

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.

MaS44 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
AMEC99	Jacobs Clean Energy Limited - Analytical Services	MaS
ANTE01	ALS Environmental - Fort Collins, CO	MaS
ARGO01	Idaho National Laboratory	MaS
ASUK99	AWE (Aldermaston)	MaS
AY1201	Consolidated Nuclear Security, LLC, ACO Laboratory	MaS
BY1201	Consolidated Nuclear Security, LLC, ACO, Production Laboratory	MaS
CESL01	Lawrence Livermore National Laboratory - EMRL	MaS
CMRC01	Carlsbad Environmental Monitoring and Research Center	MaS
COPS99	Health Canada Radiation Protection Bureau	MaS
CORE02	Eurofins TestAmerica Denver	MaS
EMAX01	EMAX Laboratories, Inc	MaS
ERCL01	Washington State Public Health Laboratories	MaS
ERHD99	Radiation Protection Bureau Health Canada RSD NMS	MaS
ETTP01	MCLinc	MaS
EULC01	EnergySolutions, LLC	MaS
FDHE01	Florida Dept of Health Environmental Laboratory	MaS
FDOH01	Florida Dept. of Health, Mobile Environmental Radiological Lab	MaS
FSCL01	Forensic Science Center Lawrence Livermore Laboratory	MaS
GENE01	GEL Laboratories, LLC	MaS
GPCL01	Georgia Power Company Environmental Laboratory	MaS
HECR01	SC Dept. Health and Environmental Control Radiological Laboratory	MaS
HPAC99	PHE, CRCE Glasgow	MaS
HPAL01	Los Alamos National Laboratory	MaS
IAEA20	IAEA 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
JLNN01	Jefferson Laboratory	MaS
LOCK03	Advanced Test Reactor (ATR) Complex Radioanalytical 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
NARL02	USEPA - NAREL - MERL	MaS
NESI01	BWXT-Radioisotope & Analytical Chemistry Laboratory	MaS
NJDH01	New Jersey Dept. of Health, PHEL, ECLS	MaS
NOCS99	National Oceanography Centre, Southampton	MaS
ODHL01	Ohio Department of Health Laboratory	MaS
ORIS01	ORISE/IEAV	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
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 SERVICES OAK RIDGE LABORATORY	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
ARSL01	ARS Aleut Analytical, LLC	MaS
CSSL99	Chemistry Support Services	MaS
DINL99	Departamento Ingeniería Energética	MaS
EFGS01	Eurofins Frontier Global Sciences, LLC.	MaS
LANL01	Los Alamos National Laboratory	MaS
LAWR01	LAWRENCE BERKELEY NATIONAL LABORATORY	MaS
MART01	Fluor B&W Ports Analytical Laboratory	MaS
RPSC01	Radiation Protection Service	MaS

Study Reference Values

MAPEP-21-MaS44

Radiological Reference Date: 02/01/2021

Analyte	Ref Value	Ref Unc	Tot Mtl Ref Val	Tot Mtl Ref Unc
Inorganic Units: (mg/kg)				
Antimony	78	3	88.7	0.9
Arsenic	45.8	0.9	45.8	0.9
Barium	223	4	690	20
Beryllium	60.6	1.2	62.2	1.3
Cadmium	7.05	0.14	7.07	0.14
Chromium	49.9	1.0	72	5
Cobalt	194	4	200	4
Copper	37.7	1.6	47	2
Lead	28.8	0.5	35.5	0.9
Mercury				
Nickel	148	3	167	5
Selenium	16.9	0.3	16.8	0.3
Silver	42.5	0.9	42.5	0.8
Technetium-99	0.00101	0.00003		
Thallium	11.0	0.2	11.2	0.2
Uranium-235	0.0469	0.0010		
Uranium-238	16.7	0.6		
Uranium-Total	16.7	0.6		
Vanadium	279	5	353	6
Zinc	370	11	427	14

Analyte	Ref Value	Ref Unc		
Radiological Units: (Bq/kg)				
Americium-241	88	2		
Cesium-137	1550	30		
Cobalt-57	920	20		
Cobalt-60	1370	30		
Iron-55	910	20		
Nickel-63	689	17		
Plutonium-238	49.1	1.0		
Potassium-40	618	19		
Strontium-90	272	7		
Technetium-99	638	16		
Uranium-234	59	2		
Uranium-238	208	7		
Zinc-65	604	15		

Sample Statistical Summary

MAPEP-21-MaS44

Radiological Reference Date: 02/01/2021

Analyte	T(1)	A(2)	Grand(3) Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
Inorganic							Units: (mg/kg)
Antimony	13	12	74	10	78	3	55 - 101
Arsenic	14	14	40.0	4.5	45.8	0.9	32.1 - 59.5
Barium	13	12	218	16	223	4	156 - 290
Beryllium	14	14	58.8	4.0	60.6	1.2	42.4 - 78.8
Cadmium	14	14	6.73	0.43	7.05	0.14	4.94 - 9.17
Chromium	13	12	48.1	3.6	49.9	1.0	34.9 - 64.9
Cobalt	14	14	190	9	194	4	136 - 252
Copper	14	14	39.5	3.5	37.7	1.6	26.4 - 49.0
Lead	14	14	29.3	2.8	28.8	0.5	20.2 - 37.4
Mercury	10						
Nickel	14	14	146	10	148	3	104 - 192
Selenium	13	11	14.6	1.8	16.9	0.3	11.8 - 22.0
Silver	12	12	39.1	2.5	42.5	0.9	29.8 - 55.3
Technetium-99	3	3			0.00101	0.00003	0.00071 - 0.00131
Thallium	14	13	10.1	0.8	11.0	0.2	7.7 - 14.3
Uranium-235	10	10	0.0465	0.0047	0.0469	0.0010	0.0328 - 0.0610
Uranium-238	11	11	16.8	1.4	16.7	0.6	11.7 - 21.7
Uranium-Total	12	12	16.5	1.6	16.7	0.6	11.7 - 21.7
Vanadium	13	13	273	30	279	5	195 - 363
Zinc	13	13	362	32	370	11	259 - 481

Analyte	T(1)	A(2)	Grand(3) Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
Radiological							Units: (Bq/kg)
Americium-241	38	34	82	8	88	2	62 - 114
Cesium-134	47	43					False Positive Test
Cesium-137	53	53	1626	111	1550	30	1085 - 2015
Cobalt-57	53	52	941	77	920	20	644 - 1196
Cobalt-60	53	52	1384	92	1370	30	959 - 1781
Iron-55	8	5			910	20	637 - 1183
Manganese-54	48	48					False Positive Test
Nickel-63	12	7	677	68	689	17	482 - 896
Plutonium-238	26	25	49.0	4.3	49.1	1.0	34.4 - 63.8
Plutonium-239/240	25	23					False Positive Test
Potassium-40	53	51	641	53	618	19	433 - 803
Strontium-90	21	19	270	24	272	7	190 - 354
Technetium-99	16	14	527	59	638	16	447 - 829
Uranium-234	26	22	55	6	59	2	41 - 77
Uranium-238	29	28	193	19	208	7	146 - 270
Zinc-65	53	52	645	48	604	15	423 - 785

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

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning $20\% < \text{Bias} < 30\%$

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..... $\text{RP} > 30\%$

RP = Relative Precision

Flag Summary Report

MAPEP-21-MaS44

Inorganic				
Analyte	A	W	RW	N
Antimony	10	2		1
Arsenic	12	2		
Barium	12			1
Beryllium	14			
Cadmium	14			
Chromium	12			1
Cobalt	14			
Copper	13	1		
Lead	13	1		
Nickel	14			
Selenium	9	2		2
Silver	12			
Thallium	12	1		1
Uranium-Total	11	1		
Uranium-235	10			
Uranium-238	11			
Vanadium	12	1		
Zinc	12	1		
Technetium-99	1	2		
Radiological				
Analyte	A	W	RW	N
Americium-241	31	3		4
Cesium-134	43			8
Cesium-137	52	1		
Cobalt-57	51	1		1
Cobalt-60	52			1
Iron-55	3	2		3
Manganese-54	48			5
Nickel-63	7			5
Plutonium-238	23	2		1
Plutonium-239/240	23			3
Potassium-40	49	2		2
Strontium-90	19			2
Technetium-99	8	6		2
Uranium-234	20	2		4
Uranium-238	25	3		1
Zinc-65	49	3		1



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

Laboratory Results For MAPEP-21-MaS44

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

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	96.9400	88	A		10.2	62 - 114	15.3550	W
Cesium-134	NR		N	(11)		False Positive Test		
Cesium-137	1901.8000	1550	W		22.7	1085 - 2015	54.3900	A
Cobalt-57	1639.1000	920	N		78.2	644 - 1196	566.1000	N
Cobalt-60	NR	1370	N	(25)		959 - 1781		
Iron-55	NR	910				637 - 1183		
Manganese-54	NR		N	(11)		False Positive Test		
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	NR	618	N	(25)		433 - 803		
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	NR	604	N	(28)		423 - 785		

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

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

Radiation Lab

Abu Dhabi, - -

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88	N	(28)		62 - 114		
Cesium-134	0.01		A			False Positive Test	0.01	
Cesium-137	1536.92	1550	A		-0.8	1085 - 2015	54.27	A
Cobalt-57	890.33	920	A		-3.2	644 - 1196	30.59	A
Cobalt-60	1388.80	1370	A		1.4	959 - 1781	37.81	A
Iron-55	NR	910				637 - 1183		
Manganese-54	0.01		A			False Positive Test	0.01	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	601.28	618	A		-2.7	433 - 803	23.52	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	596.51	604	A		-1.2	423 - 785	20.57	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	84.4	88	A		-4.1	62 - 114	5.2	A
Cesium-134	-0.97		A			False Positive Test	0.60	
Cesium-137	1470	1550	A		-5.2	1085 - 2015	38	A
Cobalt-57	872	920	A		-5.2	644 - 1196	25	A
Cobalt-60	1280	1370	A		-6.6	959 - 1781	24	N
Iron-55	NR	910				637 - 1183		
Manganese-54	0.7		A			False Positive Test	1.2	
Nickel-63	NR	689				482 - 896		
Plutonium-238	44.8	49.1	A		-8.8	34.4 - 63.8	3.2	A
Plutonium-239/240	0.36		A			False Positive Test	0.30	
Potassium-40	555	618	A		-10.2	433 - 803	20	A
Strontium-90	265	272	A		-2.6	190 - 354	12	A
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	53.7	59	A		-9.0	41 - 77	4.0	A
Uranium-238	199.8	208	A		-3.9	146 - 270	9.9	A
Zinc-65	570	604	A		-5.6	423 - 785	12	A

Radiological Reference Date: February 1, 2021

Results Flags:

A = Result acceptable Bias $\leq 20\%$

W = Result acceptable with warning $20\% < \text{Bias} < 30\%$

N = Result not acceptable Bias $> 30\%$

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP $< 2\%$

ACCEPTABLE..... $2\% \leq \text{RP} \leq 15\%$

ACCEPTABLE WITH WARNING..... $15\% < \text{RP} \leq 30\%$

NOT ACCEPTABLE.....RP $> 30\%$

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(AMEC99) Jacobs Clean Energy Limited - Analytical Services

612 Faraday Street

Birchwood Park, Warrington WA3 6GN

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	31.9	88	N		-63.8	62 - 114	1.8	A
Cesium-134	1.68		A			False Positive Test	0.57	
Cesium-137	1532	1550	A		-1.2	1085 - 2015	37	A
Cobalt-57	894	920	A		-2.8	644 - 1196	25	A
Cobalt-60	1346	1370	A		-1.8	959 - 1781	30	A
Iron-55	1110	910	W		22.0	637 - 1183	110	A
Manganese-54	4.0		A			False Positive Test	1.6	
Nickel-63	470	689	N		-31.8	482 - 896	34	A
Plutonium-238	37.5	49.1	W		-23.6	34.4 - 63.8	2.3	A
Plutonium-239/240	0.088		A			False Positive Test	0.089	
Potassium-40	590	618	A		-4.5	433 - 803	17	A
Strontium-90	105.9	272	N		-61.1	190 - 354	7.6	A
Technetium-99	523	638	A		-18.0	447 - 829	61	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	36.1	59	N		-38.8	41 - 77	1.3	A
Uranium-238	129.9	208	N		-37.5	146 - 270	3.7	A
Zinc-65	611	604	A		1.2	423 - 785	15	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (ANTE01) ALS Environmental - Fort Collins, CO
 225 Commerce Drive
 Fort Collins, CO 80524-1416

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	82.7	78	A		6.0	55 - 101	4.91238	A
Arsenic	38.2	45.8	A		-16.6	32.1 - 59.5	2.3875	A
Barium	222	223	A		-0.4	156 - 290	9.8568	A
Beryllium	60.3	60.6	A		-0.5	42.4 - 78.8	3.28635	A
Cadmium	6.79	7.05	A		-3.7	4.94 - 9.17	0.585298	A
Chromium	47.7	49.9	A		-4.4	34.9 - 64.9	2.31345	A
Cobalt	198	194	A		2.1	136 - 252	10.1178	A
Copper	39.1	37.7	A		3.7	26.4 - 49.0	1.85725	A
Lead	30.3	28.8	A		5.2	20.2 - 37.4	1.212	A
Mercury	1.2			(6)			0.09252	A
Nickel	145	148	A		-2.0	104 - 192	9.744	A
Selenium	13.9	16.9	A		-17.8	11.8 - 22.0	0.93825	A
Silver	40.8	42.5	A		-4.0	29.8 - 55.3	9.19224	W
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	3	11.0	N		-72.7	7.7 - 14.3	3	N
Uranium-235	0.0523	0.0469	A		11.5	0.0328 - 0.0610	0.004832	A
Uranium-238	18.7	16.7	A		12.0	11.7 - 21.7	1.72788	A
Uranium-Total	18.7	16.7	A		12.0	11.7 - 21.7	1.3277	A
Vanadium	258	279	A		-7.5	195 - 363	11.5326	A
Zinc	371	370	A		0.3	259 - 481	16.1756	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	75.1	88	A		-14.7	62 - 114	6.2	A
Cesium-134	3.80		A			False Positive Test	3.80	
Cesium-137	1790	1550	A		15.5	1085 - 2015	105	A
Cobalt-57	1030	920	A		12.0	644 - 1196	61	A
Cobalt-60	1480	1370	A		8.0	959 - 1781	87	A
Iron-55	1310	910	N		44.0	637 - 1183	155	A
Manganese-54	5.20		A			False Positive Test	5.20	
Nickel-63	672	689	A		-2.5	482 - 896	91	A
Plutonium-238	52.3	49.1	A		6.5	34.4 - 63.8	4.9	A
Plutonium-239/240	1.28		A			False Positive Test	1.28	
Potassium-40	679	618	A		9.9	433 - 803	44	A
Strontium-90	258	272	A		-5.1	190 - 354	31	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	530	638	A		-16.9	447 - 829	43	A
Uranium-234	59.0	59	A		0.0	41 - 77	4.9	A
Uranium-238	203	208	A		-2.4	146 - 270	16	A
Zinc-65	718	604	A		18.9	423 - 785	43	A

Radiological Reference Date: February 1, 2021

Results Flags:

A = Result acceptable Bias $\leq 20\%$

W = Result acceptable with warning $20\% < \text{Bias} < 30\%$

N = Result not acceptable Bias $> 30\%$

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP $< 2\%$

ACCEPTABLE..... $2\% \leq \text{RP} \leq 15\%$

ACCEPTABLE WITH WARNING..... $15\% < \text{RP} \leq 30\%$

NOT ACCEPTABLE.....RP $> 30\%$

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(ARGO01) Idaho National Laboratory

INL, Materials and Fuels Complex

Idaho Falls, ID 83415

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	4.47		A			False Positive Test	4.47	
Cesium-137	1810	1550	A		16.8	1085 - 2015	54	A
Cobalt-57	1080	920	A		17.4	644 - 1196	32	A
Cobalt-60	1577	1370	A		15.1	959 - 1781	47	A
Iron-55	NR	910				637 - 1183		
Manganese-54	5.74		A			False Positive Test	5.74	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	755	618	W		22.2	433 - 803	35	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	757	604	W		25.3	423 - 785	23	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(ASUK99) AWE (Aldermaston)

A38.1 AWE,

Reading, Berkshire RG7 4PR

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	NR					False Positive Test		
Cesium-137	NR	1550				1085 - 2015		
Cobalt-57	NR	920				644 - 1196		
Cobalt-60	NR	1370				959 - 1781		
Iron-55	NR	910				637 - 1183		
Manganese-54	NR					False Positive Test		
Nickel-63	NR	689				482 - 896		
Plutonium-238	47.87	49.1	A		-2.5	34.4 - 63.8	1.84	A
Plutonium-239/240	0.27			A		False Positive Test	0.15	
Potassium-40	NR	618				433 - 803		
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	48.22	59	A		-18.3	41 - 77	1.92	A
Uranium-238	193.78	208	A		-6.8	146 - 270	3.88	A
Zinc-65	NR	604				423 - 785		

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	68.7	78	A		-11.9	55 - 101	3.63	A
Arsenic	38.9	45.8	A		-15.1	32.1 - 59.5	2.19	A
Barium	231	223	A		3.6	156 - 290	9.40	A
Beryllium	64.7	60.6	A		6.8	42.4 - 78.8	4.03	A
Cadmium	6.53	7.05	A		-7.4	4.94 - 9.17	0.395	A
Chromium	53.7	49.9	A		7.6	34.9 - 64.9	1.692	A
Cobalt	200	194	A		3.1	136 - 252	10.0	A
Copper	42.0	37.7	A		11.4	26.4 - 49.0	1.73	A
Lead	30.7	28.8	A		6.6	20.2 - 37.4	2.00	A
Mercury	0.886			(6)			0.0926	A
Nickel	155	148	A		4.7	104 - 192	7.66	A
Selenium	13.7	16.9	A		-18.9	11.8 - 22.0	0.699	A
Silver	41.7	42.5	A		-1.9	29.8 - 55.3	4.87	A
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	10.9	11.0	A		-0.9	7.7 - 14.3	1.34	A
Uranium-235	0.048	0.0469	A		2.3	0.0328 - 0.0610	0.005	A
Uranium-238	16.38	16.7	A		-1.9	11.7 - 21.7	1.64	A
Uranium-Total	16.43	16.7	A		-1.6	11.7 - 21.7	1.64	A
Vanadium	286	279	A		2.5	195 - 363	10.9	A
Zinc	362	370	A		-2.2	259 - 481	22.7	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	93.1	88	A		5.8	62 - 114	9.1	A
Cesium-134	NR			(6)		False Positive Test		
Cesium-137	1660	1550	A		7.1	1085 - 2015	150	A
Cobalt-57	981	920	A		6.6	644 - 1196	30	A
Cobalt-60	1440	1370	A		5.1	959 - 1781	120	A
Iron-55	NR	910				637 - 1183		
Manganese-54	0.59		A			False Positive Test	5.9	
Nickel-63	NR	689				482 - 896		
Plutonium-238	52.5	49.1	A		6.9	34.4 - 63.8	8.7	W
Plutonium-239/240	0.400		A			False Positive Test	0.5	
Potassium-40	673	618	A		8.9	433 - 803	110	W
Strontium-90	289	272	A		6.3	190 - 354	56	W

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	461	638	W		-27.7	447 - 829	59	A
Uranium-234	66.8	59	A		13.2	41 - 77	11	W
Uranium-238	256	208	W		23.1	146 - 270	33	A
Zinc-65	675	604	A		11.8	423 - 785	100	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	88.3	88	A		0.3	62 - 114	8.5	A
Cesium-134	NR			(6)		False Positive Test		
Cesium-137	1650	1550	A		6.5	1085 - 2015	22.37	N
Cobalt-57	979	920	A		6.4	644 - 1196	9.97	N
Cobalt-60	1523.3	1370	A		11.2	959 - 1781	17.30	N
Iron-55	NR	910				637 - 1183		
Manganese-54	0.9		A			False Positive Test	1.55	
Nickel-63	NR	689				482 - 896		
Plutonium-238	49	49.1	A		-0.2	34.4 - 63.8	3.4	A
Plutonium-239/240	0.363		A			False Positive Test	0.264	
Potassium-40	663.7	618	A		7.4	433 - 803	19.1	A
Strontium-90	247.07	272	A		-9.2	190 - 354	26.36	A
Technetium-99	505	638	W		-20.8	447 - 829	69.82	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	87.6	59	N		48.5	41 - 77	11.35	A
Uranium-238	191	208	A		-8.2	146 - 270	18.4	A
Zinc-65	683.3	604	A		13.1	423 - 785	12.07	N

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	8.13E+01	88	A		-7.6	62 - 114	4.52	A
Cesium-134	-3.97E+00			A		False Positive Test	1.07	
Cesium-137	1.70E+03	1550	A		9.7	1085 - 2015	1.18	A
Cobalt-57	9.81E+02	920	A		6.6	644 - 1196	4.51	A
Cobalt-60	1.51E+03	1370	A		10.2	959 - 1781	5.93	A
Iron-55	NR	910				637 - 1183		
Manganese-54	-1.40E+00			A		False Positive Test	1.59	
Nickel-63	NR	689				482 - 896		
Plutonium-238	4.83E+01	49.1	A		-1.6	34.4 - 63.8	1.45	A
Plutonium-239/240	2.57E-01			A		False Positive Test	2.89E-01	
Potassium-40	6.61E+02	618	A		7.0	433 - 803	7.72	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	6.74E+02	604	A		11.6	423 - 785	4.78	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(CMRC01) Carlsbad Environmental Monitoring and Research Center
1400 University Dr.
Carlsbad, NM 88220

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	8.60E+01	88	A		-2.3	62 - 114	6.33	A
Cesium-134	-9.16E-01			A		False Positive Test	5.61E-01	
Cesium-137	1.79E+03	1550	A		15.5	1085 - 2015	1.91	N
Cobalt-57	9.72E+02	920	A		5.7	644 - 1196	2.05	A
Cobalt-60	1.39E+03	1370	A		1.5	959 - 1781	1.64	N
Iron-55	NR	910				637 - 1183		
Manganese-54	7.09E-01			A		False Positive Test	5.79E-01	
Nickel-63	NR	689				482 - 896		
Plutonium-238	5.11E+01	49.1	A		4.1	34.4 - 63.8	4.37	A
Plutonium-239/240	2.33E-01			A		False Positive Test	8.82E-02	
Potassium-40	6.55E+02	618	A		6.0	433 - 803	1.40	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	5.61E+01	59	A		-4.9	41 - 77	4.59	A
Uranium-238	2.04E+02	208	A		-1.9	146 - 270	1.52	A
Zinc-65	6.81E+02	604	A		12.7	423 - 785	8.55	N

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (COPS99) Health Canada Radiation Protection Bureau
 2720 Riverside drive
 Ottawa, Ontario K1A0K9

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	69.62	88	W		-20.9	62 - 114	7.15	A
Cesium-134	0.5654		A			False Positive Test	0.5876	
Cesium-137	1615	1550	A		4.2	1085 - 2015	96.9	A
Cobalt-57	835.1	920	A		-9.2	644 - 1196	59.1	A
Cobalt-60	1396	1370	A		1.9	959 - 1781	39.4	A
Iron-55	NR	910				637 - 1183		
Manganese-54	0.2698		A			False Positive Test	0.2675	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	613.1	618	A		-0.8	433 - 803	25.2	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	627.9	604	A		4.0	423 - 785	27.01	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(CORE02) Eurofins TestAmerica Denver

4955 Yarrow St

Arvada, CO 80002

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	64.0	78	A		-17.9	55 - 101	2.99	A
Arsenic	33.0	45.8	W		-27.9	32.1 - 59.5	1.54	A
Barium	224	223	A		0.4	156 - 290	12.7	A
Beryllium	56.3	60.6	A		-7.1	42.4 - 78.8	6.19	A
Cadmium	6.63	7.05	A		-6.0	4.94 - 9.17	0.265	A
Chromium	41.4	49.9	A		-17.0	34.9 - 64.9	2.35	A
Cobalt	183	194	A		-5.7	136 - 252	6.71	A
Copper	35.8	37.7	A		-5.0	26.4 - 49.0	2.27	A
Lead	27.5	28.8	A		-4.5	20.2 - 37.4	2.02	A
Mercury	1.05			(6)			0.0420	A
Nickel	134	148	A		-9.5	104 - 192	5.14	A
Selenium	12.5	16.9	W		-26.0	11.8 - 22.0	0.625	A
Silver	40.3	42.5	A		-5.2	29.8 - 55.3	2.02	A
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	10.1	11.0	A		-8.2	7.7 - 14.3	0.673	A
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	15.2	16.7	A		-9.0	11.7 - 21.7	0.963	A
Vanadium	267	279	A		-4.3	195 - 363	11.6	A
Zinc	348	370	A		-5.9	259 - 481	0.878	N

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	NR					False Positive Test		
Cesium-137	NR	1550				1085 - 2015		
Cobalt-57	NR	920				644 - 1196		
Cobalt-60	NR	1370				959 - 1781		
Iron-55	NR	910				637 - 1183		
Manganese-54	NR					False Positive Test		
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	NR	618				433 - 803		
Strontium-90	NR	272				190 - 354		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	638				447 - 829		
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	NR	604				423 - 785		

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(EMAX01) EMAX Laboratories, Inc

1835 W. 205th St.

Torrance, CA 90501

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	60.1	78	W		-22.9	55 - 101	0.172	N
Arsenic	40.4	45.8	A		-11.8	32.1 - 59.5	0.646	N
Barium	198	223	A		-11.2	156 - 290	2.32	N
Beryllium	56.0	60.6	A		-7.6	42.4 - 78.8	0.039	N
Cadmium	6.14	7.05	A		-12.9	4.94 - 9.17	0.017	N
Chromium	47.9	49.9	A		-4.0	34.9 - 64.9	0.037	N
Cobalt	190	194	A		-2.1	136 - 252	0.32	N
Copper	36.7	37.7	A		-2.7	26.4 - 49.0	1.5	A
Lead	29.5	28.8	A		2.4	20.2 - 37.4	0.054	N
Mercury	0.892			(6)			0.0263	A
Nickel	146	148	A		-1.4	104 - 192	0.5	N
Selenium	13.9	16.9	A		-17.8	11.8 - 22.0	0.293	A
Silver	36.4	42.5	A		-14.4	29.8 - 55.3	0.159	N
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	10.2	11.0	A		-7.3	7.7 - 14.3	0.387	A
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	14.1	16.7	A		-15.6	11.7 - 21.7	0.032	N
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	258	279	A		-7.5	195 - 363	0.33	N
Zinc	368	370	A		-0.5	259 - 481	.27	N

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	NR					False Positive Test		
Cesium-137	NR	1550				1085 - 2015		
Cobalt-57	NR	920				644 - 1196		
Cobalt-60	NR	1370				959 - 1781		
Iron-55	NR	910				637 - 1183		
Manganese-54	NR					False Positive Test		
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	NR	618				433 - 803		
Strontium-90	NR	272				190 - 354		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	638				447 - 829		
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	NR	604				423 - 785		

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (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	82.0	88.7	A	(5)	-7.6	62 - 115	6.1	A
Arsenic	37.3	45.8	A	(5)	-18.6	32.1 - 59.5	2.7	A
Barium	NR	223				156 - 290		
Beryllium	50.6	62.2	A	(5)	-18.7	43.5 - 80.9	3.7	A
Cadmium	7.10	7.07	A	(5)	0.4	4.95 - 9.19	0.51	A
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	189	200	A	(5)	-5.5	140 - 260	14	A
Copper	45.0	47	A	(5)	-4.3	32.9 - 61.1	3.3	A
Lead	37.2	35.5	A	(5)	4.8	24.9 - 46.2	2.7	A
Nickel	148	167	A	(5)	-11.4	117 - 217	11	A
Selenium	15.3	16.8	A	(5)	-8.9	11.8 - 21.8	1.1	A
Silver	42.2	42.5	A	(5)	-0.7	29.8 - 55.3	3.1	A
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	11.7	11.2	A	(5)	4.5	7.8 - 14.6	0.9	A
Uranium-235	0.0383	0.0469	A		-18.3	0.0328 - 0.0610	0.0028	A
Uranium-238	18.8	16.7	A		12.6	11.7 - 21.7	1.4	A
Uranium-Total	18.8	16.7	A		12.6	11.7 - 21.7	1.4	A
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	78.1	88	A		-11.3	62 - 114	4.0	A
Cesium-134	0.07		A			False Positive Test	1.04	
Cesium-137	1640	1550	A		5.8	1085 - 2015	20	N
Cobalt-57	940	920	A		2.2	644 - 1196	8	N
Cobalt-60	1410	1370	A		2.9	959 - 1781	10	N
Iron-55	NR	910				637 - 1183		
Manganese-54	-1.3		A			False Positive Test	1.3	
Nickel-63	670	689	A		-2.8	482 - 896	110	W
Plutonium-238	48.5	49.1	A		-1.2	34.4 - 63.8	2.4	A
Plutonium-239/240	1.18		A			False Positive Test	0.43	
Potassium-40	660	618	A		6.8	433 - 803	150	W
Strontium-90	270	272	A		-0.7	190 - 354	8	A
Technetium-99	NR	638	N	(28)		447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	52.2	59	A		-11.5	41 - 77	3.2	A
Uranium-238	213	208	A		2.4	146 - 270	9	A
Zinc-65	622	604	A		3.0	423 - 785	9	N

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(ERHD99) Radiation Protection Bureau Health Canada RSD NMS

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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	83.52	88	A		-5.1	62 - 114	1.68	A
Cesium-134	0.55		A			False Positive Test	0.60	
Cesium-137	1595	1550	A		2.9	1085 - 2015	60	A
Cobalt-57	975	920	A		6.0	644 - 1196	38	A
Cobalt-60	1357	1370	A		-0.9	959 - 1781	55	A
Iron-55	NR	910				637 - 1183		
Manganese-54	0.71		A			False Positive Test	0.90	
Nickel-63	NR	689				482 - 896		
Plutonium-238	46.99	49.1	A		-4.3	34.4 - 63.8	1.08	A
Plutonium-239/240	6.11		N	(1)		False Positive Test	0.40	
Potassium-40	693	618	A		12.1	433 - 803	35	A
Strontium-90	266.06	272	A		-2.2	190 - 354	5.93	A
Technetium-99	NR	638				447 - 829		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	55.02	59	A		-6.7	41 - 77	1.63	A
Uranium-238	187.33	208	A		-9.9	146 - 270	3.02	N
Zinc-65	612	604	A		1.3	423 - 785	24	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	68.06	78	A		-12.7	55 - 101	3.40	A
Arsenic	37.77	45.8	A		-17.5	32.1 - 59.5	3.45	A
Barium	226.4	223	A		1.5	156 - 290	14.0	A
Beryllium	58.52	60.6	A		-3.4	42.4 - 78.8	1.91	A
Cadmium	6.462	7.05	A		-8.3	4.94 - 9.17	0.287	A
Chromium	49.33	49.9	A		-1.1	34.9 - 64.9	1.25	A
Cobalt	179.8	194	A		-7.3	136 - 252	20.3	A
Copper	36.18	37.7	A		-4.0	26.4 - 49.0	2.1	A
Lead	26.02	28.8	A		-9.7	20.2 - 37.4	3.38	A
Mercury	0.9820			(6)			0.0206	A
Nickel	136.5	148	A		-7.8	104 - 192	4.6	A
Selenium	9.993	16.9	N		-40.9	11.8 - 22.0	1.38	A
Silver	37.30	42.5	A		-12.2	29.8 - 55.3	2.10	A
Technetium-99	0.0007504	0.00101	W		-25.7	0.00071 - 0.00131	0.000052	A
Thallium	8.593	11.0	W		-21.9	7.7 - 14.3	0.428	A
Uranium-235	0.0537	0.0469	A		14.5	0.0328 - 0.0610	0.0019	A
Uranium-238	17.580	16.7	A		5.3	11.7 - 21.7	0.615	A
Uranium-Total	17.633	16.7	A		5.6	11.7 - 21.7	0.617	A
Vanadium	260.5	279	A		-6.6	195 - 363	15.8	A
Zinc	284.0	370	W		-23.2	259 - 481	17.9	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	NR					False Positive Test		
Cesium-137	NR	1550				1085 - 2015		
Cobalt-57	NR	920				644 - 1196		
Cobalt-60	NR	1370				959 - 1781		
Iron-55	NR	910				637 - 1183		
Manganese-54	NR					False Positive Test		
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	NR	618				433 - 803		
Strontium-90	NR	272				190 - 354		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	469	638	W		-26.5	447 - 829	35.014	A
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	NR	604				423 - 785		

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(EULC01) EnergySolutions, LLC

I-80, Exit 49

Clive, UT 84029

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	79.4	88	A		-9.8	62 - 114	19.04	W
Cesium-134	-13.265			A		False Positive Test	9.6	
Cesium-137	1545.86	1550	A		-0.3	1085 - 2015	188.63	A
Cobalt-57	913.9	920	A		-0.7	644 - 1196	131.5	A
Cobalt-60	1223.22	1370	A		-10.7	959 - 1781	72.45	A
Iron-55	NR	910				637 - 1183		
Manganese-54	1.534			A		False Positive Test	1.1	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	547.6	618	A		-11.4	433 - 803	75.92	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	563.88	604	A		-6.6	423 - 785	55.43	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
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- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
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- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	75.90	88	A		-13.8	62 - 114	2.92	A
Cesium-134	0.12		A			False Positive Test	4.16	
Cesium-137	1541.25	1550	A		-0.6	1085 - 2015	33.76	A
Cobalt-57	838.63	920	A		-8.8	644 - 1196	18.66	A
Cobalt-60	1320.00	1370	A		-3.7	959 - 1781	20.73	N
Iron-55	NR	910				637 - 1183		
Manganese-54	0.70		A			False Positive Test	5.48	
Nickel-63	NR	689				482 - 896		
Plutonium-238	53.72	49.1	A		9.4	34.4 - 63.8	1.88	A
Plutonium-239/240	0.264		A			False Positive Test	0.095	
Potassium-40	620.25	618	A		0.4	433 - 803	22.81	A
Strontium-90	314.88	272	A		15.8	190 - 354	20.20	A
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	45.46	59	W		-22.9	41 - 77	5.21	A
Uranium-238	177.62	208	A		-14.6	146 - 270	10.34	A
Zinc-65	630.88	604	A		4.5	423 - 785	14.49	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	74.78	88	A		-15.0	62 - 114	2.17	A
Cesium-134	0.67		A			False Positive Test	4.32	
Cesium-137	1474.32	1550	A		-4.9	1085 - 2015	22.78	N
Cobalt-57	792.28	920	A		-13.9	644 - 1196	11.39	N
Cobalt-60	1290.63	1370	A		-5.8	959 - 1781	17.4	N
Iron-55	NR	910				637 - 1183		
Manganese-54	0.07		A			False Positive Test	5.62	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	620.54	618	A		0.4	433 - 803	15.84	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	175.76	208	A		-15.5	146 - 270	5.3	A
Zinc-65	611.81	604	A		1.3	423 - 785	12.54	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(FSCLO1) Forensic Science Center Lawrence Livermore Laboratory

7000 East Ave.

Livermore, CA 94550

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	90.15	78	A		15.6	55 - 101	0.58	N
Arsenic	50.61	45.8	A		10.5	32.1 - 59.5	0.46	N
Barium	741.6	223	N		232.6	156 - 290	7.8	N
Beryllium	60.34	60.6	A		-0.4	42.4 - 78.8	0.86	N
Cadmium	7.086	7.05	A		0.5	4.94 - 9.17	0.024	N
Chromium	86.90	49.9	N		74.1	34.9 - 64.9	0.36	N
Cobalt	198.1	194	A		2.1	136 - 252	1.2	N
Copper	48.03	37.7	W		27.4	26.4 - 49.0	0.51	N
Lead	36.51	28.8	W		26.8	20.2 - 37.4	0.22	N
Nickel	162.15	148	A		9.6	104 - 192	0.88	N
Selenium	28.9	16.9	N		71.0	11.8 - 22.0	2.3	A
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	11.26	11.0	A		2.4	7.7 - 14.3	0.12	N
Uranium-235	0.0467	0.0469	A		-0.4	0.0328 - 0.0610	0.0013	A
Uranium-238	16.18	16.7	A		-3.1	11.7 - 21.7	0.16	N
Uranium-Total	16.23	16.7	A		-2.8	11.7 - 21.7	0.16	N
Vanadium	361.9	279	W		29.7	195 - 363	1.4	N
Zinc	405.7	370	A		9.6	259 - 481	2.4	N

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	94	88	A		6.8	62 - 114	11	A
Cesium-134	0.54		A			False Positive Test	0.35	
Cesium-137	1692	1550	A		9.2	1085 - 2015	86	A
Cobalt-57	1003	920	A		9.0	644 - 1196	51	A
Cobalt-60	1433	1370	A		4.6	959 - 1781	72	A
Iron-55	NR	910				637 - 1183		
Manganese-54	1.47		A			False Positive Test	0.94	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	611	618	A		-1.1	433 - 803	32	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	172	208	A		-17.3	146 - 270	27	W
Zinc-65	665	604	A		10.1	423 - 785	34	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	27.3	78	N		-65.0	55 - 101	1.89	A
Arsenic	45.9	45.8	A		0.2	32.1 - 59.5	3.15	A
Barium	222	223	A		-0.4	156 - 290	14.8	A
Beryllium	58.8	60.6	A		-3.0	42.4 - 78.8	3.92	A
Cadmium	6.61	7.05	A		-6.2	4.94 - 9.17	0.467	A
Chromium	48.4	49.9	A		-3.0	34.9 - 64.9	3.23	A
Cobalt	182	194	A		-6.2	136 - 252	12.2	A
Copper	37.2	37.7	A		-1.3	26.4 - 49.0	2.52	A
Lead	26.0	28.8	A		-9.7	20.2 - 37.4	1.81	A
Mercury	0.992			(6)			0.0662	A
Nickel	137	148	A		-7.4	104 - 192	9.17	A
Selenium	14.8	16.9	A		-12.4	11.8 - 22.0	0.993	A
Silver	39.4	42.5	A		-7.3	29.8 - 55.3	2.63	A
Technetium-99	0.000872	0.00101	A		-13.7	0.00071 - 0.00131	0.000128	A
Thallium	10.5	11.0	A		-4.5	7.7 - 14.3	0.702	A
Uranium-235	0.0473	0.0469	A		0.9	0.0328 - 0.0610	0.000756	N
Uranium-238	17.3	16.7	A		3.6	11.7 - 21.7	0.469	A
Uranium-Total	17.35	16.7	A		3.9	11.7 - 21.7	0.469	A
Vanadium	266	279	A		-4.7	195 - 363	17.8	A
Zinc	350	370	A		-5.4	259 - 481	23.4	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	89.6	88	A		1.8	62 - 114	4.15	A
Cesium-134	2.92		A			False Positive Test	1.37	
Cesium-137	1590	1550	A		2.6	1085 - 2015	68.6	A
Cobalt-57	1010	920	A		9.8	644 - 1196	45.7	A
Cobalt-60	1320	1370	A		-3.7	959 - 1781	58.5	A
Iron-55	1150	910	W		26.4	637 - 1183	131	A
Manganese-54	1.84		A			False Positive Test	1.01	
Nickel-63	597	689	A		-13.4	482 - 896	63.6	A
Plutonium-238	51.2	49.1	A		4.3	34.4 - 63.8	3.14	A
Plutonium-239/240	-0.819		A			False Positive Test	0.63	
Potassium-40	618	618	A		0.0	433 - 803	31.5	A
Strontium-90	313	272	A		15.1	190 - 354	29.4	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	576	638	A		-9.7	447 - 829	51.5	A
Uranium-234	57.1	59	A		-3.2	41 - 77	4.56	A
Uranium-238	194	208	A		-6.7	146 - 270	11.8	A
Zinc-65	627	604	A		3.8	423 - 785	27.3	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	-0.38		A			False Positive Test	3.28	
Cesium-137	1528	1550	A		-1.4	1085 - 2015	109	A
Cobalt-57	821	920	A		-10.8	644 - 1196	71.7	A
Cobalt-60	1263	1370	A		-7.8	959 - 1781	87	A
Iron-55	NR	910				637 - 1183		
Manganese-54	-0.64		A			False Positive Test	4.13	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	637	618	A		3.1	433 - 803	50.7	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	622	604	A		3.0	423 - 785	45.2	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	-0.3925		A			False Positive Test	77.03	
Cesium-137	1535	1550	A		-1.0	1085 - 2015	134.0	A
Cobalt-57	881.8	920	A		-4.2	644 - 1196	47.85	A
Cobalt-60	1320	1370	A		-3.7	959 - 1781	77.99	A
Iron-55	NR	910				637 - 1183		
Manganese-54	1.808		A			False Positive Test	3.099	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	647.5	618	A		4.8	433 - 803	56.91	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	648.2	604	A		7.3	423 - 785	57.69	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(HPAC99) PHE, CRCE 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	78				55 - 101		
Arsenic	40.6	45.8	A		-11.4	32.1 - 59.5	2.2	A
Barium	228	223	A		2.2	156 - 290	23	A
Beryllium	60.4	60.6	A		-0.3	42.4 - 78.8	5.7	A
Cadmium	7.19	7.05	A		2.0	4.94 - 9.17	0.47	A
Chromium	50.8	49.9	A		1.8	34.9 - 64.9	6.4	A
Cobalt	199	194	A		2.6	136 - 252	11	A
Copper	41.3	37.7	A		9.5	26.4 - 49.0	2.5	A
Lead	30.2	28.8	A		4.9	20.2 - 37.4	1.7	A
Nickel	155	148	A		4.7	104 - 192	12	A
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	0.0007401	0.00101	W		-26.7	0.00071 - 0.00131	0.000085	A
Thallium	10.87	11.0	A		-1.2	7.7 - 14.3	0.71	A
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	271	279	A		-2.9	195 - 363	24	A
Zinc	395	370	A		6.8	259 - 481	34	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	67.44	88	W		-23.4	62 - 114	3.35	A
Cesium-134	NR		N	(11)		False Positive Test		
Cesium-137	1578.11	1550	A		1.8	1085 - 2015	73.01	A
Cobalt-57	866.64	920	A		-5.8	644 - 1196	41.79	A
Cobalt-60	1402.15	1370	A		2.3	959 - 1781	63.54	A
Iron-55	NR	910				637 - 1183		
Manganese-54	NR		N	(11)		False Positive Test		
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1	N	(28)		34.4 - 63.8		
Plutonium-239/240	NR		N	(11)		False Positive Test		
Potassium-40	616.13	618	A		-0.3	433 - 803	30.06	A
Strontium-90	NR	272				190 - 354		
Technetium-99	473.33	638	W		-25.8	447 - 829	35.58	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	629.79	604	A		4.3	423 - 785	28.8	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	77.40	88	A		-12.0	62 - 114	4.88	A
Cesium-134	2.20		A			False Positive Test	4.34	
Cesium-137	1493.64	1550	A		-3.6	1085 - 2015	54.06	A
Cobalt-57	872.91	920	A		-5.1	644 - 1196	49.88	A
Cobalt-60	1279.55	1370	A		-6.6	959 - 1781	43.19	A
Iron-55	NR	910				637 - 1183		
Manganese-54	1.11		A			False Positive Test	4.38	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	598.64	618	A		-3.1	433 - 803	39.31	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	-282.44	59	N		-578.7	41 - 77	919.34	N
Uranium-238	184.10	208	A		-11.5	146 - 270	18.16	A
Zinc-65	639.36	604	A		5.9	423 - 785	25.15	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(IAEA20) IAEA 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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	87.9	88	A		-0.1	62 - 114	3.1	A
Cesium-134	NR		N	(11)		False Positive Test		
Cesium-137	1779	1550	A		14.8	1085 - 2015	57	A
Cobalt-57	1000	920	A		8.7	644 - 1196	31	A
Cobalt-60	1503	1370	A		9.7	959 - 1781	51	A
Iron-55	NR	910				637 - 1183		
Manganese-54	1.13		A			False Positive Test	0.39	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	692	618	A		12.0	433 - 803	26	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	192.2	208	A		-7.6	146 - 270	9.7	A
Zinc-65	692	604	A		14.6	423 - 785	23	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	95.2	88	A		8.2	62 - 114	3.5	A
Cesium-134	1.4			A		False Positive Test	1.3	
Cesium-137	1607	1550	A		3.7	1085 - 2015	42	A
Cobalt-57	962	920	A		4.6	644 - 1196	26	A
Cobalt-60	1415	1370	A		3.3	959 - 1781	46	A
Iron-55	NR	910				637 - 1183		
Manganese-54	0.4			A		False Positive Test	1.5	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	613	618	A		-0.8	433 - 803	23	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	646	604	A		7.0	423 - 785	19	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	80.06	88	A		-9.0	62 - 114	5.56	A
Cesium-134	0.2		A			False Positive Test	0.8	
Cesium-137	1560.0	1550	A		0.6	1085 - 2015	23.4	N
Cobalt-57	868.0	920	A		-5.7	644 - 1196	11.5	N
Cobalt-60	1350.0	1370	A		-1.5	959 - 1781	13.3	N
Iron-55	NR	910				637 - 1183		
Manganese-54	-0.1		A			False Positive Test	1.4	
Nickel-63	NR	689				482 - 896		
Plutonium-238	50.74	49.1	A		3.3	34.4 - 63.8	2.42	A
Plutonium-239/240	0.72		A			False Positive Test	0.24	
Potassium-40	584.5	618	A		-5.4	433 - 803	15.1	A
Strontium-90	251.8	272	A		-7.4	190 - 354	17.4	A
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	51.7	59	A		-12.4	41 - 77	2.7	A
Uranium-238	183.1	208	A		-12.0	146 - 270	6.9	A
Zinc-65	606.0	604	A		0.3	423 - 785	9.3	N

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	2.5		A			False Positive Test	2.8	
Cesium-137	1572.8	1550	A		1.5	1085 - 2015	95.5	A
Cobalt-57	882.9	920	A		-4.0	644 - 1196	91.7	A
Cobalt-60	1281.3	1370	A		-6.5	959 - 1781	37.9	A
Iron-55	NR	910				637 - 1183		
Manganese-54	1.7		A			False Positive Test	3.5	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	551.8	618	A		-10.7	433 - 803	41.9	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	604.2	604	A		0.0	423 - 785	32.0	A

Radiological Reference Date: February 1, 2021

Results Flags:

A = Result acceptable Bias $\leq 20\%$

W = Result acceptable with warning $20\% < \text{Bias} < 30\%$

N = Result not acceptable Bias $> 30\%$

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP $< 2\%$

ACCEPTABLE..... $2\% \leq \text{RP} \leq 15\%$

ACCEPTABLE WITH WARNING..... $15\% < \text{RP} \leq 30\%$

NOT ACCEPTABLE.....RP $> 30\%$

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	NR		N	(11)		False Positive Test		
Cesium-137	1682.0	1550	A		8.5	1085 - 2015	75.0	A
Cobalt-57	982.0	920	A		6.7	644 - 1196	47.0	A
Cobalt-60	1464.0	1370	A		6.9	959 - 1781	61.0	A
Iron-55	NR	910				637 - 1183		
Manganese-54	NR		N	(11)		False Positive Test		
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	714.0	618	A		15.5	433 - 803	40.0	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	693.0	604	A		14.7	423 - 785	33.0	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	82.84	88	A		-5.9	62 - 114	2.885	A
Cesium-134	1.411		N	(1)		False Positive Test	0.206	
Cesium-137	1622	1550	A		4.6	1085 - 2015	41.37	A
Cobalt-57	970.8	920	A		5.5	644 - 1196	18.79	N
Cobalt-60	1401	1370	A		2.3	959 - 1781	23.72	N
Iron-55	NR	910				637 - 1183		
Manganese-54	0.2018		A			False Positive Test	0.7953	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	646.8	618	A		4.7	433 - 803	17.86	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	663.6	604	A		9.9	423 - 785	16.01	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	-0.34		A			False Positive Test	1.3	
Cesium-137	1750.00	1550	A		12.9	1085 - 2015	90.00	A
Cobalt-57	1113.33	920	W		21.0	644 - 1196	60.00	A
Cobalt-60	1483.33	1370	A		8.3	959 - 1781	80.00	A
Iron-55	NR	910				637 - 1183		
Manganese-54	0.22		A			False Positive Test	1.20	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	661.0	618	A		7.0	433 - 803	40.0	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	679.33	604	A		12.5	423 - 785	35.33	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (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	NR	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	-1.0		A			False Positive Test	2.3	
Cesium-137	1800	1550	A		16.1	1085 - 2015	25	N
Cobalt-57	1063	920	A		15.5	644 - 1196	12	N
Cobalt-60	1543	1370	A		12.6	959 - 1781	15	N
Iron-55	NR	910				637 - 1183		
Manganese-54	0.6		A			False Positive Test	5.5	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	751	618	W		21.5	433 - 803	24	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	744	604	W		23.2	423 - 785	15	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (MDPH01) MDPH-Radiation Control Program
 MERL-Room 002
 Jamaica Plain, MA 02130-3597

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	83.56	88	A		-5.0	62 - 114	3.51	A
Cesium-134	NR		N	(11)		False Positive Test		
Cesium-137	1616.28	1550	A		4.3	1085 - 2015	40.39	A
Cobalt-57	958.92	920	A		4.2	644 - 1196	36.23	A
Cobalt-60	1410.93	1370	A		3.0	959 - 1781	39.65	A
Iron-55	NR	910				637 - 1183		
Manganese-54	NR		N	(11)		False Positive Test		
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	652.13	618	A		5.5	433 - 803	24.24	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	648.12	604	A		7.3	423 - 785	15.90	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	NR		N	(11)		False Positive Test		
Cesium-137	1451	1550	A		-6.4	1085 - 2015	12	N
Cobalt-57	840	920	A		-8.7	644 - 1196	7	N
Cobalt-60	1209	1370	A		-11.8	959 - 1781	10	N
Iron-55	NR	910				637 - 1183		
Manganese-54	NR		N	(11)		False Positive Test		
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	NR	618	N	(25)		433 - 803		
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	578	604	A		-4.3	423 - 785	20	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	82.0	88	A		-6.8	62 - 114	4.08	A
Cesium-134	0.976		A			False Positive Test	1.03	
Cesium-137	1670	1550	A		7.7	1085 - 2015	91.4	A
Cobalt-57	932	920	A		1.3	644 - 1196	51.9	A
Cobalt-60	1360	1370	A		-0.7	959 - 1781	72.6	A
Iron-55	NR	910				637 - 1183		
Manganese-54	0.684		A			False Positive Test	1.57	
Nickel-63	NR	689				482 - 896		
Plutonium-238	51.4	49.1	A		4.7	34.4 - 63.8	3.04	A
Plutonium-239/240	0.0819		A			False Positive Test	0.119	
Potassium-40	680	618	A		10.0	433 - 803	38.5	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	56.1	59	A		-4.9	41 - 77	3.32	A
Uranium-238	189	208	A		-9.1	146 - 270	9.54	A
Zinc-65	652	604	A		7.9	423 - 785	35.9	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(NARL02) USEPA - NAREL - MERL

540 S Morris Ave

Montgomery, AL 36115

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	-0.0574		A			False Positive Test	0.710	
Cesium-137	1710	1550	A		10.3	1085 - 2015	41.0	A
Cobalt-57	1050	920	A		14.1	644 - 1196	20.0	N
Cobalt-60	1460	1370	A		6.6	959 - 1781	21.0	N
Iron-55	NR	910				637 - 1183		
Manganese-54	-1.81		A			False Positive Test	1.50	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	601	618	A		-2.8	433 - 803	15.0	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	643	604	A		6.5	423 - 785	14.0	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	61.2	78	W		-21.5	55 - 101	18.3	W
Arsenic	39.0	45.8	A		-14.8	32.1 - 59.5	2.28	A
Barium	223	223	A		0.0	156 - 290	4.07	N
Beryllium	63.4	60.6	A		4.6	42.4 - 78.8	1.527	A
Cadmium	6.91	7.05	A		-2.0	4.94 - 9.17	0.149	A
Chromium	50.6	49.9	A		1.4	34.9 - 64.9	1.34	A
Cobalt	196.3	194	A		1.2	136 - 252	5.44	A
Copper	40.3	37.7	A		6.9	26.4 - 49.0	1.14	A
Lead	28.9	28.8	A		0.3	20.2 - 37.4	0.540	N
Mercury	0.674			(6)			0.337	N
Nickel	149	148	A		0.7	104 - 192	4.26	A
Selenium	18.24	16.9	A		7.9	11.8 - 22.0	1.92	A
Silver	40.4	42.5	A		-4.9	29.8 - 55.3	0.79	N
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	10.4	11.0	A		-5.5	7.7 - 14.3	0.735	A
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	281	279	A		0.7	195 - 363	7.05	A
Zinc	363	370	A		-1.9	259 - 481	9.33	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	93.56	88	A		6.3	62 - 114	9.50	A
Cesium-134	-0.100		A			False Positive Test	1.152	
Cesium-137	1748	1550	A		12.8	1085 - 2015	73.6	A
Cobalt-57	1021	920	A		11.0	644 - 1196	39.4	A
Cobalt-60	1507	1370	A		10.0	959 - 1781	64.0	A
Iron-55	939	910	A		3.2	637 - 1183	226	W
Manganese-54	1.69		A			False Positive Test	2.59	
Nickel-63	778	689	A		12.9	482 - 896	83	A
Plutonium-238	59.57	49.1	W		21.3	34.4 - 63.8	7.59	A
Plutonium-239/240	1.45		A			False Positive Test	2.52	
Potassium-40	689	618	A		11.5	433 - 803	32	A
Strontium-90	268	272	A		-1.5	190 - 354	21.2	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	538.3	638	A		-15.6	447 - 829	55.5	A
Uranium-234	60.8	59	A		3.1	41 - 77	6.13	A
Uranium-238	205	208	A		-1.4	146 - 270	12.3	A
Zinc-65	720	604	A		19.2	423 - 785	30.5	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(NJDH01) New Jersey Dept. of Health, PHEL, ECLS
3 Schwarzkopf Drive
West Trenton, NJ 08628

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	1.9		A			False Positive Test	2.1	
Cesium-137	1720	1550	A		11.0	1085 - 2015	75	A
Cobalt-57	983	920	A		6.8	644 - 1196	35	A
Cobalt-60	1440	1370	A		5.1	959 - 1781	62	A
Iron-55	NR	910				637 - 1183		
Manganese-54	4.6		A			False Positive Test	4.5	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	673	618	A		8.9	433 - 803	32	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	628	604	A		4.0	423 - 785	25	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	68.33	88	W		-22.4	62 - 114	4.83	A
Cesium-134	44		A			False Positive Test	222	
Cesium-137	1608	1550	A		3.7	1085 - 2015	45.2	A
Cobalt-57	882	920	A		-4.1	644 - 1196	24	A
Cobalt-60	1415	1370	A		3.3	959 - 1781	40	A
Iron-55	999	910	A		9.8	637 - 1183	51	A
Manganese-54	22		A			False Positive Test	108	
Nickel-63	611	689	A		-11.3	482 - 896	30	A
Plutonium-238	43	49.1	A		-12.4	34.4 - 63.8	2.2	A
Plutonium-239/240	0.5		N	(1)		False Positive Test	0.1	
Potassium-40	632	618	A		2.3	433 - 803	54	A
Strontium-90	244	272	A		-10.3	190 - 354	18	A
Technetium-99	590	638	A		-7.5	447 - 829	40	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	46.7	59	W		-20.8	41 - 77	3.2	A
Uranium-238	150	208	W		-27.9	146 - 270	10	A
Zinc-65	621	604	A		2.8	423 - 785	27	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	0.994		A			False Positive Test	0.379	
Cesium-137	1540	1550	A		-0.6	1085 - 2015	92.2	A
Cobalt-57	961	920	A		4.5	644 - 1196	65.8	A
Cobalt-60	1310	1370	A		-4.4	959 - 1781	37.1	A
Iron-55	NR	910				637 - 1183		
Manganese-54	3.34		A			False Positive Test	1.18	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	566	618	A		-8.4	433 - 803	25.2	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	583	604	A		-3.5	423 - 785	25.5	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(ORIS01) ORISE/IEAV

PO Box 117

Oak Ridge, TN 37831-0117

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	81.1	78	A		4.0	55 - 101	3.0	A
Arsenic	37.6	45.8	A		-17.9	32.1 - 59.5	1.4	A
Barium	199.5	223	A		-10.5	156 - 290	8.5	A
Beryllium	50.2	60.6	A		-17.2	42.4 - 78.8	2.1	A
Cadmium	6.46	7.05	A		-8.4	4.94 - 9.17	0.28	A
Chromium	43.1	49.9	A		-13.6	34.9 - 64.9	1.8	A
Cobalt	185.4	194	A		-4.4	136 - 252	8.0	A
Copper	41.8	37.7	A		10.9	26.4 - 49.0	1.7	A
Lead	29.7	28.8	A		3.1	20.2 - 37.4	1.1	A
Nickel	146.1	148	A		-1.3	104 - 192	7.0	A
Selenium	14.51	16.9	A		-14.1	11.8 - 22.0	0.88	A
Silver	39.8	42.5	A		-6.4	29.8 - 55.3	1.4	A
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	9.79	11.0	A		-11.0	7.7 - 14.3	0.34	A
Uranium-235	0.046	0.0469	A		-1.9	0.0328 - 0.0610	0.002	A
Uranium-238	16.07	16.7	A		-3.8	11.7 - 21.7	0.53	A
Uranium-Total	16.18	16.7	A		-3.1	11.7 - 21.7	0.53	A
Vanadium	252.4	279	A		-9.5	195 - 363	9.3	A
Zinc	372	370	A		0.5	259 - 481	16	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	84.4	88	A		-4.1	62 - 114	5.0	A
Cesium-134	1.4		A			False Positive Test	3.3	
Cesium-137	1594	1550	A		2.8	1085 - 2015	92	A
Cobalt-57	918	920	A		-0.2	644 - 1196	20	A
Cobalt-60	1372	1370	A		0.1	959 - 1781	43	A
Iron-55	991	910	A		8.9	637 - 1183	46	A
Manganese-54	2.2		A			False Positive Test	3.1	
Nickel-63	652	689	A		-5.4	482 - 896	27	A
Plutonium-238	49.1	49.1	A		0.0	34.4 - 63.8	3.1	A
Plutonium-239/240	0.50		A			False Positive Test	0.21	
Potassium-40	640	618	A		3.6	433 - 803	35	A
Strontium-90	250.0	272	A		-8.1	190 - 354	9.9	A
Technetium-99	612	638	A		-4.1	447 - 829	28	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	58.0	59	A		-1.7	41 - 77	3.5	A
Uranium-238	200.2	208	A		-3.8	146 - 270	9.6	A
Zinc-65	632	604	A		4.6	423 - 785	23	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	0.0422	0.0469	A		-10.0	0.0328 - 0.0610	0.001	A
Uranium-238	16.3	16.7	A		-2.4	11.7 - 21.7	0.1	N
Uranium-Total	13.3	16.7	W		-20.4	11.7 - 21.7	0.1	N
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	79.9	88	A		-9.2	62 - 114	7.37	A
Cesium-134	-5.77		A			False Positive Test	2.51	
Cesium-137	1660	1550	A		7.1	1085 - 2015	108	A
Cobalt-57	897	920	A		-2.5	644 - 1196	58.5	A
Cobalt-60	1390	1370	A		1.5	959 - 1781	78.5	A
Iron-55	NR	910				637 - 1183		
Manganese-54	-4.31		A			False Positive Test	4.74	
Nickel-63	1097	689	N		59.2	482 - 896	120	A
Plutonium-238	46.2	49.1	A		-5.9	34.4 - 63.8	5.45	A
Plutonium-239/240	1.80		A			False Positive Test	1.26	
Potassium-40	652	618	A		5.5	433 - 803	51.4	A
Strontium-90	292	272	A		7.4	190 - 354	18.3	A
Technetium-99	476	638	W		-25.4	447 - 829	19.7	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	47.6	59	A		-19.3	41 - 77	10.9	W
Uranium-238	181	208	A		-13.0	146 - 270	18.7	A
Zinc-65	663	604	A		9.8	423 - 785	42.9	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (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	76.3	78	A		-2.2	55 - 101	2.54333	A
Arsenic	35.8	45.8	W		-21.8	32.1 - 59.5	1.19333	A
Barium	185.0	223	A		-17.0	156 - 290	6.16667	A
Beryllium	53.3	60.6	A		-12.0	42.4 - 78.8	1.77667	A
Cadmium	6.02	7.05	A		-14.6	4.94 - 9.17	0.20067	A
Chromium	44.7	49.9	A		-10.4	34.9 - 64.9	1.49000	A
Cobalt	169.0	194	A		-12.9	136 - 252	5.63333	A
Copper	36.1	37.7	A		-4.2	26.4 - 49.0	1.20333	A
Lead	27.3	28.8	A		-5.2	20.2 - 37.4	0.91000	A
Mercury	0.83000			(6)			0.02767	A
Nickel	129.0	148	A		-12.8	104 - 192	4.30000	A
Selenium	12.5	16.9	W		-26.0	11.8 - 22.0	0.41667	A
Silver	34.6	42.5	A		-18.6	29.8 - 55.3	1.15333	A
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	9.13	11.0	A		-17.0	7.7 - 14.3	0.57333	A
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	239.0	279	A		-14.3	195 - 363	7.96667	A
Zinc	319.0	370	A		-13.8	259 - 481	13.29167	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	NR					False Positive Test		
Cesium-137	NR	1550				1085 - 2015		
Cobalt-57	NR	920				644 - 1196		
Cobalt-60	NR	1370				959 - 1781		
Iron-55	NR	910				637 - 1183		
Manganese-54	NR					False Positive Test		
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	NR	618				433 - 803		
Strontium-90	NR	272				190 - 354		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	638				447 - 829		
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	NR	604				423 - 785		

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	80.3	78	A		2.9	55 - 101	11.2	A
Arsenic	43.1	45.8	A		-5.9	32.1 - 59.5	4.69	A
Barium	215	223	A		-3.6	156 - 290	16.5	A
Beryllium	62.6	60.6	A		3.3	42.4 - 78.8	7.43	A
Cadmium	7.18	7.05	A		1.8	4.94 - 9.17	0.53	A
Chromium	52.2	49.9	A		4.6	34.9 - 64.9	6.52	A
Cobalt	195	194	A		0.5	136 - 252	26.1	A
Copper	37.5	37.7	A		-0.5	26.4 - 49.0	3.97	A
Lead	27.3	28.8	A		-5.2	20.2 - 37.4	2.40	A
Mercury	0.934			(6)			0.120	A
Nickel	153	148	A		3.4	104 - 192	17.0	A
Selenium	16.3	16.9	A		-3.6	11.8 - 22.0	1.70	A
Silver	36.8	42.5	A		-13.4	29.8 - 55.3	4.20	A
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	9.81	11.0	A		-10.8	7.7 - 14.3	1.03	A
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	15.1	16.7	A		-9.6	11.7 - 21.7	1.59	A
Vanadium	279	279	A		0.0	195 - 363	39.7	A
Zinc	387	370	A		4.6	259 - 481	47.8	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	NR					False Positive Test		
Cesium-137	NR	1550				1085 - 2015		
Cobalt-57	NR	920				644 - 1196		
Cobalt-60	NR	1370				959 - 1781		
Iron-55	NR	910				637 - 1183		
Manganese-54	NR					False Positive Test		
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	NR	618				433 - 803		
Strontium-90	NR	272				190 - 354		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	638				447 - 829		
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	NR	604				423 - 785		

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	78.5	88	A		-10.8	62 - 114	5.2	A
Cesium-134	1.64		A			False Positive Test	0.63	
Cesium-137	1410	1550	A		-9.0	1085 - 2015	45	A
Cobalt-57	831	920	A		-9.7	644 - 1196	25	A
Cobalt-60	1230	1370	A		-10.2	959 - 1781	35	A
Iron-55	NR	910				637 - 1183		
Manganese-54	0.43		A			False Positive Test	0.55	
Nickel-63	NR	689				482 - 896		
Plutonium-238	50.2	49.1	A		2.2	34.4 - 63.8	4.0	A
Plutonium-239/240	0.15		A			False Positive Test	0.18	
Potassium-40	567	618	A		-8.3	433 - 803	20	A
Strontium-90	285	272	A		4.8	190 - 354	26	A
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	50.8	59	A		-13.9	41 - 77	3.9	A
Uranium-238	190	208	A		-8.7	146 - 270	12	A
Zinc-65	576	604	A		-4.6	423 - 785	19	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	1.6		A			False Positive Test	1.6	
Cesium-137	1394.8	1550	A		-10.0	1085 - 2015	139.5	A
Cobalt-57	865.8	920	A		-5.9	644 - 1196	86.6	A
Cobalt-60	1190.3	1370	A		-13.1	959 - 1781	119	A
Iron-55	NR	910				637 - 1183		
Manganese-54	2.3		A			False Positive Test	2.3	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	537	618	A		-13.1	433 - 803	53.8	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	567.3	604	A		-6.1	423 - 785	56.7	A

Radiological Reference Date: February 1, 2021

Results Flags:

A = Result acceptable Bias $\leq 20\%$

W = Result acceptable with warning $20\% < \text{Bias} < 30\%$

N = Result not acceptable Bias $> 30\%$

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP $< 2\%$

ACCEPTABLE..... $2\% \leq \text{RP} \leq 15\%$

ACCEPTABLE WITH WARNING..... $15\% < \text{RP} \leq 30\%$

NOT ACCEPTABLE.....RP $> 30\%$

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(SOUT01) Southwest Research Institute

6220 Culebra Rd.

San Antonio, TX 78228-0510

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	82.4	78	A		5.6	55 - 101	6.04	A
Arsenic	39.4	45.8	A		-14.0	32.1 - 59.5	2.67	A
Barium	240	223	A		7.6	156 - 290	16.2	A
Beryllium	59.5	60.6	A		-1.8	42.4 - 78.8	4.02	A
Cadmium	7.51	7.05	A		6.5	4.94 - 9.17	0.6697	A
Chromium	47.3	49.9	A		-5.2	34.9 - 64.9	3.22	A
Cobalt	192	194	A		-1.0	136 - 252	13.0	A
Copper	41.3	37.7	A		9.5	26.4 - 49.0	2.82	A
Lead	31.1	28.8	A		8.0	20.2 - 37.4	2.20	A
Mercury	0.661			(6)			0.0456	A
Nickel	151	148	A		2.0	104 - 192	10.2	A
Selenium	15.9	16.9	A		-5.9	11.8 - 22.0	1.16	A
Silver	42.7	42.5	A		0.5	29.8 - 55.3	3.01	A
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	9.60	11.0	A		-12.7	7.7 - 14.3	0.683	A
Uranium-235	0.0419	0.0469	A		-10.7	0.0328 - 0.0610	0.00375	A
Uranium-238	15.8	16.7	A		-5.4	11.7 - 21.7	1.07	A
Uranium-Total	15.9	16.7	A		-4.8	11.7 - 21.7	1.07	A
Vanadium	274	279	A		-1.8	195 - 363	18.5	A
Zinc	380	370	A		2.7	259 - 481	25.7	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	85.9	88	A		-2.4	62 - 114	7.19	A
Cesium-134	4.78		A			False Positive Test	2.75	
Cesium-137	1685	1550	A		8.7	1085 - 2015	53.7	A
Cobalt-57	989	920	A		7.5	644 - 1196	28.3	A
Cobalt-60	1470	1370	A		7.3	959 - 1781	50.7	A
Iron-55	562	910	N		-38.2	637 - 1183	376	N
Manganese-54	-1.49		A			False Positive Test	3.02	
Nickel-63	756	689	A		9.7	482 - 896	145	W
Plutonium-238	48.5	49.1	A		-1.2	34.4 - 63.8	3.55	A
Plutonium-239/240	0.286		A			False Positive Test	0.153	
Potassium-40	719	618	A		16.3	433 - 803	33.3	A
Strontium-90	269	272	A		-1.1	190 - 354	19.5	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	433	638	N		-32.1	447 - 829	27.8	A
Uranium-234	57.0	59	A		-3.4	41 - 77	4.26	A
Uranium-238	196	208	A		-5.8	146 - 270	13.6	A
Zinc-65	722	604	A		19.5	423 - 785	25.6	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	-1.66E-01		A			False Positive Test	1.11	
Cesium-137	1.54E+03	1550	A		-0.6	1085 - 2015	3.81	A
Cobalt-57	8.59E+02	920	A		-6.6	644 - 1196	2.27	A
Cobalt-60	1.31E+03	1370	A		-4.4	959 - 1781	3.10	A
Iron-55	NR	910				637 - 1183		
Manganese-54	-2.57E-01		A			False Positive Test	1.71	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	5.64E+02	618	A		-8.7	433 - 803	1.73	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	5.72E+02	604	A		-5.3	423 - 785	1.47	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	94.3	88	A		7.2	62 - 114	8.8	A
Cesium-134	5			A		False Positive Test	11	
Cesium-137	1485	1550	A		-4.2	1085 - 2015	43	A
Cobalt-57	862	920	A		-6.3	644 - 1196	19	A
Cobalt-60	1275	1370	A		-6.9	959 - 1781	24	N
Iron-55	NR	910				637 - 1183		
Manganese-54	-5.5			A		False Positive Test	5.6	
Nickel-63	NR	689				482 - 896		
Plutonium-238	46.2	49.1	A		-5.9	34.4 - 63.8	6.2	A
Plutonium-239/240	0.89			A		False Positive Test	0.66	
Potassium-40	609	618	A		-1.5	433 - 803	35	A
Strontium-90	249	272	A		-8.5	190 - 354	11	A
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	40.7	59	N		-31.0	41 - 77	4.4	A
Uranium-238	165	208	W		-20.7	146 - 270	13	A
Zinc-65	585	604	A		-3.1	423 - 785	21	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	NR					False Positive Test		
Cesium-137	NR	1550				1085 - 2015		
Cobalt-57	NR	920				644 - 1196		
Cobalt-60	NR	1370				959 - 1781		
Iron-55	NR	910				637 - 1183		
Manganese-54	NR					False Positive Test		
Nickel-63	310	689	N		-55.0	482 - 896	32.1	A
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	NR	618				433 - 803		
Strontium-90	NR	272				190 - 354		
Technetium-99	457	638	W		-28.4	447 - 829	43.2	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	NR	604				423 - 785		

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	-2.57		A			False Positive Test	2.21	
Cesium-137	1700	1550	A		9.7	1085 - 2015	20	N
Cobalt-57	977	920	A		6.2	644 - 1196	7	N
Cobalt-60	1360	1370	A		-0.7	959 - 1781	10	N
Iron-55	NR	910				637 - 1183		
Manganese-54	0.91		A			False Positive Test	2.85	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	682	618	A		10.4	433 - 803	53	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	687	604	A		13.7	423 - 785	17	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(TMAO01) EBERLINE SERVICES OAK RIDGE LABORATORY

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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	80.854	88	A		-8.1	62 - 114	14.867	W
Cesium-134	-1.052			A		False Positive Test	3.659	
Cesium-137	1638.778	1550	A		5.7	1085 - 2015	141.424	A
Cobalt-57	975.191	920	A		6.0	644 - 1196	53.189	A
Cobalt-60	1386.898	1370	A		1.2	959 - 1781	81.141	A
Iron-55	NR	910				637 - 1183		
Manganese-54	-1.514			A		False Positive Test	7.477	
Nickel-63	1524.818	689	N		121.3	482 - 896	215.081	A
Plutonium-238	45.665	49.1	A		-7.0	34.4 - 63.8	14.981	N
Plutonium-239/240	0.021			A		False Positive Test	3.665	
Potassium-40	666.292	618	A		7.8	433 - 803	74.024	A
Strontium-90	300.229	272	A		10.4	190 - 354	18.598	A
Technetium-99	637.941	638	A		0.0	447 - 829	37.634	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	68.590	59	A		16.3	41 - 77	13.099	W
Uranium-238	216.196	208	A		3.9	146 - 270	30.205	A
Zinc-65	604.561	604	A		0.1	423 - 785	64.454	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	75.775	88	A		-13.9	62 - 114	2.989	A
Cesium-134	.093		A			False Positive Test	1.996	
Cesium-137	1503.867	1550	A		-3.0	1085 - 2015	41.209	A
Cobalt-57	880.990	920	A		-4.2	644 - 1196	15.053	N
Cobalt-60	1293.967	1370	A		-5.6	959 - 1781	23.023	N
Iron-55	NR	910				637 - 1183		
Manganese-54	.304		A			False Positive Test	1.098	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	640.70	618	A		3.7	433 - 803	19.716	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	49.806	59	A		-15.6	41 - 77	6.391	A
Uranium-238	192.723	208	A		-7.3	146 - 270	15.293	A
Zinc-65	635.603	604	A		5.2	423 - 785	17.367	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	0.02		A			False Positive Test	0.5	
Cesium-137	1660.19	1550	A		7.1	1085 - 2015	91.32	A
Cobalt-57	926.48	920	A		0.7	644 - 1196	43.88	A
Cobalt-60	1399.71	1370	A		2.2	959 - 1781	50.21	A
Iron-55	NR	910				637 - 1183		
Manganese-54	0.2		A			False Positive Test	0.7	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	712.99	618	A		15.4	433 - 803	50.88	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	690.79	604	A		14.4	423 - 785	37.04	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	76.22	88	A		-13.4	62 - 114	13.51	W
Cesium-134	2.463		A			False Positive Test	1.67	
Cesium-137	1798	1550	A		16.0	1085 - 2015	239.8	A
Cobalt-57	1092	920	A		18.7	644 - 1196	147	A
Cobalt-60	1527	1370	A		11.5	959 - 1781	200	A
Iron-55	NR	910	N	(28)		637 - 1183		
Manganese-54	1.388		A			False Positive Test	3.18	
Nickel-63	NR	689	N	(28)		482 - 896		
Plutonium-238	51.06	49.1	A		4.0	34.4 - 63.8	8.58	W
Plutonium-239/240	0.56		A			False Positive Test	0.59	
Potassium-40	739	618	A		19.6	433 - 803	99.4	A
Strontium-90	228.44	272	A		-16.0	190 - 354	36.74	W
Technetium-99	533	638	A		-16.5	447 - 829	76.77	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	50.69	59	A		-14.1	41 - 77	8.03	W
Uranium-238	184.3	208	A		-11.4	146 - 270	26.57	A
Zinc-65	746	604	W		23.5	423 - 785	98.2	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	55.78	88	N		-36.6	62 - 114	9.824	W
Cesium-134	3.59		A			False Positive Test	2.69	
Cesium-137	1682.03	1550	A		8.5	1085 - 2015	41.735	A
Cobalt-57	981.59	920	A		6.7	644 - 1196	20.243	A
Cobalt-60	1429.54	1370	A		4.3	959 - 1781	23.424	N
Iron-55	NR	910				637 - 1183		
Manganese-54	0.72		A			False Positive Test	1.307	
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	673.35	618	A		9.0	433 - 803	19.002	A
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	663.98	604	A		9.9	423 - 785	16.341	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	80.2	88	A		-8.9	62 - 114	17.4	W
Cesium-134	.0623		A			False Positive Test	.693	
Cesium-137	1730	1550	A		11.6	1085 - 2015	19.3	N
Cobalt-57	1080	920	A		17.4	644 - 1196	24.2	A
Cobalt-60	1490	1370	A		8.8	959 - 1781	20.3	N
Iron-55	NR	910				637 - 1183		
Manganese-54	1.17		A			False Positive Test	.904	
Nickel-63	NR	689				482 - 896		
Plutonium-238	54.7	49.1	A		11.4	34.4 - 63.8	11.5	W
Plutonium-239/240	.582		A			False Positive Test	.320	
Potassium-40	661	618	A		7.0	433 - 803	17.5	A
Strontium-90	276	272	A		1.5	190 - 354	25.6	A
Technetium-99	NR	638				447 - 829		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	49.8	59	A		-15.6	41 - 77	7.87	W
Uranium-238	187	208	A		-10.1	146 - 270	28	A
Zinc-65	669	604	A		10.8	423 - 785	8.7	N

Radiological Reference Date: February 1, 2021

Results Flags:

A = Result acceptable Bias $\leq 20\%$

W = Result acceptable with warning $20\% < \text{Bias} < 30\%$

N = Result not acceptable Bias $> 30\%$

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP $< 2\%$

ACCEPTABLE..... $2\% \leq \text{RP} \leq 15\%$

ACCEPTABLE WITH WARNING..... $15\% < \text{RP} \leq 30\%$

NOT ACCEPTABLE.....RP $> 30\%$

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

(29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44
 (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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	NR	0.0469				0.0328 - 0.0610		
Uranium-238	NR	16.7				11.7 - 21.7		
Uranium-Total	NR	16.7				11.7 - 21.7		
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	56.13	88	N		-36.2	62 - 114	5.694	A
Cesium-134	-9.78		N	(29)		False Positive Test	0.986	
Cesium-137	1580	1550	A		1.9	1085 - 2015	44.3	A
Cobalt-57	907	920	A		-1.4	644 - 1196	19.6	A
Cobalt-60	1350	1370	A		-1.5	959 - 1781	74.2	A
Iron-55	NR	910				637 - 1183		
Manganese-54	1.14		A			False Positive Test	0.644	
Nickel-63	NR	689				482 - 896		
Plutonium-238	45.40	49.1	A		-7.5	34.4 - 63.8	3.528	A
Plutonium-239/240	0.5811		A			False Positive Test	0.5037	
Potassium-40	612	618	A		-1.0	433 - 803	49.6	A
Strontium-90	60.65	272	N		-77.7	190 - 354	16.55	W
Technetium-99	NR	638				447 - 829		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	61.40	59	A		4.1	41 - 77	5.22	A
Uranium-238	208.9	208	A		0.4	146 - 270	11.79	A
Zinc-65	634	604	A		5.0	423 - 785	46.1	A

Radiological Reference Date: February 1, 2021

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%

RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations



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

Laboratory Results For MAPEP-21-MaS44

(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	78				55 - 101		
Arsenic	NR	45.8				32.1 - 59.5		
Barium	NR	223				156 - 290		
Beryllium	NR	60.6				42.4 - 78.8		
Cadmium	NR	7.05				4.94 - 9.17		
Chromium	NR	49.9				34.9 - 64.9		
Cobalt	NR	194				136 - 252		
Copper	NR	37.7				26.4 - 49.0		
Lead	NR	28.8				20.2 - 37.4		
Nickel	NR	148				104 - 192		
Selenium	NR	16.9				11.8 - 22.0		
Silver	NR	42.5				29.8 - 55.3		
Technetium-99	NR	0.00101				0.00071 - 0.00131		
Thallium	NR	11.0				7.7 - 14.3		
Uranium-235	0.049	0.0469	A		4.5	0.0328 - 0.0610	0.01	W
Uranium-238	17.46	16.7	A		4.6	11.7 - 21.7	1	A
Uranium-Total	17.5	16.7	A		4.8	11.7 - 21.7	1	A
Vanadium	NR	279				195 - 363		
Zinc	NR	370				259 - 481		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	88				62 - 114		
Cesium-134	NR					False Positive Test		
Cesium-137	NR	1550				1085 - 2015		
Cobalt-57	NR	920				644 - 1196		
Cobalt-60	NR	1370				959 - 1781		
Iron-55	NR	910				637 - 1183		
Manganese-54	NR					False Positive Test		
Nickel-63	NR	689				482 - 896		
Plutonium-238	NR	49.1				34.4 - 63.8		
Plutonium-239/240	NR					False Positive Test		
Potassium-40	NR	618				433 - 803		
Strontium-90	NR	272				190 - 354		
Technetium-99	NR	638				447 - 829		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234	NR	59				41 - 77		
Uranium-238	NR	208				146 - 270		
Zinc-65	NR	604				423 - 785		

Radiological Reference Date: February 1, 2021

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%

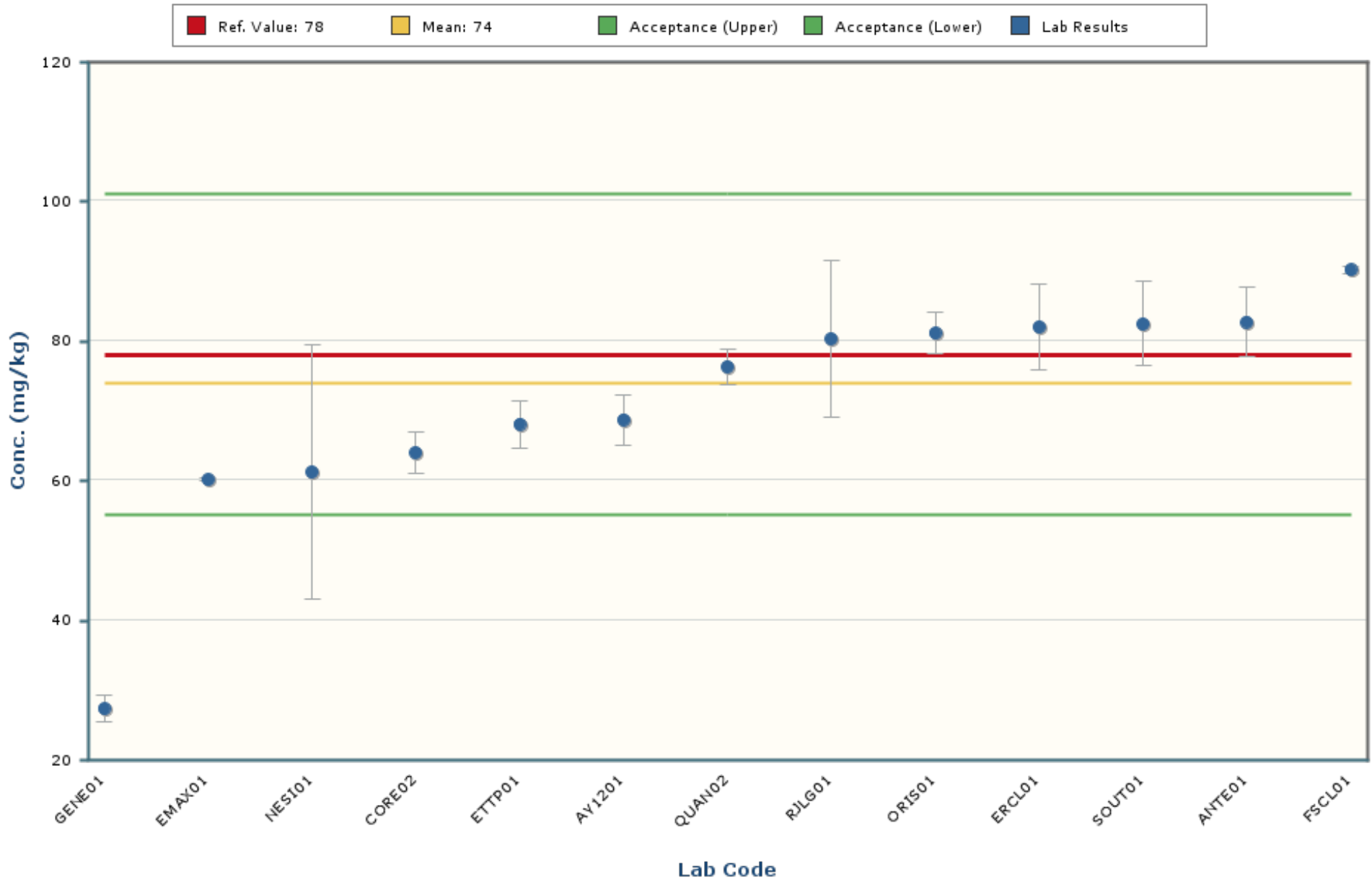
RP = Relative Precision

Notes:

- (1) = False Positive
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte
- (29) = Statistically significant negative value at 3 standard deviations

Antimony

MAPEP-21-MaS44



Notes:

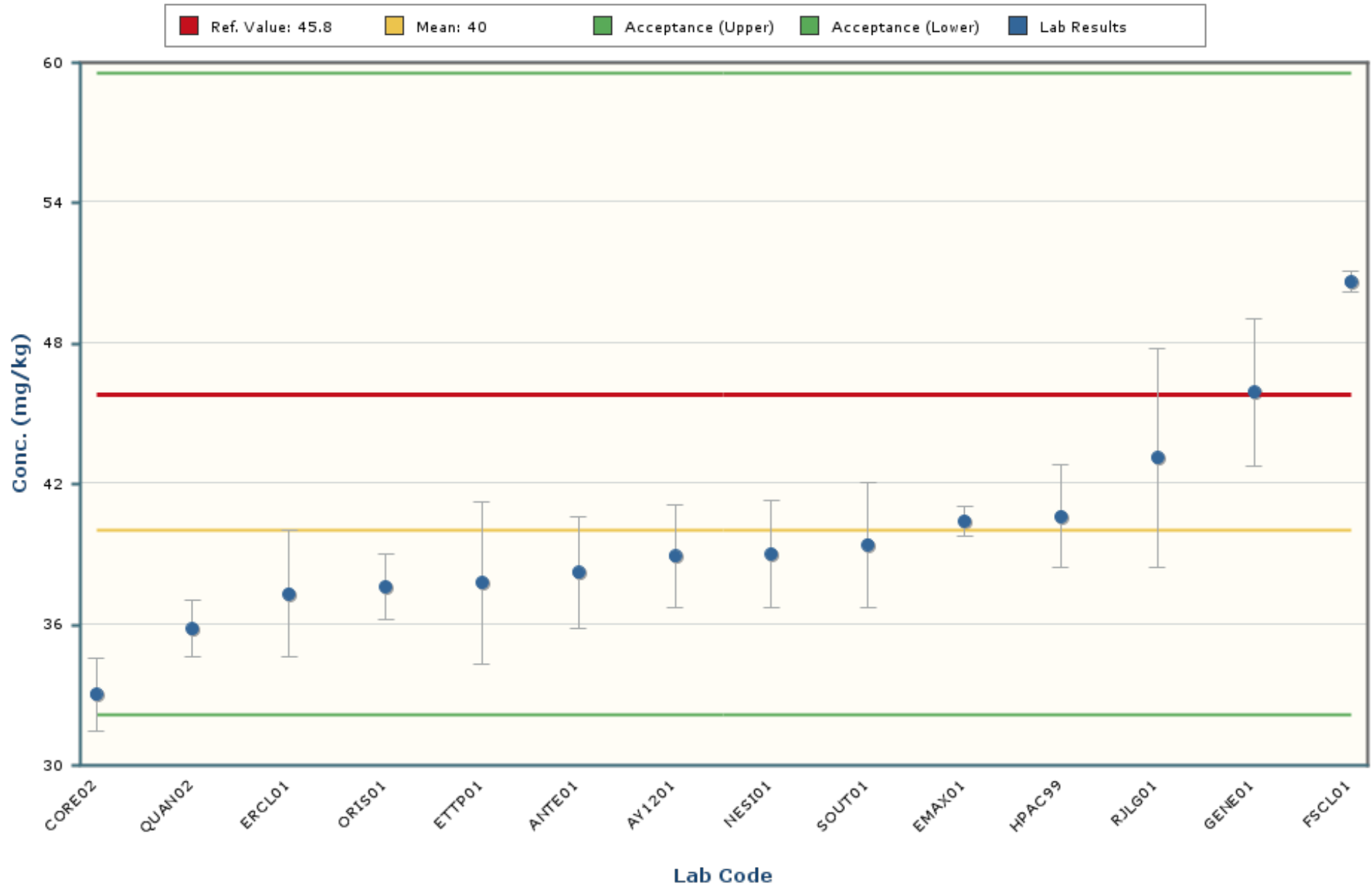
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 24 and 125 (± 5 Standard Deviations).

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

Arsenic

MAPEP-21-MaS44



Notes:

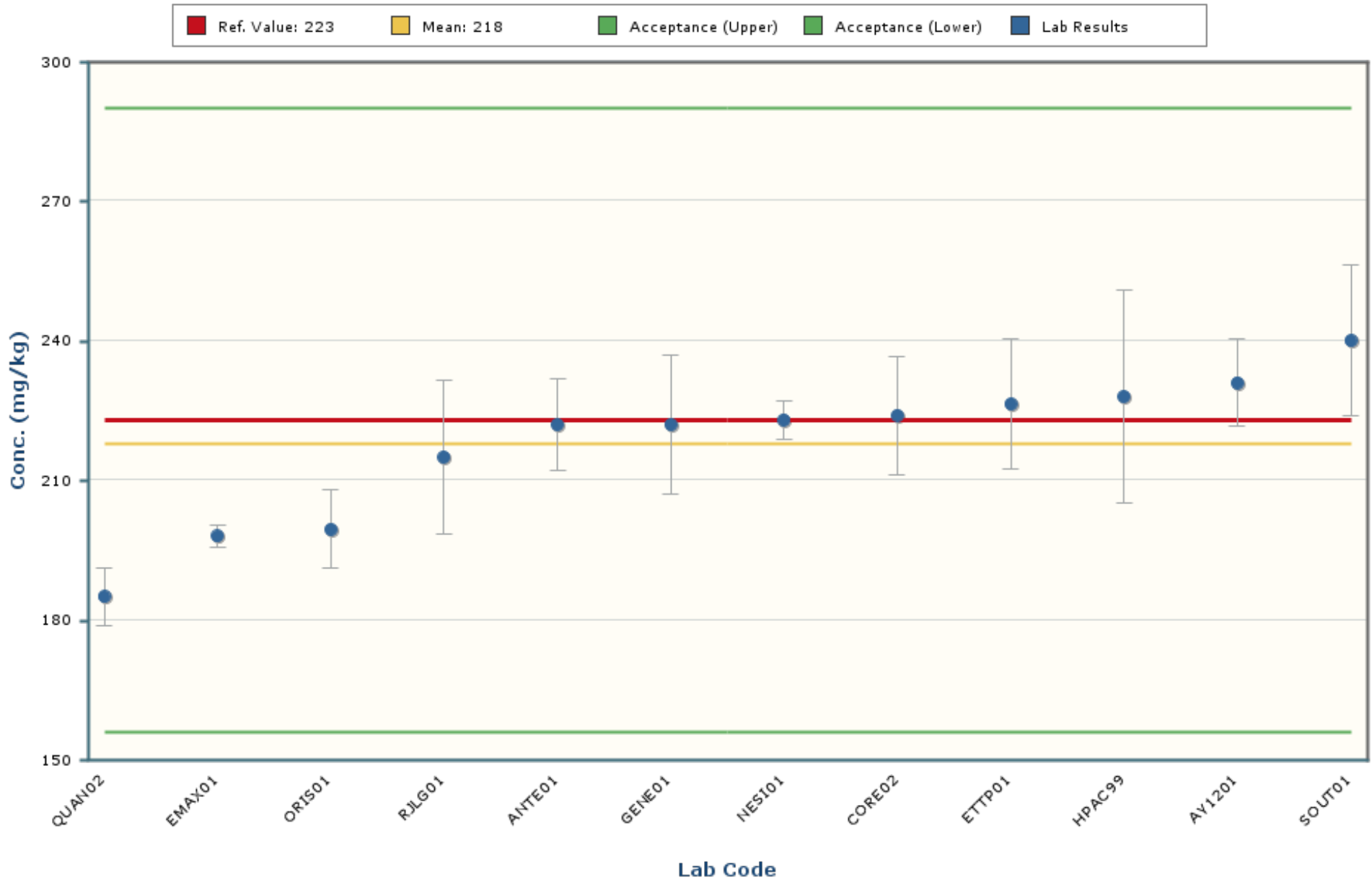
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 17.6 and 62.4 (± 5 Standard Deviations).

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

Barium

MAPEP-21-MaS44



Notes:

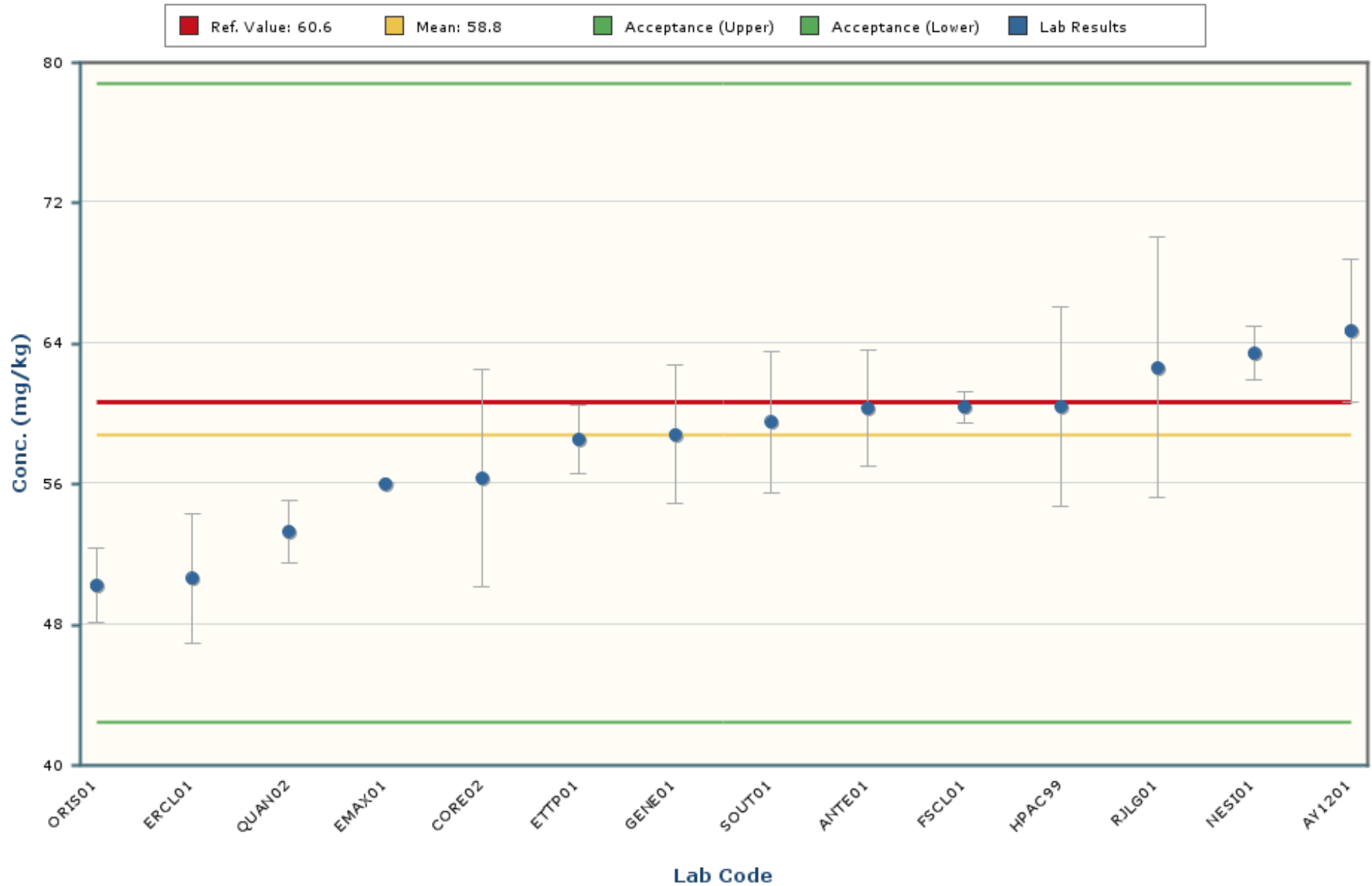
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 139 and 297 (± 5 Standard Deviations).

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

Beryllium

MAPEP-21-MaS44



Notes:

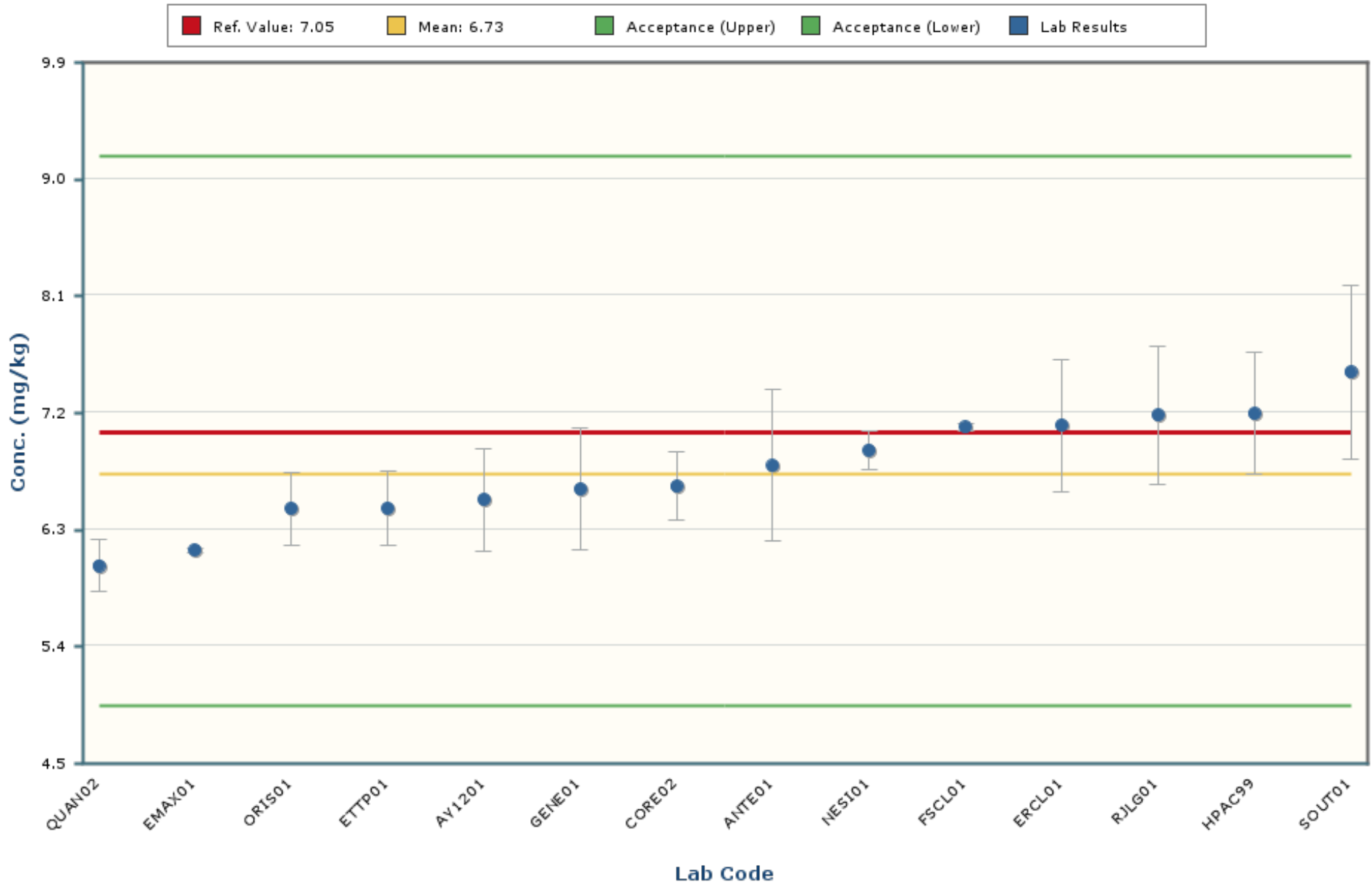
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 38.6 and 79.0 (± 5 Standard Deviations).

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

Cadmium

MAPEP-21-MaS44



Notes:

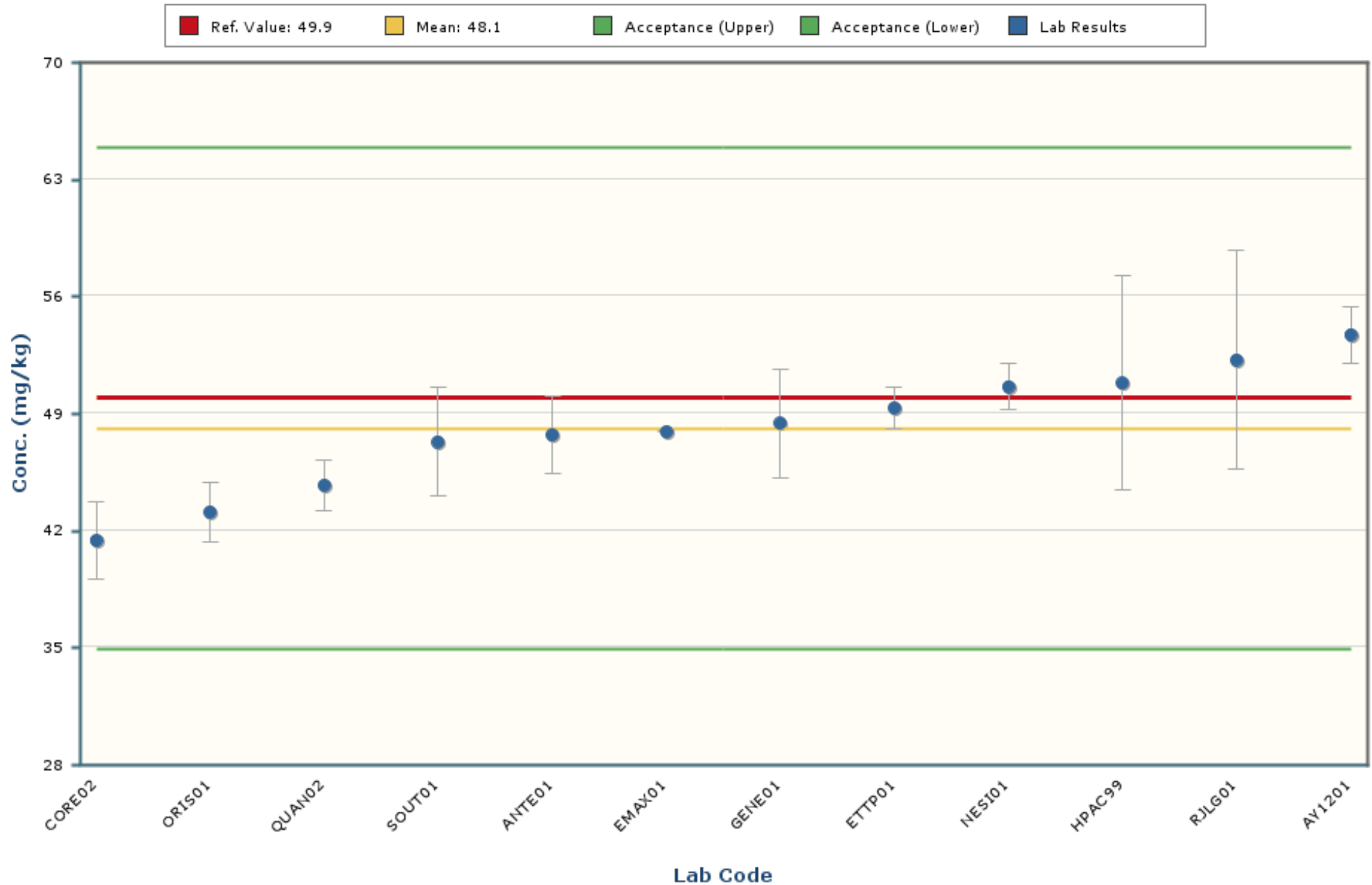
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 4.57 and 8.90 (± 5 Standard Deviations).

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

Chromium

MAPEP-21-MaS44



Notes:

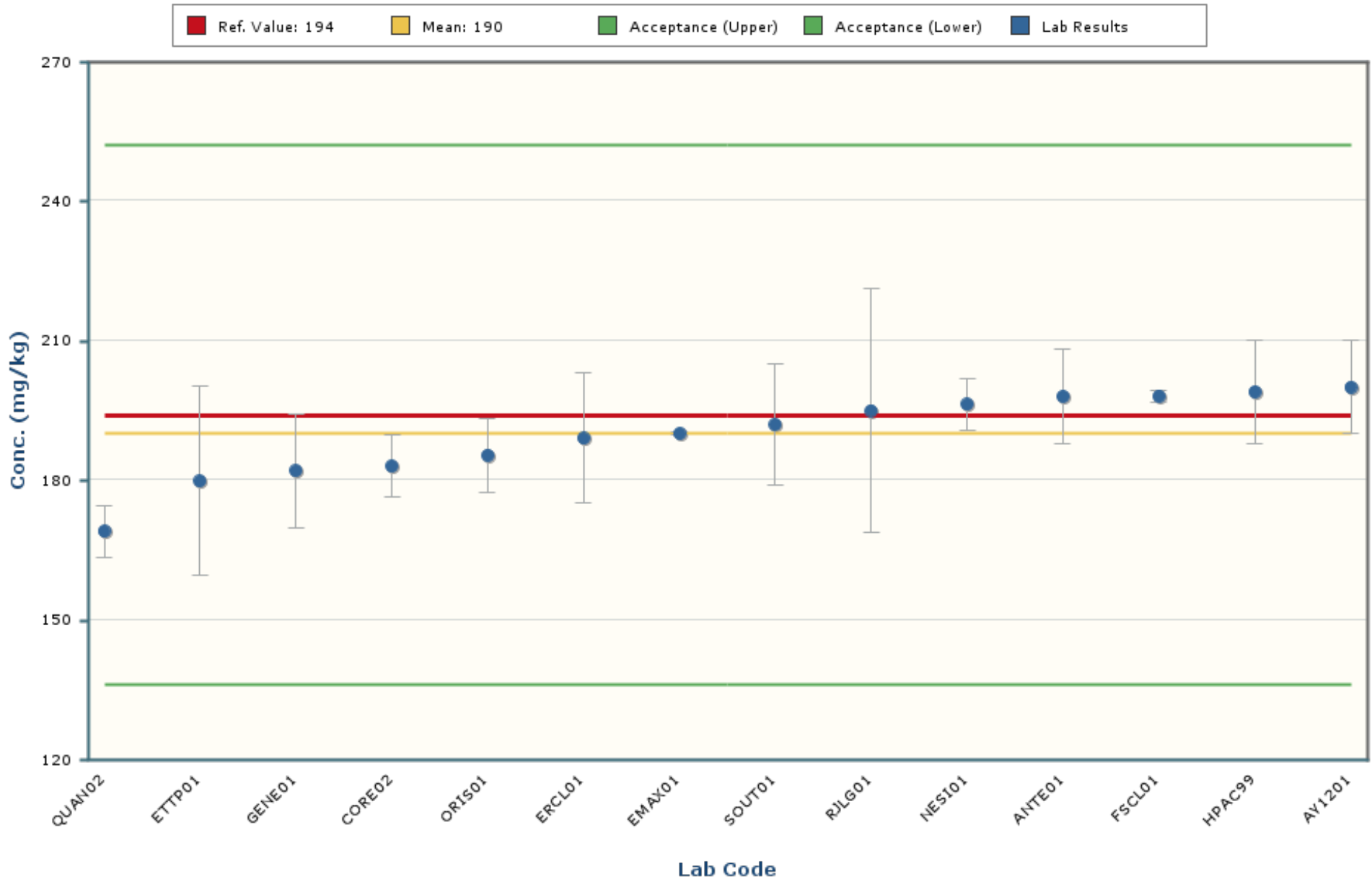
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 29.9 and 66.3 (± 5 Standard Deviations).

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

Cobalt

MAPEP-21-MaS44



Notes:

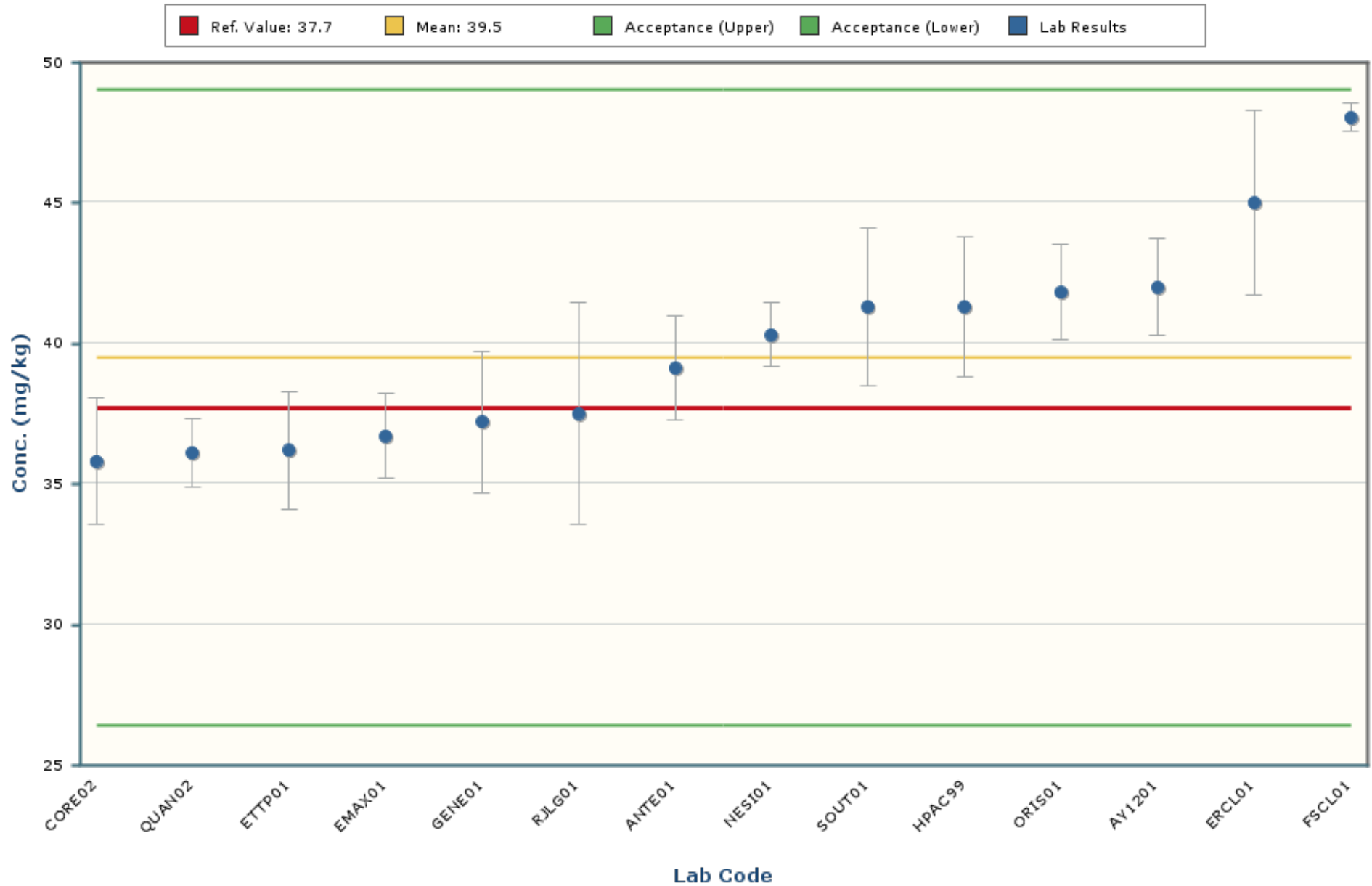
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 143 and 237 (± 5 Standard Deviations).

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

Copper

MAPEP-21-MaS44



Notes:

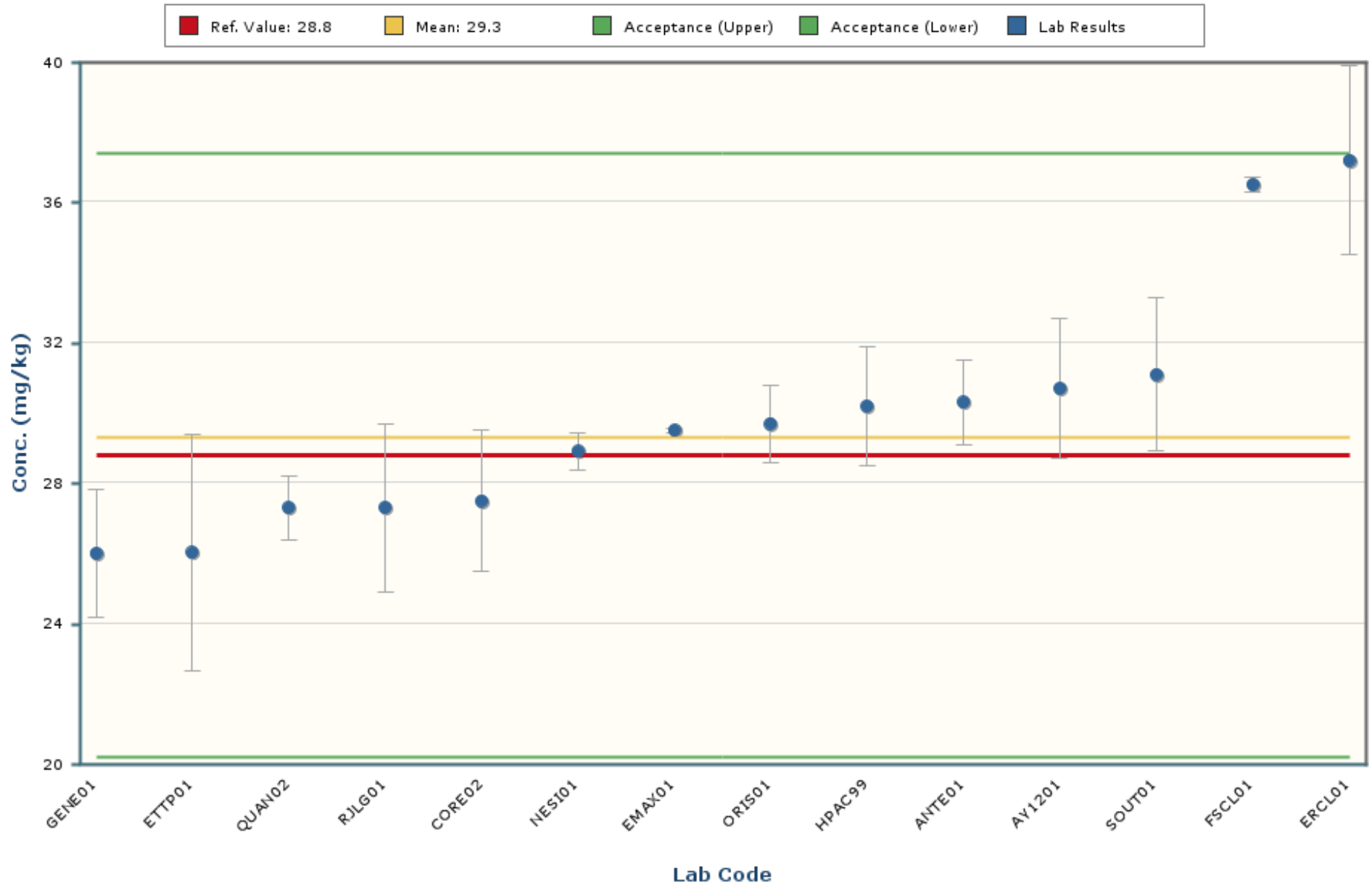
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 22.1 and 56.9 (± 5 Standard Deviations).

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

Lead

MAPEP-21-MaS44



Notes:

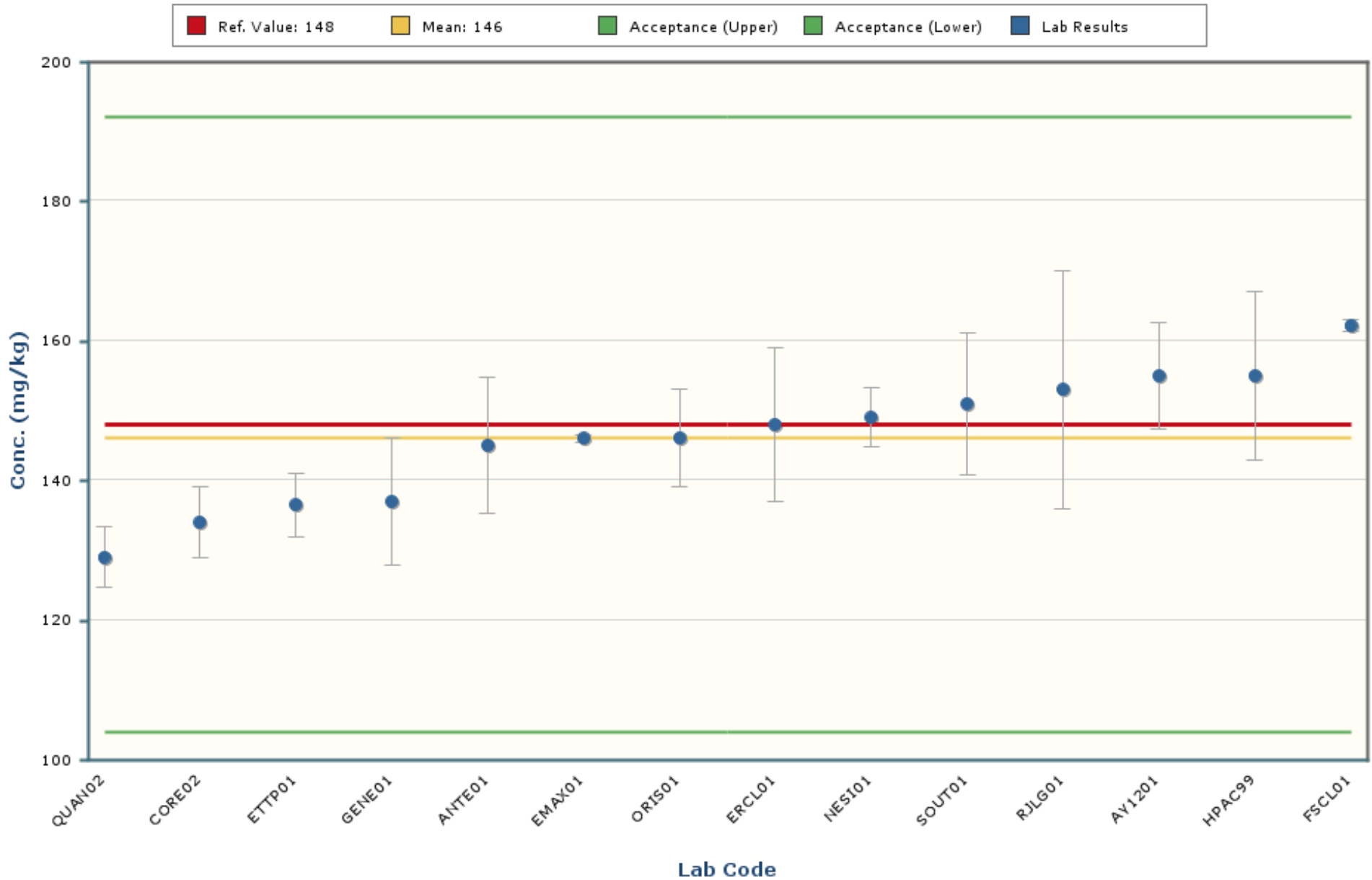
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 15.4 and 43.2 (± 5 Standard Deviations).

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

Nickel

MAPEP-21-MaS44



Notes:

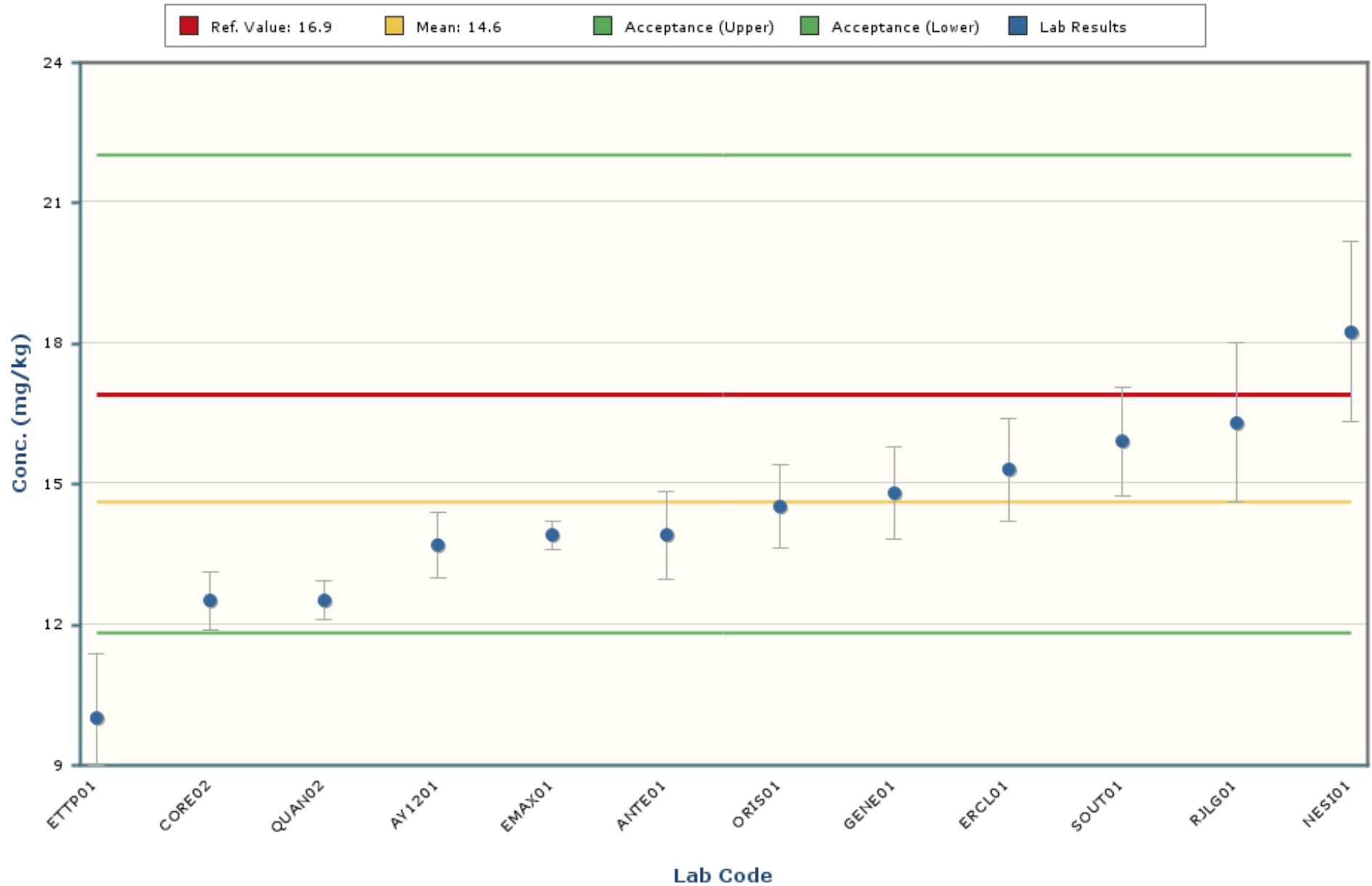
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 98 and 194 (± 5 Standard Deviations).

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

Selenium

MAPEP-21-MaS44



Notes:

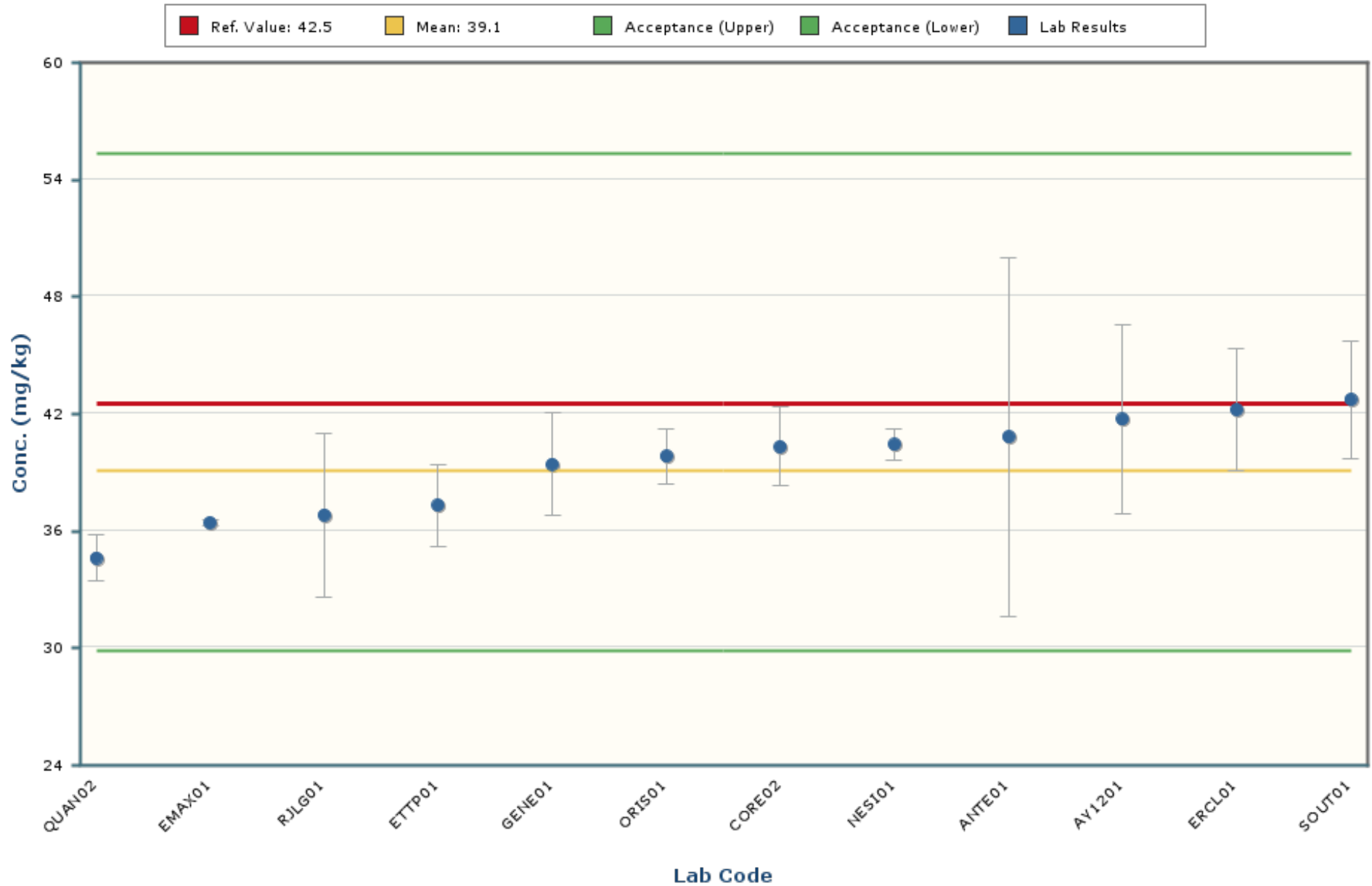
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 5.7 and 23.5 (± 5 Standard Deviations).

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

Silver

MAPEP-21-MaS44



Notes:

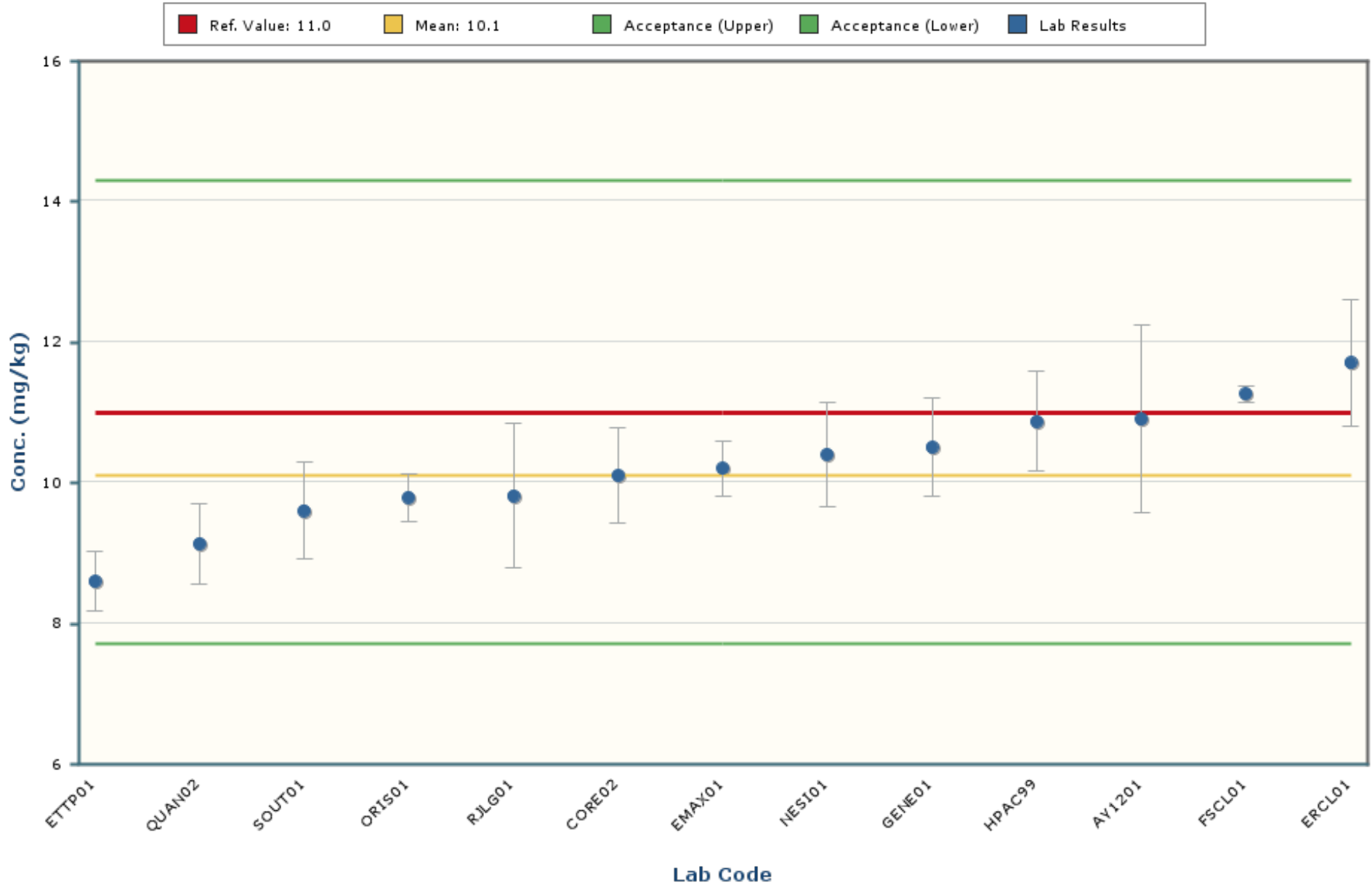
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 26.6 and 51.6 (± 5 Standard Deviations).

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

Thallium

MAPEP-21-MaS44



Notes:

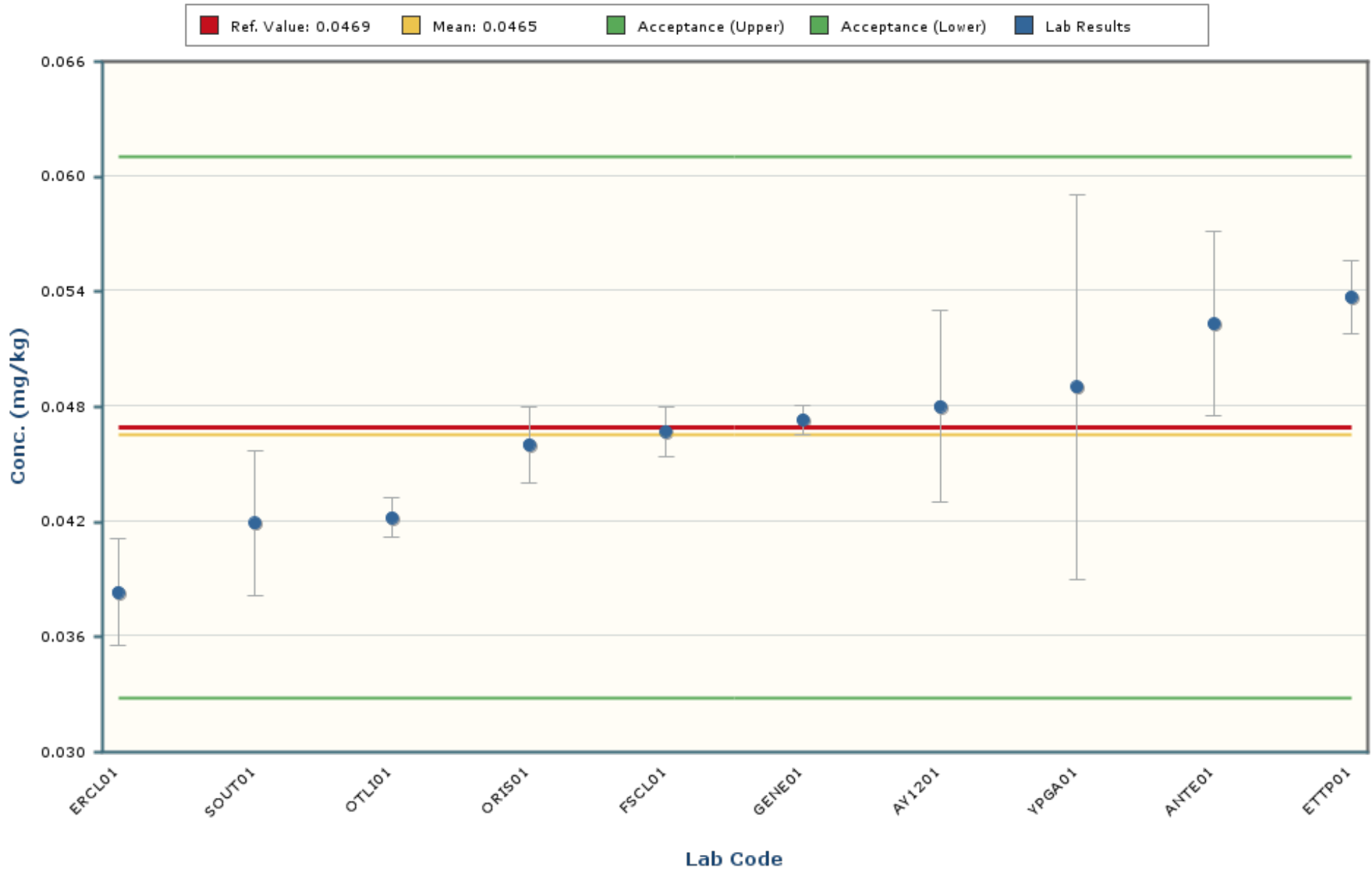
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 6.3 and 13.9 (± 5 Standard Deviations).

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

Uranium-235

MAPEP-21-MaS44



Notes:

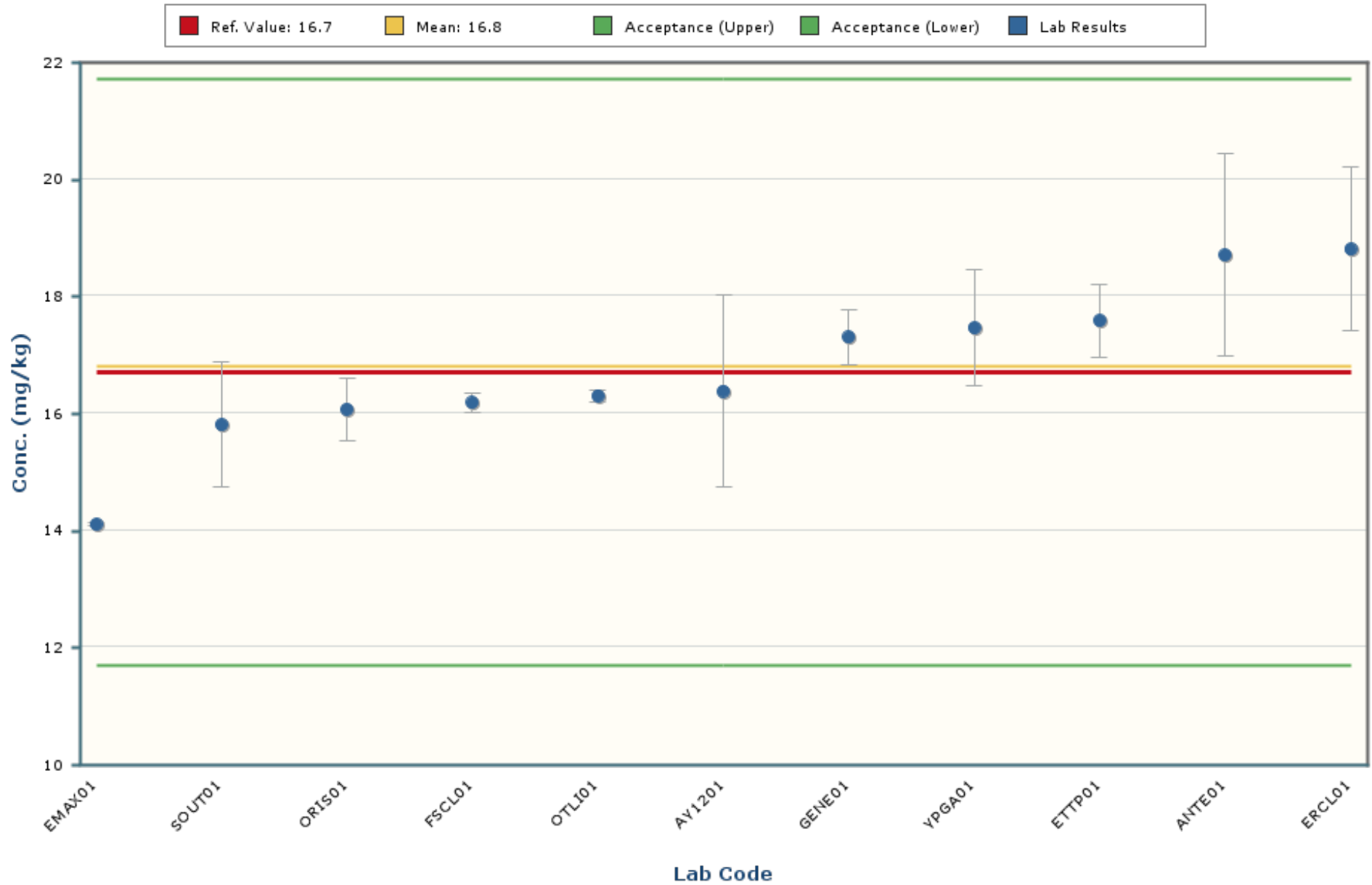
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 0.0229 and 0.0702 (± 5 Standard Deviations).

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

Uranium-238

MAPEP-21-MaS44



Notes:

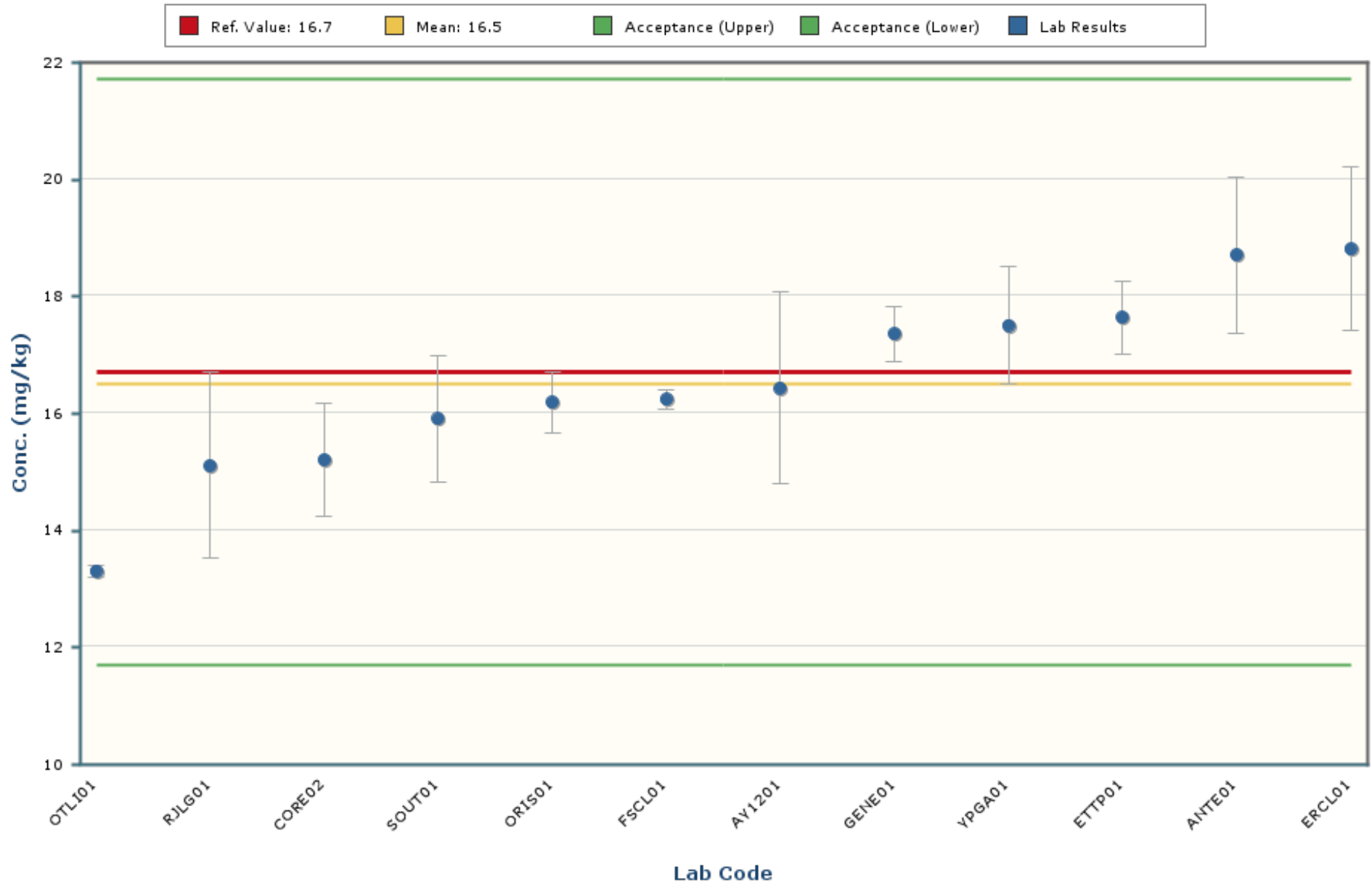
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 10.0 and 23.6 (± 5 Standard Deviations).

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

Uranium-Total

MAPEP-21-MaS44



Notes:

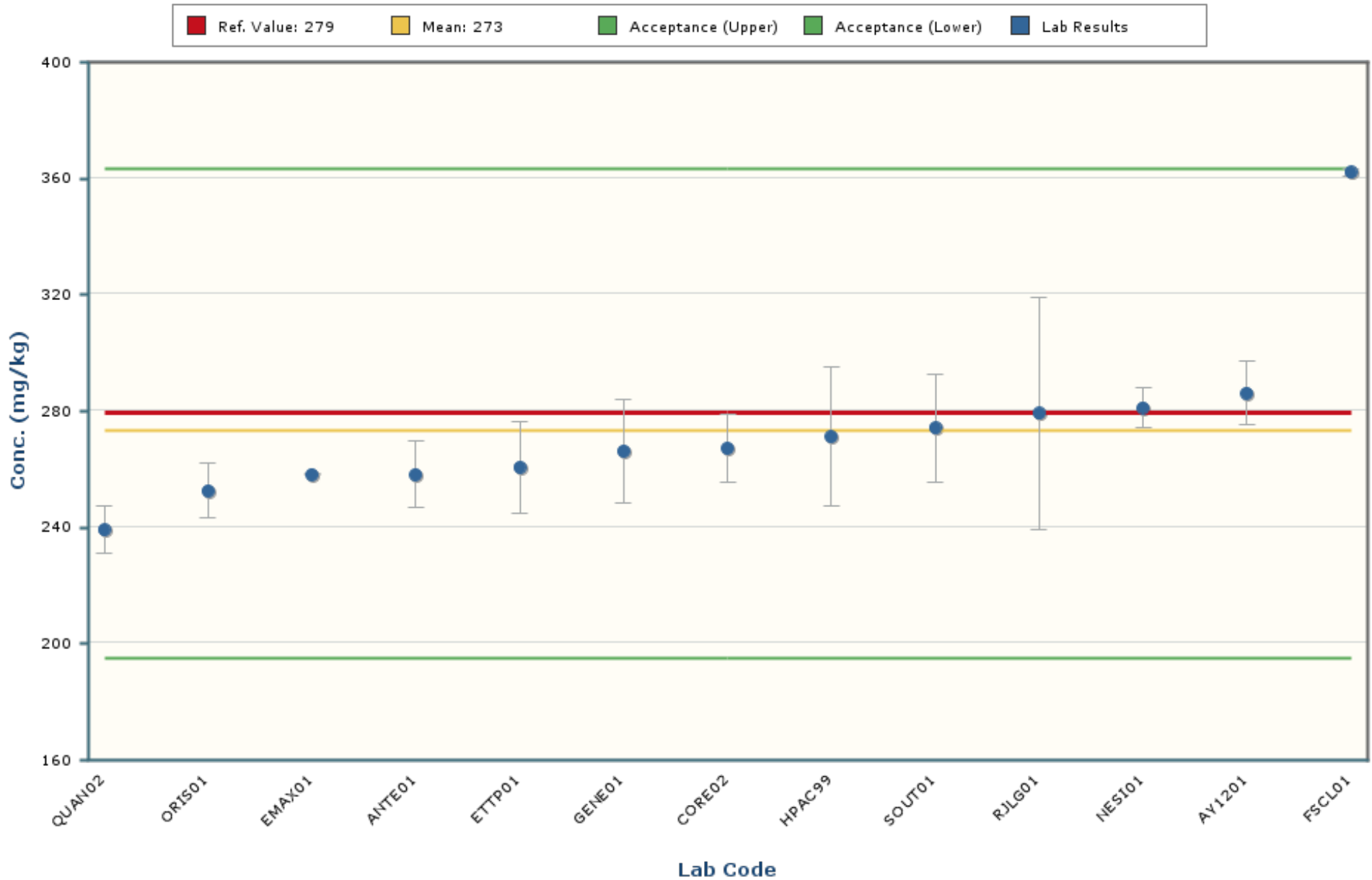
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 8.6 and 24.4 (± 5 Standard Deviations).

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

Vanadium

MAPEP-21-MaS44



Notes:

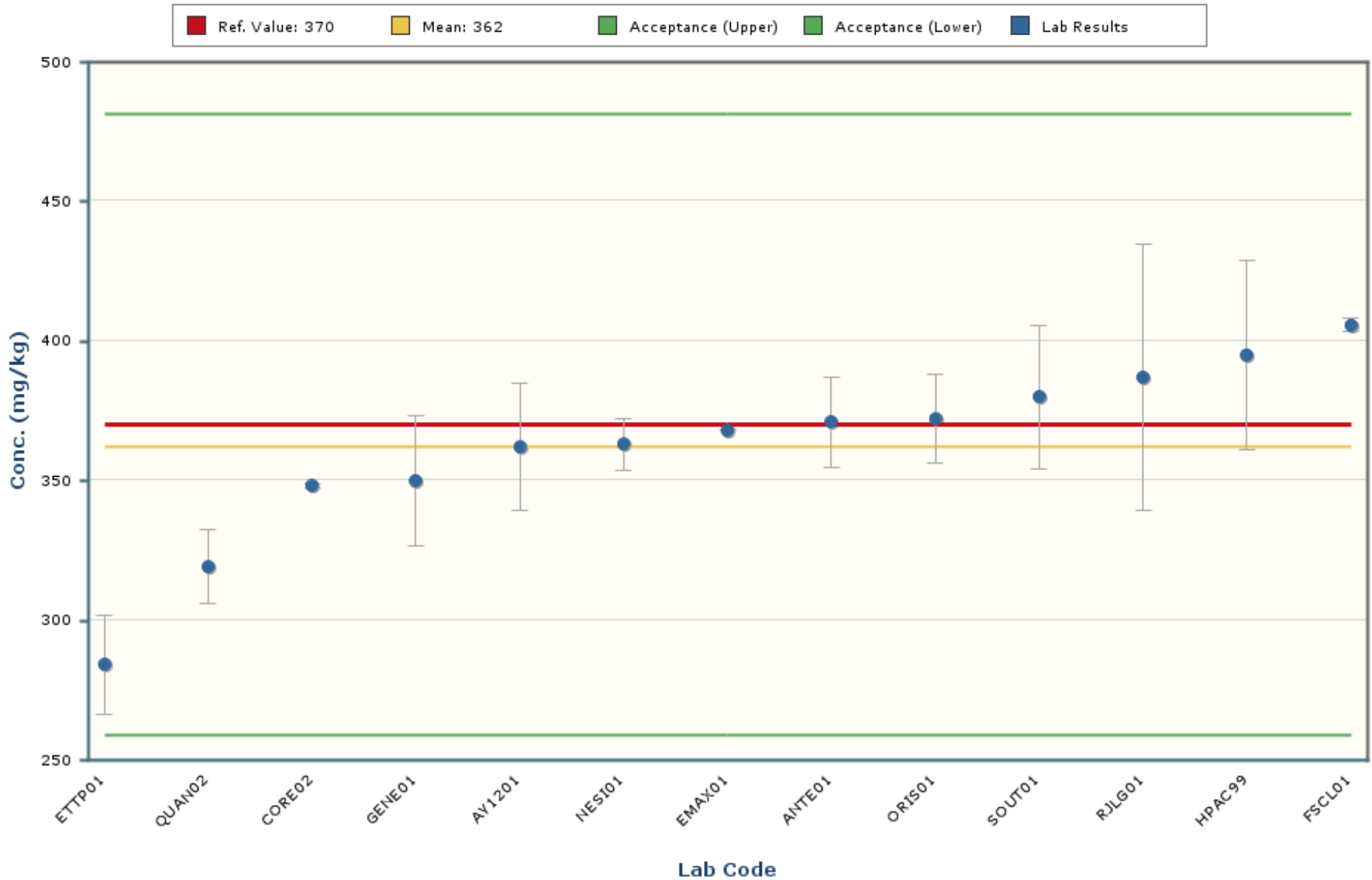
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 126 and 421 (± 5 Standard Deviations).

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

Zinc

MAPEP-21-MaS44



Notes:

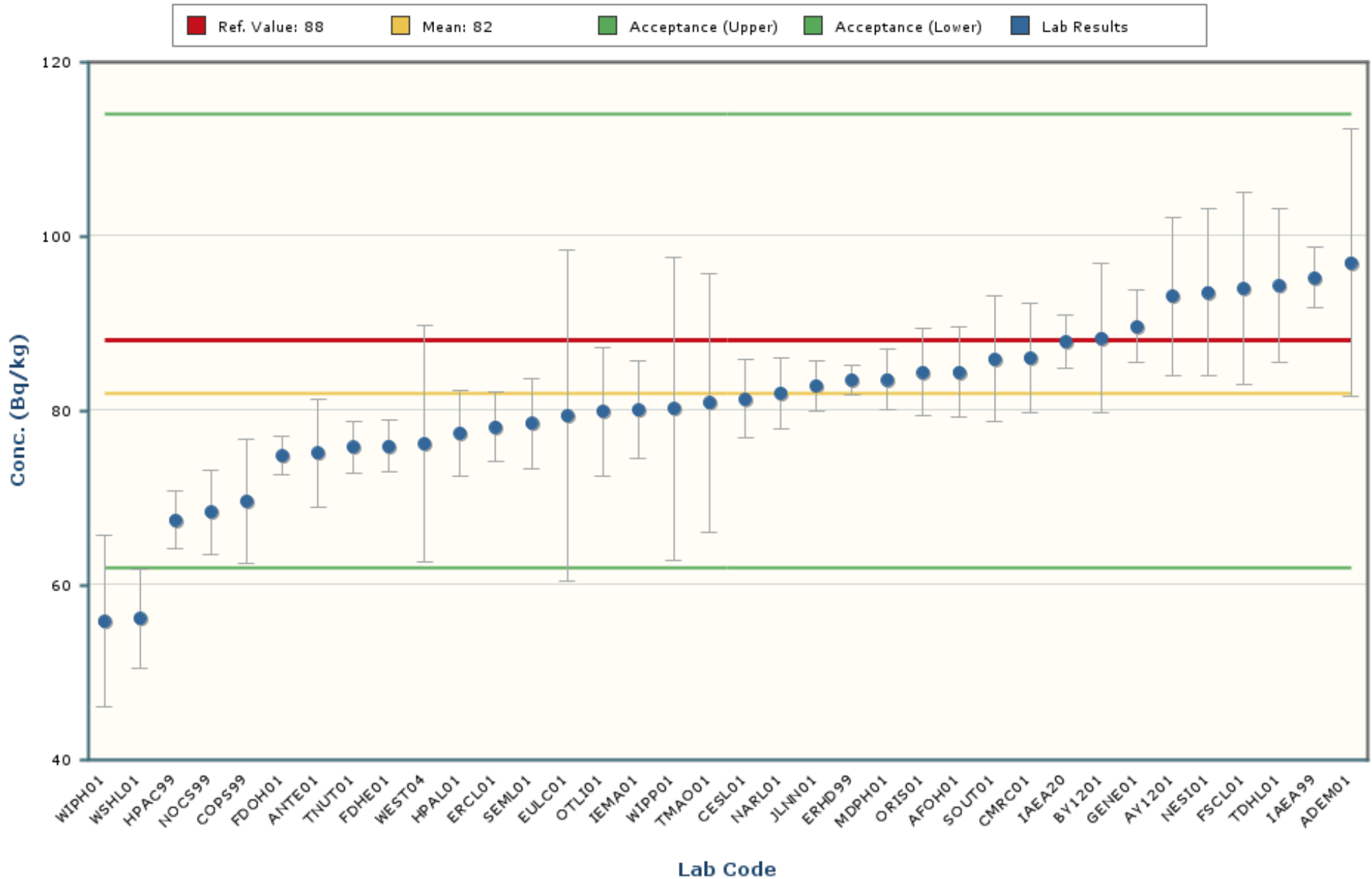
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 201 and 523 (± 5 Standard Deviations).

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

Americium-241

MAPEP-21-MaS44



Notes:

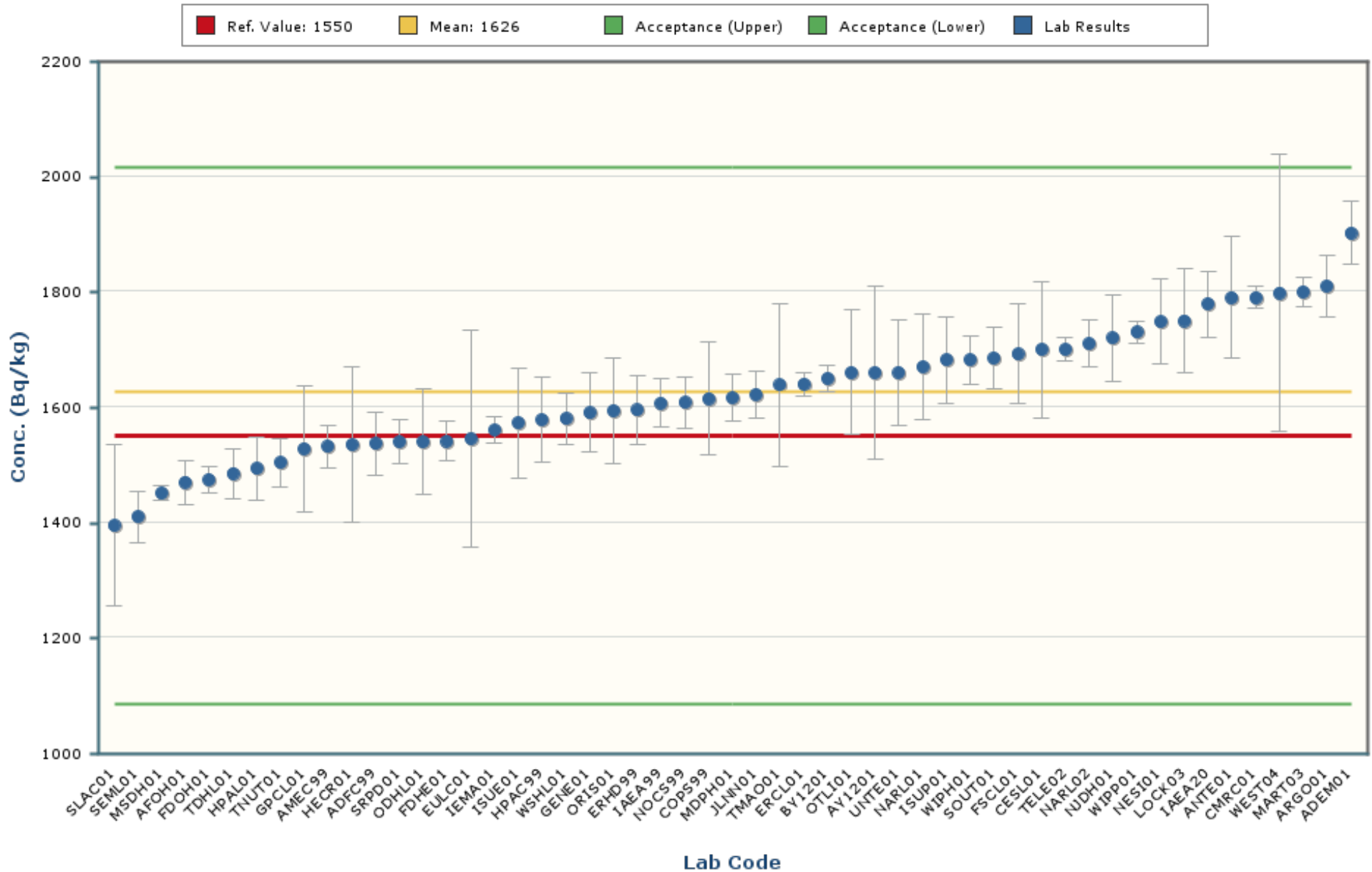
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 44 and 121 (± 5 Standard Deviations).

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

Cesium-137

MAPEP-21-MaS44



Notes:

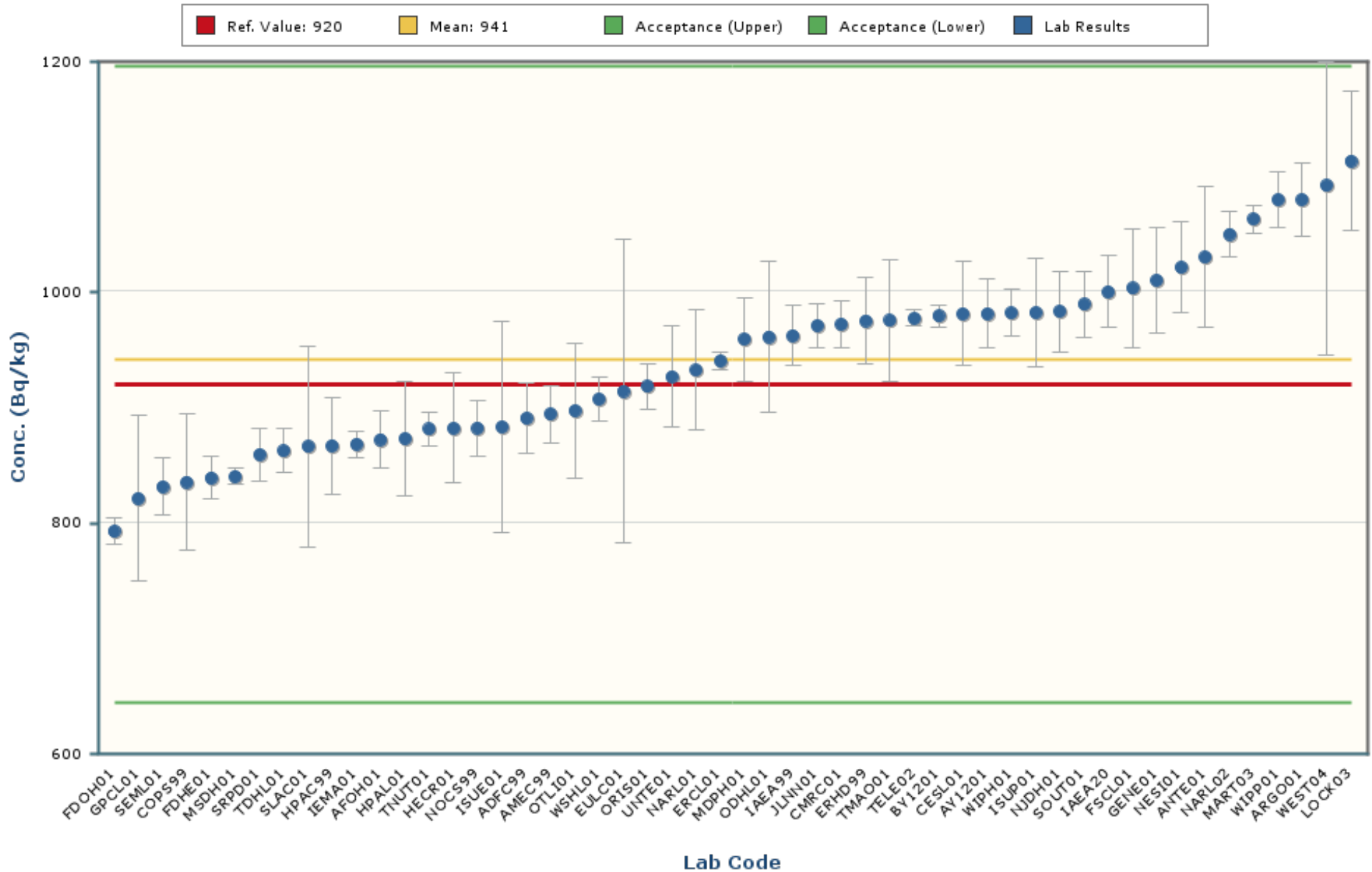
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 1069 and 2182 (± 5 Standard Deviations).

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

Cobalt-57

MAPEP-21-MaS44



Notes:

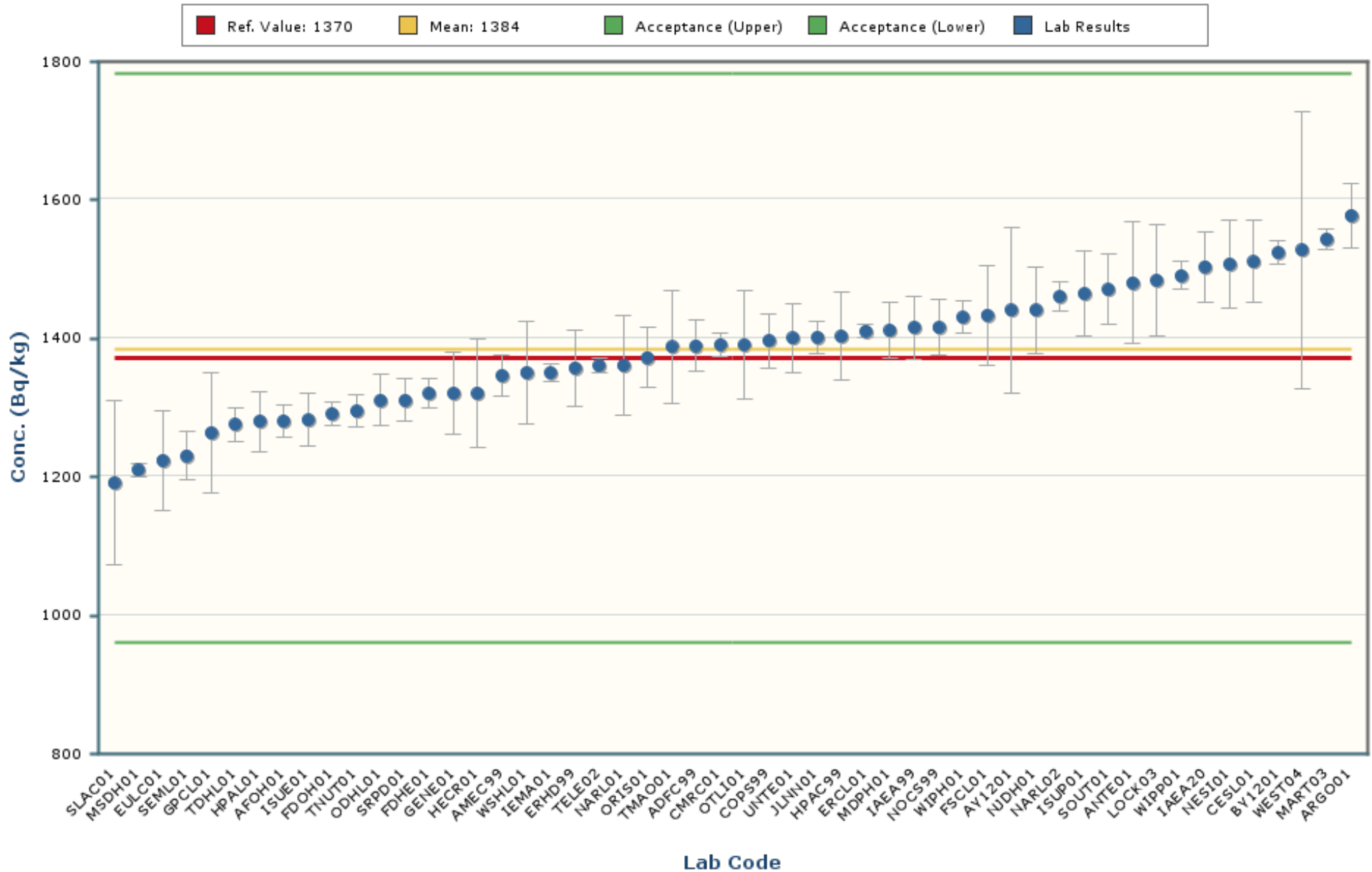
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 554 and 1328 (± 5 Standard Deviations).

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

Cobalt-60

MAPEP-21-MaS44



Notes:

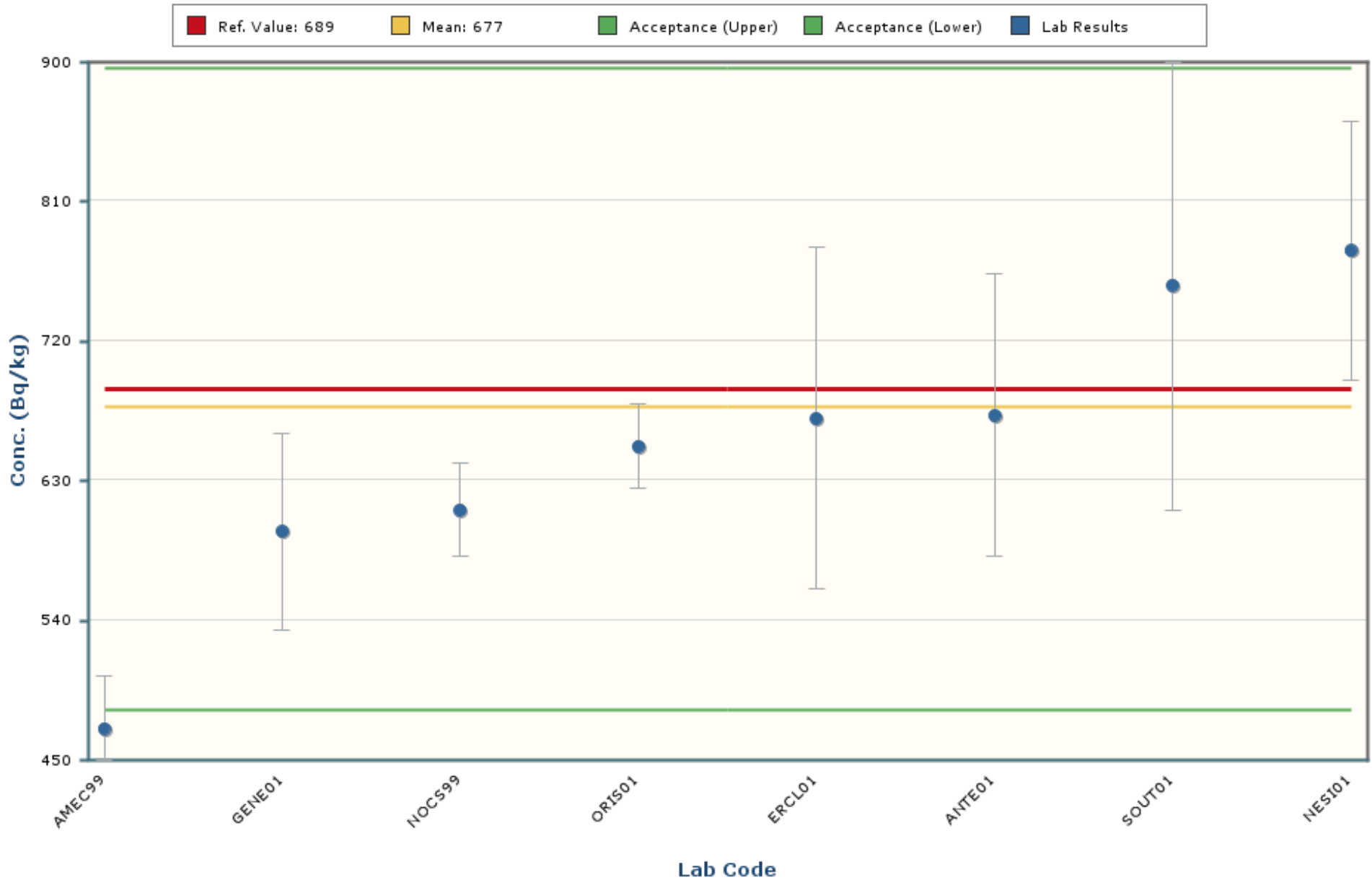
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 922 and 1846 (± 5 Standard Deviations).

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

Nickel-63

MAPEP-21-MaS44



Notes:

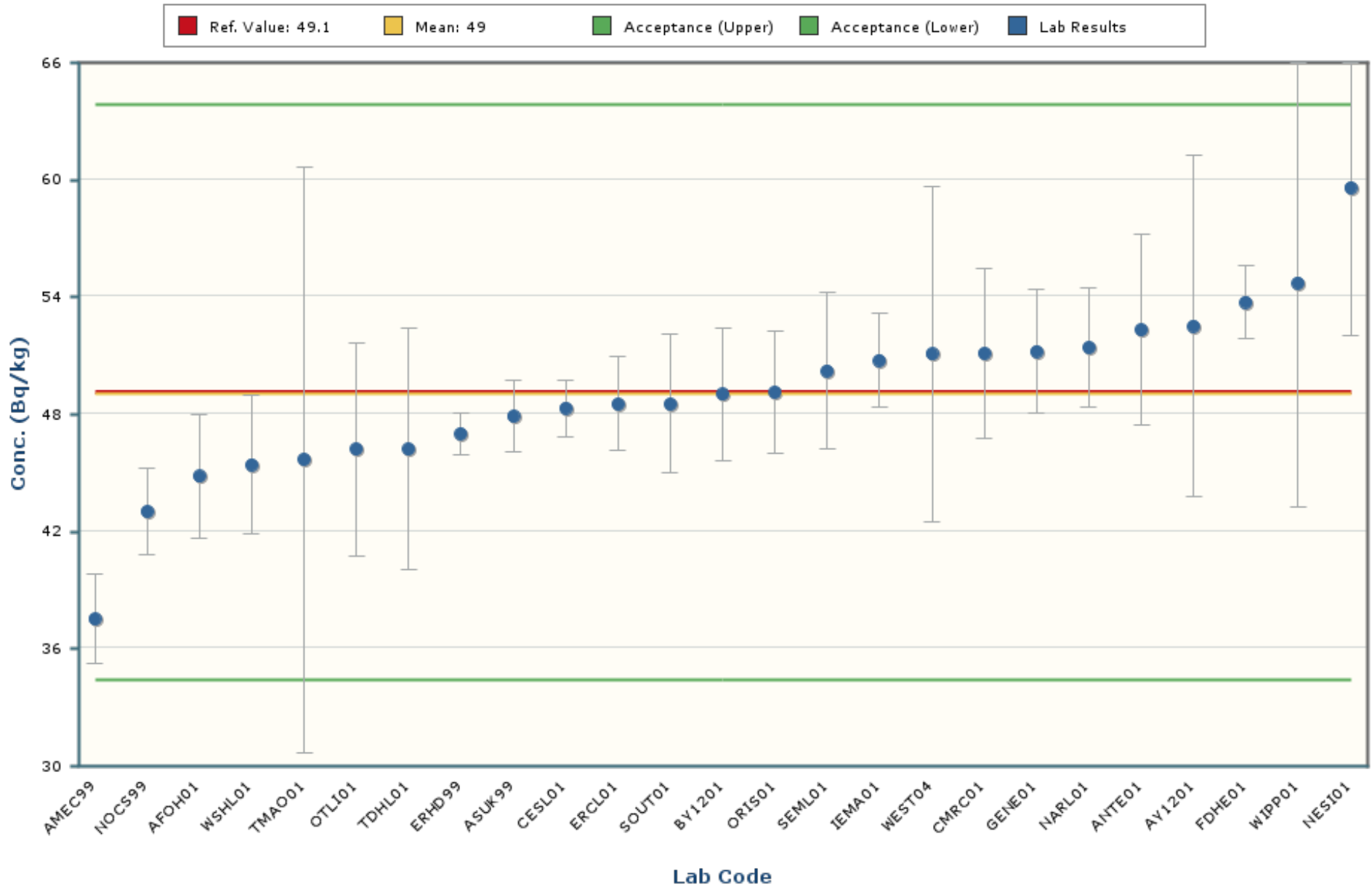
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 336 and 1017 (± 5 Standard Deviations).

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

Plutonium-238

MAPEP-21-MaS44



Notes:

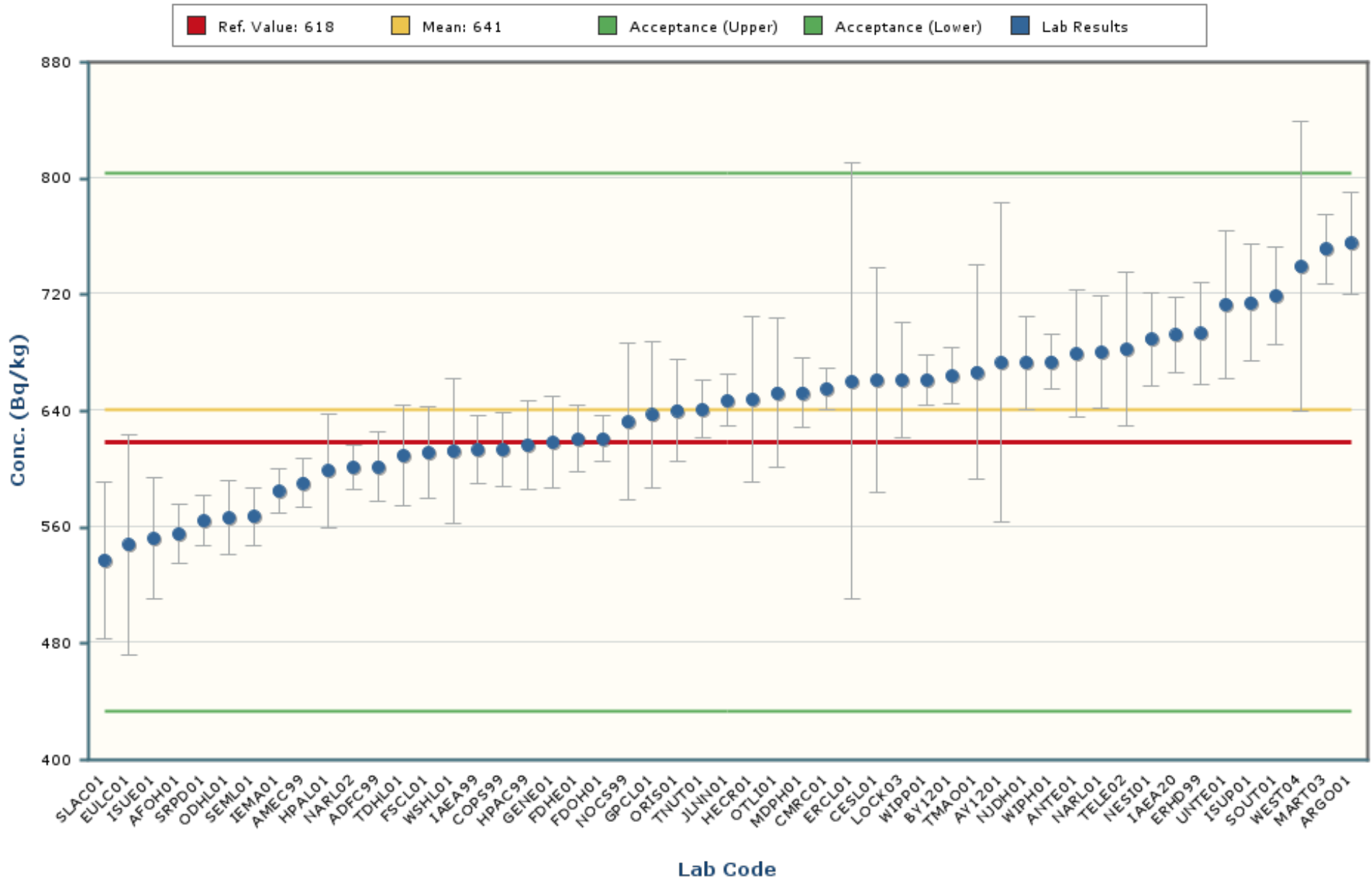
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 27.5 and 70.6 (± 5 Standard Deviations).

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

Potassium-40

MAPEP-21-MaS44



Notes:

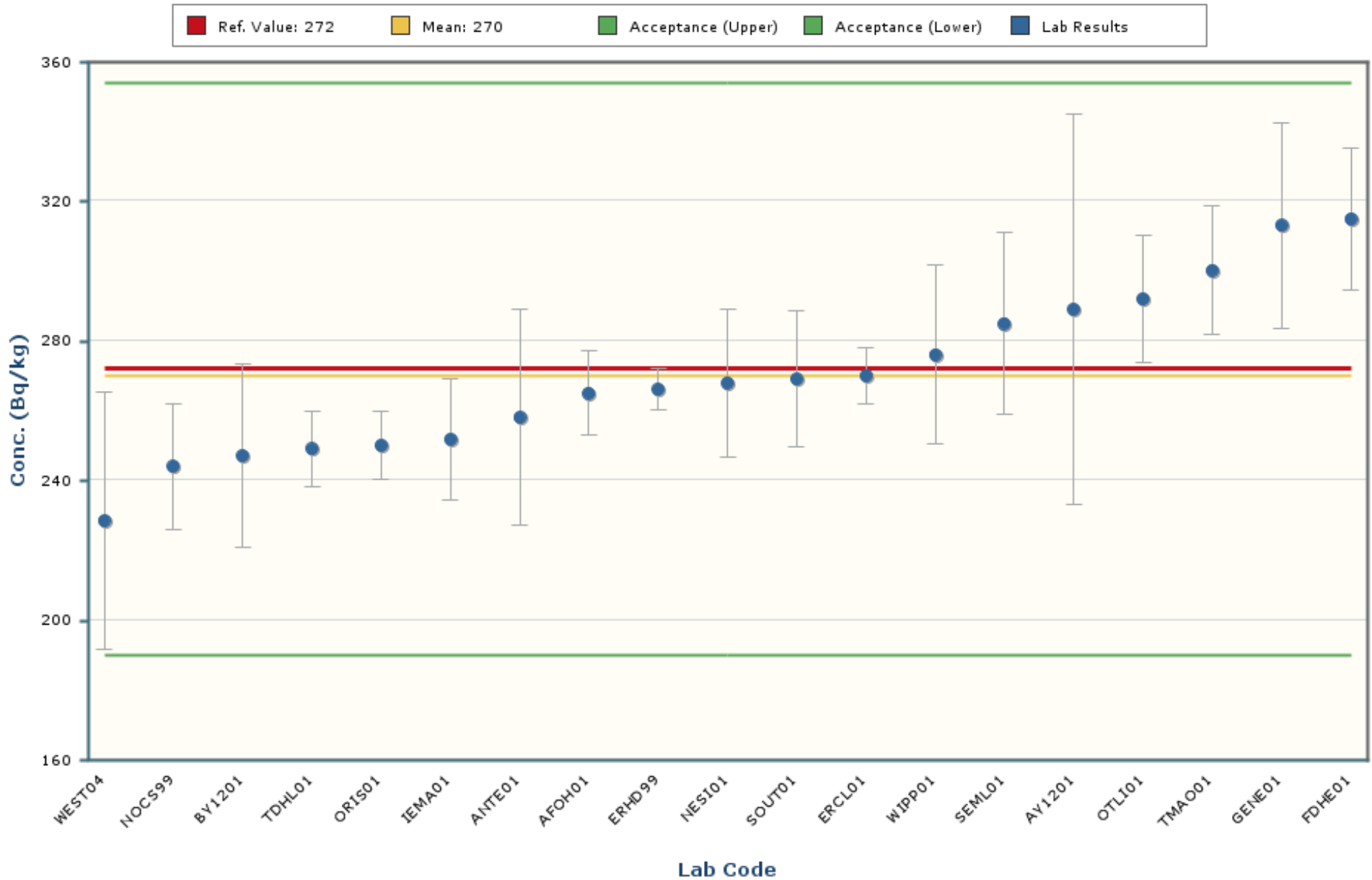
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 378 and 905 (± 5 Standard Deviations).

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

Strontium-90

MAPEP-21-MaS44



Notes:

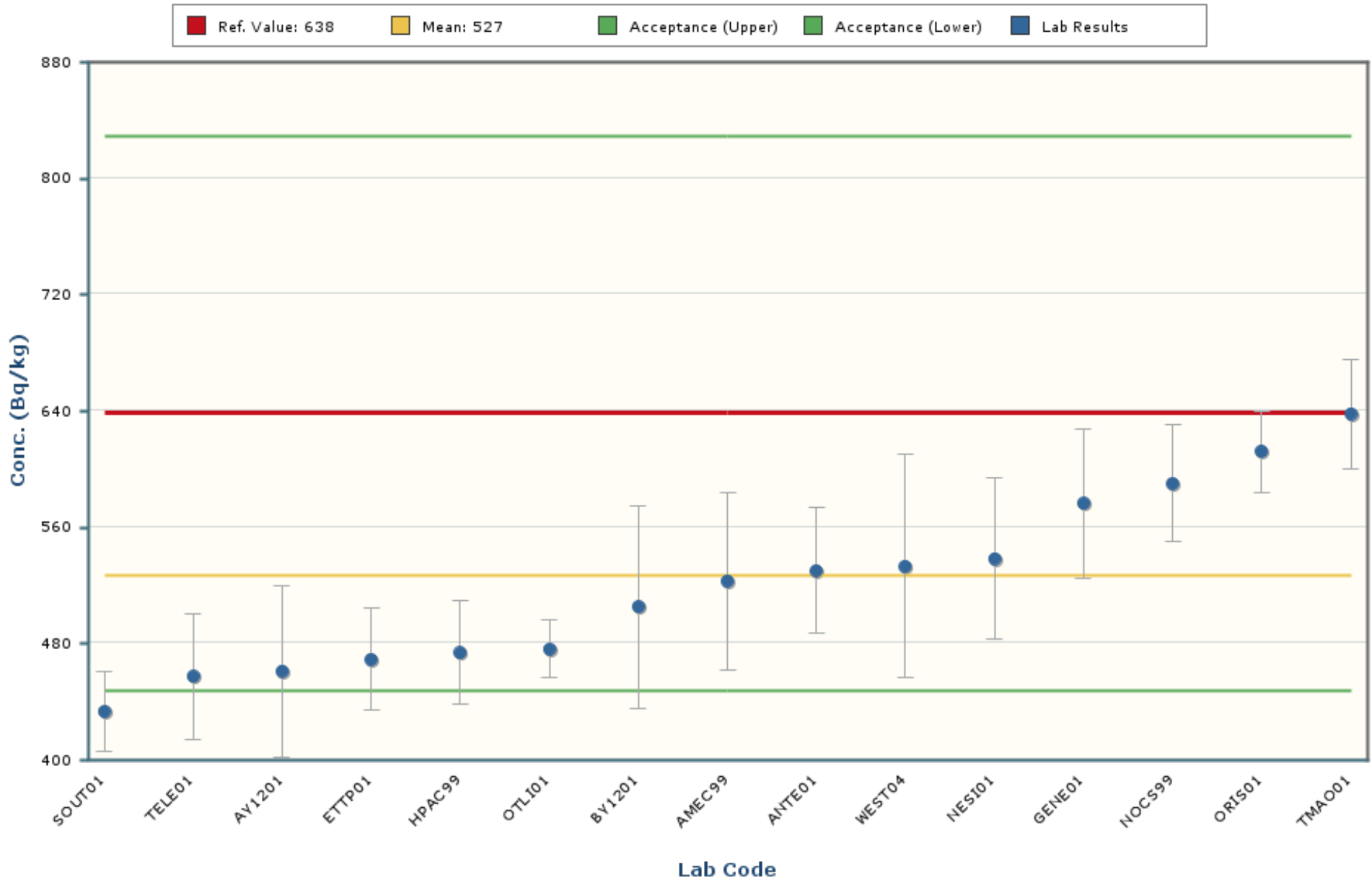
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 151 and 389 (± 5 Standard Deviations).

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

Technetium-99

MAPEP-21-MaS44



Notes:

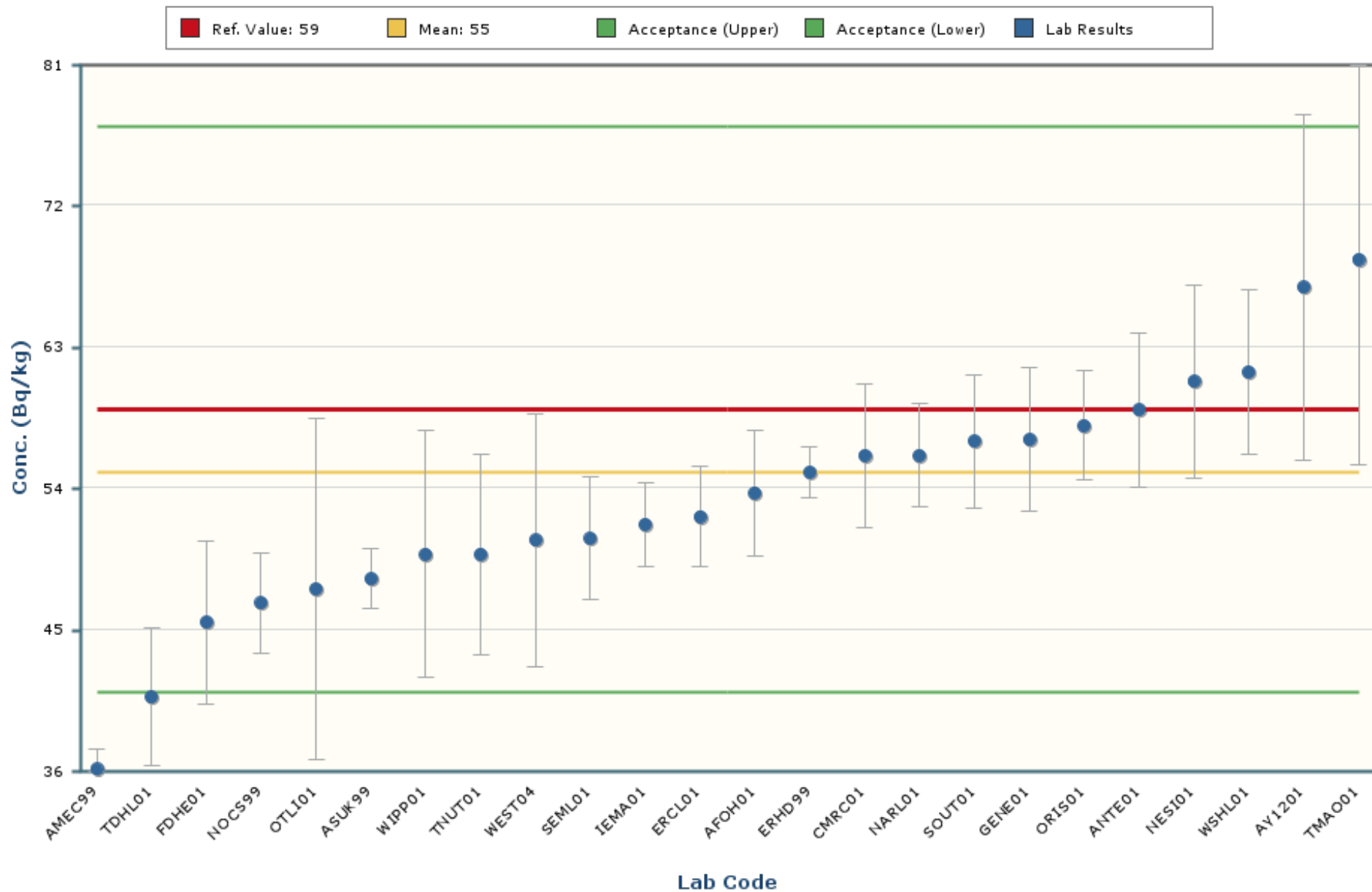
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 234 and 820 (± 5 Standard Deviations).

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

Uranium-234

MAPEP-21-MaS44



Notes:

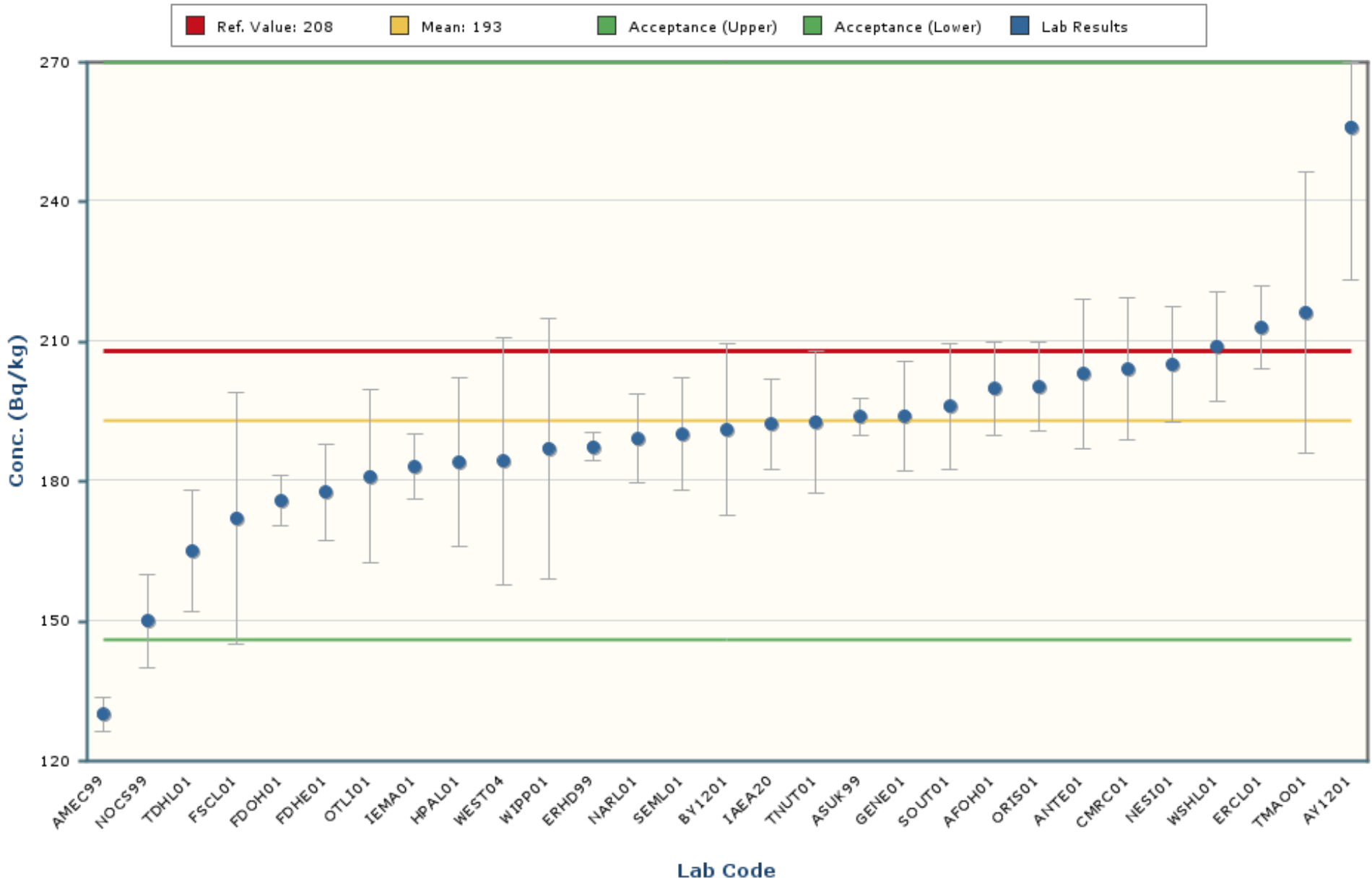
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 24 and 86 (± 5 Standard Deviations).

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

Uranium-238

MAPEP-21-MaS44



Notes:

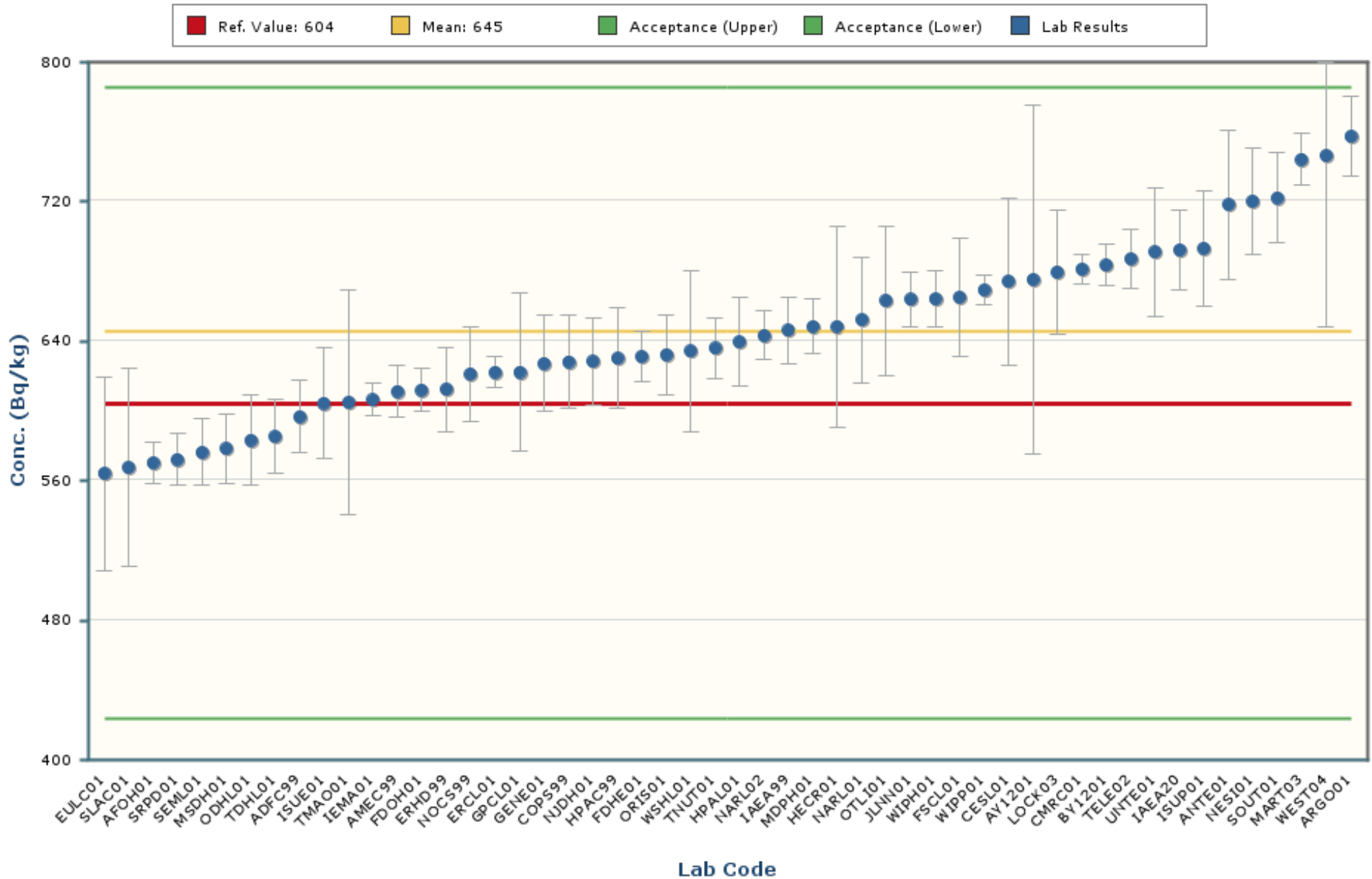
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 98 and 287 (± 5 Standard Deviations).

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

Zinc-65

MAPEP-21-MaS44



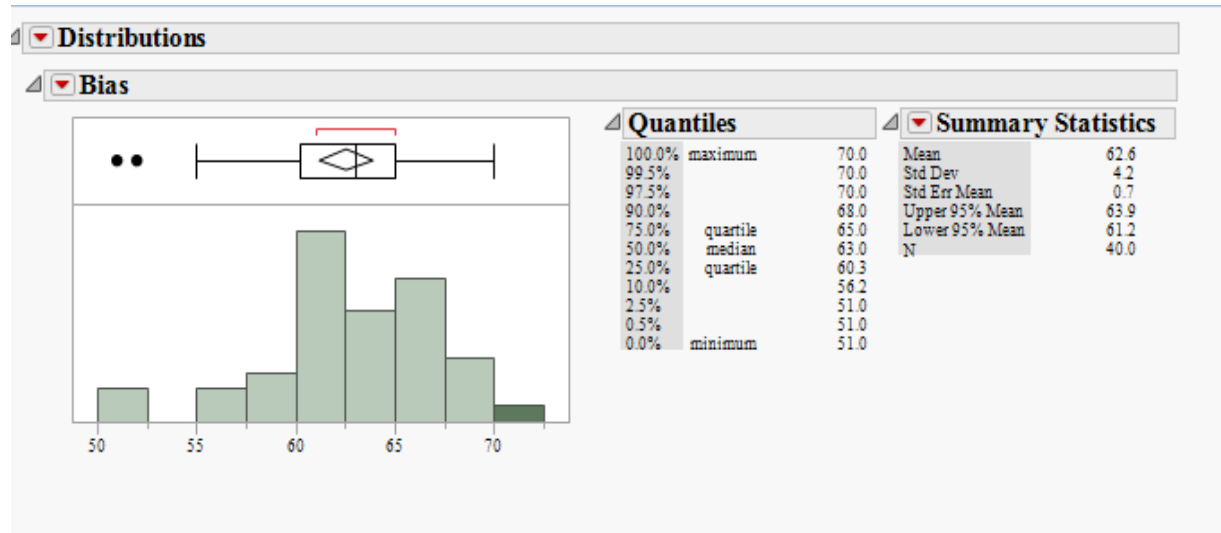
Notes:

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

The chart shows only data points with values between 402 and 887 (± 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.

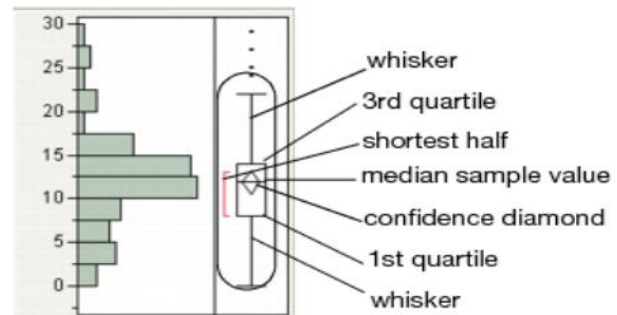


Outlier Box Plot

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)

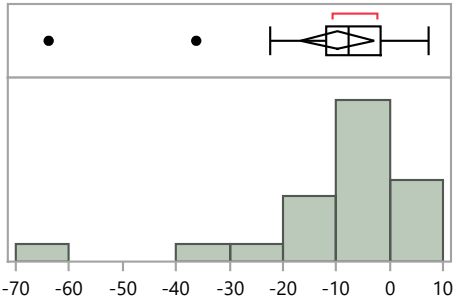


If the data points do not reach the computed ranges, then the whiskers are determined by the upper and lower data point values (not including outliers). The bracket outside of the box identifies the *shortest half*, which is the most dense 50% of the observations (Rousseuw and Leroy 1987).

MaS Distribution by Detection Method

Distributions Analyte_Detection=Americium-241 Alpha Spectrometry

Bias



Quantiles

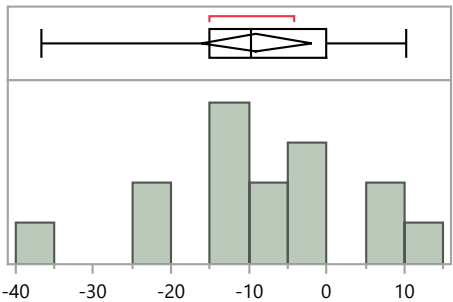
100.0%	maximum	7.2
99.5%		7.2
97.5%		7.2
90.0%		6.2
75.0%	quartile	-1.7
50.0%	median	-7.9
25.0%	quartile	-11.8
10.0%		-32.1
2.5%		-63.8
0.5%		-63.8
0.0%	minimum	-63.8

Summary Statistics

Mean	-9.8
Std Dev	15.5
Std Err Mean	3.3
Upper 95% Mean	-2.9
Lower 95% Mean	-16.6
N	22.0

Distributions Analyte_Detection=Americium-241 Gamma Spectrometry

Bias



Quantiles

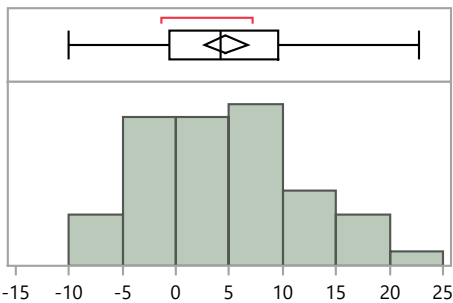
100.0%	maximum	10.2
99.5%		10.2
97.5%		10.2
90.0%		9.0
75.0%	quartile	-0.1
50.0%	median	-9.8
25.0%	quartile	-15.0
10.0%		-28.7
2.5%		-36.6
0.5%		-36.6
0.0%	minimum	-36.6

Summary Statistics

Mean	-9.0
Std Dev	12.7
Std Err Mean	3.3
Upper 95% Mean	-2.0
Lower 95% Mean	-16.0
N	15.0

Distributions Analyte_Detection=Cesium-137 Gamma Spectrometry

Bias



Quantiles

100.0%	maximum	22.7
99.5%		22.7
97.5%		20.8
90.0%		15.3
75.0%	quartile	9.6
50.0%	median	4.3
25.0%	quartile	-0.6
10.0%		-4.7
2.5%		-9.7
0.5%		-10.0
0.0%	minimum	-10.0

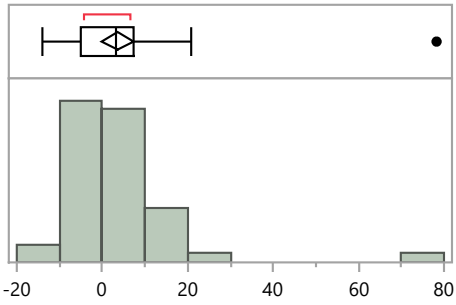
Summary Statistics

Mean	4.7
Std Dev	7.1
Std Err Mean	1.0
Upper 95% Mean	6.7
Lower 95% Mean	2.7
N	52.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Cobalt-57 Gamma Spectrometry

Bias



Quantiles

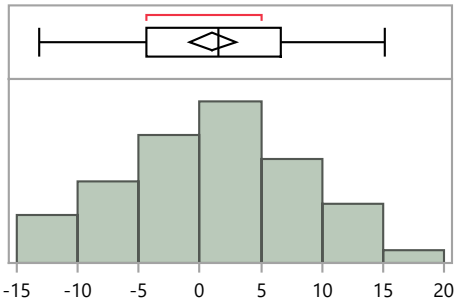
100.0%	maximum	78.2
99.5%		78.2
97.5%		59.6
90.0%		16.8
75.0%	quartile	7.3
50.0%	median	3.2
25.0%	quartile	-4.9
10.0%		-8.8
2.5%		-12.9
0.5%		-13.9
0.0%	minimum	-13.9

Summary Statistics

Mean	3.7
Std Dev	13.5
Std Err Mean	1.9
Upper 95% Mean	7.4
Lower 95% Mean	-0.1
N	52.0

Distributions Analyte_Detection=Cobalt-60 Gamma Spectrometry

Bias



Quantiles

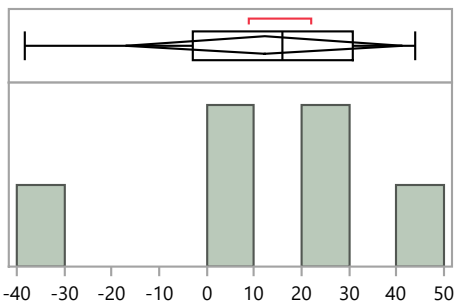
100.0%	maximum	15.1
99.5%		15.1
97.5%		14.3
90.0%		10.2
75.0%	quartile	6.6
50.0%	median	1.5
25.0%	quartile	-4.4
10.0%		-7.6
2.5%		-12.7
0.5%		-13.1
0.0%	minimum	-13.1

Summary Statistics

Mean	1.0
Std Dev	6.8
Std Err Mean	1.0
Upper 95% Mean	2.9
Lower 95% Mean	-0.9
N	51.0

Distributions Analyte_Detection=Iron-55 Liquid Scintillation Counter

Bias



Quantiles

100.0%	maximum	44.0
99.5%		44.0
97.5%		44.0
90.0%		44.0
75.0%	quartile	30.8
50.0%	median	15.9
25.0%	quartile	-2.9
10.0%		-38.2
2.5%		-38.2
0.5%		-38.2
0.0%	minimum	-38.2

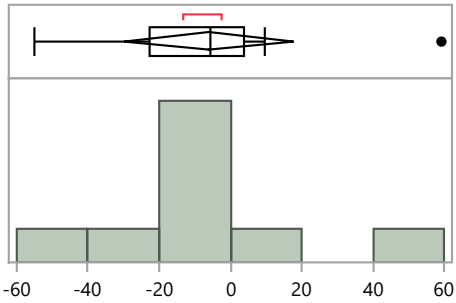
Summary Statistics

Mean	12.2
Std Dev	27.8
Std Err Mean	11.4
Upper 95% Mean	41.3
Lower 95% Mean	-17.0
N	6.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Nickel-63 Liquid Scintillation Counter

Bias



Quantiles

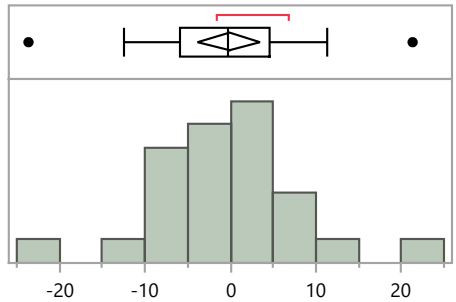
100.0%	maximum	59.2
99.5%		59.2
97.5%		59.2
90.0%		59.2
75.0%	quartile	3.6
50.0%	median	-5.4
25.0%	quartile	-22.6
10.0%		-55.0
2.5%		-55.0
0.5%		-55.0
0.0%	minimum	-55.0

Summary Statistics

Mean	-5.9
Std Dev	31.0
Std Err Mean	10.3
Upper 95% Mean	17.9
Lower 95% Mean	-29.7
N	9.0

Distributions Analyte_Detection=Plutonium-238 Alpha Spectrometry

Bias



Quantiles

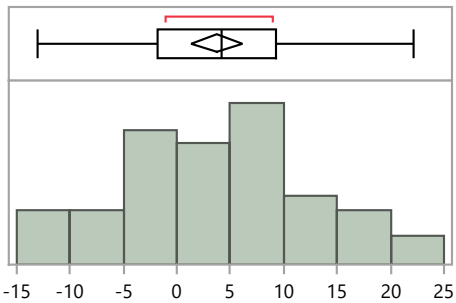
100.0%	maximum	21.3
99.5%		21.3
97.5%		21.3
90.0%		10.2
75.0%	quartile	4.5
50.0%	median	-0.2
25.0%	quartile	-5.9
10.0%		-10.2
2.5%		-23.6
0.5%		-23.6
0.0%	minimum	-23.6

Summary Statistics

Mean	-0.2
Std Dev	8.8
Std Err Mean	1.8
Upper 95% Mean	3.5
Lower 95% Mean	-3.8
N	25.0

Distributions Analyte_Detection=Potassium-40 Gamma Spectrometry

Bias



Quantiles

100.0%	maximum	22.2
99.5%		22.2
97.5%		22.0
90.0%		15.5
75.0%	quartile	9.2
50.0%	median	4.2
25.0%	quartile	-1.8
10.0%		-8.7
2.5%		-12.6
0.5%		-13.1
0.0%	minimum	-13.1

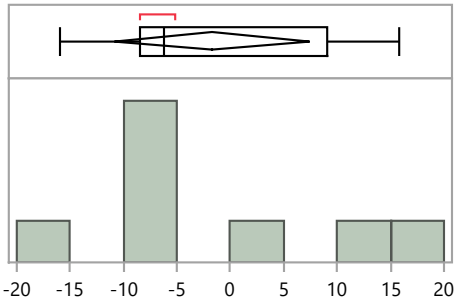
Summary Statistics

Mean	3.7
Std Dev	8.6
Std Err Mean	1.2
Upper 95% Mean	6.2
Lower 95% Mean	1.3
N	50.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Strontium-90 Gas Flow Proportional Counter

Bias



Quantiles

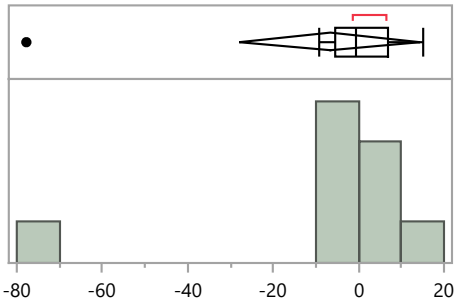
100.0%	maximum	15.8
99.5%		15.8
97.5%		15.8
90.0%		15.8
75.0%	quartile	9.0
50.0%	median	-6.3
25.0%	quartile	-8.4
10.0%		-16.0
2.5%		-16.0
0.5%		-16.0
0.0%	minimum	-16.0

Summary Statistics

Mean	-1.8
Std Dev	10.9
Std Err Mean	3.9
Upper 95% Mean	7.3
Lower 95% Mean	-10.9
N	8.0

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

Bias



Quantiles

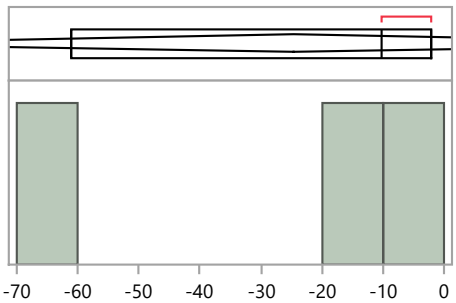
100.0%	maximum	15.1
99.5%		15.1
97.5%		15.1
90.0%		15.1
75.0%	quartile	6.9
50.0%	median	-0.7
25.0%	quartile	-5.4
10.0%		-77.7
2.5%		-77.7
0.5%		-77.7
0.0%	minimum	-77.7

Summary Statistics

Mean	-6.7
Std Dev	27.5
Std Err Mean	9.2
Upper 95% Mean	14.5
Lower 95% Mean	-27.8
N	9.0

Distributions Analyte_Detection=Strontium-90 Liquid Scintillation Counter

Bias



Quantiles

100.0%	maximum	-2.2
99.5%		-2.2
97.5%		-2.2
90.0%		-2.2
75.0%	quartile	-2.2
50.0%	median	-10.3
25.0%	quartile	-61.1
10.0%		-61.1
2.5%		-61.1
0.5%		-61.1
0.0%	minimum	-61.1

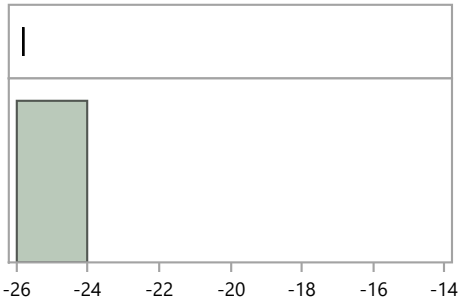
Summary Statistics

Mean	-24.5
Std Dev	31.9
Std Err Mean	18.4
Upper 95% Mean	54.8
Lower 95% Mean	-103.8
N	3.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Technetium-99 Gas Flow Proportional Counter

Bias



Quantiles

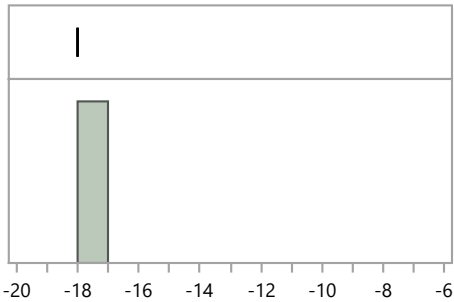
100.0%	maximum	-25.8
99.5%		-25.8
97.5%		-25.8
90.0%		-25.8
75.0%	quartile	-25.8
50.0%	median	-25.8
25.0%	quartile	-25.8
10.0%		-25.8
2.5%		-25.8
0.5%		-25.8
0.0%	minimum	-25.8

Summary Statistics

Mean	-25.8
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Detection=Technetium-99 Inductively Coupled Plasma Mass Spectrometry

Bias



Quantiles

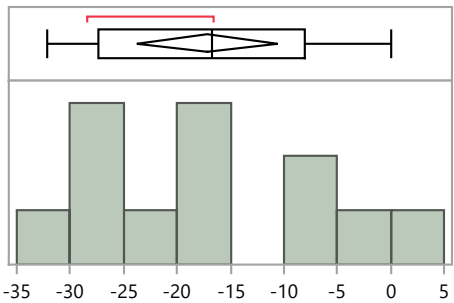
100.0%	maximum	-18.0
99.5%		-18.0
97.5%		-18.0
90.0%		-18.0
75.0%	quartile	-18.0
50.0%	median	-18.0
25.0%	quartile	-18.0
10.0%		-18.0
2.5%		-18.0
0.5%		-18.0
0.0%	minimum	-18.0

Summary Statistics

Mean	-18.0
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	0.0
99.5%		0.0
97.5%		0.0
90.0%		-1.2
75.0%	quartile	-8.1
50.0%	median	-16.7
25.0%	quartile	-27.4
10.0%		-31.0
2.5%		-32.1
0.5%		-32.1
0.0%	minimum	-32.1

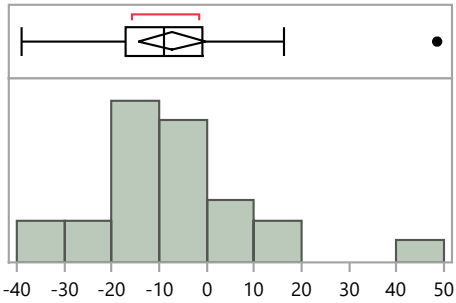
Summary Statistics

Mean	-17.2
Std Dev	10.3
Std Err Mean	3.0
Upper 95% Mean	-10.6
Lower 95% Mean	-23.7
N	12.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Uranium-234 Alpha Spectrometry

Bias



Quantiles

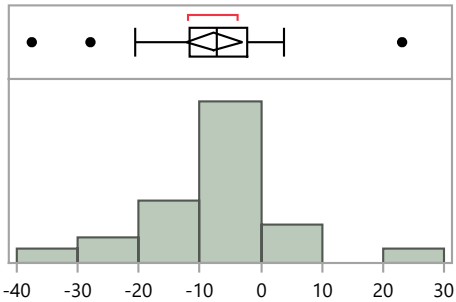
100.0%	maximum	48.5
99.5%		48.5
97.5%		48.5
90.0%		14.4
75.0%	quartile	-0.9
50.0%	median	-9.0
25.0%	quartile	-17.0
10.0%		-26.1
2.5%		-38.8
0.5%		-38.8
0.0%	minimum	-38.8

Summary Statistics

Mean	-7.3
Std Dev	17.0
Std Err Mean	3.4
Upper 95% Mean	-0.3
Lower 95% Mean	-14.3
N	25.0

Distributions Analyte_Detection=Uranium-238 Alpha Spectrometry

Bias



Quantiles

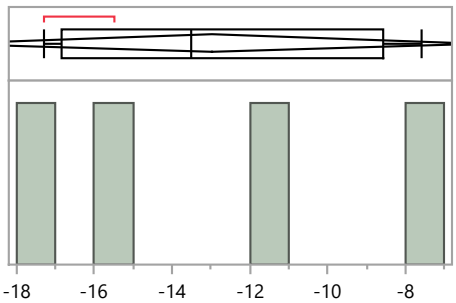
100.0%	maximum	23.1
99.5%		23.1
97.5%		23.1
90.0%		3.0
75.0%	quartile	-2.2
50.0%	median	-7.3
25.0%	quartile	-11.7
10.0%		-23.6
2.5%		-37.5
0.5%		-37.5
0.0%	minimum	-37.5

Summary Statistics

Mean	-7.7
Std Dev	11.1
Std Err Mean	2.2
Upper 95% Mean	-3.1
Lower 95% Mean	-12.3
N	25.0

Distributions Analyte_Detection=Uranium-238 Gamma Spectrometry

Bias



Quantiles

100.0%	maximum	-7.6
99.5%		-7.6
97.5%		-7.6
90.0%		-7.6
75.0%	quartile	-8.6
50.0%	median	-13.5
25.0%	quartile	-16.9
10.0%		-17.3
2.5%		-17.3
0.5%		-17.3
0.0%	minimum	-17.3

Summary Statistics

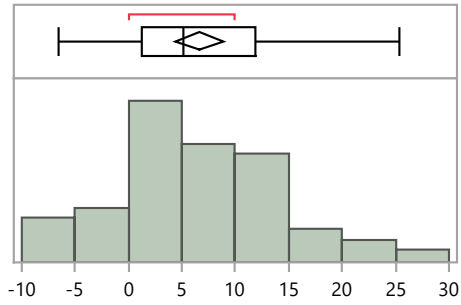
Mean	-13.0
Std Dev	4.3
Std Err Mean	2.2
Upper 95% Mean	-6.1
Lower 95% Mean	-19.9
N	4.0

MaS44 Distribution by Detection Method

MaS Distribution by Detection Method

Distributions Analyte_Detection=Zinc-65 Gamma Spectrometry

Bias



Quantiles

100.0%	maximum	25.3
99.5%		25.3
97.5%		24.8
90.0%		19.1
75.0%	quartile	11.8
50.0%	median	5.2
25.0%	quartile	1.2
10.0%		-4.5
2.5%		-6.5
0.5%		-6.6
0.0%	minimum	-6.6

Summary Statistics

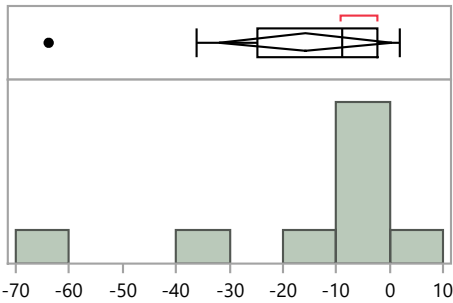
Mean	6.6
Std Dev	8.1
Std Err Mean	1.1
Upper 95% Mean	8.9
Lower 95% Mean	4.3
N	51.0

MaS44 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Americium-241 Acid dissolution with hydrofluoric acid

Bias



Quantiles

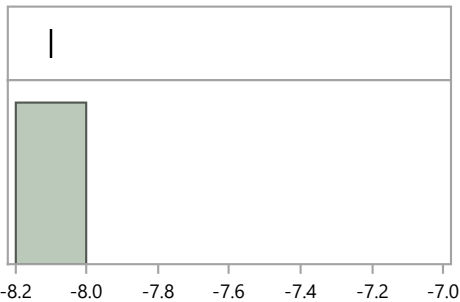
100.0%	maximum	1.8
99.5%		1.8
97.5%		1.8
90.0%		1.8
75.0%	quartile	-2.4
50.0%	median	-8.9
25.0%	quartile	-24.8
10.0%		-63.8
2.5%		-63.8
0.5%		-63.8
0.0%	minimum	-63.8

Summary Statistics

Mean	-15.8
Std Dev	21.1
Std Err Mean	7.0
Upper 95% Mean	0.4
Lower 95% Mean	-32.0
N	9.0

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

Bias



Quantiles

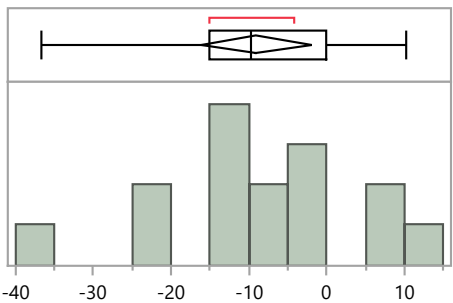
100.0%	maximum	-8.1
99.5%		-8.1
97.5%		-8.1
90.0%		-8.1
75.0%	quartile	-8.1
50.0%	median	-8.1
25.0%	quartile	-8.1
10.0%		-8.1
2.5%		-8.1
0.5%		-8.1
0.0%	minimum	-8.1

Summary Statistics

Mean	-8.1
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

Bias



Quantiles

100.0%	maximum	10.2
99.5%		10.2
97.5%		10.2
90.0%		9.0
75.0%	quartile	-0.1
50.0%	median	-9.8
25.0%	quartile	-15.0
10.0%		-28.7
2.5%		-36.6
0.5%		-36.6
0.0%	minimum	-36.6

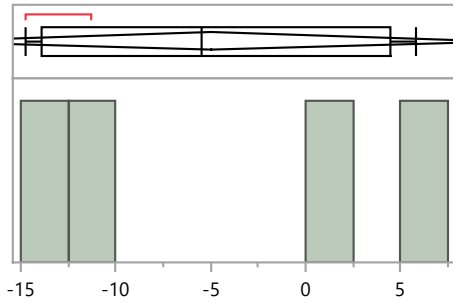
Summary Statistics

Mean	-9.0
Std Dev	12.7
Std Err Mean	3.3
Upper 95% Mean	-2.0
Lower 95% Mean	-16.0
N	15.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Americium-241 Other

Bias



Quantiles

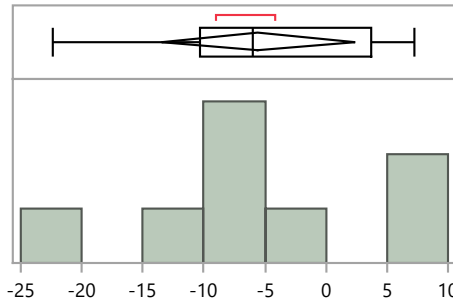
100.0%	maximum	5.8
99.5%		5.8
97.5%		5.8
90.0%		5.8
75.0%	quartile	4.4
50.0%	median	-5.5
25.0%	quartile	-13.9
10.0%		-14.7
2.5%		-14.7
0.5%		-14.7
0.0%	minimum	-14.7

Summary Statistics

Mean	-5.0
Std Dev	9.6
Std Err Mean	4.8
Upper 95% Mean	10.4
Lower 95% Mean	-20.3
N	4.0

Distributions Analyte_Method=Americium-241 Total dissolution by fusion

Bias



Quantiles

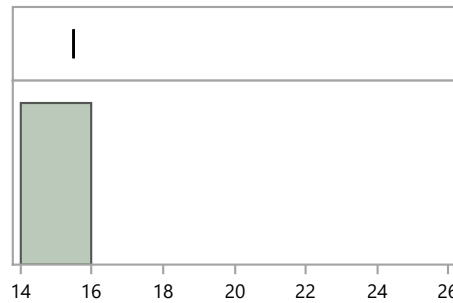
100.0%	maximum	7.2
99.5%		7.2
97.5%		7.2
90.0%		7.2
75.0%	quartile	3.7
50.0%	median	-6.0
25.0%	quartile	-10.4
10.0%		-22.4
2.5%		-22.4
0.5%		-22.4
0.0%	minimum	-22.4

Summary Statistics

Mean	-5.6
Std Dev	9.5
Std Err Mean	3.4
Upper 95% Mean	2.3
Lower 95% Mean	-13.5
N	8.0

Distributions Analyte_Method=Cesium-137 Acid dissolution with hydrofluoric acid

Bias



Quantiles

100.0%	maximum	15.5
99.5%		15.5
97.5%		15.5
90.0%		15.5
75.0%	quartile	15.5
50.0%	median	15.5
25.0%	quartile	15.5
10.0%		15.5
2.5%		15.5
0.5%		15.5
0.0%	minimum	15.5

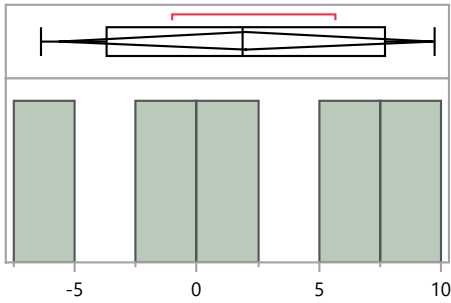
Summary Statistics

Mean	15.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaS Distribution by Prep Method

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

Bias



Quantiles

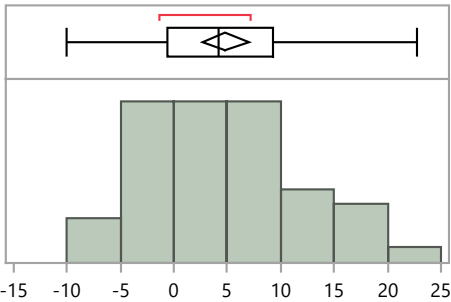
100.0%	maximum	9.7
99.5%		9.7
97.5%		9.7
90.0%		9.7
75.0%	quartile	7.7
50.0%	median	1.9
25.0%	quartile	-3.7
10.0%		-6.4
2.5%		-6.4
0.5%		-6.4
0.0%	minimum	-6.4

Summary Statistics

Mean	2.0
Std Dev	6.2
Std Err Mean	2.8
Upper 95% Mean	9.6
Lower 95% Mean	-5.7
N	5.0

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

Bias



Quantiles

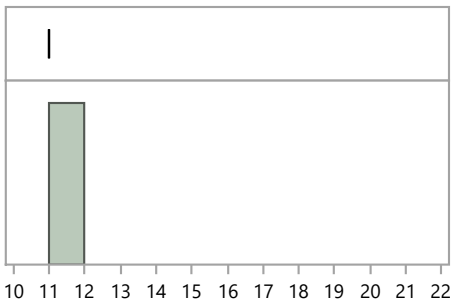
100.0%	maximum	22.7
99.5%		22.7
97.5%		21.7
90.0%		15.7
75.0%	quartile	9.3
50.0%	median	4.3
25.0%	quartile	-0.6
10.0%		-4.4
2.5%		-9.8
0.5%		-10.0
0.0%	minimum	-10.0

Summary Statistics

Mean	4.8
Std Dev	7.2
Std Err Mean	1.1
Upper 95% Mean	7.0
Lower 95% Mean	2.7
N	46.0

Distributions Analyte_Method=Cesium-137 Other

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

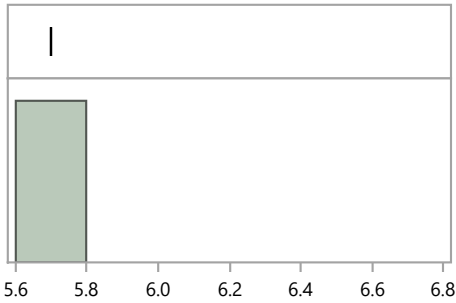
Mean	11.0
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaS44 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Cobalt-57 Acid dissolution with hydrofluoric acid

Bias



Quantiles

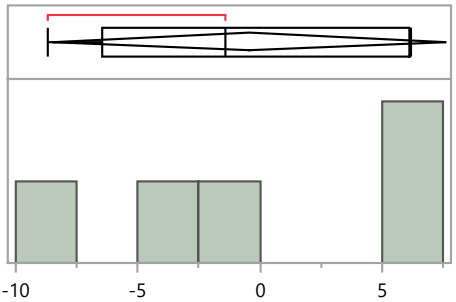
100.0%	maximum	5.7
99.5%		5.7
97.5%		5.7
90.0%		5.7
75.0%	quartile	5.7
50.0%	median	5.7
25.0%	quartile	5.7
10.0%		5.7
2.5%		5.7
0.5%		5.7
0.0%	minimum	5.7

Summary Statistics

Mean	5.7
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

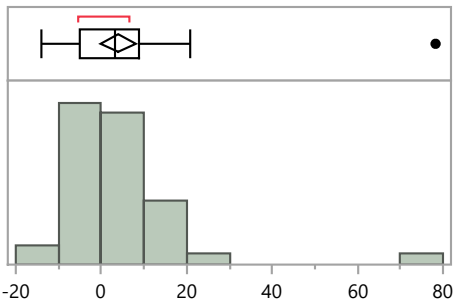
100.0%	maximum	6.2
99.5%		6.2
97.5%		6.2
90.0%		6.2
75.0%	quartile	6.1
50.0%	median	-1.4
25.0%	quartile	-6.5
10.0%		-8.7
2.5%		-8.7
0.5%		-8.7
0.0%	minimum	-8.7

Summary Statistics

Mean	-0.4
Std Dev	6.5
Std Err Mean	2.9
Upper 95% Mean	7.6
Lower 95% Mean	-8.5
N	5.0

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

Bias



Quantiles

100.0%	maximum	78.2
99.5%		78.2
97.5%		68.2
90.0%		17.4
75.0%	quartile	8.8
50.0%	median	3.2
25.0%	quartile	-5.1
10.0%		-8.9
2.5%		-13.4
0.5%		-13.9
0.0%	minimum	-13.9

Summary Statistics

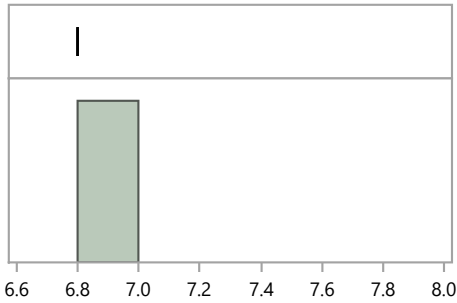
Mean	4.1
Std Dev	14.1
Std Err Mean	2.1
Upper 95% Mean	8.3
Lower 95% Mean	-0.1
N	46.0

MaS44 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Cobalt-57 Other

Bias



Quantiles

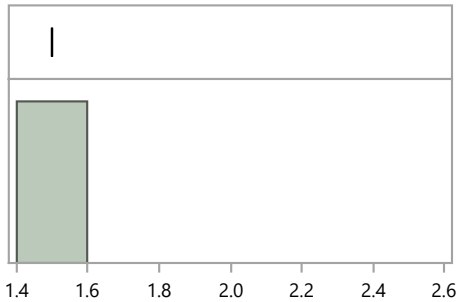
100.0%	maximum	6.8
99.5%		6.8
97.5%		6.8
90.0%		6.8
75.0%	quartile	6.8
50.0%	median	6.8
25.0%	quartile	6.8
10.0%		6.8
2.5%		6.8
0.5%		6.8
0.0%	minimum	6.8

Summary Statistics

Mean	6.8
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Cobalt-60 Acid dissolution with hydrofluoric acid

Bias



Quantiles

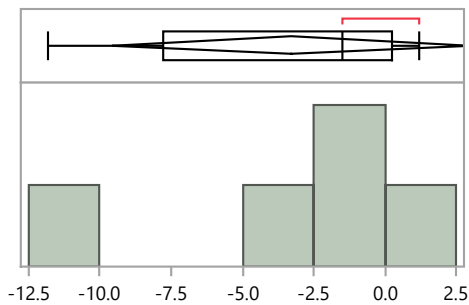
100.0%	maximum	1.5
99.5%		1.5
97.5%		1.5
90.0%		1.5
75.0%	quartile	1.5
50.0%	median	1.5
25.0%	quartile	1.5
10.0%		1.5
2.5%		1.5
0.5%		1.5
0.0%	minimum	1.5

Summary Statistics

Mean	1.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Cobalt-60 EPA 901.1, Gamma Emitting, 600/4-80-032

Bias



Quantiles

100.0%	maximum	1.2
99.5%		1.2
97.5%		1.2
90.0%		1.2
75.0%	quartile	0.3
50.0%	median	-1.5
25.0%	quartile	-7.8
10.0%		-11.8
2.5%		-11.8
0.5%		-11.8
0.0%	minimum	-11.8

Summary Statistics

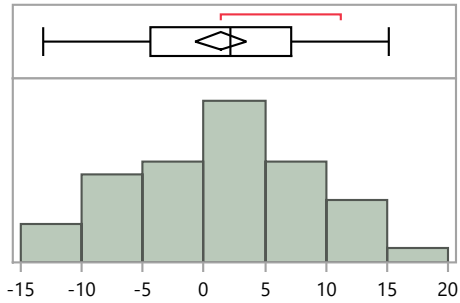
Mean	-3.3
Std Dev	5.1
Std Err Mean	2.3
Upper 95% Mean	3.0
Lower 95% Mean	-9.6
N	5.0

MaS44 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Cobalt-60 No preparation - analyzed as received

Bias



Quantiles

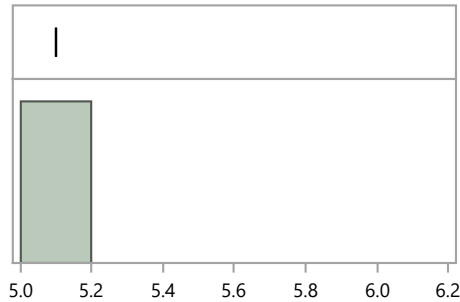
100.0%	maximum	15.1
99.5%		15.1
97.5%		14.7
90.0%		10.6
75.0%	quartile	7.1
50.0%	median	2.2
25.0%	quartile	-4.4
10.0%		-7.3
2.5%		-12.7
0.5%		-13.1
0.0%	minimum	-13.1

Summary Statistics

Mean	1.4
Std Dev	6.9
Std Err Mean	1.0
Upper 95% Mean	3.5
Lower 95% Mean	-0.7
N	45.0

Distributions Analyte_Method=Cobalt-60 Other

Bias



Quantiles

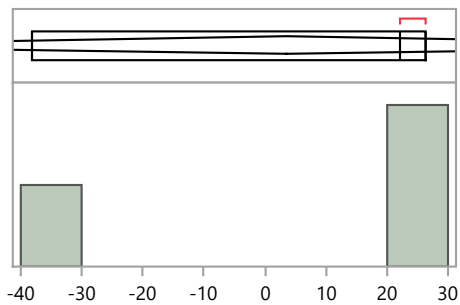
100.0%	maximum	5.1
99.5%		5.1
97.5%		5.1
90.0%		5.1
75.0%	quartile	5.1
50.0%	median	5.1
25.0%	quartile	5.1
10.0%		5.1
2.5%		5.1
0.5%		5.1
0.0%	minimum	5.1

Summary Statistics

Mean	5.1
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Iron-55 Acid dissolution with hydrofluoric acid

Bias



Quantiles

100.0%	maximum	26.4
99.5%		26.4
97.5%		26.4
90.0%		26.4
75.0%	quartile	26.4
50.0%	median	22.0
25.0%	quartile	-38.2
10.0%		-38.2
2.5%		-38.2
0.5%		-38.2
0.0%	minimum	-38.2

Summary Statistics

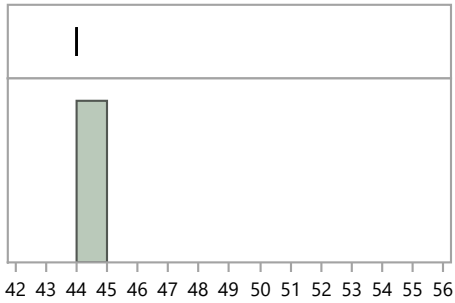
Mean	3.4
Std Dev	36.1
Std Err Mean	20.8
Upper 95% Mean	93.1
Lower 95% Mean	-86.3
N	3.0

MaS44 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Iron-55 Other

Bias



Quantiles

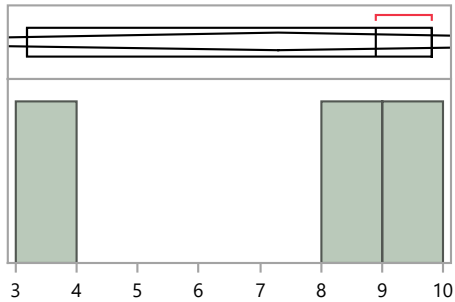
100.0%	maximum	44.0
99.5%		44.0
97.5%		44.0
90.0%		44.0
75.0%	quartile	44.0
50.0%	median	44.0
25.0%	quartile	44.0
10.0%		44.0
2.5%		44.0
0.5%		44.0
0.0%	minimum	44.0

Summary Statistics

Mean	44.0
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

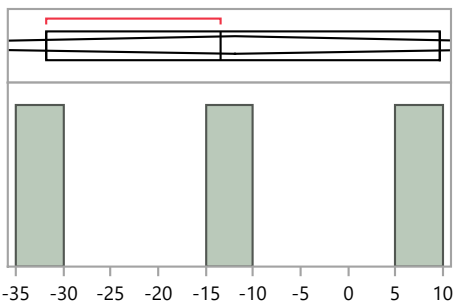
100.0%	maximum	9.8
99.5%		9.8
97.5%		9.8
90.0%		9.8
75.0%	quartile	9.8
50.0%	median	8.9
25.0%	quartile	3.2
10.0%		3.2
2.5%		3.2
0.5%		3.2
0.0%	minimum	3.2

Summary Statistics

Mean	7.3
Std Dev	3.6
Std Err Mean	2.1
Upper 95% Mean	16.2
Lower 95% Mean	-1.6
N	3.0

Distributions Analyte_Method=Nickel-63 Acid dissolution with hydrofluoric acid

Bias



Quantiles

100.0%	maximum	9.7
99.5%		9.7
97.5%		9.7
90.0%		9.7
75.0%	quartile	9.7
50.0%	median	-13.4
25.0%	quartile	-31.8
10.0%		-31.8
2.5%		-31.8
0.5%		-31.8
0.0%	minimum	-31.8

Summary Statistics

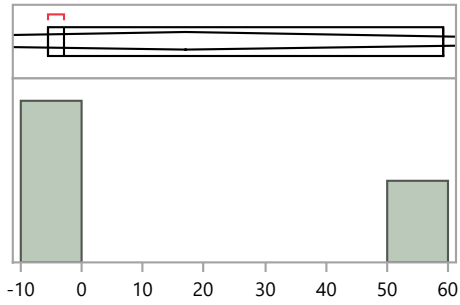
Mean	-11.8
Std Dev	20.8
Std Err Mean	12.0
Upper 95% Mean	39.8
Lower 95% Mean	-63.5
N	3.0

MaS44 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Nickel-63 Acid leaching without hydrofluoric acid

Bias



Quantiles

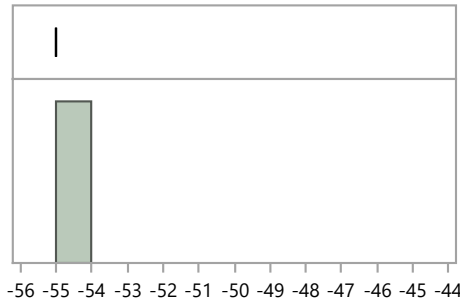
100.0%	maximum	59.2
99.5%		59.2
97.5%		59.2
90.0%		59.2
75.0%	quartile	59.2
50.0%	median	-2.8
25.0%	quartile	-5.4
10.0%		-5.4
2.5%		-5.4
0.5%		-5.4
0.0%	minimum	-5.4

Summary Statistics

Mean	17.0
Std Dev	36.6
Std Err Mean	21.1
Upper 95% Mean	107.8
Lower 95% Mean	-73.8
N	3.0

Distributions Analyte_Method=Nickel-63 Coprecipitation, straight

Bias



Quantiles

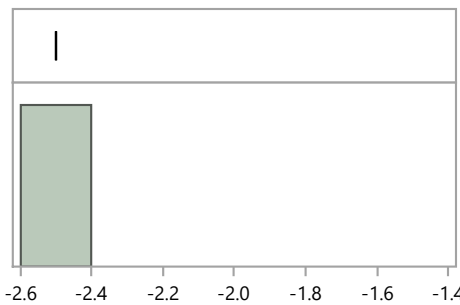
100.0%	maximum	-55.0
99.5%		-55.0
97.5%		-55.0
90.0%		-55.0
75.0%	quartile	-55.0
50.0%	median	-55.0
25.0%	quartile	-55.0
10.0%		-55.0
2.5%		-55.0
0.5%		-55.0
0.0%	minimum	-55.0

Summary Statistics

Mean	-55.0
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Nickel-63 Other

Bias



Quantiles

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

Summary Statistics

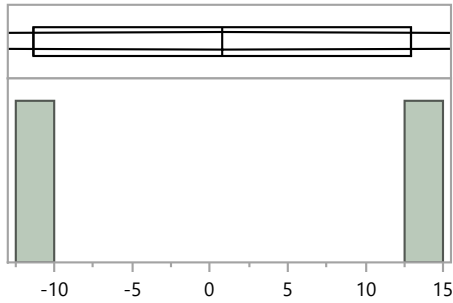
Mean	-2.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaS44 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Nickel-63 Total dissolution by fusion

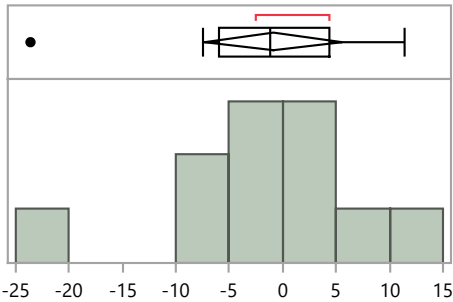
Bias



Quantiles		Summary Statistics		
100.0%	maximum	12.9	Mean	0.8
99.5%		12.9	Std Dev	17.1
97.5%		12.9	Std Err Mean	12.1
90.0%		12.9	Upper 95% Mean	154.5
75.0%	quartile	12.9	Lower 95% Mean	-152.9
50.0%	median	0.8	N	2.0
25.0%	quartile	-11.3		
10.0%		-11.3		
2.5%		-11.3		
0.5%		-11.3		
0.0%	minimum	-11.3		

Distributions Analyte_Method=Plutonium-238 Acid dissolution with hydrofluoric acid

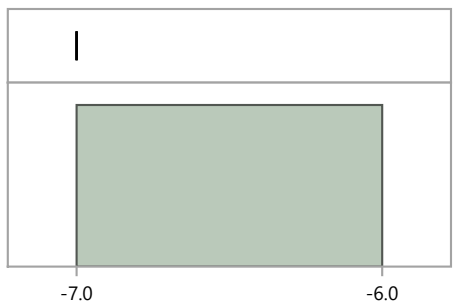
Bias



Quantiles		Summary Statistics		
100.0%	maximum	11.4	Mean	-0.8
99.5%		11.4	Std Dev	9.6
97.5%		11.4	Std Err Mean	2.9
90.0%		11.0	Upper 95% Mean	5.6
75.0%	quartile	4.3	Lower 95% Mean	-7.3
50.0%	median	-1.2	N	11.0
25.0%	quartile	-5.9		
10.0%		-20.4		
2.5%		-23.6		
0.5%		-23.6		
0.0%	minimum	-23.6		

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

Bias



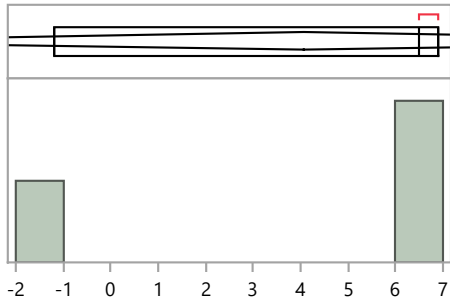
Quantiles		Summary Statistics		
100.0%	maximum	-7.0	Mean	-7.0
99.5%		-7.0	Std Dev	.
97.5%		-7.0	Std Err Mean	.
90.0%		-7.0	Upper 95% Mean	.
75.0%	quartile	-7.0	Lower 95% Mean	.
50.0%	median	-7.0	N	1.0
25.0%	quartile	-7.0		
10.0%		-7.0		
2.5%		-7.0		
0.5%		-7.0		
0.0%	minimum	-7.0		

MaS44 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Plutonium-238 Other

Bias



Quantiles

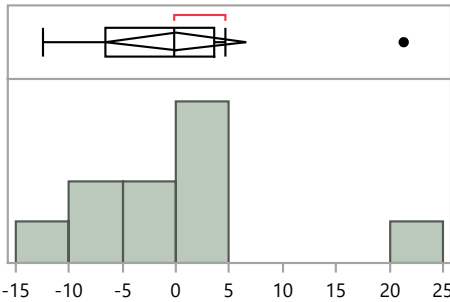
100.0%	maximum	6.9
99.5%		6.9
97.5%		6.9
90.0%		6.9
75.0%	quartile	6.9
50.0%	median	6.5
25.0%	quartile	-1.2
10.0%		-1.2
2.5%		-1.2
0.5%		-1.2
0.0%	minimum	-1.2

Summary Statistics

Mean	4.1
Std Dev	4.6
Std Err Mean	2.6
Upper 95% Mean	15.4
Lower 95% Mean	-7.3
N	3.0

Distributions Analyte_Method=Plutonium-238 Total dissolution by fusion

Bias



Quantiles

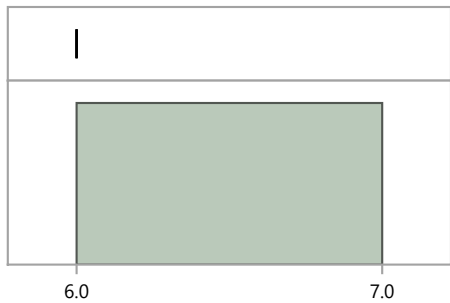
100.0%	maximum	21.3
99.5%		21.3
97.5%		21.3
90.0%		19.6
75.0%	quartile	3.7
50.0%	median	-0.1
25.0%	quartile	-6.6
10.0%		-12.0
2.5%		-12.4
0.5%		-12.4
0.0%	minimum	-12.4

Summary Statistics

Mean	-0.0
Std Dev	9.3
Std Err Mean	2.9
Upper 95% Mean	6.6
Lower 95% Mean	-6.7
N	10.0

Distributions Analyte_Method=Potassium-40 Acid dissolution with hydrofluoric acid

Bias



Quantiles

100.0%	maximum	6.0
99.5%		6.0
97.5%		6.0
90.0%		6.0
75.0%	quartile	6.0
50.0%	median	6.0
25.0%	quartile	6.0
10.0%		6.0
2.5%		6.0
0.5%		6.0
0.0%	minimum	6.0

Summary Statistics

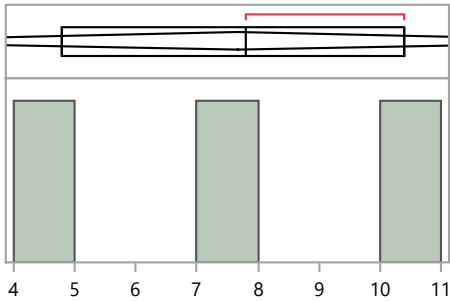
Mean	6.0
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaS44 Distribution by Preparation Method

MaS Distribution by Prep Method

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

Bias



Quantiles

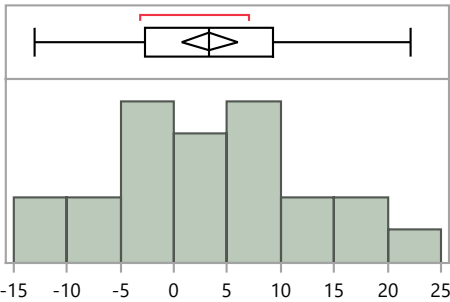
100.0%	maximum	10.4
99.5%		10.4
97.5%		10.4
90.0%		10.4
75.0%	quartile	10.4
50.0%	median	7.8
25.0%	quartile	4.8
10.0%		4.8
2.5%		4.8
0.5%		4.8
0.0%	minimum	4.8

Summary Statistics

Mean	7.7
Std Dev	2.8
Std Err Mean	1.6
Upper 95% Mean	14.6
Lower 95% Mean	0.7
N	3.0

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

Bias



Quantiles

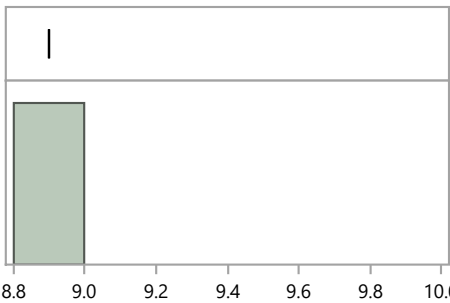
100.0%	maximum	22.2
99.5%		22.2
97.5%		22.1
90.0%		15.7
75.0%	quartile	9.2
50.0%	median	3.4
25.0%	quartile	-2.7
10.0%		-9.2
2.5%		-12.8
0.5%		-13.1
0.0%	minimum	-13.1

Summary Statistics

Mean	3.3
Std Dev	8.9
Std Err Mean	1.3
Upper 95% Mean	6.0
Lower 95% Mean	0.7
N	46.0

Distributions Analyte_Method=Potassium-40 Other

Bias



Quantiles

100.0%	maximum	8.9
99.5%		8.9
97.5%		8.9
90.0%		8.9
75.0%	quartile	8.9
50.0%	median	8.9
25.0%	quartile	8.9
10.0%		8.9
2.5%		8.9
0.5%		8.9
0.0%	minimum	8.9

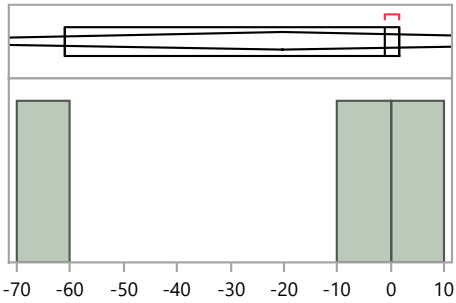
Summary Statistics

Mean	8.9
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Strontium-90 Acid dissolution with hydrofluoric acid

Bias



Quantiles

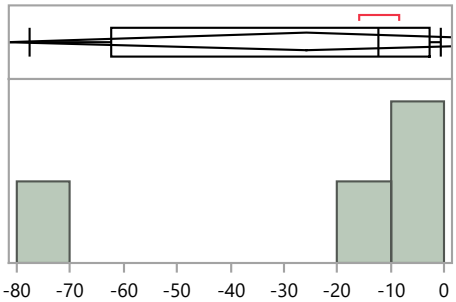
100.0%	maximum	1.5
99.5%		1.5
97.5%		1.5
90.0%		1.5
75.0%	quartile	1.5
50.0%	median	-1.1
25.0%	quartile	-61.1
10.0%		-61.1
2.5%		-61.1
0.5%		-61.1
0.0%	minimum	-61.1

Summary Statistics

Mean	-20.2
Std Dev	35.4
Std Err Mean	20.4
Upper 95% Mean	67.7
Lower 95% Mean	-108.2
N	3.0

Distributions Analyte_Method=Strontium-90 Acid leaching without hydrofluoric acid

Bias



Quantiles

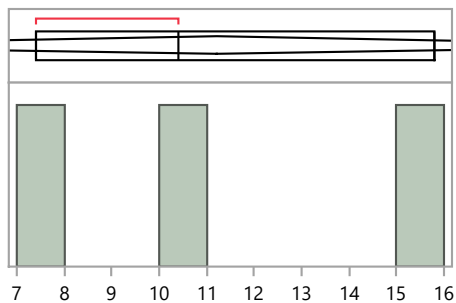
100.0%	maximum	-0.7
99.5%		-0.7
97.5%		-0.7
90.0%		-0.7
75.0%	quartile	-2.7
50.0%	median	-12.3
25.0%	quartile	-62.3
10.0%		-77.7
2.5%		-77.7
0.5%		-77.7
0.0%	minimum	-77.7

Summary Statistics

Mean	-25.7
Std Dev	35.2
Std Err Mean	17.6
Upper 95% Mean	30.3
Lower 95% Mean	-81.7
N	4.0

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

Bias



Quantiles

100.0%	maximum	15.8
99.5%		15.8
97.5%		15.8
90.0%		15.8
75.0%	quartile	15.8
50.0%	median	10.4
25.0%	quartile	7.4
10.0%		7.4
2.5%		7.4
0.5%		7.4
0.0%	minimum	7.4

Summary Statistics

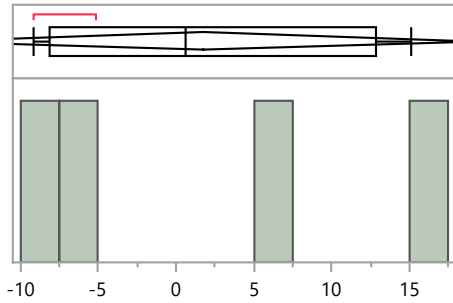
Mean	11.2
Std Dev	4.3
Std Err Mean	2.5
Upper 95% Mean	21.8
Lower 95% Mean	0.6
N	3.0

MaS44 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Strontium-90 Other

Bias



Quantiles

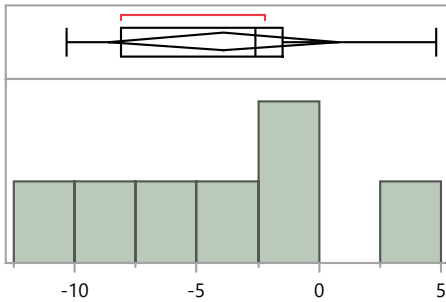
100.0%	maximum	15.1
99.5%		15.1
97.5%		15.1
90.0%		15.1
75.0%	quartile	12.9
50.0%	median	0.6
25.0%	quartile	-8.2
10.0%		-9.2
2.5%		-9.2
0.5%		-9.2
0.0%	minimum	-9.2

Summary Statistics

Mean	1.8
Std Dev	11.0
Std Err Mean	5.5
Upper 95% Mean	19.3
Lower 95% Mean	-15.8
N	4.0

Distributions Analyte_Method=Strontium-90 Total dissolution by fusion

Bias



Quantiles

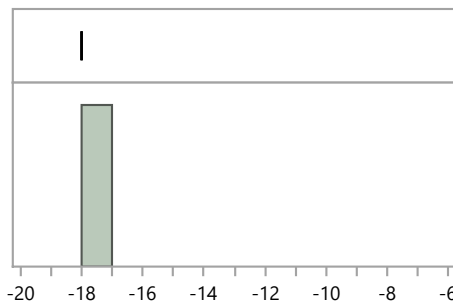
100.0%	maximum	4.8
99.5%		4.8
97.5%		4.8
90.0%		4.8
75.0%	quartile	-1.5
50.0%	median	-2.6
25.0%	quartile	-8.1
10.0%		-10.3
2.5%		-10.3
0.5%		-10.3
0.0%	minimum	-10.3

Summary Statistics

Mean	-3.9
Std Dev	5.1
Std Err Mean	1.9
Upper 95% Mean	0.8
Lower 95% Mean	-8.6
N	7.0

Distributions Analyte_Method=Technetium-99 Acid dissolution with hydrofluoric acid

Bias



Quantiles

100.0%	maximum	-18.0
99.5%		-18.0
97.5%		-18.0
90.0%		-18.0
75.0%	quartile	-18.0
50.0%	median	-18.0
25.0%	quartile	-18.0
10.0%		-18.0
2.5%		-18.0
0.5%		-18.0
0.0%	minimum	-18.0

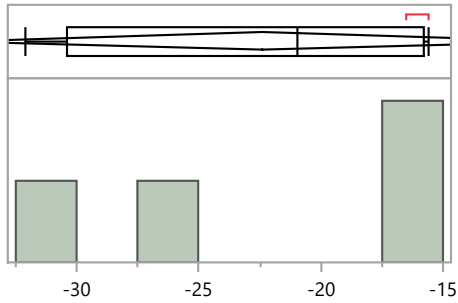
Summary Statistics

Mean	-18.0
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Technetium-99 Acid leaching without hydrofluoric acid

Bias



Quantiles

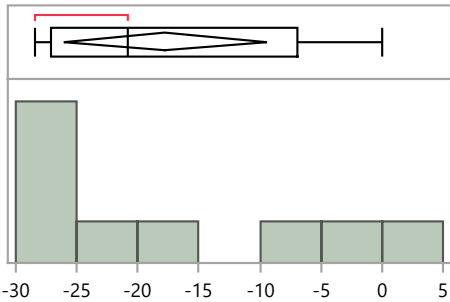
100.0%	maximum	-15.6
99.5%		-15.6
97.5%		-15.6
90.0%		-15.6
75.0%	quartile	-15.8
50.0%	median	-21.0
25.0%	quartile	-30.4
10.0%		-32.1
2.5%		-32.1
0.5%		-32.1
0.0%	minimum	-32.1

Summary Statistics

Mean	-22.4
Std Dev	7.8
Std Err Mean	3.9
Upper 95% Mean	-9.9
Lower 95% Mean	-34.9
N	4.0

Distributions Analyte_Method=Technetium-99 Other

Bias



Quantiles

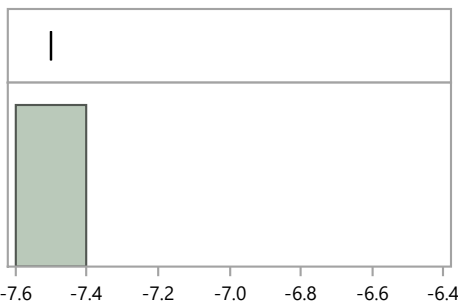
100.0%	maximum	0.0
99.5%		0.0
97.5%		0.0
90.0%		0.0
75.0%	quartile	-6.9
50.0%	median	-20.8
25.0%	quartile	-27.1
10.0%		-28.4
2.5%		-28.4
0.5%		-28.4
0.0%	minimum	-28.4

Summary Statistics

Mean	-17.8
Std Dev	10.8
Std Err Mean	3.6
Upper 95% Mean	-9.5
Lower 95% Mean	-26.1
N	9.0

Distributions Analyte_Method=Technetium-99 Total dissolution by fusion

Bias



Quantiles

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

Summary Statistics

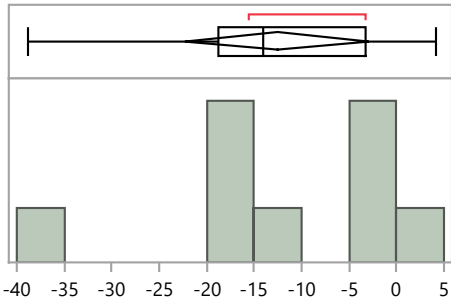
Mean	-7.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaS44 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Uranium-234 Acid dissolution with hydrofluoric acid

Bias



Quantiles

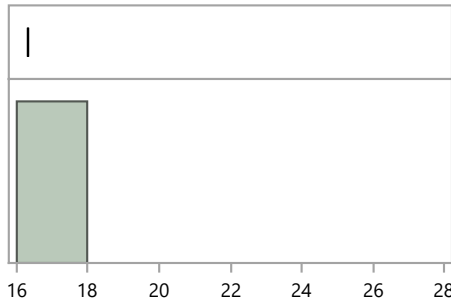
100.0%	maximum	4.1
99.5%		4.1
97.5%		4.1
90.0%		4.1
75.0%	quartile	-3.3
50.0%	median	-14.1
25.0%	quartile	-18.8
10.0%		-38.8
2.5%		-38.8
0.5%		-38.8
0.0%	minimum	-38.8

Summary Statistics

Mean	-12.6
Std Dev	12.7
Std Err Mean	4.2
Upper 95% Mean	-2.9
Lower 95% Mean	-22.4
N	9.0

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

Bias



Quantiles

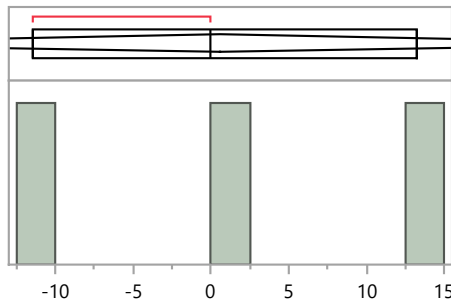
100.0%	maximum	16.3
99.5%		16.3
97.5%		16.3
90.0%		16.3
75.0%	quartile	16.3
50.0%	median	16.3
25.0%	quartile	16.3
10.0%		16.3
2.5%		16.3
0.5%		16.3
0.0%	minimum	16.3

Summary Statistics

Mean	16.3
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Uranium-234 Other

Bias



Quantiles

100.0%	maximum	13.2
99.5%		13.2
97.5%		13.2
90.0%		13.2
75.0%	quartile	13.2
50.0%	median	0.0
25.0%	quartile	-11.5
10.0%		-11.5
2.5%		-11.5
0.5%		-11.5
0.0%	minimum	-11.5

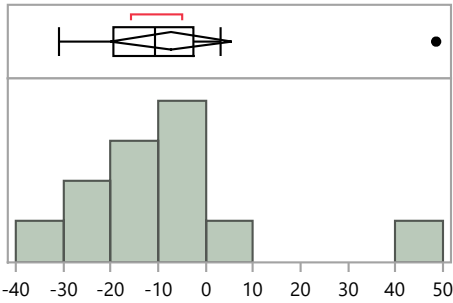
Summary Statistics

Mean	0.6
Std Dev	12.4
Std Err Mean	7.1
Upper 95% Mean	31.3
Lower 95% Mean	-30.1
N	3.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Uranium-234 Total dissolution by fusion

Bias



Quantiles

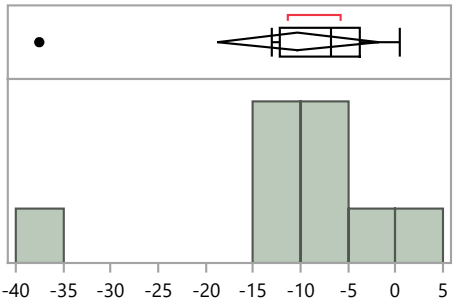
100.0%	maximum	48.5
99.5%		48.5
97.5%		48.5
90.0%		34.9
75.0%	quartile	-2.5
50.0%	median	-10.7
25.0%	quartile	-19.5
10.0%		-28.6
2.5%		-31.0
0.5%		-31.0
0.0%	minimum	-31.0

Summary Statistics

Mean	-7.3
Std Dev	20.0
Std Err Mean	5.8
Upper 95% Mean	5.4
Lower 95% Mean	-20.0
N	12.0

Distributions Analyte_Method=Uranium-238 Acid dissolution with hydrofluoric acid

Bias



Quantiles

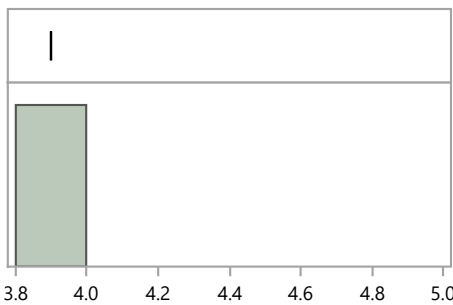
100.0%	maximum	0.4
99.5%		0.4
97.5%		0.4
90.0%		0.4
75.0%	quartile	-3.9
50.0%	median	-6.8
25.0%	quartile	-12.2
10.0%		-37.5
2.5%		-37.5
0.5%		-37.5
0.0%	minimum	-37.5

Summary Statistics

Mean	-10.3
Std Dev	11.1
Std Err Mean	3.7
Upper 95% Mean	-1.8
Lower 95% Mean	-18.8
N	9.0

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

Bias



Quantiles

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

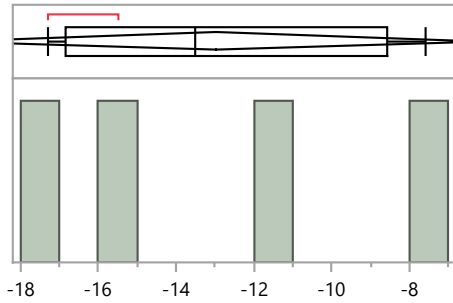
Summary Statistics

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

MaS Distribution by Prep Method

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

Bias



Quantiles

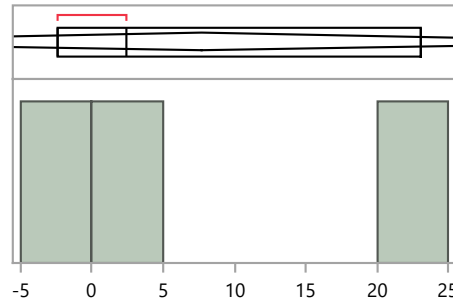
100.0%	maximum	-7.6
99.5%		-7.6
97.5%		-7.6
90.0%		-7.6
75.0%	quartile	-8.6
50.0%	median	-13.5
25.0%	quartile	-16.9
10.0%		-17.3
2.5%		-17.3
0.5%		-17.3
0.0%	minimum	-17.3

Summary Statistics

Mean	-13.0
Std Dev	4.3
Std Err Mean	2.2
Upper 95% Mean	-6.1
Lower 95% Mean	-19.9
N	4.0

Distributions Analyte_Method=Uranium-238 Other

Bias



Quantiles

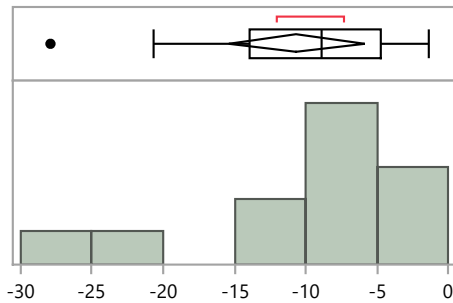
100.0%	maximum	23.1
99.5%		23.1
97.5%		23.1
90.0%		23.1
75.0%	quartile	23.1
50.0%	median	2.4
25.0%	quartile	-2.4
10.0%		-2.4
2.5%		-2.4
0.5%		-2.4
0.0%	minimum	-2.4

Summary Statistics

Mean	7.7
Std Dev	13.6
Std Err Mean	7.8
Upper 95% Mean	41.4
Lower 95% Mean	-26.0
N	3.0

Distributions Analyte_Method=Uranium-238 Total dissolution by fusion

Bias



Quantiles

100.0%	maximum	-1.4
99.5%		-1.4
97.5%		-1.4
90.0%		-2.1
75.0%	quartile	-4.8
50.0%	median	-8.9
25.0%	quartile	-14.0
10.0%		-25.7
2.5%		-27.9
0.5%		-27.9
0.0%	minimum	-27.9

Summary Statistics

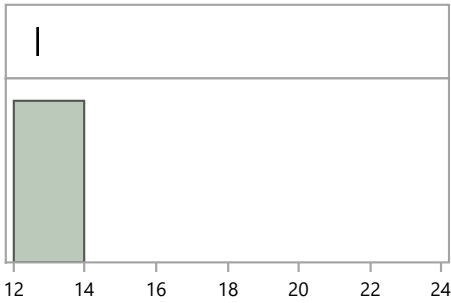
Mean	-10.6
Std Dev	7.5
Std Err Mean	2.2
Upper 95% Mean	-5.9
Lower 95% Mean	-15.4
N	12.0

MaS44 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Zinc-65 Acid dissolution with hydrofluoric acid

Bias



Quantiles

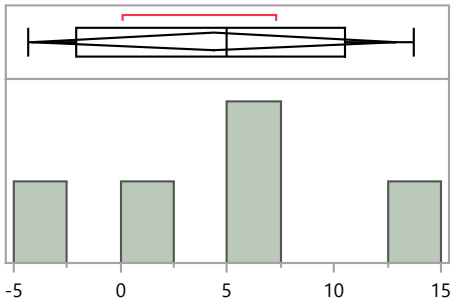
100.0%	maximum	12.7
99.5%		12.7
97.5%		12.7
90.0%		12.7
75.0%	quartile	12.7
50.0%	median	12.7
25.0%	quartile	12.7
10.0%		12.7
2.5%		12.7
0.5%		12.7
0.0%	minimum	12.7

Summary Statistics

Mean	12.7
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

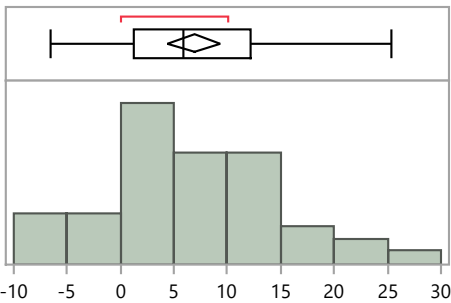
100.0%	maximum	13.7
99.5%		13.7
97.5%		13.7
90.0%		13.7
75.0%	quartile	10.5
50.0%	median	5.0
25.0%	quartile	-2.1
10.0%		-4.3
2.5%		-4.3
0.5%		-4.3
0.0%	minimum	-4.3

Summary Statistics

Mean	4.4
Std Dev	6.9
Std Err Mean	3.1
Upper 95% Mean	12.9
Lower 95% Mean	-4.2
N	5.0

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

Bias



Quantiles

100.0%	maximum	25.3
99.5%		25.3
97.5%		25.0
90.0%		19.3
75.0%	quartile	12.2
50.0%	median	5.9
25.0%	quartile	1.3
10.0%		-4.9
2.5%		-6.5
0.5%		-6.6
0.0%	minimum	-6.6

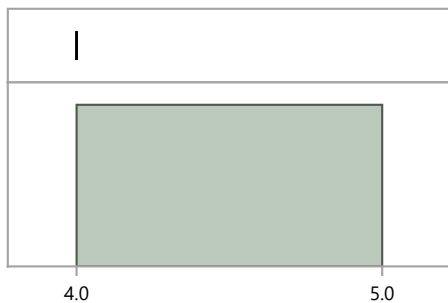
Summary Statistics

Mean	6.9
Std Dev	8.3
Std Err Mean	1.2
Upper 95% Mean	9.4
Lower 95% Mean	4.4
N	45.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Zinc-65 Other

Bias



Quantiles			Summary Statistics	
100.0%	maximum	4.0	Mean	4.0
99.5%		4.0	Std Dev	.
97.5%		4.0	Std Err Mean	.
90.0%		4.0	Upper 95% Mean	.
75.0%	quartile	4.0	Lower 95% Mean	.
50.0%	median	4.0	N	1.0
25.0%	quartile	4.0		
10.0%		4.0		
2.5%		4.0		
0.5%		4.0		
0.0%	minimum	4.0		