

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.

MaS47 Participating Laboratories

Lab Code	Lab Name	Matrix Code
ADEM01	Alabama Department of Environmental Management	MaS
ADFC99	Abu Dhabi Quality and Conformity Council-Central Testing Lab	MaS
AFOH01	USAFSAM/OEA	MaS
ARSL01	ARS Aleut Analytical, LLC	MaS
AY1201	Consolidated Nuclear Security, LLC, ACO Laboratory	MaS
BY1201	Consolidated Nuclear Security, LLC, ACO, Production Laboratory	MaS
CDHS01	California Department of Public Health	MaS
CESL01	Lawrence Livermore National Laboratory - EMRL	MaS
DINL99	Departamento Ingeniería Energética	MaS
EFGS01	Eurofins Frontier Global Sciences, LLC.	MaS
ERCL01	Washington State Public Health Laboratories	MaS
ERHD99	National Monitoring Section, Radiation Protection Bureau, Health Canada	MaS
ETTP01	MCLinc	MaS
FDHE01	Florida Dept of Health Environmental Laboratory	MaS
FDOH01	Florida Dept. of Health, Mobile Environmental Radiological Lab	MaS
GENE01	GEL Laboratories, LLC	MaS
GPCL01	Georgia Power Company Environmental Laboratory	MaS
HECR01	SC Dept. Health and Environmental Control Radiological Laboratory	MaS
HPAC99	UKHSA, RCE Glasgow	MaS
HPAL01	Los Alamos National Laboratory	MaS
IAEA20	IAEA Marine Environment Laboratories, Radiometrics Laboratory	MaS
IAEA99	International Atomic Energy Agency	MaS
IEMA01	Illinois Emergency Management Agency Radiochemistry Laboratory	MaS
ISUE01	ISU Environmental Monitoring Laboratory	MaS
ISUP01	ISU - Department of Physics/Health Physics/EAL	MaS
JAEC99	Research Laboratories and Information Directorate	MaS
JLNN01	Jefferson Laboratory	MaS
LAWR01	LAWRENCE BERKELEY NATIONAL LABORATORY	MaS
LOCK03	Advanced Test Reactor (ATR) Complex Radioanalytical Laboratory	MaS
MART01	Fluor BWXT Ports Analytical Laboratory	MaS
MART03	Radioactive Material Analysis Laboratory	MaS
MDPH01	MDPH-Radiation Control Program	MaS
MSDH01	Mississippi State Dept of Health	MaS
NARL01	National Analytical Radiation Environmental Laboratory	MaS
NESI01	BWXT-Radioisotope & Analytical Chemistry Laboratory	MaS
NJDH01	New Jersey Dept. of Health, ECLS	MaS
NOCS99	National Oceanography Centre, Southampton	MaS
NRLL99	Environmental Radioactivity - National Centre for Radiation Science	MaS
ODHL01	Ohio Department of Health Laboratory	MaS
OTLI01	Pace Analytical National Center for Testing & Innovation	MaS
QUAN02	Eurofins TestAmerica Knoxville	MaS
RJLG01	RJ Lee Group - Columbia Basin Analytical Laboratories (CBAL)	MaS
SANC99	RadioAnalysis, South Africa Nuclear Energy Corp.	MaS
SEML01	SRS Environmental Monitoring Laboratory	MaS

SLAC01	SLAC DOE National Accelerator Laboratory	MaS
SOUT01	Southwest Research Institute	MaS
SRPD01	Sandia National Laboratories, Radiation Protection Sample Diagnostics	MaS
TDHL01	Texas Department of State Health Services Laboratory	MaS
TELE01	Teledyne Brown Engineering - Environmental Services	MaS
TELE02	ATI Environmental, Inc., Midwest Lab	MaS
TMAO01	EBERLINE Analytical Corporation	MaS
TNUT01	St. Louis USACE FUSRAP Laboratory	MaS
UNTE01	UniTech-235	MaS
WEST04	PACE ANALYTICAL SERVICES, PITTSBURGH	MaS
WIPH01	WI, DPH, Radiation Protection Section	MaS
WIPP01	WIPP Laboratories	MaS
WSHL01	Wisconsin State Laboratory of Hygiene	MaS
YPGA01	US Army Yuma Proving Ground / Material Analysis Lab	MaS

Laboratories Not Reporting

Lab Code	Lab Name	Matrix Code
ASUK99	AWE (Aldermaston)	MaS
CMRC01	Carlsbad Environmental Monitoring and Research Center	MaS
EULC01	EnergySolutions, LLC	MaS
HSSB99	HG SOLUTION SDN BHD	MaS
NSPH01	Nevada State Public Health Laboratory	MaS
UNEV01	University of Nevada, Reno	MaS

Study Reference Values

MAPEP-22-MaS47

Radiological Reference Date: 08/01/2022

Analyte	Ref Value	Ref Unc	Tot Mtl Ref Val	Tot Mtl Ref Unc
Units: (mg/kg)				
Inorganic				
Antimony	7.8	0.3	10.11	0.11
Arsenic	13.9	0.4	14.2	0.5
Barium	280	10	814	15
Beryllium	8.78	0.16	9.84	0.17
Cadmium	10.0	0.2	10.1	0.2
Chromium	49.1	1.5	95	4
Cobalt	60.0	1.1	63.8	1.2
Copper	59.0	1.3	64.2	1.5
Lead	51.0	1.0	57.8	1.1
Mercury	0.235	0.004	0.235	0.004
Nickel	194	4	205	4
Selenium	11.1	0.2	11.5	0.2
Silver	52.9	1.1	53.0	1.1
Technetium-99	0.00158	0.00003		
Thallium	64.4	1.3	64.8	1.3
Uranium-235	0.0389	0.0013		
Uranium-238	12.6	0.3		
Uranium-Total	12.7	0.3		
Vanadium	122	3	167	2
Zinc	127	4	148	4

Analyte	Ref Value	Ref Unc		
Units: (Bq/kg)				
Radiological				
Americium-241	99.2	1.7		
Cesium-134	627	13		
Cobalt-57	786	16		
Iron-55	740	15		
Manganese-54	841	17		
Plutonium-238	0.56	0.07		
Plutonium-239/240	113	2		
Plutonium-241	26.8	0.8		
Potassium-40	537	15		
Strontium-90	852	17		
Technetium-99	1000	20		
Thorium-228	49	2		
Thorium-230	43	2		
Thorium-232	47	2		
Uranium-234	50.8	1.7		
Uranium-238	157	5		
Zinc-65	1140	20		

Sample Statistical Summary

MAPEP-22-MaS47

Radiological Reference Date: 08/01/2022

Analyte	T(1)	A(2)	Grand(3) Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
Inorganic							Units: (mg/kg)
Antimony	10	7	7.4	1.0	7.8	0.3	5.5 - 10.1
Arsenic	10	10	12.9	1.6	13.9	0.4	9.7 - 18.1
Barium	10	10	289	20	280	10	196 - 364
Beryllium	11	10	9.10	0.53	8.78	0.16	6.15 - 11.41
Cadmium	11	11	9.9	0.7	10.0	0.2	7.0 - 13.0
Chromium	10	10	49.7	5.5	49.1	1.5	34.4 - 63.8
Cobalt	11	11	56.3	6.1	60.0	1.1	42.0 - 78.0
Copper	11	11	57.3	5.4	59.0	1.3	41.3 - 76.7
Lead	11	11	48.5	6.6	51.0	1.0	35.7 - 66.3
Mercury	10	10	0.238	0.021	0.235	0.004	0.165 - 0.306
Nickel	11	11	190	11	194	4	136 - 252
Selenium	10	8	10.1	1.5	11.1	0.2	7.8 - 14.4
Silver	10	10	49.8	3.4	52.9	1.1	37.0 - 68.8
Technetium-99	2	2			0.00158	0.00003	0.00111 - 0.00205
Thallium	10	9	63.1	6.2	64.4	1.3	45.1 - 83.7
Uranium-235	9	7	0.0365	0.0053	0.0389	0.0013	0.0272 - 0.0506
Uranium-238	11	10	11.3	1.4	12.6	0.3	8.8 - 16.4
Uranium-Total	12	12	11.7	2.0	12.7	0.3	8.9 - 16.5
Vanadium	11	9	117	14	122	3	85 - 159
Zinc	11	11	130	11	127	4	89 - 165

Analyte	T(1)	A(2)	Grand(3) Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
Radiological							Units: (Bq/kg)
Americium-241	37	29	94.0	8.7	99.2	1.7	69.4 - 129.0
Cesium-134	51	44	602	54	627	13	439 - 815
Cesium-137	45	44					False Positive Test
Cobalt-57	51	47	797	75	786	16	550 - 1022
Cobalt-60	45	37					False Positive Test
Iron-55	6	6	718	121	740	15	518 - 962
Manganese-54	51	47	871	64	841	17	589 - 1093
Nickel-63	9	5					False Positive Test
Plutonium-238	24	22	0.74	0.70	0.56	0.07	Sensitivity Evaluation
Plutonium-239/240	24	24	110	8	113	2	79 - 147
Plutonium-241	3	3			26.8	0.8	Sensitivity Evaluation
Potassium-40	51	42	552	48	537	15	376 - 698
Strontium-90	22	18	755	102	852	17	596 - 1108
Technetium-99	15	13	951	113	1000	20	700 - 1300
Thorium-228	12	10	50	6	49	2	34 - 64
Thorium-230	12	9	41	6	43	2	30 - 56
Thorium-232	12	11	45	5	47	2	33 - 61
Uranium-234	27	23	48.4	5.3	50.8	1.7	35.6 - 66.0
Uranium-238	28	27	154	17	157	5	110 - 204
Zinc-65	51	46	1195	97	1140	20	798 - 1482

- 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..... $|\text{Bias}| \leq 20\%$
- W = Result acceptable with warning..... $20\% < |\text{Bias}| \leq 30\%$
- N = Result not acceptable..... $|\text{Bias}| > 30\%$
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE..... $\text{RP} < 2\%$
 - ACCEPTABLE..... $2\% \leq \text{RP} \leq 15\%$
 - ACCEPTABLE WITH WARNING..... $15\% < \text{RP} \leq 30\%$
 - NOT ACCEPTABLE..... $\text{RP} > 30\%$
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

Flag Summary Report

MAPEP-22-MaS47

Inorganic				
Analyte	A	W	RW	N
Antimony	6	1		3
Arsenic	10			
Barium	10			
Beryllium	10			1
Cadmium	11			
Chromium	10			
Cobalt	10	1		
Copper	10	1		
Lead	10	1		
Mercury	9	1		
Nickel	11			
Selenium	7	1		2
Silver	10			
Thallium	9			1
Uranium-Total	9	3		
Uranium-235	5	2		2
Uranium-238	8	2		1
Vanadium	8	1		2
Zinc	10	1		
Technetium-99	2			
Radiological				
Analyte	A	W	RW	N
Americium-241	28	1		8
Cesium-134	42	2		5
Cesium-137	44			7
Cobalt-57	45	2		4
Cobalt-60	37			14
Iron-55	4	2		
Manganese-54	45	2		4
Nickel-63	5			5
Plutonium-238	22			2
Plutonium-239/240	24			
Potassium-40	40	2		9
Strontium-90	12	6		4
Technetium-99	12	1		2
Thorium-228	9	1		2
Thorium-230	8	1		3
Thorium-232	10	1		1
Uranium-234	20	3		4
Uranium-238	25	2		1
Zinc-65	45	1		5
Plutonium-241	3			



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

Laboratory Results For MAPEP-22-MaS47

(ADEM01) Alabama Department of Environmental Management
1350 Coliseum Blvd.
Montgomery, AL 36110

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	92.8500	99.2	A		-6.4	69.4 - 129.0	5.0400	A
Cesium-134	579.5000	627	A		-7.6	439 - 815	9.2700	N
Cesium-137	NR		N	(11)		False Positive Test		
Cobalt-57	759.0000	786	A		-3.4	550 - 1022	14.1500	N
Cobalt-60	NR		N	(11)		False Positive Test		
Iron-55	NR	740				518 - 962		
Manganese-54	867.0000	841	A		3.1	589 - 1093	19.0000	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	NR	537	N	(25)		376 - 698		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1175.0000	1140	A		3.1	798 - 1482	27.5500	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(ADFC99) Abu Dhabi Quality and Conformity Council-Central Testing Lab

Radiation Lab

Abu Dhabi, Abu Dhabi 853

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	102.66	99.2	A		3.5	69.4 - 129.0	7.92	A
Cesium-134	668.56	627	A		6.6	439 - 815	7.40	N
Cesium-137	NR		N	(11)		False Positive Test		
Cobalt-57	823.50	786	A		4.8	550 - 1022	21.12	A
Cobalt-60	NR		N	(11)		False Positive Test		
Iron-55	NR	740				518 - 962		
Manganese-54	872.68	841	A		3.8	589 - 1093	20.07	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	535.75	537	A		-0.2	376 - 698	39.81	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1214.29	1140	A		6.5	798 - 1482	31.50	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
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- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(AFOH01) USAFSAM/OEA

2510 Fifth Street, Area B

Wright-Patterson AFB, OH 45433-7913

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	94.8	99.2	A		-4.4	69.4 - 129.0	5.8	A
Cesium-134	590	627	A		-5.9	439 - 815	12	A
Cesium-137	0.5		A			False Positive Test	0.6	
Cobalt-57	752	786	A		-4.3	550 - 1022	22	A
Cobalt-60	-0.1		A			False Positive Test	0.3	
Iron-55	NR	740				518 - 962		
Manganese-54	791	841	A		-5.9	589 - 1093	18	A
Nickel-63	NR					False Positive Test		
Plutonium-238	0.6	0.56	A	(17)		Sensitivity Evaluation	0.4	
Plutonium-239/240	114.1	113	A		1.0	79 - 147	6.6	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	482	537	A		-10.2	376 - 698	18	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	878	852	A		3.1	596 - 1108	37	A
Technetium-99	NR	1000				700 - 1300		
Thorium-228	53.4	49	A		9.0	34 - 64	4.2	A
Thorium-230	43.7	43	A		1.6	30 - 56	3.6	A
Thorium-232	46.0	47	A		-2.1	33 - 61	3.7	A
Uranium-234	46.7	50.8	A		-8.1	35.6 - 66.0	3.7	A
Uranium-238	161.9	157	A		3.1	110 - 204	8.5	A
Zinc-65	1106	1140	A		-3.0	798 - 1482	23	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
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- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(ARSL01) ARS Aleut Analytical, LLC

2609 North River Road

Port Allen, LA 70767

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	7.62	7.8	A		-2.3	5.5 - 10.1	0.338	A
Arsenic	11.7	13.9	A		-15.8	9.7 - 18.1	0.268	A
Barium	304	280	A		8.6	196 - 364	8.15	A
Beryllium	9.49	8.78	A		8.1	6.15 - 11.41	0.304	A
Cadmium	10.7	10.0	A		7.0	7.0 - 13.0	0.332	A
Chromium	58.3	49.1	A		18.7	34.4 - 63.8	0.648	N
Cobalt	61.6	60.0	A		2.7	42.0 - 78.0	0.608	N
Copper	55.4	59.0	A		-6.1	41.3 - 76.7	0.584	N
Lead	57.1	51.0	A		12.0	35.7 - 66.3	0.648	N
Mercury	0.229	0.235	A		-2.6	0.165 - 0.306	0.0134	A
Nickel	200	194	A		3.1	136 - 252	6.45	A
Selenium	8.31	11.1	W		-25.1	7.8 - 14.4	0.310	A
Silver	49.5	52.9	A		-6.4	37.0 - 68.8	0.916	N
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	74.3	64.4	A		15.4	45.1 - 83.7	0.468	N
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	10.3	12.7	A		-18.9	8.9 - 16.5	0.304	A
Vanadium	178	122	N		45.9	85 - 159	3.45	N
Zinc	120	127	A		-5.5	89 - 165	5.60	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	85.315	99.2	A		-14.0	69.4 - 129.0	7.052	A
Cesium-134	569.040	627	A		-9.2	439 - 815	18.761	A
Cesium-137	-0.740		A			False Positive Test	1.318	
Cobalt-57	767.290	786	A		-2.4	550 - 1022	27.089	A
Cobalt-60	1.469		A			False Positive Test	0.546	
Iron-55	NR	740				518 - 962		
Manganese-54	858.720	841	A		2.1	589 - 1093	28.141	A
Nickel-63	NR					False Positive Test		
Plutonium-238	1.870	0.56	A	(17)		Sensitivity Evaluation	1.137	
Plutonium-239/240	112.380	113	A		-0.5	79 - 147	9.583	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	623.290	537	A		16.1	376 - 698	23.378	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	763.870	852	A		-10.3	596 - 1108	62.507	A
Technetium-99	846.595	1000	A		-15.3	700 - 1300	105.879	A
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	24.917	50.8	N		-51.0	35.6 - 66.0	2.785	A
Uranium-238	130.255	157	A		-17.0	110 - 204	9.538	A
Zinc-65	1249.400	1140	A		9.6	798 - 1482	40.241	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(AY1201) Consolidated Nuclear Security, LLC, ACO Laboratory

Y12, NSC, Bldg. 9995, Rm 142

Oak Ridge, TN 37831-8189

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	9.17	7.8	A		17.6	5.5 - 10.1	.484	A
Arsenic	11.7	13.9	A		-15.8	9.7 - 18.1	1.547	A
Barium	310	280	A		10.7	196 - 364	12.617	A
Beryllium	8.91	8.78	A		1.5	6.15 - 11.41	0.555	A
Cadmium	9.97	10.0	A		-0.3	7.0 - 13.0	1.111	A
Chromium	52.9	49.1	A		7.7	34.4 - 63.8	1.666	A
Cobalt	53.2	60.0	A		-11.3	42.0 - 78.0	5.309	A
Copper	54.9	59.0	A		-6.9	41.3 - 76.7	6.802	A
Lead	44.6	51.0	A		-12.5	35.7 - 66.3	2.908	A
Mercury	0.222	0.235	A		-5.5	0.165 - 0.306	0.0232	A
Nickel	196	194	A		1.0	136 - 252	9.682	A
Selenium	12.7	11.1	A		14.4	7.8 - 14.4	2.06	W
Silver	43.8	52.9	A		-17.2	37.0 - 68.8	5.111	A
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	64.9	64.4	A		0.8	45.1 - 83.7	7.983	A
Uranium-235	0.04	0.0389	A		2.8	0.0272 - 0.0506	0.004	A
Uranium-238	12.48	12.6	A		-1.0	8.8 - 16.4	0.5	A
Uranium-Total	12.52	12.7	A		-1.4	8.9 - 16.5	0.5	A
Vanadium	123	122	A		0.8	85 - 159	4.674	A
Zinc	133	127	A		4.7	89 - 165	8.326	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	112	99.2	A		12.9	69.4 - 129.0	12	A
Cesium-134	NR	627		(6)		439 - 815		
Cesium-137	0.0583		A			False Positive Test	2.2	
Cobalt-57	944	786	W		20.1	550 - 1022	23	A
Cobalt-60	2.32		A			False Positive Test	1.5	
Iron-55	NR	740				518 - 962		
Manganese-54	978	841	A		16.3	589 - 1093	33	A
Nickel-63	NR					False Positive Test		
Plutonium-238	1.67	0.56	A	(17)		Sensitivity Evaluation	1.0	
Plutonium-239/240	108	113	A		-4.4	79 - 147	8.8	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	632	537	A		17.7	376 - 698	40	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	829	852	A		-2.7	596 - 1108	27	A
Techneium-99	888	1000	A		-11.2	700 - 1300	21	A
Thorium-228	43.3	49	A		-11.6	34 - 64	3.0	A
Thorium-230	37.2	43	A		-13.5	30 - 56	2.7	A
Thorium-232	42.9	47	A		-8.7	33 - 61	3.0	A
Uranium-234	50.1	50.8	A		-1.4	35.6 - 66.0	4.4	A
Uranium-238	156	157	A		-0.6	110 - 204	12	A
Zinc-65	1340	1140	A		17.5	798 - 1482	41	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

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

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	101	99.2	A		1.8	69.4 - 129.0	9.55	A
Cesium-134	NR	627		(6)		439 - 815		
Cesium-137	2.25		A			False Positive Test	1.04	
Cobalt-57	833	786	A		6.0	550 - 1022	9.05	N
Cobalt-60	4.94		N	(1)		False Positive Test	0.41	
Iron-55	NR	740				518 - 962		
Manganese-54	897.3	841	A		6.7	589 - 1093	11.93	N
Nickel-63	NR					False Positive Test		
Plutonium-238	0.656	0.56	A	(17)		Sensitivity Evaluation	0.505	
Plutonium-239/240	120	113	A		6.2	79 - 147	7.55	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	602	537	A		12.1	376 - 698	16.5	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	759.73	852	A		-10.8	596 - 1108	28.37	A
Technetium-99	993	1000	A		-0.7	700 - 1300	30	A
Thorium-228	30.2	49	N		-38.4	34 - 64	4.23	A
Thorium-230	20.9	43	N		-51.4	30 - 56	3.10	A
Thorium-232	29.6	47	N		-37.0	33 - 61	4.14	A
Uranium-234	51.8	50.8	A		2.0	35.6 - 66.0	4.13	A
Uranium-238	146	157	A		-7.0	110 - 204	7.1	A
Zinc-65	1277	1140	A		12.0	798 - 1482	19.80	N

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (CDHS01) California Department of Public Health
 Drinking Water & Radiation Lab.
 Richmond, CA 94804-6403

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	90.6	99.2	A		-8.7	69.4 - 129.0	2.97	A
Cesium-134	NR	627	N	(28)		439 - 815		
Cesium-137	NR		N	(11)		False Positive Test		
Cobalt-57	NR	786	N	(28)		550 - 1022		
Cobalt-60	NR		N	(11)		False Positive Test		
Iron-55	571	740	W		-22.8	518 - 962	33.8	A
Manganese-54	NR	841	N	(28)		589 - 1093		
Nickel-63	NR		N	(11)		False Positive Test		
Plutonium-238	0.620	0.56	A	(17)		Sensitivity Evaluation	0.214	
Plutonium-239/240	113.9	113	A		0.8	79 - 147	2.96	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	NR	537	N	(28)		376 - 698		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852	N	(28)		596 - 1108		
Technetium-99	969	1000	A		-3.1	700 - 1300	42.6	A
Thorium-228	47.5	49	A		-3.1	34 - 64	5.46	A
Thorium-230	50.8	43	A		18.1	30 - 56	5.54	A
Thorium-232	46.8	47	A		-0.4	33 - 61	5.18	A
Uranium-234	47.5	50.8	A		-6.5	35.6 - 66.0	5.13	A
Uranium-238	89.9	157	N		-42.7	110 - 204	35.0	N
Zinc-65	NR	1140	N	(28)		798 - 1482		

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(CESL01) Lawrence Livermore National Laboratory - EMRL

7000 East Avenue

Livermore, CA 94551

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2	N	(28)		69.4 - 129.0		
Cesium-134	5.80E-01	627	N		-99.9	439 - 815	1.04E-02	N
Cesium-137	-1.13E-02		A			False Positive Test	1.40E-02	
Cobalt-57	7.52e-01	786	N		-99.9	550 - 1022	1.59E-02	A
Cobalt-60	3.12E-04		A			False Positive Test	3.12E-04	
Iron-55	NR	740				518 - 962		
Manganese-54	8.36E-01	841	N		-99.9	589 - 1093	2.28E-02	A
Nickel-63	NR					False Positive Test		
Plutonium-238	6.80e-01	0.56	A	(17)		Sensitivity Evaluation	4.54e-01	
Plutonium-239/240	1.09E+02	113	A		-3.5	79 - 147	4.42	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	5.19E-01	537	N		-99.9	376 - 698	3.72E-02	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1.11E+00	1140	N		-99.9	798 - 1482	3.41E-02	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (DINL99) Departamento Ingeniería Energética
 Escuela de Ingeniería de Bilbao
 Bilbao, Vizcaya 48013

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	11.1	12.6	A		-11.9	8.8 - 16.4	0.4	A
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	83.2	99.2	A		-16.1	69.4 - 129.0	4.7	A
Cesium-134	580	627	A		-7.5	439 - 815	30	A
Cesium-137	1.29		A			False Positive Test	1.29	
Cobalt-57	696	786	A		-11.5	550 - 1022	36	A
Cobalt-60	1.12		A			False Positive Test	1.12	
Iron-55	748	740	A		1.1	518 - 962	22	A
Manganese-54	786	841	A		-6.5	589 - 1093	40	A
Nickel-63	45.2		N	(1)		False Positive Test	5.9	
Plutonium-238	0.551	0.56	A			Sensitivity Evaluation	0.080	
Plutonium-239/240	107	113	A		-5.3	79 - 147	5	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	504	537	A		-6.1	376 - 698	27	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	721	852	A		-15.4	596 - 1108	32	A
Technetium-99	934	1000	A		-6.6	700 - 1300	20	A
Thorium-228	43.5	49	A		-11.2	34 - 64	1.8	A
Thorium-230	34.3	43	W		-20.2	30 - 56	1.5	A
Thorium-232	43.1	47	A		-8.3	33 - 61	1.8	A
Uranium-234	42.5	50.8	A		-16.3	35.6 - 66.0	1.8	A
Uranium-238	138	157	A		-12.1	110 - 204	5	A
Zinc-65	1080	1140	A		-5.3	798 - 1482	56	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (EFGS01) Eurofins Frontier Global Sciences, LLC.
 5755 8th St. E
 Tacoma, WA 98424

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	0.23	0.235	A		-2.1	0.165 - 0.306	0.013441	A
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	NR	627				439 - 815		
Cesium-137	NR					False Positive Test		
Cobalt-57	NR	786				550 - 1022		
Cobalt-60	NR					False Positive Test		
Iron-55	NR	740				518 - 962		
Manganese-54	NR	841				589 - 1093		
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	NR	537				376 - 698		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	NR	1140				798 - 1482		

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(ERCL01) Washington State Public Health Laboratories
1610 N.E. 150th Street
Shoreline, WA 98155-9701

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	13.3	10.11	N	(5)	31.6	7.1 - 13.1	0.4	A
Arsenic	16.5	14.2	A	(5)	16.2	9.9 - 18.5	1.6	A
Barium	NR	280				196 - 364		
Beryllium	9.31	9.84	A	(5)	-5.4	6.89 - 12.79	0.50	A
Cadmium	10.3	10.1	A	(5)	2.0	7.1 - 13.1	0.4	A
Chromium	91.4	95	A	(5)	-3.8	66.5 - 123.5	3.9	A
Cobalt	59.6	63.8	A	(5)	-6.6	44.7 - 82.9	1.8	A
Copper	60.0	64.2	A	(5)	-6.5	44.9 - 83.5	1.8	A
Lead	60.9	57.8	A	(5)	5.4	40.5 - 75.1	2.2	A
Mercury	NR	0.235				0.165 - 0.306		
Nickel	191	205	A	(5)	-6.8	144 - 267	7	A
Selenium	11.7	11.5	A	(5)	1.7	8.1 - 15.0	0.8	A
Silver	53.3	53.0	A	(5)	0.6	37.1 - 68.9	1.6	A
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	60.4	64.8	A	(5)	-6.8	45.4 - 84.2	2.4	A
Uranium-235	.0402	0.0389	A		3.3	0.0272 - 0.0506	.0020	A
Uranium-238	12.0	12.6	A		-4.8	8.8 - 16.4	0.6	A
Uranium-Total	12.1	12.7	A		-4.7	8.9 - 16.5	0.6	A
Vanadium	172	167	A	(5)	3.0	117 - 217	6	A
Zinc	128	148	A	(5)	-13.5	104 - 192	5	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	95.5	99.2	A		-3.7	69.4 - 129.0	4.3	A
Cesium-134	577	627	A		-8.0	439 - 815	19	A
Cesium-137	0.67		A			False Positive Test	0.38	
Cobalt-57	855	786	A		8.8	550 - 1022	9	N
Cobalt-60	-0.09		A			False Positive Test	0.15	
Iron-55	NR	740				518 - 962		
Manganese-54	847	841	A		0.7	589 - 1093	36	A
Nickel-63	37		A			False Positive Test	38	
Plutonium-238	0.67	0.56	A	(17)		Sensitivity Evaluation	0.42	
Plutonium-239/240	107	113	A		-5.3	79 - 147	4	A
Plutonium-241	46	26.8	A	(17)		Sensitivity Evaluation	18	
Potassium-40	581	537	A		8.2	376 - 698	30	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	648	852	W		-23.9	596 - 1108	79	A
Technetium-99	NR	1000	N	(28)		700 - 1300		
Thorium-228	60.3	49	W		23.1	34 - 64	4.2	A
Thorium-230	62.2	43	N		44.7	30 - 56	4.3	A
Thorium-232	50.3	47	A		7.0	33 - 61	3.6	A
Uranium-234	50.3	50.8	A		-1.0	35.6 - 66.0	2.8	A
Uranium-238	150	157	A		-4.5	110 - 204	6	A
Zinc-65	1120	1140	A		-1.8	798 - 1482	20	N

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
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Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-22-MaS47

(ERHD99) National Monitoring Section, Radiation Protection Bureau, Health Canada
775 Brookfield Road AL6302D1
Ottawa, Ontario K1A 1C1

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	129.5	99.2	N		30.5	69.4 - 129.0	3.4	A
Cesium-134	655	627	A		4.5	439 - 815	48	A
Cesium-137	0.57		N	(1)		False Positive Test	0.15	
Cobalt-57	731	786	A		-7.0	550 - 1022	54	A
Cobalt-60	0.17		A			False Positive Test	0.28	
Iron-55	NR	740				518 - 962		
Manganese-54	794	841	A		-5.6	589 - 1093	55	A
Nickel-63	NR					False Positive Test		
Plutonium-238	2.70	0.56	N	(4)		Sensitivity Evaluation	0.36	
Plutonium-239/240	123.2	113	A		9.0	79 - 147	2.8	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	561	537	A		4.5	376 - 698	56	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	800.4	852	A		-6.1	596 - 1108	8.4	N
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	63.2	50.8	W		24.4	35.6 - 66.0	2.4	A
Uranium-238	199.5	157	W		27.1	110 - 204	4.3	A
Zinc-65	1093	1140	A		-4.1	798 - 1482	85	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(ETTP01) MCLinc

161 Mitchell Road

Oak Ridge, Tennessee 37830

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	6.666	7.8	A		-14.5	5.5 - 10.1	0.33	A
Arsenic	11.29	13.9	A		-18.8	9.7 - 18.1	1.03	A
Barium	269.8	280	A		-3.6	196 - 364	16.67	A
Beryllium	6.03	8.78	N		-31.3	6.15 - 11.41	0.20	A
Cadmium	8.37	10.0	A		-16.3	7.0 - 13.0	0.37	A
Chromium	39.8	49.1	A		-18.9	34.4 - 63.8	2.53	A
Cobalt	42.4	60.0	W		-29.3	42.0 - 78.0	4.79	A
Copper	55.1	59.0	A		-6.6	41.3 - 76.7	3.21	A
Lead	37.23	51.0	W		-27.0	35.7 - 66.3	4.84	A
Mercury	0.2326	0.235	A		-1.0	0.165 - 0.306	0.0116	A
Nickel	175.6	194	A		-9.5	136 - 252	5.9	A
Selenium	6.29	11.1	N		-43.3	7.8 - 14.4	0.68	A
Silver	48.555	52.9	A		-8.2	37.0 - 68.8	2.73	A
Technetium-99	0.00174	0.00158	A		10.1	0.00111 - 0.00205	0.000087	A
Thallium	34.76	64.4	N		-46.0	45.1 - 83.7	1.73	A
Uranium-235	0.0423	0.0389	A		8.7	0.0272 - 0.0506	0.00212	A
Uranium-238	14.41	12.6	A		14.4	8.8 - 16.4	0.721	A
Uranium-Total	14.45	12.7	A		13.8	8.9 - 16.5	0.723	A
Vanadium	97.1	122	W		-20.4	85 - 159	5.88	A
Zinc	141.2	127	A		11.2	89 - 165	8.9	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	NR	627				439 - 815		
Cesium-137	NR					False Positive Test		
Cobalt-57	NR	786				550 - 1022		
Cobalt-60	NR					False Positive Test		
Iron-55	NR	740				518 - 962		
Manganese-54	NR	841				589 - 1093		
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	NR	537				376 - 698		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	52.2	1000	N		-94.8	700 - 1300	2.6	A
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	NR	1140				798 - 1482		

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(FDHE01) Florida Dept of Health Environmental Laboratory

PO Box 680069

Orlando, FL 32868-0069

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	87.48	99.2	A		-11.8	69.4 - 129.0	3.54	A
Cesium-134	629.95	627	A		0.5	439 - 815	10.15	N
Cesium-137	0.86		A			False Positive Test	2.77	
Cobalt-57	680.83	786	A		-13.4	550 - 1022	16.06	A
Cobalt-60	-0.14		A			False Positive Test	0.92	
Iron-55	NR	740				518 - 962		
Manganese-54	831.75	841	A		-1.1	589 - 1093	19.85	A
Nickel-63	NR					False Positive Test		
Plutonium-238	94.23	0.56	N	(4)		Sensitivity Evaluation	9.4	
Plutonium-239/240	114.06	113	A		0.9	79 - 147	11.9	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	523.96	537	A		-2.4	376 - 698	18.29	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	92.12	852	N		-89.2	596 - 1108	9.2	A
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	68.14	50.8	N		34.1	35.6 - 66.0	6.6	A
Uranium-238	153.86	157	A		-2.0	110 - 204	15.5	A
Zinc-65	1159.58	1140	A		1.7	798 - 1482	25.7	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(FDOH01) Florida Dept. of Health, Mobile Environmental Radiological Lab

PO Box 680069

Orlando, FL 32868-0069

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	87.97	99.2	A		-11.3	69.4 - 129.0	1.84	A
Cesium-134	641.82	627	A		2.4	439 - 815	7.69	N
Cesium-137	1.14		A			False Positive Test	3.51	
Cobalt-57	687.01	786	A		-12.6	550 - 1022	9.86	N
Cobalt-60	0.15		A			False Positive Test	0.95	
Iron-55	NR	740				518 - 962		
Manganese-54	828.11	841	A		-1.5	589 - 1093	13.53	N
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	534.14	537	A		-0.5	376 - 698	12.4	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	141.16	157	A		-10.1	110 - 204	4.41	A
Zinc-65	1156.63	1140	A		1.5	798 - 1482	22.3	N

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(GENE01) GEL Laboratories, LLC

2040 Savage Road

Charleston, SC 29407

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	5.17	7.8	N		-33.7	5.5 - 10.1	0.358	A
Arsenic	11.8	13.9	A		-15.1	9.7 - 18.1	0.792	A
Barium	253	280	A		-9.6	196 - 364	16.8	A
Beryllium	9.48	8.78	A		8.0	6.15 - 11.41	0.694	A
Cadmium	9.32	10.0	A		-6.8	7.0 - 13.0	0.622	A
Chromium	48.5	49.1	A		-1.2	34.4 - 63.8	3.24	A
Cobalt	54.5	60.0	A		-9.2	42.0 - 78.0	3.64	A
Copper	57.8	59.0	A		-2.0	41.3 - 76.7	3.86	A
Lead	41.7	51.0	A		-18.2	35.7 - 66.3	2.78	A
Mercury	0.264	0.235	A		12.3	0.165 - 0.306	0.0178	A
Nickel	173	194	A		-10.8	136 - 252	11.6	A
Selenium	9.94	11.1	A		-10.5	7.8 - 14.4	0.671	A
Silver	47.0	52.9	A		-11.2	37.0 - 68.8	3.14	A
Technetium-99	0.00134	0.00158	A		-15.2	0.00111 - 0.00205	7.17E-5	A
Thallium	60.8	64.4	A		-5.6	45.1 - 83.7	4.30	A
Uranium-235	0.0642	0.0389	N		65.0	0.0272 - 0.0506	0.00488	A
Uranium-238	16.4	12.6	N		30.2	8.8 - 16.4	1.32	A
Uranium-Total	16.46	12.7	W		29.6	8.9 - 16.5	1.32	A
Vanadium	135	122	A		10.7	85 - 159	9.02	A
Zinc	115	127	A		-9.4	89 - 165	7.68	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	96.8	99.2	A		-2.4	69.4 - 129.0	5.55	A
Cesium-134	564	627	A		-10.0	439 - 815	26.1	A
Cesium-137	0.284		A			False Positive Test	0.581	
Cobalt-57	856	786	A		8.9	550 - 1022	34.6	A
Cobalt-60	0.429		A			False Positive Test	0.239	
Iron-55	628	740	A		-15.1	518 - 962	91.0	A
Manganese-54	888	841	A		5.6	589 - 1093	41.5	A
Nickel-63	20.0		A			False Positive Test	54.2	
Plutonium-238	0.285	0.56	A	(17)		Sensitivity Evaluation	0.509	
Plutonium-239/240	110	113	A		-2.7	79 - 147	5.74	A
Plutonium-241	22.7	26.8	A	(17)		Sensitivity Evaluation	108	
Potassium-40	561	537	A		4.5	376 - 698	27.5	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	842	852	A		-1.2	596 - 1108	81.3	A
Technetium-99	979	1000	A		-2.1	700 - 1300	65.8	A
Thorium-228	55.3	49	A		12.9	34 - 64	4.96	A
Thorium-230	49.6	43	A		15.3	30 - 56	4.58	A
Thorium-232	51.1	47	A		8.7	33 - 61	4.50	A
Uranium-234	88.9	50.8	N		75.0	35.6 - 66.0	5.68	A
Uranium-238	196	157	W		24.8	110 - 204	10.9	A
Zinc-65	1240	1140	A		8.8	798 - 1482	55.7	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(GPCL01) Georgia Power Company Environmental Laboratory
2480 Maner Road
Atlanta, GA 30339

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	639.28	627	A		2.0	439 - 815	41.3	A
Cesium-137	-.23		A			False Positive Test	3.05	
Cobalt-57	732.9	786	A		-6.8	550 - 1022	65.32	A
Cobalt-60	.26		A			False Positive Test	1.03	
Iron-55	NR	740				518 - 962		
Manganese-54	860.44	841	A		2.3	589 - 1093	62.27	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	610.36	537	A		13.7	376 - 698	48.17	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1232.22	1140	A		8.1	798 - 1482	88.1	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

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

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	720.0	627	A		14.8	439 - 815	29.93	A
Cesium-137	1.882		A			False Positive Test	2.980	
Cobalt-57	1004	786	W		27.7	550 - 1022	53.65	A
Cobalt-60	-0.09064		A			False Positive Test	0.2754	
Iron-55	NR	740				518 - 962		
Manganese-54	1091	841	W		29.7	589 - 1093	108.9	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	701.5	537	N		30.6	376 - 698	62.48	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1360	1140	A		19.3	798 - 1482	125.5	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(HPAC99) UKHSA, RCE Glasgow

155 Hardgate Road

Glasgow, Scotland G51 4LS

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	106	99.2	A		6.9	69.4 - 129.0	6	A
Cesium-134	518	627	A		-17.4	439 - 815	31	A
Cesium-137	2.2		A			False Positive Test	2.2	
Cobalt-57	647	786	A		-17.7	550 - 1022	41	A
Cobalt-60	1.0		A			False Positive Test	1.0	
Iron-55	NR	740				518 - 962		
Manganese-54	715	841	A		-15.0	589 - 1093	44	A
Nickel-63	NR					False Positive Test		
Plutonium-238	0.7	0.56	A	(17)		Sensitivity Evaluation	0.4	
Plutonium-239/240	123	113	A		8.9	79 - 147	8	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	426	537	W		-20.7	376 - 698	30	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	642	852	W		-24.6	596 - 1108	24	A
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	47.8	50.8	A		-5.9	35.6 - 66.0	3.4	A
Uranium-238	160	157	A		1.9	110 - 204	11	A
Zinc-65	954	1140	A		-16.3	798 - 1482	61	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (HPAL01) Los Alamos National Laboratory
 Milan Gadd, MS G761
 Los Alamos, NM 87545-1663

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	85.63	99.2	A		-13.7	69.4 - 129.0	5.40	A
Cesium-134	541.50	627	A		-13.6	439 - 815	21.51	A
Cesium-137	0.16		A			False Positive Test	3.45	
Cobalt-57	725.67	786	A		-7.7	550 - 1022	42.24	A
Cobalt-60	-0.95		A			False Positive Test	2.84	
Iron-55	NR	740				518 - 962		
Manganese-54	813.56	841	A		-3.3	589 - 1093	33.15	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	491.67	537	A		-8.4	376 - 698	39.31	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	-426.28	50.8	N		-939.1	35.6 - 66.0	927.94	N
Uranium-238	142.38	157	A		-9.3	110 - 204	16.45	A
Zinc-65	1141.89	1140	A		0.2	798 - 1482	42.49	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(IAEA20) IAEA Marine Environment Laboratories, Radiometrics Laboratory
4a, Quai Antoine 1er
Monaco, Monaco 98000

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	111.6	99.2	A		12.5	69.4 - 129.0	4.5	A
Cesium-134	622	627	A		-0.8	439 - 815	24	A
Cesium-137	NR		N	(11)		False Positive Test		
Cobalt-57	789	786	A		0.4	550 - 1022	29	A
Cobalt-60	NR		N	(11)		False Positive Test		
Iron-55	NR	740				518 - 962		
Manganese-54	866	841	A		3.0	589 - 1093	32	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	NR	537	N	(25)		376 - 698		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1171	1140	A		2.7	798 - 1482	43	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (IAEA99) International Atomic Energy Agency
 Agency's Laboratories Seibersdorf
 Seibersdorf, Austria A-2444

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	93.8	99.2	A		-5.4	69.4 - 129.0	3.2	A
Cesium-134	613	627	A		-2.2	439 - 815	21	A
Cesium-137	1.3		A			False Positive Test	0.7	
Cobalt-57	751	786	A		-4.5	550 - 1022	21	A
Cobalt-60	0.1		A			False Positive Test	0.7	
Iron-55	NR	740				518 - 962		
Manganese-54	827	841	A		-1.7	589 - 1093	23	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	516	537	A		-3.9	376 - 698	19	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	51.2	50.8	A		0.8	35.6 - 66.0	2.1	A
Uranium-238	154	157	A		-1.9	110 - 204	5	A
Zinc-65	1134	1140	A		-0.5	798 - 1482	35	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(IEMA01) Illinois Emergency Management Agency Radiochemistry Laboratory

1301 Knotts St.

Springfield, IL 62703

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	71.3	99.2	W		-28.1	69.4 - 129.0	2.98	A
Cesium-134	601	627	A		-4.1	439 - 815	9.2	N
Cesium-137	1.0		A			False Positive Test	2.5	
Cobalt-57	765	786	A		-2.7	550 - 1022	20.5	A
Cobalt-60	0.916		A			False Positive Test	1.52	
Iron-55	NR	740				518 - 962		
Manganese-54	857	841	A		1.9	589 - 1093	21.4	A
Nickel-63	NR					False Positive Test		
Plutonium-238	0.562	0.56	A	(17)		Sensitivity Evaluation	0.324	
Plutonium-239/240	112.5	113	A		-0.4	79 - 147	4.2	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	537	537	A		0.0	376 - 698	29.5	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	763.7	852	A		-10.4	596 - 1108	33.5	A
Technetium-99	NR	1000				700 - 1300		
Thorium-228	49.6	49	A		1.2	34 - 64	3.9	A
Thorium-230	77.1	43	N		79.3	30 - 56	5.7	A
Thorium-232	49.8	47	A		6.0	33 - 61	3.9	A
Uranium-234	50.71	50.8	A		-0.2	35.6 - 66.0	3.16	A
Uranium-238	147.9	157	A		-5.8	110 - 204	8.1	A
Zinc-65	1210	1140	A		6.1	798 - 1482	33.3	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (ISUE01) ISU Environmental Monitoring Laboratory
 785 5th 8th Ave Rm B107
 Pocatello, Idaho 83209

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	549.2	627	A		-12.4	439 - 815	17.1	A
Cesium-137	0.45		A			False Positive Test	0.99	
Cobalt-57	776.1	786	A		-1.3	550 - 1022	56.5	A
Cobalt-60	0.70		A			False Positive Test	0.24	
Iron-55	NR	740				518 - 962		
Manganese-54	838.1	841	A		-0.3	589 - 1093	43.8	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	555.4	537	A		3.4	376 - 698	28.0	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1133.9	1140	A		-0.5	798 - 1482	46.9	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(ISUP01) ISU - Department of Physics/Health Physics/EAL

785 S. 8th Ave, Rm 120

Pocatello, ID 83209-8106

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	647.07	627	A		3.2	439 - 815	27.79	A
Cesium-137	0.74		A			False Positive Test	0.92	
Cobalt-57	938.68	786	A		19.4	550 - 1022	25.61	A
Cobalt-60	3.98		N	(1)		False Positive Test	0.66	
Iron-55	NR	740				518 - 962		
Manganese-54	863.81	841	A		2.7	589 - 1093	39.73	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	509.85	537	A		-5.1	376 - 698	31.24	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	2386.84	1140	N		109.4	798 - 1482	98.01	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(JAEC99) Research Laboratories and Information Directorate
Jordan Atomic Energy Commission
Amman, Jordan 70 (11934)

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	813.9	814	A	(5)	0.0	570 - 1058	6.36	N
Beryllium	9.35	9.84	A	(5)	-5.0	6.89 - 12.79	5.64	N
Cadmium	9.24	10.1	A	(5)	-8.5	7.1 - 13.1	9.44	N
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	55.13	63.8	A	(5)	-13.6	44.7 - 82.9	8.88	W
Copper	62.84	64.2	A	(5)	-2.1	44.9 - 83.5	8.79	A
Lead	51.28	57.8	A	(5)	-11.3	40.5 - 75.1	9.43	W
Mercury	NR	0.235				0.165 - 0.306		
Nickel	210.81	205	A	(5)	2.8	144 - 267	8.28	A
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	10.27	12.6	A		-18.5	8.8 - 16.4	4.55	N
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	105.68	167	N	(5)	-36.7	117 - 217	12.28	A
Zinc	111.84	148	W	(5)	-24.4	104 - 192	7.96	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	95.1	99.2	A		-4.1	69.4 - 129.0	2.5	A
Cesium-134	658.9	627	A		5.1	439 - 815	20.1	A
Cesium-137	NR		N	(11)		False Positive Test		
Cobalt-57	731	786	A		-7.0	550 - 1022	19.8	A
Cobalt-60	NR		N	(11)		False Positive Test		
Iron-55	NR	740				518 - 962		
Manganese-54	853.8	841	A		1.5	589 - 1093	21.7	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	538.7	537	A		0.3	376 - 698	14.8	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	44.783	50.8	A		-11.8	35.6 - 66.0	2.118	A
Uranium-238	147.574	157	A		-6.0	110 - 204	5.216	A
Zinc-65	1147.9	1140	A		0.7	798 - 1482	30.9	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(JLNN01) Jefferson Laboratory

111 Hadron Drive

Newport News, VA 23606

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	97.95	99.2	A		-1.3	69.4 - 129.0	2.238	A
Cesium-134	612.8	627	A		-2.3	439 - 815	4.178	N
Cesium-137	-.06585		A			False Positive Test	.4340	
Cobalt-57	865.7	786	A		10.1	550 - 1022	11.56	N
Cobalt-60	2.379		N	(1)		False Positive Test	.1374	
Iron-55	NR	740				518 - 962		
Manganese-54	926.7	841	A		10.2	589 - 1093	12.05	N
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	575.6	537	A		7.2	376 - 698	11.62	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1282	1140	A		12.5	798 - 1482	16.18	N

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(LAWR01) LAWRENCE BERKELEY NATIONAL LABORATORY
1 CYCLOTRON RD.
BERKELEY, CA 94720

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	536.9	627	A		-14.4	439 - 815	29.97	A
Cesium-137	0.8192		A			False Positive Test	1.344	
Cobalt-57	730.1	786	A		-7.1	550 - 1022	39.77	A
Cobalt-60	-0.4015		A			False Positive Test	4.015	
Iron-55	NR	740				518 - 962		
Manganese-54	856.7	841	A		1.9	589 - 1093	47.78	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	573.8	537	A		6.9	376 - 698	39.74	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1240	1140	A		8.8	798 - 1482	71.31	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

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

INL/Battelle Energy Alliance, LLC

Idaho Falls, ID 83415-7111

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	635.67	627	A		1.4	439 - 815	17.8	A
Cesium-137	2.23			A		False Positive Test	1.11	
Cobalt-57	816	786	A		3.8	550 - 1022	19.78	A
Cobalt-60	0.35			A		False Positive Test	0.26	
Iron-55	NR	740				518 - 962		
Manganese-54	925.33	841	A		10.0	589 - 1093	19.9	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	535.67	537	A		-0.2	376 - 698	30.05	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1300	1140	A		14.0	798 - 1482	29.22	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (MART01) Fluor BWXT Ports Analytical Laboratory
 Lab COC, Bldg. X-705, Rm 106
 Piketon, OH 45661

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	0.0309	0.0389	W		-20.6	0.0272 - 0.0506	0.0044	A
Uranium-238	10.5	12.6	A		-16.7	8.8 - 16.4	1.24	A
Uranium-Total	10.5	12.7	A		-17.3	8.9 - 16.5	0.654	A
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	102.5	99.2	A		3.3	69.4 - 129.0	6.439	A
Cesium-134	NR	627				439 - 815		
Cesium-137	NR					False Positive Test		
Cobalt-57	NR	786				550 - 1022		
Cobalt-60	NR					False Positive Test		
Iron-55	NR	740				518 - 962		
Manganese-54	NR	841				589 - 1093		
Nickel-63	NR					False Positive Test		
Plutonium-238	0.6228	0.56	A	(17)		Sensitivity Evaluation	0.2393	
Plutonium-239/240	112.7	113	A		-0.3	79 - 147	6.283	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	NR	537				376 - 698		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	962	1000	A		-3.8	700 - 1300	15.4	N
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	39.23	50.8	W		-22.8	35.6 - 66.0	2.584	A
Uranium-238	134.2	157	A		-14.5	110 - 204	7.178	A
Zinc-65	NR	1140				798 - 1482		

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (MART03) Radioactive Material Analysis Laboratory
 ORNL
 Oak Ridge, TN 37830

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	4.38	7.8	N		-43.8	5.5 - 10.1	0.44	A
Arsenic	14.6	13.9	A		5.0	9.7 - 18.1	1.5	A
Barium	295	280	A		5.4	196 - 364	30	A
Beryllium	9.55	8.78	A		8.8	6.15 - 11.41	0.96	A
Cadmium	10.6	10.0	A		6.0	7.0 - 13.0	1.1	A
Chromium	46.5	49.1	A		-5.3	34.4 - 63.8	4.7	A
Cobalt	63.4	60.0	A		5.7	42.0 - 78.0	6.3	A
Copper	64.1	59.0	A		8.6	41.3 - 76.7	6.4	A
Lead	54.1	51.0	A		6.1	35.7 - 66.3	5.4	A
Mercury	0.288	0.235	W		22.6	0.165 - 0.306	0.058	W
Nickel	207	194	A		6.7	136 - 252	21	A
Selenium	9.12	11.1	A		-17.8	7.8 - 14.4	0.91	A
Silver	54.5	52.9	A		3.0	37.0 - 68.8	5.5	A
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	63.8	64.4	A		-0.9	45.1 - 83.7	6.4	A
Uranium-235	0.028	0.0389	W		-28.0	0.0272 - 0.0506	0.003	A
Uranium-238	10.0	12.6	W		-20.6	8.8 - 16.4	1.0	A
Uranium-Total	10.1	12.7	W		-20.5	8.9 - 16.5	1.0	A
Vanadium	112	122	A		-8.2	85 - 159	11	A
Zinc	148	127	A		16.5	89 - 165	15	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	607.3	627	A		-3.1	439 - 815	5.5	N
Cesium-137	0.5		A			False Positive Test	2.2	
Cobalt-57	784.1	786	A		-0.2	550 - 1022	8.3	N
Cobalt-60	-0.004		A			False Positive Test	0.970	
Iron-55	NR	740				518 - 962		
Manganese-54	798	841	A		-5.1	589 - 1093	11	N
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	536	537	A		-0.2	376 - 698	15	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1069	1140	A		-6.2	798 - 1482	17	N

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (MDPH01) MDPH-Radiation Control Program
 MERL-Room 362
 Jamaica Plain, MA 02130-3597

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	89.36	99.2	A		-9.9	69.4 - 129.0	3.63	A
Cesium-134	595.70	627	A		-5.0	439 - 815	15.11	A
Cesium-137	NR		N	(11)		False Positive Test		
Cobalt-57	784.40	786	A		-0.2	550 - 1022	29.58	A
Cobalt-60	NR		N	(11)		False Positive Test		
Iron-55	NR	740				518 - 962		
Manganese-54	851.00	841	A		1.2	589 - 1093	20.46	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	NR	537	N	(28)		376 - 698		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1171.05	1140	A		2.7	798 - 1482	27.90	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (MSDH01) Mississippi State Dept of Health
 Radiological Environmental Laboratory
 Jackson, MS 39216

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	1.7864e+5	99.2	N		179980.	69.4 - 129.0	4.332e+4	W
Cesium-134	1.0012e+6	627	N		159581.	439 - 815	1.024e+4	N
Cesium-137	1.4049e+3		A			False Positive Test	7.946e+3	
Cobalt-57	1.5225e+6	786	N		193602.	550 - 1022	1.285e+4	N
Cobalt-60	5.7957e+2		A			False Positive Test	2.709e+3	
Iron-55	NR	740				518 - 962		
Manganese-54	1.4793e+6	841	N		175797.	589 - 1093	1.834e+4	N
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	-1.2027	537	N		-2339.7	376 - 698	7.106e+4	N

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	-4.4735	1140	N		-492.4	798 - 1482	4.521e+4	N

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(NARL01) National Analytical Radiation Environmental Laboratory

540 S. Morris Ave.

Montgomery, AL 36115-2601

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	87.8	99.2	A		-11.5	69.4 - 129.0	5.23	A
Cesium-134	617	627	A		-1.6	439 - 815	33.3	A
Cesium-137	0.230		A			False Positive Test	0.808	
Cobalt-57	820	786	A		4.3	550 - 1022	45.0	A
Cobalt-60	0.141		A			False Positive Test	0.310	
Iron-55	NR	740				518 - 962		
Manganese-54	904	841	A		7.5	589 - 1093	48.8	A
Nickel-63	NR					False Positive Test		
Plutonium-238	0.495	0.56	A	(17)		Sensitivity Evaluation	0.166	
Plutonium-239/240	110	113	A		-2.7	79 - 147	4.18	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	584	537	A		8.8	376 - 698	32.6	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	29.1	49	N		-40.6	34 - 64	3.89	A
Thorium-230	36.3	43	A		-15.6	30 - 56	4.62	A
Thorium-232	34.7	47	W		-26.2	33 - 61	4.28	A
Uranium-234	50.6	50.8	A		-0.4	35.6 - 66.0	3.53	A
Uranium-238	149	157	A		-5.1	110 - 204	8.53	A
Zinc-65	1220	1140	A		7.0	798 - 1482	66.1	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(NESI01) BWXT-Radioisotope & Analytical Chemistry Laboratory

Lynchburg Technology Center

Lynchburg, VA 24504-5447

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	7.41	7.8	A		-5.0	5.5 - 10.1	0.53	A
Arsenic	13.0	13.9	A		-6.5	9.7 - 18.1	0.50	A
Barium	276	280	A		-1.4	196 - 364	23.7	A
Beryllium	7.92	8.78	A		-9.8	6.15 - 11.41	0.52	A
Cadmium	10.4	10.0	A		4.0	7.0 - 13.0	0.77	A
Chromium	48.2	49.1	A		-1.8	34.4 - 63.8	3.57	A
Cobalt	56.8	60.0	A		-5.3	42.0 - 78.0	4.29	A
Copper	46.8	59.0	W		-20.7	41.3 - 76.7	1.40	A
Lead	47.3	51.0	A		-7.3	35.7 - 66.3	3.89	A
Mercury	0.228	0.235	A		-3.0	0.165 - 0.306	0.016	A
Nickel	185	194	A		-4.6	136 - 252	13.0	A
Selenium	10.9	11.1	A		-1.8	7.8 - 14.4	2.70	W
Silver	49.3	52.9	A		-6.8	37.0 - 68.8	3.36	A
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	53.2	64.4	A		-17.4	45.1 - 83.7	4.21	A
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	97.9	122	A		-19.8	85 - 159	10.6	A
Zinc	123	127	A		-3.2	89 - 165	8.38	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	59.4	99.2	N		-40.1	69.4 - 129.0	11.3	W
Cesium-134	600	627	A		-4.3	439 - 815	25.8	A
Cesium-137	0.617		A			False Positive Test	1.86	
Cobalt-57	831	786	A		5.7	550 - 1022	32.0	A
Cobalt-60	0.439		A			False Positive Test	0.709	
Iron-55	923	740	W		24.7	518 - 962	151	W
Manganese-54	910	841	A		8.2	589 - 1093	38.7	A
Nickel-63	88.6		A			False Positive Test	35.9	
Plutonium-238	-0.981	0.56	A	(17)		Sensitivity Evaluation	12.0	
Plutonium-239/240	93.5	113	A		-17.3	79 - 147	12.7	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	574	537	A		6.9	376 - 698	25.9	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852	N	(28)		596 - 1108		
Technetium-99	1196	1000	A		19.6	700 - 1300	58.0	A
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	52.4	50.8	A		3.2	35.6 - 66.0	4.86	A
Uranium-238	159	157	A		1.3	110 - 204	9.40	A
Zinc-65	1298	1140	A		13.9	798 - 1482	55.0	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (NJDH01) New Jersey Dept. of Health, ECLS
 3 Schwarzkopf Drive
 Ewing, NJ 08628

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	636	627	A		1.4	439 - 815	38.4	A
Cesium-137	1.01		A			False Positive Test	0.41	
Cobalt-57	796	786	A		1.3	550 - 1022	79.7	A
Cobalt-60	0.1		A			False Positive Test	0.13	
Iron-55	NR	740				518 - 962		
Manganese-54	898	841	A		6.8	589 - 1093	53.9	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	537	537	A		0.0	376 - 698	22.7	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1210	1140	A		6.1	798 - 1482	48.7	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (NOCS99) National Oceanography Centre, Southampton
 GAU-Radioanalytical
 Southampton, Hampshire SO14 3ZH

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	95	99.2	A		-4.2	69.4 - 129.0	8	A
Cesium-134	653	627	A		4.1	439 - 815	9	N
Cesium-137	3		A			False Positive Test	20	
Cobalt-57	762	786	A		-3.1	550 - 1022	9	N
Cobalt-60	7		A			False Positive Test	40	
Iron-55	740	740	A		0.0	518 - 962	40	A
Manganese-54	860	841	A		2.3	589 - 1093	10	N
Nickel-63	74		N	(1)		False Positive Test	4	
Plutonium-238	0.45	0.56	A			Sensitivity Evaluation	0.11	
Plutonium-239/240	98	113	A		-13.3	79 - 147	5	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	528	537	A		-1.7	376 - 698	8	N

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	700	852	A		-17.8	596 - 1108	40	A
Technetium-99	1040	1000	A		4.0	700 - 1300	30	A
Thorium-228	44	49	A		-10.2	34 - 64	3	A
Thorium-230	38	43	A		-11.6	30 - 56	3	A
Thorium-232	44	47	A		-6.4	33 - 61	3	A
Uranium-234	46	50.8	A		-9.4	35.6 - 66.0	3	A
Uranium-238	134	157	A		-14.7	110 - 204	7	A
Zinc-65	1180	1140	A		3.5	798 - 1482	10	N

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(NRL99) Environmental Radioactivity - National Centre for Radiation Science

PO Box 29181

Christchurch, Christchurch 8540

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	104	99.2	A		4.8	69.4 - 129.0	8	A
Cesium-134	703	627	A		12.1	439 - 815	43	A
Cesium-137	2.5		A			False Positive Test	1.2	
Cobalt-57	915	786	A		16.4	550 - 1022	60	A
Cobalt-60	1.5		A			False Positive Test	0.71	
Iron-55	NR	740				518 - 962		
Manganese-54	981	841	A		16.6	589 - 1093	59	A
Nickel-63	NR					False Positive Test		
Plutonium-238	2.71	0.56	A			Sensitivity Evaluation	0.81	
Plutonium-239/240	115.0	113	A		1.8	79 - 147	6.4	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	615	537	A		14.5	376 - 698	41	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	51.3	50.8	A		1.0	35.6 - 66.0	3.7	A
Uranium-238	173.7	157	A		10.6	110 - 204	7.7	A
Zinc-65	1356	1140	A		18.9	798 - 1482	84	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (ODHL01) Ohio Department of Health Laboratory
 8995 E Main Street
 Reynoldsburg, OH 43068

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	641.25	627	A		2.3	439 - 815	18.325	A
Cesium-137	0.02525		A			False Positive Test	0.976	
Cobalt-57	860.5	786	A		9.5	550 - 1022	58.825	A
Cobalt-60	1.8475		N	(1)		False Positive Test	0.2255	
Iron-55	NR	740				518 - 962		
Manganese-54	855.5	841	A		1.7	589 - 1093	51.4	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	496.5	537	A		-7.5	376 - 698	22.1	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1137.5	1140	A		-0.2	798 - 1482	49.375	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(OTLI01) Pace Analytical National Center for Testing & Innovation
12065 Lebanon Road
Mt. Juliet, TN 37122

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	0.0226	0.0389	N		-41.9	0.0272 - 0.0506	.002	A
Uranium-238	9.40	12.6	W		-25.4	8.8 - 16.4	0.9	A
Uranium-Total	11.1	12.7	A		-12.6	8.9 - 16.5	0.28	A
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	251	99.2	N		153.0	69.4 - 129.0	65.1	W
Cesium-134	552	627	A		-12.0	439 - 815	34.1	A
Cesium-137	-0.878		A			False Positive Test	3.62	
Cobalt-57	824	786	A		4.8	550 - 1022	53	A
Cobalt-60	-1.18		A			False Positive Test	1.19	
Iron-55	NR	740				518 - 962		
Manganese-54	923	841	A		9.8	589 - 1093	57.4	A
Nickel-63	256		N	(1)		False Positive Test	1.8	
Plutonium-238	0.67	0.56	A	(17)		Sensitivity Evaluation	1.43	
Plutonium-239/240	101	113	A		-10.6	79 - 147	10.5	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	567	537	A		5.6	376 - 698	53.8	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	644	852	W		-24.4	596 - 1108	14.5	A
Technetium-99	709	1000	W		-29.1	700 - 1300	28.7	A
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	40.0	50.8	W		-21.3	35.6 - 66.0	10.1	W
Uranium-238	167	157	A		6.4	110 - 204	18.3	A
Zinc-65	1280	1140	A		12.3	798 - 1482	82.1	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (QUAN02) Eurofins TestAmerica Knoxville
 5815 Middlebrook Pike
 Knoxville, TN 37921-

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	6.07	7.8	W		-22.2	5.5 - 10.1	0.20233	A
Arsenic	13.00	13.9	A		-6.5	9.7 - 18.1	0.43333	A
Barium	309.0	280	A		10.4	196 - 364	10.30000	A
Beryllium	9.09	8.78	A		3.5	6.15 - 11.41	0.30300	A
Cadmium	9.72	10.0	A		-2.8	7.0 - 13.0	0.32400	A
Chromium	54.8	49.1	A		11.6	34.4 - 63.8	1.82667	A
Cobalt	59.7	60.0	A		-0.5	42.0 - 78.0	1.99000	A
Copper	60.6	59.0	A		2.7	41.3 - 76.7	2.02000	A
Lead	51.5	51.0	A		1.0	35.7 - 66.3	1.71667	A
Mercury	0.234	0.235	A		-0.4	0.165 - 0.306	0.00780	A
Nickel	193.0	194	A		-0.5	136 - 252	6.43333	A
Selenium	8.97	11.1	A		-19.2	7.8 - 14.4	0.29900	A
Silver	49.5	52.9	A		-6.4	37.0 - 68.8	1.65000	A
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	59.8	64.4	A		-7.1	45.1 - 83.7	1.9933	A
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	128.0	122	A		4.9	85 - 159	4.26667	A
Zinc	129.0	127	A		1.6	89 - 165	5.37500	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	NR	627				439 - 815		
Cesium-137	NR					False Positive Test		
Cobalt-57	NR	786				550 - 1022		
Cobalt-60	NR					False Positive Test		
Iron-55	NR	740				518 - 962		
Manganese-54	NR	841				589 - 1093		
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	NR	537				376 - 698		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	NR	1140				798 - 1482		

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(RJLG01) RJ Lee Group - Columbia Basin Analytical Laboratories (CBAL)

2710 North 20th Avenue

Pasco, WA 99301

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	7.64	7.8	A		-2.1	5.5 - 10.1	1.05	A
Arsenic	13.0	13.9	A		-6.5	9.7 - 18.1	1.40	A
Barium	300	280	A		7.1	196 - 364	24.7	A
Beryllium	9.19	8.78	A		4.7	6.15 - 11.41	0.979	A
Cadmium	10.4	10.0	A		4.0	7.0 - 13.0	0.794	A
Chromium	52.1	49.1	A		6.1	34.4 - 63.8	5.68	A
Cobalt	58.1	60.0	A		-3.2	42.0 - 78.0	6.30	A
Copper	56.3	59.0	A		-4.6	41.3 - 76.7	6.1	A
Lead	54.9	51.0	A		7.6	35.7 - 66.3	5.14	A
Mercury	0.222	0.235	A		-5.5	0.165 - 0.306	0.027	A
Nickel	193	194	A		-0.5	136 - 252	18.0	A
Selenium	10.5	11.1	A		-5.4	7.8 - 14.4	0.958	A
Silver	54.3	52.9	A		2.6	37.0 - 68.8	5.95	A
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	67.2	64.4	A		4.3	45.1 - 83.7	5.43	A
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	10.5	12.7	A		-17.3	8.9 - 16.5	1.10	A
Vanadium	128	122	A		4.9	85 - 159	17.4	A
Zinc	138	127	A		8.7	89 - 165	21.0	W

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	NR	627				439 - 815		
Cesium-137	NR					False Positive Test		
Cobalt-57	NR	786				550 - 1022		
Cobalt-60	NR					False Positive Test		
Iron-55	NR	740				518 - 962		
Manganese-54	NR	841				589 - 1093		
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	NR	537				376 - 698		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	NR	1140				798 - 1482		

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(SANC99) RadioAnalysis, South Africa Nuclear Energy Corp.

Sample Receipt Gate 1

Pretoria, Gauteng 0001

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	10.00	12.7	W		-21.3	8.9 - 16.5	0.83	A
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	284	99.2	N		186.3	69.4 - 129.0	152	N
Cesium-134	610	627	A		-2.7	439 - 815	20	A
Cesium-137	6.60		A			False Positive Test	6.60	
Cobalt-57	803	786	A		2.2	550 - 1022	23	A
Cobalt-60	4.65		A			False Positive Test	4.65	
Iron-55	NR	740				518 - 962		
Manganese-54	855.10	841	A		1.7	589 - 1093	26.90	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	322.30	537	N		-40.0	376 - 698	43.82	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	730.95	852	A		-14.2	596 - 1108	103.55	A
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1137	1140	A		-0.3	798 - 1482	40	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
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Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-22-MaS47
 (SEML01) SRS Environmental Monitoring Laboratory
 Bldg 735-B
 Aiken, SC 29808

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	89.63	99.2	A		-9.6	69.4 - 129.0	6.52	A
Cesium-134	656	627	A		4.6	439 - 815	18	A
Cesium-137	1.5		A			False Positive Test	4.2	
Cobalt-57	779	786	A		-0.9	550 - 1022	23	A
Cobalt-60	0.16		A			False Positive Test	0.27	
Iron-55	NR	740				518 - 962		
Manganese-54	862	841	A		2.5	589 - 1093	30	A
Nickel-63	NR					False Positive Test		
Plutonium-238	0.50	0.56	A	(17)		Sensitivity Evaluation	0.22	
Plutonium-239/240	108.5	113	A		-4.0	79 - 147	8.0	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	563	537	A		4.8	376 - 698	19	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	730	852	A		-14.3	596 - 1108	39	A
Technetium-99	NR	1000				700 - 1300		
Thorium-228	47.7	49	A		-2.7	34 - 64	3.6	A
Thorium-230	37.5	43	A		-12.8	30 - 56	2.9	A
Thorium-232	39.2	47	A		-16.6	33 - 61	3.0	A
Uranium-234	48.7	50.8	A		-4.1	35.6 - 66.0	3.6	A
Uranium-238	144.3	157	A		-8.1	110 - 204	9.4	A
Zinc-65	1215	1140	A		6.6	798 - 1482	40	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (SLAC01) SLAC DOE National Accelerator Laboratory
 2575 Sand Hill Road
 Menlo Park, CA 94025

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	548.33	627	A		-12.5	439 - 815	54.83	A
Cesium-137	1.44		A			False Positive Test	1.44	
Cobalt-57	725.05	786	A		-7.8	550 - 1022	72.5	A
Cobalt-60	0.64		A			False Positive Test	0.64	
Iron-55	NR	740				518 - 962		
Manganese-54	825.54	841	A		-1.8	589 - 1093	82.55	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	480.38	537	A		-10.5	376 - 698	48.04	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1129.53	1140	A		-0.9	798 - 1482	112.95	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(SOUT01) Southwest Research Institute

6220 Culebra Rd.

San Antonio, TX 78238-5166

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	7.50	7.8	A		-3.8	5.5 - 10.1	5.21	N
Arsenic	16.2	13.9	A		16.5	9.7 - 18.1	6.11	N
Barium	287	280	A		2.5	196 - 364	45.9	W
Beryllium	9.14	8.78	A		4.1	6.15 - 11.41	1.83	W
Cadmium	9.75	10.0	A		-2.5	7.0 - 13.0	1.91	W
Chromium	45.9	49.1	A		-6.5	34.4 - 63.8	7.43	W
Cobalt	56.8	60.0	A		-5.3	42.0 - 78.0	9.16	W
Copper	64.3	59.0	A		9.0	41.3 - 76.7	10.3	W
Lead	48.4	51.0	A		-5.1	35.7 - 66.3	7.92	W
Mercury	0.229	0.235	A		-2.6	0.165 - 0.306	0.0396	W
Nickel	184	194	A		-5.2	136 - 252	29.5	W
Selenium	6.33	11.1	N		-43.0	7.8 - 14.4	5.62	N
Silver	52.0	52.9	A		-1.7	37.0 - 68.8	8.61	W
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	60.6	64.4	A		-5.9	45.1 - 83.7	9.70	W
Uranium-235	0.0358	0.0389	A		-8.0	0.0272 - 0.0506	0.00804	W
Uranium-238	11.2	12.6	A		-11.1	8.8 - 16.4	1.79	W
Uranium-Total	11.2	12.7	A		-11.8	8.9 - 16.5	1.79	W
Vanadium	113	122	A		-7.4	85 - 159	18.1	W
Zinc	124	127	A		-2.4	89 - 165	19.9	W

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	59.3	99.2	N		-40.2	69.4 - 129.0	5.22	A
Cesium-134	593	627	A		-5.4	439 - 815	20.4	A
Cesium-137	0.626		A			False Positive Test	1.68	
Cobalt-57	811	786	A		3.2	550 - 1022	23.4	A
Cobalt-60	0.722		A			False Positive Test	0.711	
Iron-55	696	740	A		-5.9	518 - 962	109	W
Manganese-54	896	841	A		6.5	589 - 1093	30.7	A
Nickel-63	81.1		N	(1)		False Positive Test	26.3	
Plutonium-238	0.811	0.56	A			Sensitivity Evaluation	0.231	
Plutonium-239/240	110	113	A		-2.7	79 - 147	7.52	A
Plutonium-241	10.7	26.8	A	(17)		Sensitivity Evaluation	17.0	
Potassium-40	589	537	A		9.7	376 - 698	27.4	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	770	852	A		-9.6	596 - 1108	48.1	A
Technetium-99	878	1000	A		-12.2	700 - 1300	49.3	A
Thorium-228	50.4	49	A		2.9	34 - 64	4.26	A
Thorium-230	41.5	43	A		-3.5	30 - 56	3.62	A
Thorium-232	41.9	47	A		-10.9	33 - 61	3.60	A
Uranium-234	41.5	50.8	A		-18.3	35.6 - 66.0	2.99	A
Uranium-238	136	157	A		-13.4	110 - 204	9.15	A
Zinc-65	1267	1140	A		11.1	798 - 1482	42.6	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(SRPD01) Sandia National Laboratories, Radiation Protection Sample Diagnostics

PO Box 5800, MS1103

Albuquerque, NM 87185-1103

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	5.72E+02	627	A		-8.8	439 - 815	3.68	A
Cesium-137	9.75E-01			A		False Positive Test	1.29	
Cobalt-57	7.18E+02	786	A		-8.7	550 - 1022	7.18	A
Cobalt-60	-4.84E-01			A		False Positive Test	4.27E-01	
Iron-55	NR	740				518 - 962		
Manganese-54	7.96E+02	841	A		-5.4	589 - 1093	4.80	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	4.86E+02	537	A		-9.5	376 - 698	2.13	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1.07E+03	1140	A		-6.1	798 - 1482	4.78	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(TDHL01) Texas Department of State Health Services Laboratory
1100 W 49th Street
Austin, TX 78756

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	89	99.2	A		-10.3	69.4 - 129.0	14	W
Cesium-134	570	627	A		-9.1	439 - 815	11	N
Cesium-137	-7.3		A			False Positive Test	4.0	
Cobalt-57	798	786	A		1.5	550 - 1022	18	A
Cobalt-60	-0.5		A			False Positive Test	4.2	
Iron-55	NR	740				518 - 962		
Manganese-54	864	841	A		2.7	589 - 1093	23	A
Nickel-63	NR					False Positive Test		
Plutonium-238	1.23	0.56	A	(17)		Sensitivity Evaluation	0.55	
Plutonium-239/240	109.1	113	A		-3.5	79 - 147	8.4	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	557	537	A		3.7	376 - 698	32	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	673	852	W		-21.0	596 - 1108	17	A
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	47.7	50.8	A		-6.1	35.6 - 66.0	5.3	A
Uranium-238	160	157	A		1.9	110 - 204	14	A
Zinc-65	1180	1140	A		3.5	798 - 1482	33	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(TELE01) Teledyne Brown Engineering - Environmental Services

2508 Quality Lane

Knoxville, TN 37931-6819

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	NR	627				439 - 815		
Cesium-137	NR					False Positive Test		
Cobalt-57	NR	786				550 - 1022		
Cobalt-60	NR					False Positive Test		
Iron-55	NR	740				518 - 962		
Manganese-54	NR	841				589 - 1093		
Nickel-63	14.6		A			False Positive Test	17.5	
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	NR	537				376 - 698		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	994	1000	A		-0.6	700 - 1300	85.4	A
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	NR	1140				798 - 1482		

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(TELE02) ATI Environmental, Inc., Midwest Lab
700 Landwehr Road
Northbrook, IL 60062-

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	523	627	A		-16.6	439 - 815	5	N
Cesium-137	1.18		A			False Positive Test	2.21	
Cobalt-57	715	786	A		-9.0	550 - 1022	6	N
Cobalt-60	-0.04		A			False Positive Test	1.07	
Iron-55	NR	740				518 - 962		
Manganese-54	903	841	A		7.4	589 - 1093	11	N
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	595	537	A		10.8	376 - 698	37	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1227	1140	A		7.6	798 - 1482	19	N

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
(TMAO01) EBERLINE Analytical Corporation
601 A SCARBORO RD
OAK RIDGE, TN 37830-

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	89.768	99.2	A		-9.5	69.4 - 129.0	15.820	W
Cesium-134	NR	627	N	(28)		439 - 815		
Cesium-137	0.479		A			False Positive Test	6.631	
Cobalt-57	850.906	786	A		8.3	550 - 1022	47.934	A
Cobalt-60	10.866		N	(1)		False Positive Test	3.193	
Iron-55	NR	740				518 - 962		
Manganese-54	845.354	841	A		0.5	589 - 1093	78.745	A
Nickel-63	0.765		A			False Positive Test	109.068	
Plutonium-238	0.132	0.56	A	(17)		Sensitivity Evaluation	1.325	
Plutonium-239/240	96.40	113	A		-14.7	79 - 147	13.091	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	499.426	537	A		-7.0	376 - 698	79.92	W

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	645.857	852	W		-24.2	596 - 1108	28.276	A
Techneium-99	974.553	1000	A		-2.5	700 - 1300	32.744	A
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	44.669	50.8	A		-12.1	35.6 - 66.0	7.732	W
Uranium-238	142.173	157	A		-9.4	110 - 204	14.432	A
Zinc-65	1182.520	1140	A		3.7	798 - 1482	100.211	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (TNUT01) St. Louis USACE FUSRAP Laboratory
 112 James S McDonnell Blvd
 HAZELWOOD, MO 63042

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	89.875	99.2	A		-9.4	69.4 - 129.0	3.574	A
Cesium-134	500.924	627	W		-20.1	439 - 815	6.696	N
Cesium-137	0.473		A			False Positive Test	0.757	
Cobalt-57	767.060	786	A		-2.4	550 - 1022	13.280	N
Cobalt-60	-0.062		A			False Positive Test	0.281	
Iron-55	NR	740				518 - 962		
Manganese-54	873.414	841	A		3.9	589 - 1093	20.513	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	572.604	537	A		6.6	376 - 698	17.788	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	49.419	50.8	A		-2.7	35.6 - 66.0	6.082	A
Uranium-238	162.466	157	A		3.5	110 - 204	12.886	A
Zinc-65	1256.600	1140	A		10.2	798 - 1482	31.303	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(UNTE01) UniTech-235

178 Aldo Drive

Barnwell, SC 29812

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	634.18	627	A		1.1	439 - 815	23.82	A
Cesium-137	0.02		A			False Positive Test	0.01	
Cobalt-57	908.72	786	A		15.6	550 - 1022	43.11	A
Cobalt-60	0.01		A			False Positive Test	0.02	
Iron-55	NR	740				518 - 962		
Manganese-54	1030.45	841	W		22.5	589 - 1093	48.88	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	680.06	537	W		26.6	376 - 698	49.80	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1454.10	1140	W		27.6	798 - 1482	77.96	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(WEST04) PACE ANALYTICAL SERVICES, PITTSBURGH

1638 Roseytown Road

Greensburg, PA 15601

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	461.11	627	W		-26.5	439 - 815	60.98	A
Cesium-137	0.906		A			False Positive Test	1.395	
Cobalt-57	857.48	786	A		9.1	550 - 1022	114.54	A
Cobalt-60	1.678		N	(1)		False Positive Test	0.500	
Iron-55	NR	740				518 - 962		
Manganese-54	933.21	841	A		11.0	589 - 1093	123.2	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	584.11	537	A		8.8	376 - 698	77.907	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	953.5	1140	A		-16.4	798 - 1482	124.6	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (WIPH01) WI, DPH, Radiation Protection Section
 1 West Wilson Street
 Madison, WI 53701

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	17.656935	99.2	N		-82.2	69.4 - 129.0	2.941886	W
Cesium-134	179.92878	627	N		-71.3	439 - 815	1.918335	N
Cesium-137	0.0254361		A			False Positive Test	0.306477	
Cobalt-57	246.35363	786	N		-68.7	550 - 1022	5.123212	A
Cobalt-60	0.3359598		N	(1)		False Positive Test	0.041996	
Iron-55	NR	740				518 - 962		
Manganese-54	271.52416	841	N		-67.7	589 - 1093	5.988540	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	170.92268	537	N		-68.2	376 - 698	4.790029	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	373.98941	1140	N		-67.2	798 - 1482	8.790498	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

(WIPP01) WIPP Laboratories

1400 University Drive

Carlsbad, NM 88220

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	9.82E+001	99.2	A		-1.0	69.4 - 129.0	8.15	A
Cesium-134	6.96E+02	627	A		11.0	439 - 815	1.92	A
Cesium-137	-1.93E-01		A			False Positive Test	1.23	
Cobalt-57	9.01E+02	786	A		14.6	550 - 1022	4.05	A
Cobalt-60	1.68E-01		A			False Positive Test	5.01E-01	
Iron-55	NR	740				518 - 962		
Manganese-54	9.21E+02	841	A		9.5	589 - 1093	1.80	N
Nickel-63	NR					False Positive Test		
Plutonium-238	7.44E-01	0.56	A	(17)		Sensitivity Evaluation	3.14E-01	
Plutonium-239/240	1.22E+002	113	A		8.0	79 - 147	1.29	A
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	5.80E+02	537	A		8.0	376 - 698	2.47	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	1.05E+03	852	W		23.2	596 - 1108	8.31	A
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	5.58E+01	50.8	A		9.8	35.6 - 66.0	5.93	A
Uranium-238	1.63E+002	157	A		3.8	110 - 204	1.62	A
Zinc-65	1.28E+03	1140	A		12.3	798 - 1482	2.30	N

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47
 (WSHL01) Wisconsin State Laboratory of Hygiene
 2601 Agriculture Drive
 Madison, WI 53718

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	NR	0.0389				0.0272 - 0.0506		
Uranium-238	NR	12.6				8.8 - 16.4		
Uranium-Total	NR	12.7				8.9 - 16.5		
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	583	627	A		-7.0	439 - 815	10.5	N
Cesium-137	-0.507		A			False Positive Test	0.679	
Cobalt-57	768	786	A		-2.3	550 - 1022	16.6	A
Cobalt-60	0.895		N	(1)		False Positive Test	0.2	
Iron-55	NR	740				518 - 962		
Manganese-54	840	841	A		-0.1	589 - 1093	35.1	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	532	537	A		-0.9	376 - 698	43.2	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852	N	(28)		596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	1170	1140	A		2.6	798 - 1482	85.1	A

Radiological Reference Date: August 1, 2022

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

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-22-MaS47

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

301 C. Street

Yuma, AZ 85365

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	7.8				5.5 - 10.1		
Arsenic	NR	13.9				9.7 - 18.1		
Barium	NR	280				196 - 364		
Beryllium	NR	8.78				6.15 - 11.41		
Cadmium	NR	10.0				7.0 - 13.0		
Chromium	NR	49.1				34.4 - 63.8		
Cobalt	NR	60.0				42.0 - 78.0		
Copper	NR	59.0				41.3 - 76.7		
Lead	NR	51.0				35.7 - 66.3		
Mercury	NR	0.235				0.165 - 0.306		
Nickel	NR	194				136 - 252		
Selenium	NR	11.1				7.8 - 14.4		
Silver	NR	52.9				37.0 - 68.8		
Technetium-99	NR	0.00158				0.00111 - 0.00205		
Thallium	NR	64.4				45.1 - 83.7		
Uranium-235	0.038	0.0389	A		-2.3	0.0272 - 0.0506	0.01	W
Uranium-238	11.5	12.6	A		-8.7	8.8 - 16.4	1	A
Uranium-Total	11.5	12.7	A		-9.4	8.9 - 16.5	1	A
Vanadium	NR	122				85 - 159		
Zinc	NR	127				89 - 165		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	99.2				69.4 - 129.0		
Cesium-134	NR	627				439 - 815		
Cesium-137	NR					False Positive Test		
Cobalt-57	NR	786				550 - 1022		
Cobalt-60	NR					False Positive Test		
Iron-55	NR	740				518 - 962		
Manganese-54	NR	841				589 - 1093		
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.56				Sensitivity Evaluation		
Plutonium-239/240	NR	113				79 - 147		
Plutonium-241	NR	26.8				Sensitivity Evaluation		
Potassium-40	NR	537				376 - 698		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	NR	852				596 - 1108		
Technetium-99	NR	1000				700 - 1300		
Thorium-228	NR	49				34 - 64		
Thorium-230	NR	43				30 - 56		
Thorium-232	NR	47				33 - 61		
Uranium-234	NR	50.8				35.6 - 66.0		
Uranium-238	NR	157				110 - 204		
Zinc-65	NR	1140				798 - 1482		

Radiological Reference Date: August 1, 2022

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:

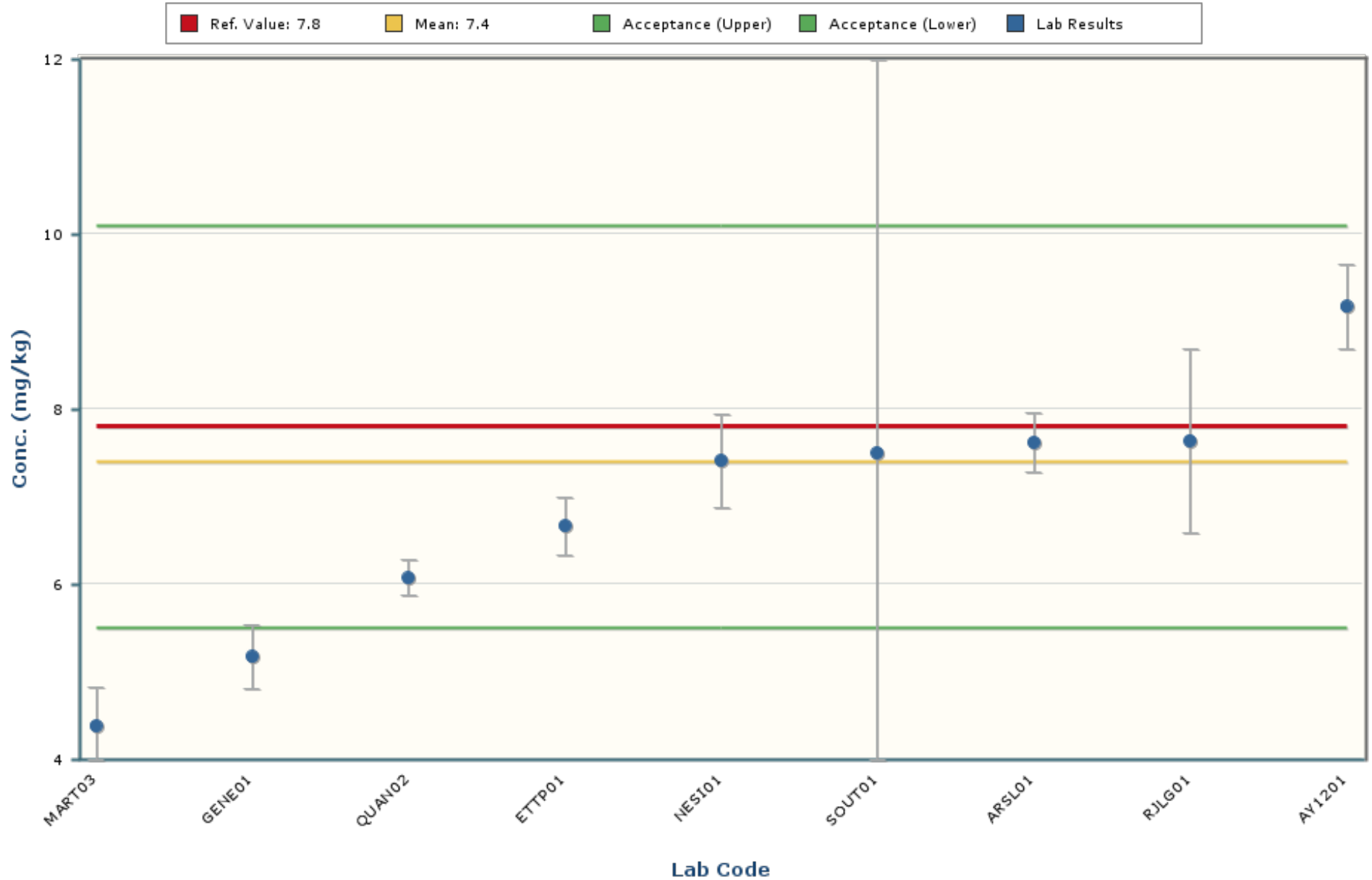
- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%
- ACCEPTABLE WITH WARNING.....15% < RP <= 30%
- NOT ACCEPTABLE.....RP > 30%
- Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (17) = NOT DETECTED - reported a statistically zero result
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte

Antimony

MAPEP-22-MaS47



Notes:

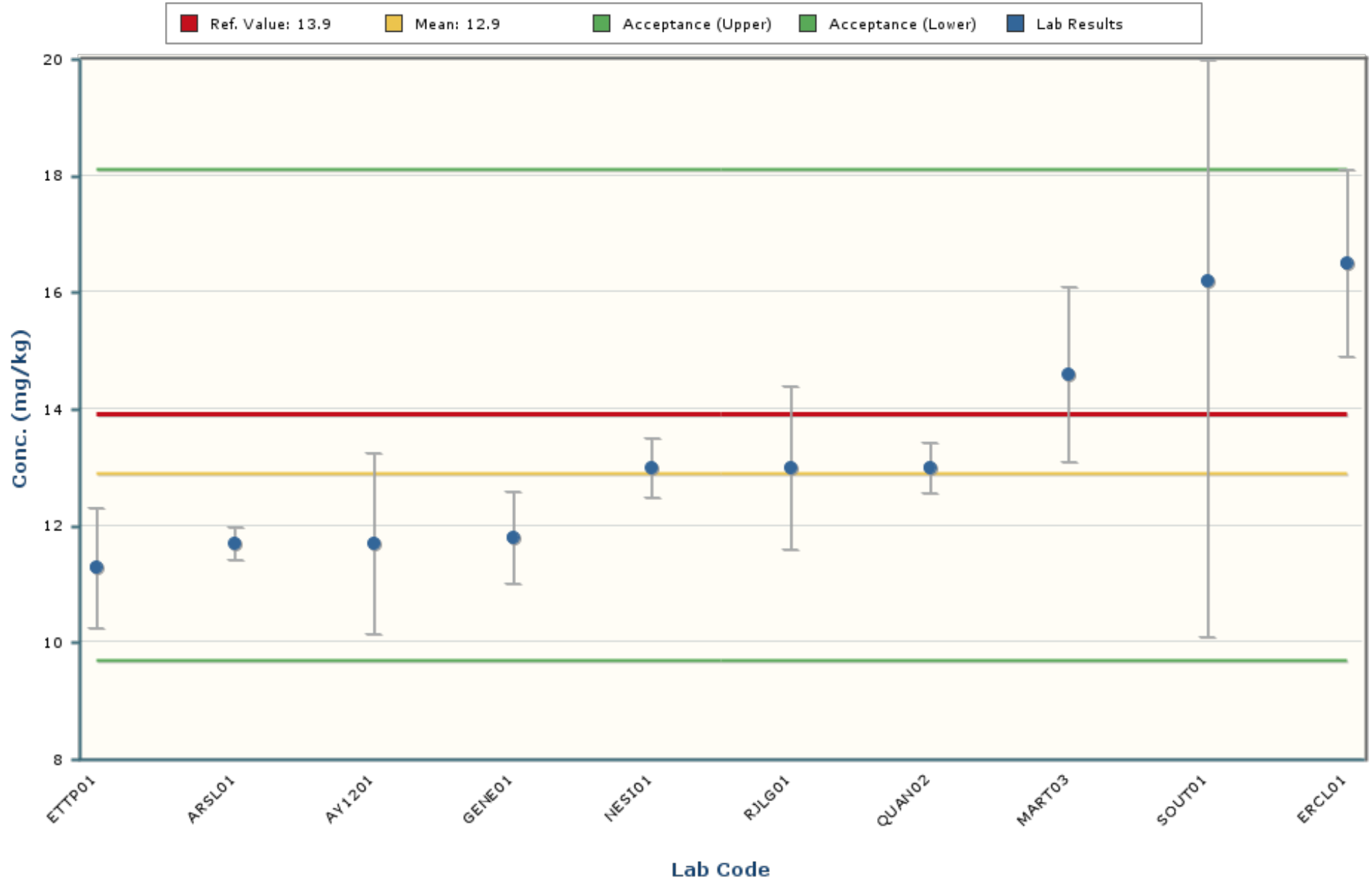
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 2.6 and 12.2 (± 5 Standard Deviations).

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

Arsenic

MAPEP-22-MaS47



Notes:

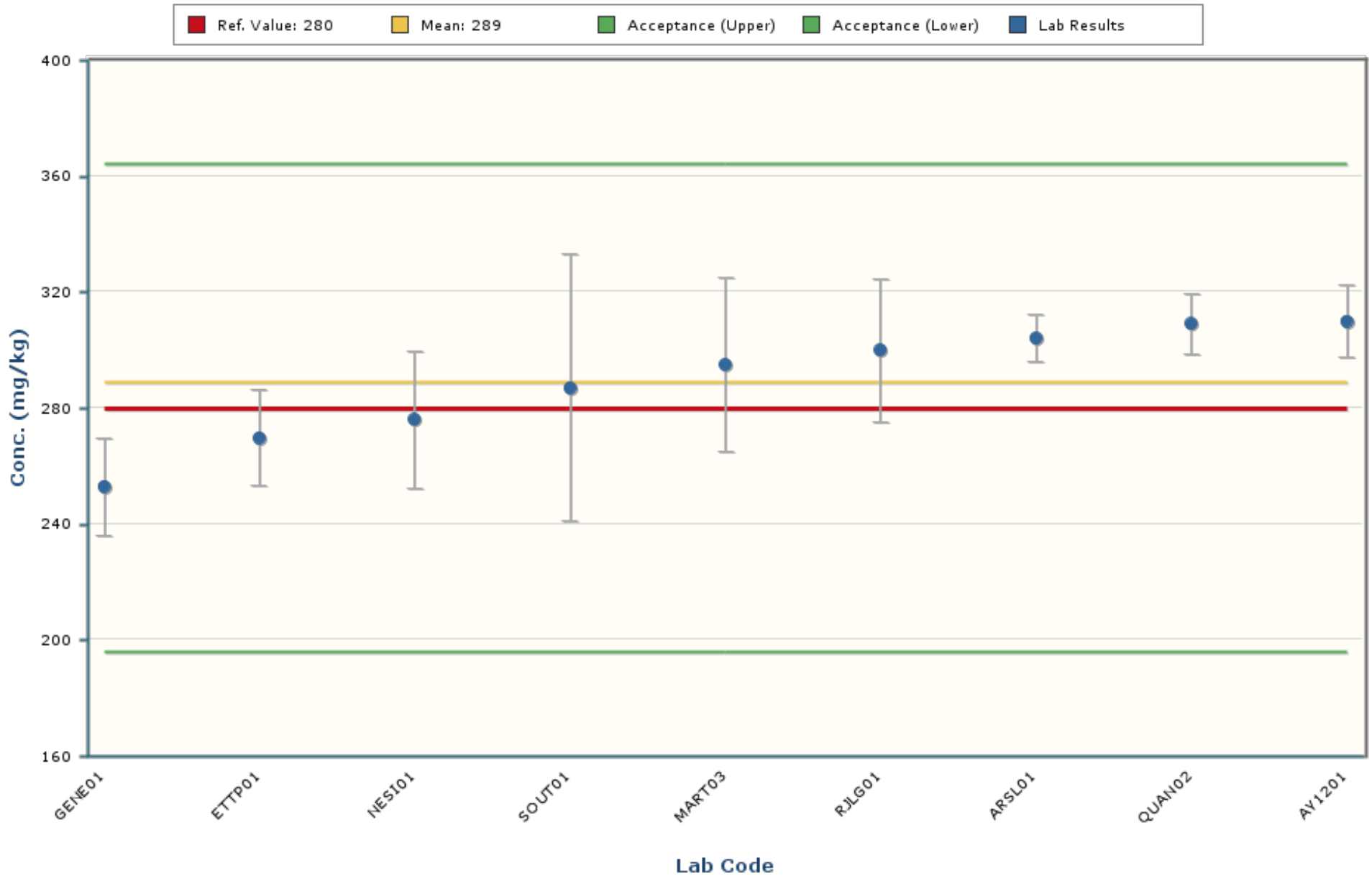
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 4.9 and 20.9 (± 5 Standard Deviations).

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

Barium

MAPEP-22-MaS47



Notes:

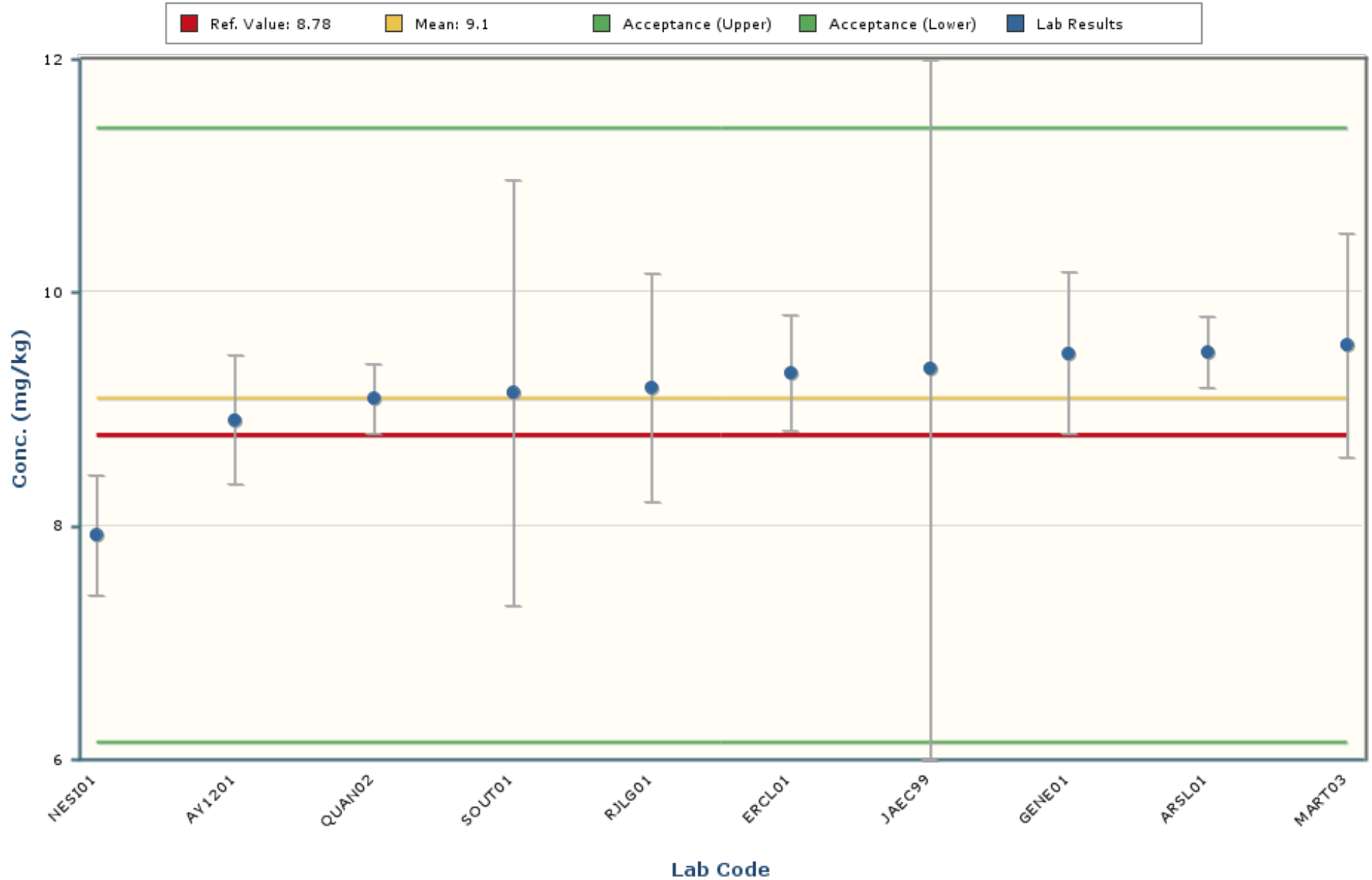
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 192 and 387 (± 5 Standard Deviations).

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

Beryllium

MAPEP-22-MaS47



Notes:

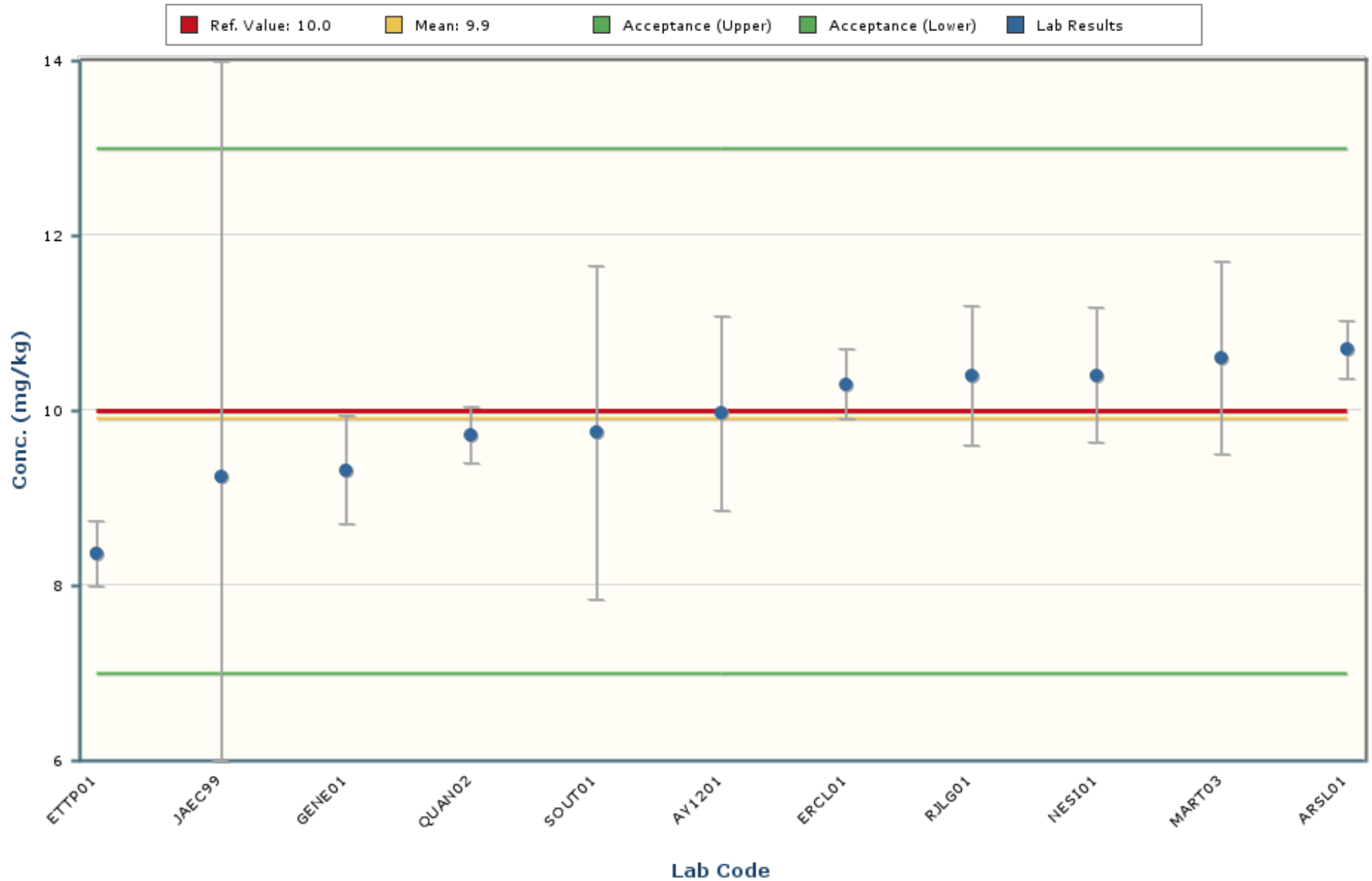
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 6.47 and 11.73 (± 5 Standard Deviations).

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

Cadmium

MAPEP-22-MaS47



Notes:

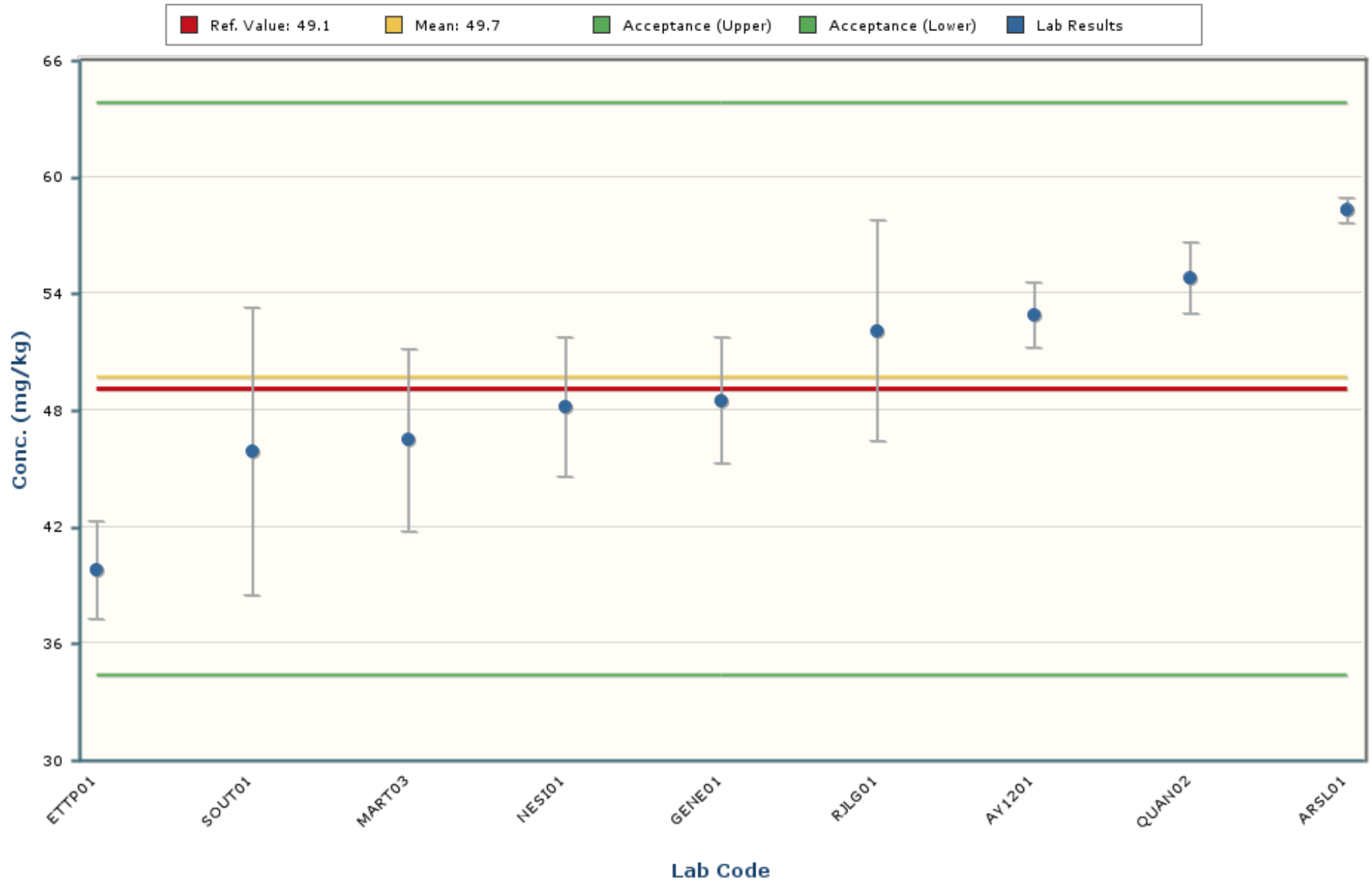
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 6.2 and 13.6 (± 5 Standard Deviations).

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

Chromium

MAPEP-22-MaS47



Notes:

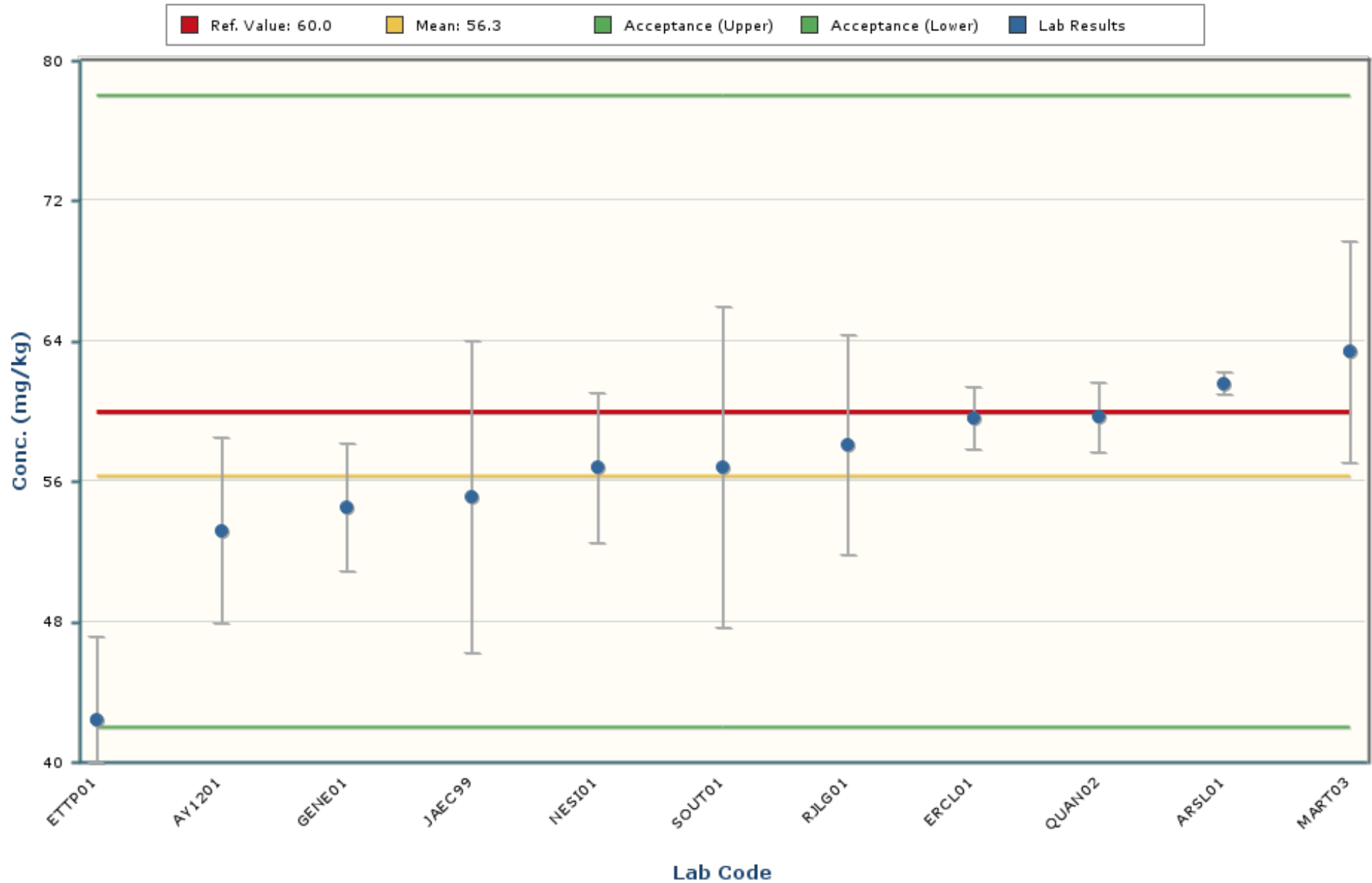
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 22.1 and 77.2 (± 5 Standard Deviations).

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

Cobalt

MAPEP-22-MaS47



Notes:

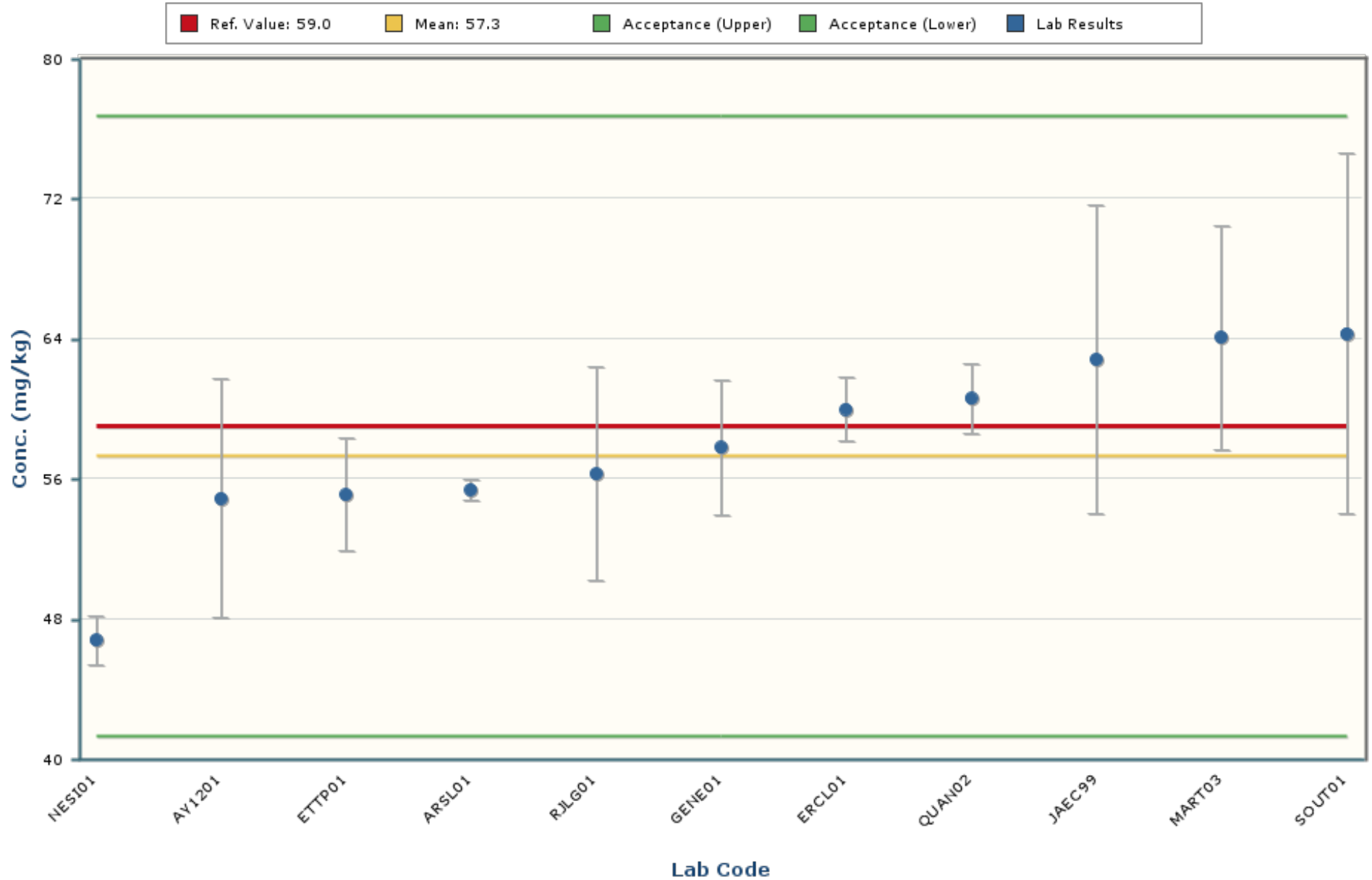
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 25.7 and 86.9 (± 5 Standard Deviations).

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

Copper

MAPEP-22-MaS47



Notes:

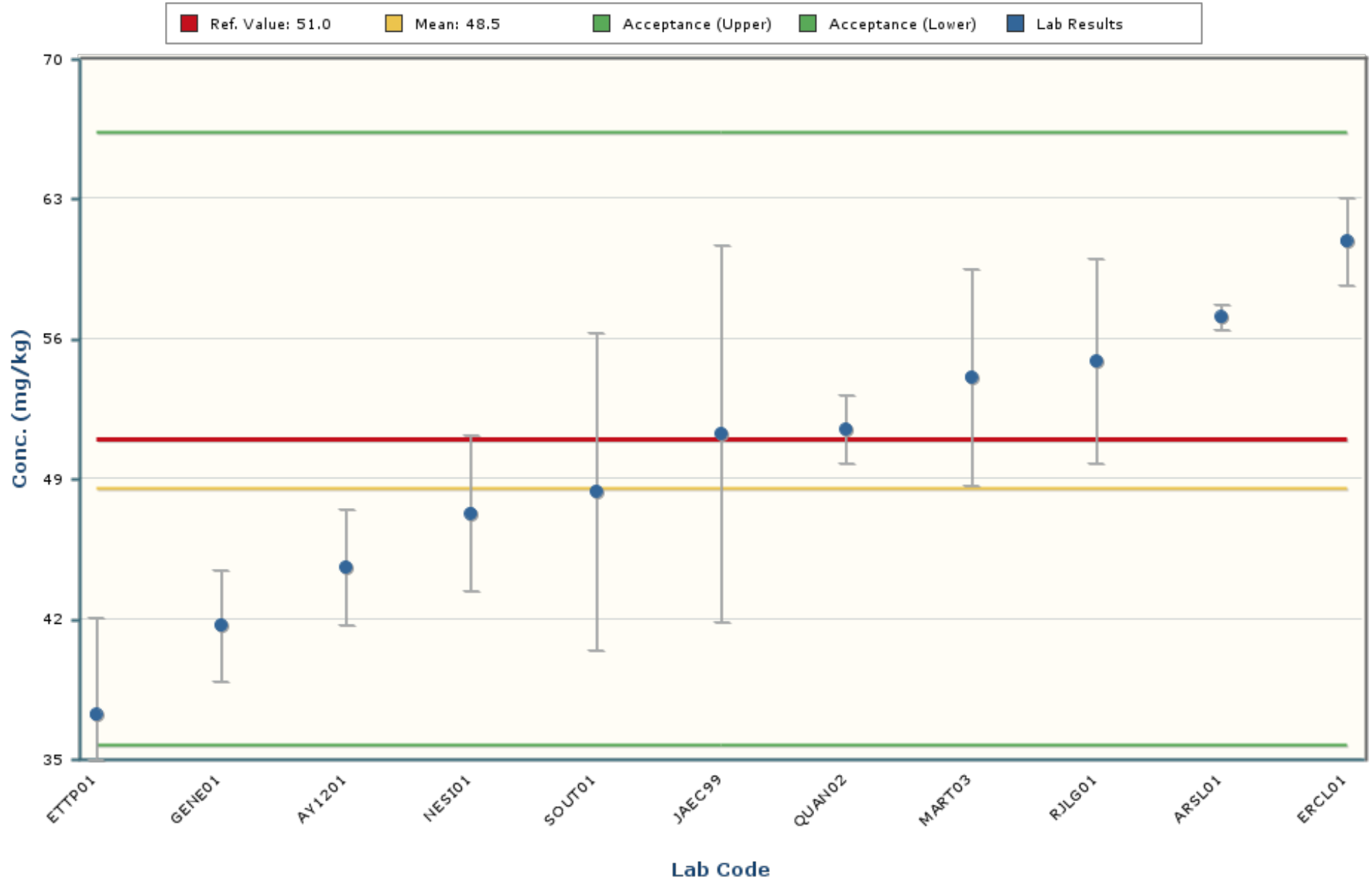
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 30.3 and 84.2 (± 5 Standard Deviations).

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

Lead

MAPEP-22-MaS47



Notes:

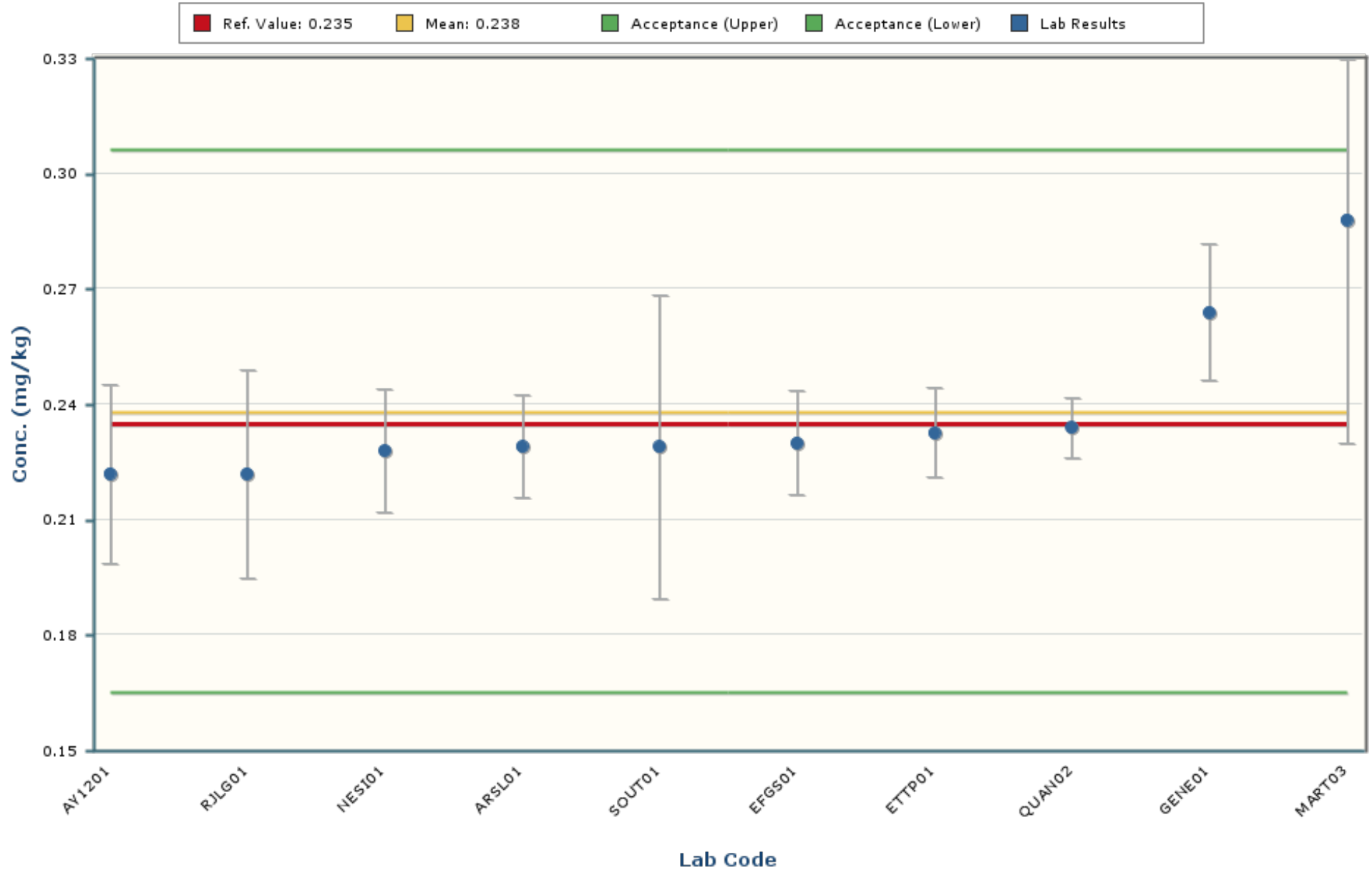
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 15.7 and 81.4 (± 5 Standard Deviations).

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

Mercury

MAPEP-22-MaS47



Notes:

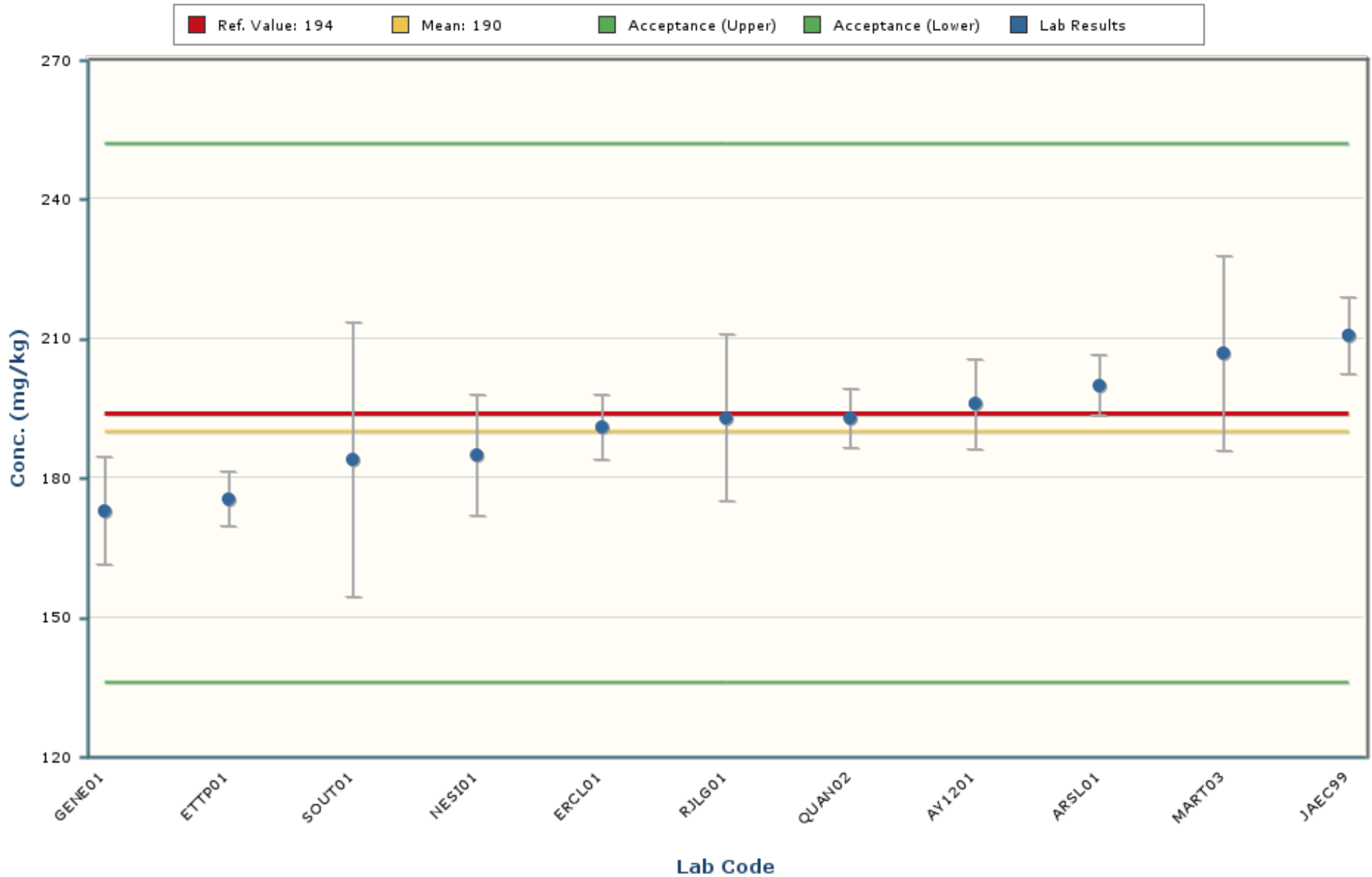
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 0.132 and 0.344 (± 5 Standard Deviations).

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

Nickel

MAPEP-22-MaS47



Notes:

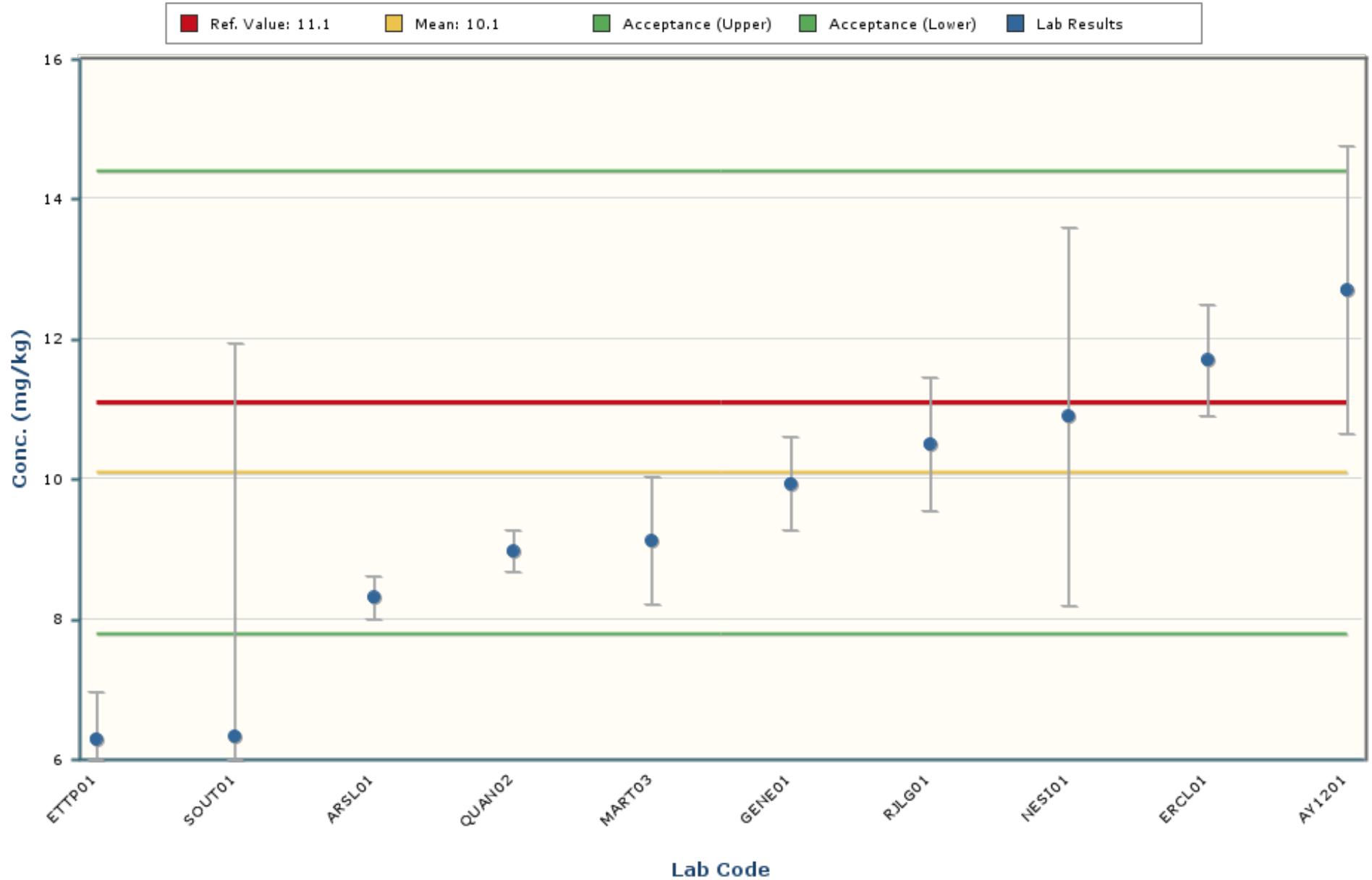
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 134 and 245 (± 5 Standard Deviations).

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

Selenium

MAPEP-22-MaS47



Notes:

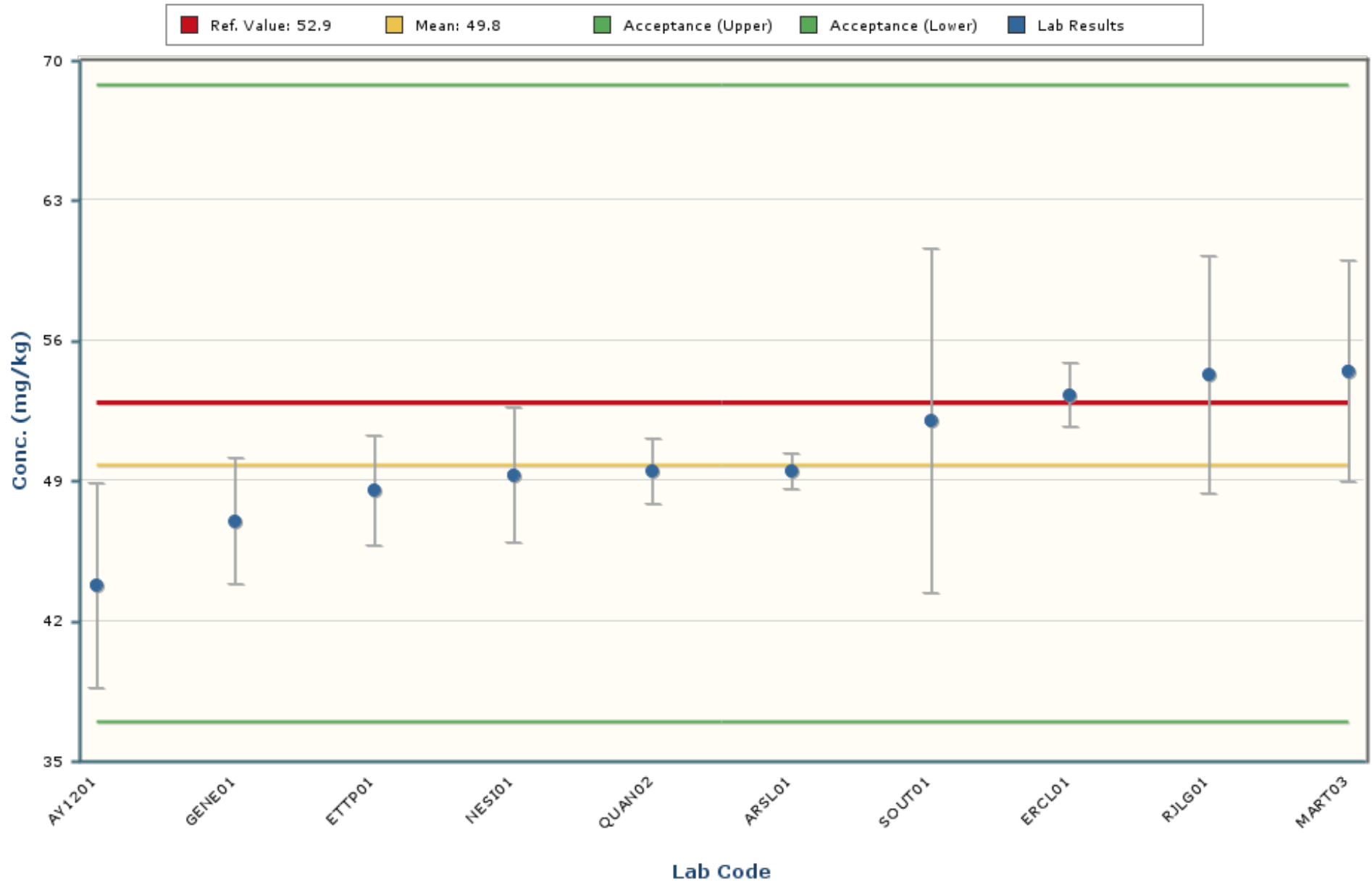
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 2.7 and 17.4 (± 5 Standard Deviations).

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

Silver

MAPEP-22-MaS47



Notes:

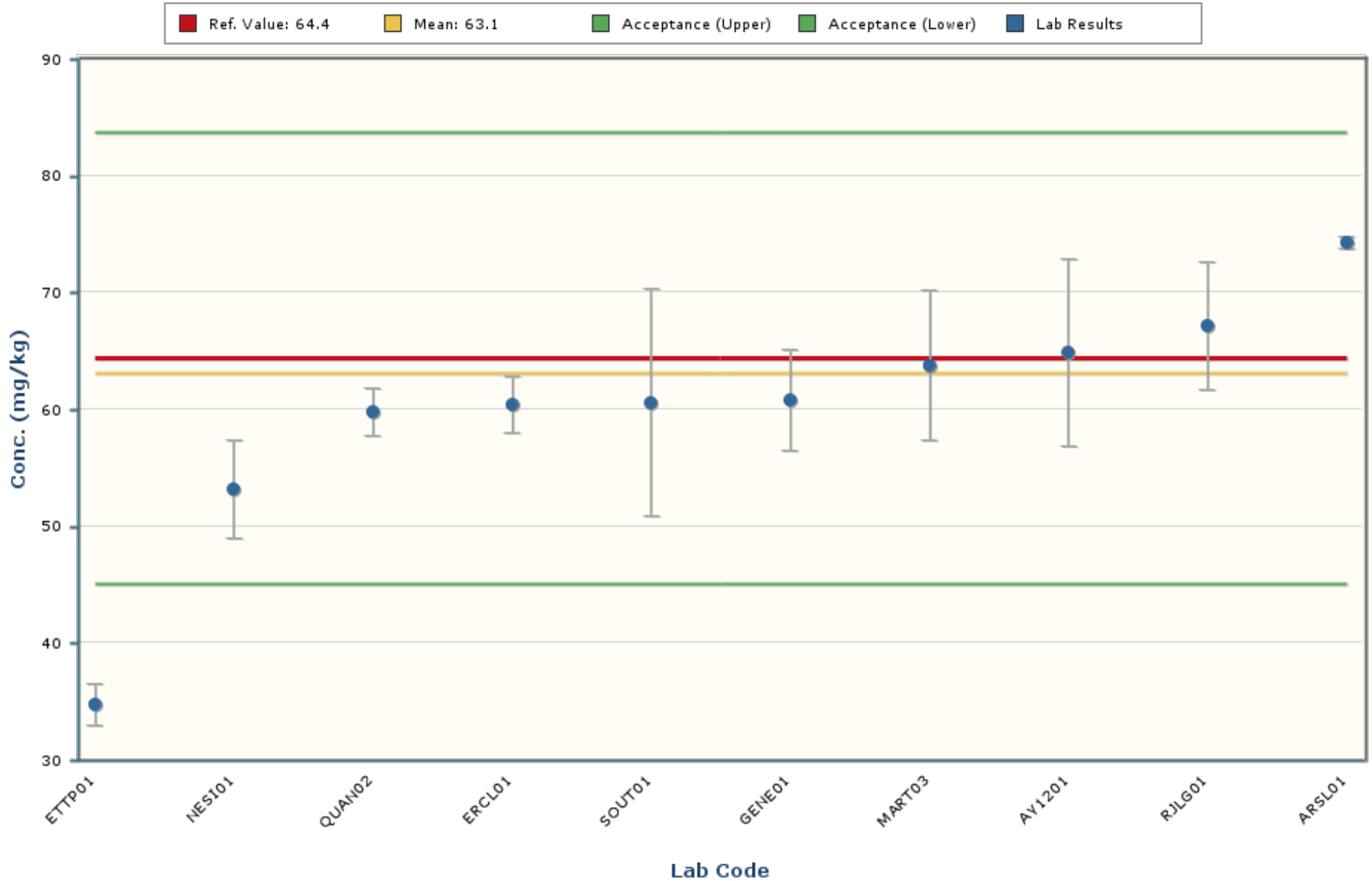
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 32.8 and 66.9 (± 5 Standard Deviations).

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

Thallium

MAPEP-22-MaS47



Notes:

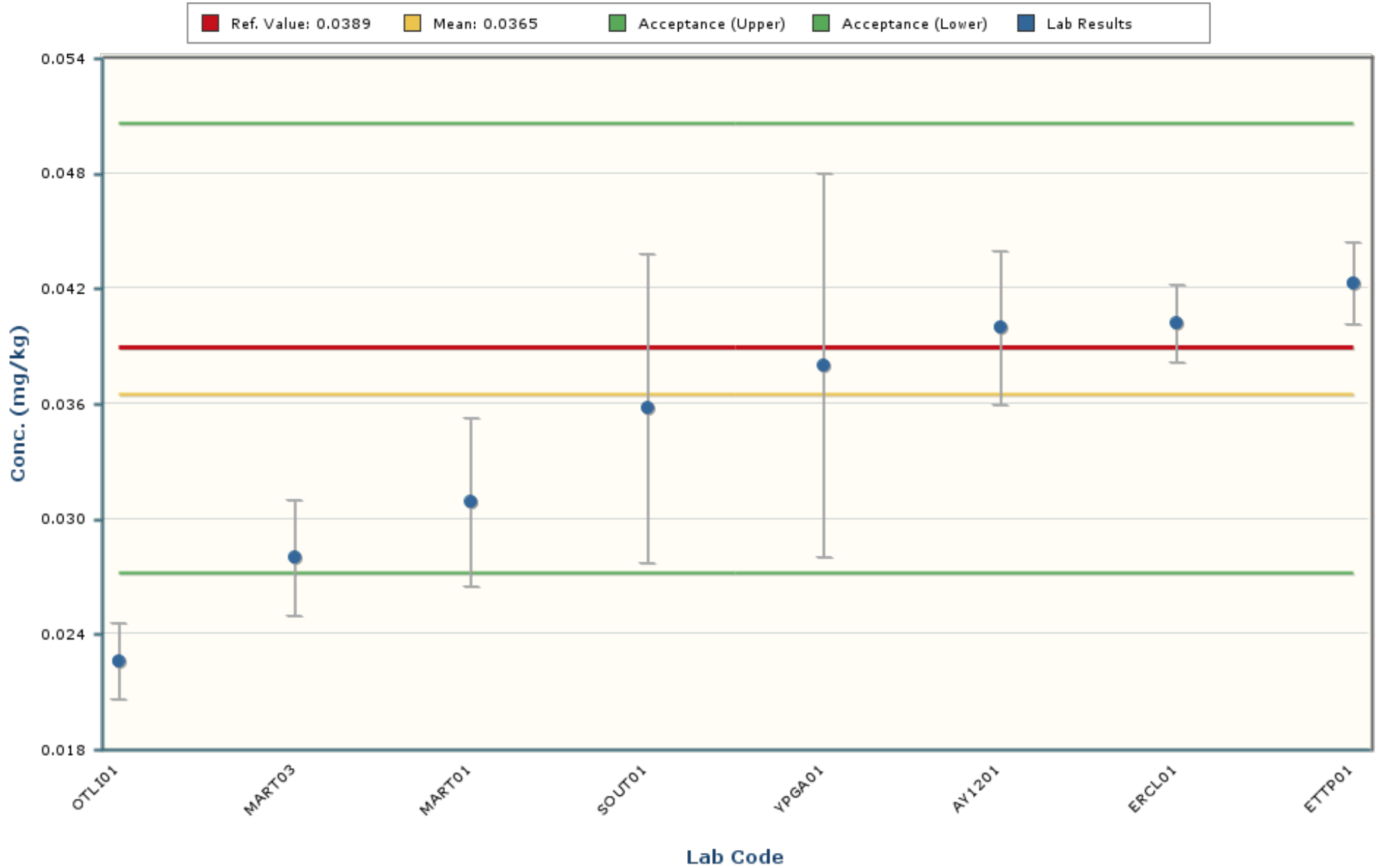
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 32.2 and 93.9 (± 5 Standard Deviations).

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

Uranium-235

MAPEP-22-MaS47



Notes:

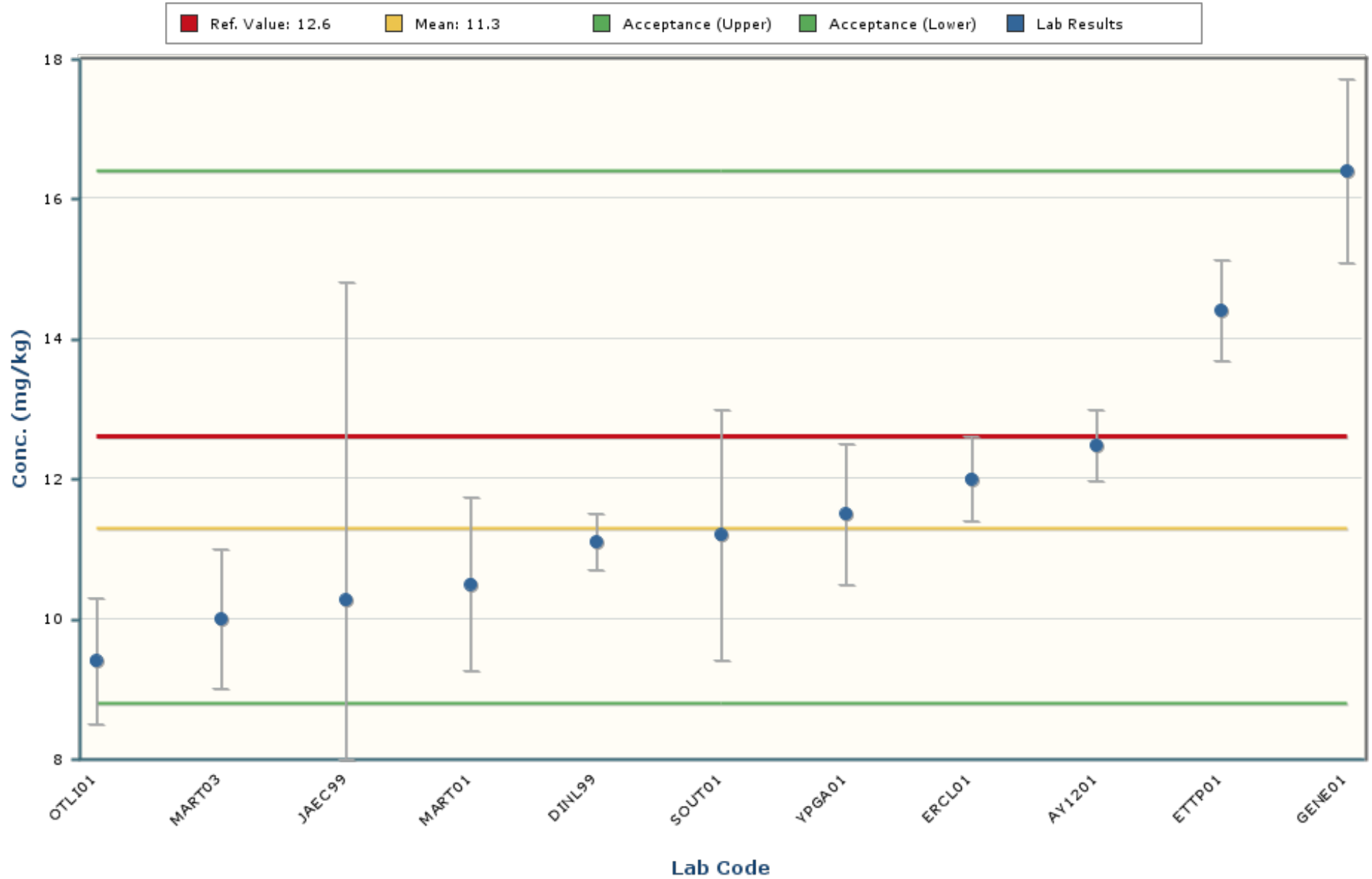
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 0.0102 and 0.0628 (± 5 Standard Deviations).

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

Uranium-238

MAPEP-22-MaS47



Notes:

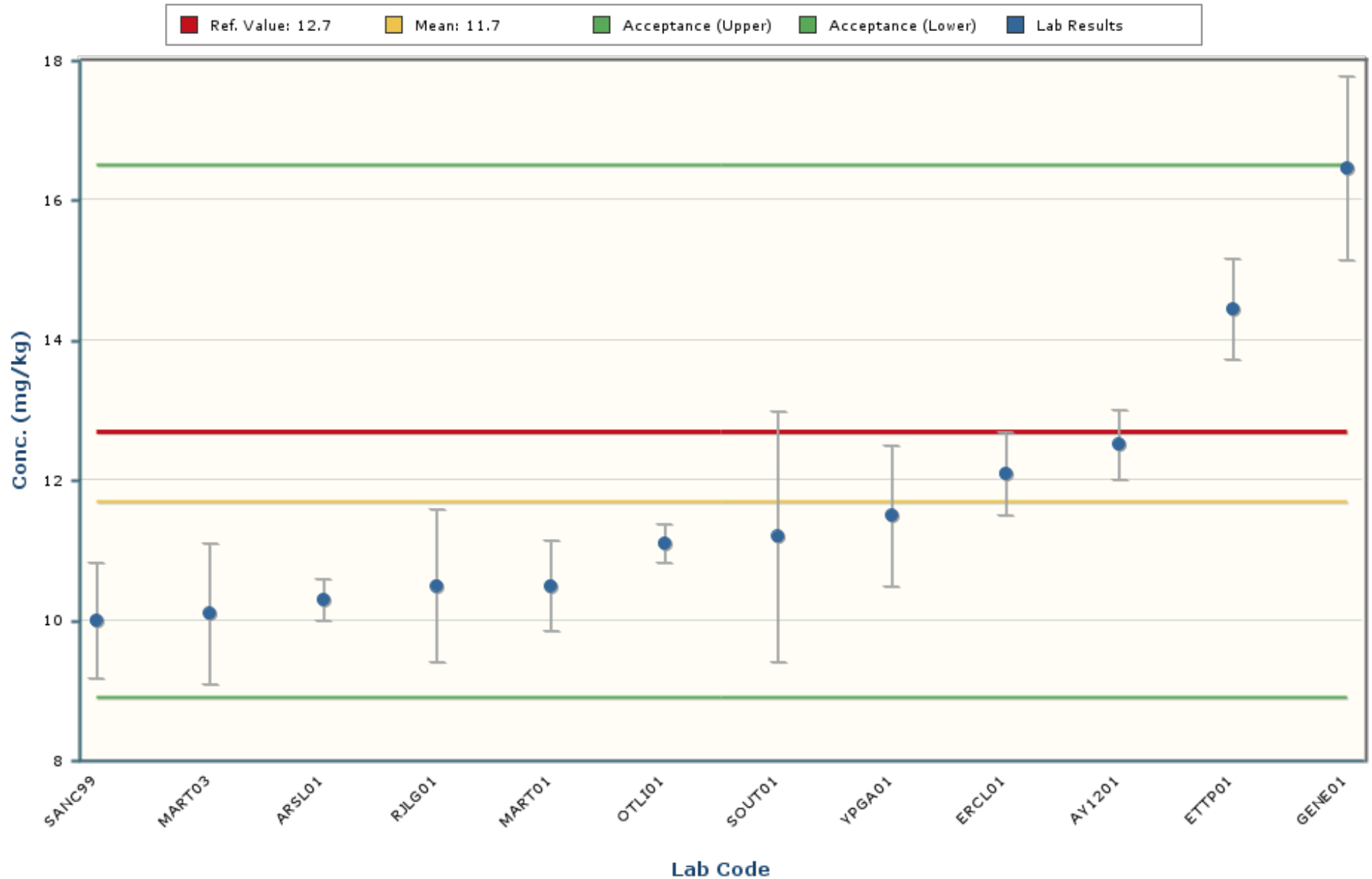
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 4.1 and 18.5 (± 5 Standard Deviations).

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

Uranium-Total

MAPEP-22-MaS47



Notes:

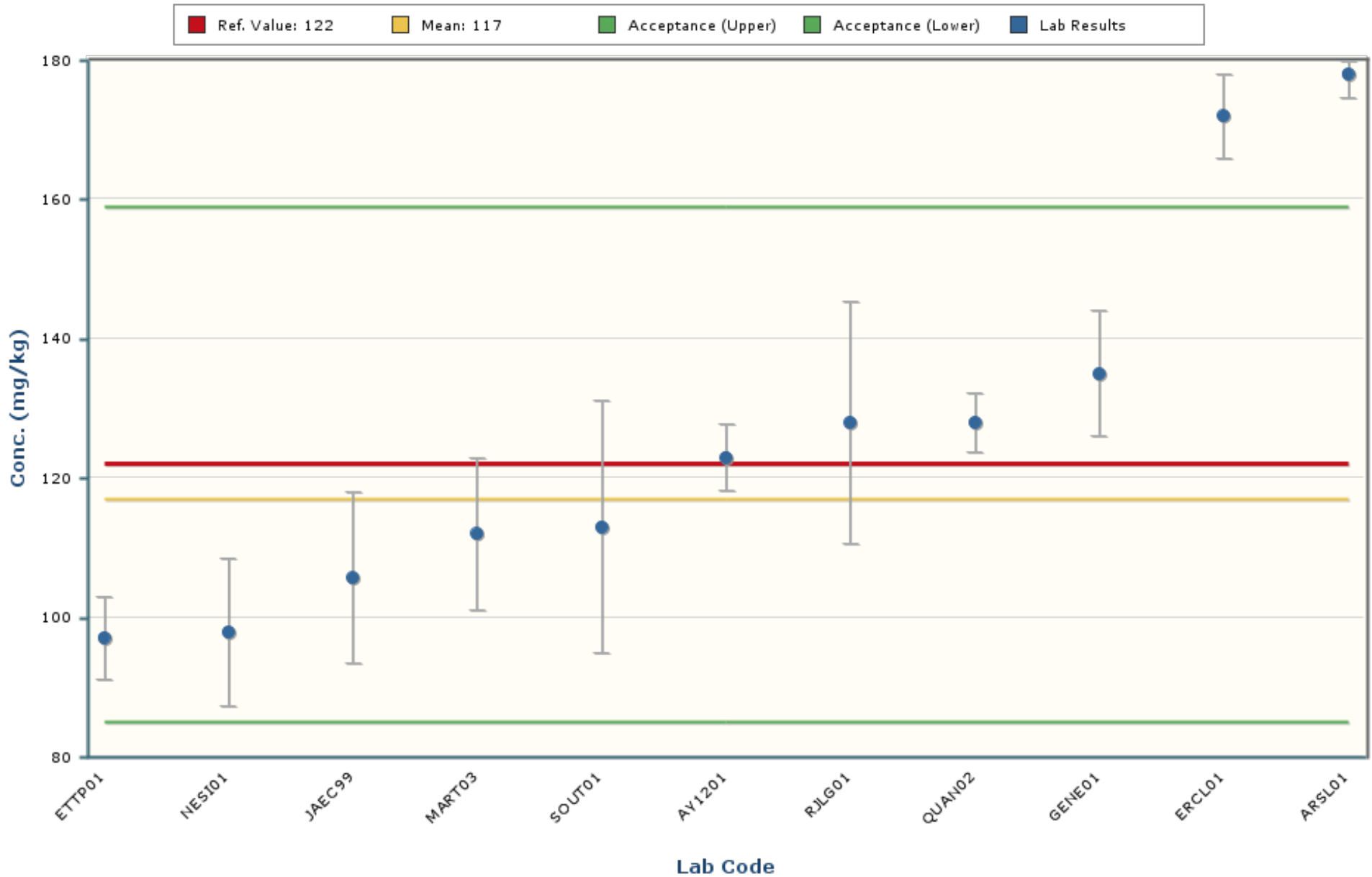
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 2.0 and 21.5 (± 5 Standard Deviations).

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

Vanadium

MAPEP-22-MaS47



Notes:

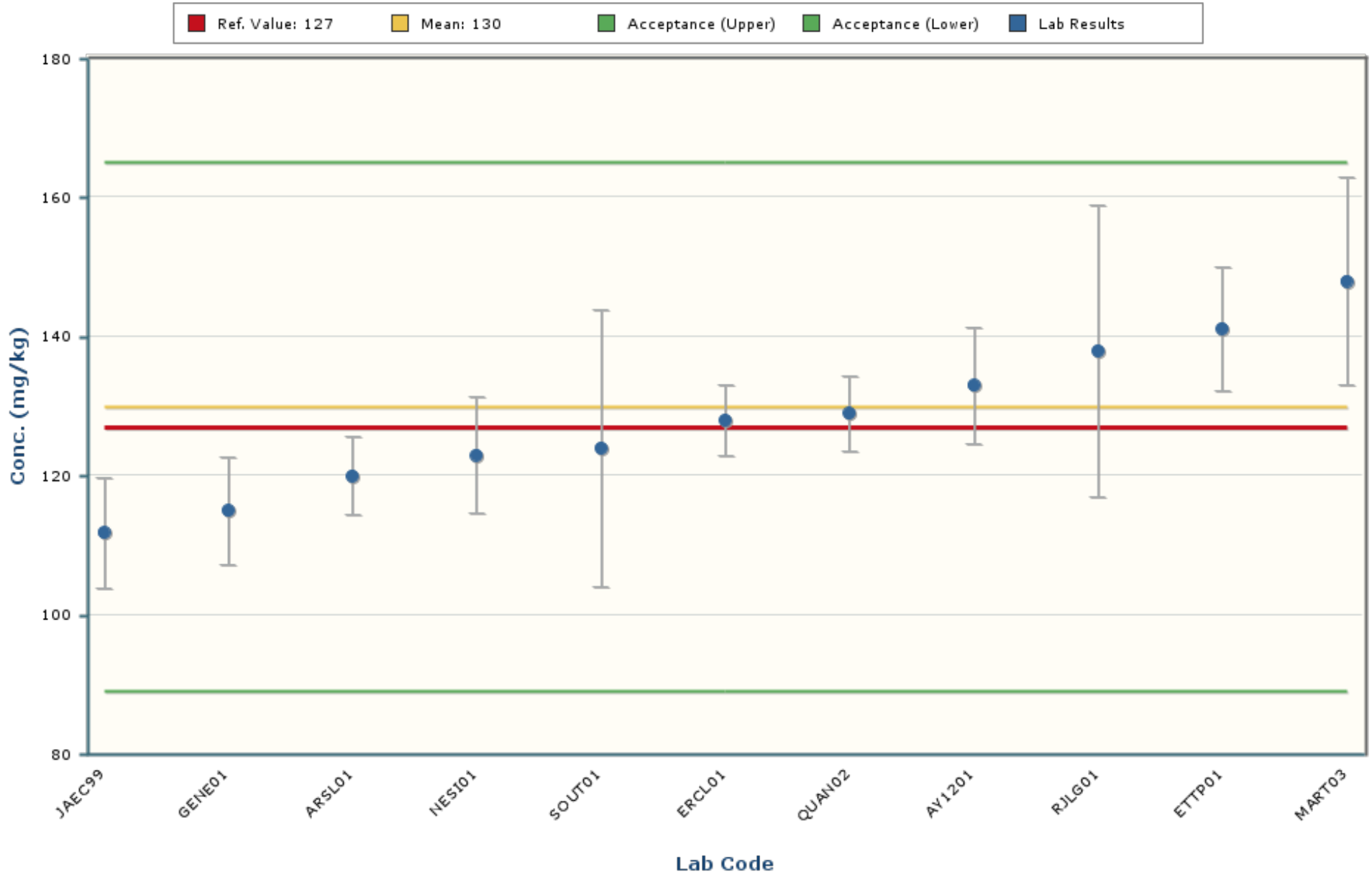
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 46 and 188 (± 5 Standard Deviations).

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

Zinc

MAPEP-22-MaS47



Notes:

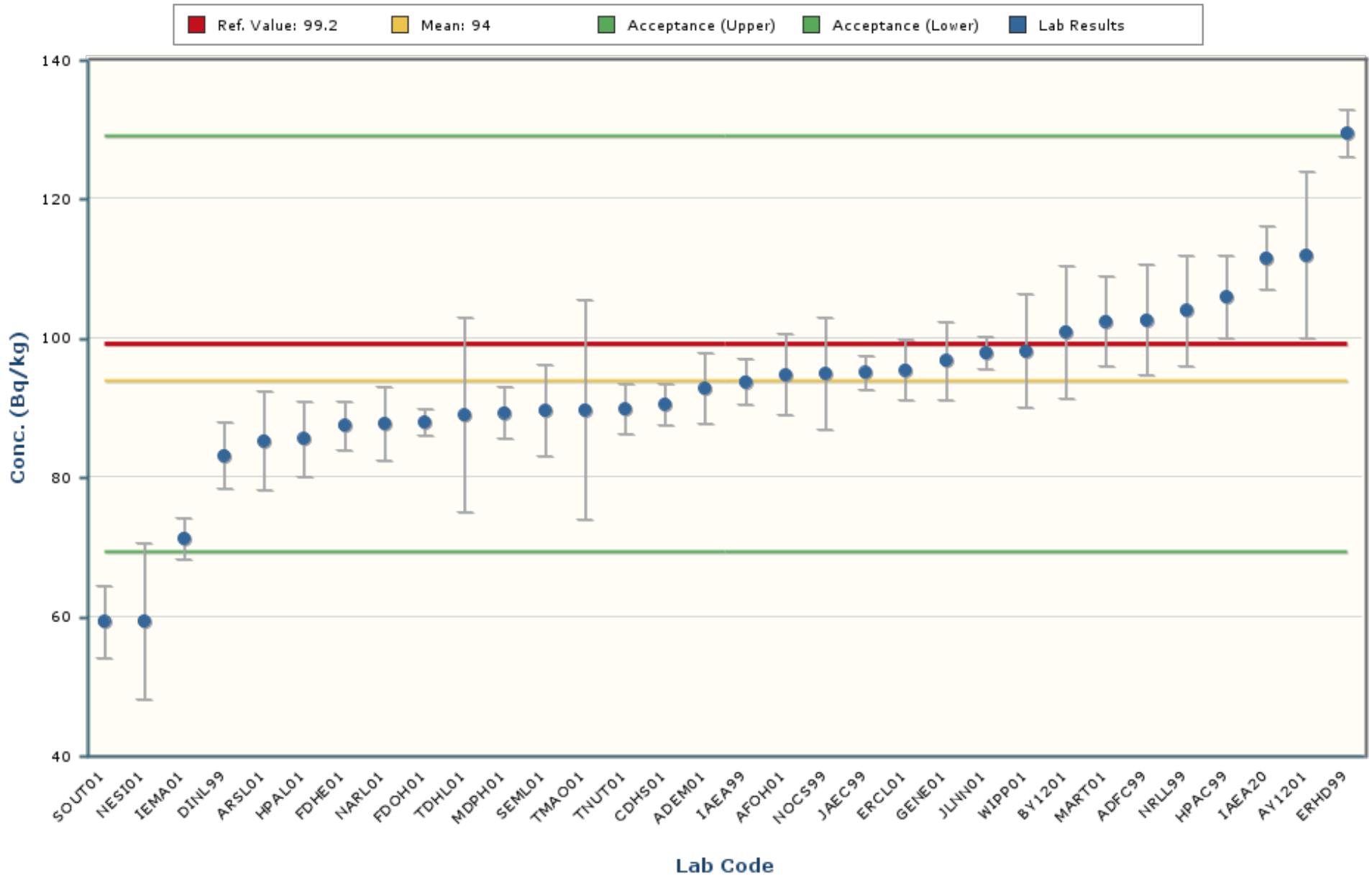
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 76 and 184 (± 5 Standard Deviations).

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

Americium-241

MAPEP-22-MaS47



Notes:

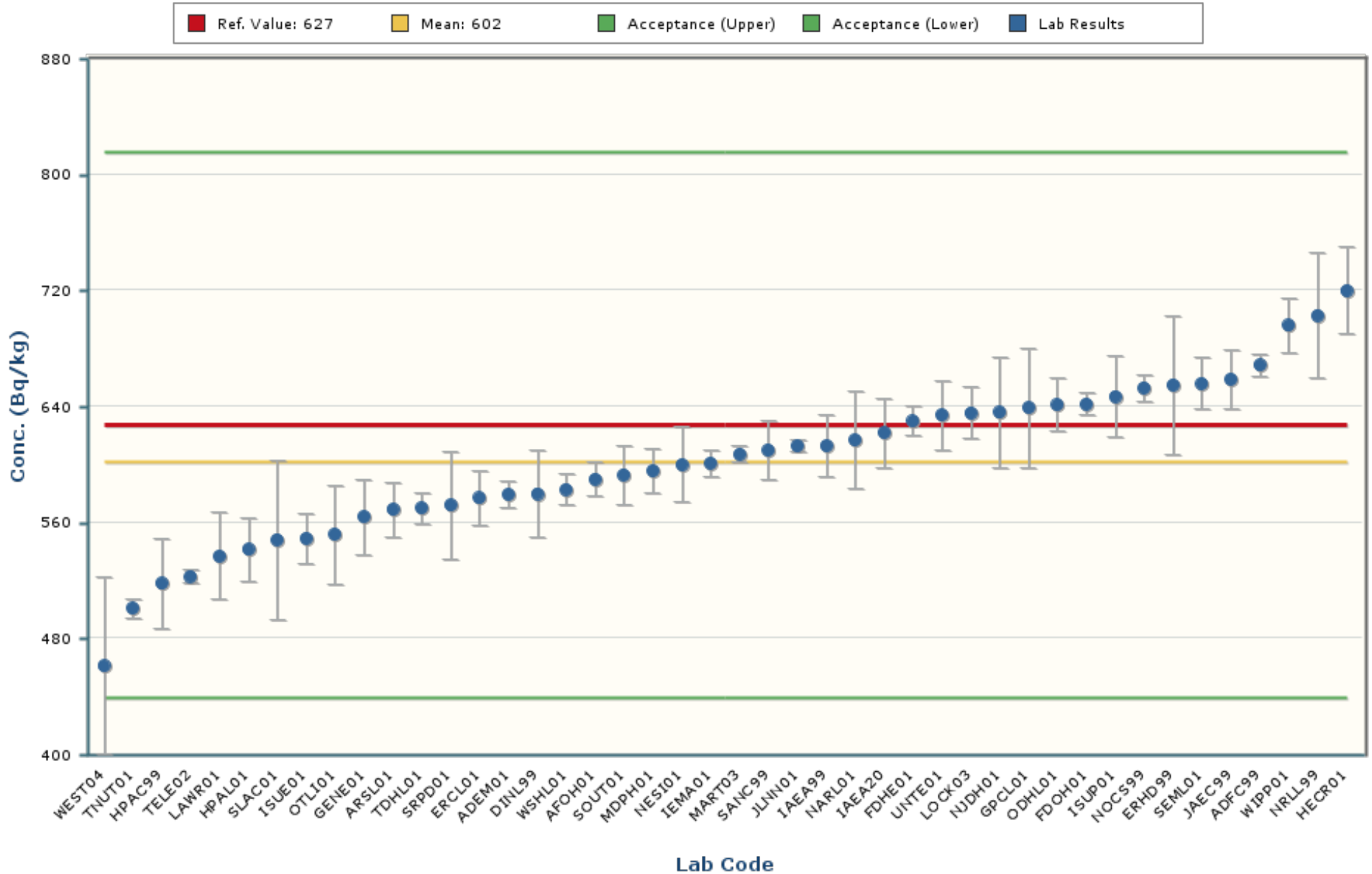
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 50.4 and 137.6 (± 5 Standard Deviations).

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

Cesium-134

MAPEP-22-MaS47



Notes:

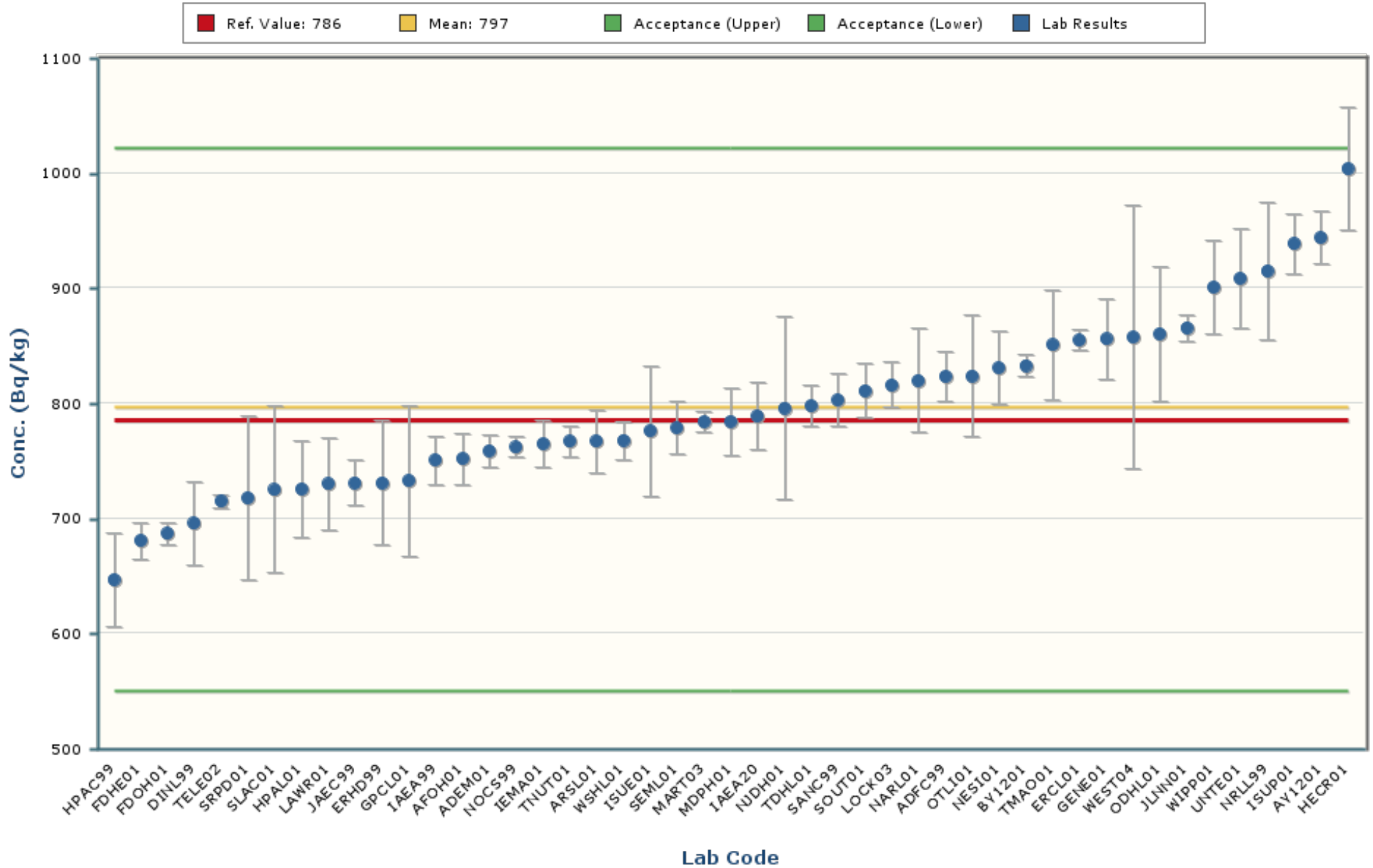
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 331 and 874 (± 5 Standard Deviations).

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

Cobalt-57

MAPEP-22-MaS47



Notes:

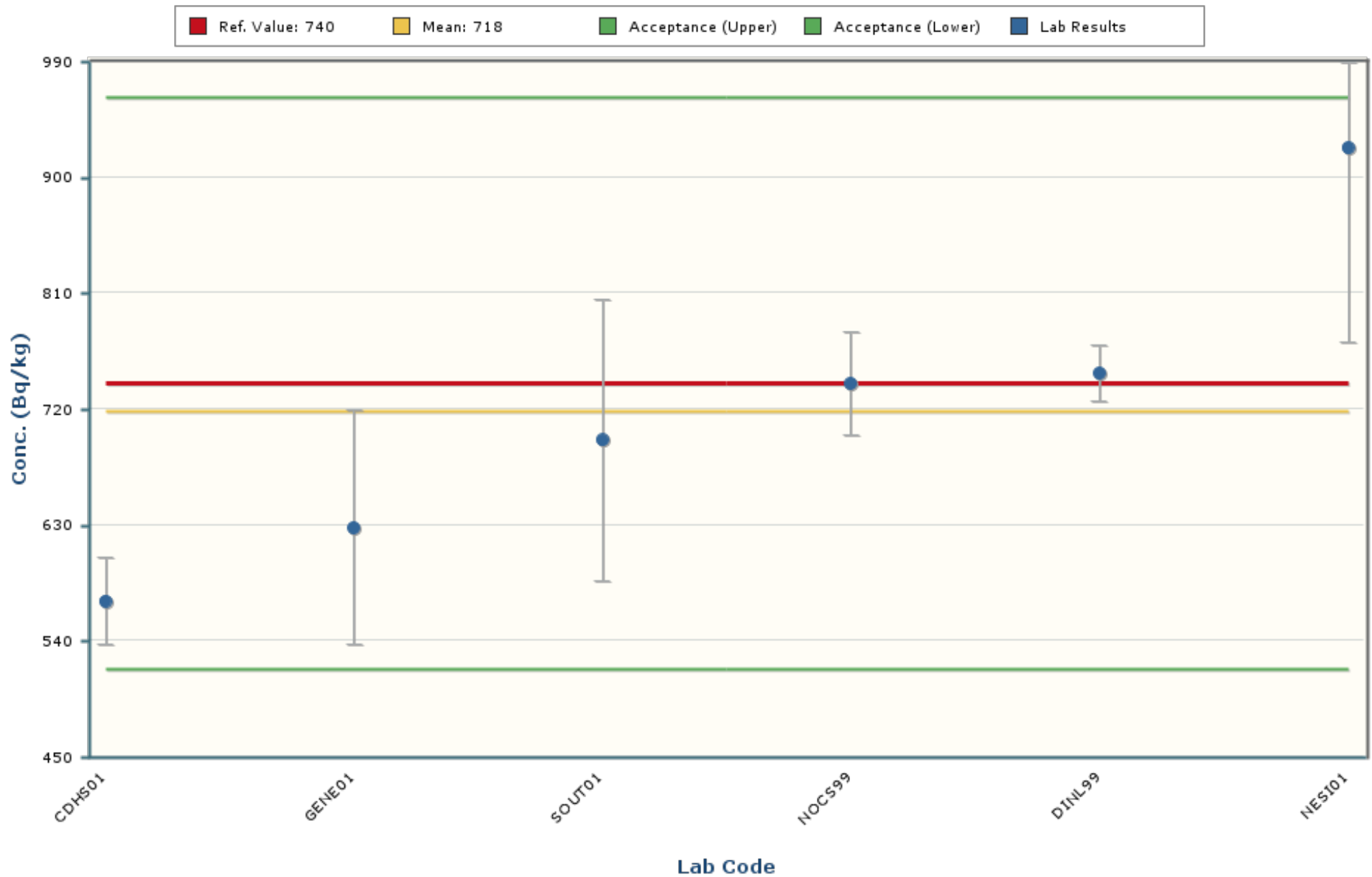
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 421 and 1172 (± 5 Standard Deviations).

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

Iron-55

MAPEP-22-MaS47



Notes:

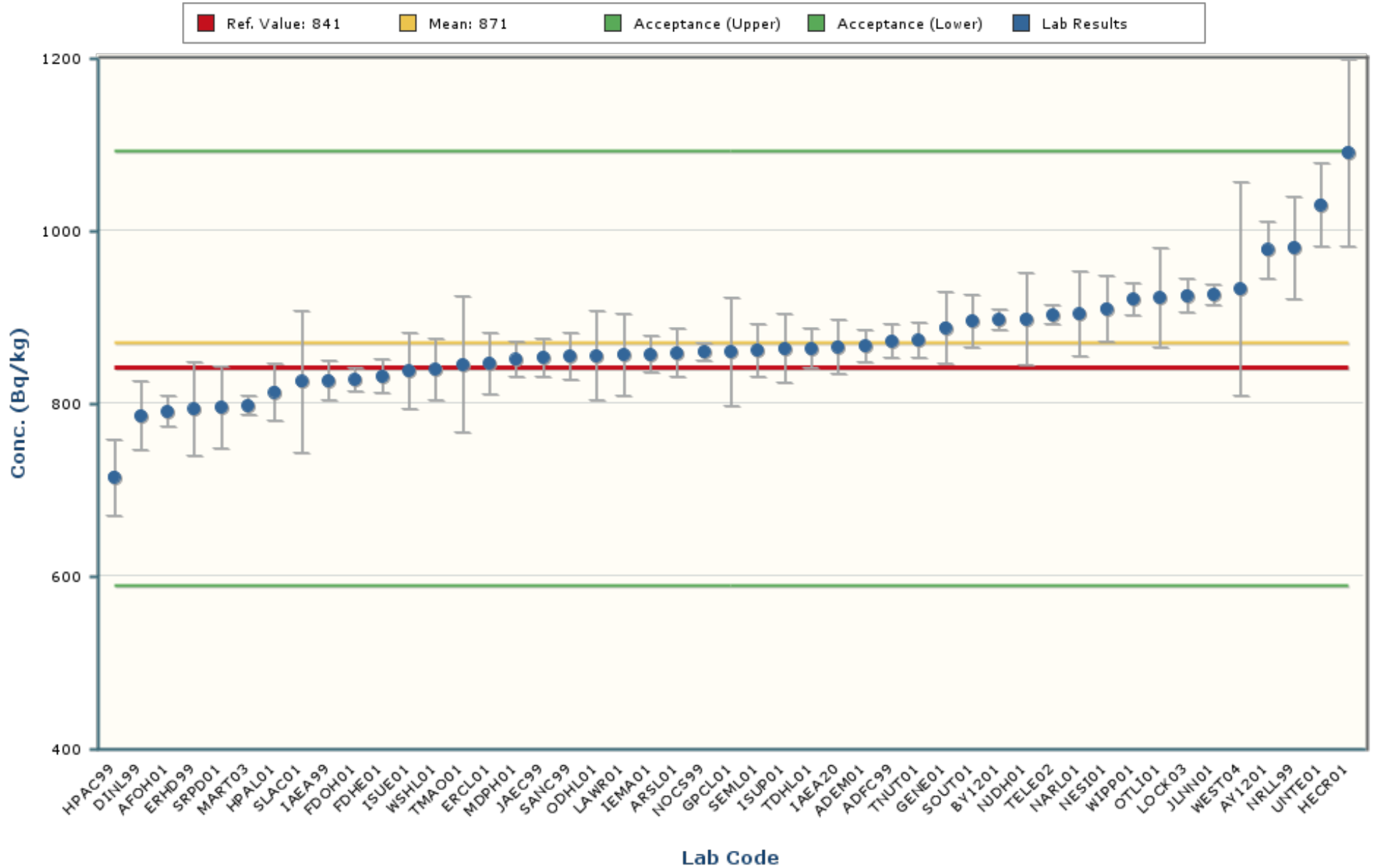
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 111 and 1324 (± 5 Standard Deviations).

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

Manganese-54

MAPEP-22-MaS47



Notes:

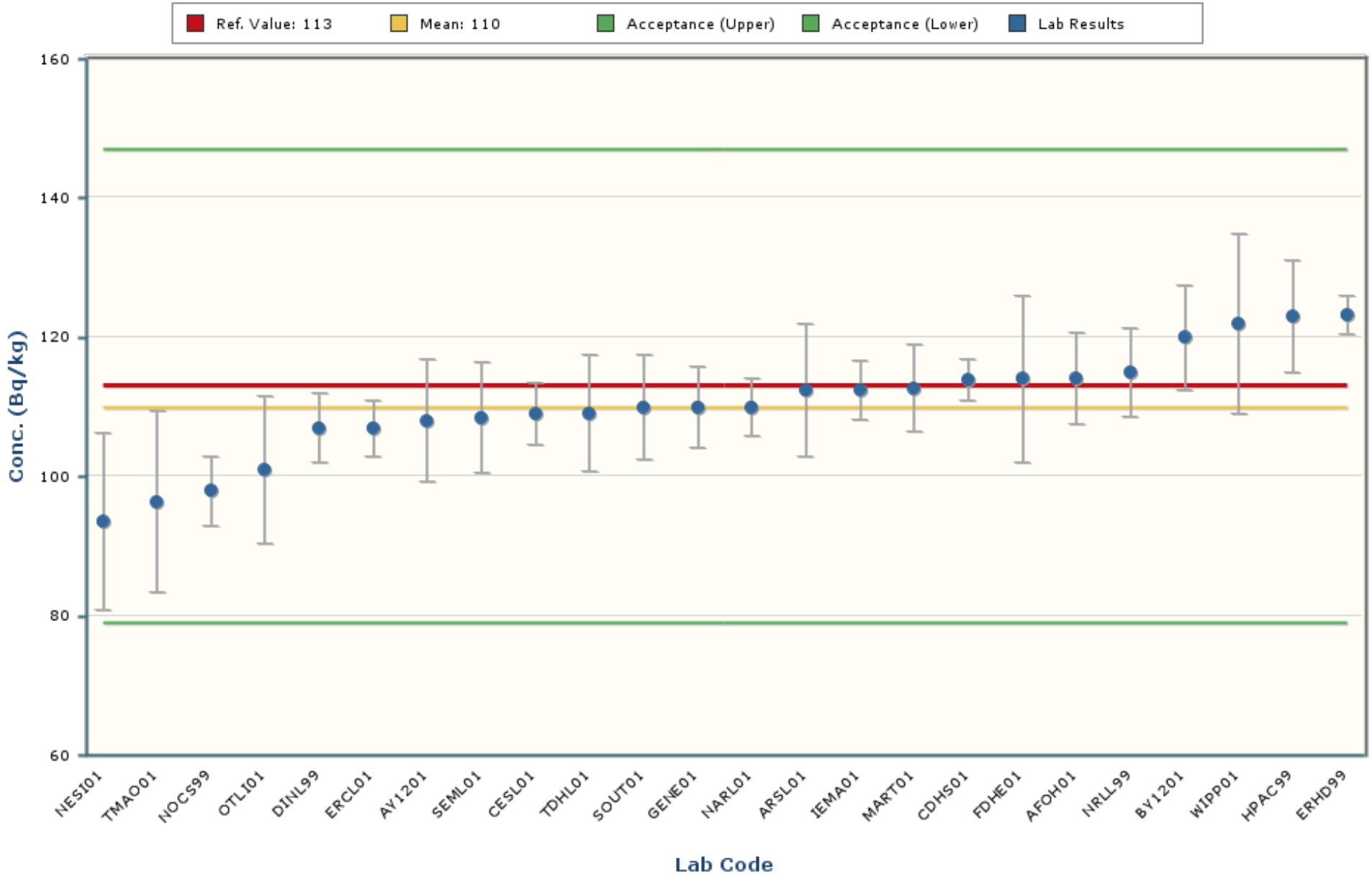
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 551 and 1192 (± 5 Standard Deviations).

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

Plutonium-239/240

MAPEP-22-MaS47



Notes:

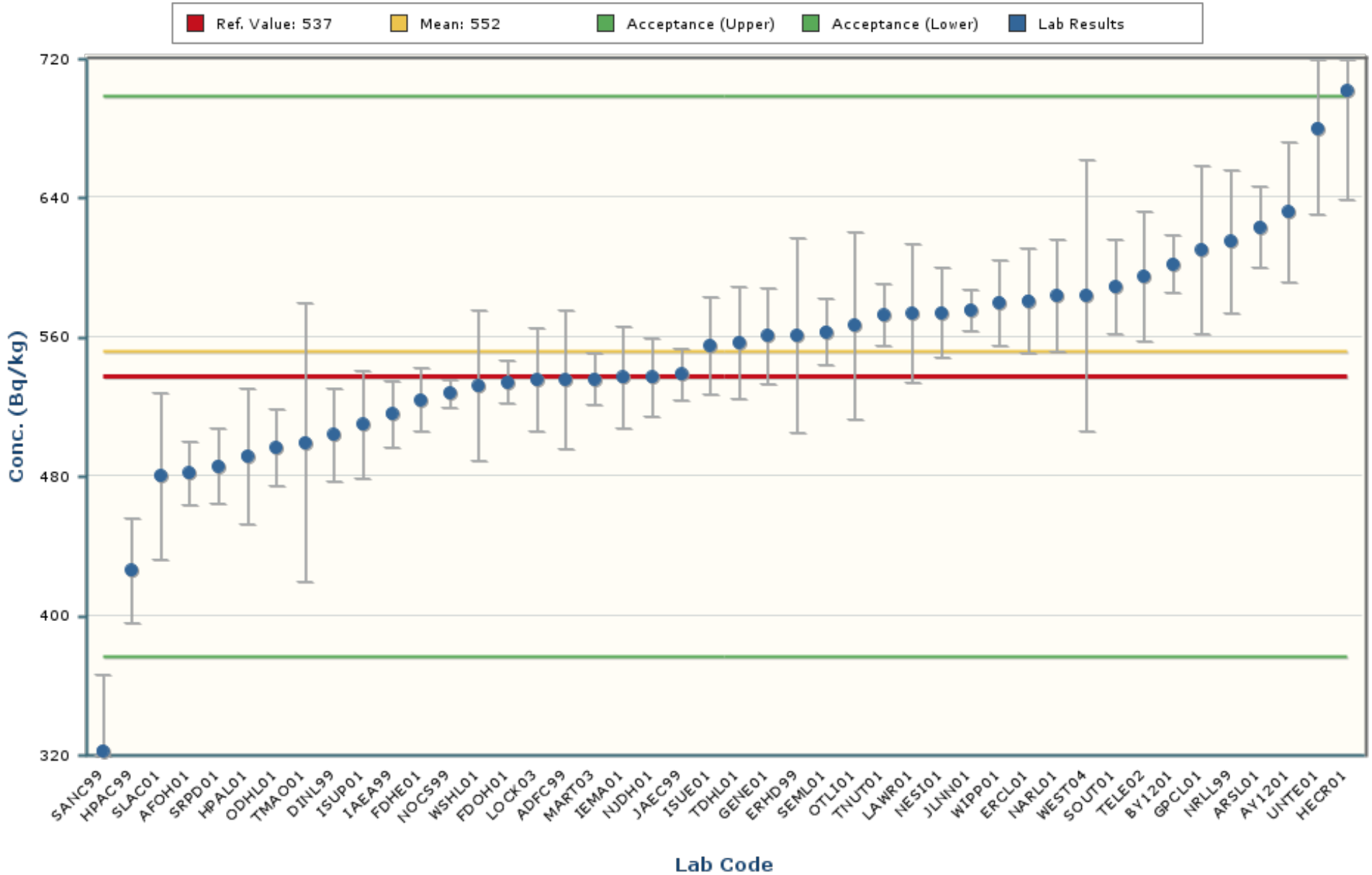
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 72 and 149 (± 5 Standard Deviations).

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

Potassium-40

MAPEP-22-MaS47



Notes:

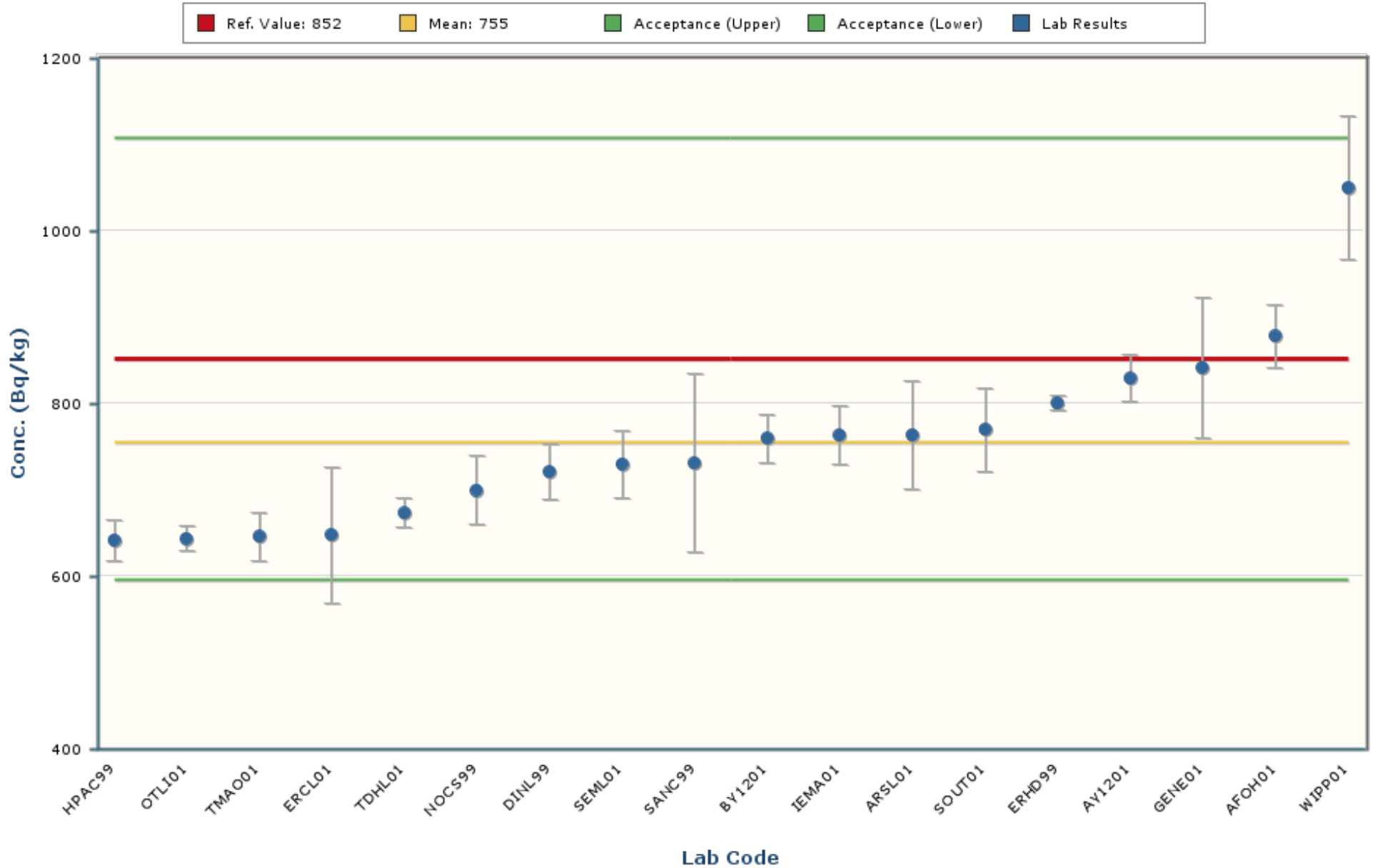
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 310 and 793 (± 5 Standard Deviations).

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

Strontium-90

MAPEP-22-MaS47



Notes:

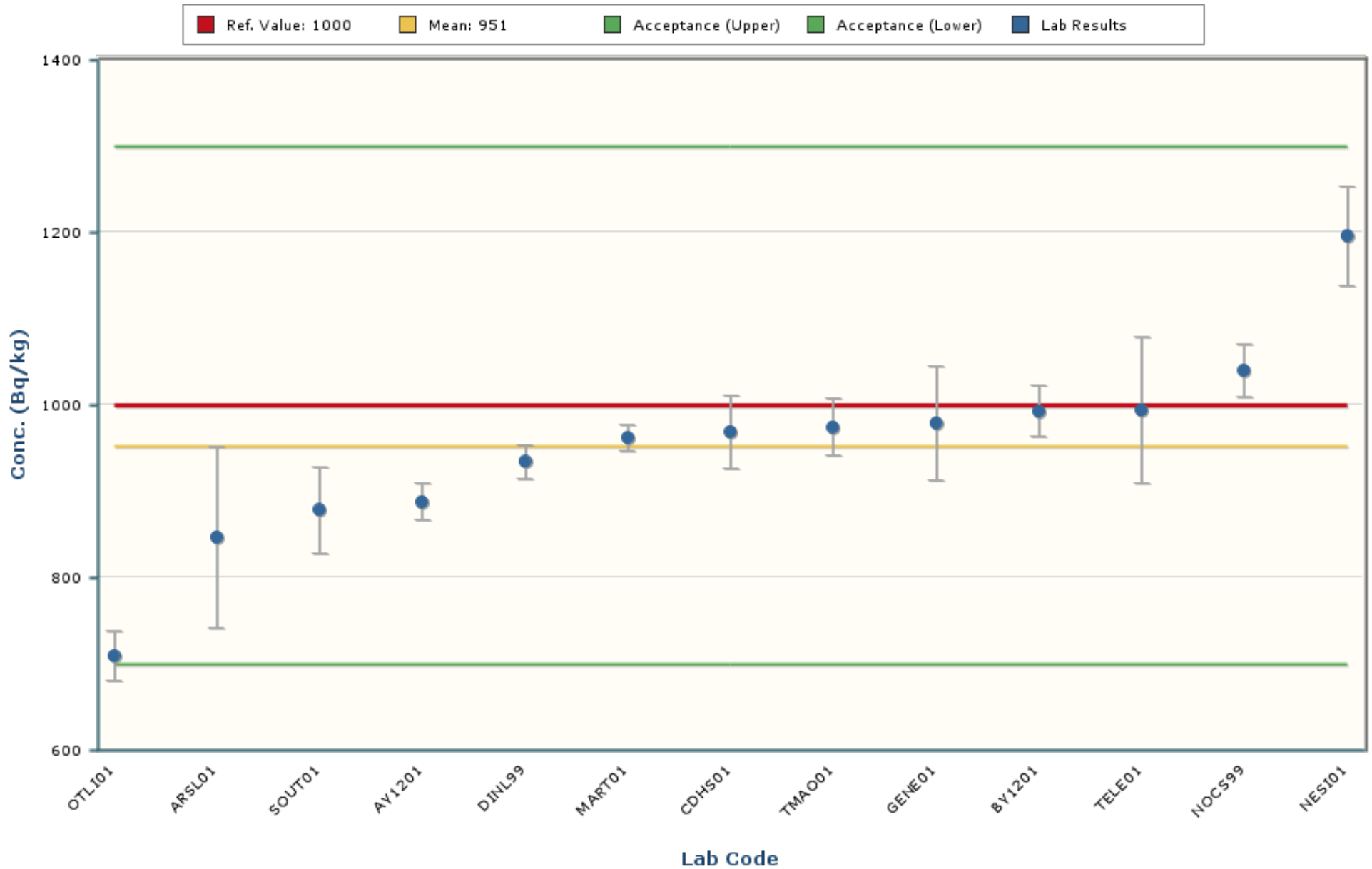
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 243 and 1267 (± 5 Standard Deviations).

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

Technetium-99

MAPEP-22-MaS47



Notes:

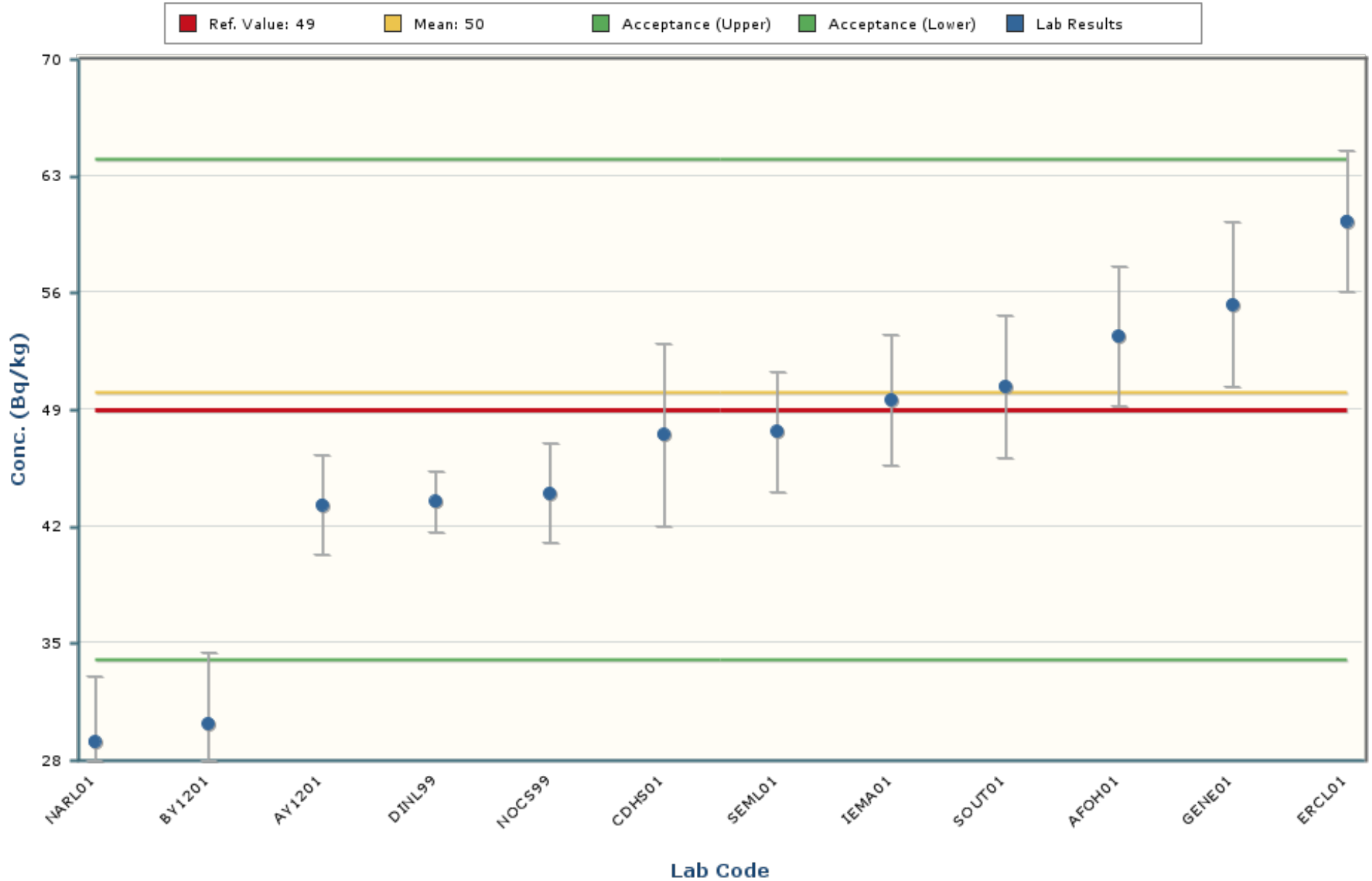
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 388 and 1514 (± 5 Standard Deviations).

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

Thorium-228

MAPEP-22-MaS47



Notes:

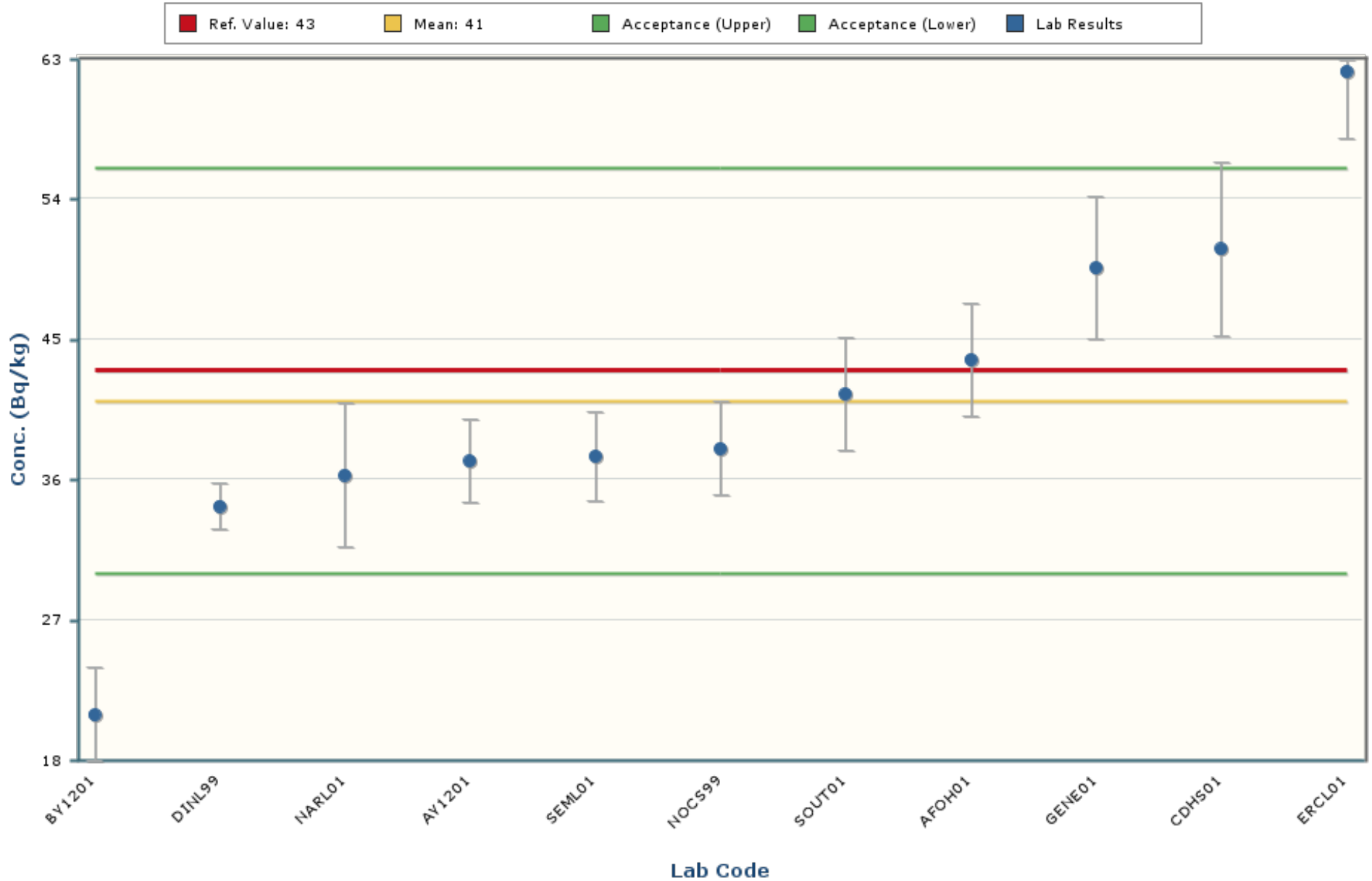
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 22 and 77 (± 5 Standard Deviations).

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

Thorium-230

MAPEP-22-MaS47



Notes:

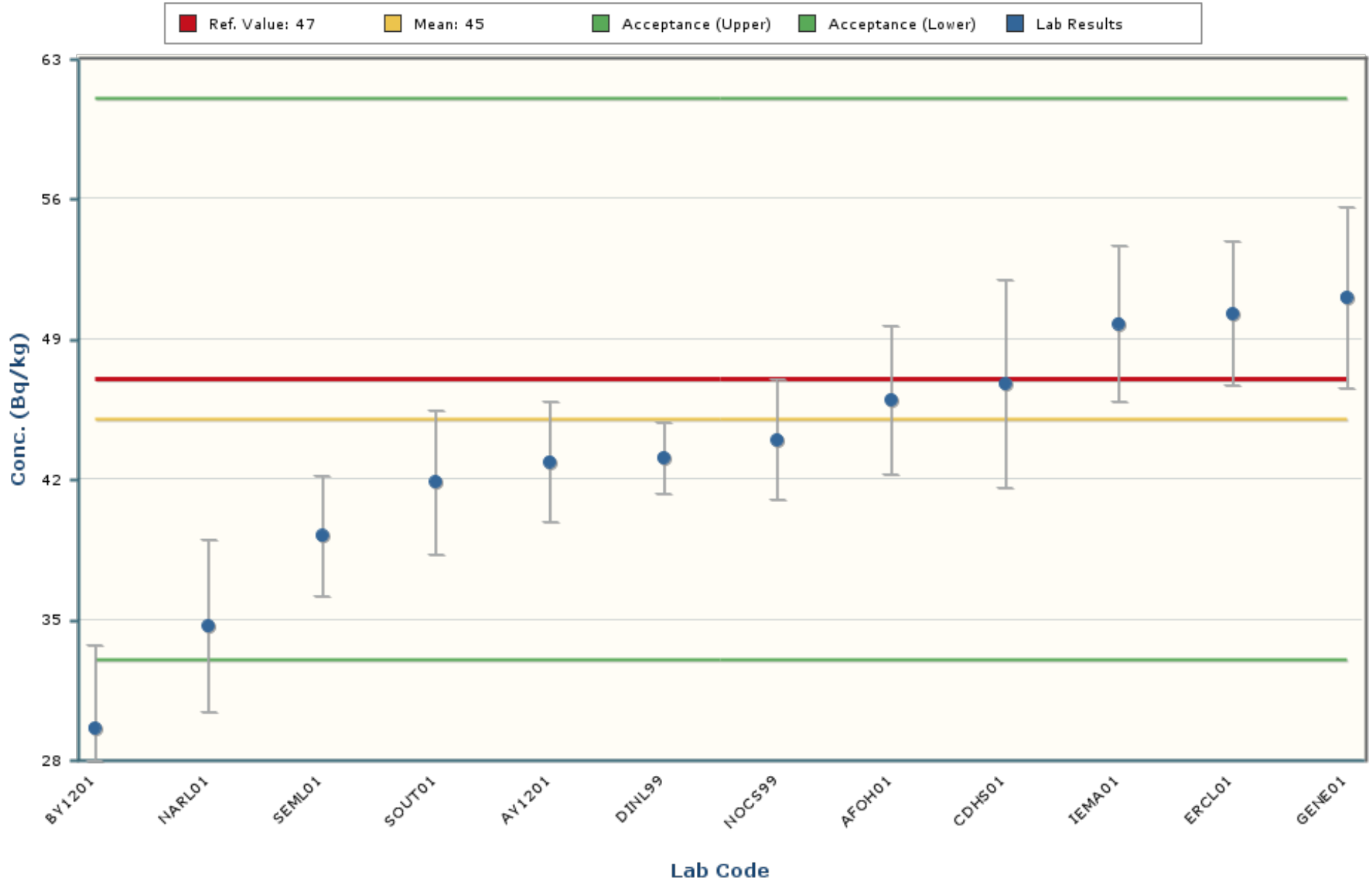
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 11 and 71 (± 5 Standard Deviations).

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

Thorium-232

MAPEP-22-MaS47



Notes:

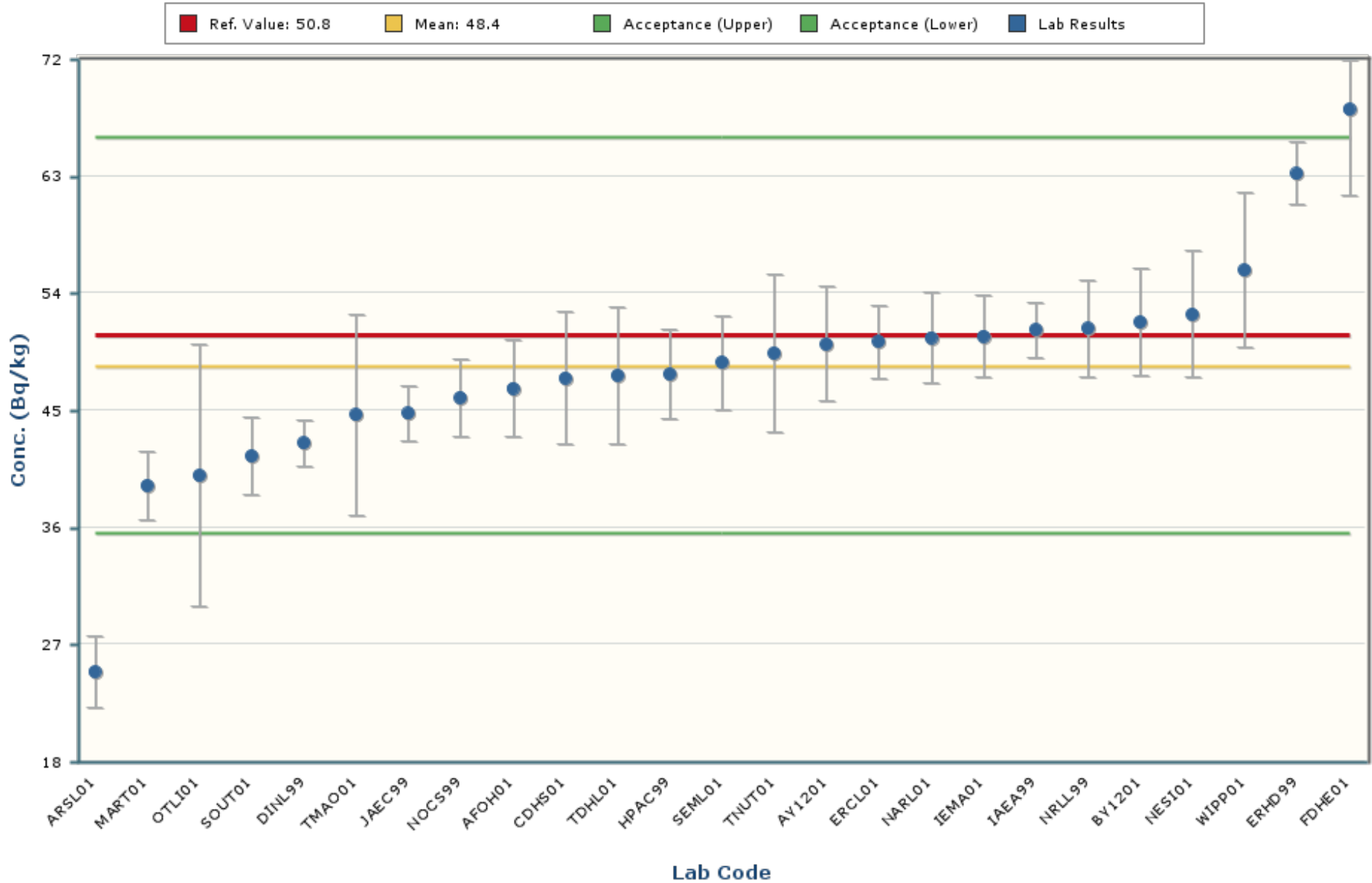
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 20 and 69 (± 5 Standard Deviations).

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

Uranium-234

MAPEP-22-MaS47



Notes:

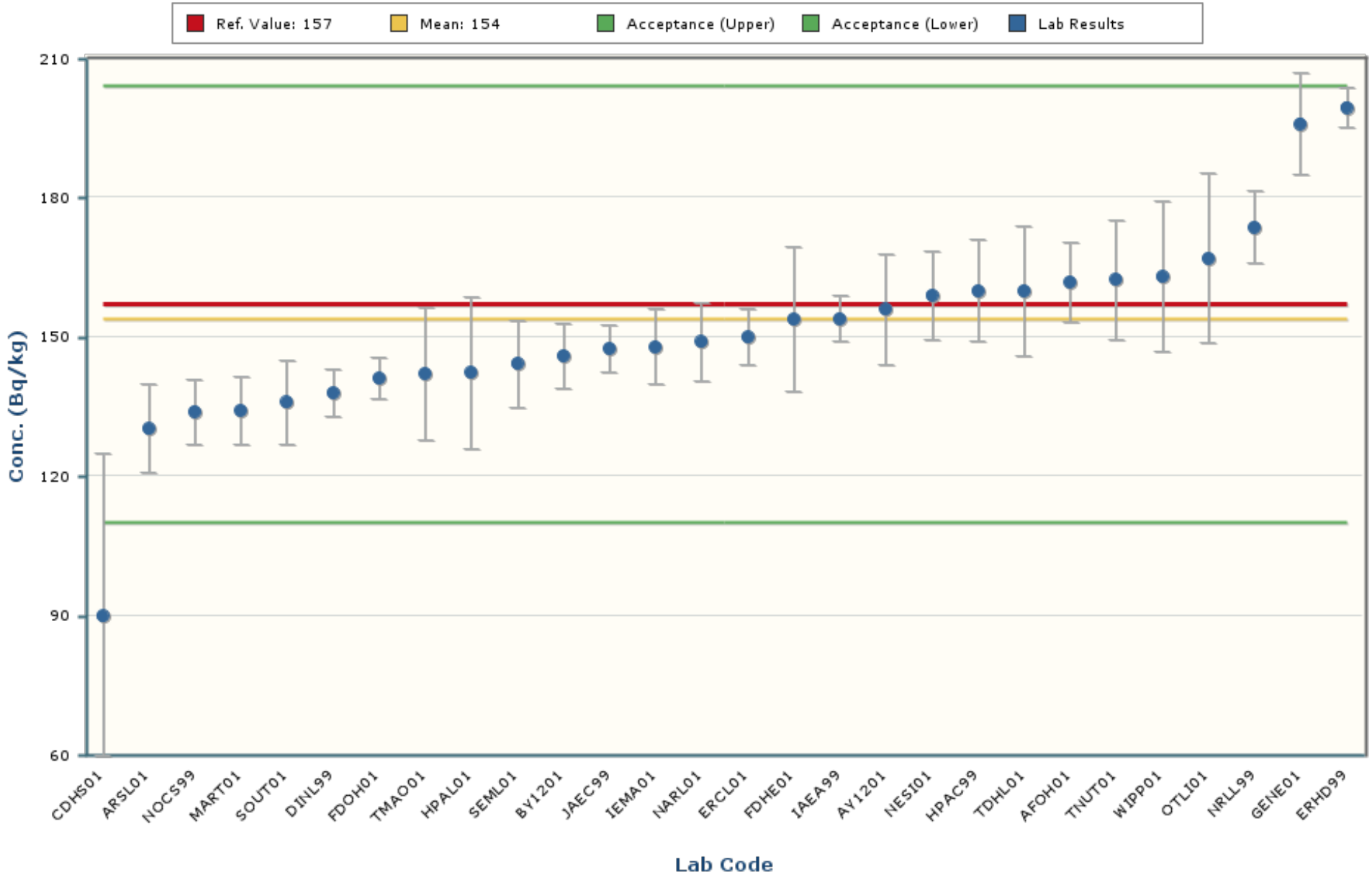
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 22.1 and 74.8 (± 5 Standard Deviations).

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

Uranium-238

MAPEP-22-MaS47



Notes:

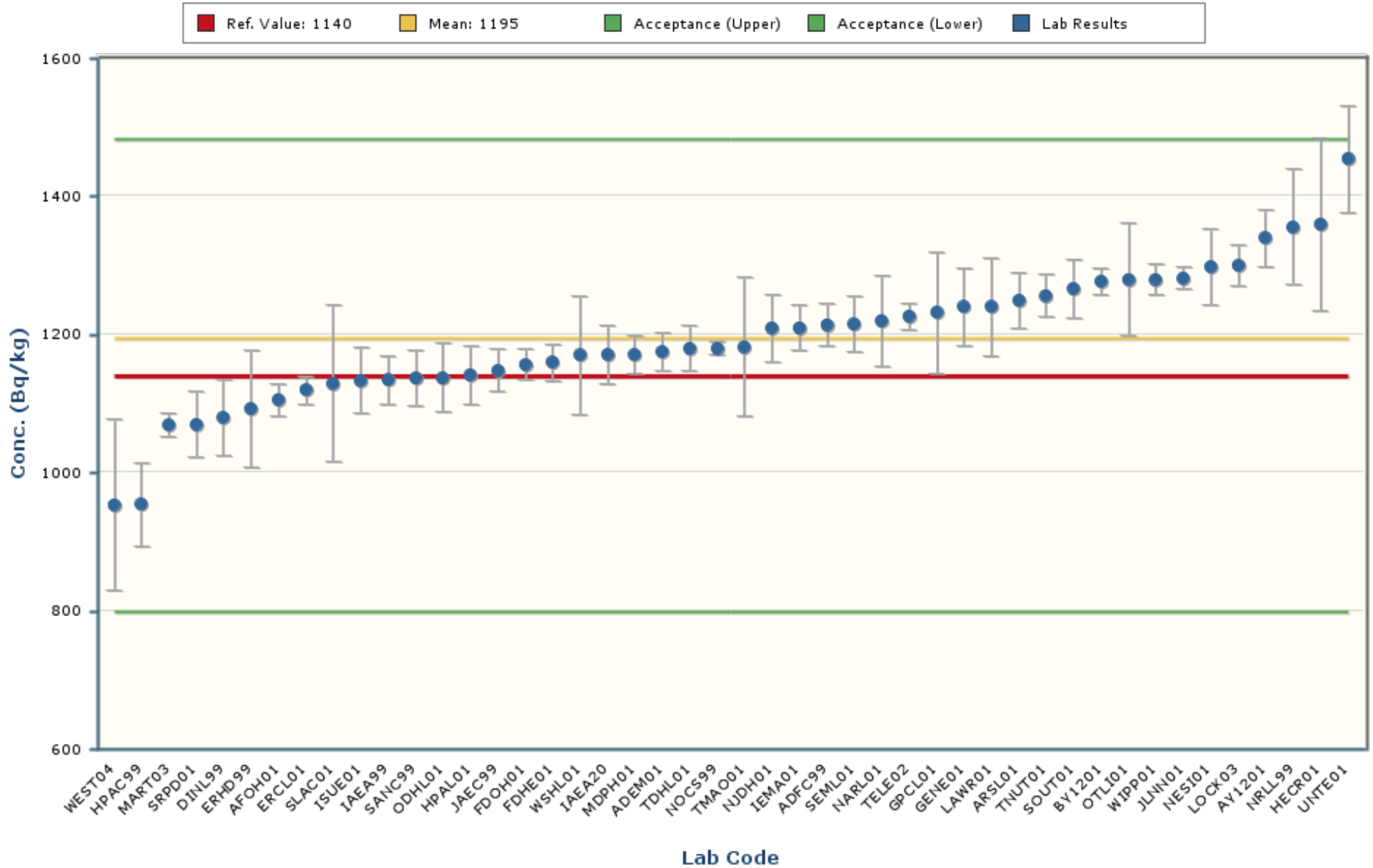
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 70 and 238 (± 5 Standard Deviations).

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

Zinc-65

MAPEP-22-MaS47



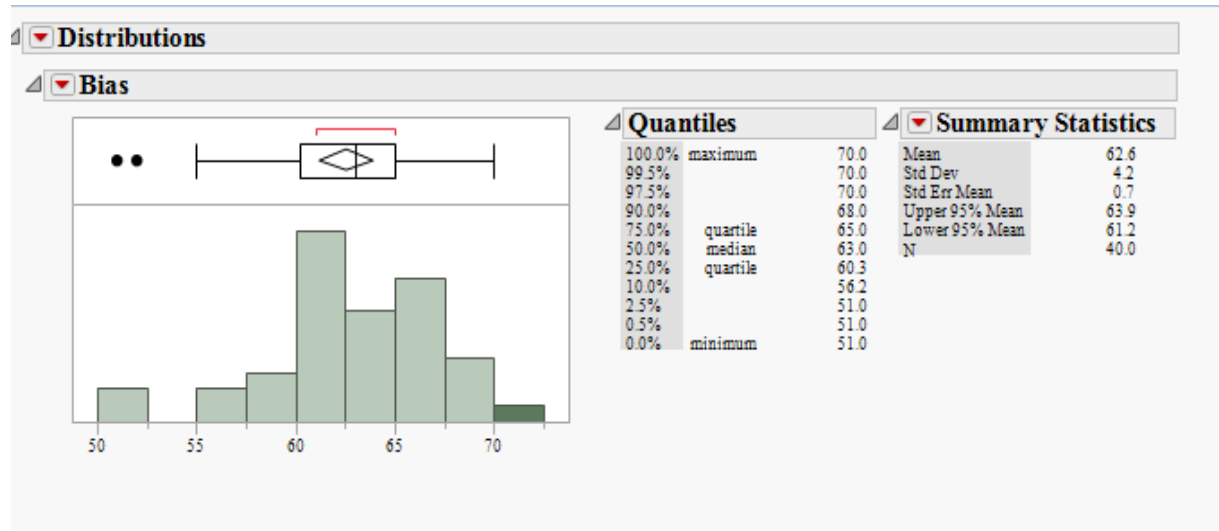
Notes:

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

The chart shows only data points with values between 708 and 1681 (± 5 Standard Deviations).

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

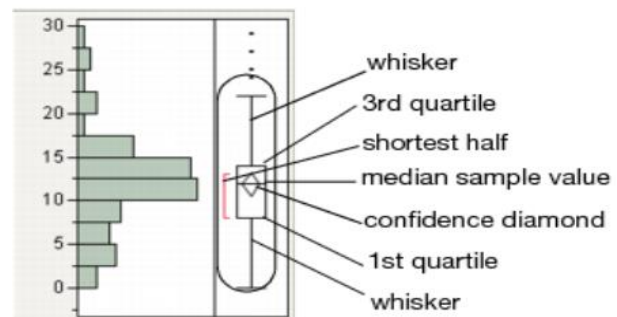


Outlier Box Plot

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)

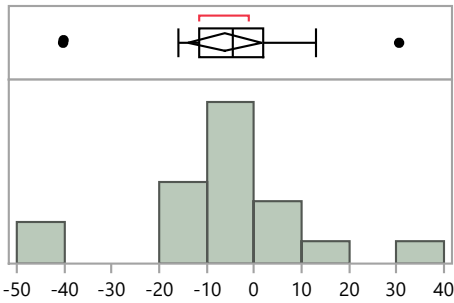


If the data points do not reach the computed ranges, then the whiskers are determined by the upper and lower data point values (not including outliers). The bracket outside of the box identifies the *shortest half*, which is the most dense 50% of the observations (Rousseuw and Leroy 1987).

MaS Distribution by Detection Method

Distributions Analyte_Detection=Americium-241 Alpha Spectrometry

Bias



Quantiles

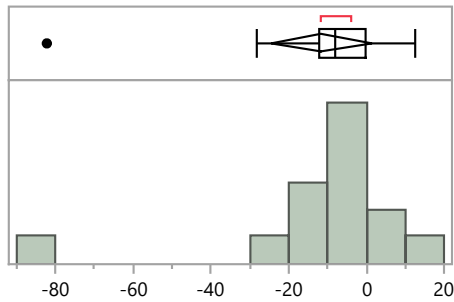
100.0%	maximum	30.5
99.5%		30.5
97.5%		30.5
90.0%		12.9
75.0%	quartile	1.8
50.0%	median	-4.4
25.0%	quartile	-11.5
10.0%		-40.1
2.5%		-40.2
0.5%		-40.2
0.0%	minimum	-40.2

Summary Statistics

Mean	-6.3
Std Dev	16.0
Std Err Mean	3.7
Upper 95% Mean	1.4
Lower 95% Mean	-14.1
N	19.0

Distributions Analyte_Detection=Americium-241 Gamma Spectrometry

Bias



Quantiles

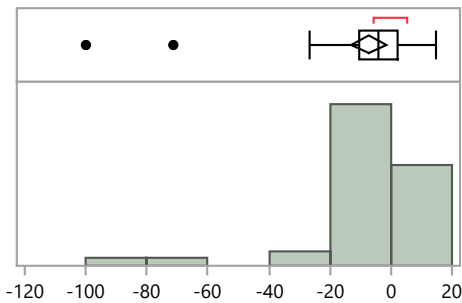
100.0%	maximum	12.5
99.5%		12.5
97.5%		12.5
90.0%		8.7
75.0%	quartile	-0.1
50.0%	median	-7.9
25.0%	quartile	-12.3
10.0%		-55.2
2.5%		-82.2
0.5%		-82.2
0.0%	minimum	-82.2

Summary Statistics

Mean	-11.6
Std Dev	22.5
Std Err Mean	6.0
Upper 95% Mean	1.4
Lower 95% Mean	-24.6
N	14.0

Distributions Analyte_Detection=Cesium-134 Gamma Spectrometry

Bias



Quantiles

100.0%	maximum	14.8
99.5%		14.8
97.5%		14.3
90.0%		5.6
75.0%	quartile	2.1
50.0%	median	-4.2
25.0%	quartile	-10.5
10.0%		-18.2
2.5%		-94.9
0.5%		-99.9
0.0%	minimum	-99.9

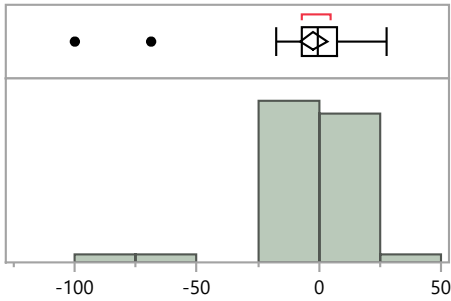
Summary Statistics

Mean	-7.5
Std Dev	19.1
Std Err Mean	2.8
Upper 95% Mean	-1.8
Lower 95% Mean	-13.2
N	46.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Cobalt-57 Gamma Spectrometry

Bias



Quantiles

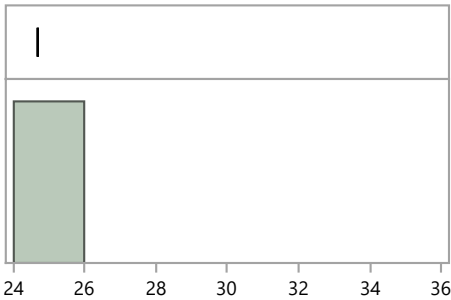
100.0%	maximum	27.7
99.5%		27.7
97.5%		25.8
90.0%		15.6
75.0%	quartile	7.2
50.0%	median	-0.2
25.0%	quartile	-7.0
10.0%		-12.6
2.5%		-92.1
0.5%		-99.9
0.0%	minimum	-99.9

Summary Statistics

Mean	-2.2
Std Dev	19.8
Std Err Mean	2.8
Upper 95% Mean	3.5
Lower 95% Mean	-7.8
N	49.0

Distributions Analyte_Detection=Iron-55 Gamma Spectrometry

Bias



Quantiles

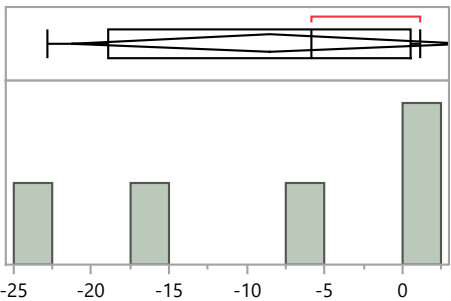
100.0%	maximum	24.7
99.5%		24.7
97.5%		24.7
90.0%		24.7
75.0%	quartile	24.7
50.0%	median	24.7
25.0%	quartile	24.7
10.0%		24.7
2.5%		24.7
0.5%		24.7
0.0%	minimum	24.7

Summary Statistics

Mean	24.7
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Detection=Iron-55 Liquid Scintillation Counter

Bias



Quantiles

100.0%	maximum	1.1
99.5%		1.1
97.5%		1.1
90.0%		1.1
75.0%	quartile	0.6
50.0%	median	-5.9
25.0%	quartile	-19.0
10.0%		-22.8
2.5%		-22.8
0.5%		-22.8
0.0%	minimum	-22.8

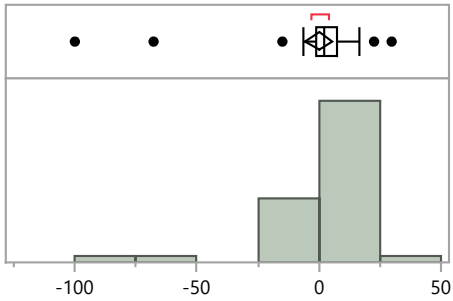
Summary Statistics

Mean	-8.5
Std Dev	10.2
Std Err Mean	4.6
Upper 95% Mean	4.2
Lower 95% Mean	-21.3
N	5.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Manganese-54 Gamma Spectrometry

Bias



Quantiles

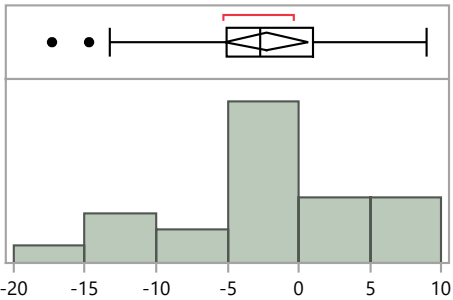
100.0%	maximum	29.7
99.5%		29.7
97.5%		27.9
90.0%		11.0
75.0%	quartile	7.1
50.0%	median	2.3
25.0%	quartile	-1.3
10.0%		-5.9
2.5%		-91.9
0.5%		-99.9
0.0%	minimum	-99.9

Summary Statistics

Mean	0.1
Std Dev	19.3
Std Err Mean	2.8
Upper 95% Mean	5.6
Lower 95% Mean	-5.5
N	49.0

Distributions Analyte_Detection=Plutonium-239/240 Alpha Spectrometry

Bias



Quantiles

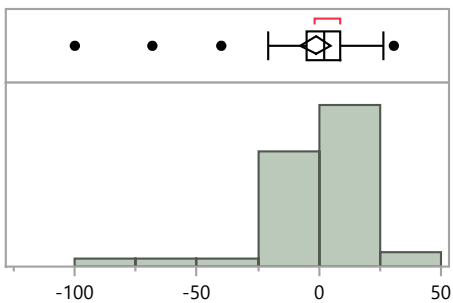
100.0%	maximum	9.0
99.5%		9.0
97.5%		9.0
90.0%		8.5
75.0%	quartile	1.0
50.0%	median	-2.7
25.0%	quartile	-5.1
10.0%		-14.0
2.5%		-17.3
0.5%		-17.3
0.0%	minimum	-17.3

Summary Statistics

Mean	-2.3
Std Dev	6.9
Std Err Mean	1.4
Upper 95% Mean	0.6
Lower 95% Mean	-5.2
N	24.0

Distributions Analyte_Detection=Potassium-40 Gamma Spectrometry

Bias



Quantiles

100.0%	maximum	30.6
99.5%		30.6
97.5%		29.9
90.0%		15.0
75.0%	quartile	8.4
50.0%	median	1.9
25.0%	quartile	-5.4
10.0%		-13.6
2.5%		-94.4
0.5%		-99.9
0.0%	minimum	-99.9

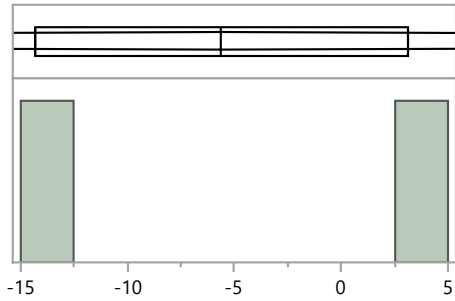
Summary Statistics

Mean	-1.4
Std Dev	21.5
Std Err Mean	3.2
Upper 95% Mean	5.0
Lower 95% Mean	-7.7
N	46.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Strontium-90 Alpha Spectrometry

Bias



Quantiles

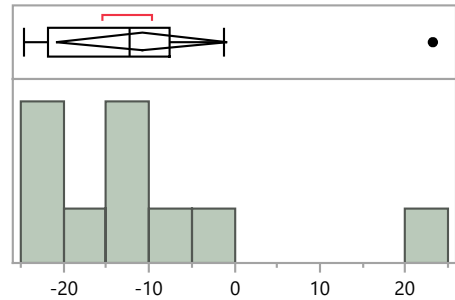
100.0%	maximum	3.1
99.5%		3.1
97.5%		3.1
90.0%		3.1
75.0%	quartile	3.1
50.0%	median	-5.6
25.0%	quartile	-14.3
10.0%		-14.3
2.5%		-14.3
0.5%		-14.3
0.0%	minimum	-14.3

Summary Statistics

Mean	-5.6
Std Dev	12.3
Std Err Mean	8.7
Upper 95% Mean	104.9
Lower 95% Mean	-116.1
N	2.0

Distributions Analyte_Detection=Strontium-90 Gas Flow Proportional Counter

Bias



Quantiles

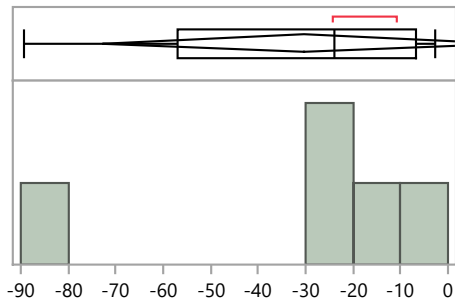
100.0%	maximum	23.2
99.5%		23.2
97.5%		23.2
90.0%		20.8
75.0%	quartile	-7.5
50.0%	median	-12.3
25.0%	quartile	-21.8
10.0%		-24.6
2.5%		-24.6
0.5%		-24.6
0.0%	minimum	-24.6

Summary Statistics

Mean	-10.8
Std Dev	14.0
Std Err Mean	4.4
Upper 95% Mean	-0.8
Lower 95% Mean	-20.8
N	10.0

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

Bias



Quantiles

100.0%	maximum	-2.7
99.5%		-2.7
97.5%		-2.7
90.0%		-2.7
75.0%	quartile	-6.8
50.0%	median	-23.9
25.0%	quartile	-56.8
10.0%		-89.2
2.5%		-89.2
0.5%		-89.2
0.0%	minimum	-89.2

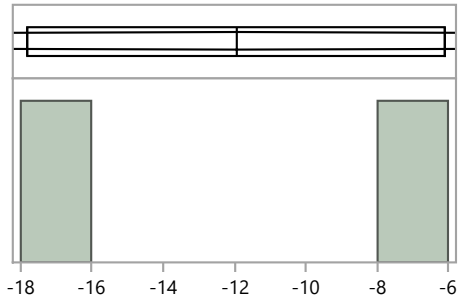
Summary Statistics

Mean	-30.2
Std Dev	34.2
Std Err Mean	15.3
Upper 95% Mean	12.3
Lower 95% Mean	-72.7
N	5.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Strontium-90 Liquid Scintillation Counter

Bias



Quantiles

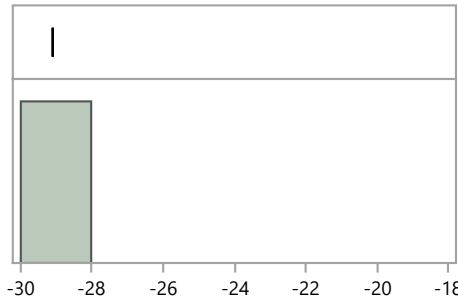
100.0%	maximum	-6.1
99.5%		-6.1
97.5%		-6.1
90.0%		-6.1
75.0%	quartile	-6.1
50.0%	median	-12.0
25.0%	quartile	-17.8
10.0%		-17.8
2.5%		-17.8
0.5%		-17.8
0.0%	minimum	-17.8

Summary Statistics

Mean	-12.0
Std Dev	8.3
Std Err Mean	5.9
Upper 95% Mean	62.4
Lower 95% Mean	-86.3
N	2.0

Distributions Analyte_Detection=Technetium-99 Gross Alpha/Beta - 2 pi gas flow proportional counter

Bias



Quantiles

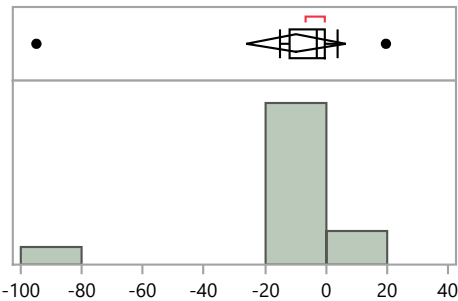
100.0%	maximum	-29.1
99.5%		-29.1
97.5%		-29.1
90.0%		-29.1
75.0%	quartile	-29.1
50.0%	median	-29.1
25.0%	quartile	-29.1
10.0%		-29.1
2.5%		-29.1
0.5%		-29.1
0.0%	minimum	-29.1

Summary Statistics

Mean	-29.1
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Detection=Technetium-99 Liquid Scintillation Counter

Bias



Quantiles

100.0%	maximum	19.6
99.5%		19.6
97.5%		19.6
90.0%		13.4
75.0%	quartile	-0.7
50.0%	median	-3.1
25.0%	quartile	-11.7
10.0%		-63.0
2.5%		-94.8
0.5%		-94.8
0.0%	minimum	-94.8

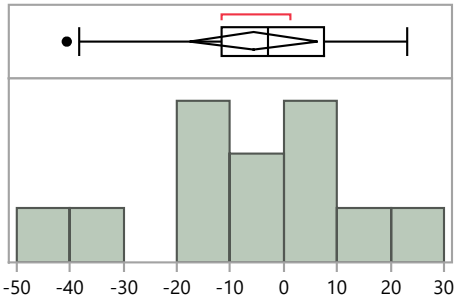
Summary Statistics

Mean	-9.9
Std Dev	26.9
Std Err Mean	7.5
Upper 95% Mean	6.3
Lower 95% Mean	-26.2
N	13.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Thorium-228 Alpha Spectrometry

Bias



Quantiles

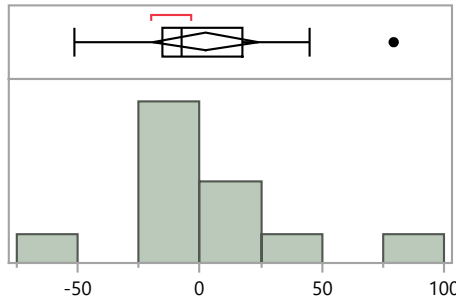
100.0%	maximum	23.1
99.5%		23.1
97.5%		23.1
90.0%		20.0
75.0%	quartile	7.5
50.0%	median	-2.9
25.0%	quartile	-11.5
10.0%		-39.9
2.5%		-40.6
0.5%		-40.6
0.0%	minimum	-40.6

Summary Statistics

Mean	-5.7
Std Dev	18.8
Std Err Mean	5.4
Upper 95% Mean	6.2
Lower 95% Mean	-17.7
N	12.0

Distributions Analyte_Detection=Thorium-230 Alpha Spectrometry

Bias



Quantiles

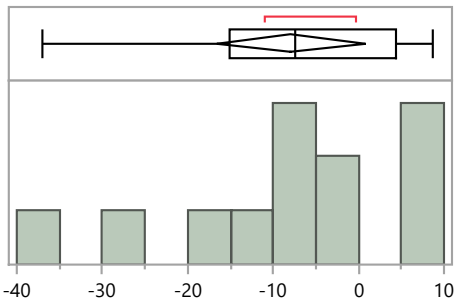
100.0%	maximum	79.3
99.5%		79.3
97.5%		79.3
90.0%		68.9
75.0%	quartile	17.4
50.0%	median	-7.6
25.0%	quartile	-15.1
10.0%		-42.0
2.5%		-51.4
0.5%		-51.4
0.0%	minimum	-51.4

Summary Statistics

Mean	2.5
Std Dev	33.8
Std Err Mean	9.8
Upper 95% Mean	24.0
Lower 95% Mean	-18.9
N	12.0

Distributions Analyte_Detection=Thorium-232 Alpha Spectrometry

Bias



Quantiles

100.0%	maximum	8.7
99.5%		8.7
97.5%		8.7
90.0%		8.2
75.0%	quartile	4.4
50.0%	median	-7.4
25.0%	quartile	-15.2
10.0%		-33.8
2.5%		-37.0
0.5%		-37.0
0.0%	minimum	-37.0

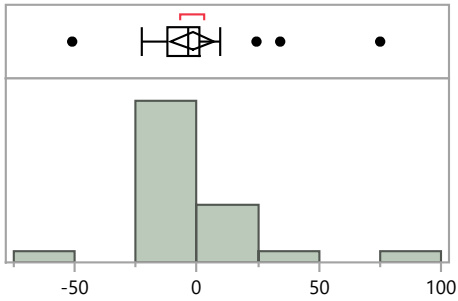
Summary Statistics

Mean	-7.9
Std Dev	13.7
Std Err Mean	3.9
Upper 95% Mean	0.8
Lower 95% Mean	-16.6
N	12.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Uranium-234 Alpha Spectrometry

Bias



Quantiles

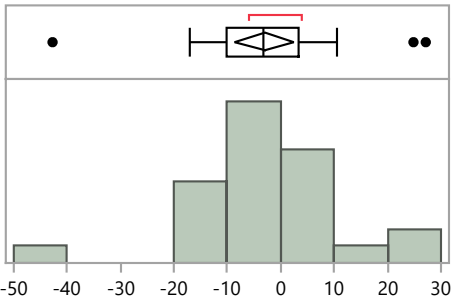
100.0%	maximum	75.0
99.5%		75.0
97.5%		75.0
90.0%		27.3
75.0%	quartile	1.3
50.0%	median	-3.4
25.0%	quartile	-11.9
10.0%		-21.8
2.5%		-51.0
0.5%		-51.0
0.0%	minimum	-51.0

Summary Statistics

Mean	-1.9
Std Dev	22.1
Std Err Mean	4.3
Upper 95% Mean	7.0
Lower 95% Mean	-10.8
N	26.0

Distributions Analyte_Detection=Uranium-238 Alpha Spectrometry

Bias



Quantiles

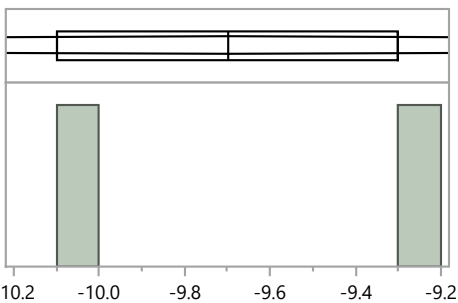
100.0%	maximum	27.1
99.5%		27.1
97.5%		27.1
90.0%		14.9
75.0%	quartile	3.2
50.0%	median	-3.3
25.0%	quartile	-10.1
10.0%		-15.4
2.5%		-42.7
0.5%		-42.7
0.0%	minimum	-42.7

Summary Statistics

Mean	-3.1
Std Dev	13.4
Std Err Mean	2.6
Upper 95% Mean	2.3
Lower 95% Mean	-8.5
N	26.0

Distributions Analyte_Detection=Uranium-238 Gamma Spectrometry

Bias



Quantiles

100.0%	maximum	-9.3
99.5%		-9.3
97.5%		-9.3
90.0%		-9.3
75.0%	quartile	-9.3
50.0%	median	-9.7
25.0%	quartile	-10.1
10.0%		-10.1
2.5%		-10.1
0.5%		-10.1
0.0%	minimum	-10.1

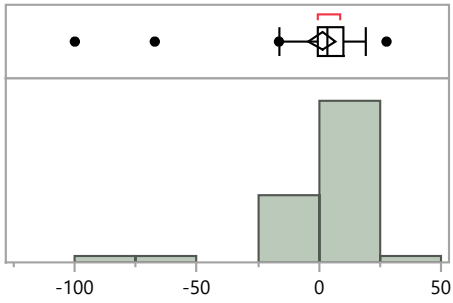
Summary Statistics

Mean	-9.7
Std Dev	0.6
Std Err Mean	0.4
Upper 95% Mean	-4.6
Lower 95% Mean	-14.8
N	2.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Zinc-65 Gamma Spectrometry

Bias



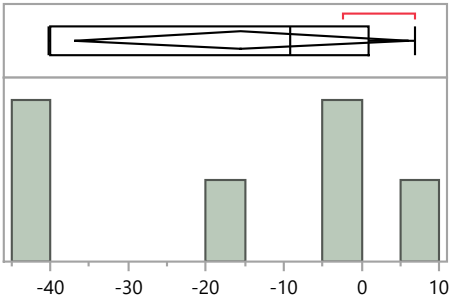
Quantiles		
100.0%	maximum	27.6
99.5%		27.6
97.5%		25.7
90.0%		14.4
75.0%	quartile	10.1
50.0%	median	3.5
25.0%	quartile	-0.5
10.0%		-7.2
2.5%		-92.5
0.5%		-99.9
0.0%	minimum	-99.9

Summary Statistics	
Mean	1.1
Std Dev	20.0
Std Err Mean	2.9
Upper 95% Mean	6.9
Lower 95% Mean	-4.7
N	48.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Americium-241 Acid dissolution with hydrofluoric acid

Bias



Quantiles

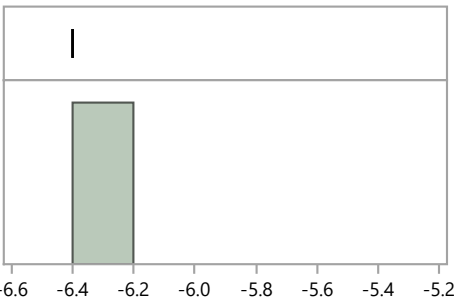
100.0%	maximum	6.9
99.5%		6.9
97.5%		6.9
90.0%		6.9
75.0%	quartile	1.0
50.0%	median	-9.3
25.0%	quartile	-40.1
10.0%		-40.2
2.5%		-40.2
0.5%		-40.2
0.0%	minimum	-40.2

Summary Statistics

Mean	-15.5
Std Dev	20.5
Std Err Mean	8.4
Upper 95% Mean	6.0
Lower 95% Mean	-37.0
N	6.0

Distributions Analyte_Method=Americium-241 EPA 901.1, Gamma Emitting, 600/4-80-032

Bias



Quantiles

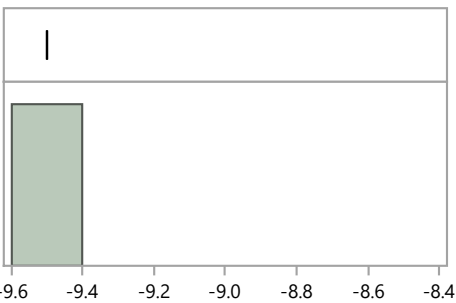
100.0%	maximum	-6.4
99.5%		-6.4
97.5%		-6.4
90.0%		-6.4
75.0%	quartile	-6.4
50.0%	median	-6.4
25.0%	quartile	-6.4
10.0%		-6.4
2.5%		-6.4
0.5%		-6.4
0.0%	minimum	-6.4

Summary Statistics

Mean	-6.4
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Americium-241 EPA 907, Actinide Elements, 600/4/80-032

Bias



Quantiles

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

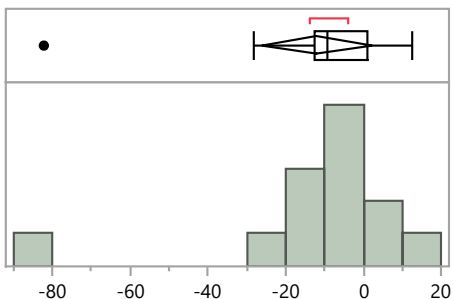
Summary Statistics

Mean	-9.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Americium-241 No preparation - analyzed as received

Bias



Quantiles

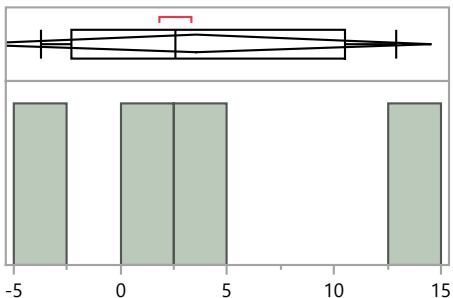
100.0%	maximum	12.5
99.5%		12.5
97.5%		12.5
90.0%		9.4
75.0%	quartile	1.1
50.0%	median	-9.4
25.0%	quartile	-12.8
10.0%		-60.6
2.5%		-82.2
0.5%		-82.2
0.0%	minimum	-82.2

Summary Statistics

Mean	-12.0
Std Dev	23.4
Std Err Mean	6.5
Upper 95% Mean	2.1
Lower 95% Mean	-26.1
N	13.0

Distributions Analyte_Method=Americium-241 Other

Bias



Quantiles

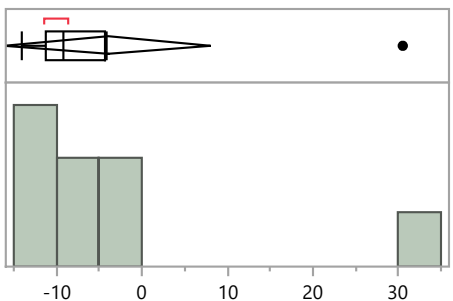
100.0%	maximum	12.9
99.5%		12.9
97.5%		12.9
90.0%		12.9
75.0%	quartile	10.5
50.0%	median	2.6
25.0%	quartile	-2.3
10.0%		-3.7
2.5%		-3.7
0.5%		-3.7
0.0%	minimum	-3.7

Summary Statistics

Mean	3.6
Std Dev	6.9
Std Err Mean	3.5
Upper 95% Mean	14.6
Lower 95% Mean	-7.4
N	4.0

Distributions Analyte_Method=Americium-241 Total dissolution by fusion

Bias



Quantiles

100.0%	maximum	30.5
99.5%		30.5
97.5%		30.5
90.0%		30.5
75.0%	quartile	-4.3
50.0%	median	-9.2
25.0%	quartile	-11.2
10.0%		-14.0
2.5%		-14.0
0.5%		-14.0
0.0%	minimum	-14.0

Summary Statistics

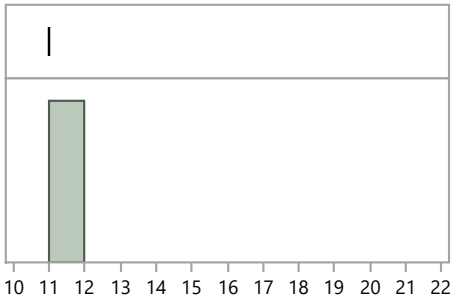
Mean	-4.0
Std Dev	14.3
Std Err Mean	5.1
Upper 95% Mean	8.0
Lower 95% Mean	-16.0
N	8.0

MaS47 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Cesium-134 Acid dissolution with hydrofluoric acid

Bias



Quantiles

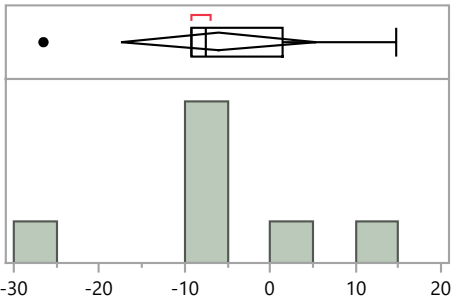
100.0%	maximum	11.0
99.5%		11.0
97.5%		11.0
90.0%		11.0
75.0%	quartile	11.0
50.0%	median	11.0
25.0%	quartile	11.0
10.0%		11.0
2.5%		11.0
0.5%		11.0
0.0%	minimum	11.0

Summary Statistics

Mean	11.0
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

Bias



Quantiles

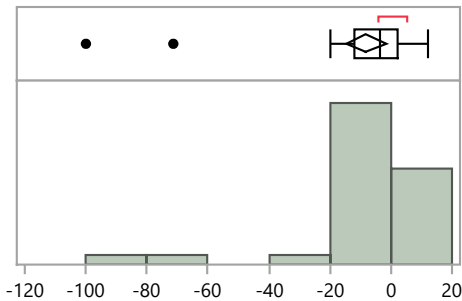
100.0%	maximum	14.8
99.5%		14.8
97.5%		14.8
90.0%		14.8
75.0%	quartile	1.4
50.0%	median	-7.6
25.0%	quartile	-9.2
10.0%		-26.5
2.5%		-26.5
0.5%		-26.5
0.0%	minimum	-26.5

Summary Statistics

Mean	-6.0
Std Dev	12.4
Std Err Mean	4.7
Upper 95% Mean	5.5
Lower 95% Mean	-17.5
N	7.0

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

Bias



Quantiles

100.0%	maximum	12.1
99.5%		12.1
97.5%		12.1
90.0%		4.7
75.0%	quartile	2.1
50.0%	median	-3.6
25.0%	quartile	-12.1
10.0%		-17.7
2.5%		-99.9
0.5%		-99.9
0.0%	minimum	-99.9

Summary Statistics

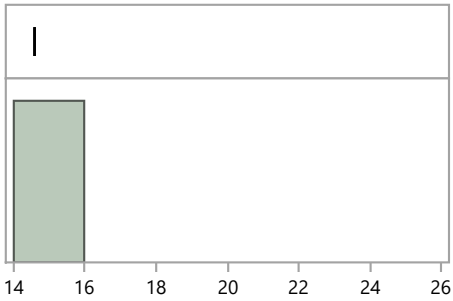
Mean	-8.2
Std Dev	20.2
Std Err Mean	3.3
Upper 95% Mean	-1.6
Lower 95% Mean	-14.9
N	38.0

MaS47 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Cobalt-57 Acid dissolution with hydrofluoric acid

Bias



Quantiles

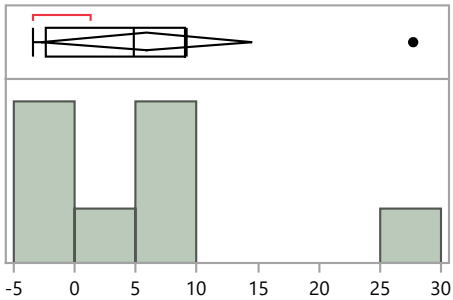
100.0%	maximum	14.6
99.5%		14.6
97.5%		14.6
90.0%		14.6
75.0%	quartile	14.6
50.0%	median	14.6
25.0%	quartile	14.6
10.0%		14.6
2.5%		14.6
0.5%		14.6
0.0%	minimum	14.6

Summary Statistics

Mean	14.6
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

Bias



Quantiles

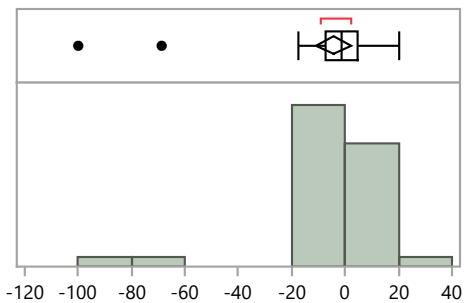
100.0%	maximum	27.7
99.5%		27.7
97.5%		27.7
90.0%		27.7
75.0%	quartile	9.0
50.0%	median	4.8
25.0%	quartile	-2.4
10.0%		-3.4
2.5%		-3.4
0.5%		-3.4
0.0%	minimum	-3.4

Summary Statistics

Mean	5.9
Std Dev	10.3
Std Err Mean	3.6
Upper 95% Mean	14.5
Lower 95% Mean	-2.7
N	8.0

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

Bias



Quantiles

100.0%	maximum	20.1
99.5%		20.1
97.5%		20.1
90.0%		15.0
75.0%	quartile	4.8
50.0%	median	-1.1
25.0%	quartile	-7.6
10.0%		-13.3
2.5%		-99.1
0.5%		-99.9
0.0%	minimum	-99.9

Summary Statistics

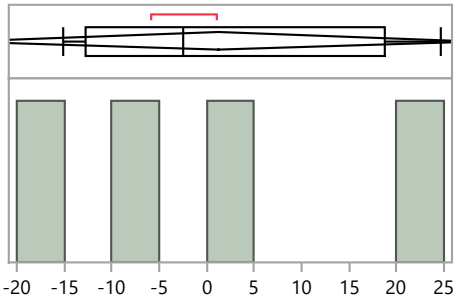
Mean	-4.2
Std Dev	20.9
Std Err Mean	3.3
Upper 95% Mean	2.5
Lower 95% Mean	-10.9
N	40.0

MaS47 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Iron-55 Acid dissolution with hydrofluoric acid

Bias



Quantiles

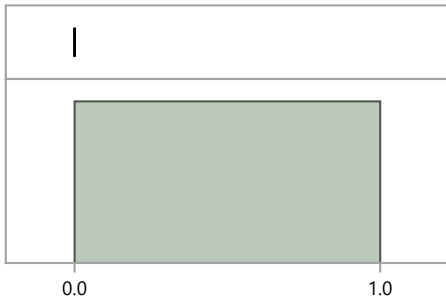
100.0%	maximum	24.7
99.5%		24.7
97.5%		24.7
90.0%		24.7
75.0%	quartile	18.8
50.0%	median	-2.4
25.0%	quartile	-12.8
10.0%		-15.1
2.5%		-15.1
0.5%		-15.1
0.0%	minimum	-15.1

Summary Statistics

Mean	1.2
Std Dev	17.0
Std Err Mean	8.5
Upper 95% Mean	28.3
Lower 95% Mean	-25.9
N	4.0

Distributions Analyte_Method=Iron-55 Acid leaching without hydrofluoric acid

Bias



Quantiles

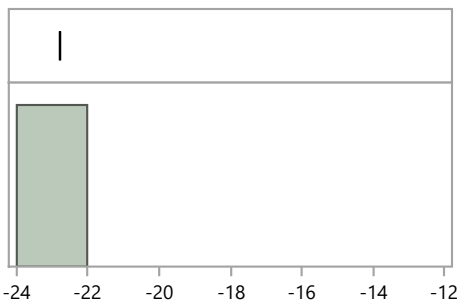
100.0%	maximum	0.0
99.5%		0.0
97.5%		0.0
90.0%		0.0
75.0%	quartile	0.0
50.0%	median	0.0
25.0%	quartile	0.0
10.0%		0.0
2.5%		0.0
0.5%		0.0
0.0%	minimum	0.0

Summary Statistics

Mean	0.0
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Iron-55 Total dissolution by fusion

Bias



Quantiles

100.0%	maximum	-22.8
99.5%		-22.8
97.5%		-22.8
90.0%		-22.8
75.0%	quartile	-22.8
50.0%	median	-22.8
25.0%	quartile	-22.8
10.0%		-22.8
2.5%		-22.8
0.5%		-22.8
0.0%	minimum	-22.8

Summary Statistics

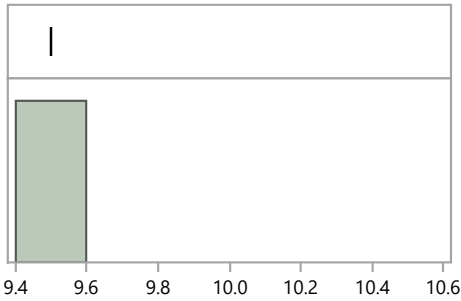
Mean	-22.8
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaS47 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Manganese-54 Acid dissolution with hydrofluoric acid

Bias



Quantiles

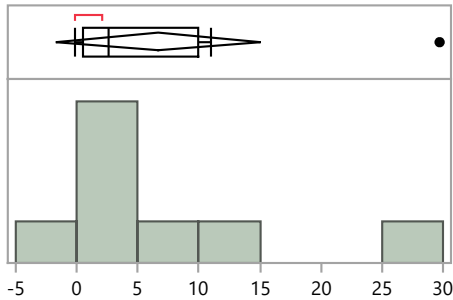
100.0%	maximum	9.5
99.5%		9.5
97.5%		9.5
90.0%		9.5
75.0%	quartile	9.5
50.0%	median	9.5
25.0%	quartile	9.5
10.0%		9.5
2.5%		9.5
0.5%		9.5
0.0%	minimum	9.5

Summary Statistics

Mean	9.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

Bias



Quantiles

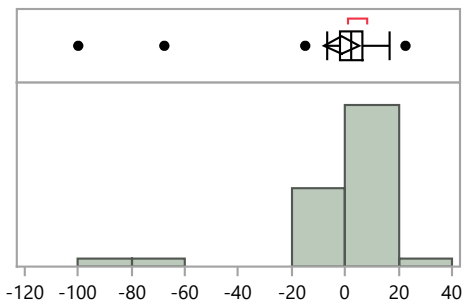
100.0%	maximum	29.7
99.5%		29.7
97.5%		29.7
90.0%		29.7
75.0%	quartile	10.0
50.0%	median	2.6
25.0%	quartile	0.6
10.0%		-0.1
2.5%		-0.1
0.5%		-0.1
0.0%	minimum	-0.1

Summary Statistics

Mean	6.7
Std Dev	10.0
Std Err Mean	3.5
Upper 95% Mean	15.1
Lower 95% Mean	-1.6
N	8.0

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

Bias



Quantiles

100.0%	maximum	22.5
99.5%		22.5
97.5%		22.4
90.0%		10.2
75.0%	quartile	6.7
50.0%	median	2.1
25.0%	quartile	-1.8
10.0%		-6.4
2.5%		-99.1
0.5%		-99.9
0.0%	minimum	-99.9

Summary Statistics

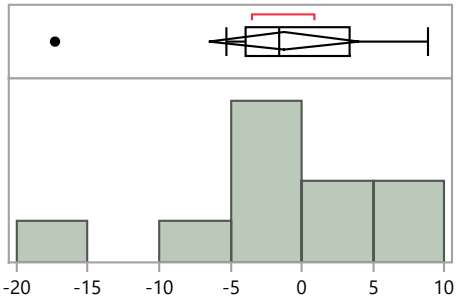
Mean	-1.5
Std Dev	20.6
Std Err Mean	3.3
Upper 95% Mean	5.1
Lower 95% Mean	-8.1
N	40.0

MaS47 Distribution by Preparation Method

MaS Distribution by Prep Method

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

Bias



Quantiles

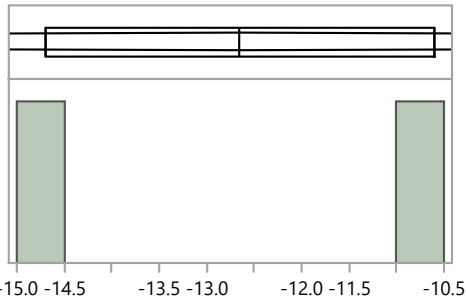
100.0%	maximum	8.9
99.5%		8.9
97.5%		8.9
90.0%		8.8
75.0%	quartile	3.4
50.0%	median	-1.6
25.0%	quartile	-4.0
10.0%		-16.1
2.5%		-17.3
0.5%		-17.3
0.0%	minimum	-17.3

Summary Statistics

Mean	-1.2
Std Dev	7.4
Std Err Mean	2.3
Upper 95% Mean	4.0
Lower 95% Mean	-6.5
N	10.0

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

Bias



Quantiles

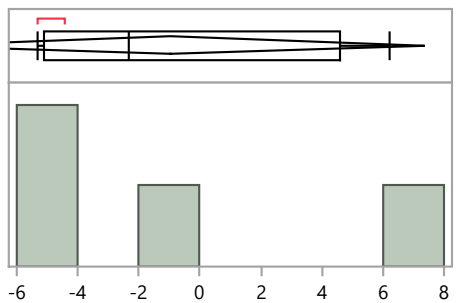
100.0%	maximum	-10.6
99.5%		-10.6
97.5%		-10.6
90.0%		-10.6
75.0%	quartile	-10.6
50.0%	median	-12.7
25.0%	quartile	-14.7
10.0%		-14.7
2.5%		-14.7
0.5%		-14.7
0.0%	minimum	-14.7

Summary Statistics

Mean	-12.7
Std Dev	2.9
Std Err Mean	2.0
Upper 95% Mean	13.4
Lower 95% Mean	-38.7
N	2.0

Distributions Analyte_Method=Plutonium-239/240 Other

Bias



Quantiles

100.0%	maximum	6.2
99.5%		6.2
97.5%		6.2
90.0%		6.2
75.0%	quartile	4.6
50.0%	median	-2.4
25.0%	quartile	-5.1
10.0%		-5.3
2.5%		-5.3
0.5%		-5.3
0.0%	minimum	-5.3

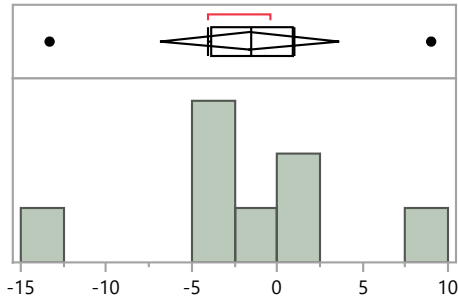
Summary Statistics

Mean	-1.0
Std Dev	5.2
Std Err Mean	2.6
Upper 95% Mean	7.4
Lower 95% Mean	-9.3
N	4.0

MaS Distribution by Prep Method

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

Bias



Quantiles

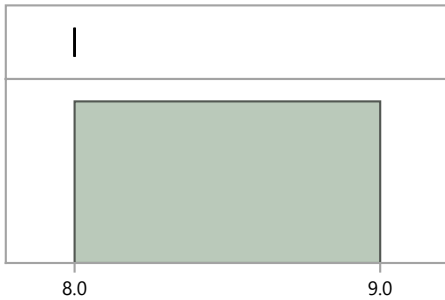
100.0%	maximum	9.0
99.5%		9.0
97.5%		9.0
90.0%		9.0
75.0%	quartile	1.0
50.0%	median	-1.6
25.0%	quartile	-3.9
10.0%		-13.3
2.5%		-13.3
0.5%		-13.3
0.0%	minimum	-13.3

Summary Statistics

Mean	-1.6
Std Dev	6.3
Std Err Mean	2.2
Upper 95% Mean	3.6
Lower 95% Mean	-6.9
N	8.0

Distributions Analyte_Method=Potassium-40 Acid dissolution with hydrofluoric acid

Bias



Quantiles

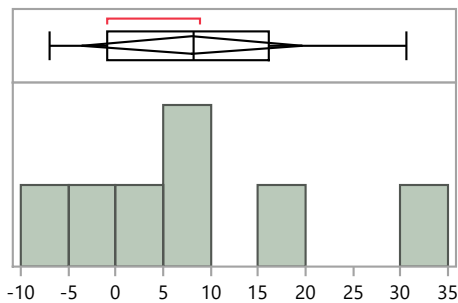
100.0%	maximum	8.0
99.5%		8.0
97.5%		8.0
90.0%		8.0
75.0%	quartile	8.0
50.0%	median	8.0
25.0%	quartile	8.0
10.0%		8.0
2.5%		8.0
0.5%		8.0
0.0%	minimum	8.0

Summary Statistics

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

Distributions Analyte_Method=Potassium-40 EPA 901.1, Gamma Emitting, 600/4-80-032

Bias



Quantiles

100.0%	maximum	30.6
99.5%		30.6
97.5%		30.6
90.0%		30.6
75.0%	quartile	16.1
50.0%	median	8.2
25.0%	quartile	-0.9
10.0%		-7.0
2.5%		-7.0
0.5%		-7.0
0.0%	minimum	-7.0

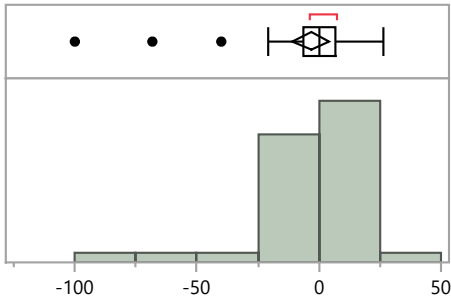
Summary Statistics

Mean	8.0
Std Dev	12.6
Std Err Mean	4.7
Upper 95% Mean	19.6
Lower 95% Mean	-3.6
N	7.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Potassium-40 No preparation - analyzed as received

Bias



Quantiles

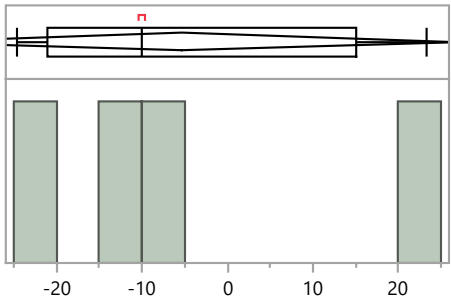
100.0%	maximum	26.6
99.5%		26.6
97.5%		26.6
90.0%		13.8
75.0%	quartile	7.0
50.0%	median	0.2
25.0%	quartile	-6.5
10.0%		-22.6
2.5%		-99.9
0.5%		-99.9
0.0%	minimum	-99.9

Summary Statistics

Mean	-3.3
Std Dev	22.6
Std Err Mean	3.7
Upper 95% Mean	4.1
Lower 95% Mean	-10.8
N	38.0

Distributions Analyte_Method=Strontium-90 Acid dissolution with hydrofluoric acid

Bias



Quantiles

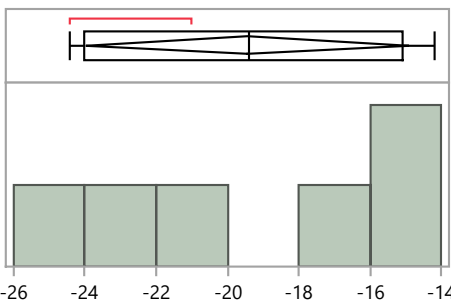
100.0%	maximum	23.2
99.5%		23.2
97.5%		23.2
90.0%		23.2
75.0%	quartile	15.0
50.0%	median	-10.0
25.0%	quartile	-21.0
10.0%		-24.6
2.5%		-24.6
0.5%		-24.6
0.0%	minimum	-24.6

Summary Statistics

Mean	-5.3
Std Dev	20.2
Std Err Mean	10.1
Upper 95% Mean	26.9
Lower 95% Mean	-37.5
N	4.0

Distributions Analyte_Method=Strontium-90 Acid leaching without hydrofluoric acid

Bias



Quantiles

100.0%	maximum	-14.2
99.5%		-14.2
97.5%		-14.2
90.0%		-14.2
75.0%	quartile	-15.1
50.0%	median	-19.4
25.0%	quartile	-24.0
10.0%		-24.4
2.5%		-24.4
0.5%		-24.4
0.0%	minimum	-24.4

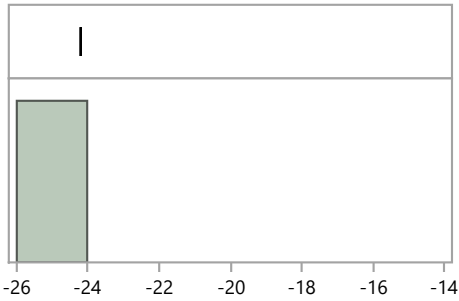
Summary Statistics

Mean	-19.5
Std Dev	4.3
Std Err Mean	1.8
Upper 95% Mean	-14.9
Lower 95% Mean	-24.0
N	6.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Strontium-90 EPA 905, Radioactive Strontium, 600/4-80-032

Bias



Quantiles

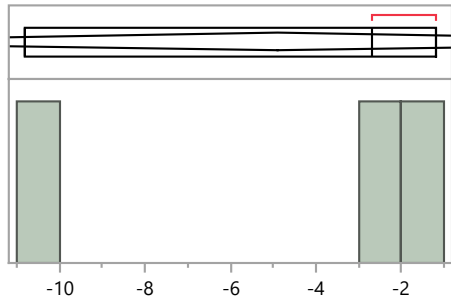
100.0%	maximum	-24.2
99.5%		-24.2
97.5%		-24.2
90.0%		-24.2
75.0%	quartile	-24.2
50.0%	median	-24.2
25.0%	quartile	-24.2
10.0%		-24.2
2.5%		-24.2
0.5%		-24.2
0.0%	minimum	-24.2

Summary Statistics

Mean	-24.2
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Strontium-90 Other

Bias



Quantiles

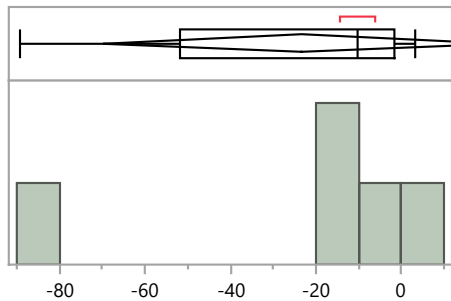
100.0%	maximum	-1.2
99.5%		-1.2
97.5%		-1.2
90.0%		-1.2
75.0%	quartile	-1.2
50.0%	median	-2.7
25.0%	quartile	-10.8
10.0%		-10.8
2.5%		-10.8
0.5%		-10.8
0.0%	minimum	-10.8

Summary Statistics

Mean	-4.9
Std Dev	5.2
Std Err Mean	3.0
Upper 95% Mean	7.9
Lower 95% Mean	-17.7
N	3.0

Distributions Analyte_Method=Strontium-90 Total dissolution by fusion

Bias



Quantiles

100.0%	maximum	3.1
99.5%		3.1
97.5%		3.1
90.0%		3.1
75.0%	quartile	-1.5
50.0%	median	-10.4
25.0%	quartile	-51.8
10.0%		-89.2
2.5%		-89.2
0.5%		-89.2
0.0%	minimum	-89.2

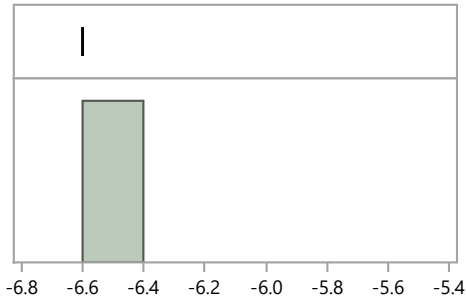
Summary Statistics

Mean	-23.4
Std Dev	37.4
Std Err Mean	16.7
Upper 95% Mean	23.0
Lower 95% Mean	-69.8
N	5.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Technetium-99 Acid dissolution with hydrofluoric acid

Bias



Quantiles

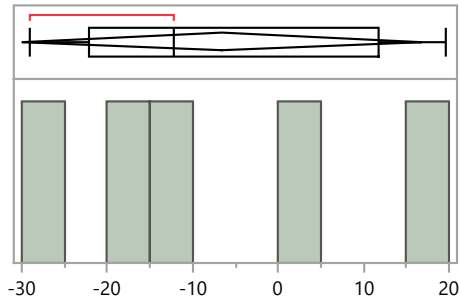
100.0%	maximum	-6.6
99.5%		-6.6
97.5%		-6.6
90.0%		-6.6
75.0%	quartile	-6.6
50.0%	median	-6.6
25.0%	quartile	-6.6
10.0%		-6.6
2.5%		-6.6
0.5%		-6.6
0.0%	minimum	-6.6

Summary Statistics

Mean	-6.6
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

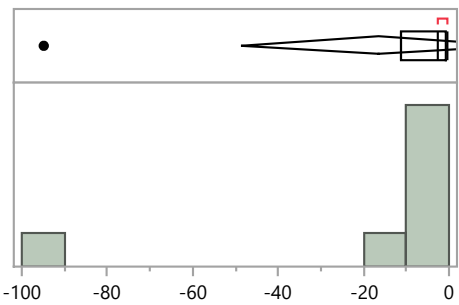
100.0%	maximum	19.6
99.5%		19.6
97.5%		19.6
90.0%		19.6
75.0%	quartile	11.8
50.0%	median	-12.2
25.0%	quartile	-22.2
10.0%		-29.1
2.5%		-29.1
0.5%		-29.1
0.0%	minimum	-29.1

Summary Statistics

Mean	-6.6
Std Dev	18.8
Std Err Mean	8.4
Upper 95% Mean	16.7
Lower 95% Mean	-29.9
N	5.0

Distributions Analyte_Method=Technetium-99 Other

Bias



Quantiles

100.0%	maximum	-0.6
99.5%		-0.6
97.5%		-0.6
90.0%		-0.6
75.0%	quartile	-0.7
50.0%	median	-2.5
25.0%	quartile	-11.2
10.0%		-94.8
2.5%		-94.8
0.5%		-94.8
0.0%	minimum	-94.8

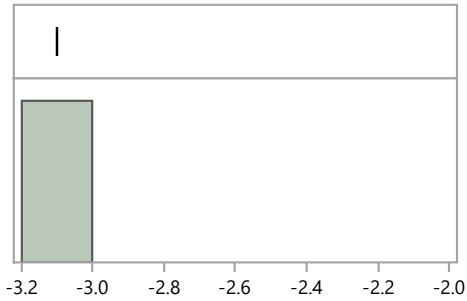
Summary Statistics

Mean	-16.5
Std Dev	34.7
Std Err Mean	13.1
Upper 95% Mean	15.6
Lower 95% Mean	-48.6
N	7.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Technetium-99 Total dissolution by fusion

Bias



Quantiles

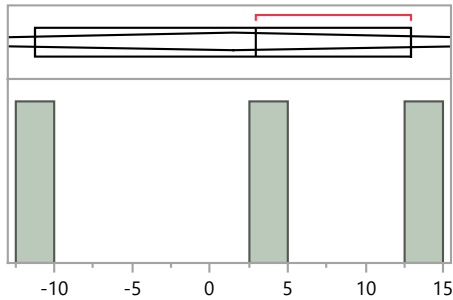
100.0%	maximum	-3.1
99.5%		-3.1
97.5%		-3.1
90.0%		-3.1
75.0%	quartile	-3.1
50.0%	median	-3.1
25.0%	quartile	-3.1
10.0%		-3.1
2.5%		-3.1
0.5%		-3.1
0.0%	minimum	-3.1

Summary Statistics

Mean	-3.1
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Thorium-228 Acid dissolution with hydrofluoric acid

Bias



Quantiles

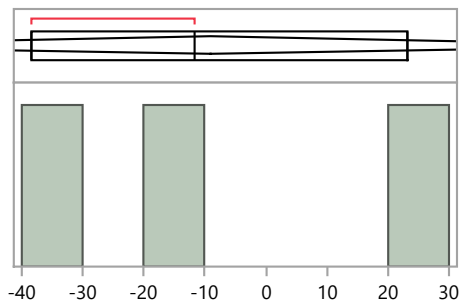
100.0%	maximum	12.9
99.5%		12.9
97.5%		12.9
90.0%		12.9
75.0%	quartile	12.9
50.0%	median	2.9
25.0%	quartile	-11.2
10.0%		-11.2
2.5%		-11.2
0.5%		-11.2
0.0%	minimum	-11.2

Summary Statistics

Mean	1.5
Std Dev	12.1
Std Err Mean	7.0
Upper 95% Mean	31.6
Lower 95% Mean	-28.5
N	3.0

Distributions Analyte_Method=Thorium-228 Other

Bias



Quantiles

100.0%	maximum	23.1
99.5%		23.1
97.5%		23.1
90.0%		23.1
75.0%	quartile	23.1
50.0%	median	-11.6
25.0%	quartile	-38.4
10.0%		-38.4
2.5%		-38.4
0.5%		-38.4
0.0%	minimum	-38.4

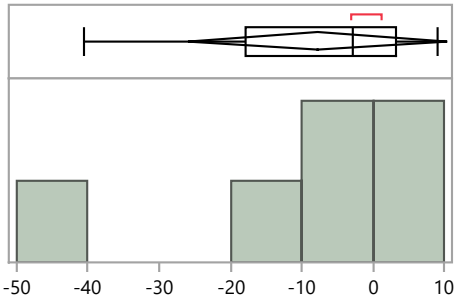
Summary Statistics

Mean	-9.0
Std Dev	30.8
Std Err Mean	17.8
Upper 95% Mean	67.6
Lower 95% Mean	-85.6
N	3.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Thorium-228 Total dissolution by fusion

Bias



Quantiles

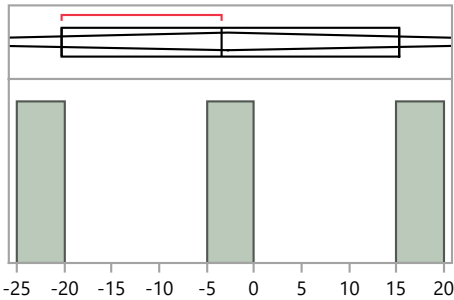
100.0%	maximum	9.0
99.5%		9.0
97.5%		9.0
90.0%		9.0
75.0%	quartile	3.2
50.0%	median	-2.9
25.0%	quartile	-17.8
10.0%		-40.6
2.5%		-40.6
0.5%		-40.6
0.0%	minimum	-40.6

Summary Statistics

Mean	-7.7
Std Dev	17.3
Std Err Mean	7.1
Upper 95% Mean	10.4
Lower 95% Mean	-25.9
N	6.0

Distributions Analyte_Method=Thorium-230 Acid dissolution with hydrofluoric acid

Bias



Quantiles

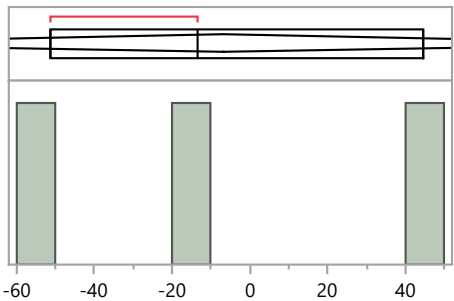
100.0%	maximum	15.3
99.5%		15.3
97.5%		15.3
90.0%		15.3
75.0%	quartile	15.3
50.0%	median	-3.5
25.0%	quartile	-20.2
10.0%		-20.2
2.5%		-20.2
0.5%		-20.2
0.0%	minimum	-20.2

Summary Statistics

Mean	-2.8
Std Dev	17.8
Std Err Mean	10.3
Upper 95% Mean	41.3
Lower 95% Mean	-46.9
N	3.0

Distributions Analyte_Method=Thorium-230 Other

Bias



Quantiles

100.0%	maximum	44.7
99.5%		44.7
97.5%		44.7
90.0%		44.7
75.0%	quartile	44.7
50.0%	median	-13.5
25.0%	quartile	-51.4
10.0%		-51.4
2.5%		-51.4
0.5%		-51.4
0.0%	minimum	-51.4

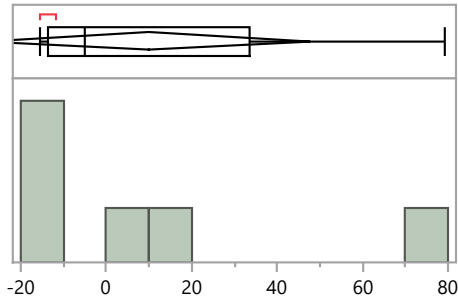
Summary Statistics

Mean	-6.7
Std Dev	48.4
Std Err Mean	27.9
Upper 95% Mean	113.5
Lower 95% Mean	-127.0
N	3.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Thorium-230 Total dissolution by fusion

Bias



Quantiles

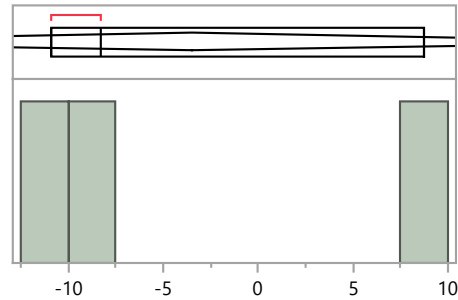
100.0%	maximum	79.3
99.5%		79.3
97.5%		79.3
90.0%		79.3
75.0%	quartile	33.4
50.0%	median	-5.0
25.0%	quartile	-13.5
10.0%		-15.6
2.5%		-15.6
0.5%		-15.6
0.0%	minimum	-15.6

Summary Statistics

Mean	9.8
Std Dev	36.3
Std Err Mean	14.8
Upper 95% Mean	47.9
Lower 95% Mean	-28.2
N	6.0

Distributions Analyte_Method=Thorium-232 Acid dissolution with hydrofluoric acid

Bias



Quantiles

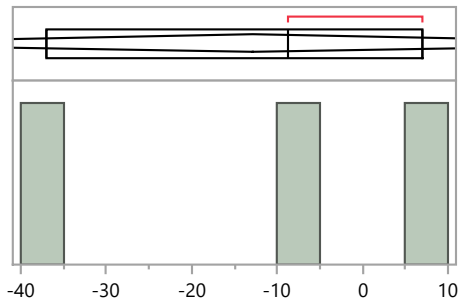
100.0%	maximum	8.7
99.5%		8.7
97.5%		8.7
90.0%		8.7
75.0%	quartile	8.7
50.0%	median	-8.3
25.0%	quartile	-10.9
10.0%		-10.9
2.5%		-10.9
0.5%		-10.9
0.0%	minimum	-10.9

Summary Statistics

Mean	-3.5
Std Dev	10.6
Std Err Mean	6.1
Upper 95% Mean	22.9
Lower 95% Mean	-29.9
N	3.0

Distributions Analyte_Method=Thorium-232 Other

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	-8.7
25.0%	quartile	-37.0
10.0%		-37.0
2.5%		-37.0
0.5%		-37.0
0.0%	minimum	-37.0

Summary Statistics

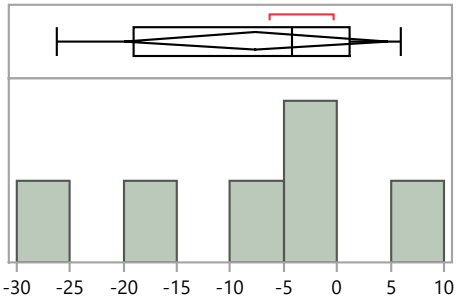
Mean	-12.9
Std Dev	22.3
Std Err Mean	12.9
Upper 95% Mean	42.5
Lower 95% Mean	-68.3
N	3.0

MaS47 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Thorium-232 Total dissolution by fusion

Bias



Quantiles

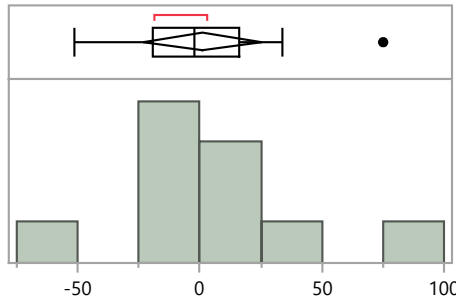
100.0%	maximum	6.0
99.5%		6.0
97.5%		6.0
90.0%		6.0
75.0%	quartile	1.2
50.0%	median	-4.3
25.0%	quartile	-19.0
10.0%		-26.2
2.5%		-26.2
0.5%		-26.2
0.0%	minimum	-26.2

Summary Statistics

Mean	-7.6
Std Dev	11.8
Std Err Mean	4.8
Upper 95% Mean	4.8
Lower 95% Mean	-20.0
N	6.0

Distributions Analyte_Method=Uranium-234 Acid dissolution with hydrofluoric acid

Bias



Quantiles

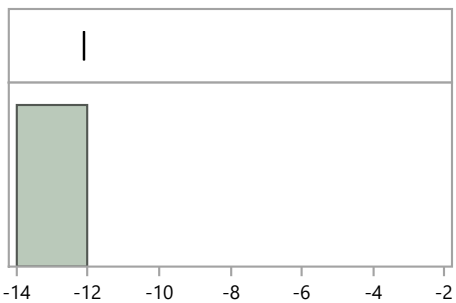
100.0%	maximum	75.0
99.5%		75.0
97.5%		75.0
90.0%		70.9
75.0%	quartile	15.9
50.0%	median	-2.5
25.0%	quartile	-19.1
10.0%		-48.0
2.5%		-51.0
0.5%		-51.0
0.0%	minimum	-51.0

Summary Statistics

Mean	1.0
Std Dev	34.3
Std Err Mean	10.8
Upper 95% Mean	25.6
Lower 95% Mean	-23.5
N	10.0

Distributions Analyte_Method=Uranium-234 EPA 908, Uranium-Radiochemical Method, 600/4/80-032

Bias



Quantiles

100.0%	maximum	-12.1
99.5%		-12.1
97.5%		-12.1
90.0%		-12.1
75.0%	quartile	-12.1
50.0%	median	-12.1
25.0%	quartile	-12.1
10.0%		-12.1
2.5%		-12.1
0.5%		-12.1
0.0%	minimum	-12.1

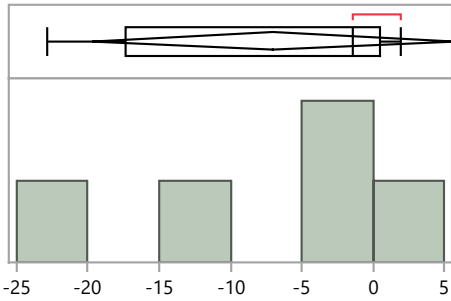
Summary Statistics

Mean	-12.1
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Uranium-234 Other

Bias



Quantiles

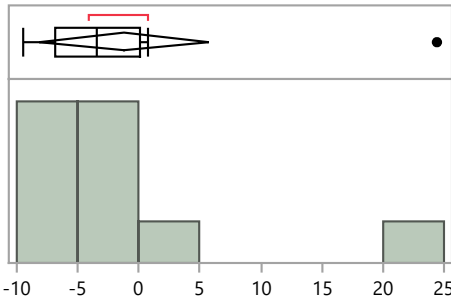
100.0%	maximum	2.0
99.5%		2.0
97.5%		2.0
90.0%		2.0
75.0%	quartile	0.5
50.0%	median	-1.4
25.0%	quartile	-17.3
10.0%		-22.8
2.5%		-22.8
0.5%		-22.8
0.0%	minimum	-22.8

Summary Statistics

Mean	-7.0
Std Dev	10.3
Std Err Mean	4.6
Upper 95% Mean	5.7
Lower 95% Mean	-19.7
N	5.0

Distributions Analyte_Method=Uranium-234 Total dissolution by fusion

Bias



Quantiles

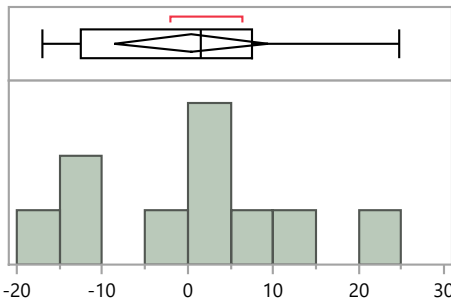
100.0%	maximum	24.4
99.5%		24.4
97.5%		24.4
90.0%		22.0
75.0%	quartile	0.1
50.0%	median	-3.4
25.0%	quartile	-6.9
10.0%		-9.3
2.5%		-9.4
0.5%		-9.4
0.0%	minimum	-9.4

Summary Statistics

Mean	-1.2
Std Dev	9.7
Std Err Mean	3.1
Upper 95% Mean	5.7
Lower 95% Mean	-8.1
N	10.0

Distributions Analyte_Method=Uranium-238 Acid dissolution with hydrofluoric acid

Bias



Quantiles

100.0%	maximum	24.8
99.5%		24.8
97.5%		24.8
90.0%		23.4
75.0%	quartile	7.5
50.0%	median	1.6
25.0%	quartile	-12.4
10.0%		-16.6
2.5%		-17.0
0.5%		-17.0
0.0%	minimum	-17.0

Summary Statistics

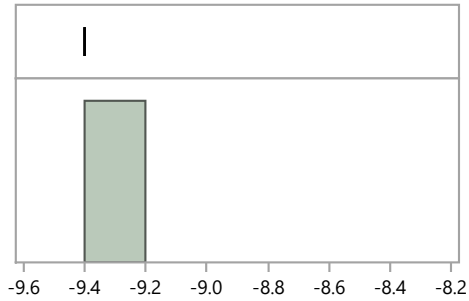
Mean	0.4
Std Dev	12.5
Std Err Mean	4.0
Upper 95% Mean	9.4
Lower 95% Mean	-8.5
N	10.0

MaS47 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Uranium-238 EPA 908, Uranium-Radiochemical Method, 600/4/80-032

Bias



Quantiles

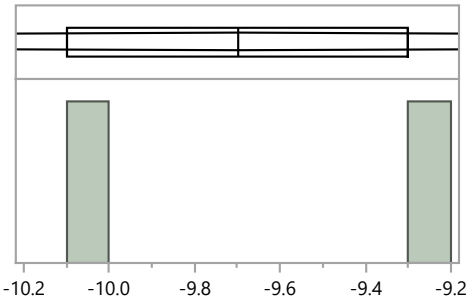
100.0%	maximum	-9.4
99.5%		-9.4
97.5%		-9.4
90.0%		-9.4
75.0%	quartile	-9.4
50.0%	median	-9.4
25.0%	quartile	-9.4
10.0%		-9.4
2.5%		-9.4
0.5%		-9.4
0.0%	minimum	-9.4

Summary Statistics

Mean	-9.4
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Uranium-238 No preparation - analyzed as received

Bias



Quantiles

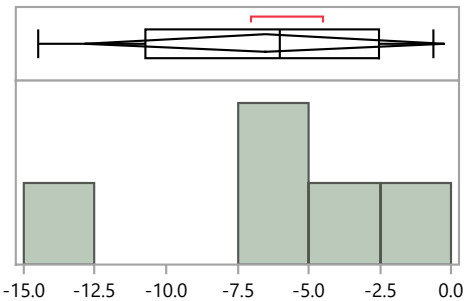
100.0%	maximum	-9.3
99.5%		-9.3
97.5%		-9.3
90.0%		-9.3
75.0%	quartile	-9.3
50.0%	median	-9.7
25.0%	quartile	-10.1
10.0%		-10.1
2.5%		-10.1
0.5%		-10.1
0.0%	minimum	-10.1

Summary Statistics

Mean	-9.7
Std Dev	0.6
Std Err Mean	0.4
Upper 95% Mean	-4.6
Lower 95% Mean	-14.8
N	2.0

Distributions Analyte_Method=Uranium-238 Other

Bias



Quantiles

100.0%	maximum	-0.6
99.5%		-0.6
97.5%		-0.6
90.0%		-0.6
75.0%	quartile	-2.6
50.0%	median	-6.0
25.0%	quartile	-10.8
10.0%		-14.5
2.5%		-14.5
0.5%		-14.5
0.0%	minimum	-14.5

Summary Statistics

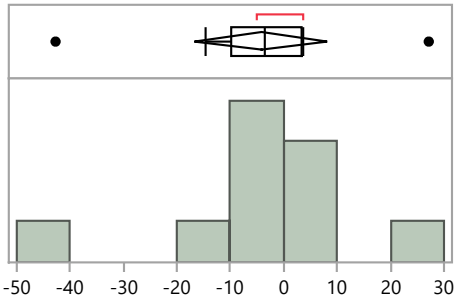
Mean	-6.5
Std Dev	5.1
Std Err Mean	2.3
Upper 95% Mean	-0.2
Lower 95% Mean	-12.8
N	5.0

MaS47 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Uranium-238 Total dissolution by fusion

Bias



Quantiles

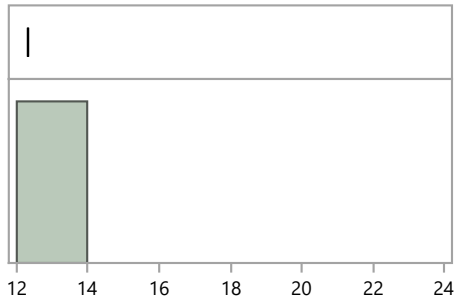
100.0%	maximum	27.1
99.5%		27.1
97.5%		27.1
90.0%		24.7
75.0%	quartile	3.2
50.0%	median	-3.5
25.0%	quartile	-9.8
10.0%		-39.9
2.5%		-42.7
0.5%		-42.7
0.0%	minimum	-42.7

Summary Statistics

Mean	-4.3
Std Dev	17.5
Std Err Mean	5.5
Upper 95% Mean	8.2
Lower 95% Mean	-16.8
N	10.0

Distributions Analyte_Method=Zinc-65 Acid dissolution with hydrofluoric acid

Bias



Quantiles

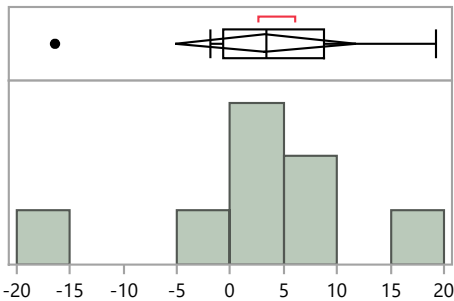
100.0%	maximum	12.3
99.5%		12.3
97.5%		12.3
90.0%		12.3
75.0%	quartile	12.3
50.0%	median	12.3
25.0%	quartile	12.3
10.0%		12.3
2.5%		12.3
0.5%		12.3
0.0%	minimum	12.3

Summary Statistics

Mean	12.3
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Zinc-65 EPA 901.1, Gamma Emitting, 600/4-80-032

Bias



Quantiles

100.0%	maximum	19.3
99.5%		19.3
97.5%		19.3
90.0%		19.3
75.0%	quartile	8.7
50.0%	median	3.4
25.0%	quartile	-0.7
10.0%		-16.4
2.5%		-16.4
0.5%		-16.4
0.0%	minimum	-16.4

Summary Statistics

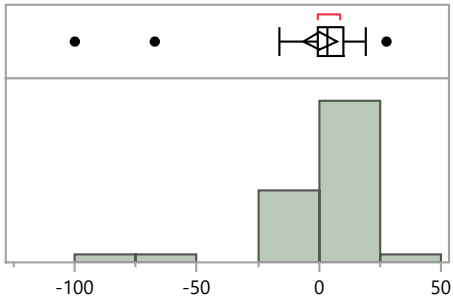
Mean	3.3
Std Dev	10.1
Std Err Mean	3.6
Upper 95% Mean	11.7
Lower 95% Mean	-5.2
N	8.0

MaS47 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Zinc-65 No preparation - analyzed as received

Bias



Quantiles

100.0%	maximum	27.6
99.5%		27.6
97.5%		27.6
90.0%		14.0
75.0%	quartile	10.2
50.0%	median	3.5
25.0%	quartile	-0.5
10.0%		-6.2
2.5%		-99.9
0.5%		-99.9
0.0%	minimum	-99.9

Summary Statistics

Mean	0.4
Std Dev	21.7
Std Err Mean	3.5
Upper 95% Mean	7.4
Lower 95% Mean	-6.6
N	39.0