesium-134	NR	11.3				7.9 - 14.7		
Cesium-137	NR	8.7				6.1 - 11.3		
Cobalt-57	NR	19.3				13.5 - 25.1		
Cobalt-60	NR					False Positive Test		
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	NR	12.7				8.9 - 16.5		
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.662	0.726		(6)	-8.8	0.508 - 0.944	0.046	A
Plutonium-239/240	0.708	0.784		(6)	-9.7	0.549 - 1.019	0.049	A
Potassium-40	NR					False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	8.95	8.85	A		1.1	6.20 - 11.51	0.23	A
Uranium-234	0.625	0.67	A		-6.7	0.47 - 0.87	0.038	A
Uranium-238	0.618	0.67	A		-7.8	0.47 - 0.87	0.037	A
Zinc-65	NR	19.1				13.4 - 24.8		

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (MART03) Radioactive Material Analysis Laboratory
 ORNL
 Oak Ridge, TN 37830

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	0.0026		A			False Positive Test	0.0026	
Arsenic	3.75	4.01	A		-6.5	2.81 - 5.21	0.375	A
Barium	5.76	5.91	A		-2.5	4.14 - 7.68	0.576	A
Beryllium	1.32	1.40	A		-5.7	0.98 - 1.82	0.132	A
Cadmium	0.299	0.315	A		-5.1	0.221 - 0.410	0.030	A
Chromium	1.95	2.07	A		-5.8	1.45 - 2.69	0.195	A
Cobalt	5.70	6.02	A		-5.3	4.21 - 7.83	0.57	A
Copper	4.75	4.93	A		-3.7	3.45 - 6.41	0.949	W
Lead	2.68	2.83	A		-5.3	1.98 - 3.68	0.268	A
Mercury	0.118	0.124	A		-4.8	0.087 - 0.161	0.012	A
Nickel	4.96	5.24	A		-5.3	3.67 - 6.81	0.496	A
Selenium	0.349	0.369	A		-5.4	0.258 - 0.480	0.070	W
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	1.82	1.97	A		-7.6	1.38 - 2.56	0.182	A
Uranium-235	0.00036	3.94E-4	A		-8.6	2.76E-4 - 5.12E-4	0.000036	A
Uranium-238	0.0495	0.0542	A		-8.7	0.0379 - 0.0705	0.005	A
Uranium-Total	0.0498	0.0546	A		-8.8	0.0382 - 0.0710	0.005	A
Vanadium	4.59	5.01	A		-8.4	3.51 - 6.51	0.0459	N
Zinc	5.31	5.55	A		-4.3	3.89 - 7.22	0.531	A

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.008		A			False Positive Test	0.006	
Cesium-134	11.34	11.3	A		0.4	7.9 - 14.7	0.17	N
Cesium-137	8.92	8.7	A		2.5	6.1 - 11.3	0.23	A
Cobalt-57	18.94	19.3	A		-1.9	13.5 - 25.1	0.39	A
Cobalt-60	0.20		A			False Positive Test	0.10	
Hydrogen-3	-0.1		A			False Positive Test	3.8	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.86	12.7	A		1.3	8.9 - 16.5	0.30	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.619	0.726		(6)	-14.7	0.508 - 0.944	0.041	A
Plutonium-239/240	0.644	0.784		(6)	-17.9	0.549 - 1.019	0.041	A
Potassium-40	2.6			(6)		False Positive Test	1.3	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	7.10	7.31	A		-2.9	5.12 - 9.50	0.24	A
Technetium-99	7.62	8.85	A		-13.9	6.20 - 11.51	0.34	A
Uranium-234	0.653	0.67	A		-2.5	0.47 - 0.87	0.045	A
Uranium-238	0.649	0.67	A		-3.1	0.47 - 0.87	0.045	A
Zinc-65	19.62	19.1	A		2.7	13.4 - 24.8	0.51	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(MNDH01) Minnesota Department of Health, Public Health Lab. Division
601 Robert St. N.
St. Paul, MN 55155

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	-0.22897		A			False Positive Test	0.3083	
Cesium-134	10.714	11.3	A		-5.2	7.9 - 14.7	0.1018	N
Cesium-137	9.9302	8.7	A		14.1	6.1 - 11.3	0.1384	N
Cobalt-57	20.717	19.3	A		7.3	13.5 - 25.1	0.6078	A
Cobalt-60	0.036575		A			False Positive Test	0.07618	
Hydrogen-3	115.07		N	(1)		False Positive Test	5.99	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	14.093	12.7	A		11.0	8.9 - 16.5	0.170	N
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	-0.32021			(6)		False Positive Test	.3083	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	21.775	19.1	A		14.0	13.4 - 24.8	0.3367	N

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (1) = False Positive
- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(NARL01) National Analytical Radiation Environmental Laboratory
 540 S. Morris Ave.
 Montgomery, AL 36115-2601

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.00259		A			False Positive Test	0.00264	
Cesium-134	11.3	11.3	A		0.0	7.9 - 14.7	0.625	A
Cesium-137	9.4	8.7	A		8.0	6.1 - 11.3	0.526	A
Cobalt-57	19.3	19.3	A		0.0	13.5 - 25.1	1.07	A
Cobalt-60	-0.0281		A			False Positive Test	0.0438	
Hydrogen-3	20.0		N	(1)		False Positive Test	2.29	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	13.2	12.7	A		3.9	8.9 - 16.5	0.734	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.632	0.726		(6)	-12.9	0.508 - 0.944	0.0354	A
Plutonium-239/240	0.670	0.784		(6)	-14.5	0.549 - 1.019	0.0369	A
Potassium-40	-0.549			(6)		False Positive Test	0.564	
Radium-226	0.725	0.650	A		11.5	0.455 - 0.845	0.0441	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	7.19	7.31	A		-1.6	5.12 - 9.50	0.207	A
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	0.609	0.67	A		-9.1	0.47 - 0.87	0.0375	A
Uranium-238	0.690	0.67	A		3.0	0.47 - 0.87	0.0412	A
Zinc-65	20.5	19.1	A		7.3	13.4 - 24.8	1.14	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (1) = False Positive
- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(NESI01) BWXT-Radioisotope & Analytical Chemistry Laboratory

Lynchburg Technology Center

Lynchburg, VA 24504-5447

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	0.0006		N	(1)		False Positive Test	0.0001	
Arsenic	4.04	4.01	A		0.7	2.81 - 5.21	0.057	N
Barium	6.12	5.91	A		3.6	4.14 - 7.68	0.117	N
Beryllium	1.44	1.40	A		2.9	0.98 - 1.82	0.024	N
Cadmium	0.324	0.315	A		2.9	0.221 - 0.410	0.006	N
Chromium	2.05	2.07	A		-1.0	1.45 - 2.69	0.04	N
Cobalt	5.87	6.02	A		-2.5	4.21 - 7.83	0.112	N
Copper	4.66	4.93	A		-5.5	3.45 - 6.41	0.099	A
Lead	2.69	2.83	A		-4.9	1.98 - 3.68	0.062	A
Mercury	0.122	0.124	A		-1.6	0.087 - 0.161	0.009	A
Nickel	5.42	5.24	A		3.4	3.67 - 6.81	0.101	N
Selenium	0.372	0.369	A		0.8	0.258 - 0.480	0.004	N
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	2.01	1.97	A		2.0	1.38 - 2.56	0.042	A
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	5.01	5.01	A		0.0	3.51 - 6.51	0.089	N
Zinc	5.51	5.55	A		-0.7	3.89 - 7.22	0.092	N

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.002		A			False Positive Test	0.007	
Cesium-134	10.6	11.3	A		-6.2	7.9 - 14.7	0.496	A
Cesium-137	8.90	8.7	A		2.3	6.1 - 11.3	0.362	A
Cobalt-57	20.1	19.3	A		4.1	13.5 - 25.1	0.601	A
Cobalt-60	-0.003		A			False Positive Test	0.15	
Hydrogen-3	-4.17		A			False Positive Test	7.66	
Iron-55	44.4	41.1	A		8.0	28.8 - 53.4	3.32	A
Manganese-54	12.5	12.7	A		-1.6	8.9 - 16.5	0.487	A
Nickel-63	0.993	1.11	A			Sensitivity Evaluation	0.133	
Plutonium-238	0.654	0.726		(6)	-9.9	0.508 - 0.944	0.029	A
Plutonium-239/240	0.655	0.784		(6)	-16.5	0.549 - 1.019	0.029	A
Potassium-40	10.4			(6)		False Positive Test	1.81	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	6.61	7.31	A		-9.6	5.12 - 9.50	0.486	A
Technetium-99	7.67	8.85	A		-13.3	6.20 - 11.51	0.207	A
Uranium-234	0.638	0.67	A		-4.8	0.47 - 0.87	0.030	A
Uranium-238	0.663	0.67	A		-1.0	0.47 - 0.87	0.031	A
Zinc-65	19.7	19.1	A		3.1	13.4 - 24.8	0.795	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (1) = False Positive
- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (NJDH01) New Jersey Dept. of Health, ECLS
 3 Schwarzkopf Drive
 Ewing, NJ 08628

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	11	11.3	A		-2.7	7.9 - 14.7	1.0	A
Cesium-137	10.4	8.7	A		19.5	6.1 - 11.3	0.80	A
Cobalt-57	22.3	19.3	A		15.5	13.5 - 25.1	1.2	A
Cobalt-60	-0.1			A		False Positive Test	0.27	
Hydrogen-3	2			A		False Positive Test	14	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	14.5	12.7	A		14.2	8.9 - 16.5	1.1	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	-3.5			(6)		False Positive Test	6.5	
Radium-226	0.700	0.650	A		7.7	0.455 - 0.845	0.082	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	6.96	7.31	A		-4.8	5.12 - 9.50	0.33	A
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	22.8	19.1	A		19.4	13.4 - 24.8	2.1	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (ODHL01) Ohio Department of Health Laboratory
 8995 E Main Street
 Reynoldsburg, OH 43068

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	11.2	11.3	A		-0.9	7.9 - 14.7	0.373	A
Cesium-137	8.76	8.7	A		0.7	6.1 - 11.3	0.550	A
Cobalt-57	17.6	19.3	A		-8.8	13.5 - 25.1	1.25	A
Cobalt-60	0.0295			A		False Positive Test	0.0163	
Hydrogen-3	0.16			A		False Positive Test	0.84	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.5	12.7	A		-1.6	8.9 - 16.5	0.771	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	0.690			(6)		False Positive Test	0.428	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	18.5	19.1	A		-3.1	13.4 - 24.8	0.876	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (OTLI01) Pace Analytical National Center for Testing & Innovation
 12065 Lebanon Road
 Mt. Juliet, TN 37122

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.025		A			False Positive Test	0.021	
Cesium-134	11.1	11.3	A		-1.8	7.9 - 14.7	0.7	A
Cesium-137	9.71	8.7	A		11.6	6.1 - 11.3	0.8	A
Cobalt-57	19.7	19.3	A		2.1	13.5 - 25.1	1.31	A
Cobalt-60	-0.12		A			False Positive Test	0.13	
Hydrogen-3	-26.5		N	(29)		False Positive Test	8.5	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.4	12.7	A		-2.4	8.9 - 16.5	0.98	A
Nickel-63	-3.2	1.11	A	(17)		Sensitivity Evaluation	2.1	
Plutonium-238	0.646	0.726		(6)	-11.0	0.508 - 0.944	0.068	A
Plutonium-239/240	0.727	0.784		(6)	-7.3	0.549 - 1.019	0.072	A
Potassium-40	NR			(6)		False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	6.36	7.31	A		-13.0	5.12 - 9.50	0.158	A
Technetium-99	8.78	8.85	A		-0.8	6.20 - 11.51	0.76	A
Uranium-234	1.185	0.67	N		76.9	0.47 - 0.87	0.167	A
Uranium-238	1.326	0.67	N		97.9	0.47 - 0.87	0.175	A
Zinc-65	19.2	19.1	A		0.5	13.4 - 24.8	1.65	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated
- (17) = NOT DETECTED - reported a statistically zero result
- (29) = Statistically significant negative value at 3 standard deviations



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(QUAN01) Eurofins St. Louis
 13715 Rider Trail North
 Earth City, MO 63045-1205

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	NR	11.3				7.9 - 14.7		
Cesium-137	NR	8.7				6.1 - 11.3		
Cobalt-57	NR	19.3				13.5 - 25.1		
Cobalt-60	NR					False Positive Test		
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	NR	12.7				8.9 - 16.5		
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR					False Positive Test		
Radium-226	0.546	0.650	A		-16.0	0.455 - 0.845	0.0277	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	NR	19.1				13.4 - 24.8		

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (RPSC01) Radiation Protection Service
 O. Ministry of Labour, Immigration, Training & Skills Development
 Toronto, Ontario M9P 3T1

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	12.4	11.3	A		9.7	7.9 - 14.7	0.778	A
Cesium-137	10.5	8.7	W		20.7	6.1 - 11.3	1.30	A
Cobalt-57	22.9	19.3	A		18.7	13.5 - 25.1	3.18	A
Cobalt-60	0.0826			A		False Positive Test	0.207	
Hydrogen-3	1.6			A		False Positive Test	1.7	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	14.6	12.7	A		15.0	8.9 - 16.5	1.8	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	5.56			(6)		False Positive Test	1.19	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	21.3	19.1	A		11.5	13.4 - 24.8	1.99	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (SANC99) RadioAnalysis, South Africa Nuclear Energy Corp.
 Sample Receipt Gate 1
 Pretoria, Gauteng 0001

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.021		A			False Positive Test	0.021	
Cesium-134	9.74	11.3	A		-13.8	7.9 - 14.7	0.43	A
Cesium-137	8.38	8.7	A		-3.7	6.1 - 11.3	0.38	A
Cobalt-57	15.34	19.3	W		-20.5	13.5 - 25.1	1.38	A
Cobalt-60	0.65		A			False Positive Test	0.65	
Hydrogen-3	5.769		A			False Positive Test	5.769	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.09	12.7	A		-4.8	8.9 - 16.5	0.47	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.491	0.726		(6)	-32.4	0.508 - 0.944	0.042	A
Plutonium-239/240	0.565	0.784		(6)	-27.9	0.549 - 1.019	0.045	A
Potassium-40	8.95			(6)		False Positive Test	8.95	
Radium-226	0.588	0.650	A		-9.5	0.455 - 0.845	0.046	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	6.405	7.31	A		-12.4	5.12 - 9.50	0.845	A
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	0.655	0.67	A		-2.2	0.47 - 0.87	0.027	A
Uranium-238	0.629	0.67	A		-6.1	0.47 - 0.87	0.026	A
Zinc-65	17.5	19.1	A		-8.4	13.4 - 24.8	0.91	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
(SAVA01) Battelle Savannah River Alliance
SRNL (non-purchased material receipt)
AIKEN, SC 29808-0000

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	0.000239		A			False Positive Test	0.000084	
Arsenic	3.96	4.01	A		-1.2	2.81 - 5.21	0.40	A
Barium	6.29	5.91	A		6.4	4.14 - 7.68	0.63	A
Beryllium	1.42	1.40	A		1.4	0.98 - 1.82	0.14	A
Cadmium	0.334	0.315	A		6.0	0.221 - 0.410	0.033	A
Chromium	2.08	2.07	A		0.5	1.45 - 2.69	0.21	A
Cobalt	5.82	6.02	A		-3.3	4.21 - 7.83	0.58	A
Copper	4.80	4.93	A		-2.6	3.45 - 6.41	0.480	A
Lead	2.92	2.83	A		3.2	1.98 - 3.68	0.29	A
Mercury	0.124	0.124	A		0.0	0.087 - 0.161	0.0124	A
Nickel	5.18	5.24	A		-1.1	3.67 - 6.81	0.52	A
Selenium	0.373	0.369	A		1.1	0.258 - 0.480	0.037	A
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	2.03	1.97	A		3.0	1.38 - 2.56	0.20	A
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	0.0565	0.0546	A		3.5	0.0382 - 0.0710	0.0057	A
Vanadium	5.37	5.01	A		7.2	3.51 - 6.51	0.54	A
Zinc	5.64	5.55	A		1.6	3.89 - 7.22	0.56	A

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	11.4	11.3	A		0.9	7.9 - 14.7	0.439	A
Cesium-137	8.85	8.7	A		1.7	6.1 - 11.3	0.725	A
Cobalt-57	18.8	19.3	A		-2.6	13.5 - 25.1	0.751	A
Cobalt-60	1.59		A			False Positive Test	1.00	
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	11.8	12.7	A		-7.1	8.9 - 16.5	0.709	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	22.3			(6)		False Positive Test	13.3	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	16.3	19.1	A		-14.7	13.4 - 24.8	1.34	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (SEML01) SRS Environmental Monitoring Laboratory
 Bldg 735-B
 Aiken, SC 29808

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	0.025		A			False Positive Test	0.025	
Arsenic	3.94	4.01	A		-1.7	2.81 - 5.21	0.39	A
Barium	5.91	5.91	A		0.0	4.14 - 7.68	0.53	A
Beryllium	1.31	1.40	A		-6.4	0.98 - 1.82	0.10	A
Cadmium	0.304	0.315	A		-3.5	0.221 - 0.410	0.030	A
Chromium	2.04	2.07	A		-1.4	1.45 - 2.69	0.20	A
Cobalt	5.84	6.02	A		-3.0	4.21 - 7.83	0.53	A
Copper	4.61	4.93	A		-6.5	3.45 - 6.41	0.46	A
Lead	2.71	2.83	A		-4.2	1.98 - 3.68	0.27	A
Mercury	0.16	0.124	W		29.0	0.087 - 0.161	0.016	A
Nickel	5.13	5.24	A		-2.1	3.67 - 6.81	0.51	A
Selenium	0.42	0.369	A		13.8	0.258 - 0.480	0.06	A
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	1.95	1.97	A		-1.0	1.38 - 2.56	0.20	A
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	4.84	5.01	A		-3.4	3.51 - 6.51	0.44	A
Zinc	5.33	5.55	A		-4.0	3.89 - 7.22	0.53	A

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.006		A			False Positive Test	0.004	
Cesium-134	11.37	11.3	A		0.6	7.9 - 14.7	0.81	A
Cesium-137	8.94	8.7	A		2.8	6.1 - 11.3	0.74	A
Cobalt-57	19.40	19.3	A		0.5	13.5 - 25.1	1.40	A
Cobalt-60	0.14		A			False Positive Test	0.14	
Hydrogen-3	-2.0		A			False Positive Test	16	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	13.0	12.7	A		2.4	8.9 - 16.5	1.2	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.68	0.726		(6)	-6.3	0.508 - 0.944	0.11	W
Plutonium-239/240	0.67	0.784		(6)	-14.5	0.549 - 1.019	0.11	W
Potassium-40	0.04			(6)		False Positive Test	1.07	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	6.76	7.31	A		-7.5	5.12 - 9.50	0.42	A
Technetium-99	8.97	8.85	A		1.4	6.20 - 11.51	0.36	A
Uranium-234	0.67	0.67	A		0.0	0.47 - 0.87	0.08	A
Uranium-238	0.66	0.67	A		-1.5	0.47 - 0.87	0.08	A
Zinc-65	19.9	19.1	A		4.2	13.4 - 24.8	1.7	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (SLAC01) SLAC DOE National Accelerator Laboratory
 2575 Sand Hill Road
 Menlo Park, CA 94025

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	9.75	11.3	A		-13.7	7.9 - 14.7	0.98	A
Cesium-137	8.54	8.7	A		-1.8	6.1 - 11.3	0.85	A
Cobalt-57	17.75	19.3	A		-8.0	13.5 - 25.1	1.77	A
Cobalt-60	0.27			A		False Positive Test	0.27	
Hydrogen-3	6			A		False Positive Test	6	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	11.77	12.7	A		-7.3	8.9 - 16.5	1.18	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	0.1			(6)		False Positive Test	0.1	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	17.68	19.1	A		-7.4	13.4 - 24.8	1.77	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(SOUT01) Southwest Research Institute

6220 Culebra Rd.

San Antonio, TX 78238-5166

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	0.00468		A			False Positive Test	0.0575	
Arsenic	3.81	4.01	A		-5.0	2.81 - 5.21	0.688	W
Barium	6.17	5.91	A		4.4	4.14 - 7.68	1.11	W
Beryllium	1.44	1.40	A		2.9	0.98 - 1.82	0.284	W
Cadmium	0.309	0.315	A		-1.9	0.221 - 0.410	0.0568	W
Chromium	2.06	2.07	A		-0.5	1.45 - 2.69	0.371	W
Cobalt	5.73	6.02	A		-4.8	4.21 - 7.83	1.03	W
Copper	4.93	4.93	A		0.0	3.45 - 6.41	0.895	W
Lead	2.65	2.83	A		-6.4	1.98 - 3.68	0.477	W
Mercury	0.113	0.124	A		-8.9	0.087 - 0.161	0.0205	W
Nickel	5.05	5.24	A		-3.6	3.67 - 6.81	0.909	W
Selenium	0.290	0.369	W		-21.4	0.258 - 0.480	0.0518	W
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	1.92	1.97	A		-2.5	1.38 - 2.56	0.386	W
Uranium-235	0.000382	3.94E-4	A		-3.0	2.76E-4 - 5.12E-4	0.0000839	W
Uranium-238	0.0537	0.0542	A		-0.9	0.0379 - 0.0705	0.00860	W
Uranium-Total	0.0541	0.0546	A		-0.9	0.0382 - 0.0710	0.00867	W
Vanadium	5.10	5.01	A		1.8	3.51 - 6.51	0.918	W
Zinc	5.26	5.55	A		-5.2	3.89 - 7.22	0.947	W

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.00496		A			False Positive Test	0.00238	
Cesium-134	11.1	11.3	A		-1.8	7.9 - 14.7	0.563	A
Cesium-137	9.00	8.7	A		3.4	6.1 - 11.3	0.459	A
Cobalt-57	18.8	19.3	A		-2.6	13.5 - 25.1	0.844	A
Cobalt-60	0.00759		A			False Positive Test	0.140	
Hydrogen-3	15.0		N	(1)		False Positive Test	2.65	
Iron-55	35.4	41.1	A		-13.9	28.8 - 53.4	2.93	A
Manganese-54	14.0	12.7	A		10.2	8.9 - 16.5	0.700	A
Nickel-63	1.26	1.11	A			Sensitivity Evaluation	0.175	
Plutonium-238	0.674	0.726		(6)	-7.2	0.508 - 0.944	0.0504	A
Plutonium-239/240	0.767	0.784		(6)	-2.2	0.549 - 1.019	0.0563	A
Potassium-40	4.00			(6)		False Positive Test	1.30	
Radium-226	0.452	0.650	N		-30.5	0.455 - 0.845	0.0328	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	7.41	7.31	A		1.4	5.12 - 9.50	0.500	A
Technetium-99	8.63	8.85	A		-2.5	6.20 - 11.51	0.504	A
Uranium-234	0.633	0.67	A		-5.5	0.47 - 0.87	0.0478	A
Uranium-238	0.678	0.67	A		1.2	0.47 - 0.87	0.0504	A
Zinc-65	20.6	19.1	A		7.9	13.4 - 24.8	1.15	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (1) = False Positive
- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(SRPD01) Sandia National Laboratories, Radiation Protection Sample Diagnostics

PO Box 5800, MS1103

Albuquerque, NM 87185-1103

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.07E+01	11.3	A		-5.3	7.9 - 14.7	1.19E+00	A
Cesium-137	8.06E+00	8.7	A		-7.4	6.1 - 11.3	5.87E-01	A
Cobalt-57	1.67E+01	19.3	A		-13.5	13.5 - 25.1	1.70E+00	A
Cobalt-60	-2.73E-02			A		False Positive Test	1.89E-01	
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	1.09E+01	12.7	A		-14.2	8.9 - 16.5	6.92E-01	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	2.86E+01			(6)		False Positive Test	2.79E+00	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	1.64E+01	19.1	A		-14.1	13.4 - 24.8	1.06E+00	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (STRL01) South Texas Project Radiological Laboratory
 12090 FM 521
 Wadsworth, Texas 77483

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	11.00	11.3	A		-2.7	7.9 - 14.7	0.23	A
Cesium-137	8.685	8.7	A		-0.2	6.1 - 11.3	0.343	A
Cobalt-57	18.31	19.3	A		-5.1	13.5 - 25.1	0.41	A
Cobalt-60	NR		N	(11)		False Positive Test		
Hydrogen-3	NR					False Positive Test		
Iron-55	38.36	41.1	A		-6.7	28.8 - 53.4	0.49	N
Manganese-54	12.54	12.7	A		-1.3	8.9 - 16.5	0.28	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR			(6)		False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	7.333	7.31	A		0.3	5.12 - 9.50	0.491	A
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	19.57	19.1	A		2.5	13.4 - 24.8	0.52	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (TDHL01) Texas Department of State Health Services Laboratory
 1100 W 49th Street
 Austin, TX 78756

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0010		A			False Positive Test	0.0012	
Cesium-134	10.50	11.3	A		-7.1	7.9 - 14.7	0.24	A
Cesium-137	9.17	8.7	A		5.4	6.1 - 11.3	0.36	A
Cobalt-57	19.00	19.3	A		-1.6	13.5 - 25.1	0.47	A
Cobalt-60	0.141		A			False Positive Test	0.058	
Hydrogen-3	-4.5		A			False Positive Test	5.4	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.99	12.7	A		2.3	8.9 - 16.5	0.42	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.538	0.726		(6)	-25.9	0.508 - 0.944	0.059	A
Plutonium-239/240	0.649	0.784		(6)	-17.2	0.549 - 1.019	0.068	A
Potassium-40	-0.37			(6)		False Positive Test	0.63	
Radium-226	0.539	0.650	A		-17.1	0.455 - 0.845	0.020	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	6.54	7.31	A		-10.5	5.12 - 9.50	0.20	A
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	0.644	0.67	A		-3.9	0.47 - 0.87	0.064	A
Uranium-238	0.626	0.67	A		-6.6	0.47 - 0.87	0.062	A
Zinc-65	19.53	19.1	A		2.3	13.4 - 24.8	0.61	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (TELE01) Teledyne Brown Engineering - Environmental Services
 2508 Quality Lane
 Knoxville, TN 37931-6819

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	NR	11.3				7.9 - 14.7		
Cesium-137	NR	8.7				6.1 - 11.3		
Cobalt-57	NR	19.3				13.5 - 25.1		
Cobalt-60	NR					False Positive Test		
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	NR	12.7				8.9 - 16.5		
Nickel-63	.971	1.11	A			Sensitivity Evaluation	.148	
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR					False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	8.88	8.85	A		0.3	6.20 - 11.51	.905	A
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	NR	19.1				13.4 - 24.8		

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (TELE02) Microbac Laboratories Inc. - Northbrook
 700 Landwehr Road
 Northbrook, IL 60062-

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	8.88	11.3	W		-21.4	7.9 - 14.7	0.18	A
Cesium-137	7.95	8.7	A		-8.6	6.1 - 11.3	0.30	A
Cobalt-57	16.5	19.3	A		-14.5	13.5 - 25.1	0.3	N
Cobalt-60	0.09			A		False Positive Test	0.06	
Hydrogen-3	1.16			A		False Positive Test	2.92	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	11.6	12.7	A		-8.7	8.9 - 16.5	0.3	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	1.56			(6)		False Positive Test	1.60	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31	N	(28)		5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	17.9	19.1	A		-6.3	13.4 - 24.8	0.6	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated
- (28) = Not Reporting Previously Reported Analyte



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (TMAO01) EBERLINE Analytical Corporation
 601 A SCARBORO RD
 OAK RIDGE, TN 37830-

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.005		A			False Positive Test	.013	
Cesium-134	11.723	11.3	A		3.7	7.9 - 14.7	1.080	A
Cesium-137	10.485	8.7	W		20.5	6.1 - 11.3	1.553	A
Cobalt-57	23.287	19.3	W		20.7	13.5 - 25.1	1.701	A
Cobalt-60	-0.084		A			False Positive Test	0.383	
Hydrogen-3	-0.805		A			False Positive Test	10.478	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	14.611	12.7	A		15.0	8.9 - 16.5	1.875	A
Nickel-63	3.649	1.11	N	(4)		Sensitivity Evaluation	0.319	
Plutonium-238	0.722	0.726		(6)	-0.6	0.508 - 0.944	0.118	W
Plutonium-239/240	0.824	0.784		(6)	5.1	0.549 - 1.019	0.128	W
Potassium-40	3.996			(6)		False Positive Test	3.841	
Radium-226	0.747	0.650	A		14.9	0.455 - 0.845	0.137	W

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	7.642	7.31	A		4.5	5.12 - 9.50	0.274	A
Technetium-99	8.360	8.85	A		-5.5	6.20 - 11.51	0.317	A
Uranium-234	0.683	0.67	A		1.9	0.47 - 0.87	0.098	A
Uranium-238	0.647	0.67	A		-3.4	0.47 - 0.87	.094	A
Zinc-65	21.045	19.1	A		10.2	13.4 - 24.8	3.014	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (4) = Sensitivity Evaluation
- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (TNUT01) St. Louis USACE FUSRAP Laboratory
 112 James S McDonnell Blvd
 HAZELWOOD, MO 63042

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	-0.0440		A			False Positive Test	0.0768	
Cesium-134	9.77	11.3	A		-13.5	7.9 - 14.7	0.213	A
Cesium-137	9.22	8.7	A		6.0	6.1 - 11.3	0.273	A
Cobalt-57	19.6	19.3	A		1.6	13.5 - 25.1	0.425	A
Cobalt-60	0.00622		A			False Positive Test	0.0326	
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	13.4	12.7	A		5.5	8.9 - 16.5	0.348	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	1.50			(6)		False Positive Test	0.781	
Radium-226	0.697	0.650	A		7.2	0.455 - 0.845	0.0441	A

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	0.640	0.67	A		-4.5	0.47 - 0.87	0.0528	A
Uranium-238	0.681	0.67	A		1.6	0.47 - 0.87	0.0551	A
Zinc-65	21.0	19.1	A		9.9	13.4 - 24.8	0.707	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(UNTE01) UniTech-235

178 Aldo Drive

Barnwell, SC 29812

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	9.27	11.3	A		-18.0	7.9 - 14.7	0.76	A
Cesium-137	8.71	8.7	A		0.1	6.1 - 11.3	1.18	A
Cobalt-57	18.98	19.3	A		-1.7	13.5 - 25.1	1.39	A
Cobalt-60	0.02			A		False Positive Test	0.07	
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	13.03	12.7	A		2.6	8.9 - 16.5	1.46	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	0.01			(6)		False Positive Test	0.06	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	20.59	19.1	A		7.8	13.4 - 24.8	2.87	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (WEST04) PACE ANALYTICAL SERVICES, PITTSBURGH
 1638 Roseytown Road
 Greensburg, PA 15601

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	NR	11.3				7.9 - 14.7		
Cesium-137	NR	8.7				6.1 - 11.3		
Cobalt-57	NR	19.3				13.5 - 25.1		
Cobalt-60	NR					False Positive Test		
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	NR	12.7				8.9 - 16.5		
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR					False Positive Test		
Radium-226	0.6438	0.650	A		-1.0	0.455 - 0.845	0.1088	W

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	NR	19.1				13.4 - 24.8		

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (WIPH01) WI, DPH, Radiation Protection Section
 1 West Wilson Street
 Madison, WI 53701

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	-0.095		A			False Positive Test	0.717	
Cesium-134	11.21	11.3	A		-0.8	7.9 - 14.7	0.36	A
Cesium-137	8.92	8.7	A		2.5	6.1 - 11.3	0.57	A
Cobalt-57	19.08	19.3	A		-1.1	13.5 - 25.1	1.43	A
Cobalt-60	-0.006		A			False Positive Test	0.051	
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.40	12.7	A		-2.4	8.9 - 16.5	0.68	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR			(6)		False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	19.13	19.1	A		0.2	13.4 - 24.8	0.91	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(WIPP01) WIPP Laboratories
 1400 University Drive
 Carlsbad, NM 88220

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	3.70E-003		A			False Positive Test	2.56E-003	
Cesium-134	1.01E+001	11.3	A		-10.6	7.9 - 14.7	1.54E-001	N
Cesium-137	9.44E+000	8.7	A		8.5	6.1 - 11.3	1.71E-001	N
Cobalt-57	1.93E+001	19.3	A		0.0	13.5 - 25.1	4.54E-001	A
Cobalt-60	-7.70E-003		A			False Positive Test	2.86E-002	
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	1.31E+001	12.7	A		3.2	8.9 - 16.5	2.03E-001	N
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	6.11E-001	0.726		(6)	-15.8	0.508 - 0.944	5.94E-002	A
Plutonium-239/240	7.09E-001	0.784		(6)	-9.6	0.549 - 1.019	6.77E-002	A
Potassium-40	6.00E-001			(6)		False Positive Test	6.28E-001	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	7.07E+000	7.31	A		-3.3	5.12 - 9.50	3.58E-001	A
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	6.41E-001	0.67	A		-4.3	0.47 - 0.87	5.65E-002	A
Uranium-238	6.27E-001	0.67	A		-6.4	0.47 - 0.87	5.55E-002	A
Zinc-65	1.91E+001	19.1	A		0.0	13.4 - 24.8	3.77E-001	N

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (WSHL01) Wisconsin State Laboratory of Hygiene
 2601 Agriculture Drive
 Madison, WI 53718

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.02602		A			False Positive Test	0.01603	
Cesium-134	10.6	11.3	A		-6.2	7.9 - 14.7	0.243	A
Cesium-137	9.17	8.7	A		5.4	6.1 - 11.3	0.302	A
Cobalt-57	18.6	19.3	A		-3.6	13.5 - 25.1	0.443	A
Cobalt-60	0.0440		A			False Positive Test	0.0416	
Hydrogen-3	10.064		N	(1)		False Positive Test	1.71	
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.7	12.7	A		0.0	8.9 - 16.5	0.562	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	0.6526	0.726		(6)	-10.1	0.508 - 0.944	0.05004	A
Plutonium-239/240	0.7292	0.784		(6)	-7.0	0.549 - 1.019	0.05185	A
Potassium-40	-51.9			(6)		False Positive Test	4.66	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	5.39	7.31	W		-26.3	5.12 - 9.50	0.20	A
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	0.6687	0.67	A		-0.2	0.47 - 0.87	0.04909	A
Uranium-238	0.5804	0.67	A		-13.4	0.47 - 0.87	0.04404	A
Zinc-65	19.4	19.1	A		1.6	13.4 - 24.8	1.59	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (1) = False Positive
- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(WSTP99) Cavendish Nuclear Limited

Greson Court

Cumbria, UK CA24 3HZ

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0032		A			False Positive Test	0.0034	
Cesium-134	11.37	11.3	A		0.6	7.9 - 14.7	0.53	A
Cesium-137	8.97	8.7	A		3.1	6.1 - 11.3	0.56	A
Cobalt-57	18.68	19.3	A		-3.2	13.5 - 25.1	0.56	A
Cobalt-60	0.01		A			False Positive Test	0.17	
Hydrogen-3	6.4		N	(1)		False Positive Test	1.5	
Iron-55	38.0	41.1	A		-7.5	28.8 - 53.4	1.3	A
Manganese-54	12.31	12.7	A		-3.1	8.9 - 16.5	0.45	A
Nickel-63	2.95	1.11	N	(4)		Sensitivity Evaluation	0.20	
Plutonium-238	0.757	0.726		(6)	4.3	0.508 - 0.944	0.059	A
Plutonium-239/240	0.841	0.784		(6)	7.3	0.549 - 1.019	0.064	A
Potassium-40	-1.4			(6)		False Positive Test	3.4	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	7.24	7.31	A		-1.0	5.12 - 9.50	0.43	A
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	16.84	19.1	A		-11.8	13.4 - 24.8	0.66	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49
 (WVDP01) WVDP Environmental Laboratory
 10282 Rock Springs Road
 West Valley, NY 14171

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	NR	3.94E-4				2.76E-4 - 5.12E-4		
Uranium-238	NR	0.0542				0.0379 - 0.0705		
Uranium-Total	NR	0.0546				0.0382 - 0.0710		
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	10.0	11.3	A		-11.5	7.9 - 14.7	0.256	A
Cesium-137	8.88	8.7	A		2.1	6.1 - 11.3	0.300	A
Cobalt-57	18.9	19.3	A		-2.1	13.5 - 25.1	0.494	A
Cobalt-60	-0.0511			A		False Positive Test	0.0523	
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	12.7	12.7	A		0.0	8.9 - 16.5	0.386	A
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	-0.0917			(6)		False Positive Test	0.955	
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	7.11	7.31	A		-2.7	5.12 - 9.50	0.227	A
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	19.2	19.1	A		0.5	13.4 - 24.8	0.932	A

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

- (6) = Not Evaluated



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-23-MaW49

(YPGA01) US Army Yuma Proving Ground / Material Analysis Lab

301 C. Street

Yuma, AZ 85365

Inorganic							Units: (mg/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR					False Positive Test		
Arsenic	NR	4.01				2.81 - 5.21		
Barium	NR	5.91				4.14 - 7.68		
Beryllium	NR	1.40				0.98 - 1.82		
Cadmium	NR	0.315				0.221 - 0.410		
Chromium	NR	2.07				1.45 - 2.69		
Cobalt	NR	6.02				4.21 - 7.83		
Copper	NR	4.93				3.45 - 6.41		
Lead	NR	2.83				1.98 - 3.68		
Mercury	NR	0.124				0.087 - 0.161		
Nickel	NR	5.24				3.67 - 6.81		
Selenium	NR	0.369				0.258 - 0.480		
Technetium-99	NR	1.40E-5				9.80E-6 - 1.82E-5		
Thallium	NR	1.97				1.38 - 2.56		
Uranium-235	0.00038	3.94E-4	A		-3.6	2.76E-4 - 5.12E-4	0.00002	A
Uranium-238	0.0516	0.0542	A		-4.8	0.0379 - 0.0705	0.001	N
Uranium-Total	0.052	0.0546	A		-4.8	0.0382 - 0.0710	0.001	N
Vanadium	NR	5.01				3.51 - 6.51		
Zinc	NR	5.55				3.89 - 7.22		

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	NR	11.3				7.9 - 14.7		
Cesium-137	NR	8.7				6.1 - 11.3		
Cobalt-57	NR	19.3				13.5 - 25.1		
Cobalt-60	NR					False Positive Test		
Hydrogen-3	NR					False Positive Test		
Iron-55	NR	41.1				28.8 - 53.4		
Manganese-54	NR	12.7				8.9 - 16.5		
Nickel-63	NR	1.11				Sensitivity Evaluation		
Plutonium-238	NR	0.726				0.508 - 0.944		
Plutonium-239/240	NR	0.784				0.549 - 1.019		
Potassium-40	NR					False Positive Test		
Radium-226	NR	0.650				0.455 - 0.845		

Radiological						Units: (Bq/L)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	7.31				5.12 - 9.50		
Technetium-99	NR	8.85				6.20 - 11.51		
Uranium-234	NR	0.67				0.47 - 0.87		
Uranium-238	NR	0.67				0.47 - 0.87		
Zinc-65	NR	19.1				13.4 - 24.8		

Radiological Reference Date: August 1, 2023

Results Flags:

- A = Result acceptable.....|Bias| ≤ 20%
- W = Result acceptable with warning.....20% < |Bias| ≤ 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

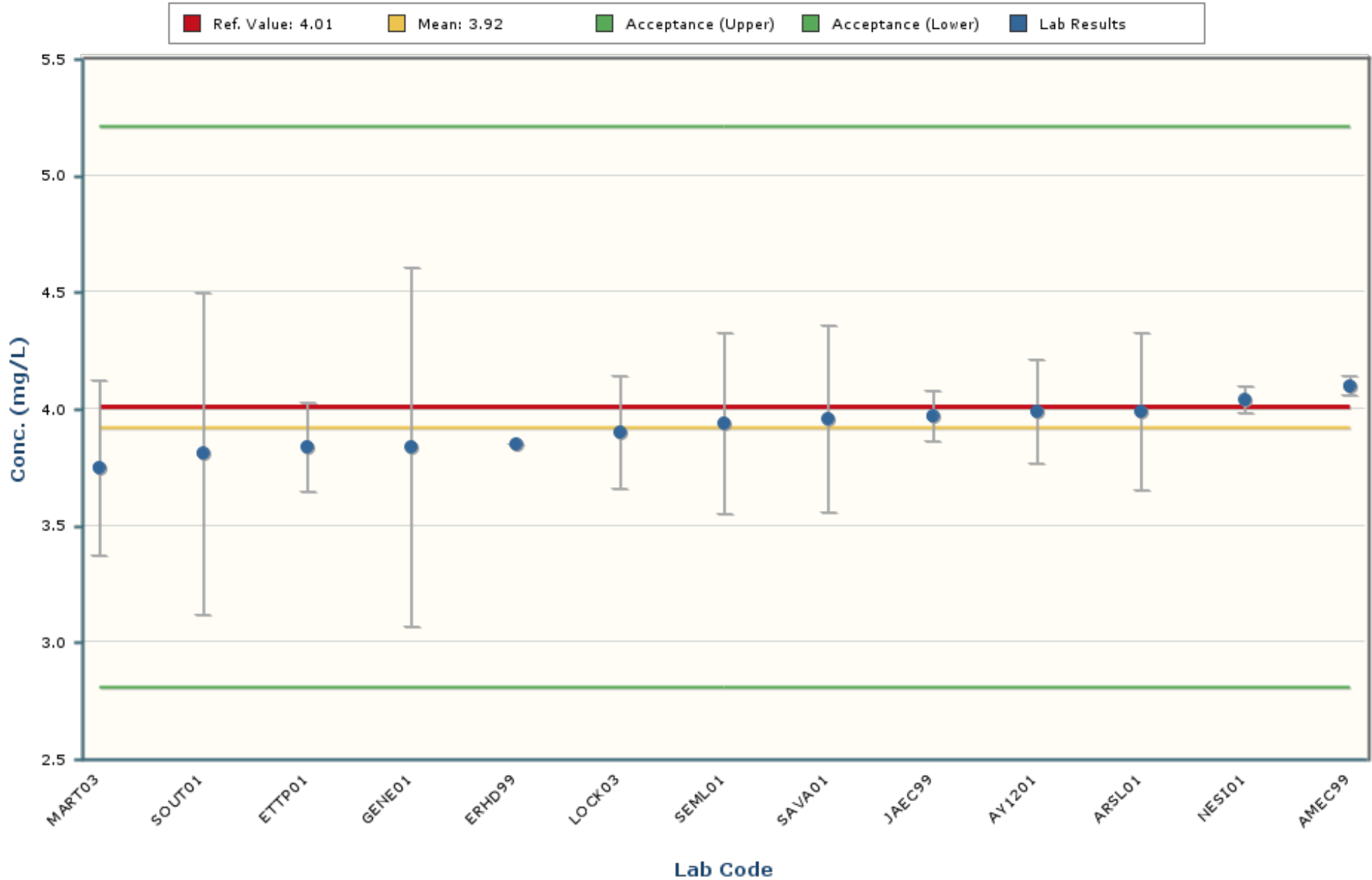
- NOT ACCEPTABLE.....RP < 2%
 - ACCEPTABLE.....2% ≤ RP ≤ 15%
 - ACCEPTABLE WITH WARNING.....15% < RP ≤ 30%
 - NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

RESL analytical verifications determined that the Plutonium wasn't stable for MaW49.

Notes:

Arsenic

MAPEP-23-MaW49



Notes:

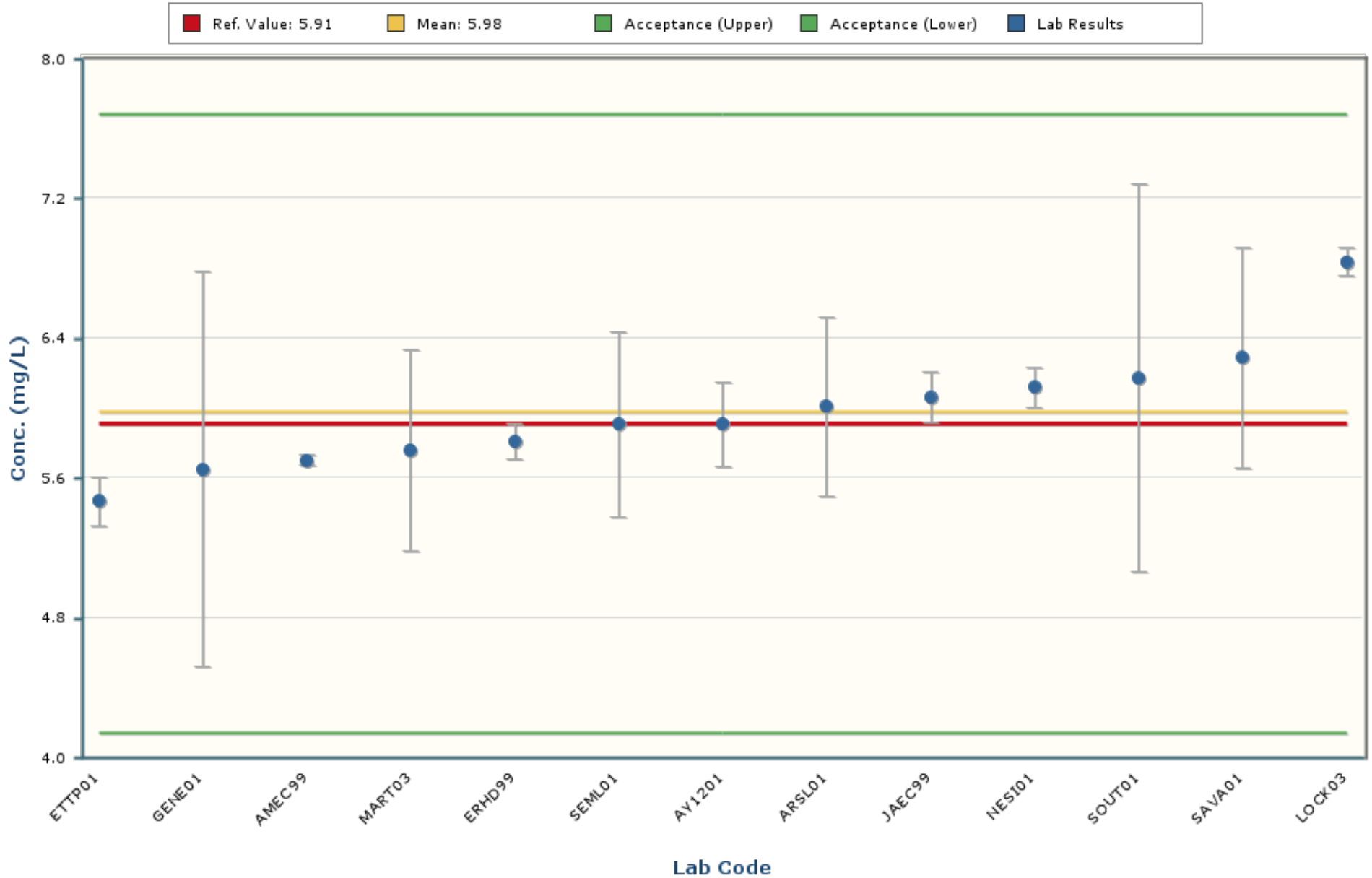
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 3.42 and 4.42 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at ± 1 standard deviation.

Barium

MAPEP-23-MaW49



Notes:

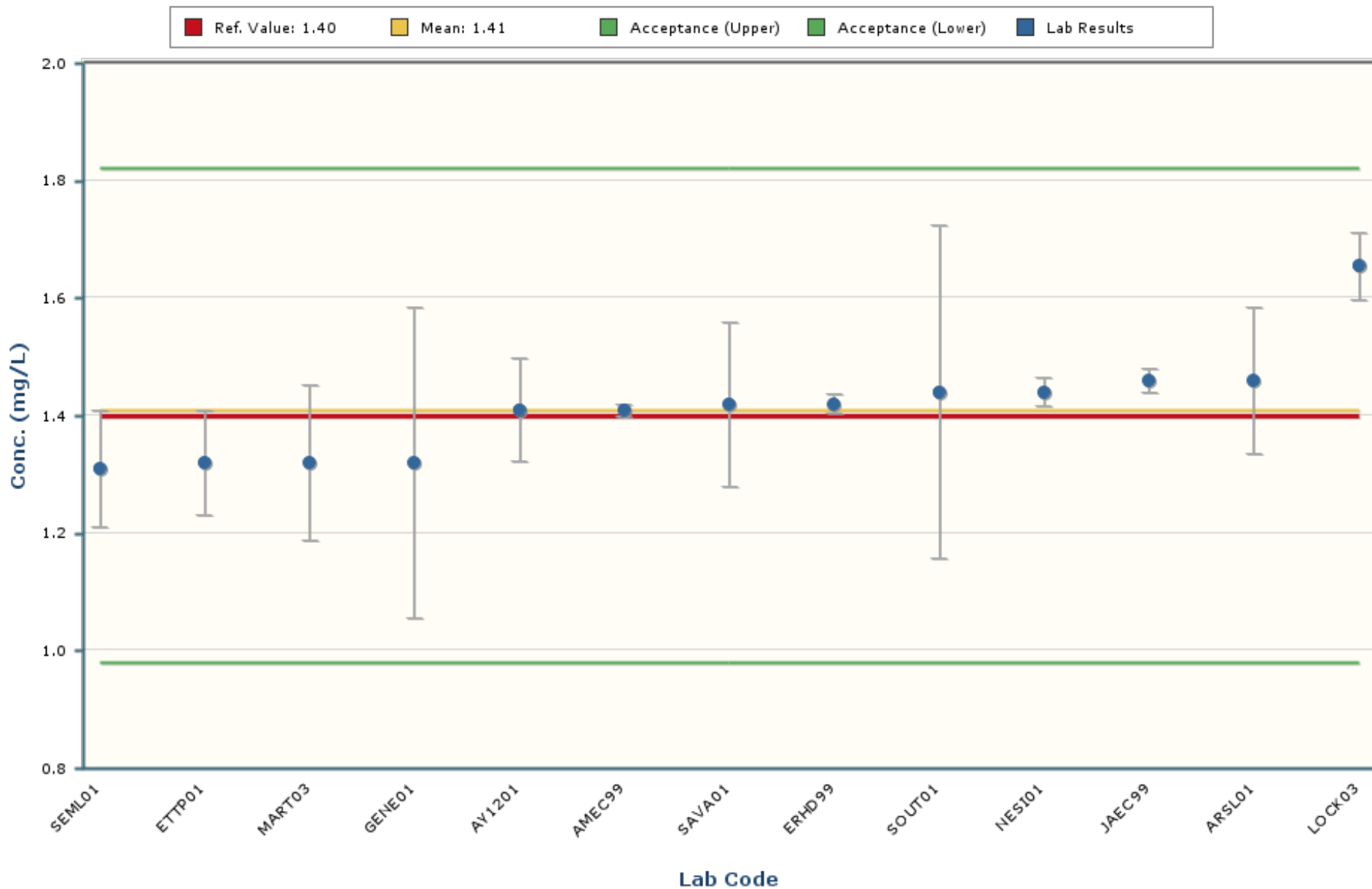
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 4.25 and 7.70 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at \pm one standard deviation.

Beryllium

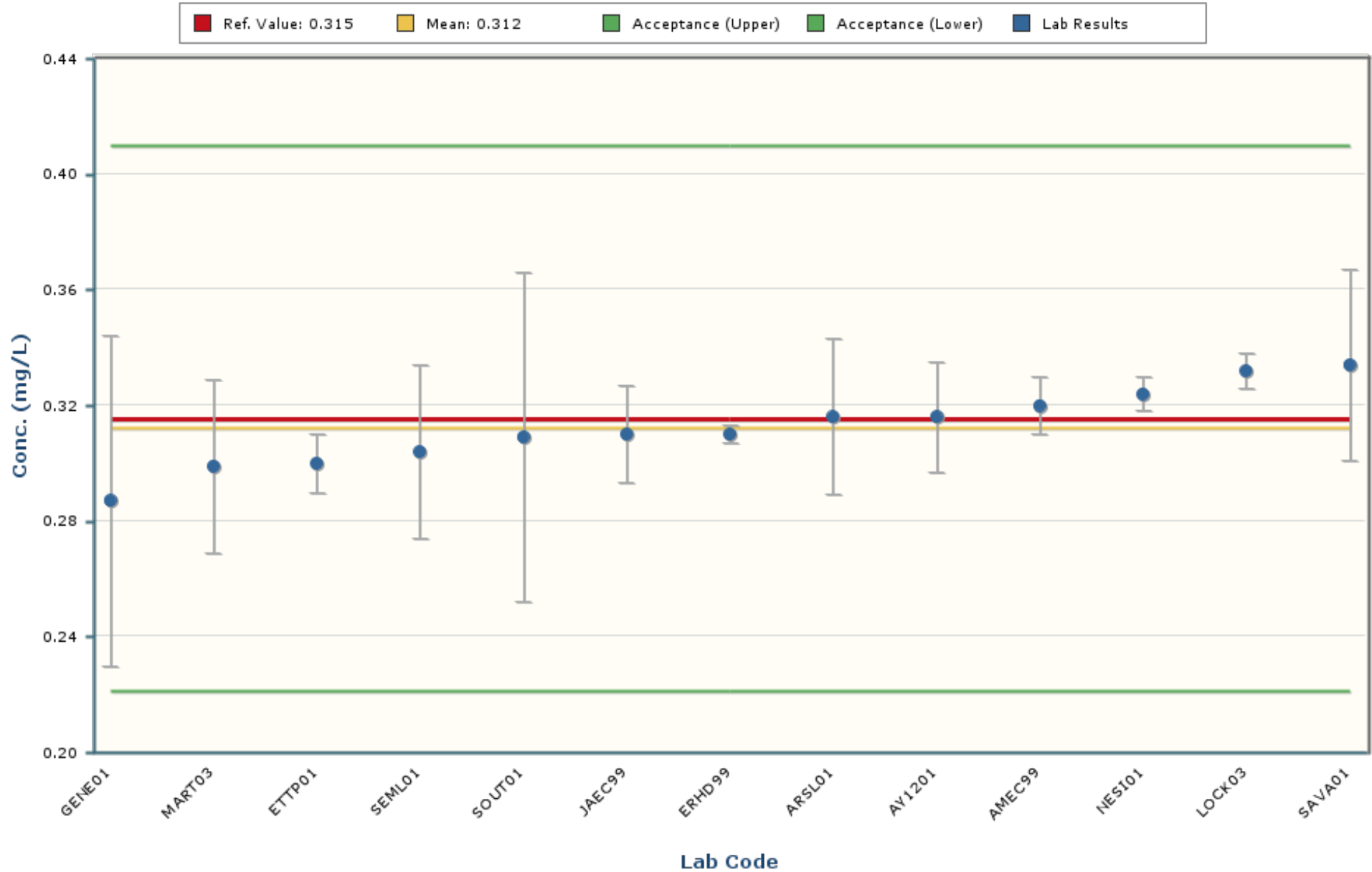
MAPEP-23-MaW49



Notes:
The chart mean excludes values outside of a bias range of $\pm 30\%$.
The chart shows only data points with values between 0.96 and 1.87 (± 5 Standard Deviations).
The error bars encompassing each result are plotted at \pm one standard deviation.

Cadmium

MAPEP-23-MaW49



Notes:

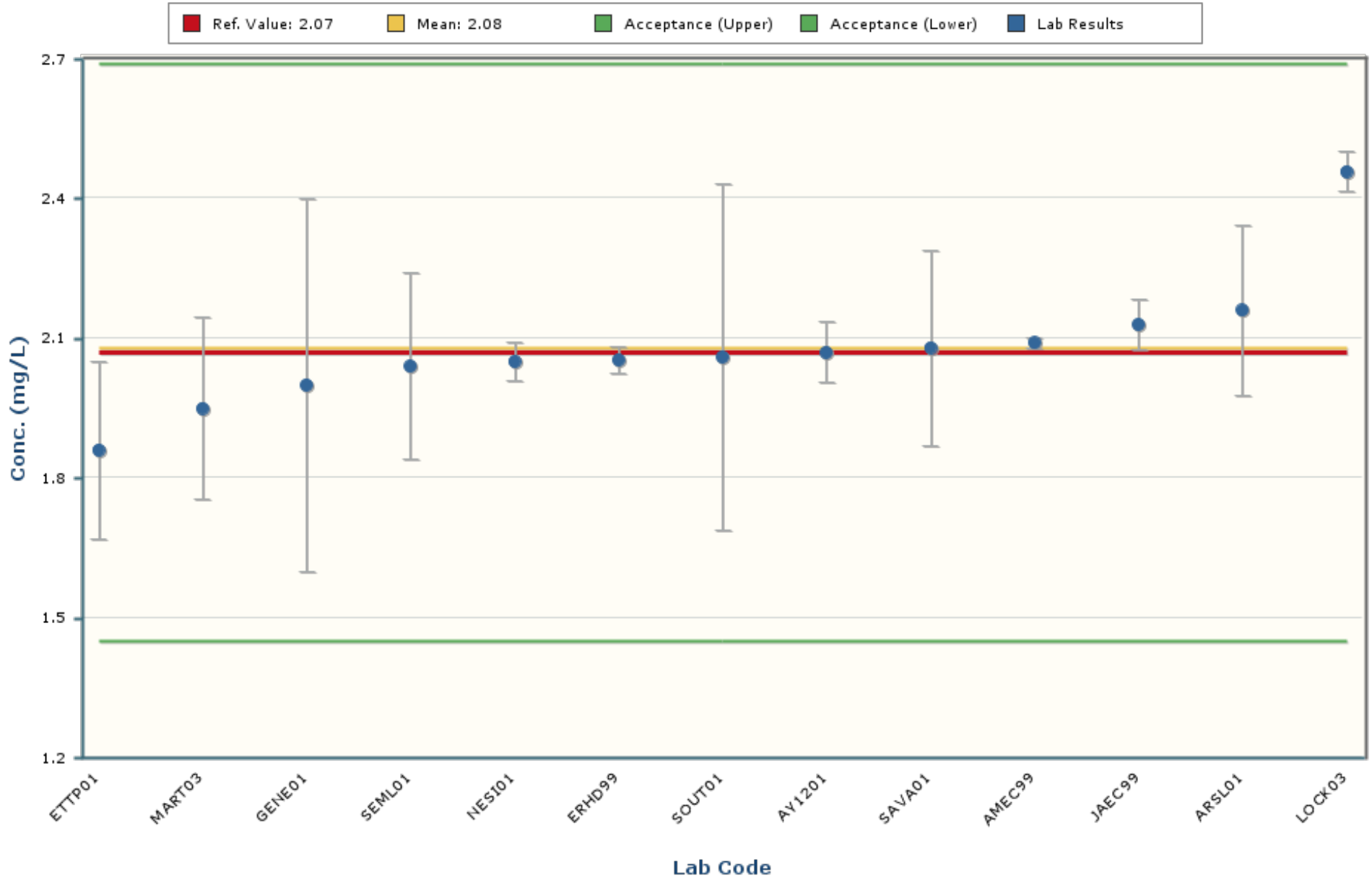
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 0.246 and 0.379 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at \pm one standard deviation.

Chromium

MAPEP-23-MaW49



Notes:

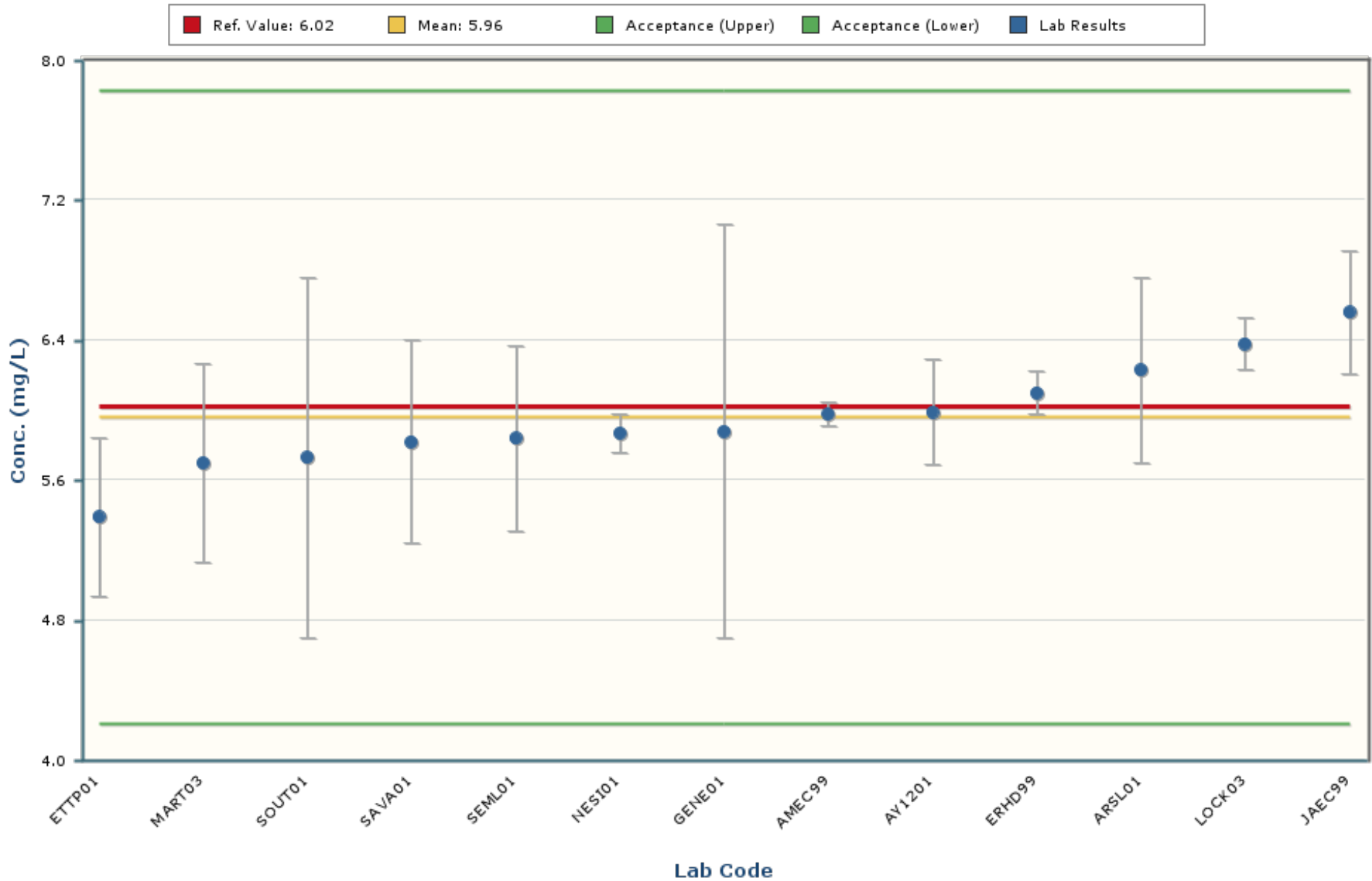
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 1.39 and 2.76 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at \pm one standard deviation.

Cobalt

MAPEP-23-MaW49



Notes:

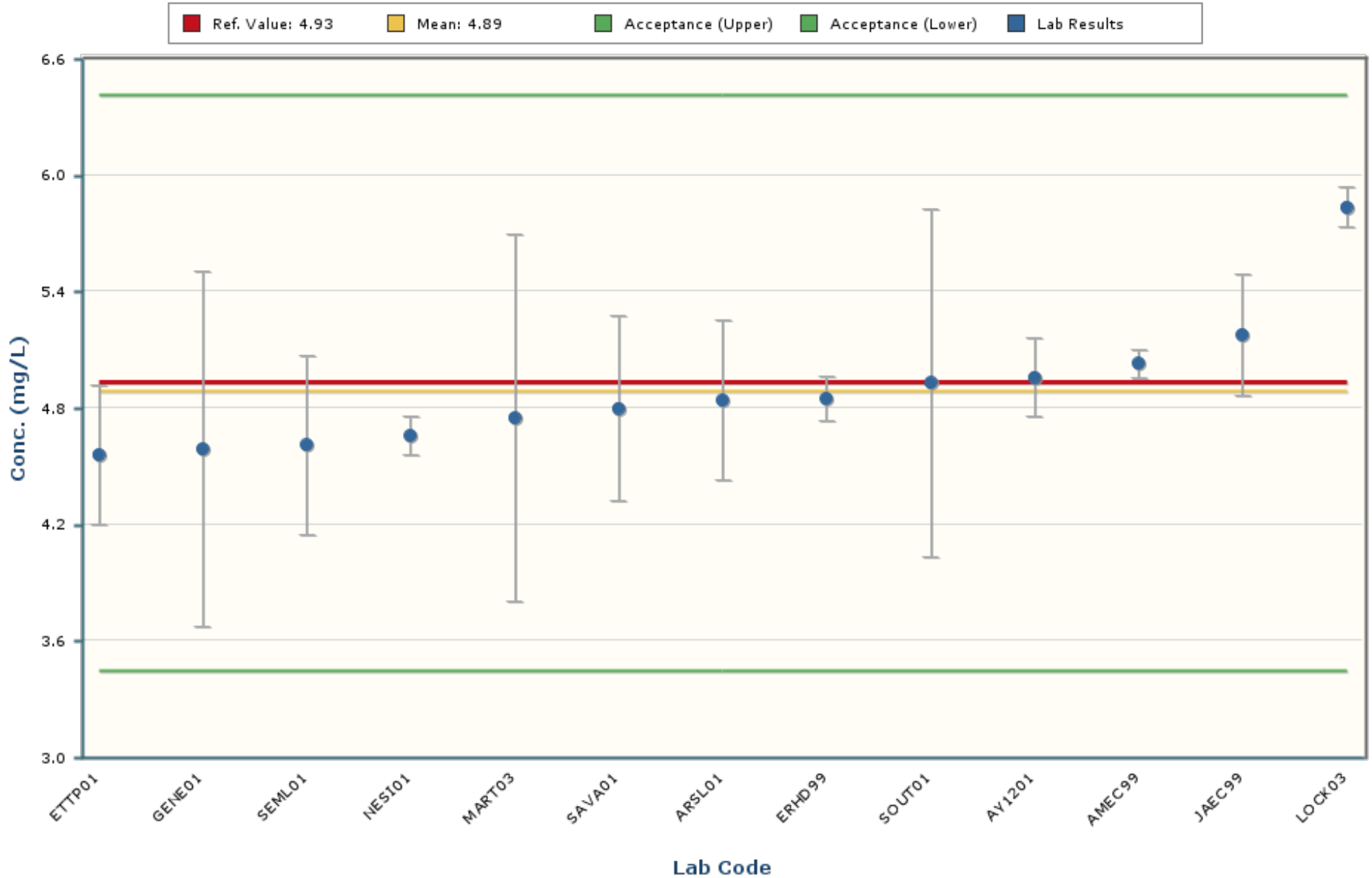
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 4.43 and 7.49 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at \pm one standard deviation.

Copper

MAPEP-23-MaW49



Notes:

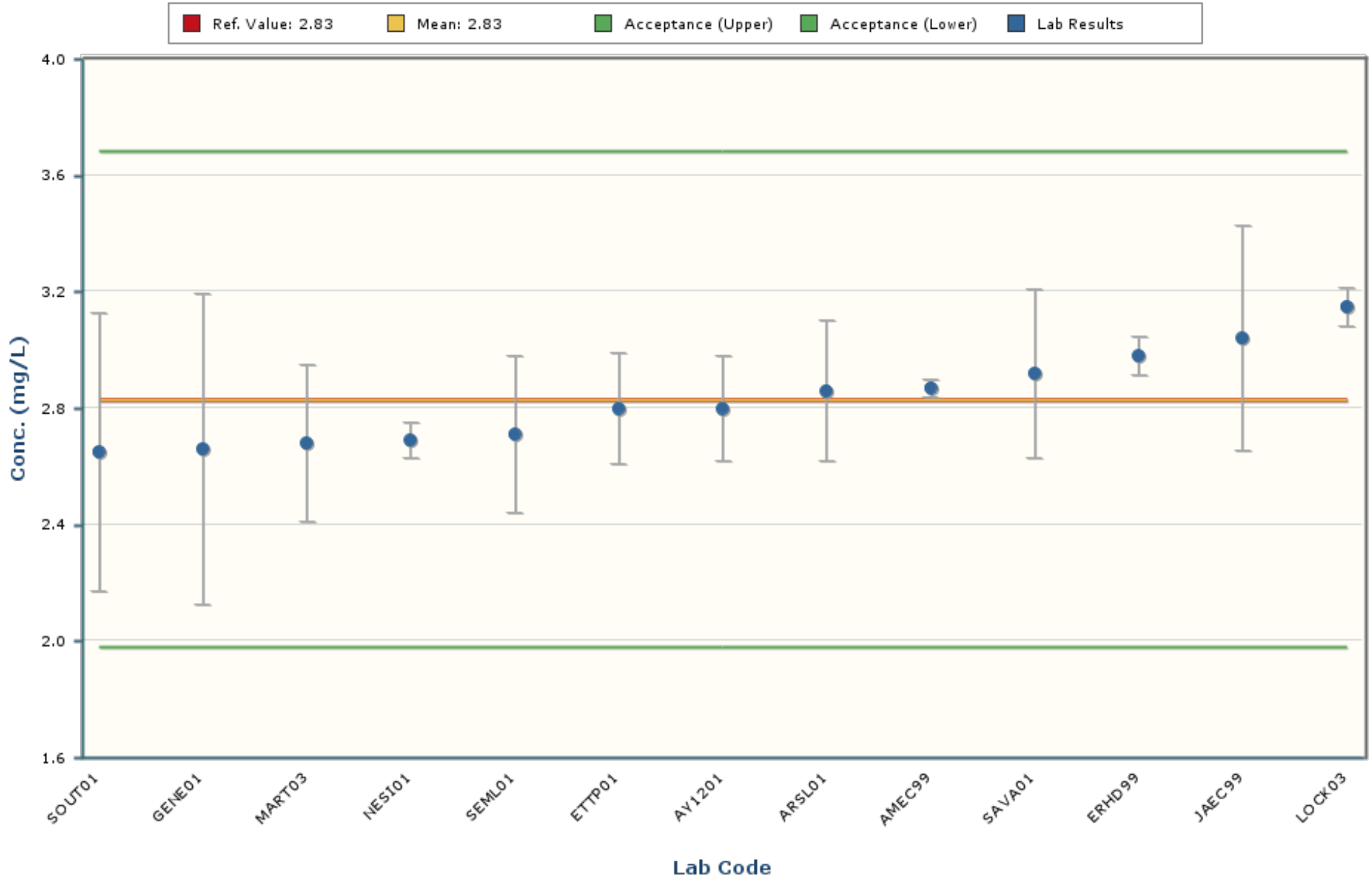
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 3.20 and 6.58 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at \pm one standard deviation.

Lead

MAPEP-23-MaW49



Notes:

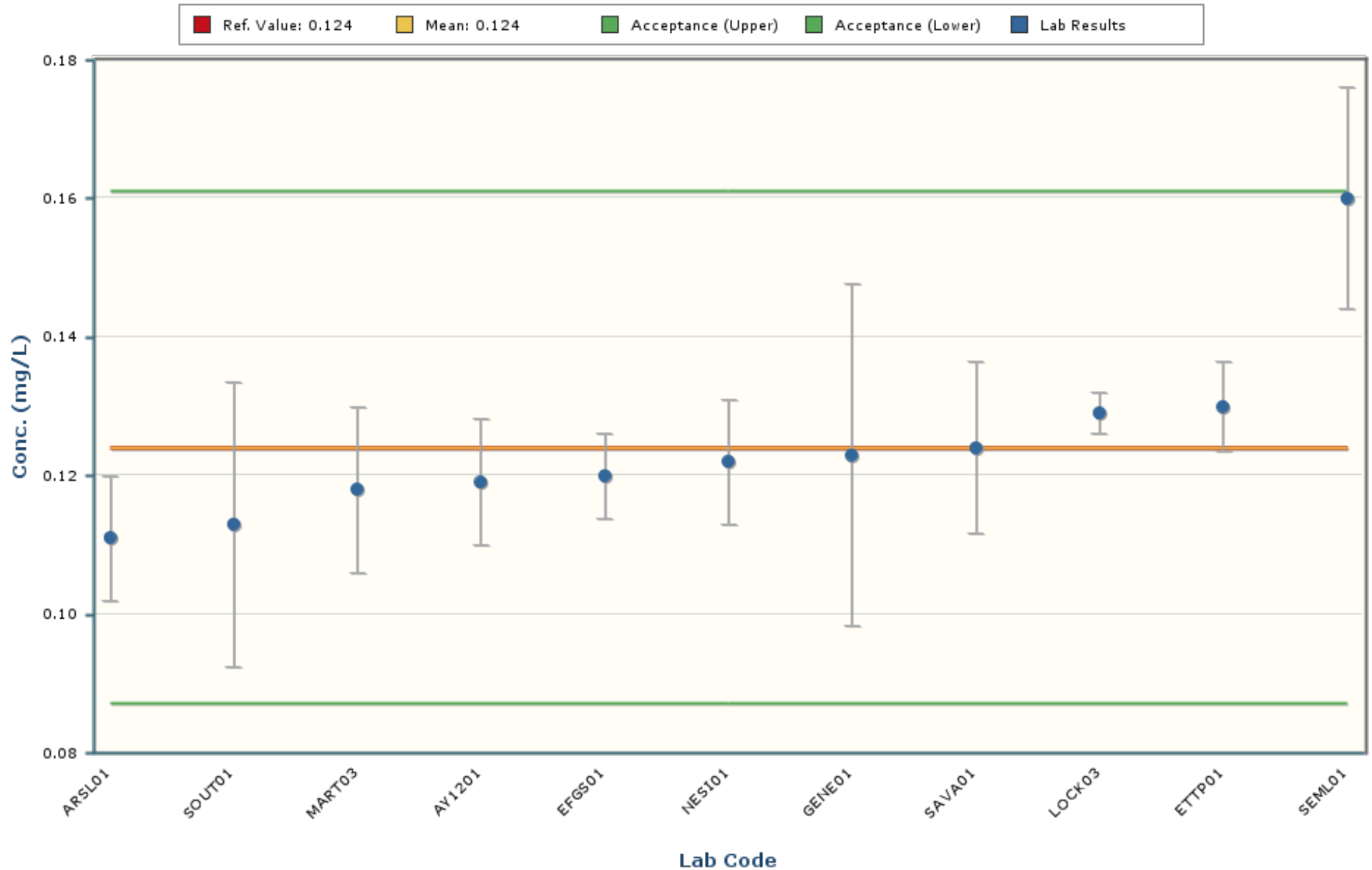
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 2.04 and 3.62 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at \pm one standard deviation.

Mercury

MAPEP-23-MaW49



Notes:

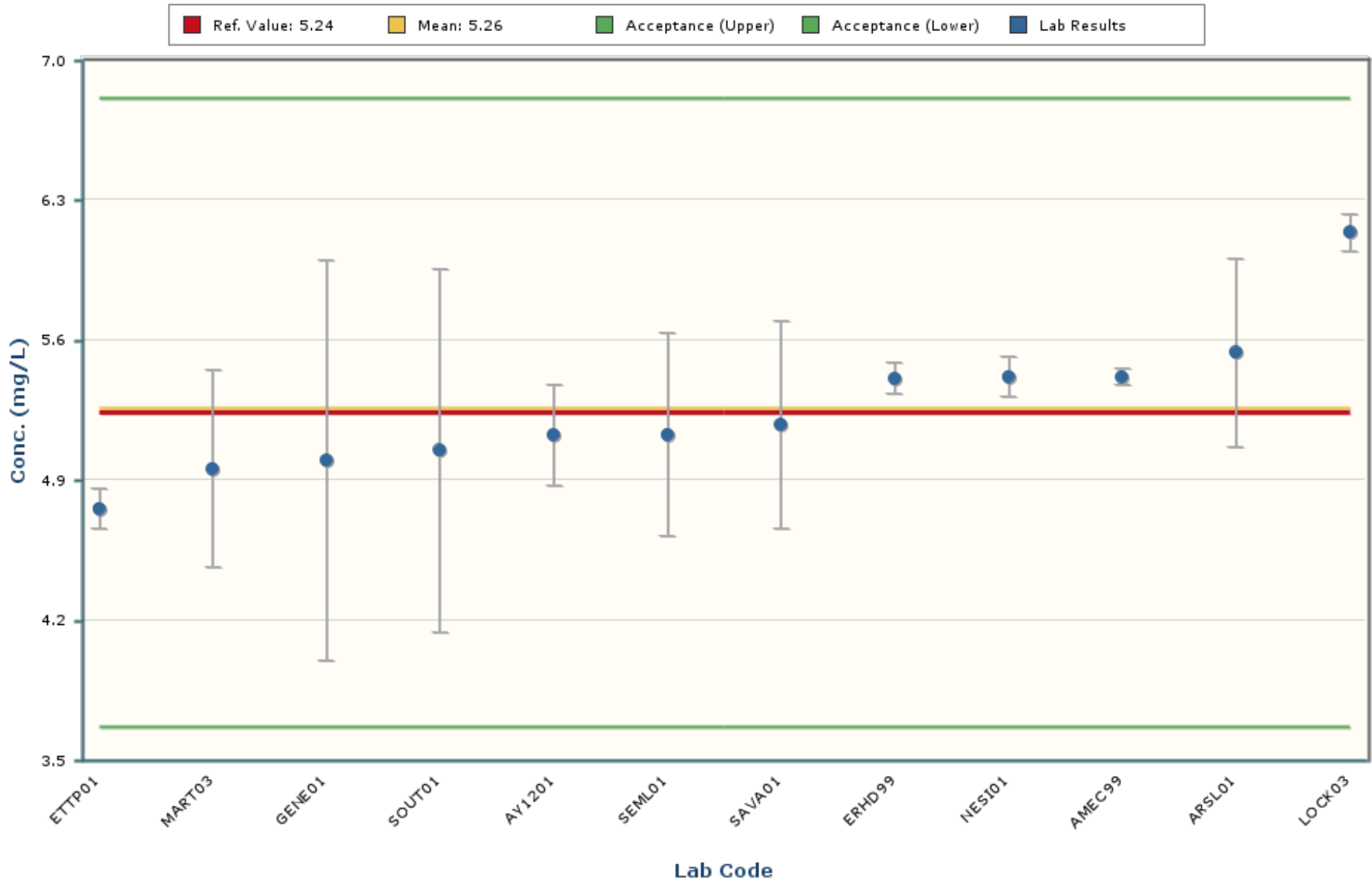
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 0.059 and 0.190 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at \pm one standard deviation.

Nickel

MAPEP-23-MaW49



Notes:

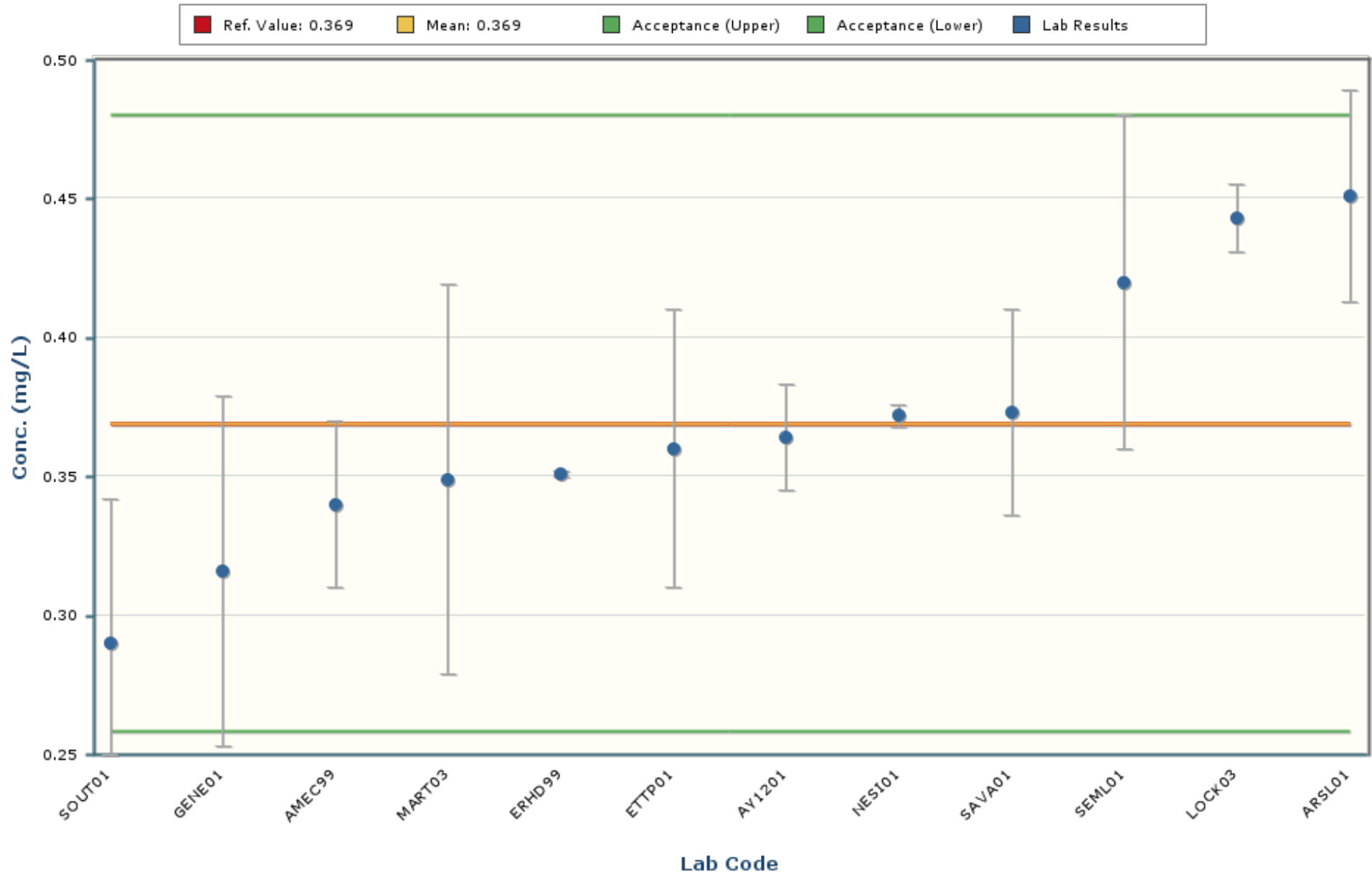
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 3.47 and 7.06 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at \pm one standard deviation.

Selenium

MAPEP-23-MaW49



Notes:

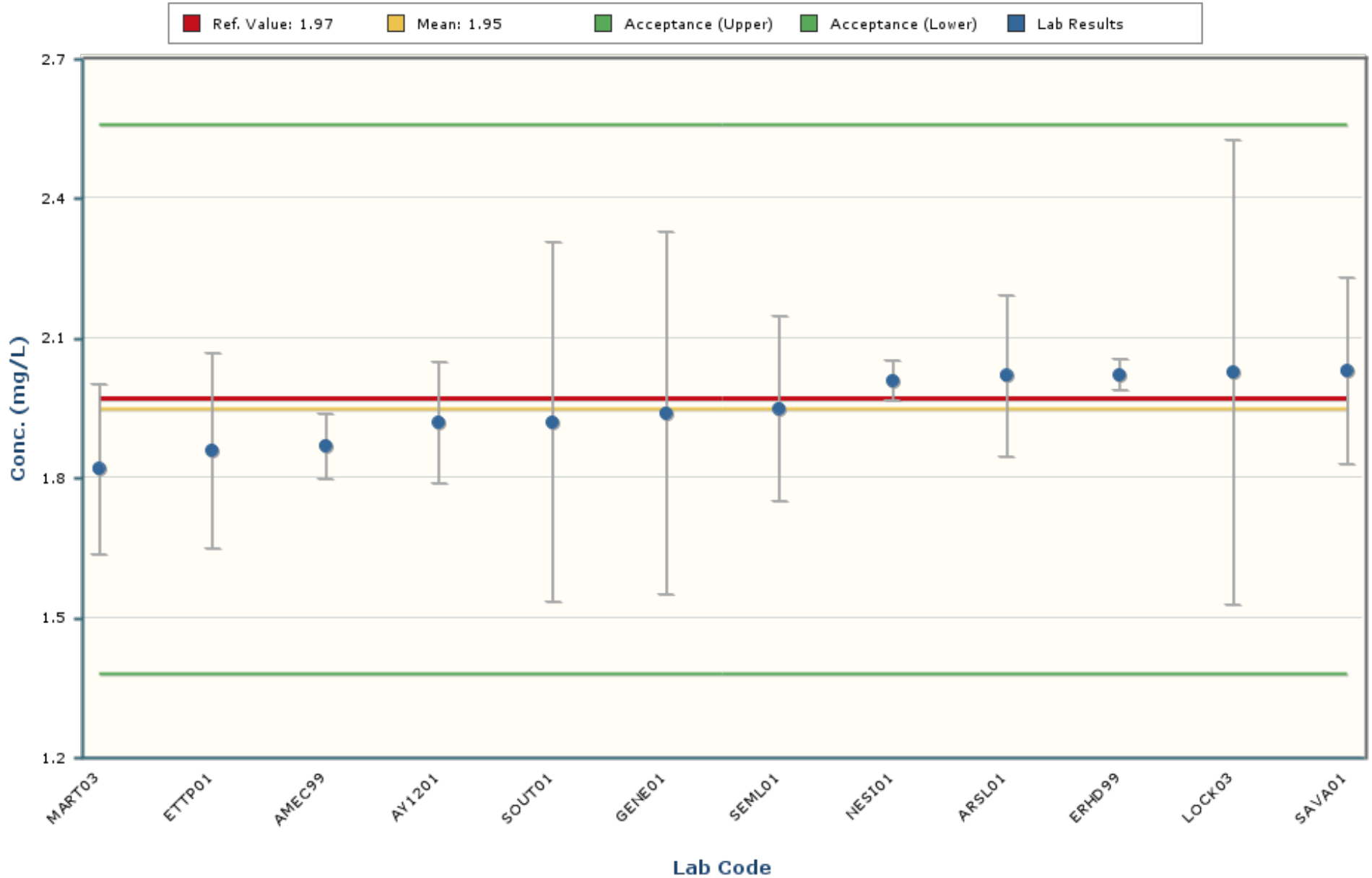
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 0.128 and 0.610 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at ± 1 standard deviation.

Thallium

MAPEP-23-MaW49



Notes:

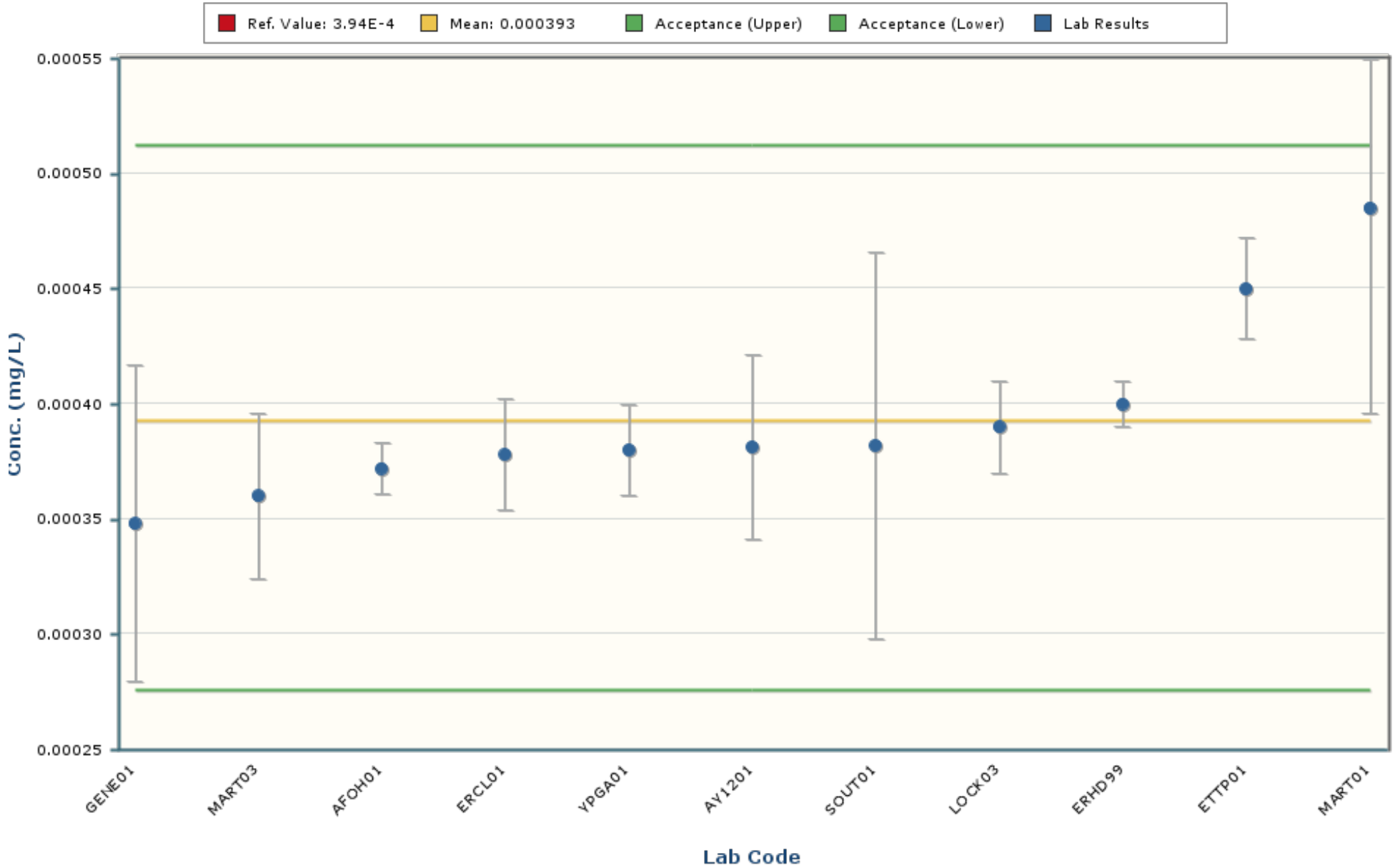
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 1.58 and 2.32 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at \pm one standard deviation.

Uranium-235

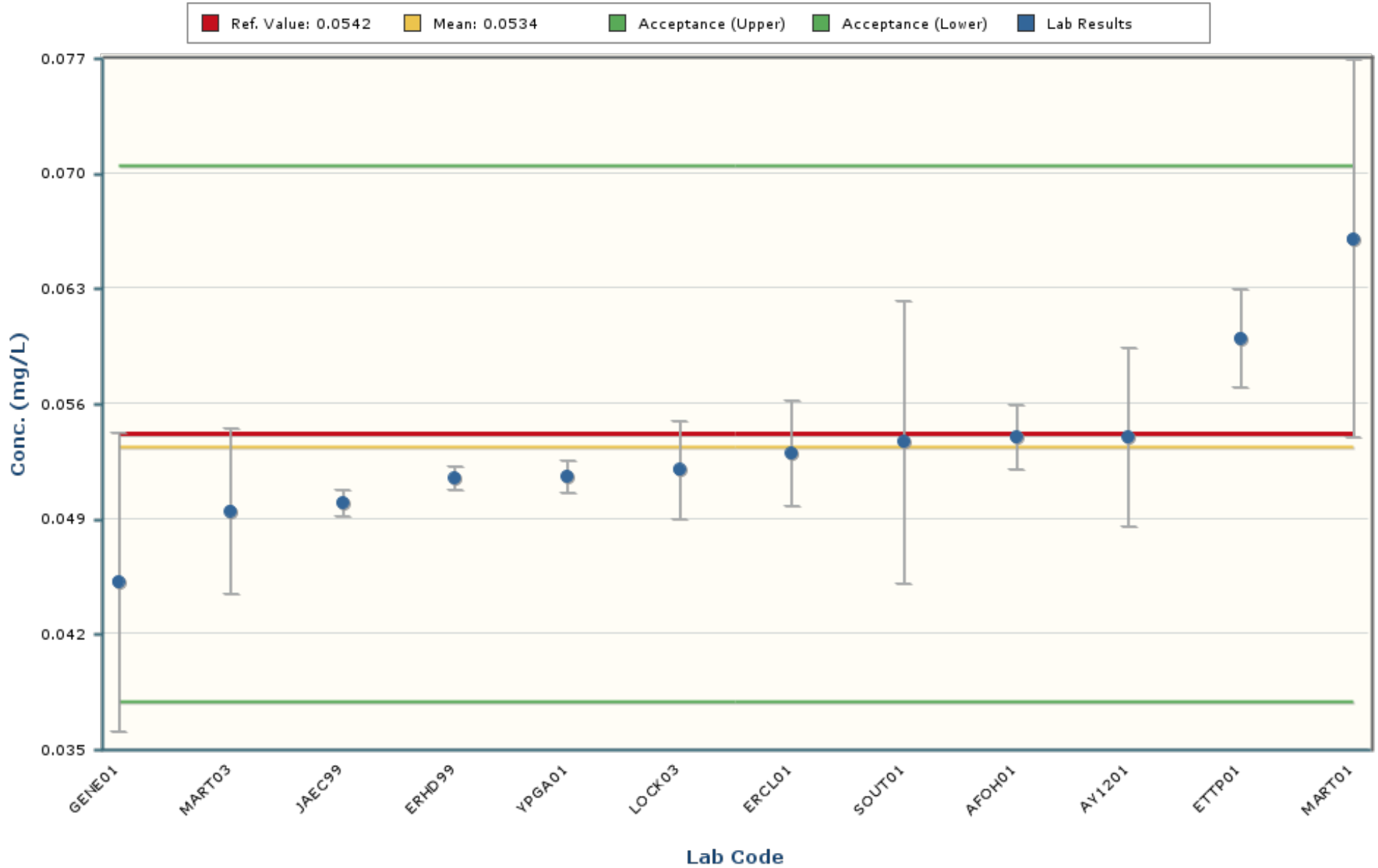
MAPEP-23-MaW49



Notes:
The chart mean excludes values outside of a bias range of $\pm 30\%$.
The chart shows only data points with values between 0.000193 and 0.000593 (± 5 Standard Deviations).
The error bars encompassing each result are plotted at \pm one standard deviation.

Uranium-238

MAPEP-23-MaW49



Notes:

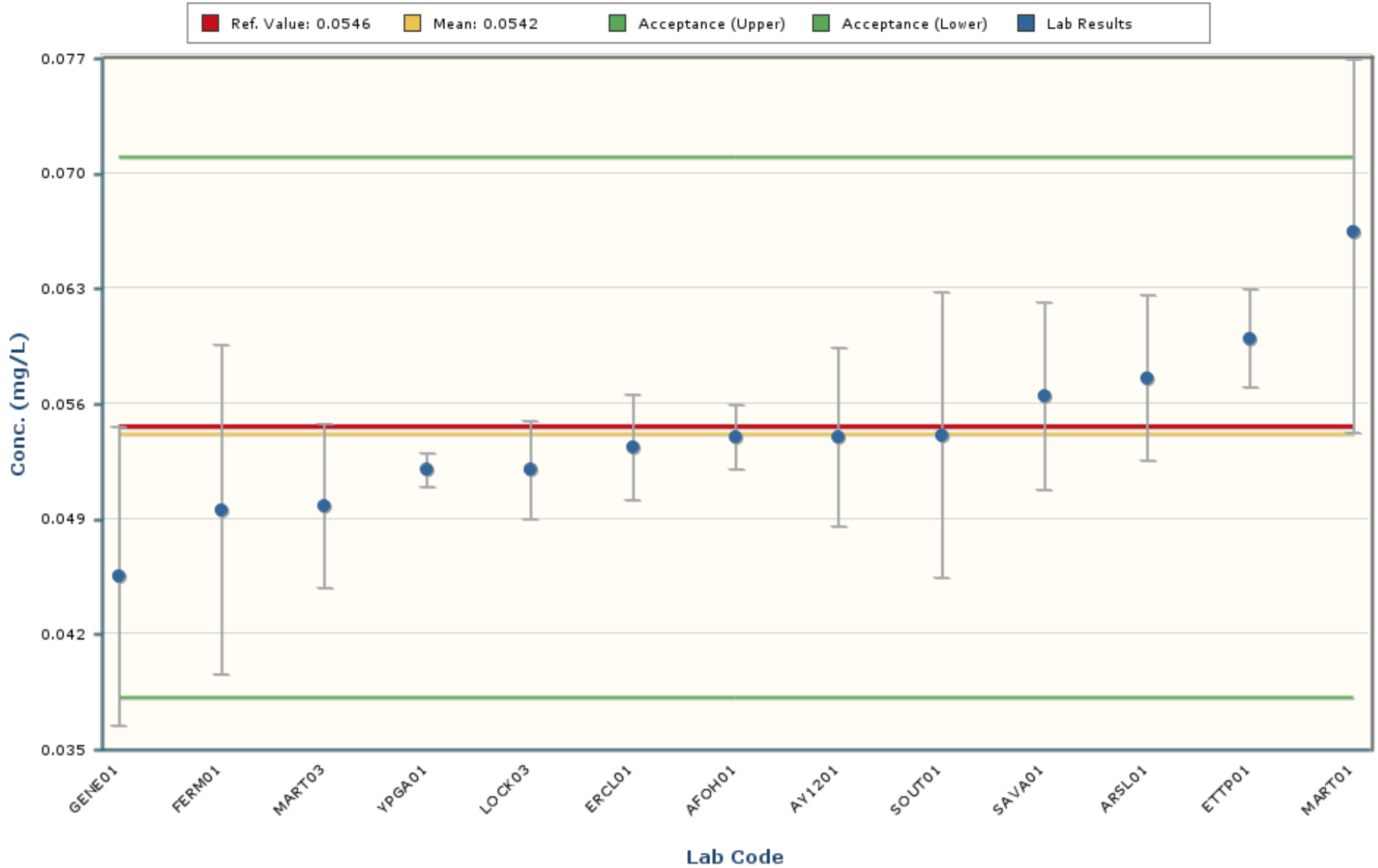
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 0.0270 and 0.0798 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at \pm one standard deviation.

Uranium-Total

MAPEP-23-MaW49



Notes:

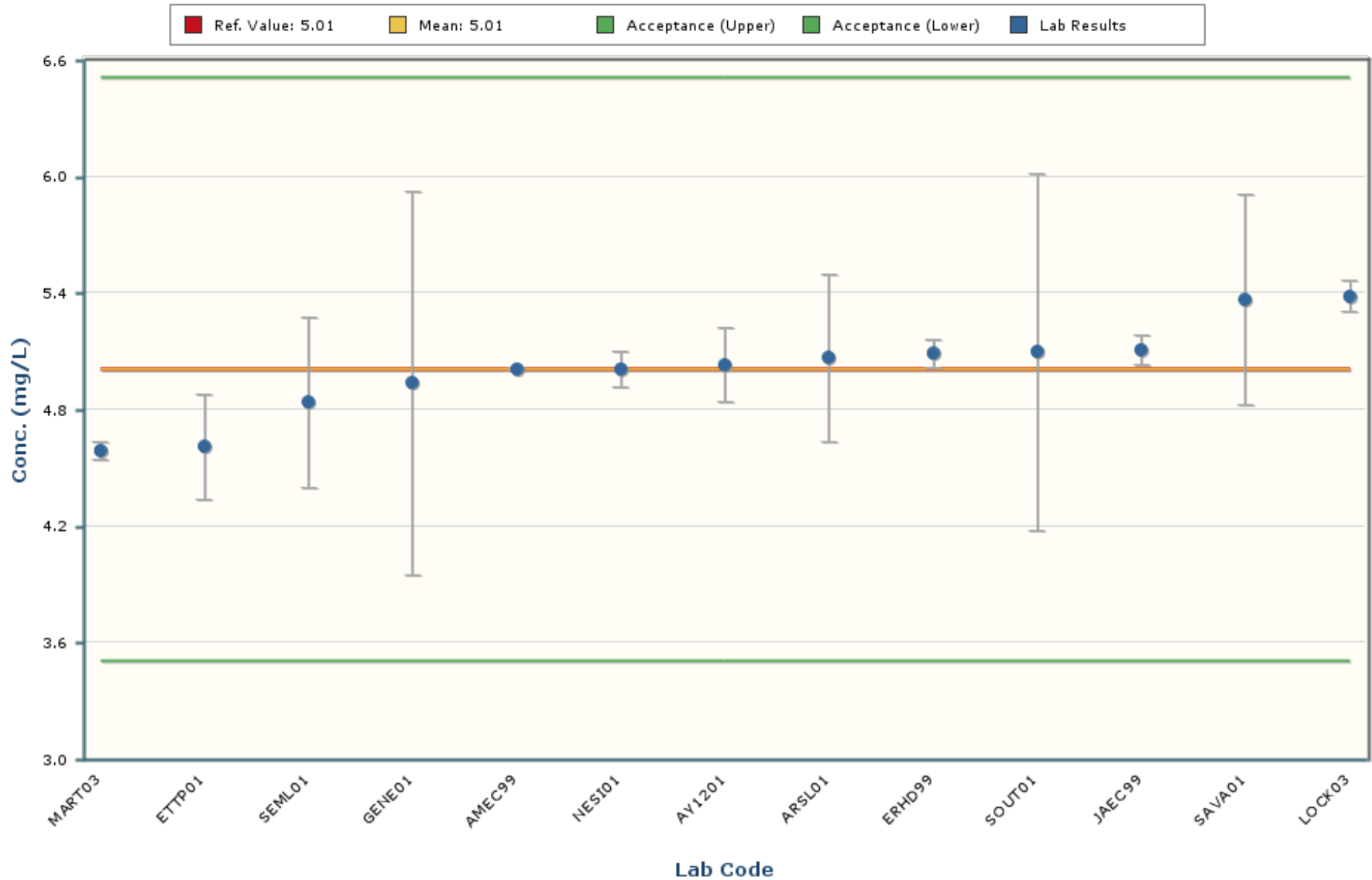
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 0.0281 and 0.0804 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at ± 1 standard deviation.

Vanadium

MAPEP-23-MaW49



Notes:

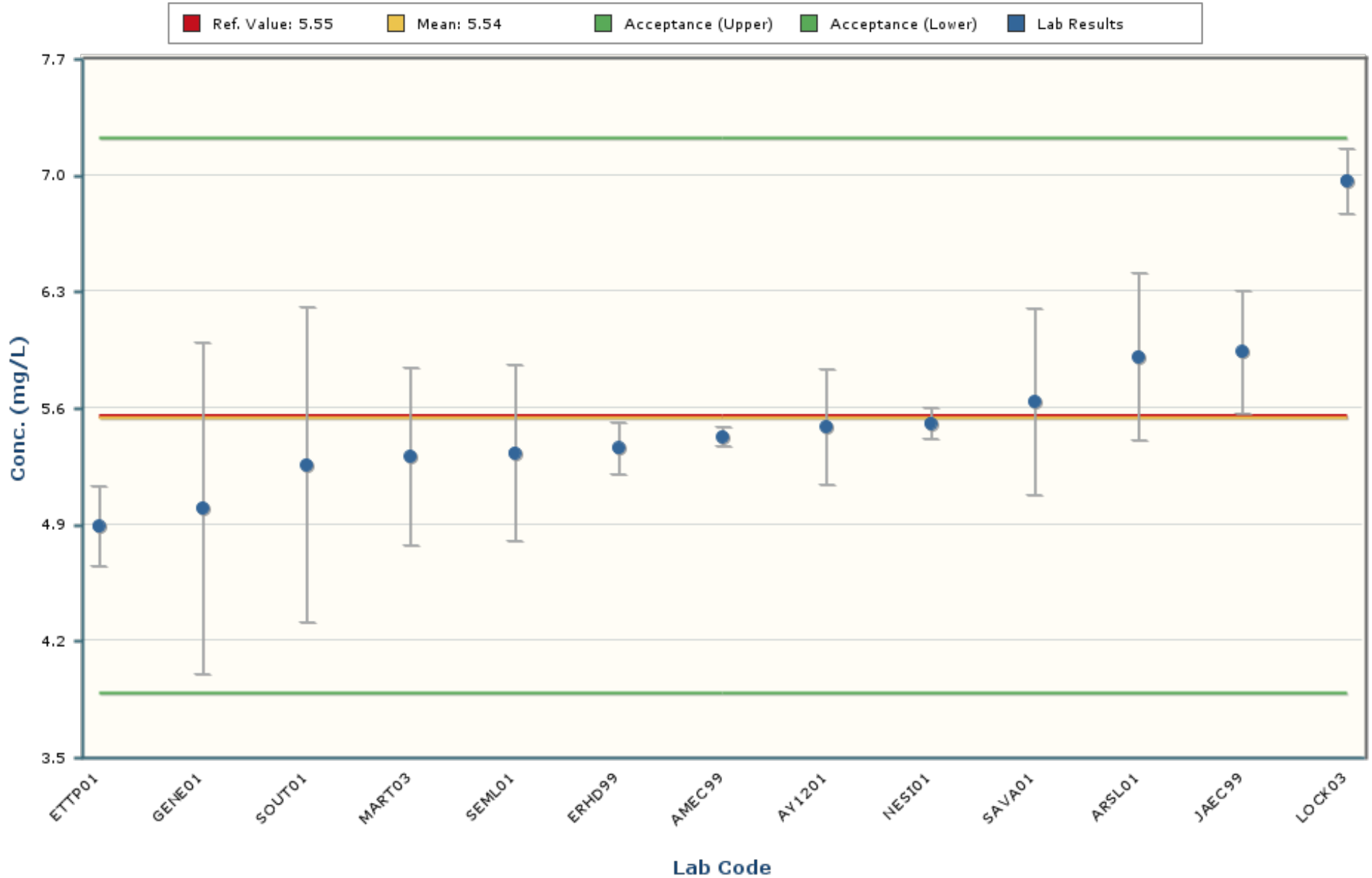
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 3.83 and 6.19 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at ± 1 standard deviation.

Zinc

MAPEP-23-MaW49



Notes:

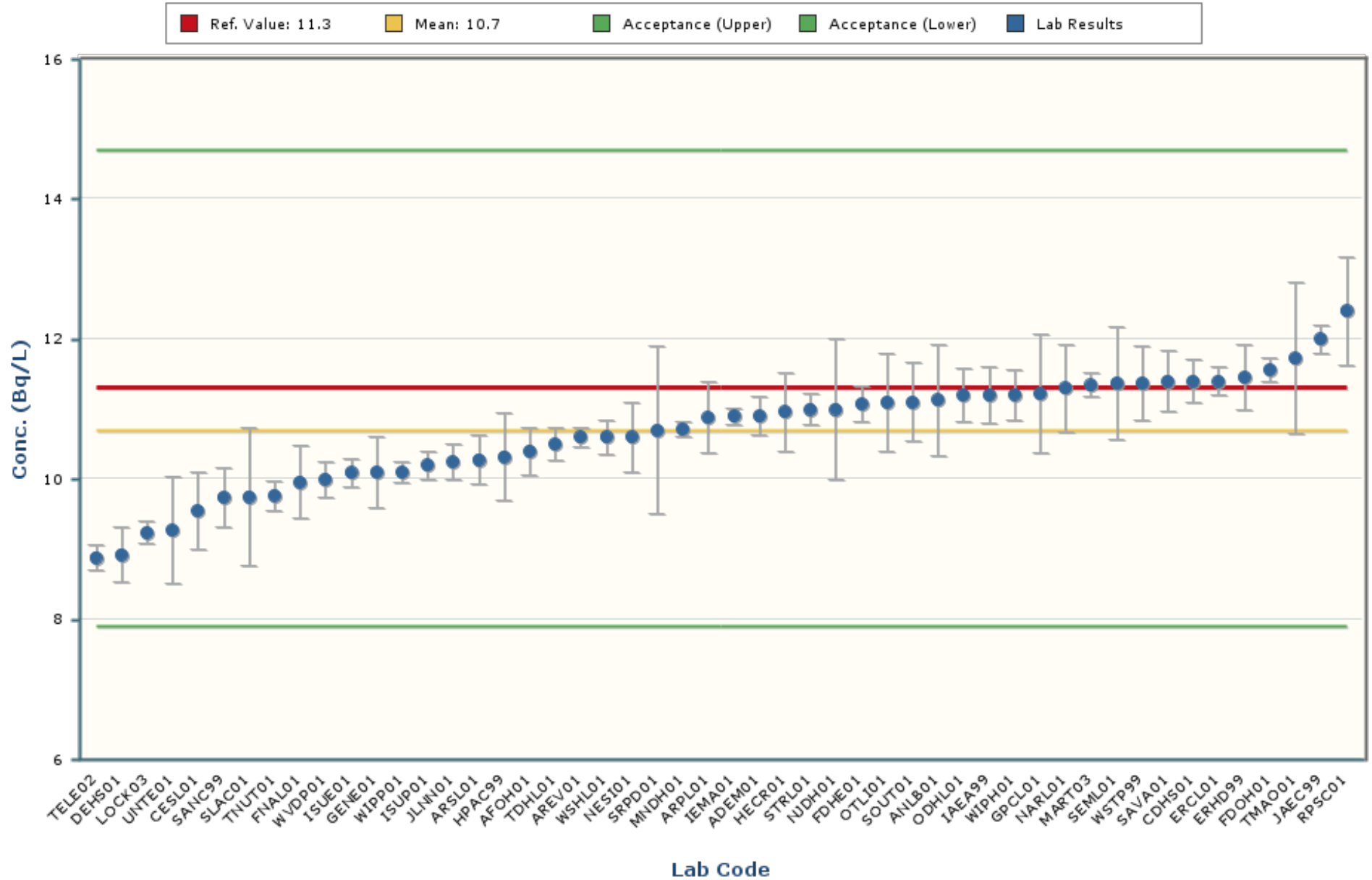
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 2.93 and 8.16 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at \pm one standard deviation.

Cesium-134

MAPEP-23-MaW49



Notes:

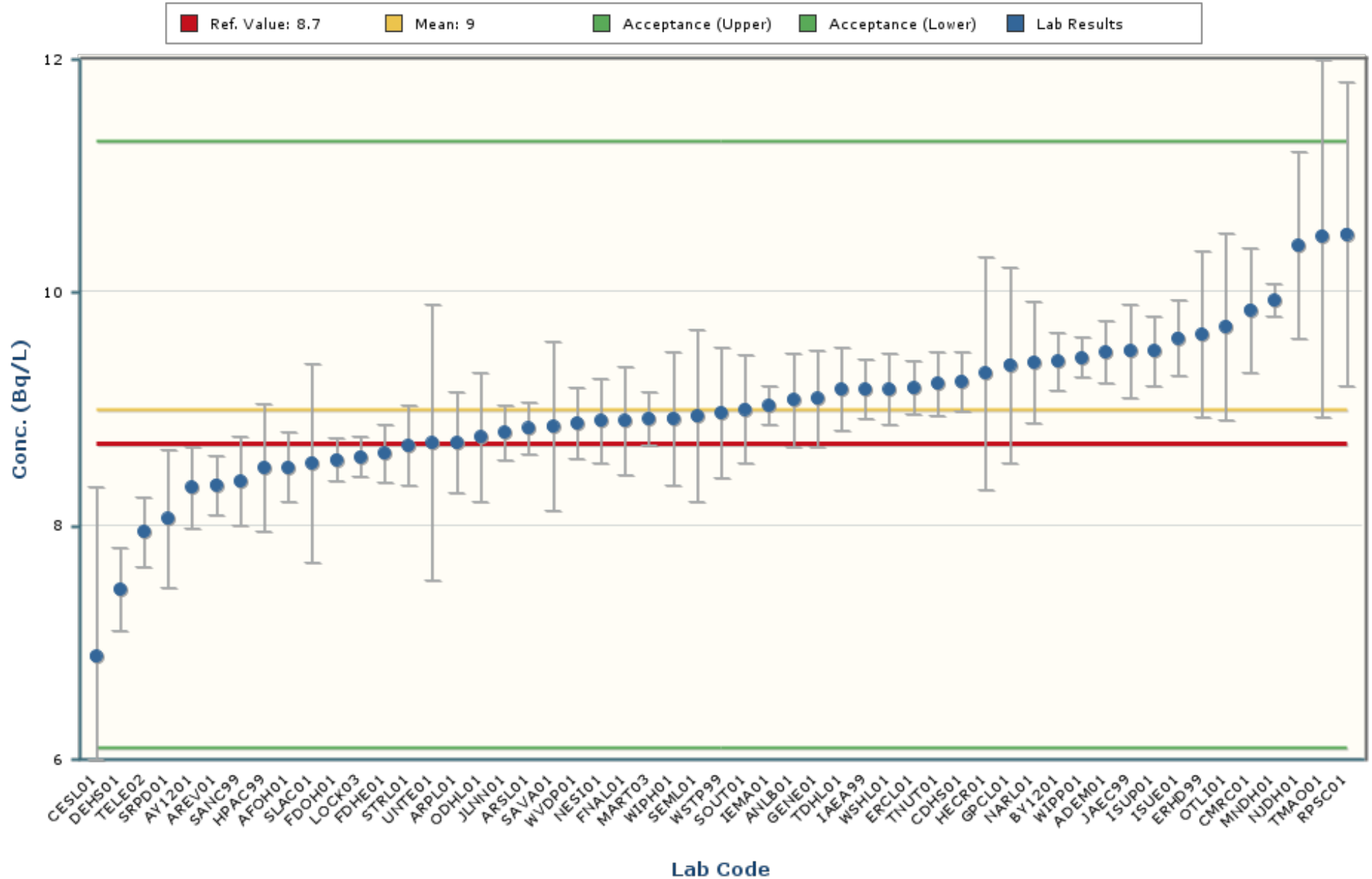
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 6.8 and 14.6 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at \pm one standard deviation.

Cesium-137

MAPEP-23-MaW49



Notes:

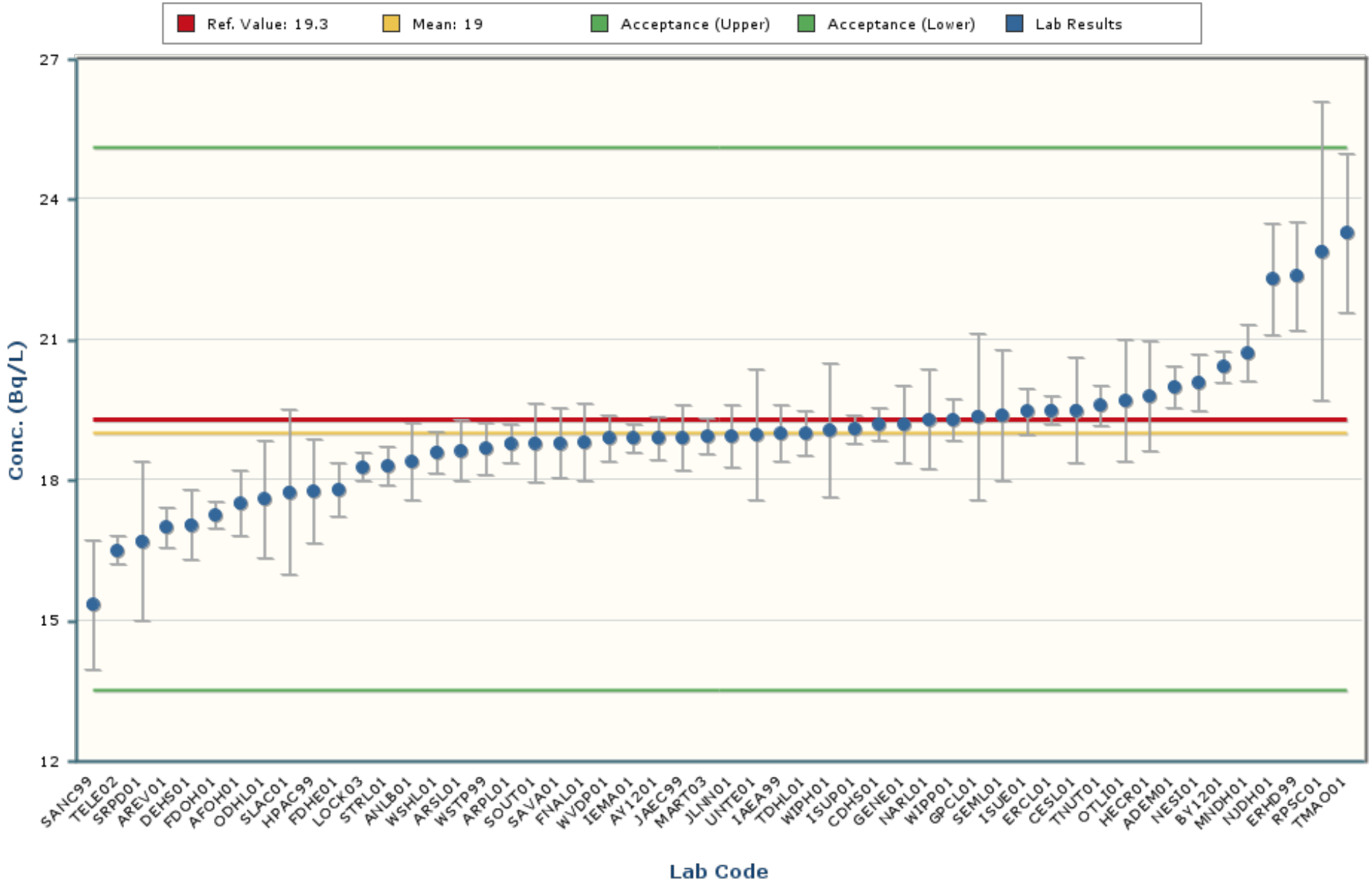
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 5.7 and 12.3 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at ± 1 standard deviation.

Cobalt-57

MAPEP-23-MaW49



Notes:

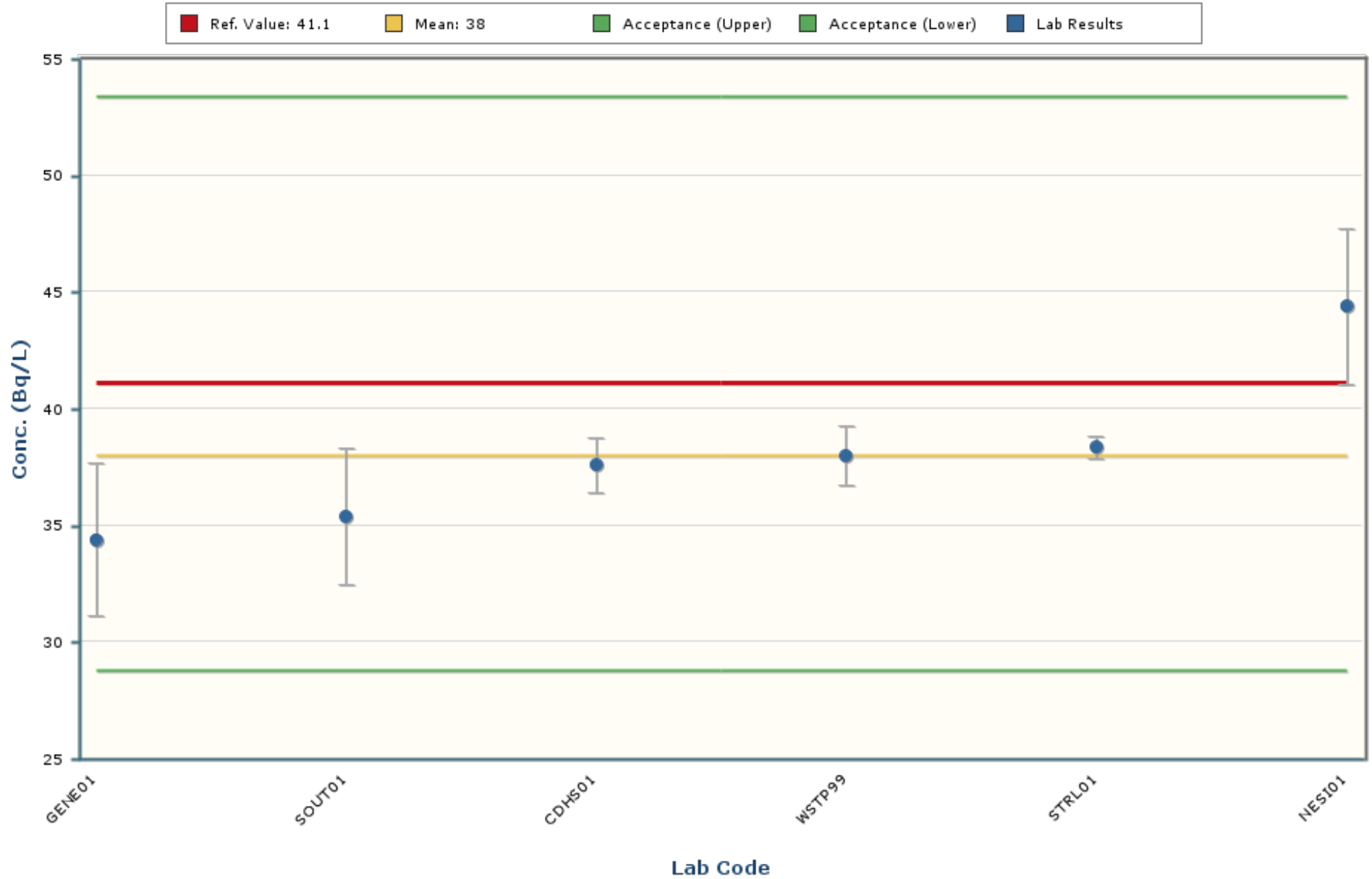
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 11.6 and 26.4 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at \pm one standard deviation.

Iron-55

MAPEP-23-MaW49



Notes:

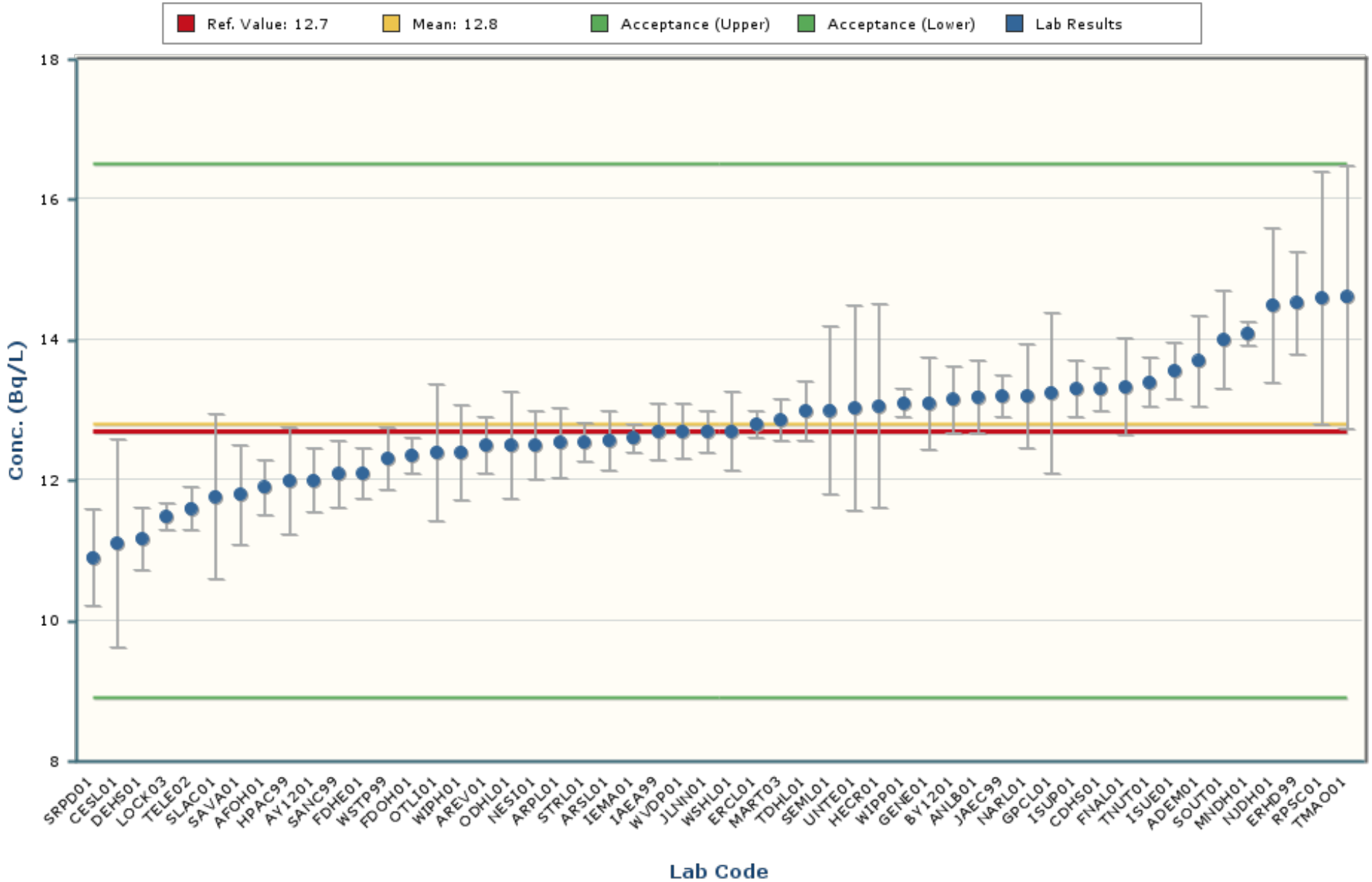
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 20.6 and 55.5 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at \pm one standard deviation.

Manganese-54

MAPEP-23-MaW49



Notes:

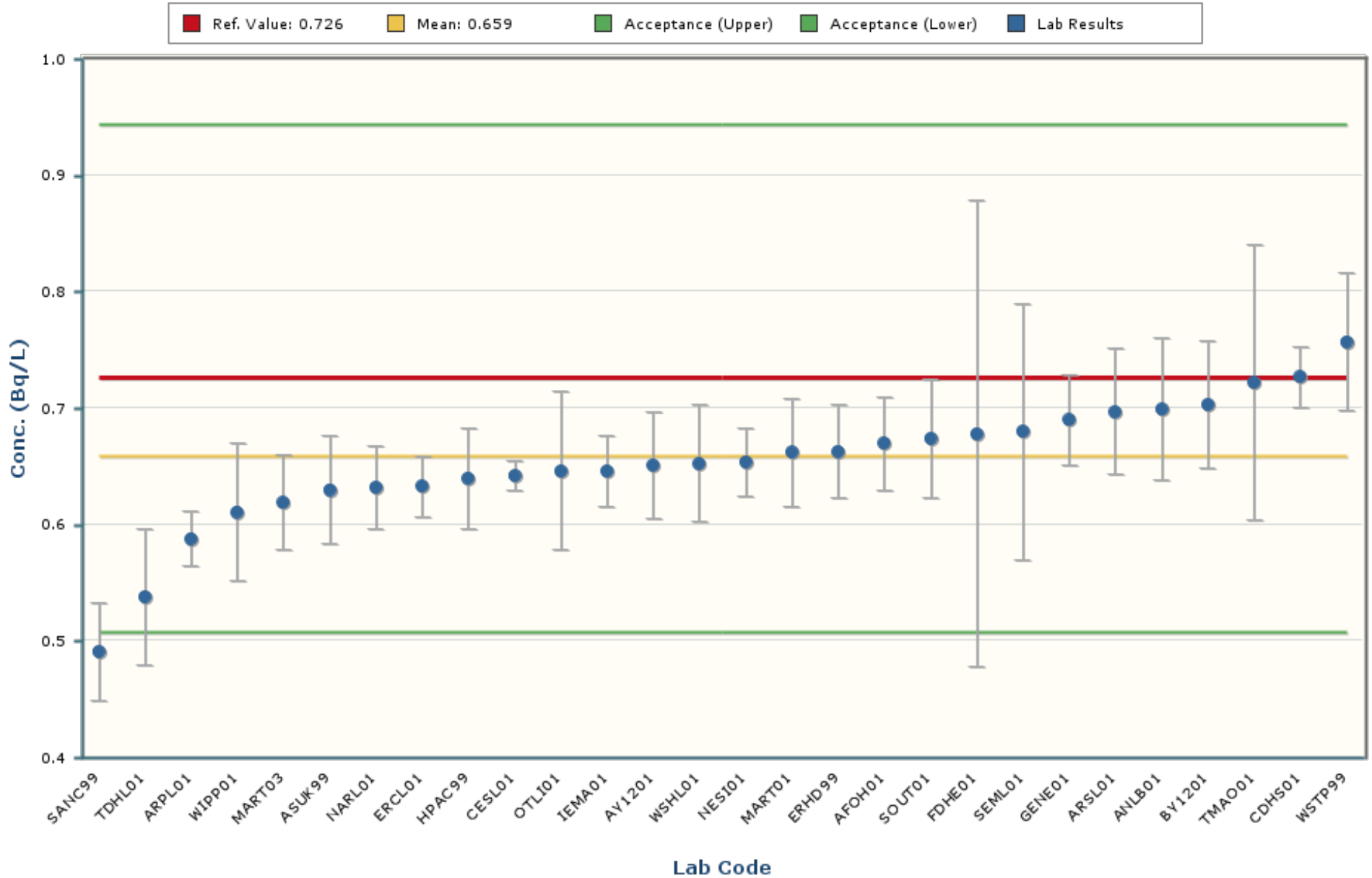
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 8.5 and 17.1 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at \pm one standard deviation.

Plutonium-238

MAPEP-23-MaW49



Notes:

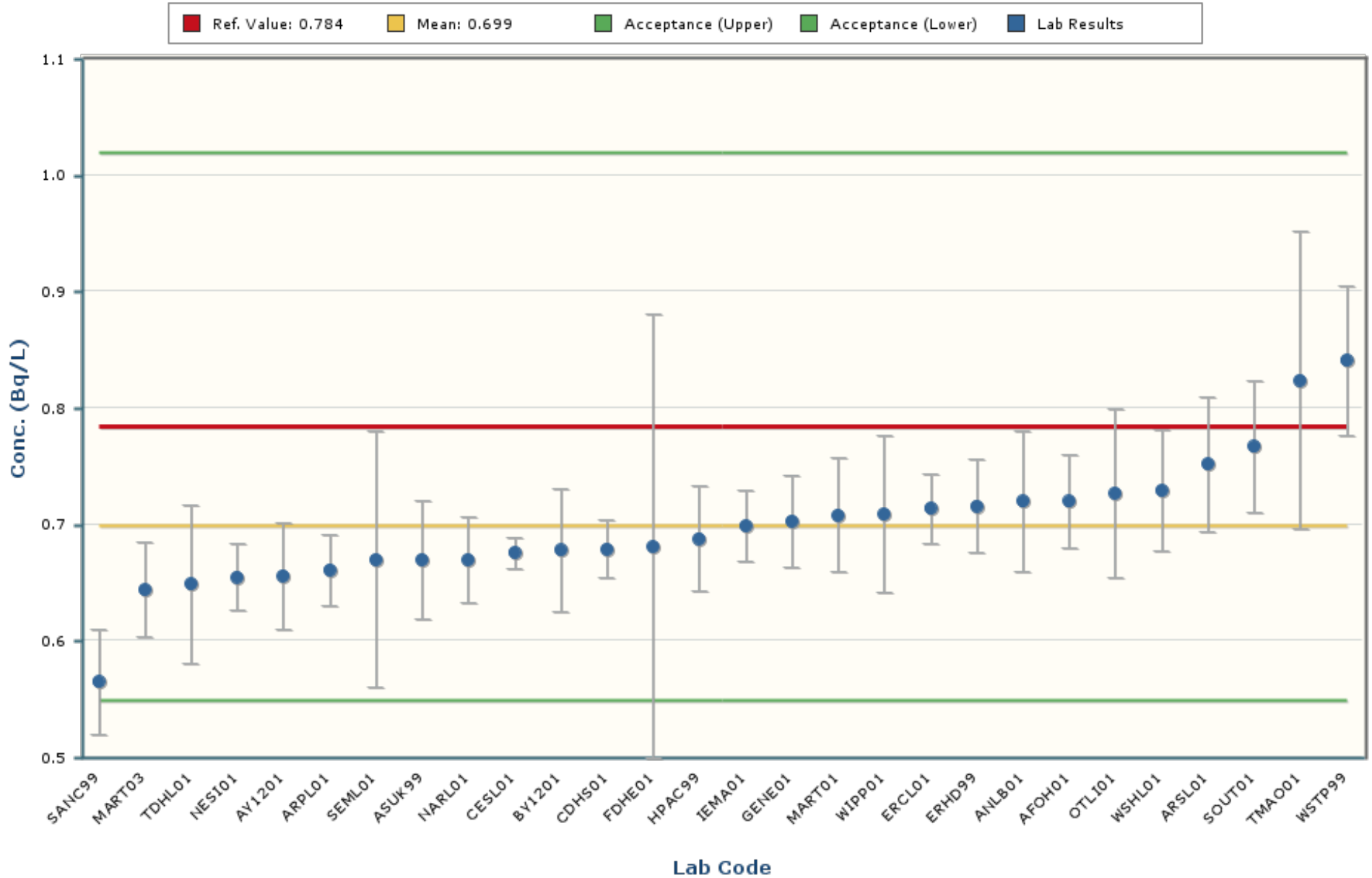
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 0.435 and 0.884 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at ± 1 standard deviation.

Plutonium-239/240

MAPEP-23-MaW49



Notes:

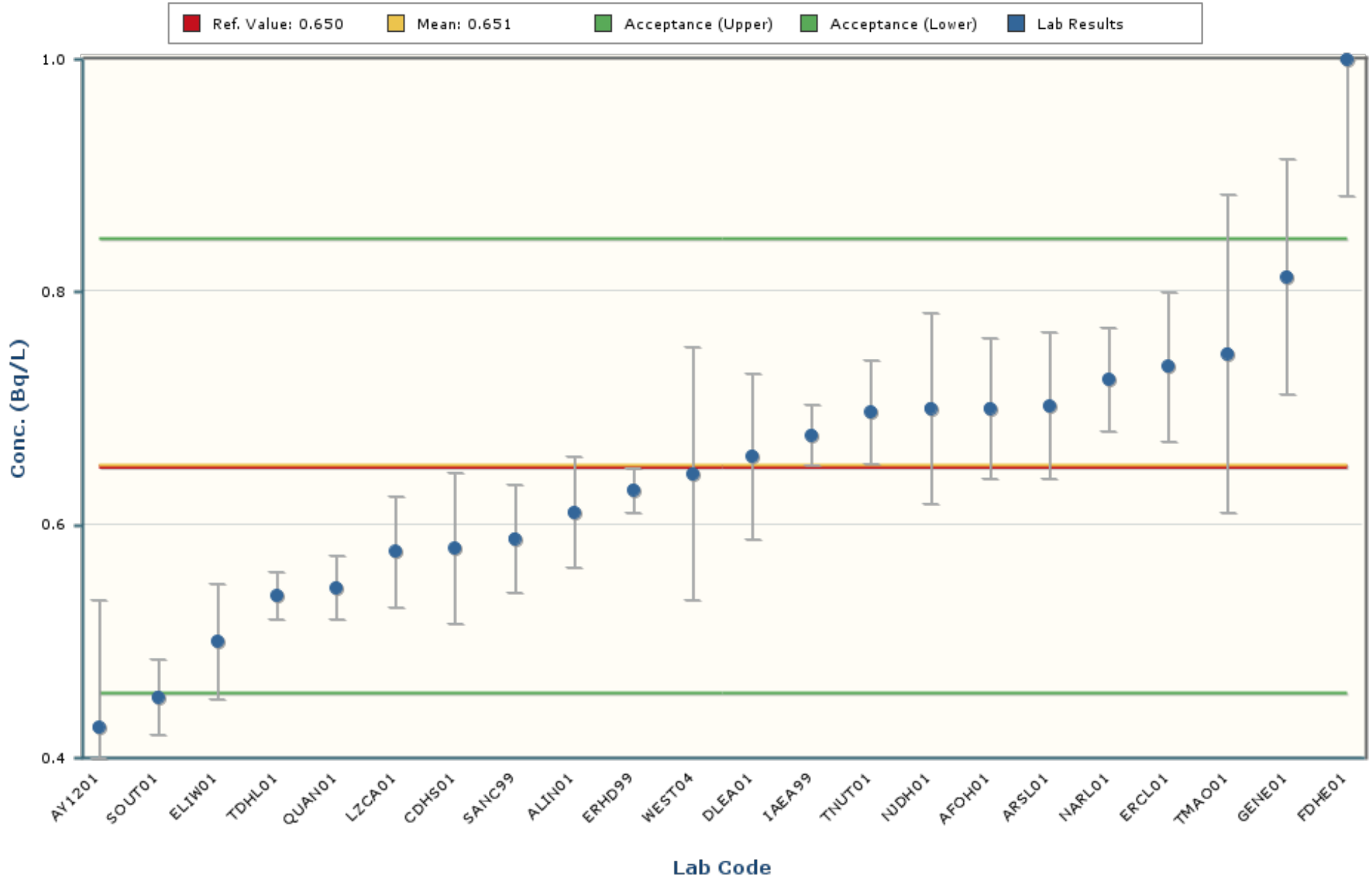
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 0.428 and 0.970 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at ± 1 standard deviation.

Radium-226

MAPEP-23-MaW49



Notes:

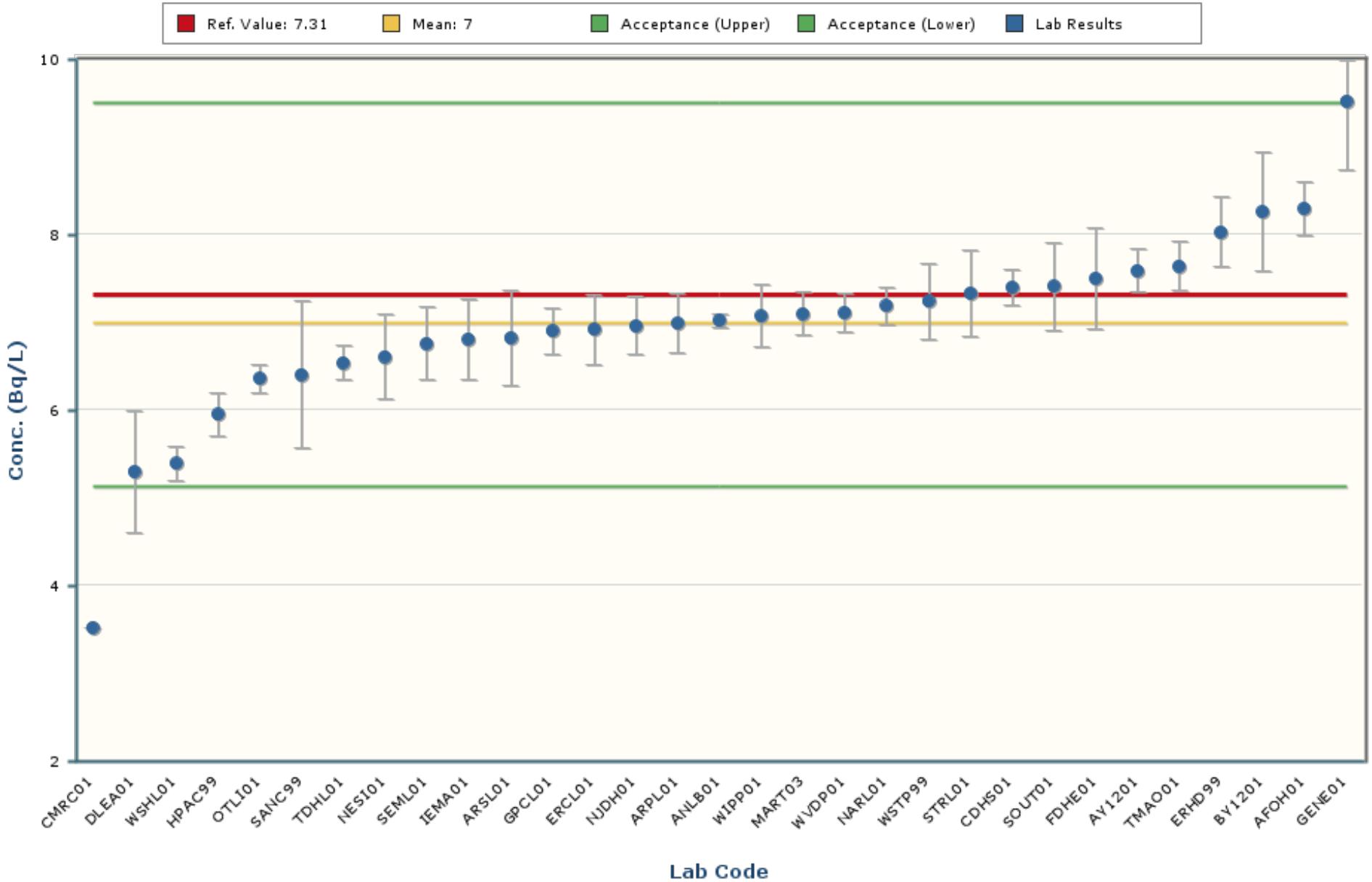
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 0.240 and 1.062 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at ± 1 standard deviation.

Strontium-90

MAPEP-23-MaW49



Notes:

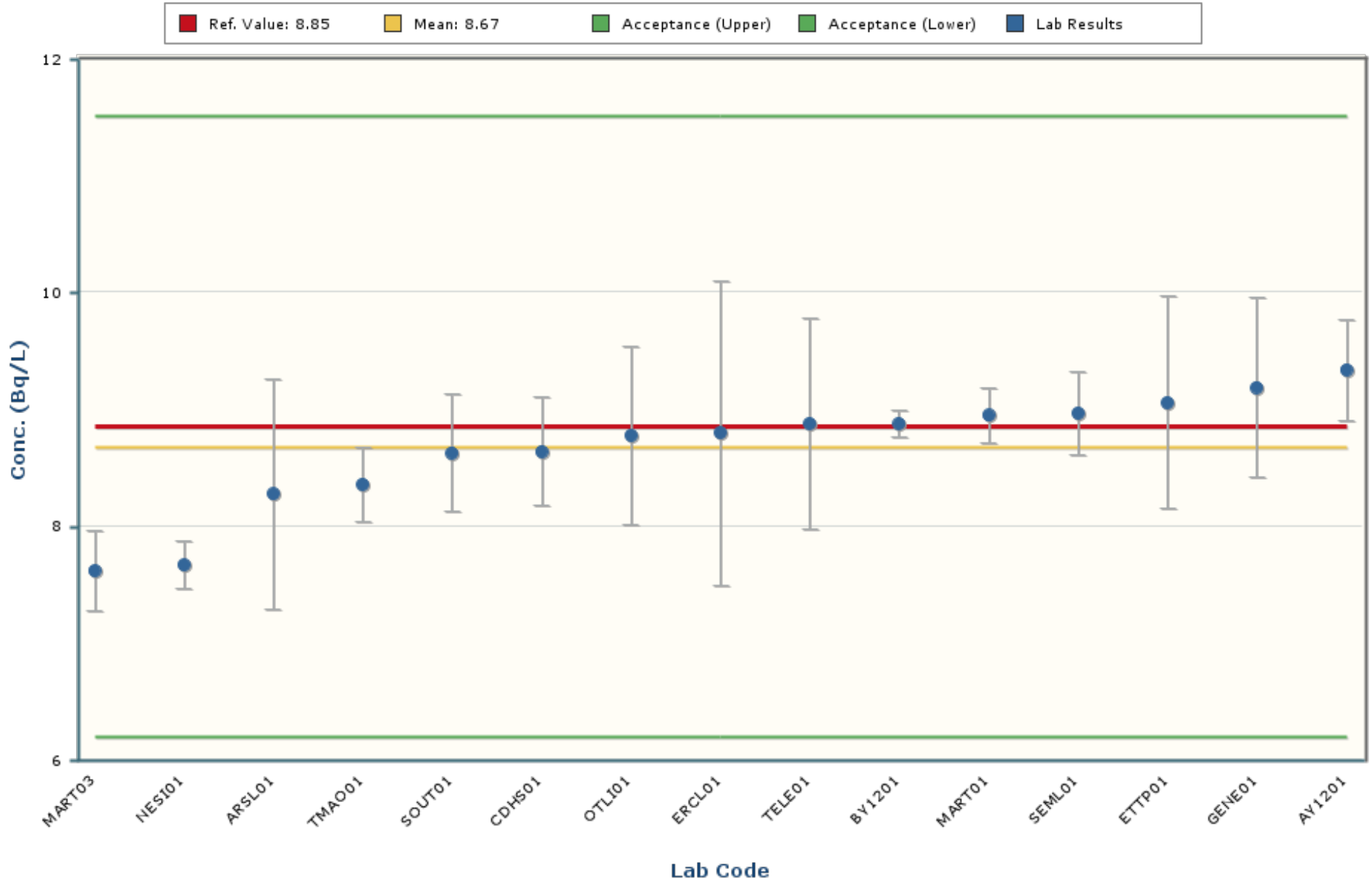
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 3.49 and 10.50 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at ± 1 standard deviation.

Technetium-99

MAPEP-23-MaW49



Notes:

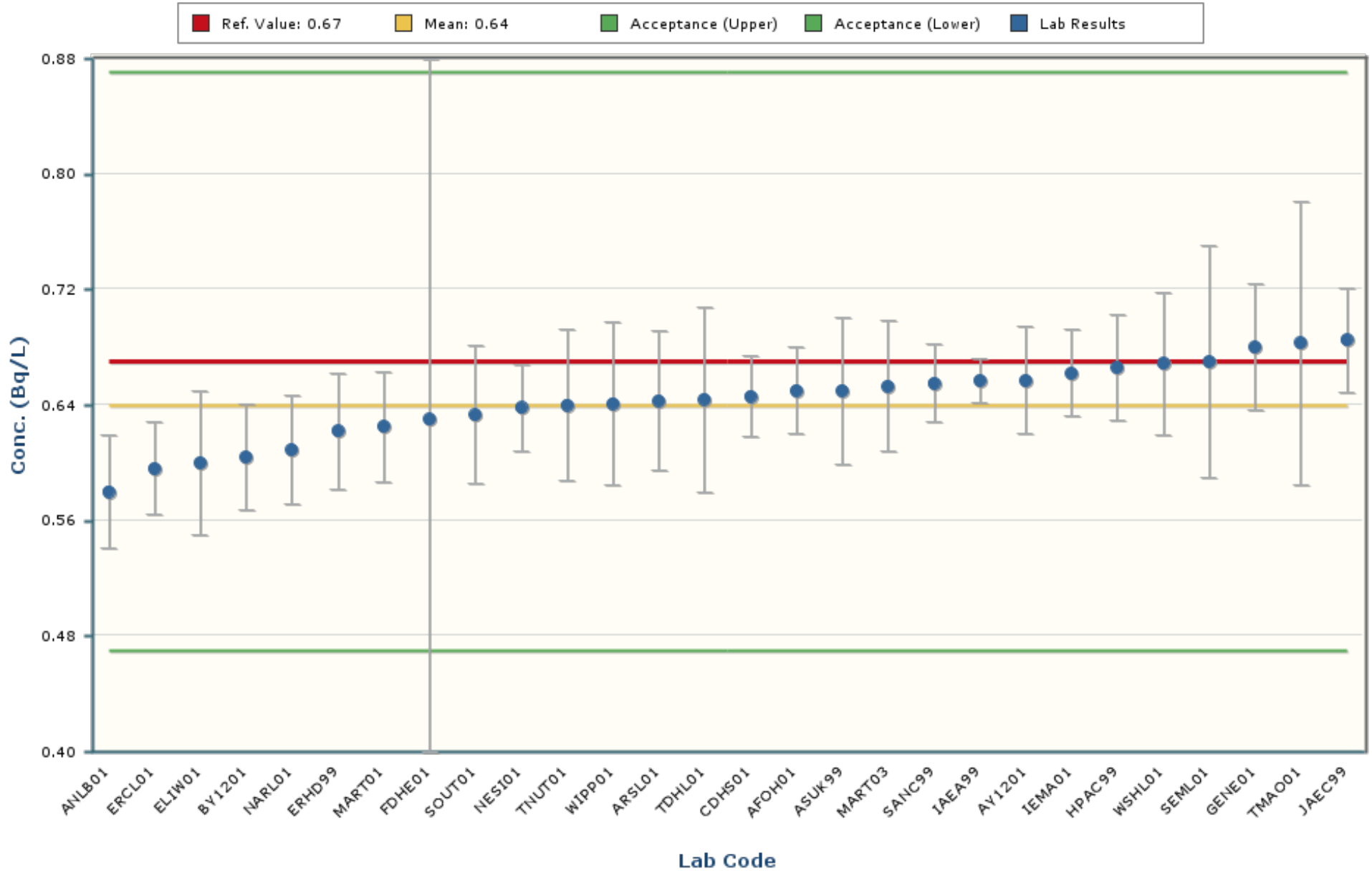
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 6.17 and 11.17 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at ± 1 standard deviation.

Uranium-234

MAPEP-23-MaW49



Notes:

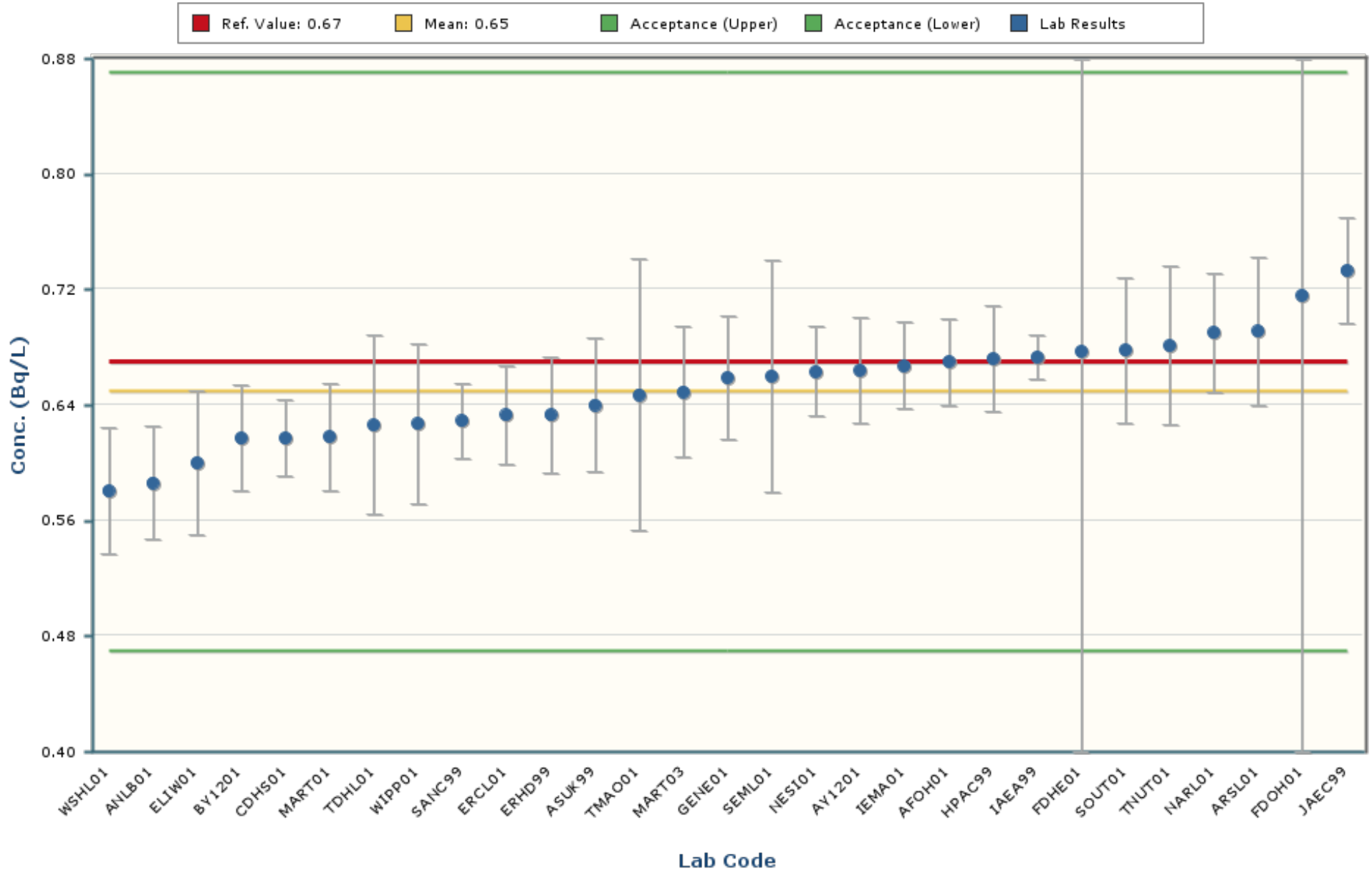
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 0.51 and 0.78 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at ± 1 standard deviation.

Uranium-238

MAPEP-23-MaW49



Notes:

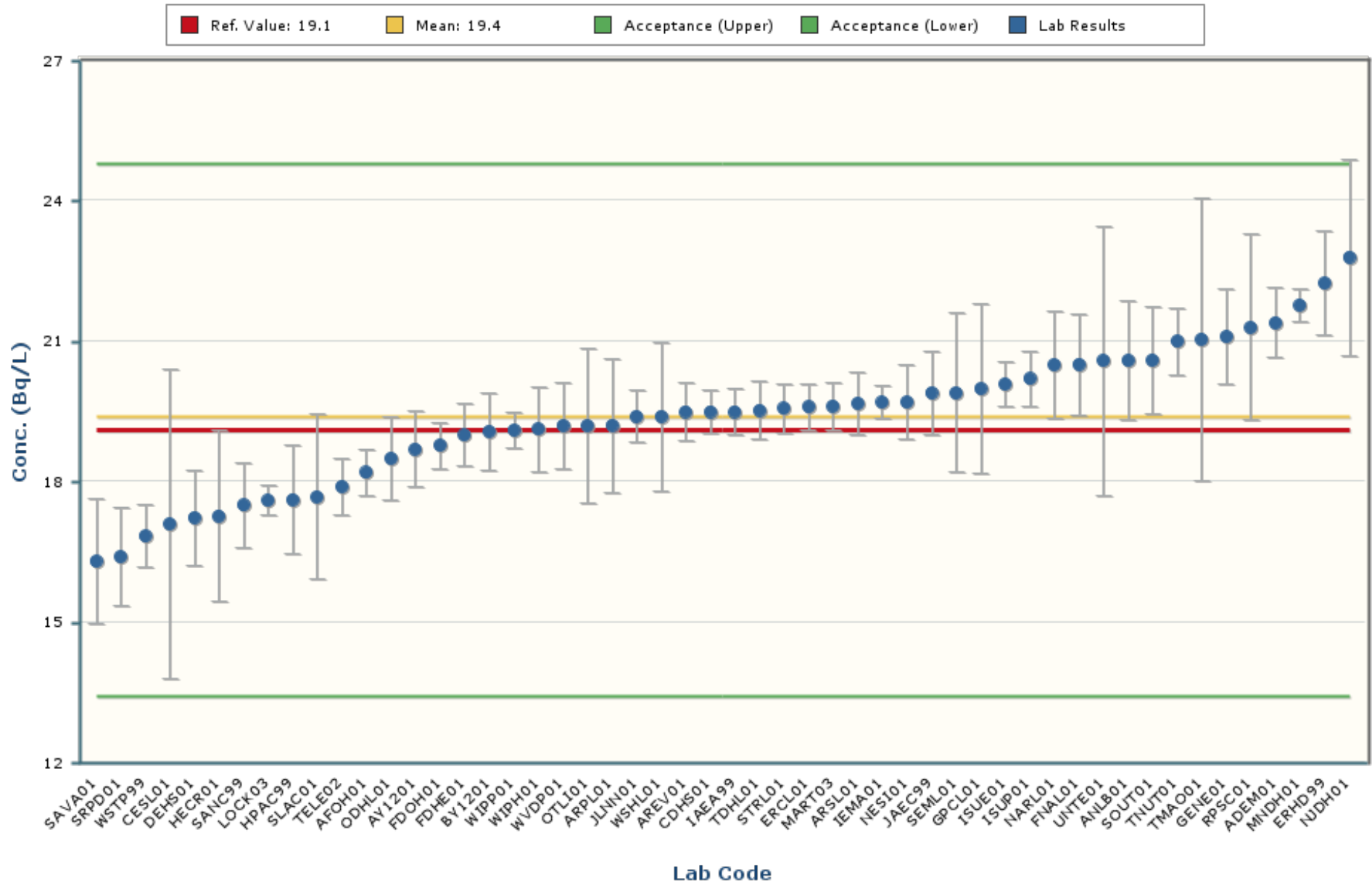
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 0.47 and 0.83 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at \pm one standard deviation.

Zinc-65

MAPEP-23-MaW49



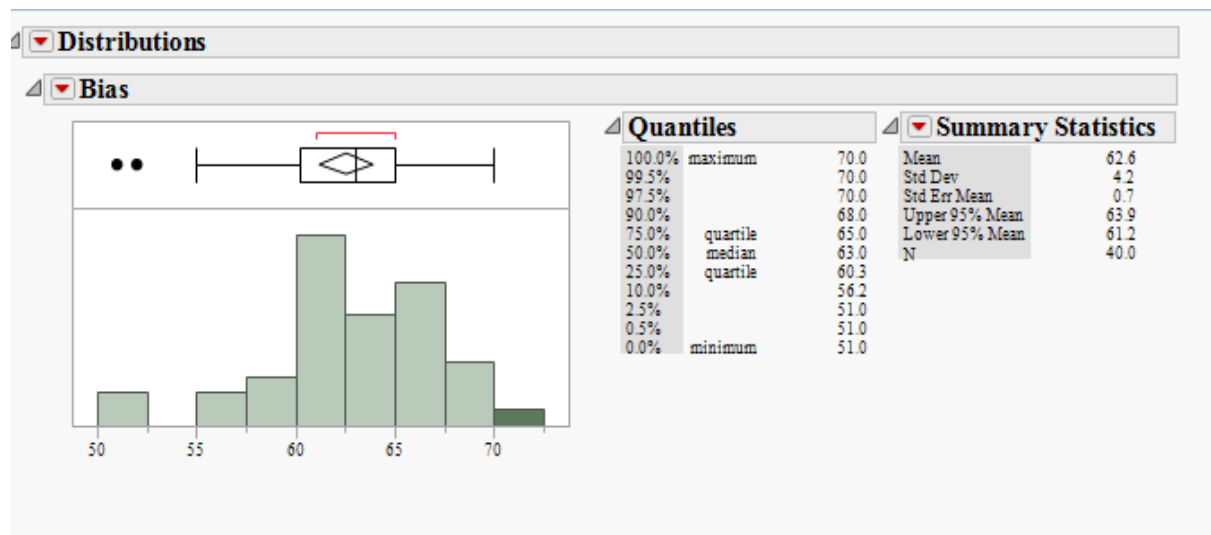
Notes:

The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 12.1 and 26.7 (± 5 Standard Deviations).

The error bars encompassing each result are plotted at ± 1 standard deviation.

The intent of the distribution graphs contained within this report is to graphically demonstrate to users how % Bias data within the current MAPEP Series appears when examined by matrix, by analyte, by method of sample preparation or by method of detection. Biases greater than +/- 100% have been screened from the data. The box plot of the bias data points and the mean visually illustrate the breadth of the distribution and where potential outliers in the distribution might lie. The statistics for the distribution plot are provided adjacent to the Bias plot. In some cases, N becomes very small and thus developed statistics may not accurately reflect estimates of the population if N were a significantly larger value.

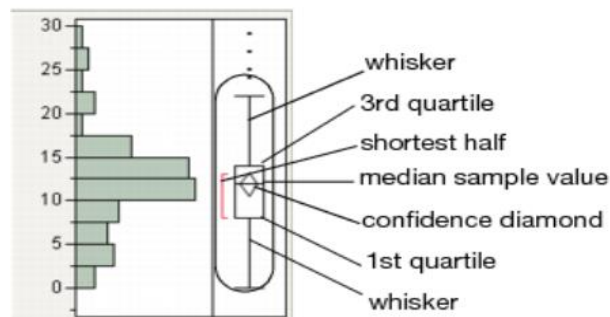


Outlier Box Plot

The BLACK small vertical line inside the small rectangle at the top of the data distribution graph is the median of the population of the bias shown for that analyte in the matrix. The confidence diamond contains the mean and the upper and lower 95% of the mean. If you drew a line through the middle of the diamond, you would have the mean. The top and bottom points of the diamond represent the upper and lower 95% of the mean. The ends of the box represent the 25th and 75th quantiles, also expressed as 1st and 3rd quartile. The difference between the 1st and 3rd quartiles is called the interquartile range. Each box has lines that extend from each end, sometimes called whiskers. The whiskers extend from the ends of the box to the outermost data point that falls within the distances computed as follows:

3rd quartile + 1.5*(interquartile range)

1st quartile - 1.5*(interquartile range)

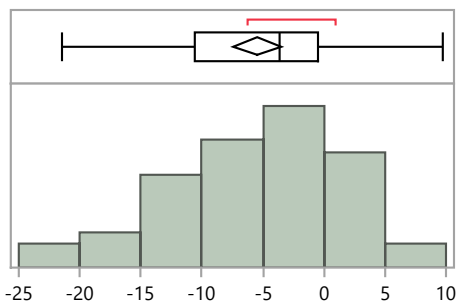


If the data points do not reach the computed ranges, then the whiskers are determined by the upper and lower data point values (not including outliers). The bracket outside of the box identifies the *shortest half*, which is the most dense 50% of the observations (Rousseuw and Leroy 1987).

MaW Distribution by Detection Method

Distributions Analyte_Detection=Cesium-134 Gamma Spectrometry

Bias



Quantiles

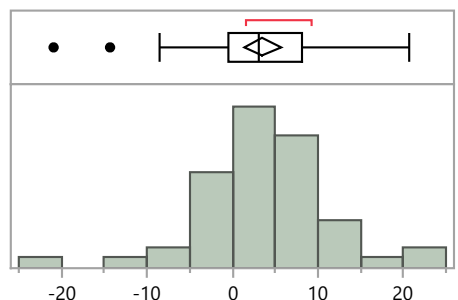
100.0%	maximum	9.7
99.5%		9.7
97.5%		8.7
90.0%		1.3
75.0%	quartile	-0.5
50.0%	median	-3.6
25.0%	quartile	-10.6
10.0%		-15.3
2.5%		-21.3
0.5%		-21.4
0.0%	minimum	-21.4

Summary Statistics

Mean	-5.5
Std Dev	6.9
Std Err Mean	1.0
Upper 95% Mean	-3.5
Lower 95% Mean	-7.4
N	50.0

Distributions Analyte_Detection=Cesium-137 Gamma Spectrometry

Bias



Quantiles

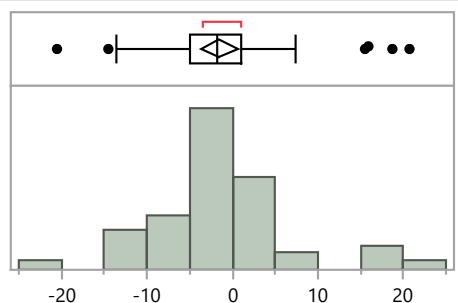
100.0%	maximum	20.7
99.5%		20.7
97.5%		20.6
90.0%		12.6
75.0%	quartile	8.1
50.0%	median	3.1
25.0%	quartile	-0.6
10.0%		-4.2
2.5%		-18.6
0.5%		-20.9
0.0%	minimum	-20.9

Summary Statistics

Mean	3.5
Std Dev	7.6
Std Err Mean	1.0
Upper 95% Mean	5.6
Lower 95% Mean	1.4
N	53.0

Distributions Analyte_Detection=Cobalt-57 Gamma Spectrometry

Bias



Quantiles

100.0%	maximum	20.7
99.5%		20.7
97.5%		20.0
90.0%		6.9
75.0%	quartile	1.0
50.0%	median	-1.9
25.0%	quartile	-5.0
10.0%		-11.3
2.5%		-18.6
0.5%		-20.5
0.0%	minimum	-20.5

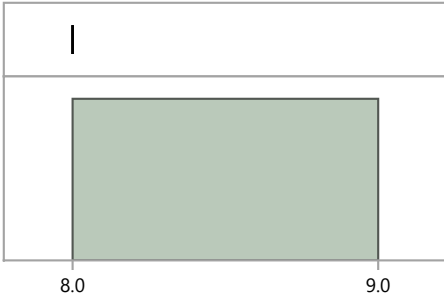
Summary Statistics

Mean	-1.5
Std Dev	7.7
Std Err Mean	1.1
Upper 95% Mean	0.6
Lower 95% Mean	-3.6
N	52.0

MaW Distribution by Detection Method

Distributions Analyte_Detection=Iron-55 Gamma Spectrometry

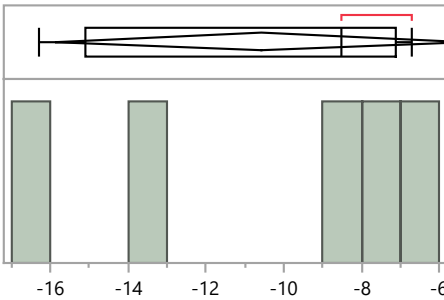
Bias



Quantiles		Summary Statistics		
100.0%	maximum	8.0	Mean	8.0
99.5%		8.0	Std Dev	.
97.5%		8.0	Std Err Mean	.
90.0%		8.0	Upper 95% Mean	.
75.0%	quartile	8.0	Lower 95% Mean	.
50.0%	median	8.0	N	1.0
25.0%	quartile	8.0		
10.0%		8.0		
2.5%		8.0		
0.5%		8.0		
0.0%	minimum	8.0		

Distributions Analyte_Detection=Iron-55 Liquid Scintillation Counter

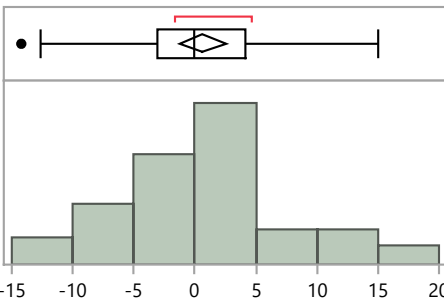
Bias



Quantiles		Summary Statistics		
100.0%	maximum	-6.7	Mean	-10.6
99.5%		-6.7	Std Dev	4.3
97.5%		-6.7	Std Err Mean	1.9
90.0%		-6.7	Upper 95% Mean	-5.3
75.0%	quartile	-7.1	Lower 95% Mean	-15.9
50.0%	median	-8.5	N	5.0
25.0%	quartile	-15.1		
10.0%		-16.3		
2.5%		-16.3		
0.5%		-16.3		
0.0%	minimum	-16.3		

Distributions Analyte_Detection=Manganese-54 Gamma Spectrometry

Bias

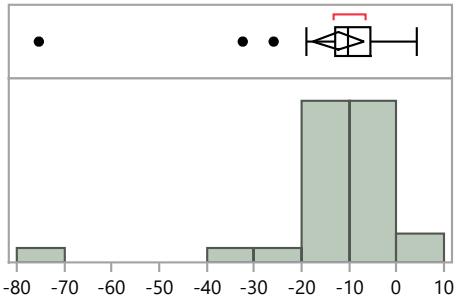


Quantiles		Summary Statistics		
100.0%	maximum	15.0	Mean	0.7
99.5%		15.0	Std Dev	6.8
97.5%		15.0	Std Err Mean	0.9
90.0%		10.8	Upper 95% Mean	2.6
75.0%	quartile	4.2	Lower 95% Mean	-1.2
50.0%	median	0.0	N	52.0
25.0%	quartile	-3.0		
10.0%		-8.3		
2.5%		-13.7		
0.5%		-14.2		
0.0%	minimum	-14.2		

MaW Distribution by Detection Method

Distributions Analyte_Detection=Plutonium-238 Alpha Spectrometry

Bias



Quantiles

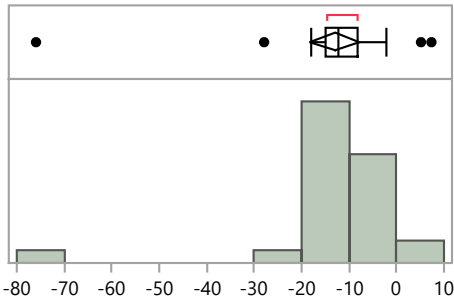
100.0%	maximum	4.3
99.5%		4.3
97.5%		4.3
90.0%		-0.6
75.0%	quartile	-5.7
50.0%	median	-10.1
25.0%	quartile	-13.1
10.0%		-25.9
2.5%		-75.3
0.5%		-75.3
0.0%	minimum	-75.3

Summary Statistics

Mean	-12.2
Std Dev	14.2
Std Err Mean	2.6
Upper 95% Mean	-6.9
Lower 95% Mean	-17.6
N	29.0

Distributions Analyte_Detection=Plutonium-239/240 Alpha Spectrometry

Bias



Quantiles

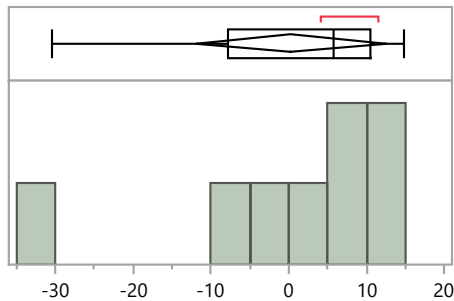
100.0%	maximum	7.3
99.5%		7.3
97.5%		7.3
90.0%		-2.2
75.0%	quartile	-8.2
50.0%	median	-12.2
25.0%	quartile	-15.1
10.0%		-17.9
2.5%		-75.9
0.5%		-75.9
0.0%	minimum	-75.9

Summary Statistics

Mean	-13.1
Std Dev	13.9
Std Err Mean	2.6
Upper 95% Mean	-7.8
Lower 95% Mean	-18.4
N	29.0

Distributions Analyte_Detection=Radium-226 Alpha Spectrometry

Bias



Quantiles

100.0%	maximum	14.9
99.5%		14.9
97.5%		14.9
90.0%		14.9
75.0%	quartile	10.6
50.0%	median	5.7
25.0%	quartile	-7.9
10.0%		-30.5
2.5%		-30.5
0.5%		-30.5
0.0%	minimum	-30.5

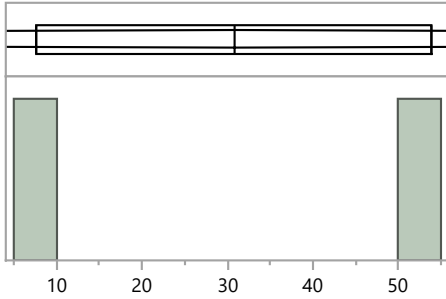
Summary Statistics

Mean	0.3
Std Dev	14.7
Std Err Mean	5.2
Upper 95% Mean	12.6
Lower 95% Mean	-12.0
N	8.0

MaW Distribution by Detection Method

Distributions Analyte_Detection=Radium-226 Gamma Spectrometry

Bias



Quantiles

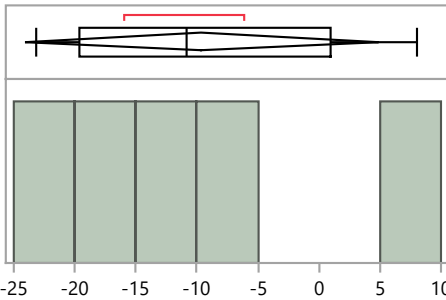
100.0%	maximum	53.8
99.5%		53.8
97.5%		53.8
90.0%		53.8
75.0%	quartile	53.8
50.0%	median	30.8
25.0%	quartile	7.7
10.0%		7.7
2.5%		7.7
0.5%		7.7
0.0%	minimum	7.7

Summary Statistics

Mean	30.8
Std Dev	32.6
Std Err Mean	23.1
Upper 95% Mean	323.6
Lower 95% Mean	-262.1
N	2.0

Distributions Analyte_Detection=Radium-226 Gas Flow Proportional Counter

Bias



Quantiles

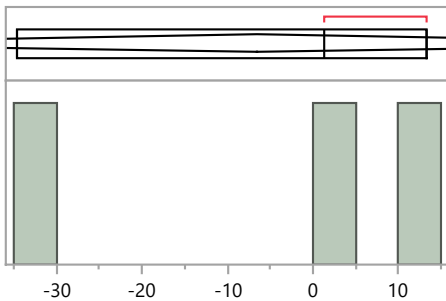
100.0%	maximum	8.0
99.5%		8.0
97.5%		8.0
90.0%		8.0
75.0%	quartile	1.0
50.0%	median	-10.8
25.0%	quartile	-19.6
10.0%		-23.1
2.5%		-23.1
0.5%		-23.1
0.0%	minimum	-23.1

Summary Statistics

Mean	-9.6
Std Dev	11.7
Std Err Mean	5.2
Upper 95% Mean	4.9
Lower 95% Mean	-24.1
N	5.0

Distributions Analyte_Detection=Radium-226 Gross Alpha/Beta - 2 pi gas flow proportional counter

Bias



Quantiles

100.0%	maximum	13.2
99.5%		13.2
97.5%		13.2
90.0%		13.2
75.0%	quartile	13.2
50.0%	median	1.4
25.0%	quartile	-34.5
10.0%		-34.5
2.5%		-34.5
0.5%		-34.5
0.0%	minimum	-34.5

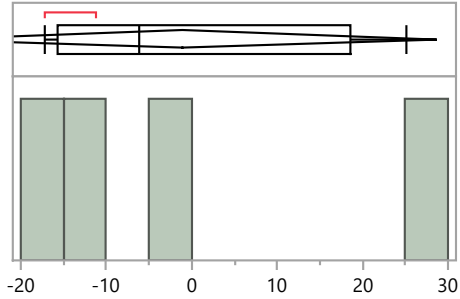
Summary Statistics

Mean	-6.6
Std Dev	24.8
Std Err Mean	14.3
Upper 95% Mean	55.1
Lower 95% Mean	-68.3
N	3.0

MaW Distribution by Detection Method

Distributions Analyte_Detection=Radium-226 Other

Bias



Quantiles

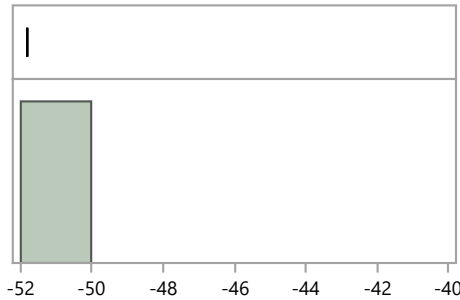
100.0%	maximum	25.1
99.5%		25.1
97.5%		25.1
90.0%		25.1
75.0%	quartile	18.6
50.0%	median	-6.1
25.0%	quartile	-15.6
10.0%		-17.1
2.5%		-17.1
0.5%		-17.1
0.0%	minimum	-17.1

Summary Statistics

Mean	-1.1
Std Dev	18.7
Std Err Mean	9.3
Upper 95% Mean	28.6
Lower 95% Mean	-30.7
N	4.0

Distributions Analyte_Detection=Strontium-90 Gamma Spectrometry

Bias



Quantiles

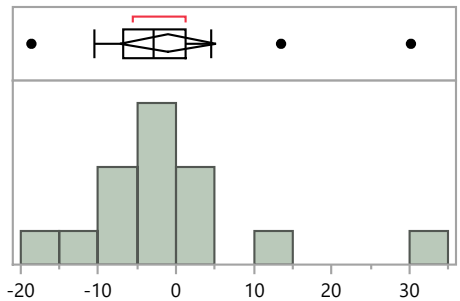
100.0%	maximum	-51.8
99.5%		-51.8
97.5%		-51.8
90.0%		-51.8
75.0%	quartile	-51.8
50.0%	median	-51.8
25.0%	quartile	-51.8
10.0%		-51.8
2.5%		-51.8
0.5%		-51.8
0.0%	minimum	-51.8

Summary Statistics

Mean	-51.8
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Detection=Strontium-90 Gas Flow Proportional Counter

Bias



Quantiles

100.0%	maximum	30.2
99.5%		30.2
97.5%		30.2
90.0%		20.2
75.0%	quartile	1.2
50.0%	median	-2.9
25.0%	quartile	-6.7
10.0%		-13.7
2.5%		-18.6
0.5%		-18.6
0.0%	minimum	-18.6

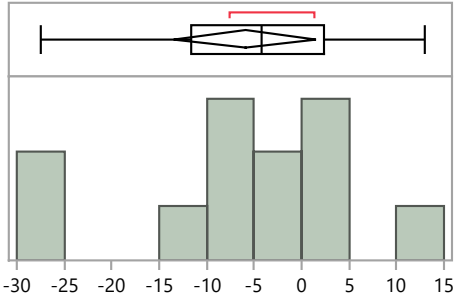
Summary Statistics

Mean	-1.0
Std Dev	11.3
Std Err Mean	2.9
Upper 95% Mean	5.2
Lower 95% Mean	-7.3
N	15.0

MaW Distribution by Detection Method

Distributions Analyte_Detection=Strontium-90 Gross Alpha/Beta - 2 pi gas flow proportional counter

Bias



Quantiles

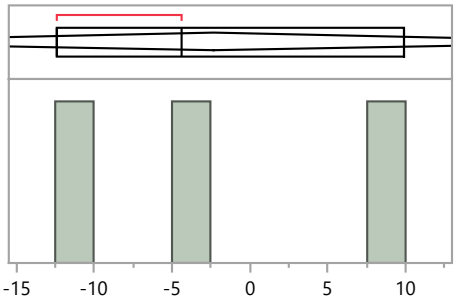
100.0%	maximum	13.0
99.5%		13.0
97.5%		13.0
90.0%		10.2
75.0%	quartile	2.3
50.0%	median	-4.3
25.0%	quartile	-11.6
10.0%		-27.1
2.5%		-27.5
0.5%		-27.5
0.0%	minimum	-27.5

Summary Statistics

Mean	-6.0
Std Dev	11.8
Std Err Mean	3.4
Upper 95% Mean	1.5
Lower 95% Mean	-13.5
N	12.0

Distributions Analyte_Detection=Strontium-90 Liquid Scintillation Counter

Bias



Quantiles

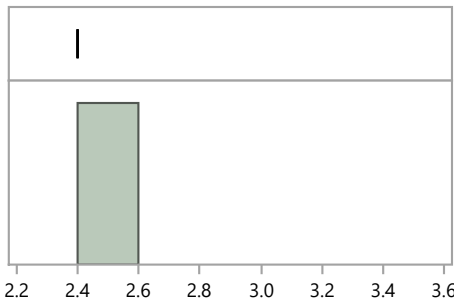
100.0%	maximum	9.9
99.5%		9.9
97.5%		9.9
90.0%		9.9
75.0%	quartile	9.9
50.0%	median	-4.4
25.0%	quartile	-12.4
10.0%		-12.4
2.5%		-12.4
0.5%		-12.4
0.0%	minimum	-12.4

Summary Statistics

Mean	-2.3
Std Dev	11.3
Std Err Mean	6.5
Upper 95% Mean	25.8
Lower 95% Mean	-30.4
N	3.0

Distributions Analyte_Detection=Technetium-99 Inductively Coupled Plasma Mass Spectrometry

Bias



Quantiles

100.0%	maximum	2.4
99.5%		2.4
97.5%		2.4
90.0%		2.4
75.0%	quartile	2.4
50.0%	median	2.4
25.0%	quartile	2.4
10.0%		2.4
2.5%		2.4
0.5%		2.4
0.0%	minimum	2.4

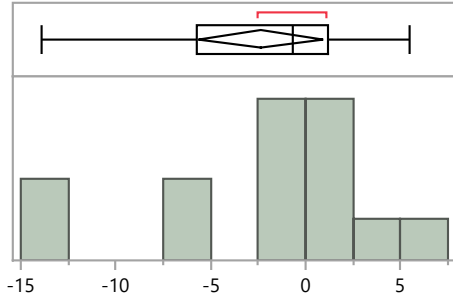
Summary Statistics

Mean	2.4
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaW Distribution by Detection Method

Distributions Analyte_Detection=Technetium-99 Liquid Scintillation Counter

Bias



Quantiles

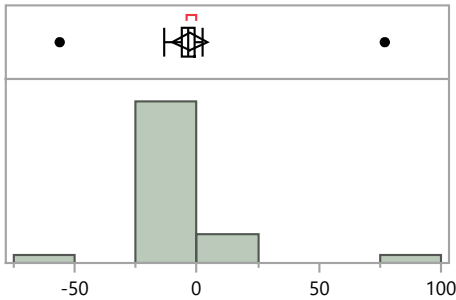
100.0%	maximum	5.5
99.5%		5.5
97.5%		5.5
90.0%		4.7
75.0%	quartile	1.2
50.0%	median	-0.7
25.0%	quartile	-5.8
10.0%		-13.6
2.5%		-13.9
0.5%		-13.9
0.0%	minimum	-13.9

Summary Statistics

Mean	-2.4
Std Dev	5.7
Std Err Mean	1.5
Upper 95% Mean	0.9
Lower 95% Mean	-5.7
N	14.0

Distributions Analyte_Detection=Uranium-234 Alpha Spectrometry

Bias



Quantiles

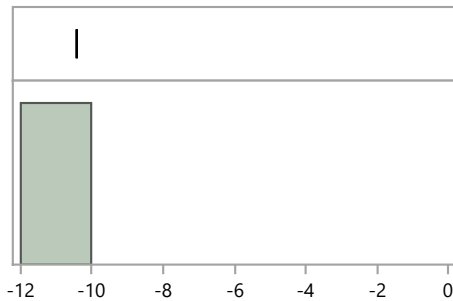
100.0%	maximum	76.9
99.5%		76.9
97.5%		76.9
90.0%		1.9
75.0%	quartile	-0.9
50.0%	median	-3.6
25.0%	quartile	-6.4
10.0%		-11.0
2.5%		-56.1
0.5%		-56.1
0.0%	minimum	-56.1

Summary Statistics

Mean	-2.9
Std Dev	18.5
Std Err Mean	3.4
Upper 95% Mean	4.2
Lower 95% Mean	-9.9
N	29.0

Distributions Analyte_Detection=Uranium-234 Gas Flow Proportional Counter

Bias



Quantiles

100.0%	maximum	-10.4
99.5%		-10.4
97.5%		-10.4
90.0%		-10.4
75.0%	quartile	-10.4
50.0%	median	-10.4
25.0%	quartile	-10.4
10.0%		-10.4
2.5%		-10.4
0.5%		-10.4
0.0%	minimum	-10.4

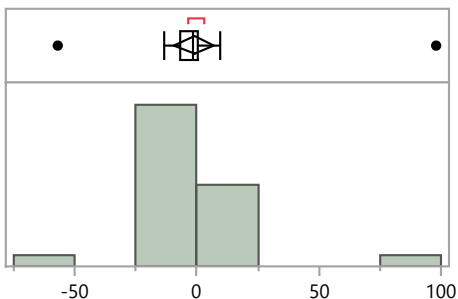
Summary Statistics

Mean	-10.4
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaW Distribution by Detection Method

Distributions Analyte_Detection=Uranium-238 Alpha Spectrometry

Bias



Quantiles

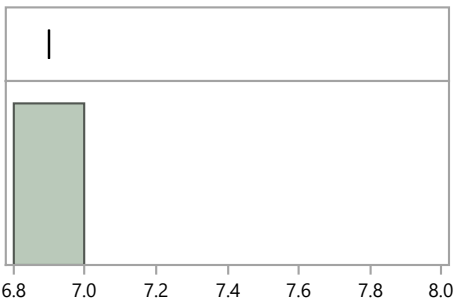
100.0%	maximum	97.9
99.5%		97.9
97.5%		97.9
90.0%		3.1
75.0%	quartile	0.7
50.0%	median	-1.6
25.0%	quartile	-6.5
10.0%		-12.5
2.5%		-56.9
0.5%		-56.9
0.0%	minimum	-56.9

Summary Statistics

Mean	-1.2
Std Dev	22.1
Std Err Mean	4.1
Upper 95% Mean	7.2
Lower 95% Mean	-9.6
N	29.0

Distributions Analyte_Detection=Uranium-238 Gamma Spectrometry

Bias



Quantiles

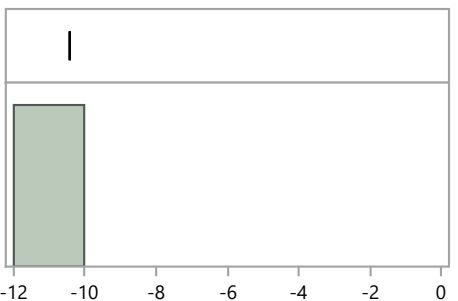
100.0%	maximum	6.9
99.5%		6.9
97.5%		6.9
90.0%		6.9
75.0%	quartile	6.9
50.0%	median	6.9
25.0%	quartile	6.9
10.0%		6.9
2.5%		6.9
0.5%		6.9
0.0%	minimum	6.9

Summary Statistics

Mean	6.9
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Detection=Uranium-238 Gas Flow Proportional Counter

Bias



Quantiles

100.0%	maximum	-10.4
99.5%		-10.4
97.5%		-10.4
90.0%		-10.4
75.0%	quartile	-10.4
50.0%	median	-10.4
25.0%	quartile	-10.4
10.0%		-10.4
2.5%		-10.4
0.5%		-10.4
0.0%	minimum	-10.4

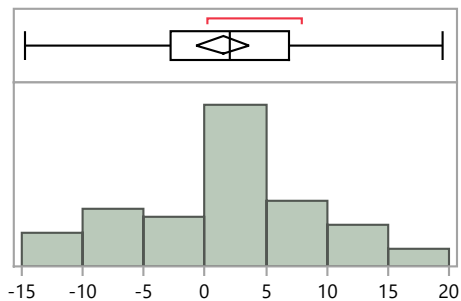
Summary Statistics

Mean	-10.4
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaW Distribution by Detection Method

Distributions Analyte_Detection=Zinc-65 Gamma Spectrometry

Bias

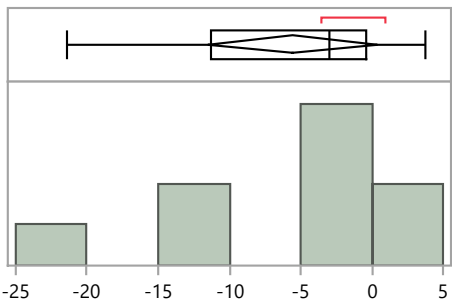


Quantiles			Summary Statistics	
100.0%	maximum	19.4	Mean	1.5
99.5%		19.4	Std Dev	7.6
97.5%		18.4	Std Err Mean	1.1
90.0%		11.2	Upper 95% Mean	3.6
75.0%	quartile	6.9	Lower 95% Mean	-0.7
50.0%	median	2.1	N	52.0
25.0%	quartile	-2.9		
10.0%		-9.7		
2.5%		-14.5		
0.5%		-14.7		
0.0%	minimum	-14.7		

MaW Distribution by Preparation Method

Distributions Analyte_Method=Cesium-134 EPA 901.1, Gamma Emitting, 600/4-80-032

Bias

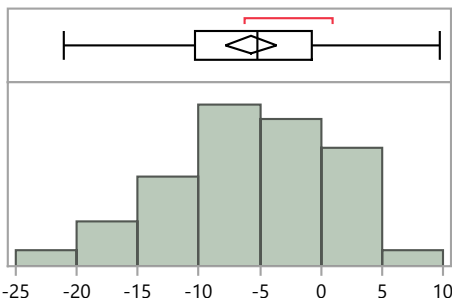


Quantiles		
100.0%	maximum	3.7
99.5%		3.7
97.5%		3.7
90.0%		3.7
75.0%	quartile	-0.5
50.0%	median	-3.0
25.0%	quartile	-11.3
10.0%		-21.4
2.5%		-21.4
0.5%		-21.4
0.0%	minimum	-21.4

Summary Statistics	
Mean	-5.6
Std Dev	7.7
Std Err Mean	2.6
Upper 95% Mean	0.3
Lower 95% Mean	-11.5
N	9.0

Distributions Analyte_Method=Cesium-134 No preparation - analyzed as received

Bias

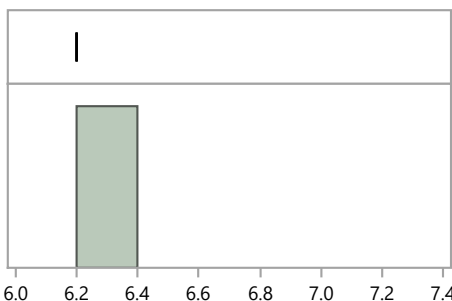


Quantiles		
100.0%	maximum	9.7
99.5%		9.7
97.5%		9.5
90.0%		0.9
75.0%	quartile	-0.7
50.0%	median	-5.3
25.0%	quartile	-10.4
10.0%		-15.3
2.5%		-20.9
0.5%		-21.0
0.0%	minimum	-21.0

Summary Statistics	
Mean	-5.7
Std Dev	6.6
Std Err Mean	1.0
Upper 95% Mean	-3.6
Lower 95% Mean	-7.8
N	40.0

Distributions Analyte_Method=Cesium-134 Other

Bias



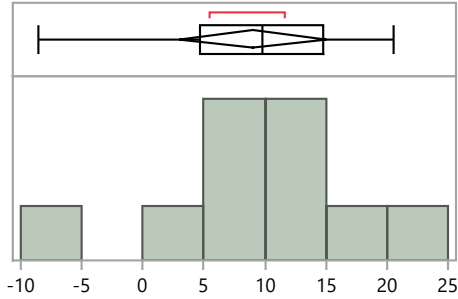
Quantiles		
100.0%	maximum	6.2
99.5%		6.2
97.5%		6.2
90.0%		6.2
75.0%	quartile	6.2
50.0%	median	6.2
25.0%	quartile	6.2
10.0%		6.2
2.5%		6.2
0.5%		6.2
0.0%	minimum	6.2

Summary Statistics	
Mean	6.2
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Cesium-137 EPA 901.1, Gamma Emitting, 600/4-80-032

Bias



Quantiles

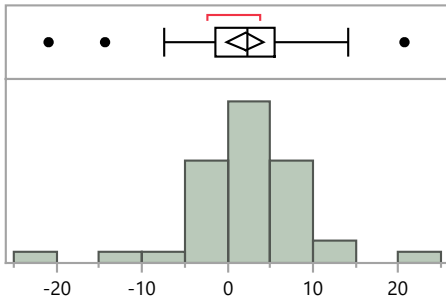
100.0%	maximum	20.5
99.5%		20.5
97.5%		20.5
90.0%		20.4
75.0%	quartile	14.8
50.0%	median	9.8
25.0%	quartile	4.7
10.0%		-7.5
2.5%		-8.6
0.5%		-8.6
0.0%	minimum	-8.6

Summary Statistics

Mean	9.1
Std Dev	8.4
Std Err Mean	2.7
Upper 95% Mean	15.1
Lower 95% Mean	3.0
N	10.0

Distributions Analyte_Method=Cesium-137 No preparation - analyzed as received

Bias



Quantiles

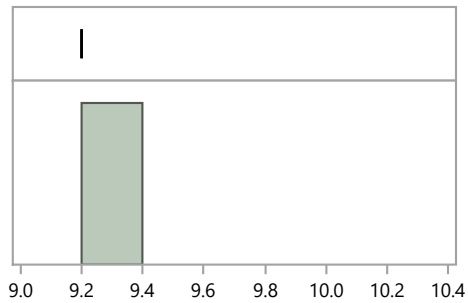
100.0%	maximum	20.7
99.5%		20.7
97.5%		20.2
90.0%		9.0
75.0%	quartile	5.6
50.0%	median	2.4
25.0%	quartile	-1.4
10.0%		-4.2
2.5%		-20.4
0.5%		-20.9
0.0%	minimum	-20.9

Summary Statistics

Mean	2.1
Std Dev	6.9
Std Err Mean	1.1
Upper 95% Mean	4.2
Lower 95% Mean	-0.1
N	42.0

Distributions Analyte_Method=Cesium-137 Other

Bias



Quantiles

100.0%	maximum	9.2
99.5%		9.2
97.5%		9.2
90.0%		9.2
75.0%	quartile	9.2
50.0%	median	9.2
25.0%	quartile	9.2
10.0%		9.2
2.5%		9.2
0.5%		9.2
0.0%	minimum	9.2

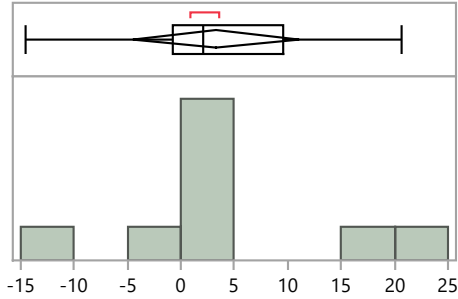
Summary Statistics

Mean	9.2
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Cobalt-57 EPA 901.1, Gamma Emitting, 600/4-80-032

Bias



Quantiles

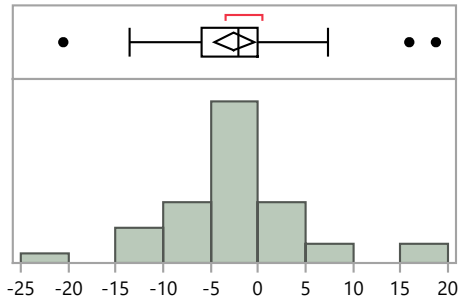
100.0%	maximum	20.7
99.5%		20.7
97.5%		20.7
90.0%		20.7
75.0%	quartile	9.6
50.0%	median	2.1
25.0%	quartile	-0.8
10.0%		-14.5
2.5%		-14.5
0.5%		-14.5
0.0%	minimum	-14.5

Summary Statistics

Mean	3.3
Std Dev	10.1
Std Err Mean	3.4
Upper 95% Mean	11.0
Lower 95% Mean	-4.5
N	9.0

Distributions Analyte_Method=Cobalt-57 No preparation - analyzed as received

Bias



Quantiles

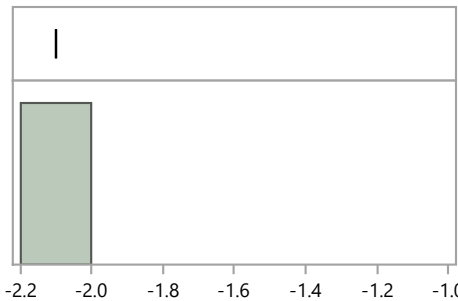
100.0%	maximum	18.7
99.5%		18.7
97.5%		18.5
90.0%		5.3
75.0%	quartile	0.0
50.0%	median	-2.1
25.0%	quartile	-5.9
10.0%		-11.3
2.5%		-20.0
0.5%		-20.5
0.0%	minimum	-20.5

Summary Statistics

Mean	-2.5
Std Dev	6.9
Std Err Mean	1.1
Upper 95% Mean	-0.4
Lower 95% Mean	-4.7
N	42.0

Distributions Analyte_Method=Cobalt-57 Other

Bias



Quantiles

100.0%	maximum	-2.1
99.5%		-2.1
97.5%		-2.1
90.0%		-2.1
75.0%	quartile	-2.1
50.0%	median	-2.1
25.0%	quartile	-2.1
10.0%		-2.1
2.5%		-2.1
0.5%		-2.1
0.0%	minimum	-2.1

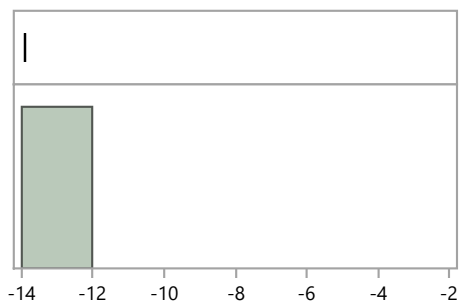
Summary Statistics

Mean	-2.1
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Iron-55 Acid dissolution with hydrofluoric acid

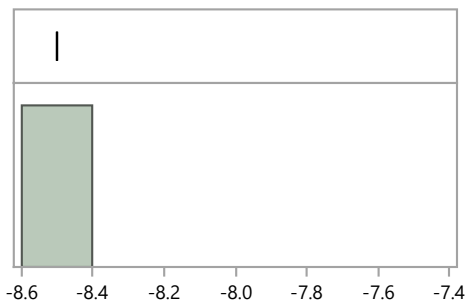
Bias



Quantiles			Summary Statistics	
100.0%	maximum	-13.9	Mean	-13.9
99.5%		-13.9	Std Dev	.
97.5%		-13.9	Std Err Mean	.
90.0%		-13.9	Upper 95% Mean	.
75.0%	quartile	-13.9	Lower 95% Mean	.
50.0%	median	-13.9	N	1.0
25.0%	quartile	-13.9		
10.0%		-13.9		
2.5%		-13.9		
0.5%		-13.9		
0.0%	minimum	-13.9		

Distributions Analyte_Method=Iron-55 Coprecipitation, acidified

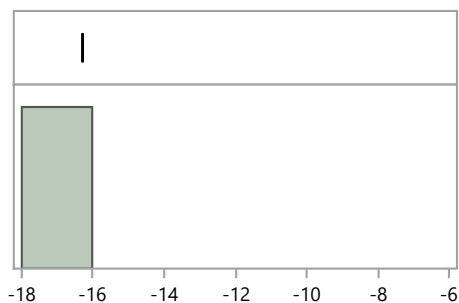
Bias



Quantiles			Summary Statistics	
100.0%	maximum	-8.5	Mean	-8.5
99.5%		-8.5	Std Dev	.
97.5%		-8.5	Std Err Mean	.
90.0%		-8.5	Upper 95% Mean	.
75.0%	quartile	-8.5	Lower 95% Mean	.
50.0%	median	-8.5	N	1.0
25.0%	quartile	-8.5		
10.0%		-8.5		
2.5%		-8.5		
0.5%		-8.5		
0.0%	minimum	-8.5		

Distributions Analyte_Method=Iron-55 Coprecipitation, straight

Bias

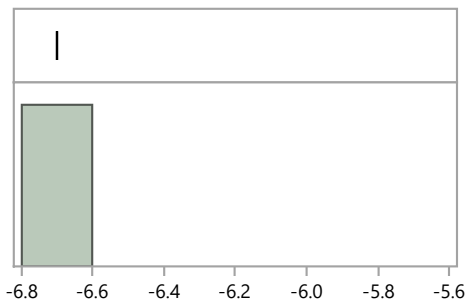


Quantiles			Summary Statistics	
100.0%	maximum	-16.3	Mean	-16.3
99.5%		-16.3	Std Dev	.
97.5%		-16.3	Std Err Mean	.
90.0%		-16.3	Upper 95% Mean	.
75.0%	quartile	-16.3	Lower 95% Mean	.
50.0%	median	-16.3	N	1.0
25.0%	quartile	-16.3		
10.0%		-16.3		
2.5%		-16.3		
0.5%		-16.3		
0.0%	minimum	-16.3		

MaW Distribution by Preparation Method

Distributions Analyte_Method=Iron-55 EPA 00-07 - Radiochemistry Procedures Manual

Bias



Quantiles

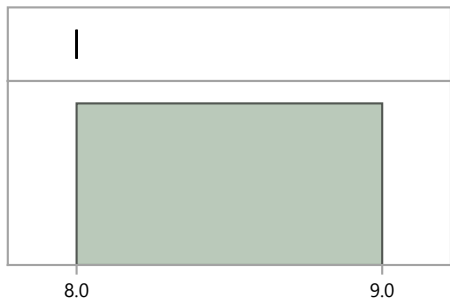
100.0%	maximum	-6.7
99.5%		-6.7
97.5%		-6.7
90.0%		-6.7
75.0%	quartile	-6.7
50.0%	median	-6.7
25.0%	quartile	-6.7
10.0%		-6.7
2.5%		-6.7
0.5%		-6.7
0.0%	minimum	-6.7

Summary Statistics

Mean	-6.7
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Iron-55 Ion Exchange Chromatography / Ion Chromatography

Bias



Quantiles

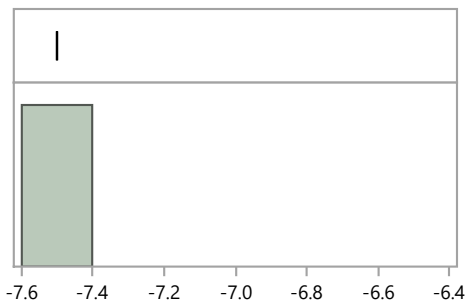
100.0%	maximum	8.0
99.5%		8.0
97.5%		8.0
90.0%		8.0
75.0%	quartile	8.0
50.0%	median	8.0
25.0%	quartile	8.0
10.0%		8.0
2.5%		8.0
0.5%		8.0
0.0%	minimum	8.0

Summary Statistics

Mean	8.0
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Iron-55 Other

Bias



Quantiles

100.0%	maximum	-7.5
99.5%		-7.5
97.5%		-7.5
90.0%		-7.5
75.0%	quartile	-7.5
50.0%	median	-7.5
25.0%	quartile	-7.5
10.0%		-7.5
2.5%		-7.5
0.5%		-7.5
0.0%	minimum	-7.5

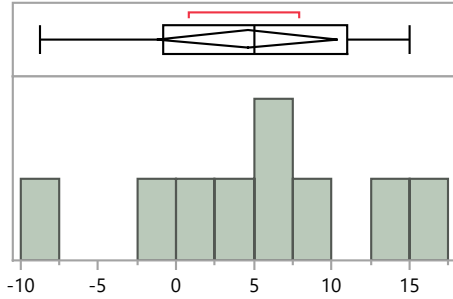
Summary Statistics

Mean	-7.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Manganese-54 EPA 901.1, Gamma Emitting, 600/4-80-032

Bias



Quantiles

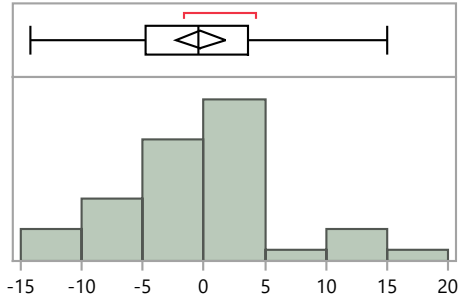
100.0%	maximum	15.0
99.5%		15.0
97.5%		15.0
90.0%		15.0
75.0%	quartile	11.1
50.0%	median	5.0
25.0%	quartile	-0.8
10.0%		-8.7
2.5%		-8.7
0.5%		-8.7
0.0%	minimum	-8.7

Summary Statistics

Mean	4.6
Std Dev	7.6
Std Err Mean	2.5
Upper 95% Mean	10.4
Lower 95% Mean	-1.2
N	9.0

Distributions Analyte_Method=Manganese-54 No preparation - analyzed as received

Bias



Quantiles

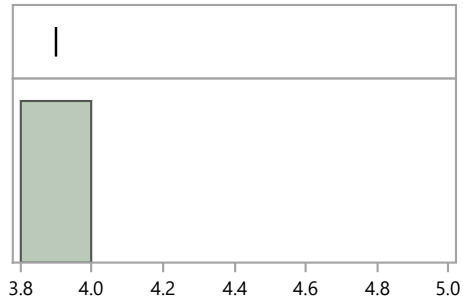
100.0%	maximum	15.0
99.5%		15.0
97.5%		15.0
90.0%		8.8
75.0%	quartile	3.6
50.0%	median	-0.4
25.0%	quartile	-4.7
10.0%		-8.9
2.5%		-14.1
0.5%		-14.2
0.0%	minimum	-14.2

Summary Statistics

Mean	-0.3
Std Dev	6.5
Std Err Mean	1.0
Upper 95% Mean	1.8
Lower 95% Mean	-2.3
N	42.0

Distributions Analyte_Method=Manganese-54 Other

Bias



Quantiles

100.0%	maximum	3.9
99.5%		3.9
97.5%		3.9
90.0%		3.9
75.0%	quartile	3.9
50.0%	median	3.9
25.0%	quartile	3.9
10.0%		3.9
2.5%		3.9
0.5%		3.9
0.0%	minimum	3.9

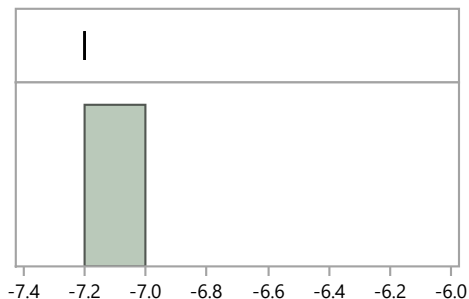
Summary Statistics

Mean	3.9
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Plutonium-238 Acid dissolution with hydrofluoric acid

Bias



Quantiles

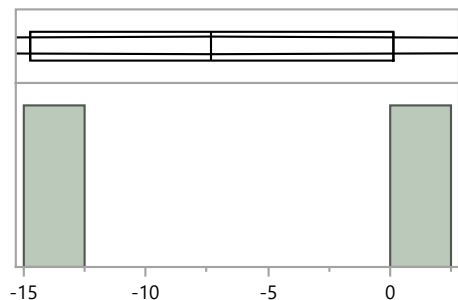
100.0%	maximum	-7.2
99.5%		-7.2
97.5%		-7.2
90.0%		-7.2
75.0%	quartile	-7.2
50.0%	median	-7.2
25.0%	quartile	-7.2
10.0%		-7.2
2.5%		-7.2
0.5%		-7.2
0.0%	minimum	-7.2

Summary Statistics

Mean	-7.2
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Plutonium-238 Coprecipitation, acidified

Bias



Quantiles

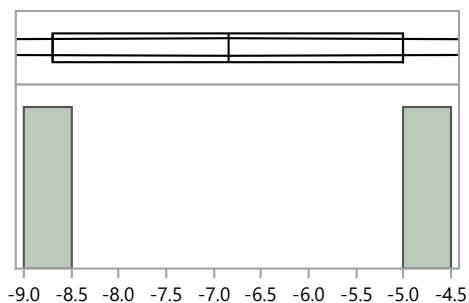
100.0%	maximum	0.1
99.5%		0.1
97.5%		0.1
90.0%		0.1
75.0%	quartile	0.1
50.0%	median	-7.3
25.0%	quartile	-14.7
10.0%		-14.7
2.5%		-14.7
0.5%		-14.7
0.0%	minimum	-14.7

Summary Statistics

Mean	-7.3
Std Dev	10.5
Std Err Mean	7.4
Upper 95% Mean	86.7
Lower 95% Mean	-101.3
N	2.0

Distributions Analyte_Method=Plutonium-238 Coprecipitation, straight

Bias



Quantiles

100.0%	maximum	-5.0
99.5%		-5.0
97.5%		-5.0
90.0%		-5.0
75.0%	quartile	-5.0
50.0%	median	-6.9
25.0%	quartile	-8.7
10.0%		-8.7
2.5%		-8.7
0.5%		-8.7
0.0%	minimum	-8.7

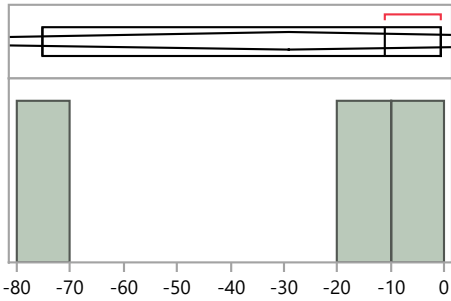
Summary Statistics

Mean	-6.9
Std Dev	2.6
Std Err Mean	1.8
Upper 95% Mean	16.7
Lower 95% Mean	-30.4
N	2.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Plutonium-238 EPA 907, Actinide Elements, 600/4/80-032

Bias



Quantiles

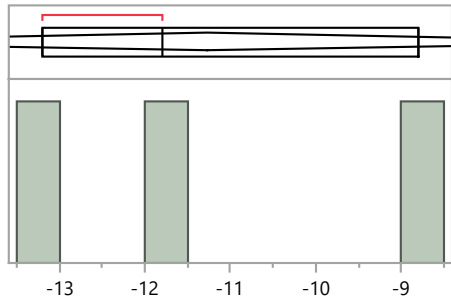
100.0%	maximum	-0.6
99.5%		-0.6
97.5%		-0.6
90.0%		-0.6
75.0%	quartile	-0.6
50.0%	median	-11.0
25.0%	quartile	-75.3
10.0%		-75.3
2.5%		-75.3
0.5%		-75.3
0.0%	minimum	-75.3

Summary Statistics

Mean	-29.0
Std Dev	40.5
Std Err Mean	23.4
Upper 95% Mean	71.5
Lower 95% Mean	-129.5
N	3.0

Distributions Analyte_Method=Plutonium-238 Evaporation, acidified

Bias



Quantiles

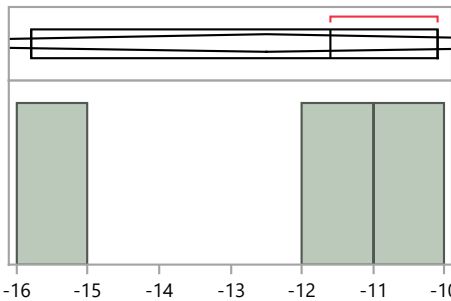
100.0%	maximum	-8.8
99.5%		-8.8
97.5%		-8.8
90.0%		-8.8
75.0%	quartile	-8.8
50.0%	median	-11.8
25.0%	quartile	-13.2
10.0%		-13.2
2.5%		-13.2
0.5%		-13.2
0.0%	minimum	-13.2

Summary Statistics

Mean	-11.3
Std Dev	2.2
Std Err Mean	1.3
Upper 95% Mean	-5.7
Lower 95% Mean	-16.9
N	3.0

Distributions Analyte_Method=Plutonium-238 Evaporation, straight

Bias



Quantiles

100.0%	maximum	-10.1
99.5%		-10.1
97.5%		-10.1
90.0%		-10.1
75.0%	quartile	-10.1
50.0%	median	-11.6
25.0%	quartile	-15.8
10.0%		-15.8
2.5%		-15.8
0.5%		-15.8
0.0%	minimum	-15.8

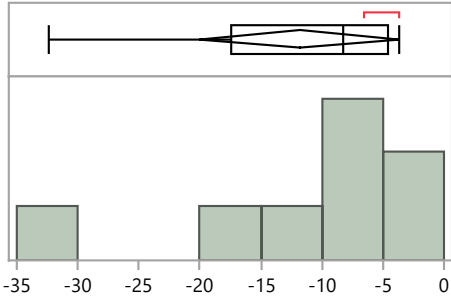
Summary Statistics

Mean	-12.5
Std Dev	3.0
Std Err Mean	1.7
Upper 95% Mean	-5.2
Lower 95% Mean	-19.8
N	3.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Plutonium-238 Ion Exchange Chromatography / Ion Chromatography

Bias



Quantiles

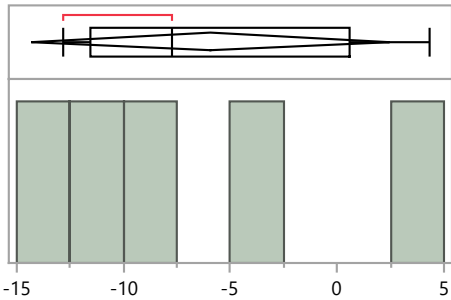
100.0%	maximum	-3.7
99.5%		-3.7
97.5%		-3.7
90.0%		-3.7
75.0%	quartile	-4.6
50.0%	median	-8.3
25.0%	quartile	-17.5
10.0%		-32.4
2.5%		-32.4
0.5%		-32.4
0.0%	minimum	-32.4

Summary Statistics

Mean	-11.9
Std Dev	9.7
Std Err Mean	3.4
Upper 95% Mean	-3.7
Lower 95% Mean	-20.0
N	8.0

Distributions Analyte_Method=Plutonium-238 Other

Bias



Quantiles

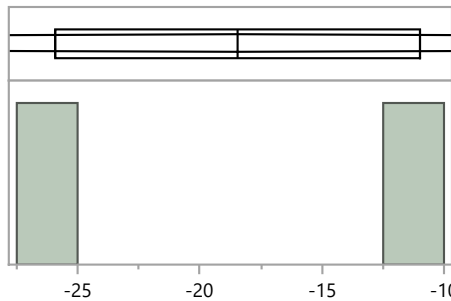
100.0%	maximum	4.3
99.5%		4.3
97.5%		4.3
90.0%		4.3
75.0%	quartile	0.5
50.0%	median	-7.7
25.0%	quartile	-11.6
10.0%		-12.8
2.5%		-12.8
0.5%		-12.8
0.0%	minimum	-12.8

Summary Statistics

Mean	-5.9
Std Dev	6.7
Std Err Mean	3.0
Upper 95% Mean	2.4
Lower 95% Mean	-14.3
N	5.0

Distributions Analyte_Method=Plutonium-238 Total dissolution by fusion

Bias



Quantiles

100.0%	maximum	-11.0
99.5%		-11.0
97.5%		-11.0
90.0%		-11.0
75.0%	quartile	-11.0
50.0%	median	-18.5
25.0%	quartile	-25.9
10.0%		-25.9
2.5%		-25.9
0.5%		-25.9
0.0%	minimum	-25.9

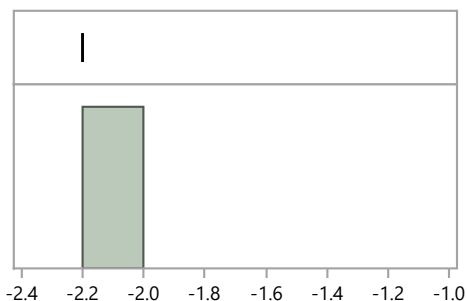
Summary Statistics

Mean	-18.5
Std Dev	10.5
Std Err Mean	7.5
Upper 95% Mean	76.2
Lower 95% Mean	-113.1
N	2.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Plutonium-239/240 Acid dissolution with hydrofluoric acid

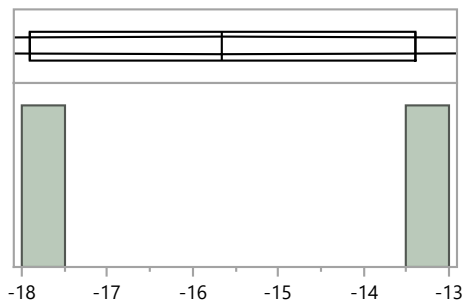
Bias



Quantiles			Summary Statistics	
100.0%	maximum	-2.2	Mean	-2.2
99.5%		-2.2	Std Dev	.
97.5%		-2.2	Std Err Mean	.
90.0%		-2.2	Upper 95% Mean	.
75.0%	quartile	-2.2	Lower 95% Mean	.
50.0%	median	-2.2	N	1.0
25.0%	quartile	-2.2		
10.0%		-2.2		
2.5%		-2.2		
0.5%		-2.2		
0.0%	minimum	-2.2		

Distributions Analyte_Method=Plutonium-239/240 Coprecipitation, acidified

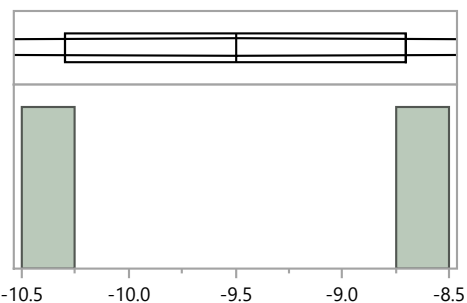
Bias



Quantiles			Summary Statistics	
100.0%	maximum	-13.4	Mean	-15.7
99.5%		-13.4	Std Dev	3.2
97.5%		-13.4	Std Err Mean	2.2
90.0%		-13.4	Upper 95% Mean	12.9
75.0%	quartile	-13.4	Lower 95% Mean	-44.2
50.0%	median	-15.7	N	2.0
25.0%	quartile	-17.9		
10.0%		-17.9		
2.5%		-17.9		
0.5%		-17.9		
0.0%	minimum	-17.9		

Distributions Analyte_Method=Plutonium-239/240 Coprecipitation, straight

Bias

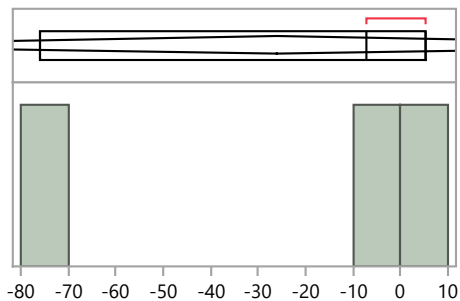


Quantiles			Summary Statistics	
100.0%	maximum	-8.7	Mean	-9.5
99.5%		-8.7	Std Dev	1.1
97.5%		-8.7	Std Err Mean	0.8
90.0%		-8.7	Upper 95% Mean	0.7
75.0%	quartile	-8.7	Lower 95% Mean	-19.7
50.0%	median	-9.5	N	2.0
25.0%	quartile	-10.3		
10.0%		-10.3		
2.5%		-10.3		
0.5%		-10.3		
0.0%	minimum	-10.3		

MaW Distribution by Preparation Method

Distributions Analyte_Method=Plutonium-239/240 EPA 907, Actinide Elements, 600/4/80-032

Bias



Quantiles

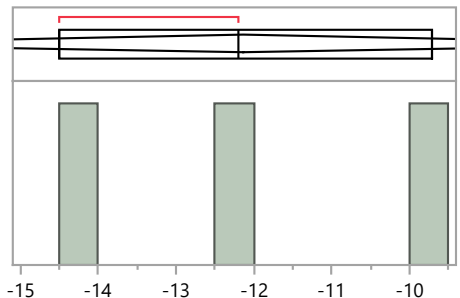
100.0%	maximum	5.1
99.5%		5.1
97.5%		5.1
90.0%		5.1
75.0%	quartile	5.1
50.0%	median	-7.3
25.0%	quartile	-75.9
10.0%		-75.9
2.5%		-75.9
0.5%		-75.9
0.0%	minimum	-75.9

Summary Statistics

Mean	-26.0
Std Dev	43.6
Std Err Mean	25.2
Upper 95% Mean	82.3
Lower 95% Mean	-134.4
N	3.0

Distributions Analyte_Method=Plutonium-239/240 Evaporation, acidified

Bias



Quantiles

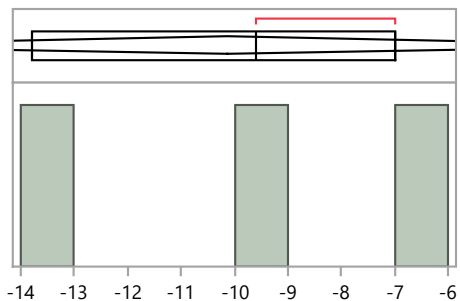
100.0%	maximum	-9.7
99.5%		-9.7
97.5%		-9.7
90.0%		-9.7
75.0%	quartile	-9.7
50.0%	median	-12.2
25.0%	quartile	-14.5
10.0%		-14.5
2.5%		-14.5
0.5%		-14.5
0.0%	minimum	-14.5

Summary Statistics

Mean	-12.1
Std Dev	2.4
Std Err Mean	1.4
Upper 95% Mean	-6.2
Lower 95% Mean	-18.1
N	3.0

Distributions Analyte_Method=Plutonium-239/240 Evaporation, straight

Bias



Quantiles

100.0%	maximum	-7.0
99.5%		-7.0
97.5%		-7.0
90.0%		-7.0
75.0%	quartile	-7.0
50.0%	median	-9.6
25.0%	quartile	-13.8
10.0%		-13.8
2.5%		-13.8
0.5%		-13.8
0.0%	minimum	-13.8

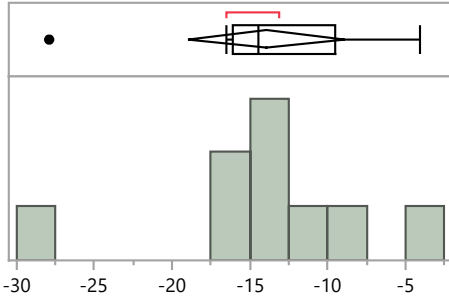
Summary Statistics

Mean	-10.1
Std Dev	3.4
Std Err Mean	2.0
Upper 95% Mean	-1.6
Lower 95% Mean	-18.7
N	3.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Plutonium-239/240 Ion Exchange Chromatography / Ion Chromatography

Bias



Quantiles

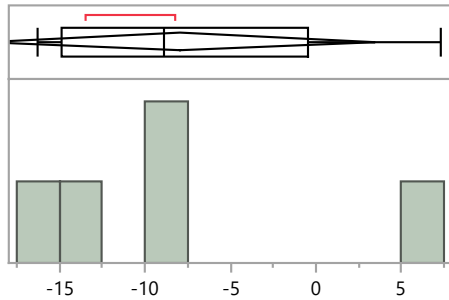
100.0%	maximum	-4.1
99.5%		-4.1
97.5%		-4.1
90.0%		-4.1
75.0%	quartile	-9.5
50.0%	median	-14.5
25.0%	quartile	-16.1
10.0%		-27.9
2.5%		-27.9
0.5%		-27.9
0.0%	minimum	-27.9

Summary Statistics

Mean	-13.9
Std Dev	6.6
Std Err Mean	2.2
Upper 95% Mean	-8.9
Lower 95% Mean	-19.0
N	9.0

Distributions Analyte_Method=Plutonium-239/240 Other

Bias



Quantiles

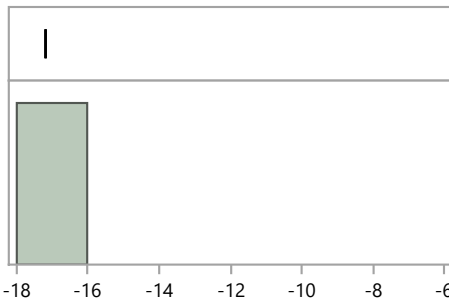
100.0%	maximum	7.3
99.5%		7.3
97.5%		7.3
90.0%		7.3
75.0%	quartile	-0.4
50.0%	median	-8.9
25.0%	quartile	-14.9
10.0%		-16.3
2.5%		-16.3
0.5%		-16.3
0.0%	minimum	-16.3

Summary Statistics

Mean	-7.9
Std Dev	9.1
Std Err Mean	4.1
Upper 95% Mean	3.4
Lower 95% Mean	-19.3
N	5.0

Distributions Analyte_Method=Plutonium-239/240 Total dissolution by fusion

Bias



Quantiles

100.0%	maximum	-17.2
99.5%		-17.2
97.5%		-17.2
90.0%		-17.2
75.0%	quartile	-17.2
50.0%	median	-17.2
25.0%	quartile	-17.2
10.0%		-17.2
2.5%		-17.2
0.5%		-17.2
0.0%	minimum	-17.2

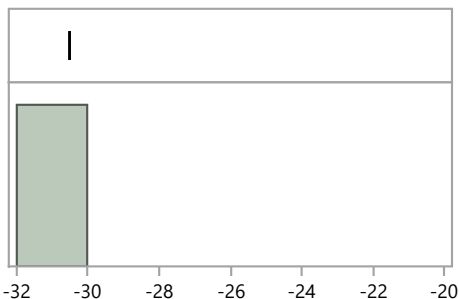
Summary Statistics

Mean	-17.2
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Radium-226 Acid leaching without hydrofluoric acid

Bias



Quantiles

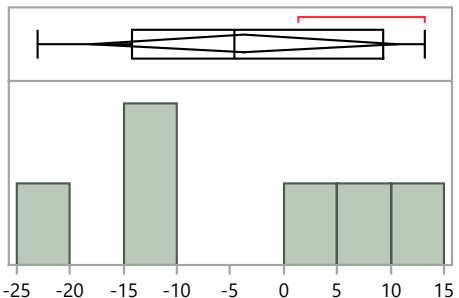
100.0%	maximum	-30.5
99.5%		-30.5
97.5%		-30.5
90.0%		-30.5
75.0%	quartile	-30.5
50.0%	median	-30.5
25.0%	quartile	-30.5
10.0%		-30.5
2.5%		-30.5
0.5%		-30.5
0.0%	minimum	-30.5

Summary Statistics

Mean	-30.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Radium-226 Coprecipitation, acidified

Bias



Quantiles

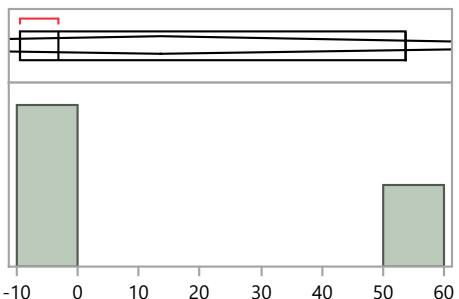
100.0%	maximum	13.2
99.5%		13.2
97.5%		13.2
90.0%		13.2
75.0%	quartile	9.3
50.0%	median	-4.7
25.0%	quartile	-14.2
10.0%		-23.1
2.5%		-23.1
0.5%		-23.1
0.0%	minimum	-23.1

Summary Statistics

Mean	-3.8
Std Dev	13.6
Std Err Mean	5.6
Upper 95% Mean	10.6
Lower 95% Mean	-18.1
N	6.0

Distributions Analyte_Method=Radium-226 Coprecipitation, straight

Bias



Quantiles

100.0%	maximum	53.8
99.5%		53.8
97.5%		53.8
90.0%		53.8
75.0%	quartile	53.8
50.0%	median	-3.1
25.0%	quartile	-9.5
10.0%		-9.5
2.5%		-9.5
0.5%		-9.5
0.0%	minimum	-9.5

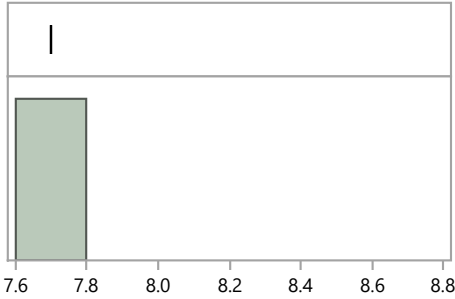
Summary Statistics

Mean	13.7
Std Dev	34.8
Std Err Mean	20.1
Upper 95% Mean	100.3
Lower 95% Mean	-72.8
N	3.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Radium-226 EPA 901.1, Gamma Emitting, 600/4-80-032

Bias



Quantiles

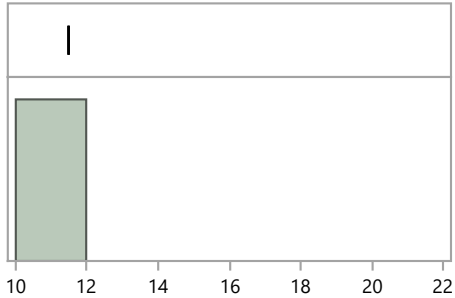
100.0%	maximum	7.7
99.5%		7.7
97.5%		7.7
90.0%		7.7
75.0%	quartile	7.7
50.0%	median	7.7
25.0%	quartile	7.7
10.0%		7.7
2.5%		7.7
0.5%		7.7
0.0%	minimum	7.7

Summary Statistics

Mean	7.7
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Radium-226 Ion Exchange Chromatography / Ion Chromatography

Bias



Quantiles

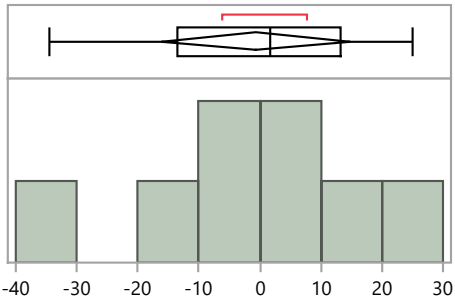
100.0%	maximum	11.5
99.5%		11.5
97.5%		11.5
90.0%		11.5
75.0%	quartile	11.5
50.0%	median	11.5
25.0%	quartile	11.5
10.0%		11.5
2.5%		11.5
0.5%		11.5
0.0%	minimum	11.5

Summary Statistics

Mean	11.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Radium-226 Other

Bias



Quantiles

100.0%	maximum	25.1
99.5%		25.1
97.5%		25.1
90.0%		25.1
75.0%	quartile	13.1
50.0%	median	1.6
25.0%	quartile	-13.5
10.0%		-34.5
2.5%		-34.5
0.5%		-34.5
0.0%	minimum	-34.5

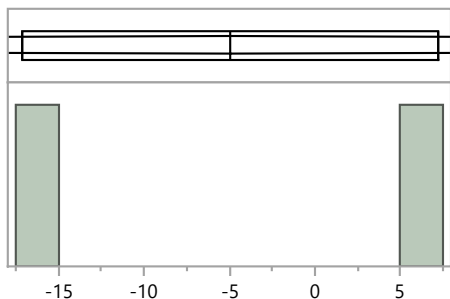
Summary Statistics

Mean	-0.7
Std Dev	18.6
Std Err Mean	6.6
Upper 95% Mean	14.8
Lower 95% Mean	-16.2
N	8.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Radium-226 Total dissolution by fusion

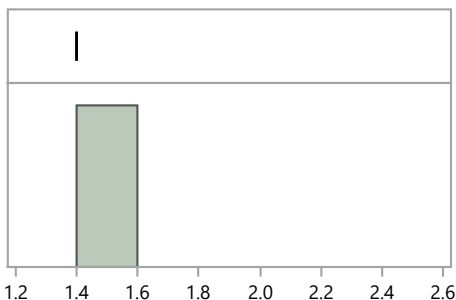
Bias



Quantiles			Summary Statistics	
100.0%	maximum	7.2	Mean	-5.0
99.5%		7.2	Std Dev	17.2
97.5%		7.2	Std Err Mean	12.2
90.0%		7.2	Upper 95% Mean	149.4
75.0%	quartile	7.2	Lower 95% Mean	-159.3
50.0%	median	-5.0	N	2.0
25.0%	quartile	-17.1		
10.0%		-17.1		
2.5%		-17.1		
0.5%		-17.1		
0.0%	minimum	-17.1		

Distributions Analyte_Method=Strontium-90 Acid dissolution with hydrofluoric acid

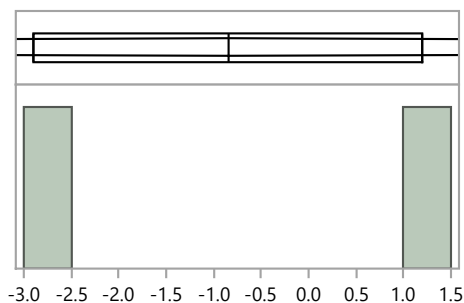
Bias



Quantiles			Summary Statistics	
100.0%	maximum	1.4	Mean	1.4
99.5%		1.4	Std Dev	.
97.5%		1.4	Std Err Mean	.
90.0%		1.4	Upper 95% Mean	.
75.0%	quartile	1.4	Lower 95% Mean	.
50.0%	median	1.4	N	1.0
25.0%	quartile	1.4		
10.0%		1.4		
2.5%		1.4		
0.5%		1.4		
0.0%	minimum	1.4		

Distributions Analyte_Method=Strontium-90 Coprecipitation, acidified

Bias

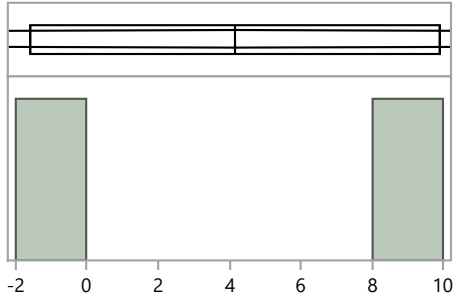


Quantiles			Summary Statistics	
100.0%	maximum	1.2	Mean	-0.9
99.5%		1.2	Std Dev	2.9
97.5%		1.2	Std Err Mean	2.1
90.0%		1.2	Upper 95% Mean	25.2
75.0%	quartile	1.2	Lower 95% Mean	-26.9
50.0%	median	-0.9	N	2.0
25.0%	quartile	-2.9		
10.0%		-2.9		
2.5%		-2.9		
0.5%		-2.9		
0.0%	minimum	-2.9		

MaW Distribution by Preparation Method

Distributions Analyte_Method=Strontium-90 Coprecipitation, straight

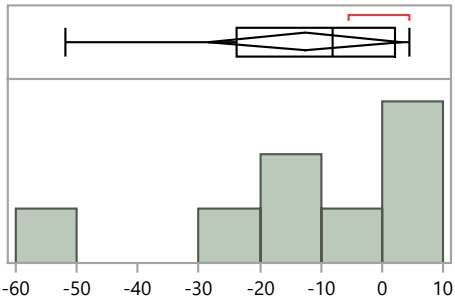
Bias



Quantiles		Summary Statistics		
100.0%	maximum	9.9	Mean	4.2
99.5%		9.9	Std Dev	8.1
97.5%		9.9	Std Err Mean	5.8
90.0%		9.9	Upper 95% Mean	77.2
75.0%	quartile	9.9	Lower 95% Mean	-68.9
50.0%	median	4.2	N	2.0
25.0%	quartile	-1.6		
10.0%		-1.6		
2.5%		-1.6		
0.5%		-1.6		
0.0%	minimum	-1.6		

Distributions Analyte_Method=Strontium-90 EPA 905, Radioactive Strontium, 600/4-80-032

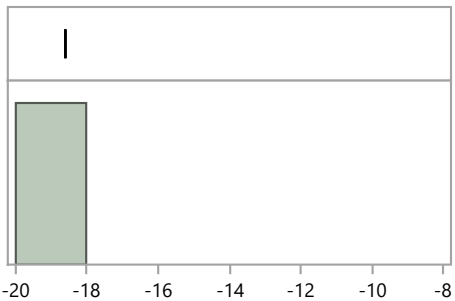
Bias



Quantiles		Summary Statistics		
100.0%	maximum	4.5	Mean	-12.6
99.5%		4.5	Std Dev	18.9
97.5%		4.5	Std Err Mean	6.7
90.0%		4.5	Upper 95% Mean	3.2
75.0%	quartile	2.0	Lower 95% Mean	-28.4
50.0%	median	-8.1	N	8.0
25.0%	quartile	-23.9		
10.0%		-51.8		
2.5%		-51.8		
0.5%		-51.8		
0.0%	minimum	-51.8		

Distributions Analyte_Method=Strontium-90 Evaporation, acidified

Bias

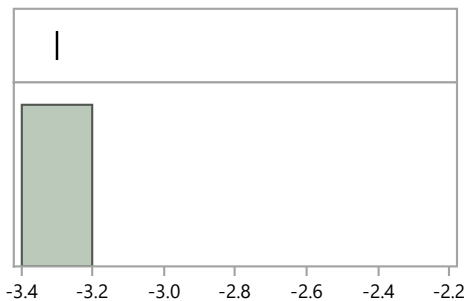


Quantiles		Summary Statistics		
100.0%	maximum	-18.6	Mean	-18.6
99.5%		-18.6	Std Dev	.
97.5%		-18.6	Std Err Mean	.
90.0%		-18.6	Upper 95% Mean	.
75.0%	quartile	-18.6	Lower 95% Mean	.
50.0%	median	-18.6	N	1.0
25.0%	quartile	-18.6		
10.0%		-18.6		
2.5%		-18.6		
0.5%		-18.6		
0.0%	minimum	-18.6		

MaW Distribution by Preparation Method

Distributions Analyte_Method=Strontium-90 Evaporation, straight

Bias



Quantiles

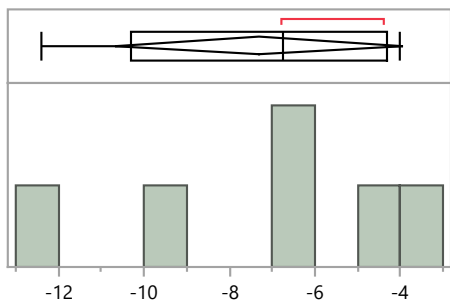
100.0%	maximum	-3.3
99.5%		-3.3
97.5%		-3.3
90.0%		-3.3
75.0%	quartile	-3.3
50.0%	median	-3.3
25.0%	quartile	-3.3
10.0%		-3.3
2.5%		-3.3
0.5%		-3.3
0.0%	minimum	-3.3

Summary Statistics

Mean	-3.3
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Strontium-90 Ion Exchange Chromatography / Ion Chromatography

Bias



Quantiles

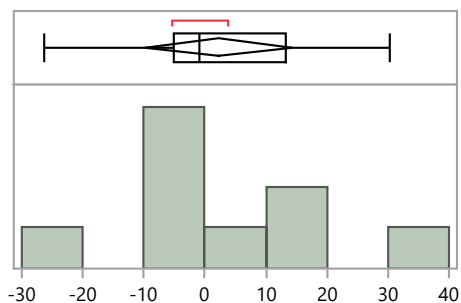
100.0%	maximum	-4.0
99.5%		-4.0
97.5%		-4.0
90.0%		-4.0
75.0%	quartile	-4.3
50.0%	median	-6.8
25.0%	quartile	-10.3
10.0%		-12.4
2.5%		-12.4
0.5%		-12.4
0.0%	minimum	-12.4

Summary Statistics

Mean	-7.3
Std Dev	3.2
Std Err Mean	1.3
Upper 95% Mean	-4.0
Lower 95% Mean	-10.7
N	6.0

Distributions Analyte_Method=Strontium-90 Other

Bias



Quantiles

100.0%	maximum	30.2
99.5%		30.2
97.5%		30.2
90.0%		30.2
75.0%	quartile	13.3
50.0%	median	-1.0
25.0%	quartile	-5.1
10.0%		-26.3
2.5%		-26.3
0.5%		-26.3
0.0%	minimum	-26.3

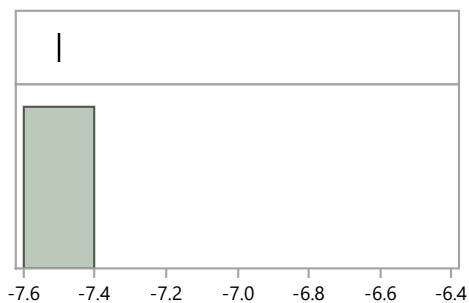
Summary Statistics

Mean	2.3
Std Dev	15.7
Std Err Mean	5.2
Upper 95% Mean	14.4
Lower 95% Mean	-9.8
N	9.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Strontium-90 Total dissolution by fusion

Bias



Quantiles

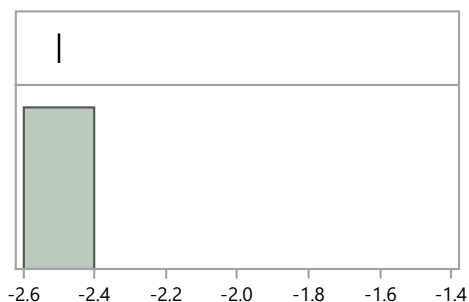
100.0%	maximum	-7.5
99.5%		-7.5
97.5%		-7.5
90.0%		-7.5
75.0%	quartile	-7.5
50.0%	median	-7.5
25.0%	quartile	-7.5
10.0%		-7.5
2.5%		-7.5
0.5%		-7.5
0.0%	minimum	-7.5

Summary Statistics

Mean	-7.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Technetium-99 Acid leaching without hydrofluoric acid

Bias



Quantiles

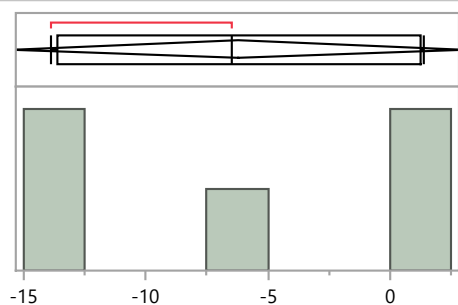
100.0%	maximum	-2.5
99.5%		-2.5
97.5%		-2.5
90.0%		-2.5
75.0%	quartile	-2.5
50.0%	median	-2.5
25.0%	quartile	-2.5
10.0%		-2.5
2.5%		-2.5
0.5%		-2.5
0.0%	minimum	-2.5

Summary Statistics

Mean	-2.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Technetium-99 Ion Exchange Chromatography / Ion Chromatography

Bias



Quantiles

100.0%	maximum	1.4
99.5%		1.4
97.5%		1.4
90.0%		1.4
75.0%	quartile	1.3
50.0%	median	-6.5
25.0%	quartile	-13.6
10.0%		-13.9
2.5%		-13.9
0.5%		-13.9
0.0%	minimum	-13.9

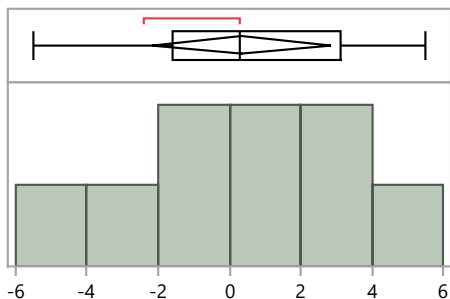
Summary Statistics

Mean	-6.2
Std Dev	7.4
Std Err Mean	3.3
Upper 95% Mean	3.0
Lower 95% Mean	-15.5
N	5.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Technetium-99 Other

Bias



Quantiles

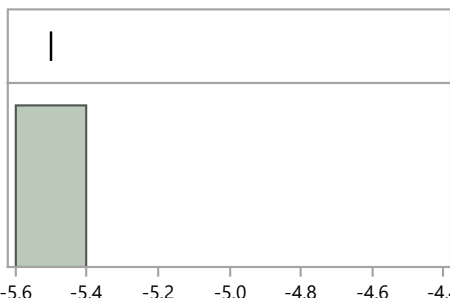
100.0%	maximum	5.5
99.5%		5.5
97.5%		5.5
90.0%		5.5
75.0%	quartile	3.1
50.0%	median	0.3
25.0%	quartile	-1.6
10.0%		-5.5
2.5%		-5.5
0.5%		-5.5
0.0%	minimum	-5.5

Summary Statistics

Mean	0.3
Std Dev	3.3
Std Err Mean	1.1
Upper 95% Mean	2.9
Lower 95% Mean	-2.2
N	9.0

Distributions Analyte_Method=Uranium-234 Acid dissolution with hydrofluoric acid

Bias



Quantiles

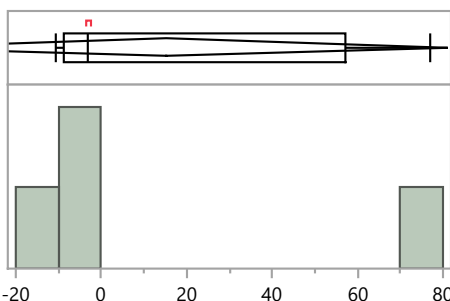
100.0%	maximum	-5.5
99.5%		-5.5
97.5%		-5.5
90.0%		-5.5
75.0%	quartile	-5.5
50.0%	median	-5.5
25.0%	quartile	-5.5
10.0%		-5.5
2.5%		-5.5
0.5%		-5.5
0.0%	minimum	-5.5

Summary Statistics

Mean	-5.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Uranium-234 Coprecipitation, acidified

Bias



Quantiles

100.0%	maximum	76.9
99.5%		76.9
97.5%		76.9
90.0%		76.9
75.0%	quartile	57.1
50.0%	median	-3.1
25.0%	quartile	-8.7
10.0%		-10.4
2.5%		-10.4
0.5%		-10.4
0.0%	minimum	-10.4

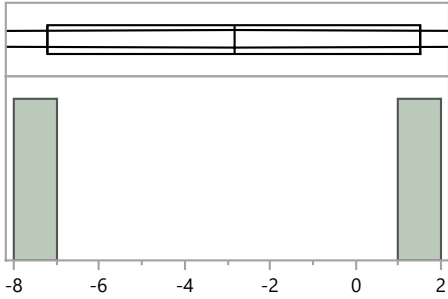
Summary Statistics

Mean	15.1
Std Dev	41.3
Std Err Mean	20.7
Upper 95% Mean	80.9
Lower 95% Mean	-50.7
N	4.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Uranium-234 Coprecipitation, straight

Bias



Quantiles

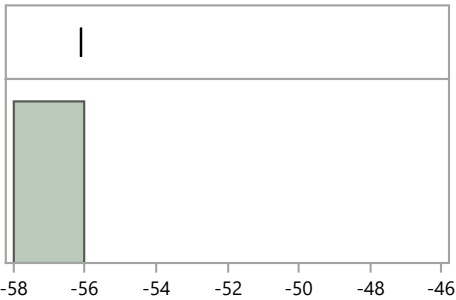
100.0%	maximum	1.5
99.5%		1.5
97.5%		1.5
90.0%		1.5
75.0%	quartile	1.5
50.0%	median	-2.9
25.0%	quartile	-7.2
10.0%		-7.2
2.5%		-7.2
0.5%		-7.2
0.0%	minimum	-7.2

Summary Statistics

Mean	-2.9
Std Dev	6.2
Std Err Mean	4.4
Upper 95% Mean	52.4
Lower 95% Mean	-58.1
N	2.0

Distributions Analyte_Method=Uranium-234 EPA 907, Actinide Elements, 600/4/80-032

Bias



Quantiles

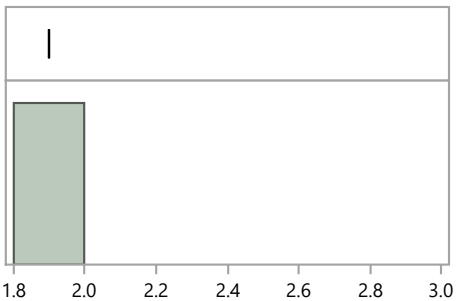
100.0%	maximum	-56.1
99.5%		-56.1
97.5%		-56.1
90.0%		-56.1
75.0%	quartile	-56.1
50.0%	median	-56.1
25.0%	quartile	-56.1
10.0%		-56.1
2.5%		-56.1
0.5%		-56.1
0.0%	minimum	-56.1

Summary Statistics

Mean	-56.1
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Uranium-234 EPA 908, Uranium-Radiochemical Method, 600/4/80-032

Bias



Quantiles

100.0%	maximum	1.9
99.5%		1.9
97.5%		1.9
90.0%		1.9
75.0%	quartile	1.9
50.0%	median	1.9
25.0%	quartile	1.9
10.0%		1.9
2.5%		1.9
0.5%		1.9
0.0%	minimum	1.9

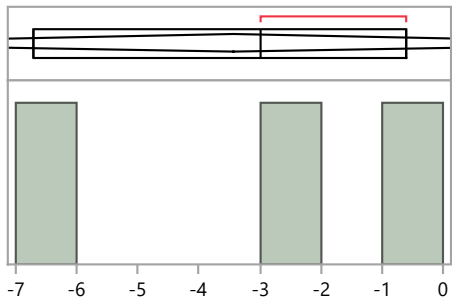
Summary Statistics

Mean	1.9
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Uranium-234 Evaporation, acidified

Bias



Quantiles

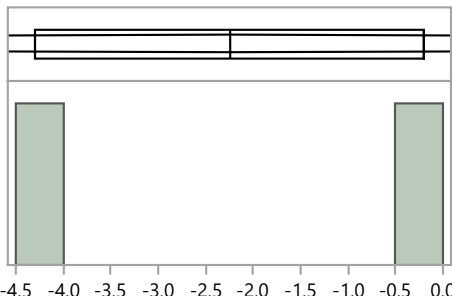
100.0%	maximum	-0.6
99.5%		-0.6
97.5%		-0.6
90.0%		-0.6
75.0%	quartile	-0.6
50.0%	median	-3.0
25.0%	quartile	-6.7
10.0%		-6.7
2.5%		-6.7
0.5%		-6.7
0.0%	minimum	-6.7

Summary Statistics

Mean	-3.4
Std Dev	3.1
Std Err Mean	1.8
Upper 95% Mean	4.2
Lower 95% Mean	-11.1
N	3.0

Distributions Analyte_Method=Uranium-234 Evaporation, straight

Bias



Quantiles

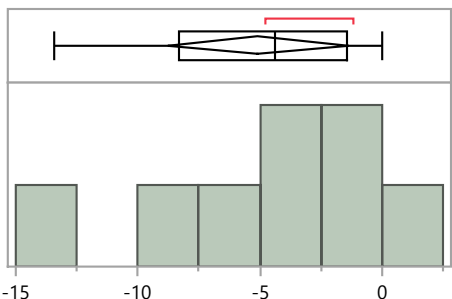
100.0%	maximum	-0.2
99.5%		-0.2
97.5%		-0.2
90.0%		-0.2
75.0%	quartile	-0.2
50.0%	median	-2.3
25.0%	quartile	-4.3
10.0%		-4.3
2.5%		-4.3
0.5%		-4.3
0.0%	minimum	-4.3

Summary Statistics

Mean	-2.3
Std Dev	2.9
Std Err Mean	2.1
Upper 95% Mean	23.8
Lower 95% Mean	-28.3
N	2.0

Distributions Analyte_Method=Uranium-234 Ion Exchange Chromatography / Ion Chromatography

Bias



Quantiles

100.0%	maximum	0.0
99.5%		0.0
97.5%		0.0
90.0%		0.0
75.0%	quartile	-1.5
50.0%	median	-4.4
25.0%	quartile	-8.3
10.0%		-13.4
2.5%		-13.4
0.5%		-13.4
0.0%	minimum	-13.4

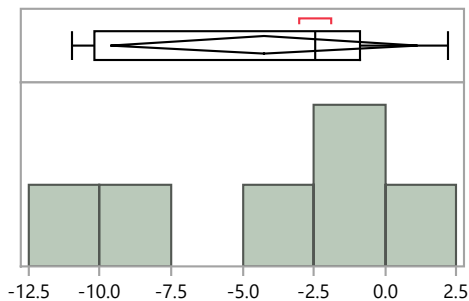
Summary Statistics

Mean	-5.1
Std Dev	4.4
Std Err Mean	1.6
Upper 95% Mean	-1.4
Lower 95% Mean	-8.8
N	8.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Uranium-234 Other

Bias



Quantiles

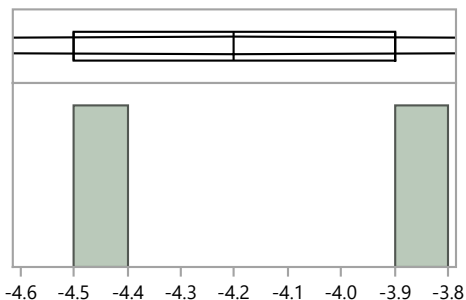
100.0%	maximum	2.2
99.5%		2.2
97.5%		2.2
90.0%		2.2
75.0%	quartile	-0.9
50.0%	median	-2.5
25.0%	quartile	-10.2
10.0%		-11.0
2.5%		-11.0
0.5%		-11.0
0.0%	minimum	-11.0

Summary Statistics

Mean	-4.3
Std Dev	5.1
Std Err Mean	2.1
Upper 95% Mean	1.1
Lower 95% Mean	-9.6
N	6.0

Distributions Analyte_Method=Uranium-234 Total dissolution by fusion

Bias



Quantiles

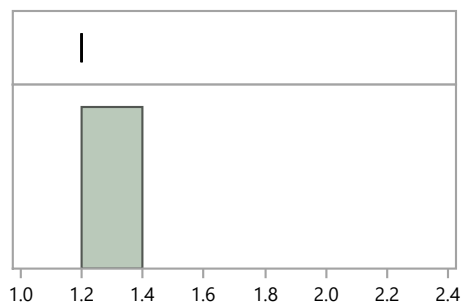
100.0%	maximum	-3.9
99.5%		-3.9
97.5%		-3.9
90.0%		-3.9
75.0%	quartile	-3.9
50.0%	median	-4.2
25.0%	quartile	-4.5
10.0%		-4.5
2.5%		-4.5
0.5%		-4.5
0.0%	minimum	-4.5

Summary Statistics

Mean	-4.2
Std Dev	0.4
Std Err Mean	0.3
Upper 95% Mean	-0.4
Lower 95% Mean	-8.0
N	2.0

Distributions Analyte_Method=Uranium-238 Acid dissolution with hydrofluoric acid

Bias



Quantiles

100.0%	maximum	1.2
99.5%		1.2
97.5%		1.2
90.0%		1.2
75.0%	quartile	1.2
50.0%	median	1.2
25.0%	quartile	1.2
10.0%		1.2
2.5%		1.2
0.5%		1.2
0.0%	minimum	1.2

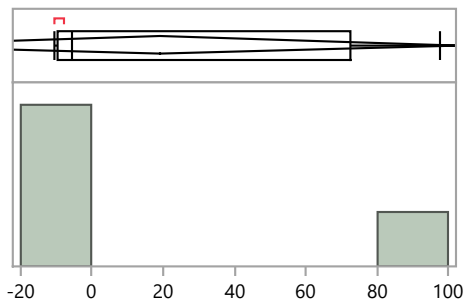
Summary Statistics

Mean	1.2
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Uranium-238 Coprecipitation, acidified

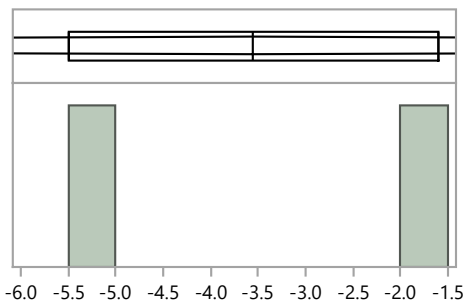
Bias



Quantiles			Summary Statistics	
100.0%	maximum	97.9	Mean	19.1
99.5%		97.9	Std Dev	52.6
97.5%		97.9	Std Err Mean	26.3
90.0%		97.9	Upper 95% Mean	102.8
75.0%	quartile	72.7	Lower 95% Mean	-64.6
50.0%	median	-5.5	N	4.0
25.0%	quartile	-9.8		
10.0%		-10.4		
2.5%		-10.4		
0.5%		-10.4		
0.0%	minimum	-10.4		

Distributions Analyte_Method=Uranium-238 Coprecipitation, straight

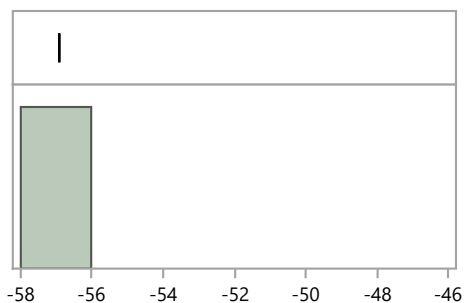
Bias



Quantiles			Summary Statistics	
100.0%	maximum	-1.6	Mean	-3.6
99.5%		-1.6	Std Dev	2.8
97.5%		-1.6	Std Err Mean	2.0
90.0%		-1.6	Upper 95% Mean	21.2
75.0%	quartile	-1.6	Lower 95% Mean	-28.3
50.0%	median	-3.6	N	2.0
25.0%	quartile	-5.5		
10.0%		-5.5		
2.5%		-5.5		
0.5%		-5.5		
0.0%	minimum	-5.5		

Distributions Analyte_Method=Uranium-238 EPA 907, Actinide Elements, 600/4/80-032

Bias

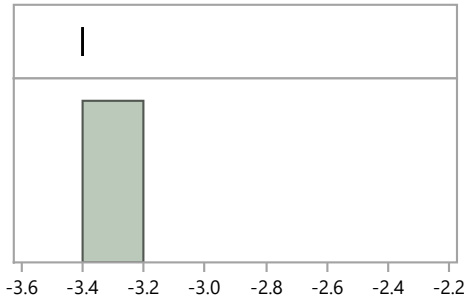


Quantiles			Summary Statistics	
100.0%	maximum	-56.9	Mean	-56.9
99.5%		-56.9	Std Dev	.
97.5%		-56.9	Std Err Mean	.
90.0%		-56.9	Upper 95% Mean	.
75.0%	quartile	-56.9	Lower 95% Mean	.
50.0%	median	-56.9	N	1.0
25.0%	quartile	-56.9		
10.0%		-56.9		
2.5%		-56.9		
0.5%		-56.9		
0.0%	minimum	-56.9		

MaW Distribution by Preparation Method

Distributions Analyte_Method=Uranium-238 EPA 908, Uranium-Radiochemical Method, 600/4/80-032

Bias



Quantiles

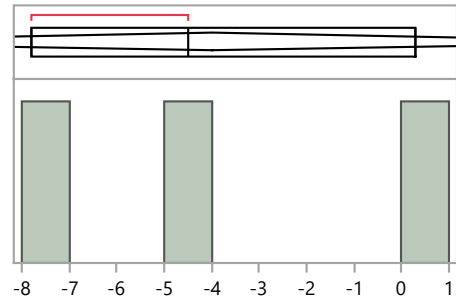
100.0%	maximum	-3.4
99.5%		-3.4
97.5%		-3.4
90.0%		-3.4
75.0%	quartile	-3.4
50.0%	median	-3.4
25.0%	quartile	-3.4
10.0%		-3.4
2.5%		-3.4
0.5%		-3.4
0.0%	minimum	-3.4

Summary Statistics

Mean	-3.4
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Uranium-238 Evaporation, acidified

Bias



Quantiles

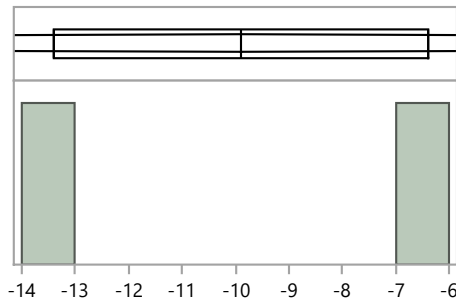
100.0%	maximum	0.3
99.5%		0.3
97.5%		0.3
90.0%		0.3
75.0%	quartile	0.3
50.0%	median	-4.5
25.0%	quartile	-7.8
10.0%		-7.8
2.5%		-7.8
0.5%		-7.8
0.0%	minimum	-7.8

Summary Statistics

Mean	-4.0
Std Dev	4.1
Std Err Mean	2.4
Upper 95% Mean	6.1
Lower 95% Mean	-14.1
N	3.0

Distributions Analyte_Method=Uranium-238 Evaporation, straight

Bias



Quantiles

100.0%	maximum	-6.4
99.5%		-6.4
97.5%		-6.4
90.0%		-6.4
75.0%	quartile	-6.4
50.0%	median	-9.9
25.0%	quartile	-13.4
10.0%		-13.4
2.5%		-13.4
0.5%		-13.4
0.0%	minimum	-13.4

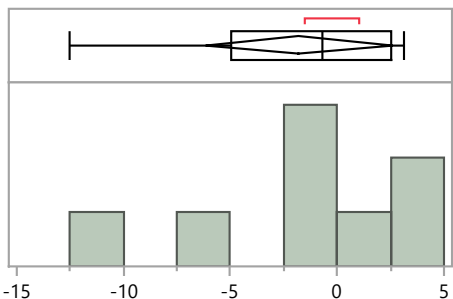
Summary Statistics

Mean	-9.9
Std Dev	4.9
Std Err Mean	3.5
Upper 95% Mean	34.6
Lower 95% Mean	-54.4
N	2.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Uranium-238 Ion Exchange Chromatography / Ion Chromatography

Bias



Quantiles

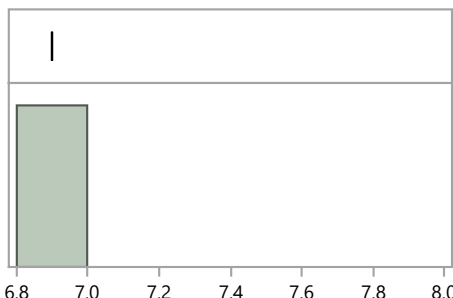
100.0%	maximum	3.1
99.5%		3.1
97.5%		3.1
90.0%		3.1
75.0%	quartile	2.5
50.0%	median	-0.7
25.0%	quartile	-5.0
10.0%		-12.5
2.5%		-12.5
0.5%		-12.5
0.0%	minimum	-12.5

Summary Statistics

Mean	-1.8
Std Dev	5.2
Std Err Mean	1.8
Upper 95% Mean	2.6
Lower 95% Mean	-6.2
N	8.0

Distributions Analyte_Method=Uranium-238 No preparation - analyzed as received

Bias



Quantiles

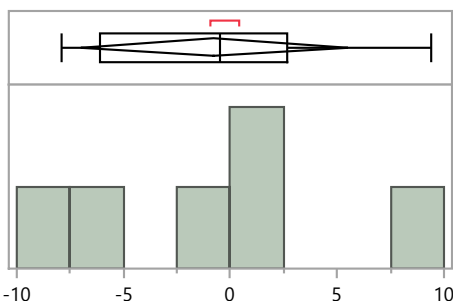
100.0%	maximum	6.9
99.5%		6.9
97.5%		6.9
90.0%		6.9
75.0%	quartile	6.9
50.0%	median	6.9
25.0%	quartile	6.9
10.0%		6.9
2.5%		6.9
0.5%		6.9
0.0%	minimum	6.9

Summary Statistics

Mean	6.9
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Uranium-238 Other

Bias



Quantiles

100.0%	maximum	9.4
99.5%		9.4
97.5%		9.4
90.0%		9.4
75.0%	quartile	2.7
50.0%	median	-0.5
25.0%	quartile	-6.1
10.0%		-7.9
2.5%		-7.9
0.5%		-7.9
0.0%	minimum	-7.9

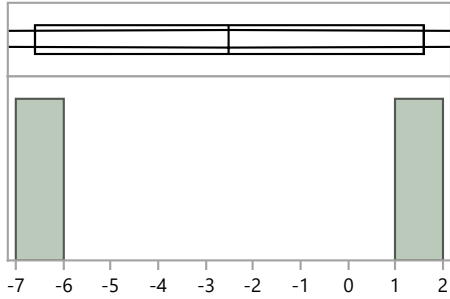
Summary Statistics

Mean	-0.8
Std Dev	6.0
Std Err Mean	2.4
Upper 95% Mean	5.5
Lower 95% Mean	-7.0
N	6.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Uranium-238 Total dissolution by fusion

Bias



Quantiles

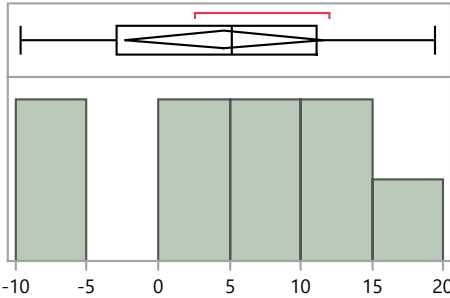
100.0%	maximum	1.6
99.5%		1.6
97.5%		1.6
90.0%		1.6
75.0%	quartile	1.6
50.0%	median	-2.5
25.0%	quartile	-6.6
10.0%		-6.6
2.5%		-6.6
0.5%		-6.6
0.0%	minimum	-6.6

Summary Statistics

Mean	-2.5
Std Dev	5.8
Std Err Mean	4.1
Upper 95% Mean	49.6
Lower 95% Mean	-54.6
N	2.0

Distributions Analyte_Method=Zinc-65 EPA 901.1, Gamma Emitting, 600/4-80-032

Bias



Quantiles

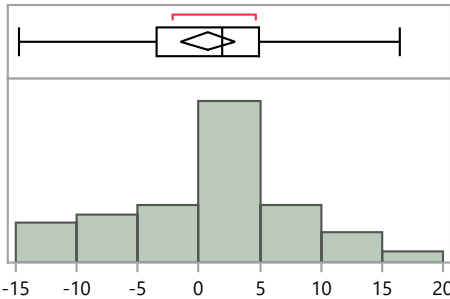
100.0%	maximum	19.4
99.5%		19.4
97.5%		19.4
90.0%		19.4
75.0%	quartile	11.1
50.0%	median	5.2
25.0%	quartile	-2.9
10.0%		-9.6
2.5%		-9.6
0.5%		-9.6
0.0%	minimum	-9.6

Summary Statistics

Mean	4.6
Std Dev	9.0
Std Err Mean	3.0
Upper 95% Mean	11.6
Lower 95% Mean	-2.4
N	9.0

Distributions Analyte_Method=Zinc-65 No preparation - analyzed as received

Bias



Quantiles

100.0%	maximum	16.4
99.5%		16.4
97.5%		16.2
90.0%		10.3
75.0%	quartile	5.0
50.0%	median	1.9
25.0%	quartile	-3.5
10.0%		-10.3
2.5%		-14.7
0.5%		-14.7
0.0%	minimum	-14.7

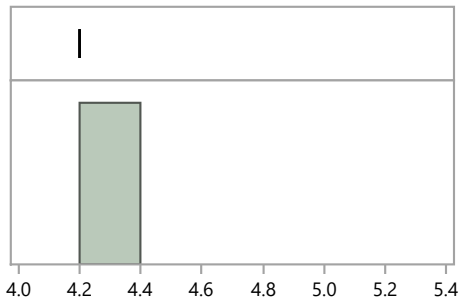
Summary Statistics

Mean	0.7
Std Dev	7.3
Std Err Mean	1.1
Upper 95% Mean	3.0
Lower 95% Mean	-1.6
N	42.0

MaW Distribution by Preparation Method

Distributions Analyte_Method=Zinc-65 Other

Bias



Quantiles		
100.0%	maximum	4.2
99.5%		4.2
97.5%		4.2
90.0%		4.2
75.0%	quartile	4.2
50.0%	median	4.2
25.0%	quartile	4.2
10.0%		4.2
2.5%		4.2
0.5%		4.2
0.0%	minimum	4.2

Summary Statistics	
Mean	4.2
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0