

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.

MaS42 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
ANTE01	ALS Environmental - Fort Collins, CO	MaS
ARGO01	Idaho National Laboratory	MaS
ARSA01	ARS Aleut Analytical, LLC (Luckey)	MaS
ARSL01	ARS Aleut Analytical, LLC	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
COPS99	Health Canada Radiation Protection Bureau	MaS
CORE02	TestAmerica Denver	MaS
DINL99	Departamento Ingeniería Nuclear y Mecánica de Fluidos	MaS
EFGS01	Eurofins Frontier Global Sciences, LLC.	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
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
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
LOCK03	Advanced Test Reactor (ATR) Complex Radioanalytical Laboratory	MaS
MART03	Radioactive Material Analysis Laboratory	MaS
MDPH01	MDPH-Radiation Control Program	MaS
NESI01	BWXT-Radioisotope & Analytical Chemistry Laboratory	MaS
NJDH01	New Jersey Dept. of Health, PHEL, ECLS	MaS
NRLL99	Environmental Radioactivity - National Centre for Radiation Science	MaS
ODHL01	Ohio Department of Health Laboratory	MaS
ORIS01	ORISE/IEAV	MaS
OTLI01	Pace Analytical National Center for Testing & Innovation	MaS
QUAN02	TestAmerica Knoxville	MaS
RAVR99	Radiactividad Ambiental y Vigilancia Radiologica	MaS
RJLG01	RJ Lee Group - Columbia Basin Analytical Laboratories (CBAL)	MaS
SANC99	RadioAnalysis, South Africa Nuclear Energy Corp.	MaS
SEML01	SRS Environmental Monitoring Laboratory	MaS

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
AMEC99	Wood Nuclear Limited - Analytical Services	MaS
JAEC99	Research Laboratories and Information Directorate	MaS
JLNN01	Jefferson Laboratory	MaS
LANL01	Los Alamos National Laboratory	MaS
LAWR01	LAWRENCE BERKELEY NATIONAL LABORATORY	MaS
MART01	Fluor B&W Ports Analytical Laboratory	MaS
MSDH01	Mississippi State Dept of Health	MaS
NARL01	National Analytical Radiation Environmental Laboratory	MaS
NARL02	USEPA - NAREL - MERL	MaS
NOCS99	National Oceanography Centre, Southampton	MaS
RPSC01	Radiation Protection Service	MaS
SLAC01	SLAC DOE National Accelerator Laboratory	MaS

Study Reference Values

MAPEP-20-MaS42

Radiological Reference Date: 02/01/2020

Analyte	Ref Value	Ref Unc	Tot Mtl Ref Val	Tot Mtl Ref Unc
Units: (mg/kg)				
Inorganic				
Antimony	0.068	0.007	0.162	0.022
Arsenic	26.7	0.5	26.8	0.5
Barium	169	4	630	20
Beryllium	26.9	0.5	28.6	0.8
Cadmium	14.2	0.3	14.2	0.3
Chromium	77.7	1.4	100	5
Cobalt	125	2	131	3
Copper	170	3	182	4
Lead	35.7	0.6	42.5	0.9
Mercury	0.0023	0.0003		
Nickel	244	5	263	7
Selenium	11.0	0.2	11.0	0.2
Silver	90.2	0.9	90.3	0.9
Technetium-99	0.00112	0.00002		
Thallium	64.6	1.3	65.0	1.3
Uranium-235	0.0249	0.005		
Uranium-238	5.50	0.19		
Uranium-Total	5.53	0.19		
Vanadium	233	4	308	6
Zinc	384	11	442	14

Analyte	Ref Value	Ref Unc
Units: (Bq/kg)		
Radiological		
Americium-241	40.9	1.0
Cesium-134	1114	22
Cesium-137	1020	16
Cobalt-57	1071	22
Iron-55	1096	22
Manganese-54	945	19
Plutonium-238	0.26	0.06
Plutonium-239/240	41.8	1.0
Potassium-40	625	19
Strontium-90	340	7
Technetium-99	706	14
Uranium-234	40.3	1.2
Uranium-238	68	2
Zinc-65	751	15

Sample Statistical Summary

MAPEP-20-MaS42

Radiological Reference Date: 02/01/2020

Analyte	T(1)	A(2)	Grand ⁽³⁾ Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
Inorganic							Units: (mg/kg)
Antimony	13	8	1.913	2.722	0.068	0.007	Sensitivity Evaluation
Arsenic	14	14	22.9	1.7	26.7	0.5	18.7 - 34.7
Barium	13	13	166	9	169	4	118 - 220
Beryllium	15	14	25.9	2.0	26.9	0.5	18.8 - 35.0
Cadmium	14	14	13.5	1.0	14.2	0.3	9.9 - 18.5
Chromium	14	14	73.5	8.4	77.7	1.4	54.4 - 101.0
Cobalt	14	14	122	13	125	2	88 - 163
Copper	14	14	168	15	170	3	119 - 221
Lead	15	15	35.0	3.0	35.7	0.6	25.0 - 46.4
Mercury	12	11	0.0121	0.0196	0.0023	0.0003	Sensitivity Evaluation
Nickel	14	14	235	20	244	5	171 - 317
Selenium	13	9	9.8	1.3	11.0	0.2	7.7 - 14.3
Silver	13	11	84.5	4.5	90.2	0.9	63.1 - 117.3
Technetium-99	2	2			0.00112	0.00002	0.00078 - 0.00146
Thallium	14	14	60.9	5.7	64.6	1.3	45.2 - 84.0
Uranium-235	8	7	0.0248	0.0042	0.0249	0.005	0.0174 - 0.0324
Uranium-238	8	8	5.20	0.54	5.50	0.19	3.85 - 7.15
Uranium-Total	13	12	4.89	0.70	5.53	0.19	3.87 - 7.19
Vanadium	14	13	211	15	233	4	163 - 303
Zinc	13	12	370	28	384	11	269 - 499

Analyte	T(1)	A(2)	Grand ⁽³⁾ Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
Radiological							Units: (Bq/kg)
Americium-241	37	35	38.3	4.6	40.9	1.0	28.6 - 53.2
Cesium-134	49	45	1045	103	1114	22	780 - 1448
Cesium-137	49	47	1052	71	1020	16	714 - 1326
Cobalt-57	49	46	1069	89	1071	22	750 - 1392
Cobalt-60	46	34					False Positive Test
Iron-55	7	7	1124	120	1096	22	767 - 1425
Manganese-54	49	47	964	71	945	19	662 - 1229
Nickel-63	10	10					False Positive Test
Plutonium-238	26	22	21.44	94.45	0.26	0.06	Sensitivity Evaluation
Plutonium-239/240	26	21	43.3	4.7	41.8	1.0	29.3 - 54.3
Potassium-40	49	45	638	62	625	19	438 - 813
Strontium-90	25	19	311	39	340	7	238 - 442
Technetium-99	14	14	637	89	706	14	494 - 918
Uranium-234	28	18	37.1	4.9	40.3	1.2	28.2 - 52.4
Uranium-238	29	23	65	8	68	2	48 - 88
Zinc-65	49	47	777	58	751	15	526 - 976

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-20-MaS42

Inorganic				
Analyte	A	W	RW	N
Antimony	8			5
Arsenic	11	3		
Barium	13			
Beryllium	14			1
Cadmium	14			
Chromium	13	1		
Cobalt	13	1		
Copper	14			
Lead	15			
Mercury	11			1
Nickel	14			
Selenium	8	1		4
Silver	11			2
Thallium	14			
Uranium-Total	9	3		1
Uranium-235	5	2		1
Uranium-238	7	1		
Vanadium	11	2		1
Zinc	12			1
Technetium-99	1	1		

Radiological				
Analyte	A	W	RW	N
Americium-241	31	4		2
Cesium-134	40	5		2
Cesium-137	46	1		2
Cobalt-57	46			3
Cobalt-60	34			15
Iron-55	7			
Manganese-54	46	1		2
Nickel-63	10			
Plutonium-238	22			4
Plutonium-239/240	18	3		5
Potassium-40	42	3		4
Strontium-90	16	3		6
Technetium-99	8	6		
Uranium-234	14	4		10
Uranium-238	19	4		6
Zinc-65	45	2		2



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	49.95	40.9	W		22.1	28.6 - 53.2	11.248	W
Cesium-134	1006.4	1114	A		-9.7	780 - 1448	7.807	N
Cesium-137	1102.6	1020	A		8.1	714 - 1326	5.032	N
Cobalt-57	2412.4	1071	N		125.2	750 - 1392	1.5281	N
Cobalt-60	NR		N	(11)		False Positive Test		
Iron-55	NR	1096				767 - 1425		
Manganese-54	917.6	945	A		-2.9	662 - 1229	3.6963	N
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	NR	625	N	(25)		438 - 813		
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	740	751	A		-1.5	526 - 976	7.733	N

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	38.51	40.9	A		-5.8	28.6 - 53.2	6.13	W
Cesium-134	1109.20	1114	A		-0.4	780 - 1448	34.44	A
Cesium-137	920.38	1020	A		-9.8	714 - 1326	70.45	A
Cobalt-57	989.69	1071	A		-7.6	750 - 1392	104.64	A
Cobalt-60	-0.17			A		False Positive Test	0.17	
Iron-55	NR	1096				767 - 1425		
Manganese-54	859.74	945	A		-9.0	662 - 1229	74.52	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	558.85	625	A		-10.6	438 - 813	61.33	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	699.40	751	A		-6.9	526 - 976	59.54	A

Radiological Reference Date: February 1, 2020

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:

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- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
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Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	37.6	40.9	A		-8.1	28.6 - 53.2	2.9	A
Cesium-134	1029	1114	A		-7.6	780 - 1448	25	A
Cesium-137	960	1020	A		-5.9	714 - 1326	25	A
Cobalt-57	1005	1071	A		-6.2	750 - 1392	29	A
Cobalt-60	0.35			A		False Positive Test	0.35	
Iron-55	NR	1096				767 - 1425		
Manganese-54	856	945	A		-9.4	662 - 1229	20	A
Nickel-63	NR					False Positive Test		
Plutonium-238	1.21	0.26	A	(17)		Sensitivity Evaluation	0.53	
Plutonium-239/240	38.8	41.8	A		-7.2	29.3 - 54.3	3.0	A
Potassium-40	548	625	A		-12.3	438 - 813	19	A
Strontium-90	329	340	A		-3.2	238 - 442	30	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	35.9	40.3	A		-10.9	28.2 - 52.4	2.8	A
Uranium-238	61.6	68	A		-9.4	48 - 88	3.7	A
Zinc-65	689	751	A		-8.3	526 - 976	13	N

Radiological Reference Date: February 1, 2020

Results Flags:

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N = Result not acceptable Bias > 30%

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Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

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Notes:

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(5) = Total Metal

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(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42
 (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	7.69	0.068	A	(17)		Sensitivity Evaluation	7.69	
Arsenic	20.3	26.7	W		-24.0	18.7 - 34.7	1.682341	A
Barium	164	169	A		-3.0	118 - 220	11.52759	A
Beryllium	25.3	26.9	A		-5.9	18.8 - 35.0	1.425701	A
Cadmium	13.5	14.2	A		-4.9	9.9 - 18.5	0.844838	A
Chromium	73.4	77.7	A		-5.5	54.4 - 101.0	4.200031	A
Cobalt	121	125	A		-3.2	88 - 163	6.420761	A
Copper	175	170	A		2.9	119 - 221	11.39250	A
Lead	33.9	35.7	A		-5.0	25.0 - 46.4	1.870349	A
Mercury	0.0329	0.0023	A	(17)		Sensitivity Evaluation	0.0329	
Nickel	232	244	A		-4.9	171 - 317	16.08836	A
Selenium	8.85	11.0	A		-19.5	7.7 - 14.3	0.794070	A
Silver	56.8	90.2	N		-37.0	63.1 - 117.3	4.658537	A
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	58.7	64.6	A		-9.1	45.2 - 84.0	5.827222	A
Uranium-235	0.0384	0.0249	N		54.2	0.0174 - 0.0324	0.0384	N
Uranium-238	5.54	5.50	A		0.7	3.85 - 7.15	0.512019	A
Uranium-Total	5.58	5.53	A		0.9	3.87 - 7.19	0.515716	A
Vanadium	214	233	A		-8.2	163 - 303	10.43041	A
Zinc	381	384	A		-0.8	269 - 499	26.00011	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	32.4	40.9	W		-20.8	28.6 - 53.2	3.0	A
Cesium-134	987	1114	A		-11.4	780 - 1448	58	A
Cesium-137	1020	1020	A		0.0	714 - 1326	60	A
Cobalt-57	1050	1071	A		-2.0	750 - 1392	62	A
Cobalt-60	2.13		A			False Positive Test	2.13	
Iron-55	1240	1096	A		13.1	767 - 1425	150	A
Manganese-54	947	945	A		0.2	662 - 1229	56	A
Nickel-63	103		A			False Positive Test	103	
Plutonium-238	1.66	0.26	A	(17)		Sensitivity Evaluation	1.66	
Plutonium-239/240	44.2	41.8	A		5.7	29.3 - 54.3	5.0	A
Potassium-40	642	625	A		2.7	438 - 813	43	A
Strontium-90	311	340	A		-8.5	238 - 442	37	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	555	706	W		-21.4	494 - 918	45	A
Uranium-234	34.2	40.3	A		-15.1	28.2 - 52.4	3.1	A
Uranium-238	57.2	68	A		-15.9	48 - 88	4.9	A
Zinc-65	778	751	A		3.6	526 - 976	46	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	1178	1114	A		5.7	780 - 1448	35	A
Cesium-137	1110	1020	A		8.8	714 - 1326	33	A
Cobalt-57	1148	1071	A		7.2	750 - 1392	34	A
Cobalt-60	1.62			A		False Positive Test	1.62	
Iron-55	NR	1096				767 - 1425		
Manganese-54	1004	945	A		6.2	662 - 1229	30	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	657	625	A		5.1	438 - 813	27	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	829	751	A		10.4	526 - 976	25	A

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42
 (ARSA01) ARS Aleut Analytical, LLC (Luckey)
 21200 Luckey Rd.
 Luckey, OH 43443

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	25.2	26.9	A		-6.3	18.8 - 35.0	1.34	A
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	29.8	35.7	A		-16.5	25.0 - 46.4	1.01	A
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	33.875	40.9	A		-17.2	28.6 - 53.2	5.324	W
Cesium-134	811.447	1114	W		-27.2	780 - 1448	37.755	A
Cesium-137	899.507	1020	A		-11.8	714 - 1326	39.912	A
Cobalt-57	888.11	1071	A		-17.1	750 - 1392	63.966	A
Cobalt-60	5.100		N	(1)		False Positive Test	1.225	
Iron-55	NR	1096				767 - 1425		
Manganese-54	846.782	945	A		-10.4	662 - 1229	34.185	A
Nickel-63	NR					False Positive Test		
Plutonium-238	444.259	0.26	A	(17)		Sensitivity Evaluation	491.323	
Plutonium-239/240	2218.187	41.8	N		5206.7	29.3 - 54.3	2359.897	N
Potassium-40	615.865	625	A		-1.5	438 - 813	59.966	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	36.417	40.3	A		-9.6	28.2 - 52.4	9.456	W
Uranium-238	61.462	68	A		-9.6	48 - 88	13.03	W
Zinc-65	747.289	751	A		-0.5	526 - 976	37.255	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(ARSL01) ARS Aleut Analytical, LLC

2609 North River Road

Port Allen, LA 70767

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	1.44	0.068	N	(4)		Sensitivity Evaluation	.176	
Arsenic	23.8	26.7	A		-10.9	18.7 - 34.7	3.630	W
Barium	180	169	A		6.5	118 - 220	27.290	W
Beryllium	28.7	26.9	A		6.7	18.8 - 35.0	4.482	W
Cadmium	15.8	14.2	A		11.3	9.9 - 18.5	2.511	W
Chromium	80.5	77.7	A		3.6	54.4 - 101.0	12.091	W
Cobalt	128	125	A		2.4	88 - 163	22.188	W
Copper	170	170	A		0.0	119 - 221	30.492	W
Lead	38.1	35.7	A		6.7	25.0 - 46.4	9.366	W
Mercury	.00481	0.0023	A			Sensitivity Evaluation	.001	
Nickel	241	244	A		-1.2	171 - 317	42.125	W
Selenium	10.6	11.0	A		-3.6	7.7 - 14.3	1.656	W
Silver	83.5	90.2	A		-7.4	63.1 - 117.3	10.001	A
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	66.4	64.6	A		2.8	45.2 - 84.0	11.593	W
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	4.61	5.53	A		-16.6	3.87 - 7.19	.607	A
Vanadium	229	233	A		-1.7	163 - 303	40.375	W
Zinc	380	384	A		-1.0	269 - 499	45.227	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	40.956	40.9	A		0.1	28.6 - 53.2	3.190	A
Cesium-134	1043.600	1114	A		-6.3	780 - 1448	33.817	A
Cesium-137	1060.900	1020	A		4.0	714 - 1326	22.006	A
Cobalt-57	1054.300	1071	A		-1.6	750 - 1392	36.159	A
Cobalt-60	-3.568		A			False Positive Test	1.278	
Iron-55	NR	1096				767 - 1425		
Manganese-54	966.00	945	A		2.2	662 - 1229	30.511	A
Nickel-63	NR					False Positive Test		
Plutonium-238	3.319	0.26	A	(17)		Sensitivity Evaluation	1.620	
Plutonium-239/240	41.649	41.8	A		-0.4	29.3 - 54.3	4.939	A
Potassium-40	655.030	625	A		4.8	438 - 813	26.163	A
Strontium-90	376.652	340	A		10.8	238 - 442	33.003	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	627.991	706	A		-11.0	494 - 918	75.122	A
Uranium-234	38.880	40.3	A		-3.5	28.2 - 52.4	3.185	A
Uranium-238	67.272	68	A		-1.1	48 - 88	4.970	A
Zinc-65	772.080	751	A		2.8	526 - 976	24.850	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(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	NR	0.068				Sensitivity Evaluation		
Arsenic	25.1	26.7	A		-6.0	18.7 - 34.7	1.41	A
Barium	171	169	A		1.2	118 - 220	7.0	A
Beryllium	27.3	26.9	A		1.5	18.8 - 35.0	1.70	A
Cadmium	12.4	14.2	A		-12.7	9.9 - 18.5	0.750	A
Chromium	76.0	77.7	A		-2.2	54.4 - 101.0	2.39	A
Cobalt	131	125	A		4.8	88 - 163	6.55	A
Copper	175	170	A		2.9	119 - 221	7.20	A
Lead	34.5	35.7	A		-3.4	25.0 - 46.4	2.25	A
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	247	244	A		1.2	171 - 317	12.2	A
Selenium	19.0	11.0	N		72.7	7.7 - 14.3	3.08	W
Silver	88.1	90.2	A		-2.3	63.1 - 117.3	10.3	A
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	64.0	64.6	A		-0.9	45.2 - 84.0	4.37	A
Uranium-235	0.027	0.0249	A		8.4	0.0174 - 0.0324	0.05	N
Uranium-238	5.42	5.50	A		-1.5	3.85 - 7.15	0.5	A
Uranium-Total	5.45	5.53	A		-1.4	3.87 - 7.19	0.5	A
Vanadium	223	233	A		-4.3	163 - 303	8.47	A
Zinc	380	384	A		-1.0	269 - 499	23.8	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	34.6	40.9	A		-15.4	28.6 - 53.2	8.9	W
Cesium-134	NR	1114		(6)		780 - 1448		
Cesium-137	1134	1020	A		11.2	714 - 1326	85	A
Cobalt-57	1150	1071	A		7.4	750 - 1392	35	A
Cobalt-60	7.22		A			False Positive Test	3.6	
Iron-55	NR	1096				767 - 1425		
Manganese-54	1050	945	A		11.1	662 - 1229	170	W
Nickel-63	NR					False Positive Test		
Plutonium-238	-0.18	0.26	A	(17)		Sensitivity Evaluation	0.88	
Plutonium-239/240	41.8	41.8	A		0.0	29.3 - 54.3	4.8	A
Potassium-40	764	625	W		22.2	438 - 813	115	W
Strontium-90	330	340	A		-2.9	238 - 442	35	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	551	706	W		-22.0	494 - 918	41	A
Uranium-234	35.3	40.3	A		-12.4	28.2 - 52.4	4.6	A
Uranium-238	60.7	68	A		-10.7	48 - 88	6.8	A
Zinc-65	866	751	A		15.3	526 - 976	118	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	37.7	40.9	A		-7.8	28.6 - 53.2	4.26	A
Cesium-134	NR	1114		(6)		780 - 1448		
Cesium-137	1110.00	1020	A		8.8	714 - 1326	29.46	A
Cobalt-57	1154.00	1071	A		7.8	750 - 1392	14.36	N
Cobalt-60	3.05		N	(1)		False Positive Test	0.386	
Iron-55	NR	1096				767 - 1425		
Manganese-54	1018.00	945	A		7.7	662 - 1229	30.38	A
Nickel-63	NR					False Positive Test		
Plutonium-238	0.777	0.26	A	(17)		Sensitivity Evaluation	0.431	
Plutonium-239/240	39.3	41.8	A		-6.0	29.3 - 54.3	3.49	A
Potassium-40	677.60	625	A		8.4	438 - 813	33.00	A
Strontium-90	294.89	340	A		-13.3	238 - 442	9.81	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	552.00	706	W		-21.8	494 - 918	29.21	A
Uranium-234	43.9	40.3	A		8.9	28.2 - 52.4	4.315	A
Uranium-238	61.7	68	A		-9.3	48 - 88	5.3	A
Zinc-65	826.00	751	A		10.0	526 - 976	29.50	A

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	3.58E+01	40.9	A		-12.5	28.6 - 53.2	4.57	A
Cesium-134	1.08E+03	1114	A		-3.1	780 - 1448	1.68	N
Cesium-137	1.09E+03	1020	A		6.9	714 - 1326	3.15	A
Cobalt-57	1.19E+03	1071	A		11.1	750 - 1392	2.20	N
Cobalt-60	-1.73E+00			A		False Positive Test	6.06	
Iron-55	NR	1096				767 - 1425		
Manganese-54	9.94E+02	945	A		5.2	662 - 1229	2.55	A
Nickel-63	NR					False Positive Test		
Plutonium-238	2.44E-01	0.26	A			Sensitivity Evaluation	8.09E-02	
Plutonium-239/240	4.09E+01	41.8	A		-2.2	29.3 - 54.3	9.85E-01	A
Potassium-40	6.73E+02	625	A		7.7	438 - 813	3.45	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	8.14E+02	751	A		8.4	526 - 976	2.49	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42
 (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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	36.55	40.9	A		-10.6	28.6 - 53.2	3.76	A
Cesium-134	1220	1114	A		9.5	780 - 1448	19.45	N
Cesium-137	1088	1020	A		6.7	714 - 1326	65.4	A
Cobalt-57	1050	1071	A		-2.0	750 - 1392	66.9	A
Cobalt-60	1.051		N	(1)		False Positive Test	0.11	
Iron-55	NR	1096				767 - 1425		
Manganese-54	985.1	945	A		4.2	662 - 1229	59.2	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	606.4	625	A		-3.0	438 - 813	25.2	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	782.5	751	A		4.2	526 - 976	33.6	A

Radiological Reference Date: February 1, 2020

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:

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

Laboratory Results For MAPEP-20-MaS42

(CORE02) 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	0.0790	0.068	A			Sensitivity Evaluation	0.00369	
Arsenic	21.7	26.7	A		-18.7	18.7 - 34.7	0.90	A
Barium	172	169	A		1.8	118 - 220	7.17	A
Beryllium	26.7	26.9	A		-0.7	18.8 - 35.0	1.34	A
Cadmium	14.2	14.2	A		0.0	9.9 - 18.5	0.544	A
Chromium	77.0	77.7	A		-0.9	54.4 - 101.0	3.85	A
Cobalt	129	125	A		3.2	88 - 163	4.95	A
Copper	172	170	A		1.2	119 - 221	6.31	A
Lead	38.0	35.7	A		6.4	25.0 - 46.4	1.52	A
Mercury	0.000727	0.0023	A	(17)		Sensitivity Evaluation	0.009	
Nickel	249	244	A		2.0	171 - 317	9.55	A
Selenium	7.95	11.0	W		-27.7	7.7 - 14.3	0.398	A
Silver	85.6	90.2	A		-5.1	63.1 - 117.3	3.852	A
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	61.9	64.6	A		-4.2	45.2 - 84.0	4.127	A
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	4.06	5.53	W		-26.6	3.87 - 7.19	0.176	A
Vanadium	212	233	A		-9.0	163 - 303	7.77	A
Zinc	392	384	A		2.1	269 - 499	24.83	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	NR	1114				780 - 1448		
Cesium-137	NR	1020				714 - 1326		
Cobalt-57	NR	1071				750 - 1392		
Cobalt-60	NR					False Positive Test		
Iron-55	NR	1096				767 - 1425		
Manganese-54	NR	945				662 - 1229		
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	NR	625				438 - 813		
Strontium-90	NR	340				238 - 442		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	NR	751				526 - 976		

Radiological Reference Date: February 1, 2020

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%

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RP = Relative Precision

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

Laboratory Results For MAPEP-20-MaS42

(DINL99) Departamento Ingeniería Nuclear y Mecánica de Fluidos

Escuela de Ingeniería de Bilbao

Bilbao, Vizcaya 48013

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	3.654E+01	40.9	A		-10.7	28.6 - 53.2	2.411	A
Cesium-134	1041	1114	A		-6.6	780 - 1448	53.5	A
Cesium-137	991.5	1020	A		-2.8	714 - 1326	51	A
Cobalt-57	947.4	1071	A		-11.5	750 - 1392	48.9	A
Cobalt-60	0.64		A			False Positive Test	0.64	
Iron-55	1243	1096	A		13.4	767 - 1425	38.3	A
Manganese-54	832.7	945	A		-11.9	662 - 1229	42.8	A
Nickel-63	25.93		A			False Positive Test	25.93	
Plutonium-238	1.022	0.26	N	(4)		Sensitivity Evaluation	0.099	
Plutonium-239/240	36.59	41.8	A		-12.5	29.3 - 54.3	1.54	A
Potassium-40	468	625	W		-25.1	438 - 813	25	A
Strontium-90	NR	340	N	(28)		238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	790.3	706	A		11.9	494 - 918	17.2	A
Uranium-234	31.1	40.3	W		-22.8	28.2 - 52.4	1.39	A
Uranium-238	54.06	68	W		-20.5	48 - 88	2.31	A
Zinc-65	712.3	751	A		-5.2	526 - 976	36.7	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42
 (EFGS01) Eurofins Frontier Global Sciences, LLC.
 5755 8th St. E
 Tacoma, WA 98424

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	0.00229	0.0023	A	(17)		Sensitivity Evaluation	0.00096	
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	NR	1114				780 - 1448		
Cesium-137	NR	1020				714 - 1326		
Cobalt-57	NR	1071				750 - 1392		
Cobalt-60	NR					False Positive Test		
Iron-55	NR	1096				767 - 1425		
Manganese-54	NR	945				662 - 1229		
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	NR	625				438 - 813		
Strontium-90	NR	340				238 - 442		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	NR	751				526 - 976		

Radiological Reference Date: February 1, 2020

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

Laboratory Results For MAPEP-20-MaS42

(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	1.23	0.068	N	(4)		Sensitivity Evaluation	0.172	
Arsenic	23.3	26.7	A		-12.7	18.7 - 34.7	0.646	A
Barium	168	169	A		-0.6	118 - 220	2.32	N
Beryllium	26.0	26.9	A		-3.3	18.8 - 35.0	0.039	N
Cadmium	13.1	14.2	A		-7.7	9.9 - 18.5	0.017	N
Chromium	71.8	77.7	A		-7.6	54.4 - 101.0	0.037	N
Cobalt	125	125	A		0.0	88 - 163	0.32	N
Copper	166	170	A		-2.4	119 - 221	1.5	N
Lead	34.1	35.7	A		-4.5	25.0 - 46.4	0.054	N
Mercury	0.00317	0.0023	A	(17)		Sensitivity Evaluation	0.0263	
Nickel	252	244	A		3.3	171 - 317	0.5	N
Selenium	9.42	11.0	A		-14.4	7.7 - 14.3	0.293	A
Silver	82.4	90.2	A		-8.6	63.1 - 117.3	0.159	N
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	55.4	64.6	A		-14.2	45.2 - 84.0	0.387	N
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	3.88	5.53	W		-29.8	3.87 - 7.19	0.032	N
Vanadium	219	233	A		-6.0	163 - 303	0.33	N
Zinc	408	384	A		6.3	269 - 499	0.27	N

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	NR	1114				780 - 1448		
Cesium-137	NR	1020				714 - 1326		
Cobalt-57	NR	1071				750 - 1392		
Cobalt-60	NR					False Positive Test		
Iron-55	NR	1096				767 - 1425		
Manganese-54	NR	945				662 - 1229		
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	NR	625				438 - 813		
Strontium-90	NR	340				238 - 442		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	NR	751				526 - 976		

Radiological Reference Date: February 1, 2020

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%

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ACCEPTABLE WITH WARNING.....15%<RP<=30%

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- (5) = Total Metal
- (6) = Not Evaluated
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Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-20-MaS42
 (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	0.307	0.162	N	(5)		Sensitivity Evaluation	0.019		
Arsenic	23.8	26.8	A	(5)	-11.2	18.8 - 34.8	0.7	A	
Barium	NR	169				118 - 220			
Beryllium	25.4	28.6	A	(5)	-11.2	20.0 - 37.2	0.7	A	
Cadmium	13.3	14.2	A	(5)	-6.3	9.9 - 18.5	0.4	A	
Chromium	102	100	A	(5)	2.0	70.0 - 130.0	3	A	
Cobalt	124	131	A	(5)	-5.3	92 - 170	4	A	
Copper	164	182	A	(5)	-9.9	127 - 237	5	A	
Lead	41.7	42.5	A	(5)	-1.9	29.8 - 55.3	1.3	A	
Mercury	NR	0.0023				Sensitivity Evaluation			
Nickel	226	263	A	(5)	-14.1	184 - 342	7	A	
Selenium	NR	11.0				7.7 - 14.3			
Silver	NR	90.2				63.1 - 117.3			
Technetium-99	NR	0.00112				0.00078 - 0.00146			
Thallium	61.7	65.0	A	(5)	-5.1	45.5 - 84.5	2.2	A	
Uranium-235	0.0279	0.0249	A		12.0	0.0174 - 0.0324	0.0013	A	
Uranium-238	6.06	5.50	A		10.2	3.85 - 7.15	0.17	A	
Uranium-Total	6.09	5.53	A		10.1	3.87 - 7.19	0.17	A	
Vanadium	294	308	A	(5)	-4.5	216 - 400	9	A	
Zinc	NR	384				269 - 499			

Radiological								Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag	
Americium-241	37.4	40.9	A		-8.6	28.6 - 53.2	3.4	A	
Cesium-134	981	1114	A		-11.9	780 - 1448	4	N	
Cesium-137	1060	1020	A		3.9	714 - 1326	10	N	
Cobalt-57	1010	1071	A		-5.7	750 - 1392	10	N	
Cobalt-60	-0.07		A			False Positive Test	0.26		
Iron-55	NR	1096				767 - 1425			
Manganese-54	955	945	A		1.1	662 - 1229	8	N	
Nickel-63	33		A			False Positive Test	38		
Plutonium-238	6.7	0.26	A	(17)		Sensitivity Evaluation	2.3		
Plutonium-239/240	41.8	41.8	A		0.0	29.3 - 54.3	1.1	A	
Potassium-40	722	625	A		15.5	438 - 813	9	N	
Strontium-90	292	340	A		-14.1	238 - 442	11	A	

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	537	706	W		-23.9	494 - 918	79	A
Uranium-234	48.5	40.3	W		20.3	28.2 - 52.4	3.4	A
Uranium-238	65.9	68	A		-3.1	48 - 88	4.2	A
Zinc-65	755	751	A		0.5	526 - 976	8	N

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	39.06	40.9	A		-4.5	28.6 - 53.2	2.11	A
Cesium-134	887	1114	W		-20.4	780 - 1448	89	A
Cesium-137	1000	1020	A		-2.0	714 - 1326	41	A
Cobalt-57	1057	1071	A		-1.3	750 - 1392	76	A
Cobalt-60	0.392		N	(1)		False Positive Test	0.03	
Iron-55	NR	1096				767 - 1425		
Manganese-54	937	945	A		-0.8	662 - 1229	94	A
Nickel-63	NR					False Positive Test		
Plutonium-238	2.25	0.26	A	(17)		Sensitivity Evaluation	2.35	
Plutonium-239/240	51.85	41.8	W		24.0	29.3 - 54.3	1.55	A
Potassium-40	638	625	A		2.1	438 - 813	65	A
Strontium-90	298.17	340	A		-12.3	238 - 442	17.41	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	25.81	40.3	N		-36.0	28.2 - 52.4	2.06	A
Uranium-238	55.28	68	A		-18.7	48 - 88	3.04	A
Zinc-65	695	751	A		-7.5	526 - 976	26	A

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42

(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	2.0	0.068	A	(17)		Sensitivity Evaluation	1.0	
Arsenic	19.6	26.7	W		-26.6	18.7 - 34.7	0.78	A
Barium	153	169	A		-9.5	118 - 220	8.2	A
Beryllium	23.1	26.9	A		-14.1	18.8 - 35.0	0.58	A
Cadmium	12.1	14.2	A		-14.8	9.9 - 18.5	0.31	A
Chromium	68.1	77.7	A		-12.4	54.4 - 101.0	2.9	A
Cobalt	109	125	A		-12.8	88 - 163	7.2	A
Copper	149	170	A		-12.4	119 - 221	4.9	A
Lead	31.4	35.7	A		-12.0	25.0 - 46.4	2.2	A
Mercury	0.050	0.0023	A	(17)		Sensitivity Evaluation	0.025	
Nickel	216	244	A		-11.5	171 - 317	6.5	A
Selenium	2.21	11.0	N		-79.9	7.7 - 14.3	0.10	A
Silver	77.5	90.2	A		-14.1	63.1 - 117.3	3.9	A
Technetium-99	0.000882	0.00112	W		-21.3	0.00078 - 0.00146	0.00003	A
Thallium	54.4	64.6	A		-15.8	45.2 - 84.0	2.2	A
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	197	233	A		-15.5	163 - 303	10.4	A
Zinc	331	384	A		-13.8	269 - 499	18.5	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	NR	1114				780 - 1448		
Cesium-137	NR	1020				714 - 1326		
Cobalt-57	NR	1071				750 - 1392		
Cobalt-60	NR					False Positive Test		
Iron-55	NR	1096				767 - 1425		
Manganese-54	NR	945				662 - 1229		
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	NR	625				438 - 813		
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	554	706	W		-21.5	494 - 918	19	A
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	NR	751				526 - 976		

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	32.8	40.9	A		-19.8	28.6 - 53.2	10.46	N
Cesium-134	872.46	1114	W		-21.7	780 - 1448	47.88	A
Cesium-137	899.1	1020	A		-11.9	714 - 1326	109.45	A
Cobalt-57	917.6	1071	A		-14.3	750 - 1392	132.76	A
Cobalt-60	-.865		A			False Positive Test	.4	
Iron-55	NR	1096				767 - 1425		
Manganese-54	795.5	945	A		-15.8	662 - 1229	83.99	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	465.46	625	W		-25.5	438 - 813	64.82	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	598.66	751	W		-20.3	526 - 976	56.76	A

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

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(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	36.31	40.9	A		-11.2	28.6 - 53.2	1.88	A
Cesium-134	1166.54	1114	A		4.7	780 - 1448	15.30	N
Cesium-137	1054.0	1020	A		3.3	714 - 1326	19.96	N
Cobalt-57	994.20	1071	A		-7.2	750 - 1392	16.12	N
Cobalt-60	0.87		A			False Positive Test	0.93	
Iron-55	NR	1096				767 - 1425		
Manganese-54	980.20	945	A		3.7	662 - 1229	17.74	N
Nickel-63	NR					False Positive Test		
Plutonium-238	0.915	0.26	A			Sensitivity Evaluation	0.270	
Plutonium-239/240	38.82	41.8	A		-7.1	29.3 - 54.3	3.94	A
Potassium-40	652.00	625	A		4.3	438 - 813	31.28	A
Strontium-90	209.35	340	N		-38.4	238 - 442	15.96	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	34.99	40.3	A		-13.2	28.2 - 52.4	4.03	A
Uranium-238	67.82	68	A		-0.3	48 - 88	5.70	A
Zinc-65	804.80	751	A		7.2	526 - 976	17.48	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	43.69	40.9	A		6.8	28.6 - 53.2	4.13	A
Cesium-134	1176.83	1114	A		5.6	780 - 1448	14.55	N
Cesium-137	1045.95	1020	A		2.5	714 - 1326	17.58	N
Cobalt-57	963.66	1071	A		-10.0	750 - 1392	13.75	N
Cobalt-60	2.1			A		False Positive Test	1.1	
Iron-55	NR	1096				767 - 1425		
Manganese-54	941.21	945	A		-0.4	662 - 1229	15.99	N
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	666.16	625	A		6.6	438 - 813	13.95	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	66.71	68	A		-1.9	48 - 88	2.93	A
Zinc-65	786.67	751	A		4.8	526 - 976	15.43	N

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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(18) = Sensitivity Evaluation, Value Not Reported

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(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42

(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	0.0995	0.068	A	(17)		Sensitivity Evaluation	0.109	
Arsenic	24.5	26.7	A		-8.2	18.7 - 34.7	1.83	A
Barium	159	169	A		-5.9	118 - 220	10.6	A
Beryllium	25.7	26.9	A		-4.5	18.8 - 35.0	1.72	A
Cadmium	12.8	14.2	A		-9.9	9.9 - 18.5	0.868	A
Chromium	71.7	77.7	A		-7.7	54.4 - 101.0	4.79	A
Cobalt	117	125	A		-6.4	88 - 163	7.82	A
Copper	165	170	A		-2.9	119 - 221	11.0	A
Lead	34.8	35.7	A		-2.5	25.0 - 46.4	2.38	A
Mercury	0.00604	0.0023	A	(17)		Sensitivity Evaluation	0.00249	
Nickel	222	244	A		-9.0	171 - 317	14.8	A
Selenium	9.59	11.0	A		-12.8	7.7 - 14.3	0.650	A
Silver	84.7	90.2	A		-6.1	63.1 - 117.3	5.65	A
Technetium-99	0.00105	0.00112	A		-6.3	0.00078 - 0.00146	5.98E-05	A
Thallium	57.9	64.6	A		-10.4	45.2 - 84.0	3.86	A
Uranium-235	0.0307	0.0249	W		23.3	0.0174 - 0.0324	0.00106	A
Uranium-238	4.91	5.50	A		-10.7	3.85 - 7.15	0.0642	N
Uranium-Total	4.94	5.53	A		-10.7	3.87 - 7.19	0.65	A
Vanadium	215	233	A		-7.7	163 - 303	14.3	A
Zinc	350	384	A		-8.9	269 - 499	23.4	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	43.0	40.9	A		5.1	28.6 - 53.2	2.91	A
Cesium-134	984	1114	A		-11.7	780 - 1448	45.8	A
Cesium-137	1060	1020	A		3.9	714 - 1326	44.3	A
Cobalt-57	1200	1071	A		12.0	750 - 1392	54.7	A
Cobalt-60	0.366		A			False Positive Test	0.420	
Iron-55	950	1096	A		-13.3	767 - 1425	148	W
Manganese-54	961	945	A		1.7	662 - 1229	45.9	A
Nickel-63	-0.727		A			False Positive Test	19.4	
Plutonium-238	0.165	0.26	A	(17)		Sensitivity Evaluation	0.388	
Plutonium-239/240	38.0	41.8	A		-9.1	29.3 - 54.3	2.72	A
Potassium-40	618	625	A		-1.1	438 - 813	33.6	A
Strontium-90	286	340	A		-15.9	238 - 442	26.9	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	728	706	A		3.1	494 - 918	59.3	A
Uranium-234	43.2	40.3	A		7.2	28.2 - 52.4	3.49	A
Uranium-238	64.6	68	A		-5.0	48 - 88	4.60	A
Zinc-65	784	751	A		4.4	526 - 976	35.4	A

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42
 (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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	NR	1114	N	(25)		780 - 1448		
Cesium-137	1022	1020	A		0.2	714 - 1326	73.0	A
Cobalt-57	976	1071	A		-8.9	750 - 1392	85.2	A
Cobalt-60	0.68		A			False Positive Test	1.03	
Iron-55	NR	1096				767 - 1425		
Manganese-54	939	945	A		-0.6	662 - 1229	67.1	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	650	625	A		4.0	438 - 813	50.3	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	772	751	A		2.8	526 - 976	55.1	A

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	991.8	1114	A		-11.0	780 - 1448	40.24	A
Cesium-137	1016	1020	A		-0.4	714 - 1326	90.89	A
Cobalt-57	1032	1071	A		-3.6	750 - 1392	53.52	A
Cobalt-60	1.161			A		False Positive Test	0.8687	
Iron-55	NR	1096				767 - 1425		
Manganese-54	961.0	945	A		1.7	662 - 1229	89.92	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	639.0	625	A		2.2	438 - 813	54.12	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	802.6	751	A		6.9	526 - 976	69.29	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(HPAC99) PHE, CRCE Glasgow

155 Hardgate Road

Glasgow, Scotland G514LS

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	42.4	40.9	A		3.7	28.6 - 53.2	4.5	A
Cesium-134	1160	1114	A		4.1	780 - 1448	72	A
Cesium-137	1060	1020	A		3.9	714 - 1326	70	A
Cobalt-57	1075	1071	A		0.4	750 - 1392	66	A
Cobalt-60	1.29			A		False Positive Test	1.29	
Iron-55	NR	1096				767 - 1425		
Manganese-54	958	945	A		1.4	662 - 1229	60	A
Nickel-63	NR					False Positive Test		
Plutonium-238	0.34	0.26	A			Sensitivity Evaluation	0.1	
Plutonium-239/240	42.6	41.8	A		1.9	29.3 - 54.3	2.7	A
Potassium-40	625	625	A		0.0	438 - 813	39	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3	N	(28)		28.2 - 52.4		
Uranium-238	NR	68	N	(28)		48 - 88		
Zinc-65	763	751	A		1.6	526 - 976	55	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42
 (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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	39	40.9	A		-4.6	28.6 - 53.2	3	A
Cesium-134	974	1114	A		-12.6	780 - 1448	42	A
Cesium-137	1000	1020	A		-2.0	714 - 1326	37	A
Cobalt-57	1034	1071	A		-3.5	750 - 1392	58	A
Cobalt-60	.76			A		False Positive Test	3.31	
Iron-55	NR	1096				767 - 1425		
Manganese-54	940	945	A		-0.5	662 - 1229	43	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	648	625	A		3.7	438 - 813	54	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	-732	40.3	N		-1916.4	28.2 - 52.4	1097	N
Uranium-238	78	68	A		14.7	48 - 88	19	W
Zinc-65	786	751	A		4.7	526 - 976	32	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42
 (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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	41.2	40.9	A		0.7	28.6 - 53.2	2.1	A
Cesium-134	1114	1114	A		0.0	780 - 1448	46	A
Cesium-137	1049	1020	A		2.8	714 - 1326	37	A
Cobalt-57	1073	1071	A		0.2	750 - 1392	38	A
Cobalt-60	0.5			A		False Positive Test	1.2	
Iron-55	NR	1096				767 - 1425		
Manganese-54	948	945	A		0.3	662 - 1229	34	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	609	625	A		-2.6	438 - 813	28	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	769	751	A		2.4	526 - 976	29	A

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	23.0	40.9	N		-43.8	28.6 - 53.2	3.6	W
Cesium-134	989.8	1114	A		-11.1	780 - 1448	9.5	N
Cesium-137	973	1020	A		-4.6	714 - 1326	14	N
Cobalt-57	962	1071	A		-10.2	750 - 1392	14	N
Cobalt-60	0.19		A			False Positive Test	0.38	
Iron-55	NR	1096				767 - 1425		
Manganese-54	910	945	A		-3.7	662 - 1229	11	N
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26	N	(18)		Sensitivity Evaluation		
Plutonium-239/240	NR	41.8	N	(28)		29.3 - 54.3		
Potassium-40	612	625	A		-2.1	438 - 813	15	A
Strontium-90	NR	340	N	(28)		238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3	N	(28)		28.2 - 52.4		
Uranium-238	NR	68	N	(28)		48 - 88		
Zinc-65	753	751	A		0.3	526 - 976	11	N

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42
 (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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	994	1114	A		-10.8	780 - 1448	26	A
Cesium-137	1105	1020	A		8.3	714 - 1326	67	A
Cobalt-57	1143	1071	A		6.7	750 - 1392	82	A
Cobalt-60	2		N	(1)		False Positive Test	0.4	
Iron-55	NR	1096				767 - 1425		
Manganese-54	1004	945	A		6.2	662 - 1229	51	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	672	625	A		7.5	438 - 813	31	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	767	751	A		2.1	526 - 976	32	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	981	1114	A		-11.9	780 - 1448	39	A
Cesium-137	1097	1020	A		7.5	714 - 1326	49	A
Cobalt-57	1152	1071	A		7.6	750 - 1392	54	A
Cobalt-60	0.4			A		False Positive Test	0.2	
Iron-55	NR	1096				767 - 1425		
Manganese-54	1033	945	A		9.3	662 - 1229	45	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	728	625	A		16.5	438 - 813	39	A
Strontium-90	NR	340				238 - 442		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	841	751	A		12.0	526 - 976	38	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	1156.67	1114	A		3.8	780 - 1448	80.00	A
Cesium-137	1150.00	1020	A		12.7	714 - 1326	80.00	A
Cobalt-57	1280.00	1071	A		19.5	750 - 1392	90.00	A
Cobalt-60	0.57			A		False Positive Test	0.42	
Iron-55	NR	1096				767 - 1425		
Manganese-54	1043.33	945	A		10.4	662 - 1229	70.00	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	679.67	625	A		8.7	438 - 813	52.00	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	828.00	751	A		10.3	526 - 976	59.67	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42
 (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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	988	1114	A		-11.3	780 - 1448	19	N
Cesium-137	1063	1020	A		4.2	714 - 1326	30	A
Cobalt-57	1080	1071	A		0.8	750 - 1392	30	A
Cobalt-60	-0.55			A		False Positive Test	1.2	
Iron-55	NR	1096				767 - 1425		
Manganese-54	988	945	A		4.6	662 - 1229	25	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	692	625	A		10.7	438 - 813	43	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	812	751	A		8.1	526 - 976	26	A

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42
 (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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	33.86	40.9	A		-17.2	28.6 - 53.2	2.39	A
Cesium-134	1061.90	1114	A		-4.7	780 - 1448	25.94	A
Cesium-137	1069.30	1020	A		4.8	714 - 1326	26.75	A
Cobalt-57	1098.90	1071	A		2.6	750 - 1392	41.44	A
Cobalt-60	NR		N	(11)		False Positive Test		
Iron-55	NR	1096				767 - 1425		
Manganese-54	973.10	945	A		3.0	662 - 1229	23.27	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	965.70	625	N		54.5	438 - 813	32.26	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	788.10	751	A		4.9	526 - 976	18.94	A

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42
 (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	0.148	0.068	N	(4)		Sensitivity Evaluation	0.025	
Arsenic	24.0	26.7	A		-10.1	18.7 - 34.7	9.49	N
Barium	169	169	A		0.0	118 - 220	3.56	A
Beryllium	25.4	26.9	A		-5.6	18.8 - 35.0	0.826	A
Cadmium	14.2	14.2	A		0.0	9.9 - 18.5	0.375	A
Chromium	63.7	77.7	A		-18.0	54.4 - 101.0	1.78	A
Cobalt	107	125	A		-14.4	88 - 163	1.46	N
Copper	150	170	A		-11.8	119 - 221	2.51	N
Lead	36.0	35.7	A		0.8	25.0 - 46.4	0.561	N
Mercury	-0.013	0.0023	A	(17)		Sensitivity Evaluation	0.012	
Nickel	211	244	A		-13.5	171 - 317	3.38	N
Selenium	9.75	11.0	A		-11.4	7.7 - 14.3	0.668	A
Silver	87.9	90.2	A		-2.6	63.1 - 117.3	1.81	A
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	61.1	64.6	A		-5.4	45.2 - 84.0	0.917	N
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	185	233	W		-20.6	163 - 303	3.27	N
Zinc	340	384	A		-11.5	269 - 499	6.38	N

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	42.0	40.9	A		2.7	28.6 - 53.2	4.97	A
Cesium-134	1151	1114	A		3.3	780 - 1448	67.5	A
Cesium-137	1256	1020	W		23.1	714 - 1326	50.9	A
Cobalt-57	1267	1071	A		18.3	750 - 1392	73.1	A
Cobalt-60	0.227		A			False Positive Test	0.947	
Iron-55	1181	1096	A		7.8	767 - 1425	189	W
Manganese-54	1169	945	W		23.7	662 - 1229	62.7	A
Nickel-63	-15.5		A			False Positive Test	30.9	
Plutonium-238	2.60	0.26	A	(17)		Sensitivity Evaluation	3.99	
Plutonium-239/240	51.7	41.8	W		23.7	29.3 - 54.3	5.48	A
Potassium-40	742	625	A		18.7	438 - 813	41.8	A
Strontium-90	340	340	A		0.0	238 - 442	35.1	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	654	706	A		-7.4	494 - 918	38.6	A
Uranium-234	69.4	40.3	N		72.2	28.2 - 52.4	5.34	A
Uranium-238	99.6	68	N		46.5	48 - 88	6.66	A
Zinc-65	947	751	W		26.1	526 - 976	45.5	A

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42
 (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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	32.1	40.9	W		-21.5	28.6 - 53.2	1.4	A
Cesium-134	983	1114	A		-11.8	780 - 1448	42	A
Cesium-137	1040	1020	A		2.0	714 - 1326	45	A
Cobalt-57	1050	1071	A		-2.0	750 - 1392	37	A
Cobalt-60	0.535		N	(1)		False Positive Test	0.079	
Iron-55	NR	1096				767 - 1425		
Manganese-54	957	945	A		1.3	662 - 1229	42	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	613	625	A		-1.9	438 - 813	27	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	781	751	A		4.0	526 - 976	32	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(NRL99) Environmental Radioactivity - National Centre for Radiation Science

PO Box 29181

Christchurch, Christchurch 8540

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	38.9	40.9	A		-4.9	28.6 - 53.2	2.8	A
Cesium-134	1119	1114	A		0.4	780 - 1448	67	A
Cesium-137	1069	1020	A		4.8	714 - 1326	64	A
Cobalt-57	1115	1071	A		4.1	750 - 1392	73	A
Cobalt-60	0.49			A		False Positive Test	0.24	
Iron-55	NR	1096				767 - 1425		
Manganese-54	958	945	A		1.4	662 - 1229	57	A
Nickel-63	NR					False Positive Test		
Plutonium-238	2.01	0.26	A	(17)		Sensitivity Evaluation	0.92	
Plutonium-239/240	49.4	41.8	A		18.2	29.3 - 54.3	3.8	A
Potassium-40	601	625	A		-3.8	438 - 813	39	A
Strontium-90	254	340	W		-25.3	238 - 442	13	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	29.3	40.3	W		-27.3	28.2 - 52.4	2.8	A
Uranium-238	53.3	68	W		-21.6	48 - 88	4.0	A
Zinc-65	755	751	A		0.5	526 - 976	46	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42
 (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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	1110	1114	A		-0.4	780 - 1448	31.5	A
Cesium-137	1030	1020	A		1.0	714 - 1326	61.6	A
Cobalt-57	1130	1071	A		5.5	750 - 1392	77.5	A
Cobalt-60	2.35		N	(1)		False Positive Test	0.258	
Iron-55	NR	1096				767 - 1425		
Manganese-54	924	945	A		-2.2	662 - 1229	55.5	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	554	625	A		-11.4	438 - 813	24.4	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	718	751	A		-4.4	526 - 976	31.3	A

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42

(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	2.3	0.068	A	(17)		Sensitivity Evaluation	2.3	
Arsenic	24.6	26.7	A		-7.9	18.7 - 34.7	1.3	A
Barium	149.1	169	A		-11.8	118 - 220	5.1	A
Beryllium	25.7	26.9	A		-4.5	18.8 - 35.0	1.2	A
Cadmium	13.84	14.2	A		-2.5	9.9 - 18.5	0.57	A
Chromium	68.5	77.7	A		-11.8	54.4 - 101.0	3.0	A
Cobalt	123.3	125	A		-1.4	88 - 163	5.8	A
Copper	171.1	170	A		0.6	119 - 221	8.8	A
Lead	35.3	35.7	A		-1.1	25.0 - 46.4	1.3	A
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	243	244	A		-0.4	171 - 317	11	A
Selenium	8.99	11.0	A		-18.3	7.7 - 14.3	0.85	A
Silver	80.1	90.2	A		-11.2	63.1 - 117.3	3.5	A
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	56.1	64.6	A		-13.2	45.2 - 84.0	2.6	A
Uranium-235	0.024	0.0249	A		-3.6	0.0174 - 0.0324	0.001	A
Uranium-238	5.39	5.50	A		-2.0	3.85 - 7.15	0.25	A
Uranium-Total	5.43	5.53	A		-1.8	3.87 - 7.19	0.25	A
Vanadium	223.7	233	A		-4.0	163 - 303	8.3	A
Zinc	403	384	A		4.9	269 - 499	21	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	43.6	40.9	A		6.6	28.6 - 53.2	2.9	A
Cesium-134	1145	1114	A		2.8	780 - 1448	58	A
Cesium-137	1073	1020	A		5.2	714 - 1326	59	A
Cobalt-57	1102	1071	A		2.9	750 - 1392	23	A
Cobalt-60	0.41		A			False Positive Test	1.3	
Iron-55	1163	1096	A		6.1	767 - 1425	55	A
Manganese-54	983	945	A		4.0	662 - 1229	48	A
Nickel-63	17		A			False Positive Test	10	
Plutonium-238	0.27	0.26	A	(17)		Sensitivity Evaluation	0.15	
Plutonium-239/240	41.6	41.8	A		-0.5	29.3 - 54.3	2.7	A
Potassium-40	642	625	A		2.7	438 - 813	33	A
Strontium-90	325	340	A		-4.4	238 - 442	11	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	666	706	A		-5.7	494 - 918	26	A
Uranium-234	38.2	40.3	A		-5.2	28.2 - 52.4	2.7	A
Uranium-238	66.3	68	A		-2.5	48 - 88	4.1	A
Zinc-65	785	751	A		4.5	526 - 976	27	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(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	3	0.068	A	(17)		Sensitivity Evaluation	3	
Arsenic	21.1	26.7	W		-21.0	18.7 - 34.7	1	A
Barium	166	169	A		-1.8	118 - 220	2.5	N
Beryllium	22.7	26.9	A		-15.6	18.8 - 35.0	2.5	A
Cadmium	14.2	14.2	A		0.0	9.9 - 18.5	1	A
Chromium	63.3	77.7	A		-18.5	54.4 - 101.0	5	A
Cobalt	107	125	A		-14.4	88 - 163	1	N
Copper	152	170	A		-10.6	119 - 221	5	A
Lead	33.2	35.7	A		-7.0	25.0 - 46.4	2	A
Mercury	0.04	0.0023	A	(17)		Sensitivity Evaluation	0.04	
Nickel	208	244	A		-14.8	171 - 317	2.5	N
Selenium	10.5	11.0	A		-4.5	7.7 - 14.3	2.5	W
Silver	91.2	90.2	A		1.1	63.1 - 117.3	1	N
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	59.9	64.6	A		-7.3	45.2 - 84.0	2	A
Uranium-235	0.0178	0.0249	W		-28.5	0.0174 - 0.0324	.002	A
Uranium-238	4.36	5.50	W		-20.7	3.85 - 7.15	0.1	A
Uranium-Total	3.96	5.53	W		-28.4	3.87 - 7.19	0.1	A
Vanadium	185	233	W		-20.6	163 - 303	2	N
Zinc	327	384	A		-14.8	269 - 499	25	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	39.4	40.9	A		-3.7	28.6 - 53.2	5.41	A
Cesium-134	1010	1114	A		-9.3	780 - 1448	77	A
Cesium-137	1150	1020	A		12.7	714 - 1326	88.4	A
Cobalt-57	1040	1071	A		-2.9	750 - 1392	74.9	A
Cobalt-60	0.565		A			False Positive Test	0.926	
Iron-55	NR	1096				767 - 1425		
Manganese-54	1050	945	A		11.1	662 - 1229	74.9	A
Nickel-63	NR					False Positive Test		
Plutonium-238	1.43	0.26	A	(17)		Sensitivity Evaluation	1.34	
Plutonium-239/240	55.4	41.8	N		32.5	29.3 - 54.3	5.81	A
Potassium-40	680	625	A		8.8	438 - 813	66.8	A
Strontium-90	322	340	A		-5.3	238 - 442	25.4	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	755	706	A		6.9	494 - 918	37	A
Uranium-234	32.0	40.3	W		-20.6	28.2 - 52.4	9.4	W
Uranium-238	70.5	68	A		3.7	48 - 88	9	A
Zinc-65	817	751	A		8.8	526 - 976	52.3	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(QUAN02) 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	1.42220	0.068	A	(17)		Sensitivity Evaluation	0.87667	
Arsenic	22.5	26.7	A		-15.7	18.7 - 34.7	0.75000	A
Barium	165	169	A		-2.4	118 - 220	5.50000	A
Beryllium	24.9	26.9	A		-7.4	18.8 - 35.0	0.83000	A
Cadmium	13.2	14.2	A		-7.0	9.9 - 18.5	0.44000	A
Chromium	71.6	77.7	A		-7.9	54.4 - 101.0	2.38667	A
Cobalt	116	125	A		-7.2	88 - 163	3.86667	A
Copper	155	170	A		-8.8	119 - 221	5.16667	A
Lead	34.4	35.7	A		-3.6	25.0 - 46.4	1.14667	A
Mercury	0.00156	0.0023	A	(17)		Sensitivity Evaluation	0.00313	
Nickel	228	244	A		-6.6	171 - 317	7.60000	A
Selenium	7.38	11.0	N		-32.9	7.7 - 14.3	0.24600	A
Silver	79.0	90.2	A		-12.4	63.1 - 117.3	2.63333	A
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	58.7	64.6	A		-9.1	45.2 - 84.0	1.95667	A
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	208.0	233	A		-10.7	163 - 303	6.93333	A
Zinc	353.0	384	A		-8.1	269 - 499	14.70833	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	NR	1114				780 - 1448		
Cesium-137	NR	1020				714 - 1326		
Cobalt-57	NR	1071				750 - 1392		
Cobalt-60	NR					False Positive Test		
Iron-55	NR	1096				767 - 1425		
Manganese-54	NR	945				662 - 1229		
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	NR	625				438 - 813		
Strontium-90	NR	340				238 - 442		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	NR	751				526 - 976		

Radiological Reference Date: February 1, 2020

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

Laboratory Results For MAPEP-20-MaS42

(RAVR99) Radiactividad Ambiental y Vigilancia Radiologica

CIEMAT (Ed 70 P2 D11)

Madrid, Madrid 28040

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	33.7	40.9	A		-17.6	28.6 - 53.2	1.5	A
Cesium-134	851	1114	W		-23.6	780 - 1448	14	N
Cesium-137	967	1020	A		-5.2	714 - 1326	11	N
Cobalt-57	984	1071	A		-8.1	750 - 1392	11	N
Cobalt-60	0.8		A			False Positive Test	2	
Iron-55	NR	1096				767 - 1425		
Manganese-54	912.8	945	A		-3.4	662 - 1229	9.8	N
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26	N	(18)		Sensitivity Evaluation		
Plutonium-239/240	NR	41.8	N	(28)		29.3 - 54.3		
Potassium-40	636	625	A		1.8	438 - 813	11	N
Strontium-90	NR	340	N	(28)		238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3	N	(28)		28.2 - 52.4		
Uranium-238	NR	68	N	(28)		48 - 88		
Zinc-65	765.8	751	A		2.0	526 - 976	9.1	N

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(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	0.009	0.068	N	(4)		Sensitivity Evaluation	0.000000	
Arsenic	24.098	26.7	A		-9.7	18.7 - 34.7	6.715	W
Barium	171.108	169	A		1.2	118 - 220	1.075	N
Beryllium	36.245	26.9	N		34.7	18.8 - 35.0	11.702	N
Cadmium	12.353	14.2	A		-13.0	9.9 - 18.5	0.080	N
Chromium	96.217	77.7	W		23.8	54.4 - 101.0	33.229	N
Cobalt	158.162	125	W		26.5	88 - 163	47.350	W
Copper	202.600	170	A		19.2	119 - 221	67.844	N
Lead	42.146	35.7	A		18.1	25.0 - 46.4	12.677	N
Mercury	0.021	0.0023	N	(4)		Sensitivity Evaluation	0.001	
Nickel	279.764	244	A		14.7	171 - 317	83.400	W
Selenium	7.558	11.0	N		-31.3	7.7 - 14.3	0.188	A
Silver	57.504	90.2	N		-36.2	63.1 - 117.3	0.547	N
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	76.046	64.6	A		17.7	45.2 - 84.0	22.562	W
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	4.675	5.53	A		-15.5	3.87 - 7.19	0.144	A
Vanadium	648.434	233	N		178.3	163 - 303	214.355	N
Zinc	554.836	384	N		44.5	269 - 499	180.254	N

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	NR	1114				780 - 1448		
Cesium-137	NR	1020				714 - 1326		
Cobalt-57	NR	1071				750 - 1392		
Cobalt-60	NR					False Positive Test		
Iron-55	NR	1096				767 - 1425		
Manganese-54	NR	945				662 - 1229		
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	NR	625				438 - 813		
Strontium-90	NR	340				238 - 442		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	NR	751				526 - 976		

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(SANC99) RadioAnalysis, South Africa Nuclear Energy Corp.

Sample Receipt Gate 1

Pretoria, Gauteng 0001

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	3.70	5.53	N		-33.1	3.87 - 7.19	0.22	A
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	1020	1114	A		-8.4	780 - 1448	37	A
Cesium-137	1027	1020	A		0.7	714 - 1326	36	A
Cobalt-57	1042	1071	A		-2.7	750 - 1392	54	A
Cobalt-60	7.85			A		False Positive Test	7.85	
Iron-55	NR	1096				767 - 1425		
Manganese-54	907	945	A		-4.0	662 - 1229	30	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	587	625	A		-6.1	438 - 813	48	A
Strontium-90	227	340	N		-33.2	238 - 442	32	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	117	40.3	N		190.3	28.2 - 52.4	7	A
Uranium-238	189	68	N		177.9	48 - 88	8	A
Zinc-65	680	751	A		-9.5	526 - 976	28	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42
 (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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	47.1	40.9	A		15.2	28.6 - 53.2	3.5	A
Cesium-134	1034	1114	A		-7.2	780 - 1448	28	A
Cesium-137	919	1020	A		-9.9	714 - 1326	30	A
Cobalt-57	936	1071	A		-12.6	750 - 1392	28	A
Cobalt-60	5.5		N	(1)		False Positive Test	0.4	
Iron-55	NR	1096				767 - 1425		
Manganese-54	858	945	A		-9.2	662 - 1229	28	A
Nickel-63	NR					False Positive Test		
Plutonium-238	0.67	0.26	A	(17)		Sensitivity Evaluation	0.26	
Plutonium-239/240	51.9	41.8	W		24.2	29.3 - 54.3	4.1	A
Potassium-40	563	625	A		-9.9	438 - 813	19	A
Strontium-90	318	340	A		-6.5	238 - 442	20	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	52.4	40.3	N		30.0	28.2 - 52.4	4.1	A
Uranium-238	82.5	68	W		21.3	48 - 88	6.1	A
Zinc-65	700	751	A		-6.8	526 - 976	23	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(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	-1.29	0.068	A	(17)		Sensitivity Evaluation	1.08	
Arsenic	23.3	26.7	A		-12.7	18.7 - 34.7	1.93	A
Barium	174	169	A		3.0	118 - 220	11.7	A
Beryllium	30.0	26.9	A		11.5	18.8 - 35.0	2.07	A
Cadmium	13.8	14.2	A		-2.8	9.9 - 18.5	0.958	A
Chromium	73.8	77.7	A		-5.0	54.4 - 101.0	4.99	A
Cobalt	118	125	A		-5.6	88 - 163	7.97	A
Copper	181	170	A		6.5	119 - 221	12.2	A
Lead	34.9	35.7	A		-2.2	25.0 - 46.4	2.38	A
Mercury	0.00457	0.0023	A	(17)		Sensitivity Evaluation	0.00786	
Nickel	229	244	A		-6.1	171 - 317	15.5	A
Selenium	12.5	11.0	A		13.6	7.7 - 14.3	1.40	A
Silver	90.0	90.2	A		-0.2	63.1 - 117.3	6.09	A
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	60.8	64.6	A		-5.9	45.2 - 84.0	4.11	A
Uranium-235	0.0229	0.0249	A		-8.0	0.0174 - 0.0324	0.00287	A
Uranium-238	4.65	5.50	A		-15.5	3.85 - 7.15	0.314	A
Uranium-Total	4.68	5.53	A		-15.4	3.87 - 7.19	0.316	A
Vanadium	224	233	A		-3.9	163 - 303	15.1	A
Zinc	391	384	A		1.8	269 - 499	26.4	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	42.6	40.9	A		4.2	28.6 - 53.2	3.85	A
Cesium-134	1026	1114	A		-7.9	780 - 1448	34.2	A
Cesium-137	1104	1020	A		8.2	714 - 1326	35.4	A
Cobalt-57	1119	1071	A		4.5	750 - 1392	31.9	A
Cobalt-60	0.644		A			False Positive Test	0.730	
Iron-55	1121	1096	A		2.3	767 - 1425	114	A
Manganese-54	1026	945	A		8.6	662 - 1229	35.1	A
Nickel-63	36.8		A			False Positive Test	13.7	
Plutonium-238	1.11	0.26	A	(17)		Sensitivity Evaluation	0.400	
Plutonium-239/240	44.1	41.8	A		5.5	29.3 - 54.3	3.55	A
Potassium-40	674	625	A		7.8	438 - 813	30.6	A
Strontium-90	327	340	A		-3.8	238 - 442	29.9	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	552	706	W		-21.8	494 - 918	31.7	A
Uranium-234	33.5	40.3	A		-16.9	28.2 - 52.4	2.85	A
Uranium-238	70.7	68	A		4.0	48 - 88	5.41	A
Zinc-65	848	751	A		12.9	526 - 976	28.9	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	1150	1114	A		3.2	780 - 1448	31.5	A
Cesium-137	1140	1020	A		11.8	714 - 1326	29.0	A
Cobalt-57	1030	1071	A		-3.8	750 - 1392	26.5	A
Cobalt-60	1.44		N	(1)		False Positive Test	0.450	
Iron-55	NR	1096				767 - 1425		
Manganese-54	958	945	A		1.4	662 - 1229	21.6	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	631	625	A		1.0	438 - 813	18.8	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	751	751	A		0.0	526 - 976	19.1	A

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	39.4	40.9	A		-3.7	28.6 - 53.2	5.0	A
Cesium-134	1014	1114	A		-9.0	780 - 1448	16	N
Cesium-137	999	1020	A		-2.1	714 - 1326	29	A
Cobalt-57	972	1071	A		-9.2	750 - 1392	20	A
Cobalt-60	-2.7		A			False Positive Test	2.3	
Iron-55	NR	1096				767 - 1425		
Manganese-54	903	945	A		-4.4	662 - 1229	23	A
Nickel-63	NR					False Positive Test		
Plutonium-238	0.60	0.26	A	(17)		Sensitivity Evaluation	0.48	
Plutonium-239/240	41.3	41.8	A		-1.2	29.3 - 54.3	4.4	A
Potassium-40	585	625	A		-6.4	438 - 813	32	A
Strontium-90	245	340	W		-27.9	238 - 442	10	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	36.4	40.3	A		-9.7	28.2 - 52.4	4.1	A
Uranium-238	78.5	68	A		15.4	48 - 88	7.5	A
Zinc-65	725	751	A		-3.5	526 - 976	22	A

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	NR	1114				780 - 1448		
Cesium-137	NR	1020				714 - 1326		
Cobalt-57	NR	1071				750 - 1392		
Cobalt-60	NR					False Positive Test		
Iron-55	NR	1096				767 - 1425		
Manganese-54	NR	945				662 - 1229		
Nickel-63	0.01		A			False Positive Test	12.1	
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	NR	625				438 - 813		
Strontium-90	348	340	A		2.4	238 - 442	18.1	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	NR	751				526 - 976		

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42
 (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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	955	1114	A		-14.3	780 - 1448	9	N
Cesium-137	1089	1020	A		6.8	714 - 1326	12	N
Cobalt-57	1106	1071	A		3.3	750 - 1392	8	N
Cobalt-60	0.33			A		False Positive Test	1.26	
Iron-55	NR	1096				767 - 1425		
Manganese-54	1022	945	A		8.1	662 - 1229	27	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	710	625	A		13.6	438 - 813	42	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	842	751	A		12.1	526 - 976	17	A

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42
 (TMAO01) EBERLINE SERVICES OAK RIDGE LABORATORY
 601 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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	45.069	40.9	A		10.2	28.6 - 53.2	9.462	W
Cesium-134	961.415	1114	A		-13.7	780 - 1448	62.665	A
Cesium-137	1036.419	1020	A		1.6	714 - 1326	100.331	A
Cobalt-57	1194.566	1071	A		11.5	750 - 1392	119.367	A
Cobalt-60	-0.131		A			False Positive Test	5.824	
Iron-55	NR	1096				767 - 1425		
Manganese-54	971.391	945	A		2.8	662 - 1229	157.94	W
Nickel-63	.3211		A			False Positive Test	35.966	
Plutonium-238	.013	0.26	A	(17)		Sensitivity Evaluation	2.856	
Plutonium-239/240	48.129	41.8	A		15.1	29.3 - 54.3	12.303	W
Potassium-40	615.646	625	A		-1.5	438 - 813	73.348	A
Strontium-90	380.514	340	A		11.9	238 - 442	23.274	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	738.018	706	A		4.5	494 - 918	27.005	A
Uranium-234	53.448	40.3	N		32.6	28.2 - 52.4	8.305	W
Uranium-238	67.94	68	A		-0.1	48 - 88	9.612	A
Zinc-65	791.129	751	A		5.3	526 - 976	90.012	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42
 (TNUT01) St. Louis USACE FUSRAP Laboratory
 112 James S McDonnell Blvd
 Saint Louis, MO 63042

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	35.816	40.9	A		-12.4	28.6 - 53.2	2.396	A
Cesium-134	885.792	1114	W		-20.5	780 - 1448	11.604	N
Cesium-137	1045.100	1020	A		2.5	714 - 1326	27.957	A
Cobalt-57	1037.400	1071	A		-3.1	750 - 1392	18.101	N
Cobalt-60	.369		A			False Positive Test	.427	
Iron-55	NR	1096				767 - 1425		
Manganese-54	974.630	945	A		3.1	662 - 1229	22.871	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	646.044	625	A		3.4	438 - 813	21.637	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	43.145	40.3	A		7.1	28.2 - 52.4	6.715	W
Uranium-238	68.878	68	A		1.3	48 - 88	8.733	A
Zinc-65	797.438	751	A		6.2	526 - 976	22.246	A

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	1310.54	1114	A		17.6	780 - 1448	1.46	N
Cesium-137	1401.19	1020	N		37.4	714 - 1326	2.14	N
Cobalt-57	1475.93	1071	N		37.8	750 - 1392	1.93	N
Cobalt-60	NR		N	(11)		False Positive Test		
Iron-55	NR	1096				767 - 1425		
Manganese-54	1279.09	945	N		35.4	662 - 1229	1.69	N
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	848.41	625	N		35.7	438 - 813	2.05	N
Strontium-90	NR	340				238 - 442		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	1060.42	751	N		41.2	526 - 976	2.01	N

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

(18) = Sensitivity Evaluation, Value Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42
 (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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	33.93	40.9	A		-17.0	28.6 - 53.2	6.81	W
Cesium-134	1084.537	1114	A		-2.6	780 - 1448	144.222	A
Cesium-137	1045.9	1020	A		2.5	714 - 1326	139.09	A
Cobalt-57	1055.5	1071	A		-1.4	750 - 1392	141.04	A
Cobalt-60	4.27		N	(1)		False Positive Test	0.725	
Iron-55	970.62	1096	A		-11.4	767 - 1425	215.34	W
Manganese-54	1122.6	945	A		18.8	662 - 1229	149.08	A
Nickel-63	10.84		A			False Positive Test	38.67	
Plutonium-238	0.85	0.26	A	(17)		Sensitivity Evaluation	1.44	
Plutonium-239/240	39.96	41.8	A		-4.4	29.3 - 54.3	7.66	W
Potassium-40	729.49	625	A		16.7	438 - 813	97.618	A
Strontium-90	238.65	340	W		-29.8	238 - 442	39.22	W

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	658.6	706	A		-6.7	494 - 918	93.24	A
Uranium-234	36.3	40.3	A		-9.9	28.2 - 52.4	6.07	W
Uranium-238	54.02	68	W		-20.6	48 - 88	8.58	W
Zinc-65	817.34	751	A		8.8	526 - 976	107.43	A

Radiological Reference Date: February 1, 2020

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

(4) = Sensitivity Evaluation

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

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

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(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-20-MaS42
 (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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	28.91	40.9	W		-29.3	28.6 - 53.2	6.592	W
Cesium-134	1098.86	1114	A		-1.4	780 - 1448	11.212	N
Cesium-137	1126.66	1020	A		10.5	714 - 1326	28.001	A
Cobalt-57	1127.44	1071	A		5.3	750 - 1392	23.225	A
Cobalt-60	2.42		N	(1)		False Positive Test	0.173	
Iron-55	NR	1096				767 - 1425		
Manganese-54	1045.77	945	A		10.7	662 - 1229	23.027	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	662.77	625	A		6.0	438 - 813	18.362	A
Strontium-90	NR	340				238 - 442		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	834.11	751	A		11.1	526 - 976	19.764	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	35.4	40.9	A		-13.4	28.6 - 53.2	2.89	A
Cesium-134	11400	1114	N		923.3	780 - 1448	353	A
Cesium-137	11600	1020	N		1037.3	714 - 1326	475	A
Cobalt-57	12700	1071	N		1085.8	750 - 1392	354	A
Cobalt-60	5.88		A			False Positive Test	3.76	
Iron-55	NR	1096				767 - 1425		
Manganese-54	10500	945	N		1011.1	662 - 1229	263	A
Nickel-63	NR					False Positive Test		
Plutonium-238	.440	0.26	A	(17)		Sensitivity Evaluation	.222	
Plutonium-239/240	44.2	41.8	A		5.7	29.3 - 54.3	3.24	A
Potassium-40	NR	625	N	(28)		438 - 813		
Strontium-90	302	340	A		-11.2	238 - 442	15.9	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	36.4	40.3	A		-9.7	28.2 - 52.4	5.25	A
Uranium-238	63.6	68	A		-6.5	48 - 88	8.69	A
Zinc-65	8600	751	N		1045.1	526 - 976	180	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42
 (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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	NR	0.0249				0.0174 - 0.0324		
Uranium-238	NR	5.50				3.85 - 7.15		
Uranium-Total	NR	5.53				3.87 - 7.19		
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9	N	(28)		28.6 - 53.2		
Cesium-134	1130	1114	A		1.4	780 - 1448	20.2	N
Cesium-137	1140	1020	A		11.8	714 - 1326	32	A
Cobalt-57	1180	1071	A		10.2	750 - 1392	25.5	A
Cobalt-60	0.709		N	(1)		False Positive Test	0.121	
Iron-55	NR	1096				767 - 1425		
Manganese-54	1030	945	A		9.0	662 - 1229	43.1	A
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26	N	(18)		Sensitivity Evaluation		
Plutonium-239/240	NR	41.8	N	(28)		29.3 - 54.3		
Potassium-40	654	625	A		4.6	438 - 813	53.2	A
Strontium-90	234.79	340	N		-30.9	238 - 442	31.34	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3	N	(28)		28.2 - 52.4		
Uranium-238	NR	68	N	(28)		48 - 88		
Zinc-65	817	751	A		8.8	526 - 976	59.5	A

Radiological Reference Date: February 1, 2020

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



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

Laboratory Results For MAPEP-20-MaS42

(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	0.068				Sensitivity Evaluation		
Arsenic	NR	26.7				18.7 - 34.7		
Barium	NR	169				118 - 220		
Beryllium	NR	26.9				18.8 - 35.0		
Cadmium	NR	14.2				9.9 - 18.5		
Chromium	NR	77.7				54.4 - 101.0		
Cobalt	NR	125				88 - 163		
Copper	NR	170				119 - 221		
Lead	NR	35.7				25.0 - 46.4		
Mercury	NR	0.0023				Sensitivity Evaluation		
Nickel	NR	244				171 - 317		
Selenium	NR	11.0				7.7 - 14.3		
Silver	NR	90.2				63.1 - 117.3		
Technetium-99	NR	0.00112				0.00078 - 0.00146		
Thallium	NR	64.6				45.2 - 84.0		
Uranium-235	0.023	0.0249	A		-7.6	0.0174 - 0.0324	0.006	W
Uranium-238	5.28	5.50	A		-4.0	3.85 - 7.15	0.6	A
Uranium-Total	5.3	5.53	A		-4.2	3.87 - 7.19	0.6	A
Vanadium	NR	233				163 - 303		
Zinc	NR	384				269 - 499		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	40.9				28.6 - 53.2		
Cesium-134	NR	1114				780 - 1448		
Cesium-137	NR	1020				714 - 1326		
Cobalt-57	NR	1071				750 - 1392		
Cobalt-60	NR					False Positive Test		
Iron-55	NR	1096				767 - 1425		
Manganese-54	NR	945				662 - 1229		
Nickel-63	NR					False Positive Test		
Plutonium-238	NR	0.26				Sensitivity Evaluation		
Plutonium-239/240	NR	41.8				29.3 - 54.3		
Potassium-40	NR	625				438 - 813		
Strontium-90	NR	340				238 - 442		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	706				494 - 918		
Uranium-234	NR	40.3				28.2 - 52.4		
Uranium-238	NR	68				48 - 88		
Zinc-65	NR	751				526 - 976		

Radiological Reference Date: February 1, 2020

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%

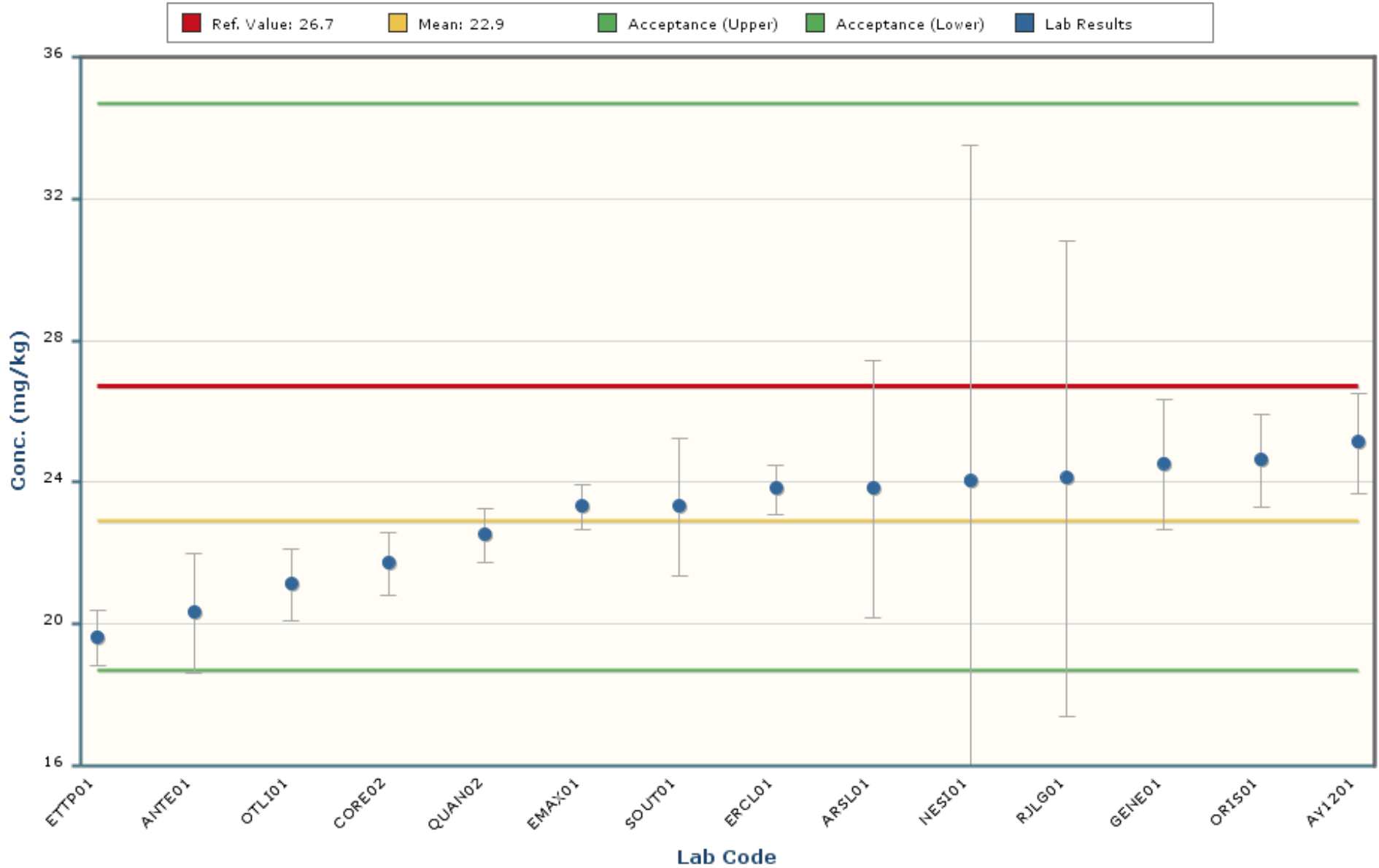
RP = Relative Precision

Notes:

- (1) = False Positive
- (4) = Sensitivity Evaluation
- (5) = Total Metal
- (6) = Not Evaluated
- (11) = False Positive Test, Result Not Reported
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- (18) = Sensitivity Evaluation, Value Not Reported
- (25) = Result not reported with other gamma results
- (28) = Not Reporting Previously Reported Analyte

Arsenic

MAPEP-20-MaS42



Notes:

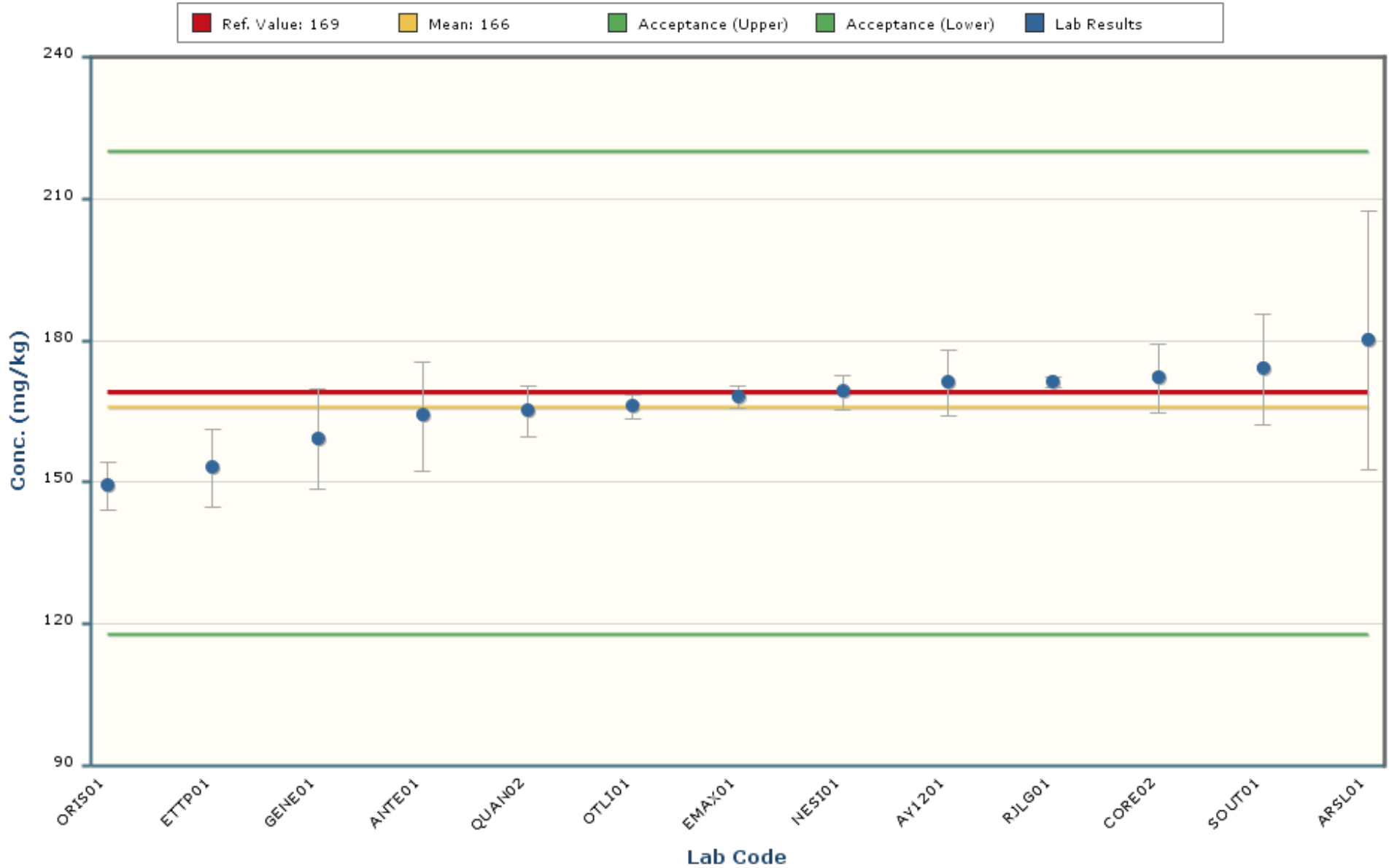
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 14.2 and 31.6 (± 5 Standard Deviations).

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

Barium

MAPEP-20-MaS42



Notes:

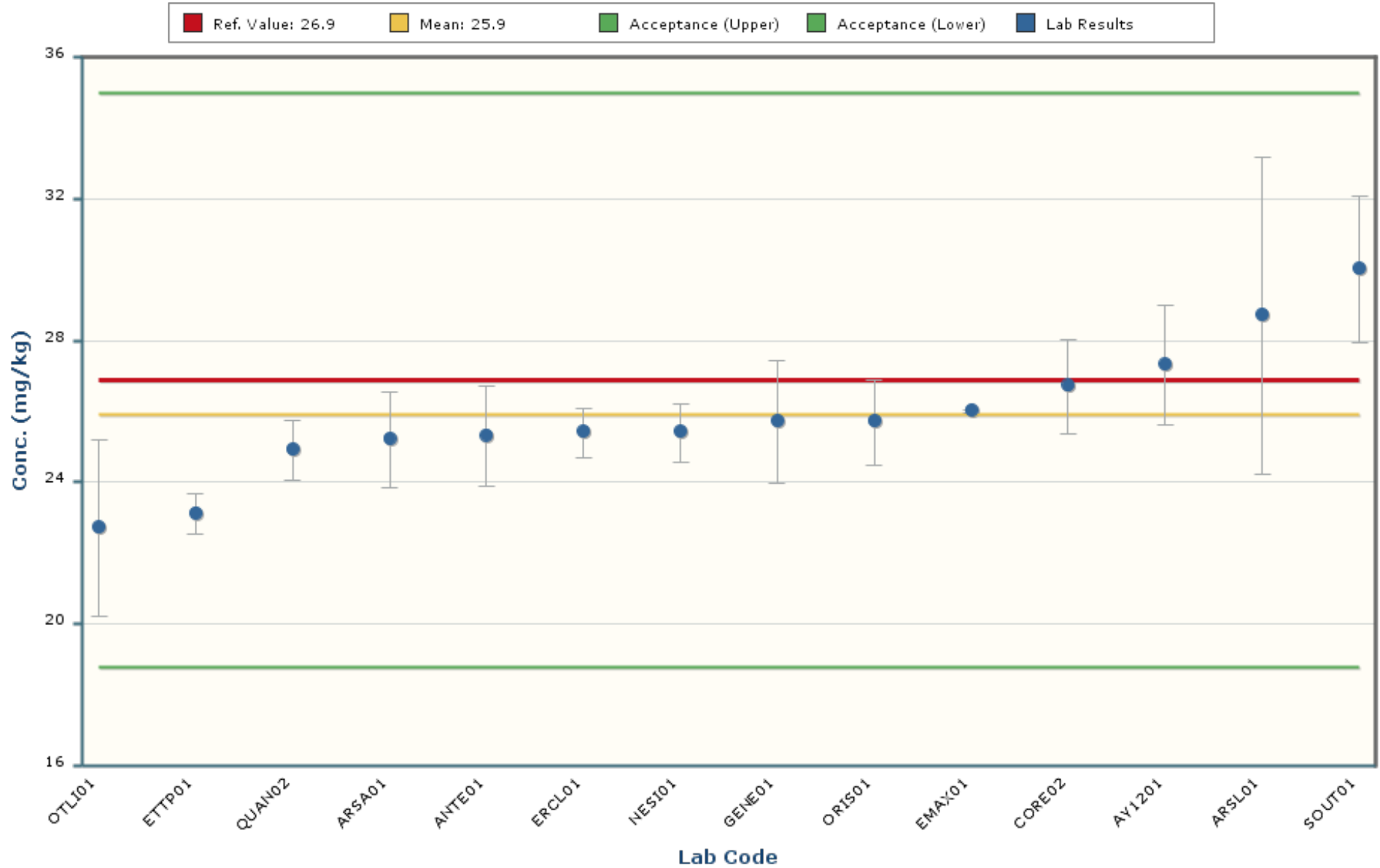
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 124 and 209 (± 5 Standard Deviations).

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

Beryllium

MAPEP-20-MaS42



Notes:

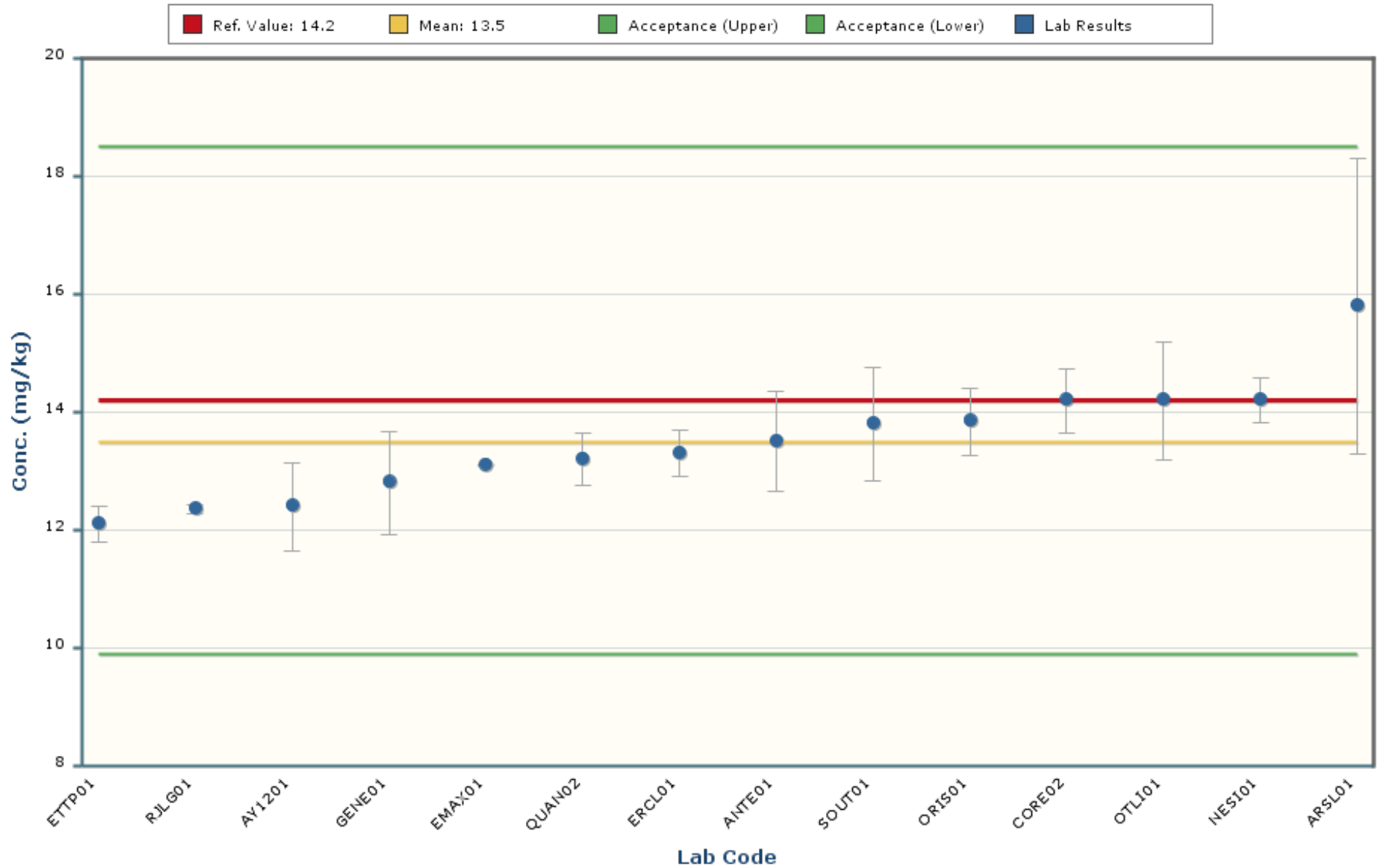
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 16.0 and 35.8 (± 5 Standard Deviations).

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

Cadmium

MAPEP-20-MaS42



Notes:

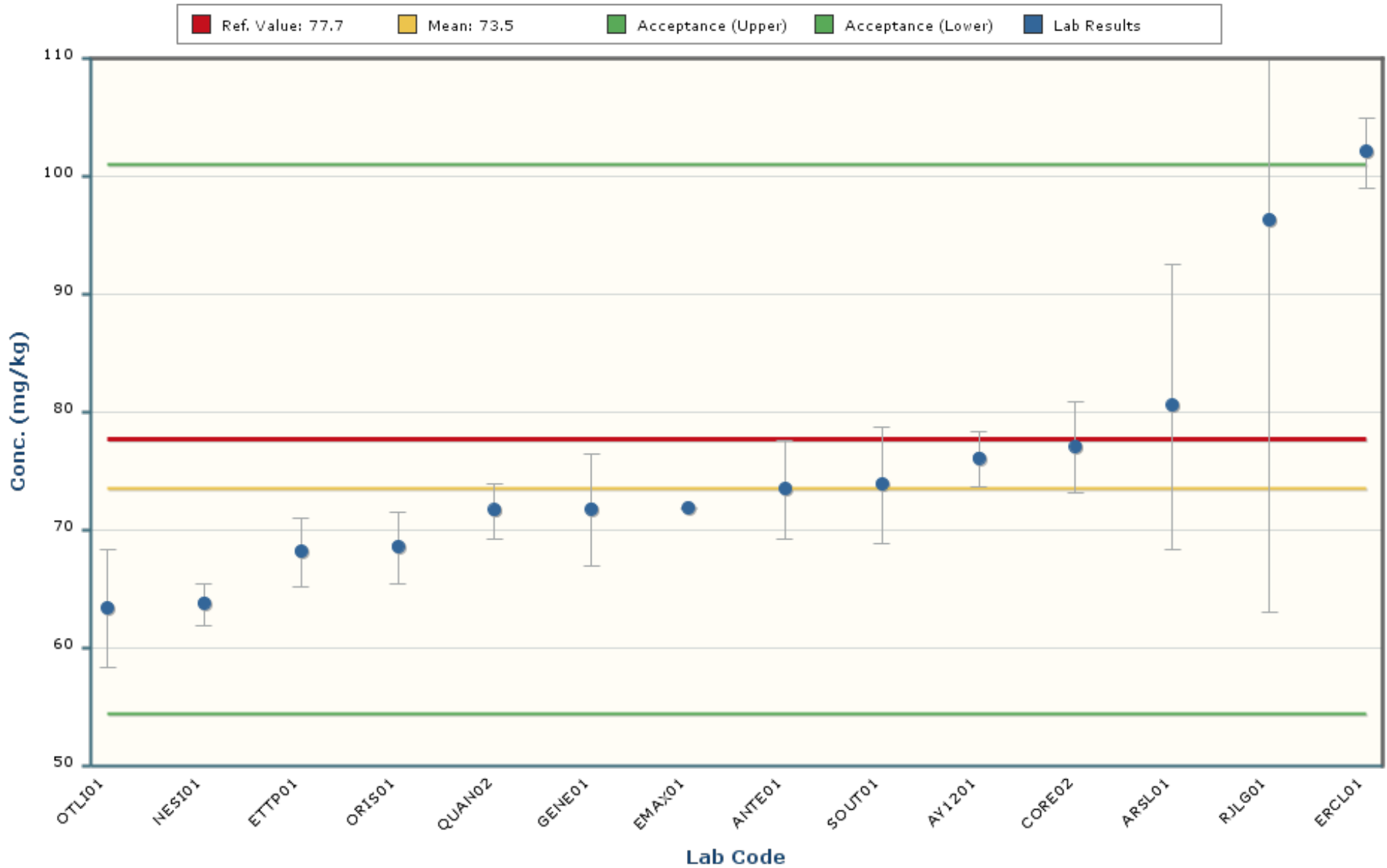
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 8.5 and 18.5 (± 5 Standard Deviations).

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

Chromium

MAPEP-20-MaS42



Notes:

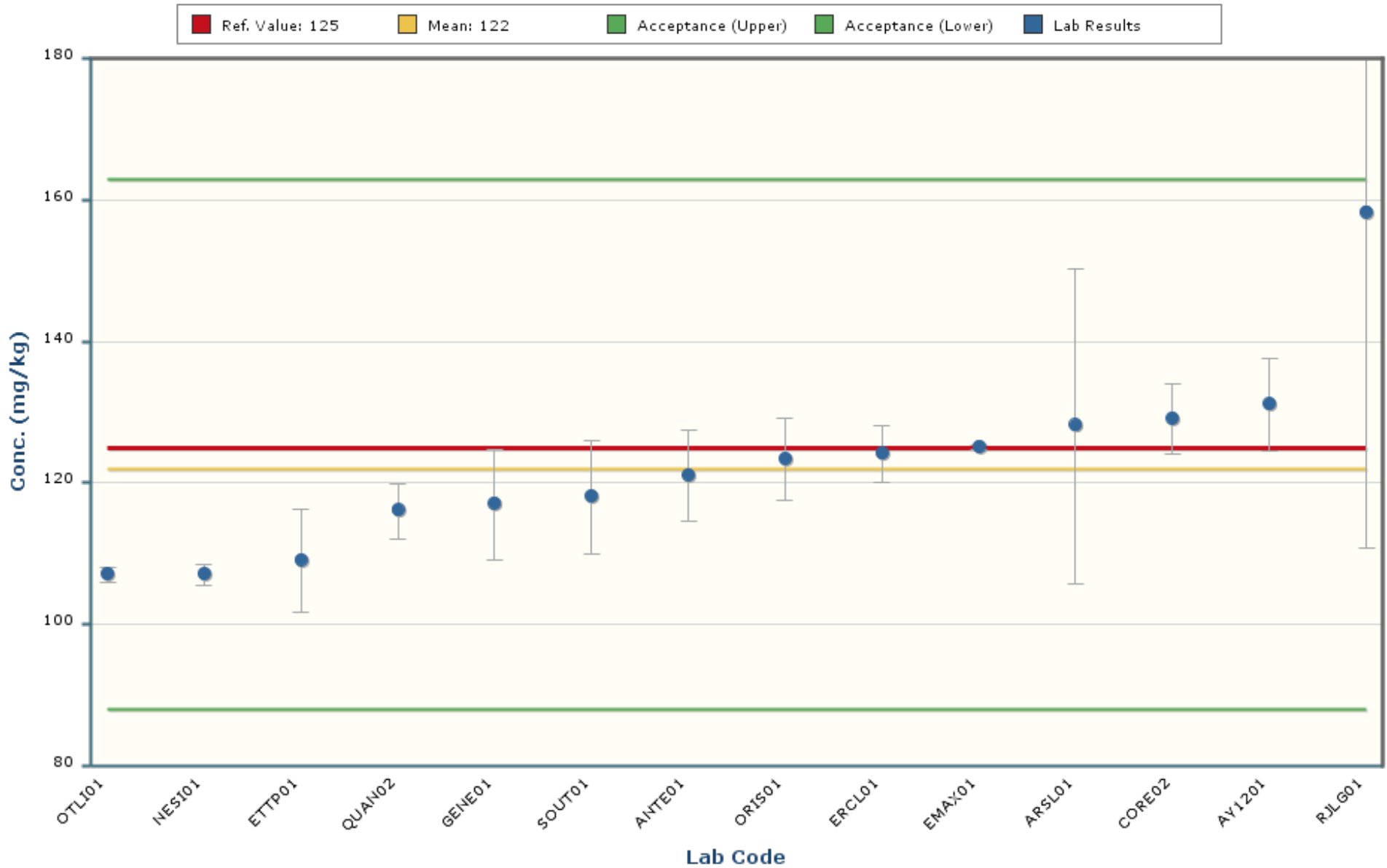
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 31.5 and 115.5 (± 5 Standard Deviations).

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

Cobalt

MAPEP-20-MaS42



Notes:

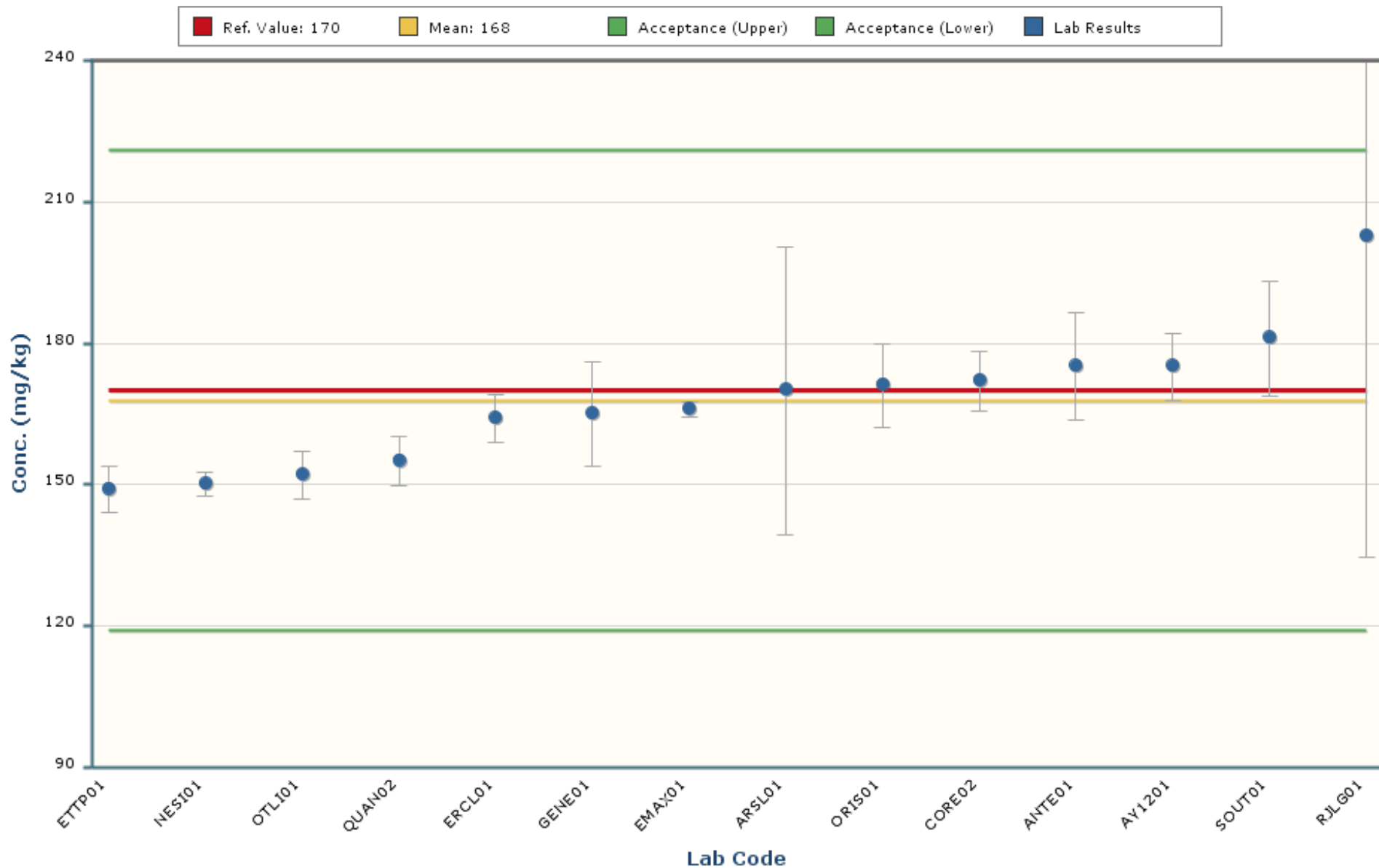
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 55 and 190 (± 5 Standard Deviations).

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

Copper

MAPEP-20-MaS42



Notes:

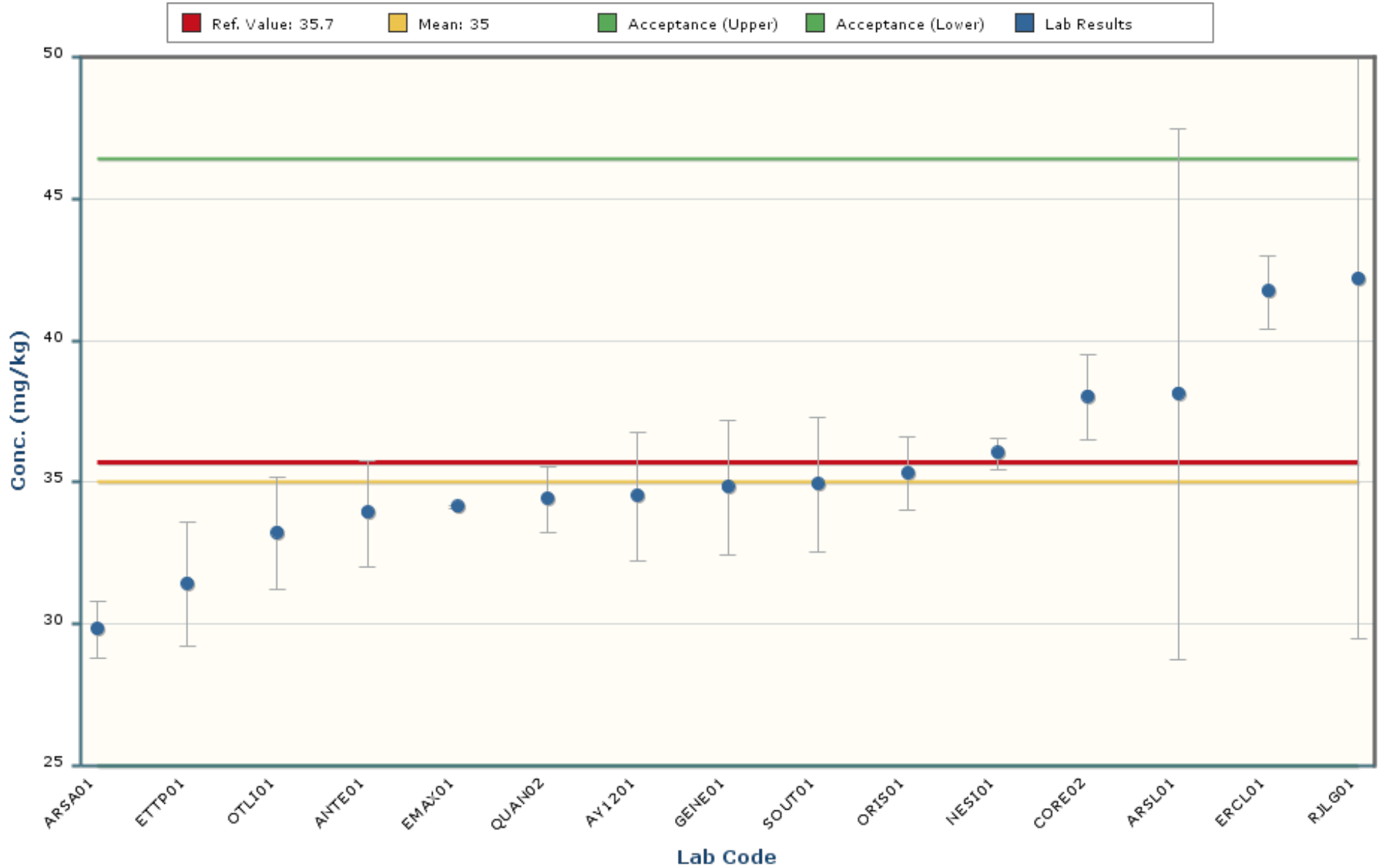
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 94 and 242 (± 5 Standard Deviations).

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

Lead

MAPEP-20-MaS42



Notes:

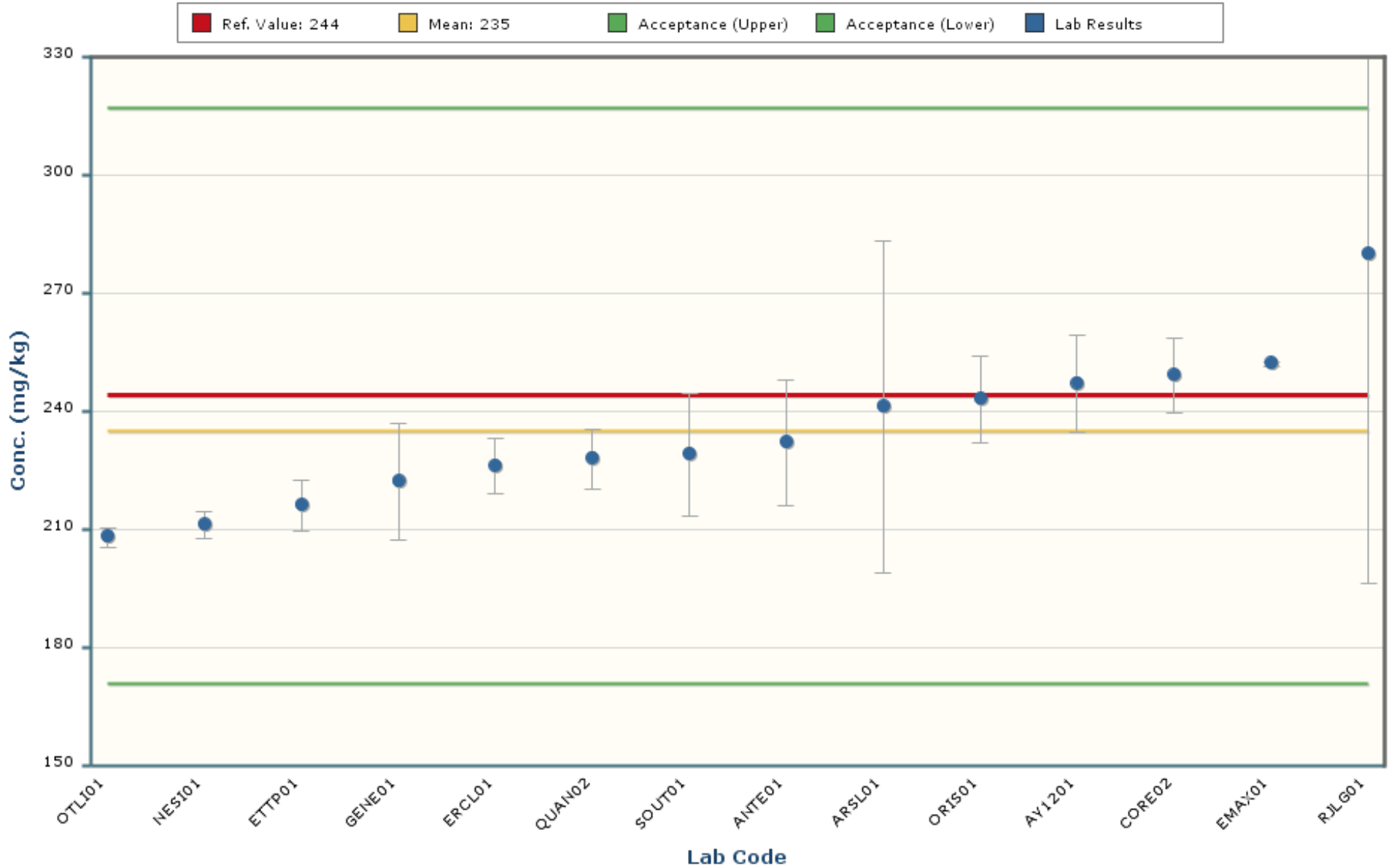
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 20.1 and 50.0 (± 5 Standard Deviations).

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

Nickel

MAPEP-20-MaS42



Notes:

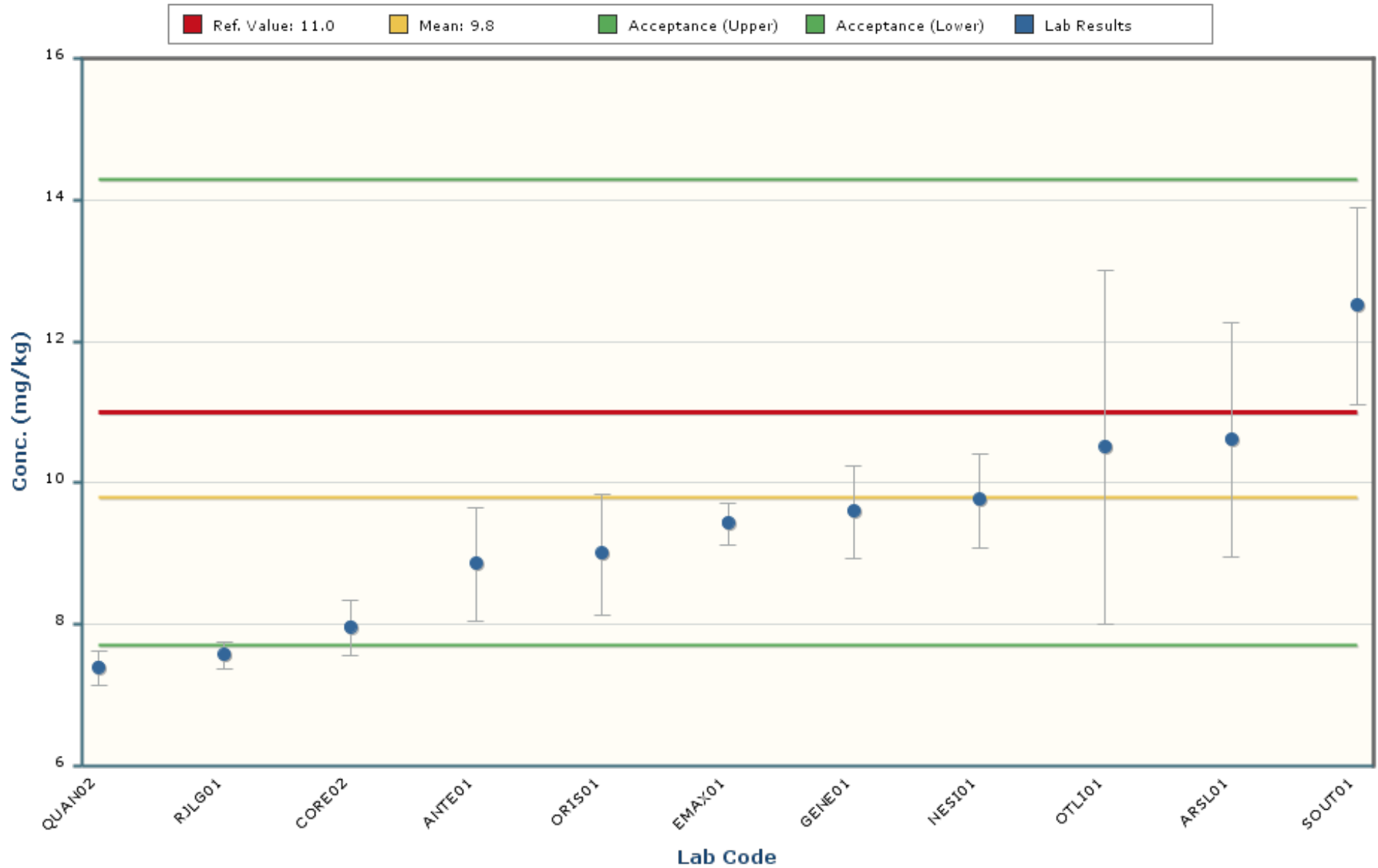
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 137 and 334 (± 5 Standard Deviations).

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

Selenium

MAPEP-20-MaS42



Notes:

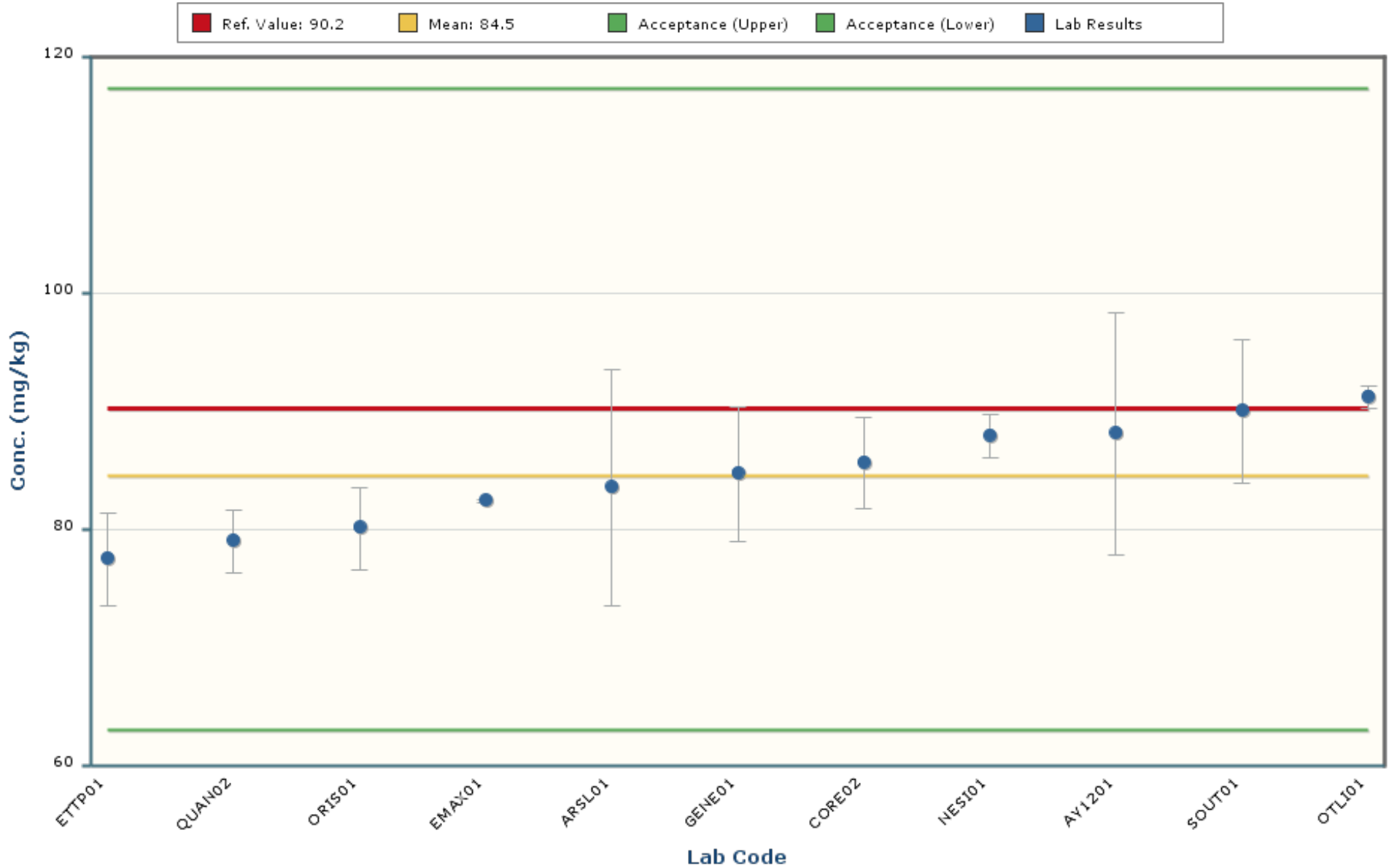
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 3.3 and 16.3 (± 5 Standard Deviations).

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

Silver

MAPEP-20-MaS42



Notes:

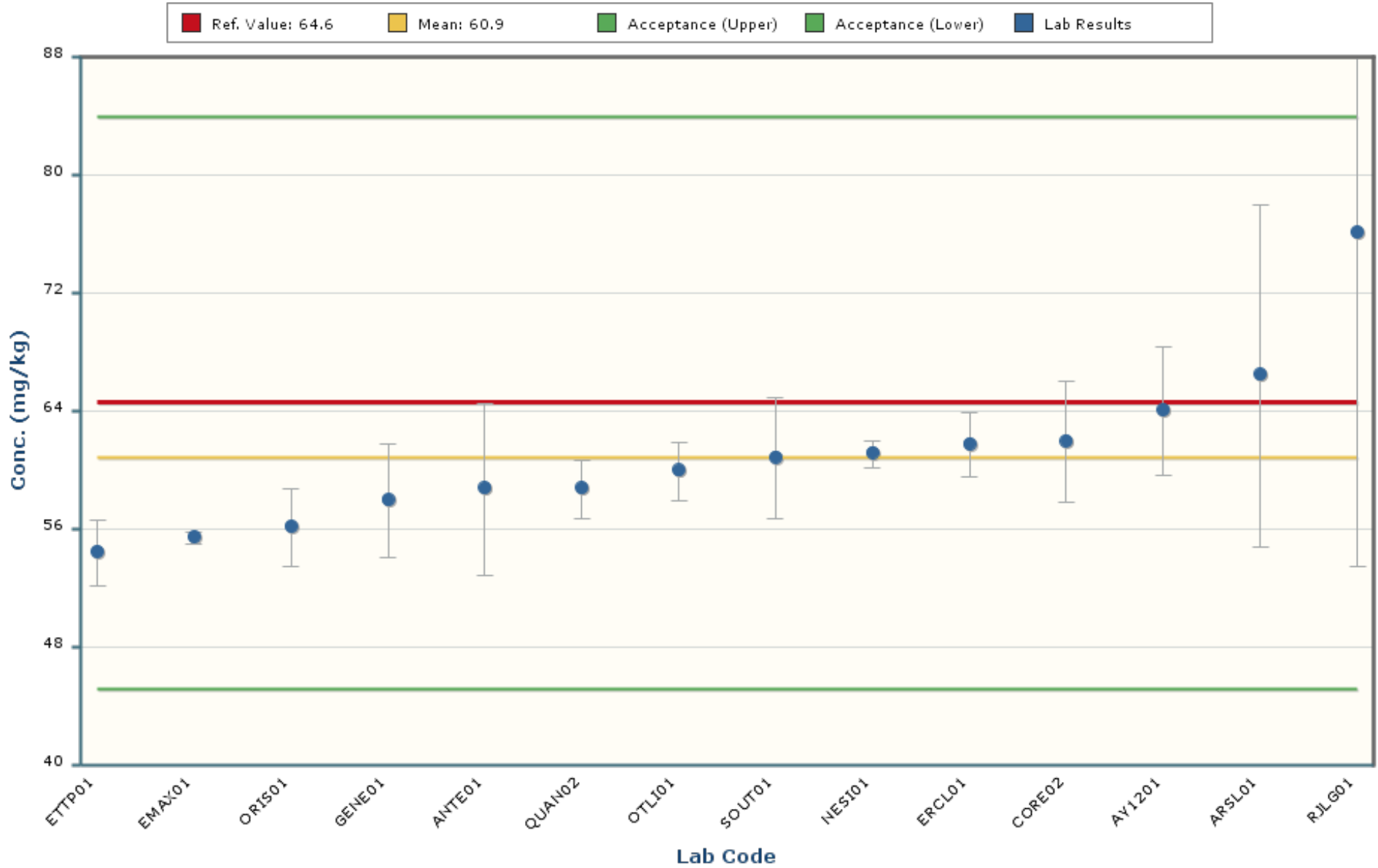
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 61.9 and 107.2 (± 5 Standard Deviations).

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

Thallium

MAPEP-20-MaS42



Notes:

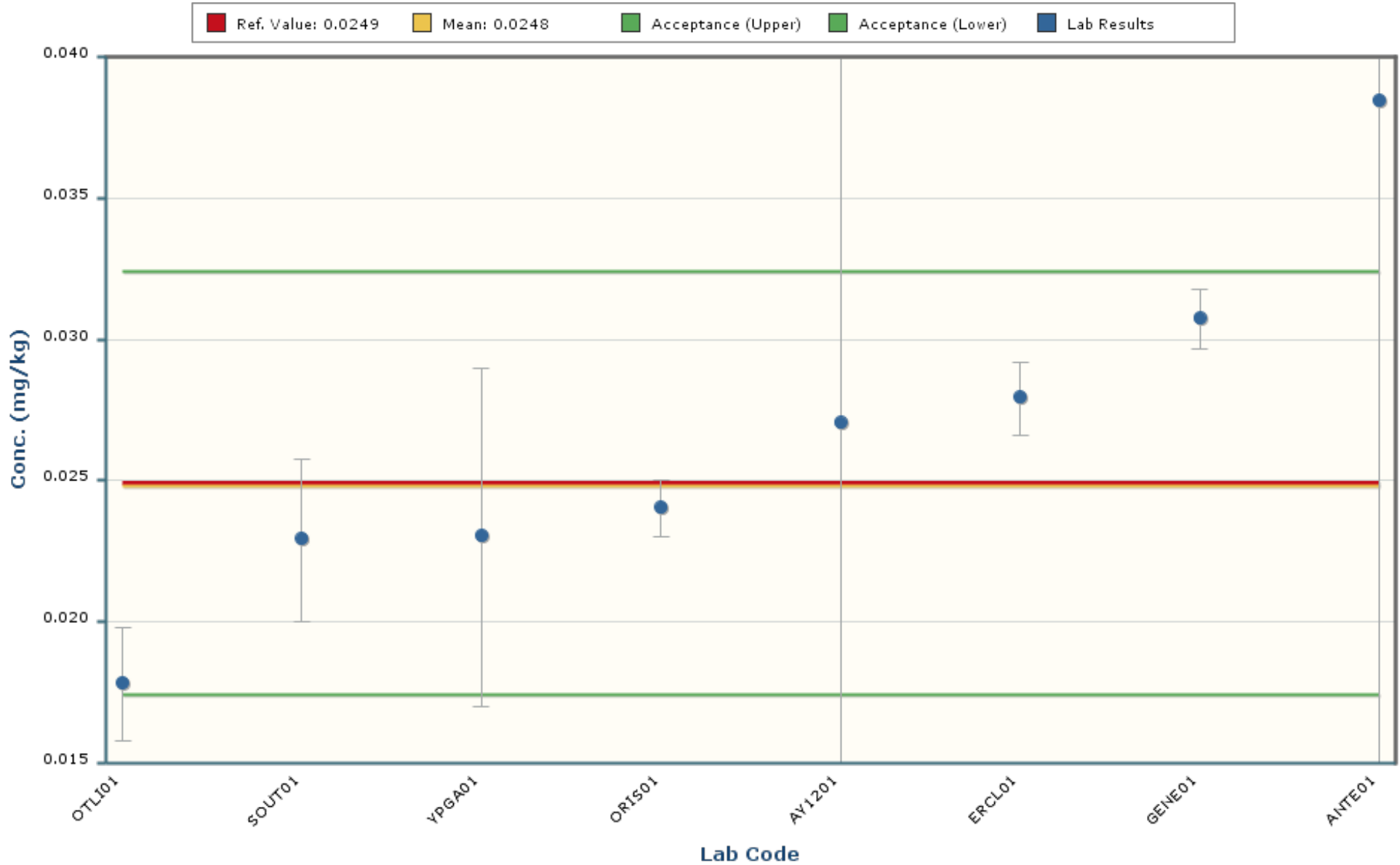
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 32.5 and 89.2 (± 5 Standard Deviations).

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

Uranium-235

MAPEP-20-MaS42



Notes:

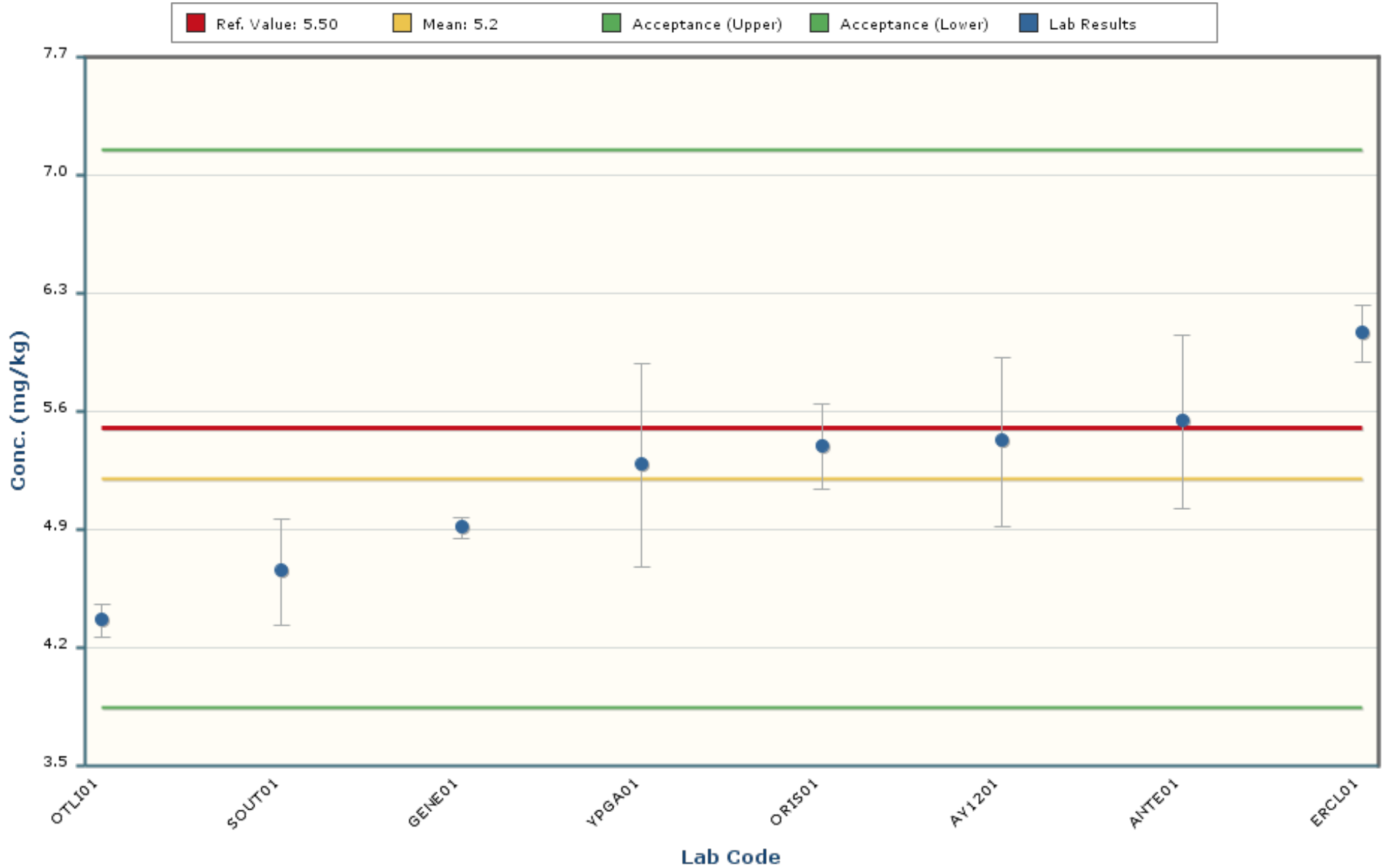
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 0.0038 and 0.0457 (± 5 Standard Deviations).

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

Uranium-238

MAPEP-20-MaS42



Notes:

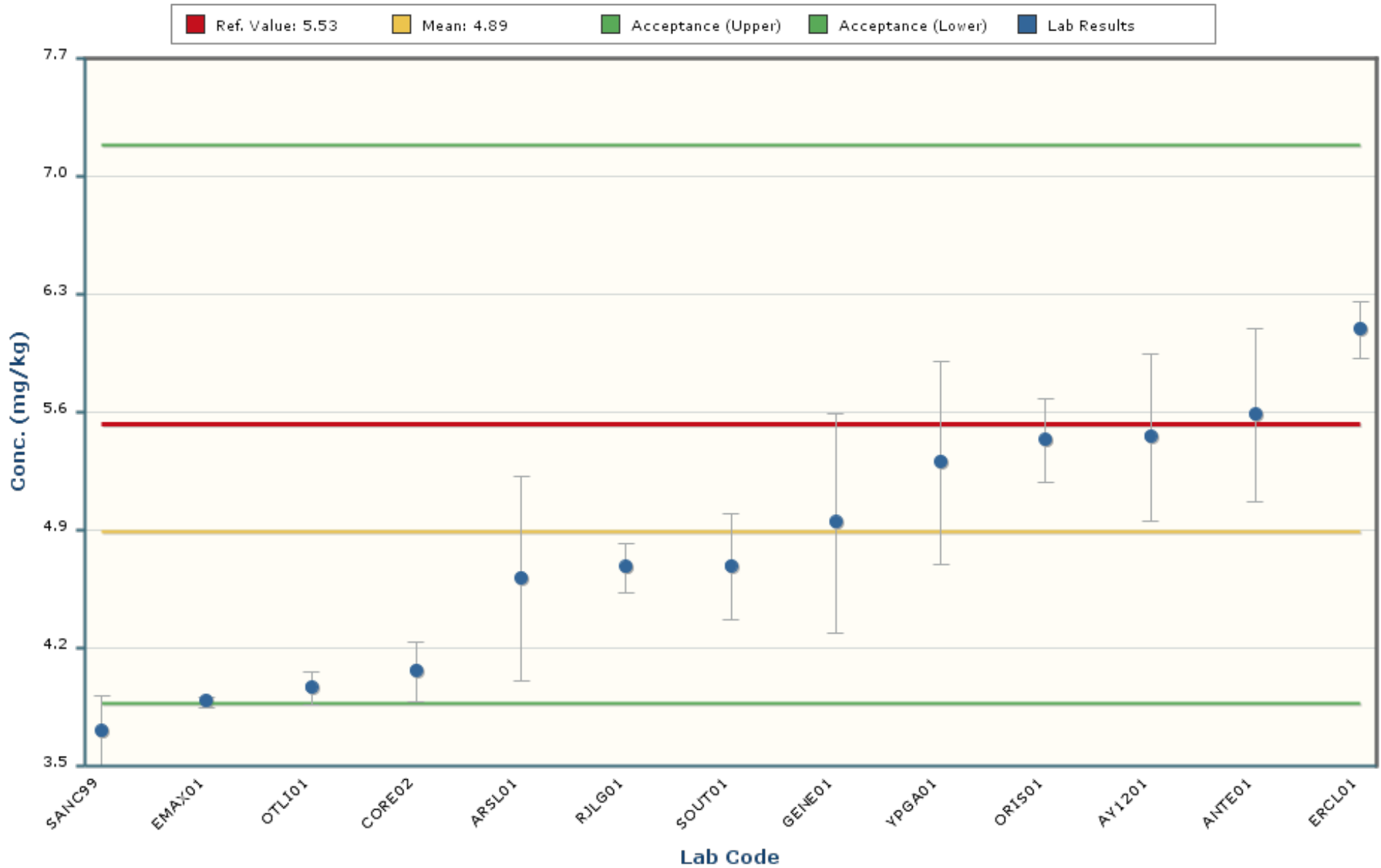
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 2.50 and 7.90 (± 5 Standard Deviations).

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

Uranium-Total

MAPEP-20-MaS42



Notes:

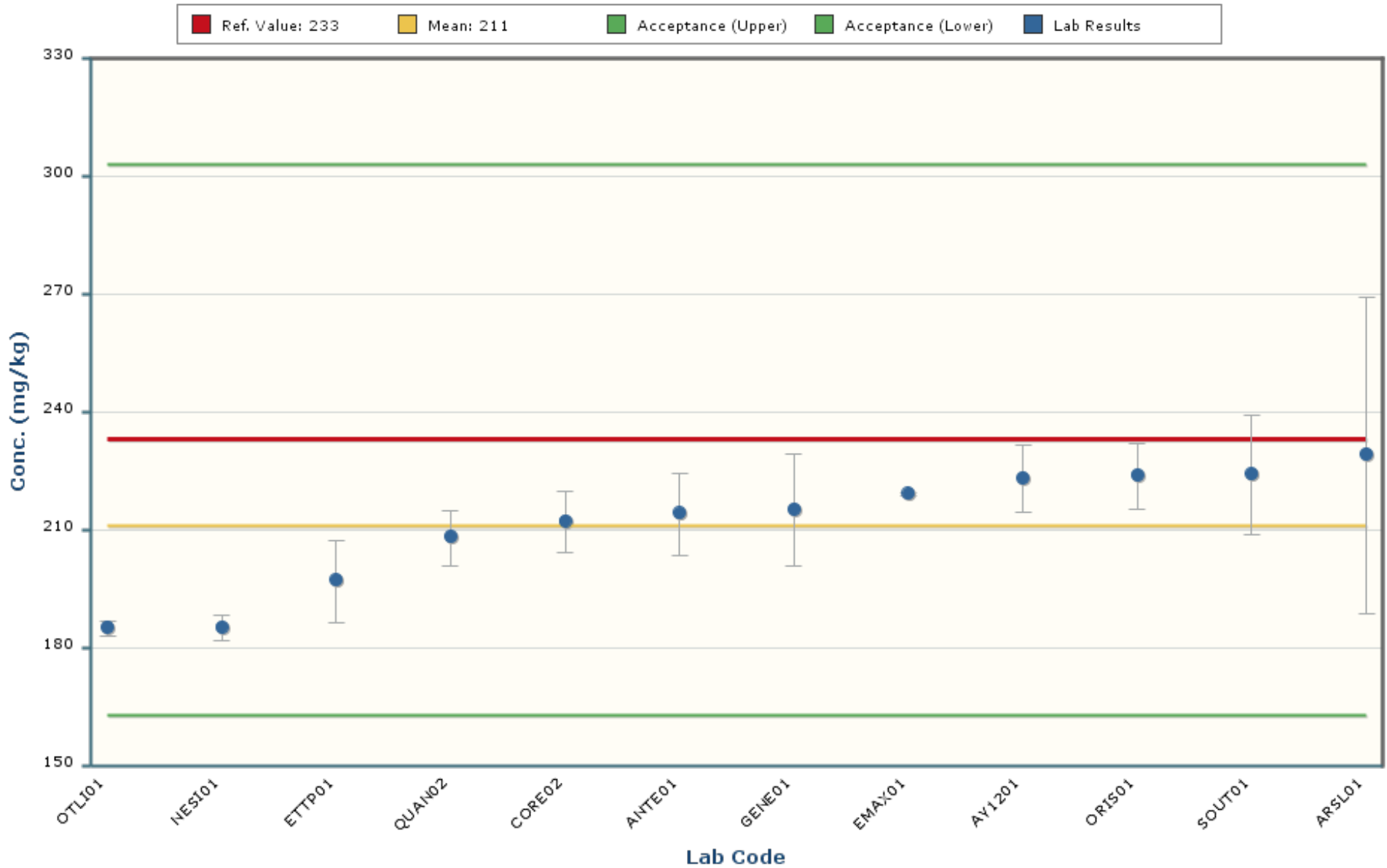
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 1.37 and 8.40 (± 5 Standard Deviations).

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

Vanadium

MAPEP-20-MaS42



Notes:

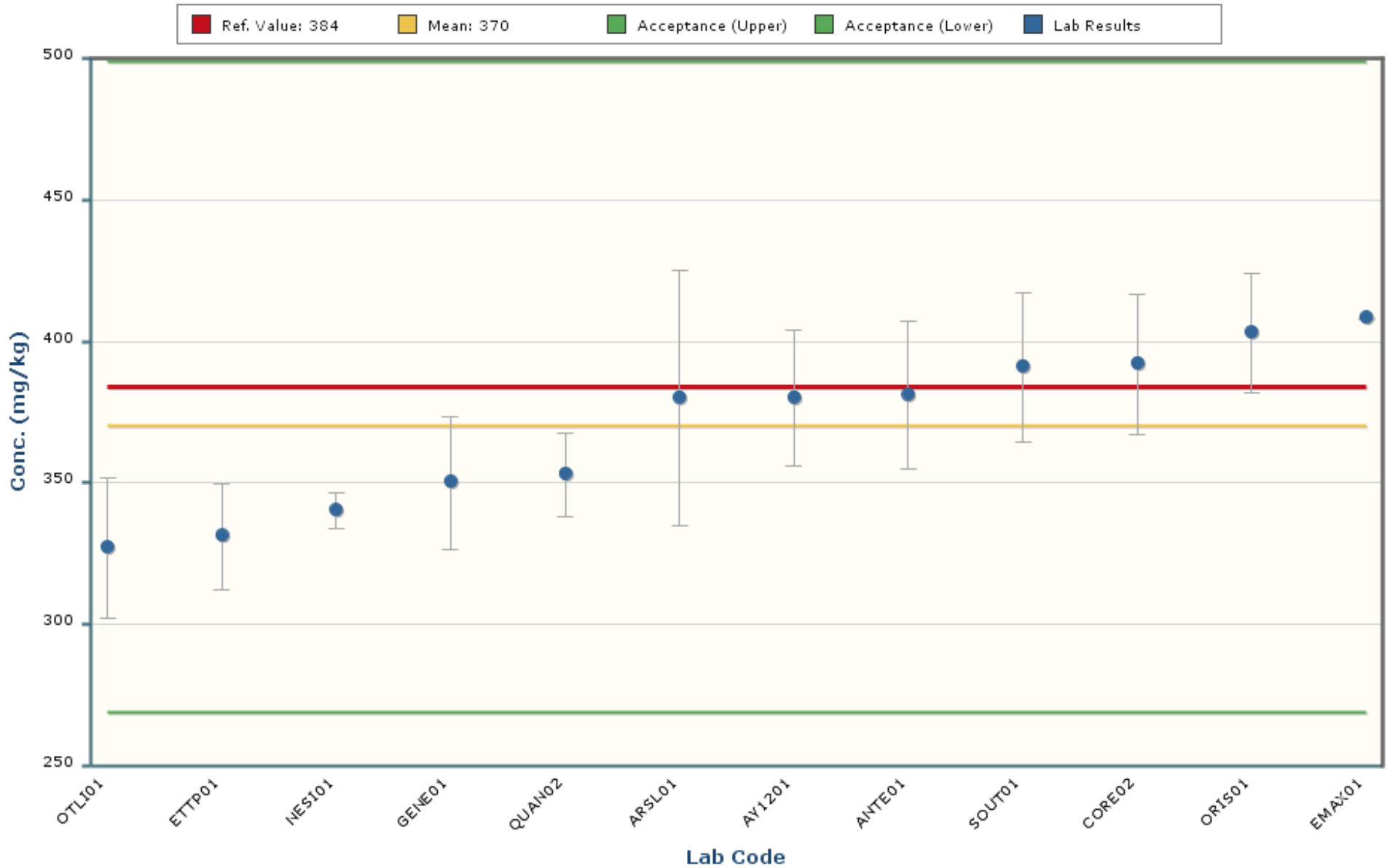
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 137 and 286 (± 5 Standard Deviations).

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

Zinc

MAPEP-20-MaS42



Notes:

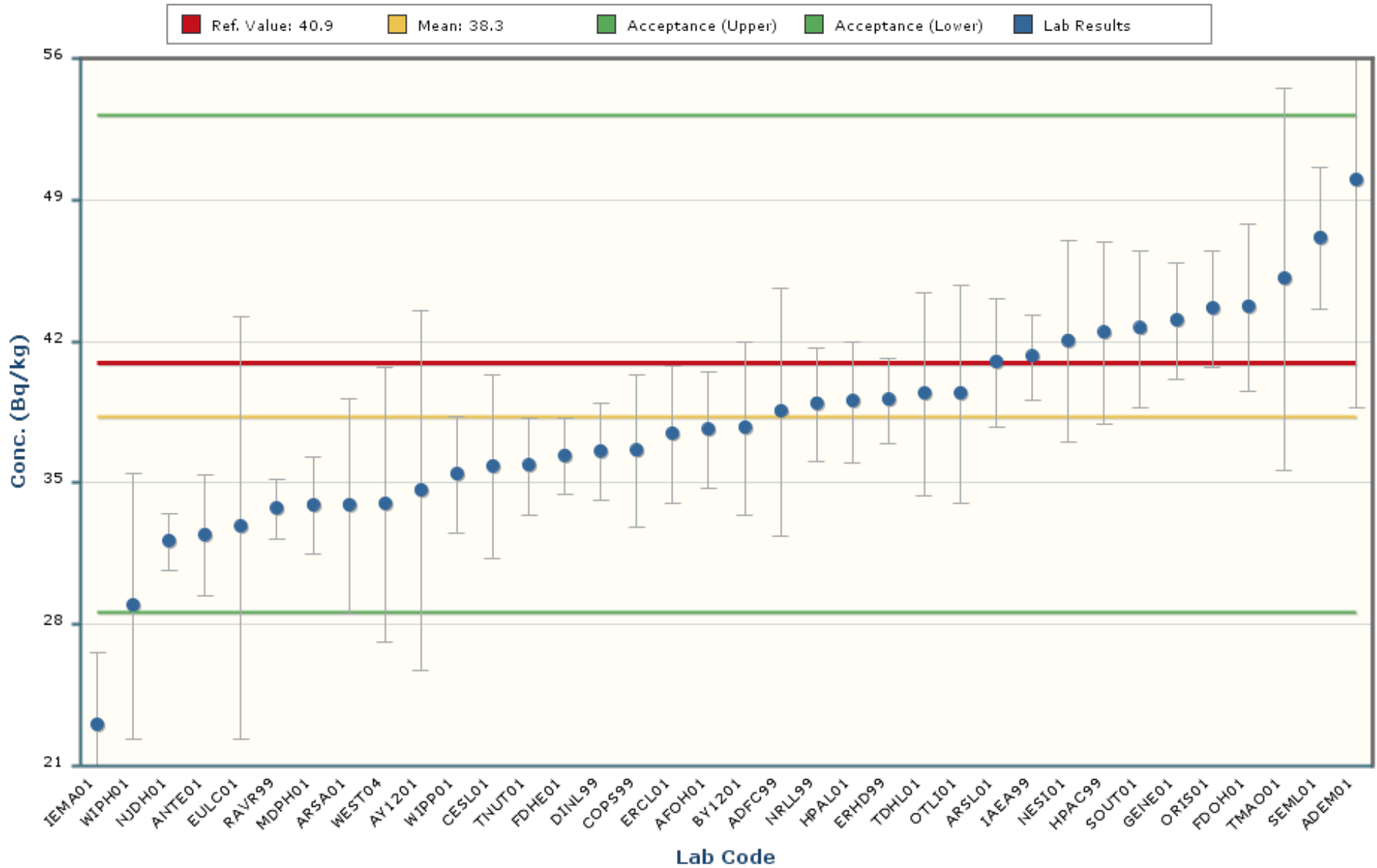
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 229 and 511 (± 5 Standard Deviations).

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

Americium-241

MAPEP-20-MaS42



Notes:

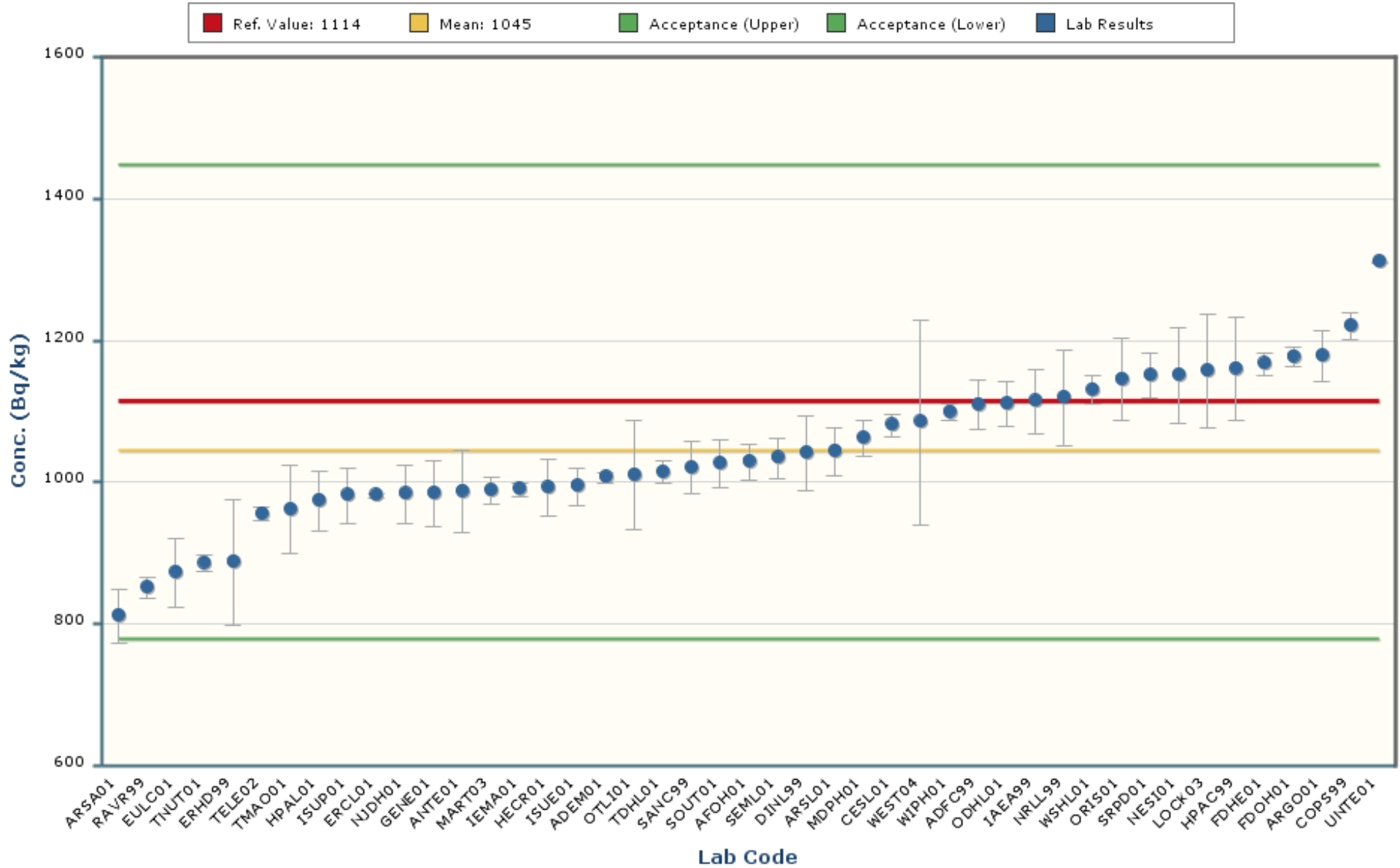
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 15.2 and 61.4 (± 5 Standard Deviations).

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

Cesium-134

MAPEP-20-MaS42



Notes:

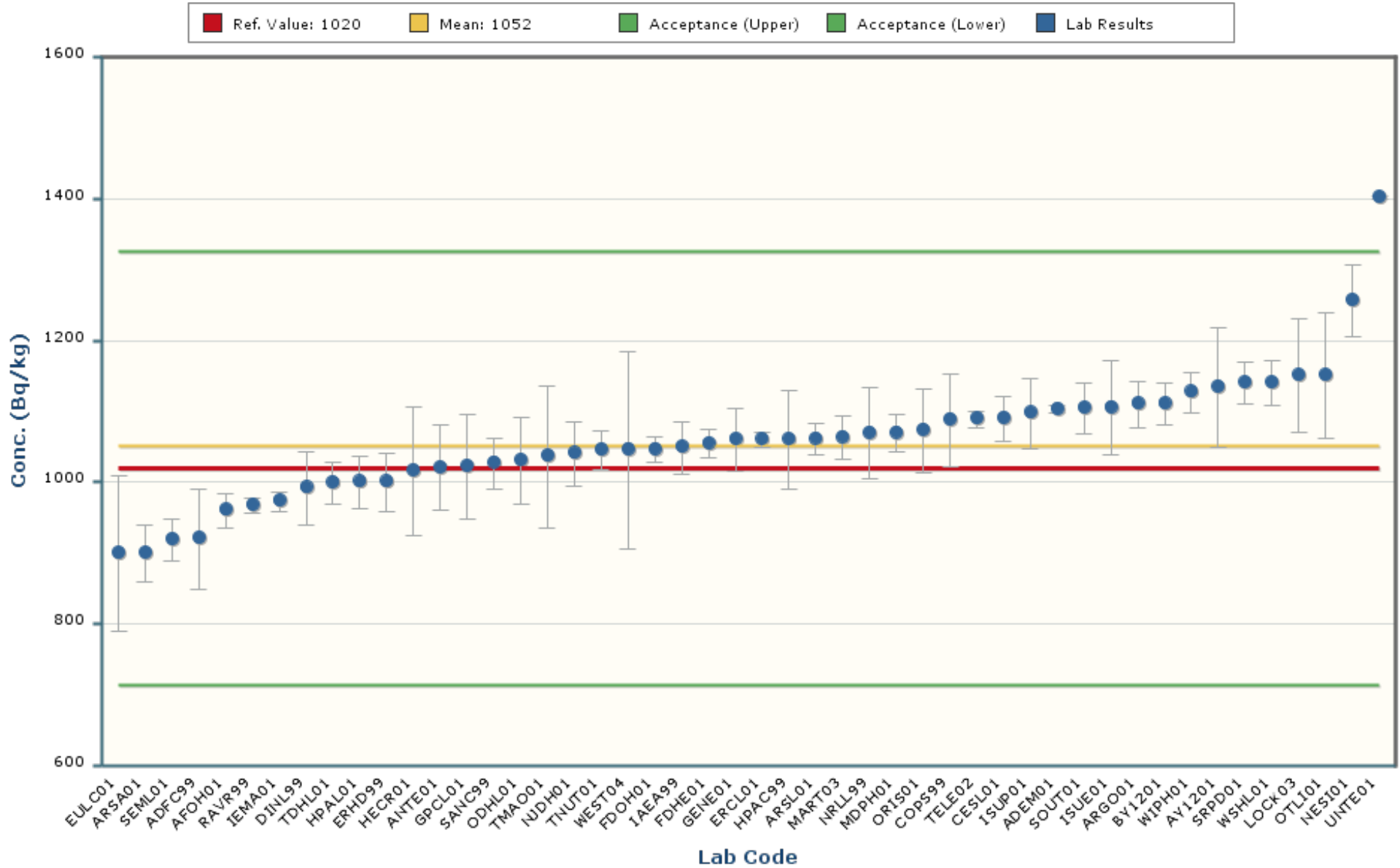
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 529 and 1561 (± 5 Standard Deviations).

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

Cesium-137

MAPEP-20-MaS42



Notes:

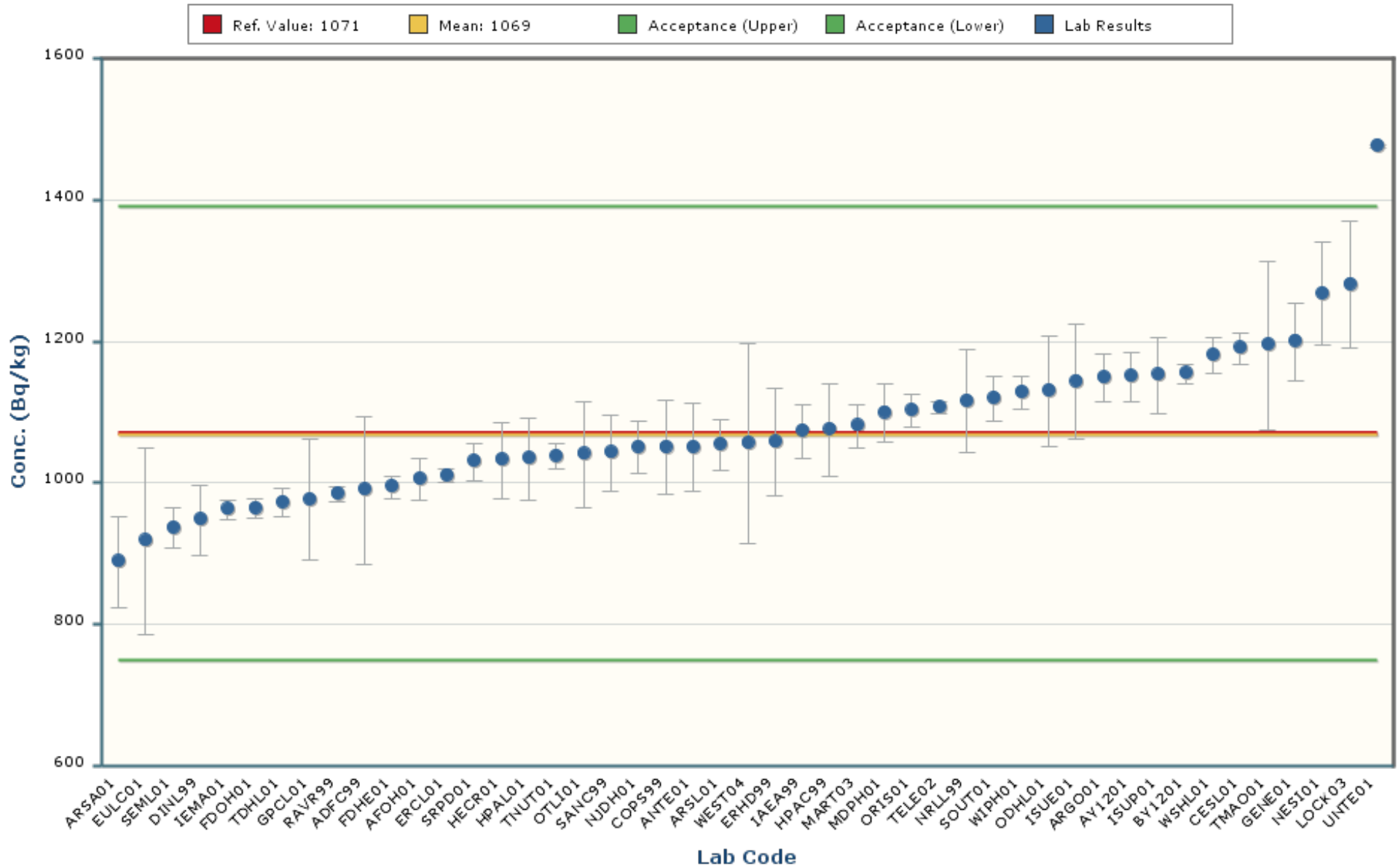
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 698 and 1407 (± 5 Standard Deviations).

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

Cobalt-57

MAPEP-20-MaS42



Notes:

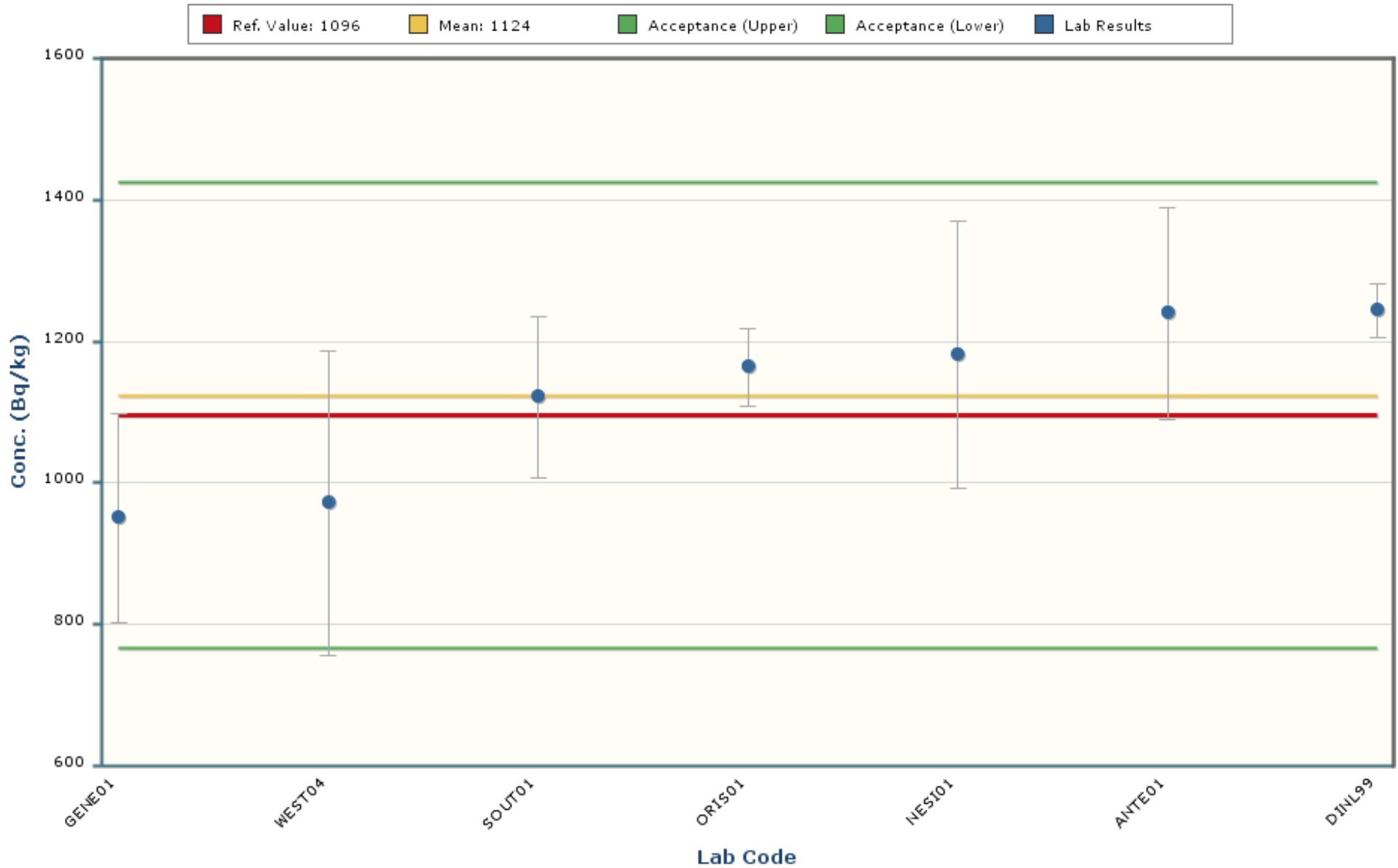
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 625 and 1513 (± 5 Standard Deviations).

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

Iron-55

MAPEP-20-MaS42



Notes:

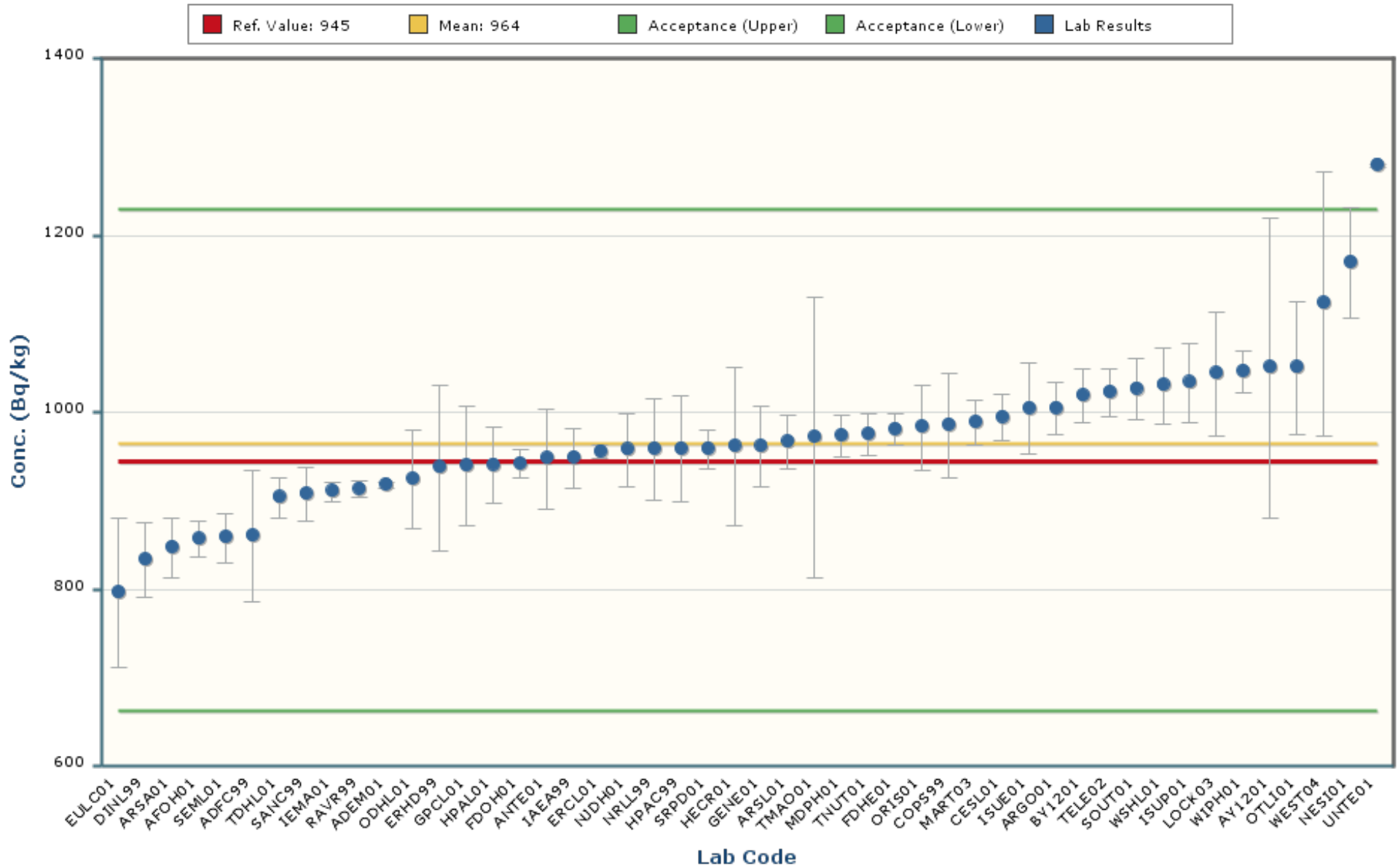
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 525 and 1723 (± 5 Standard Deviations).

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

Manganese-54

MAPEP-20-MaS42



Notes:

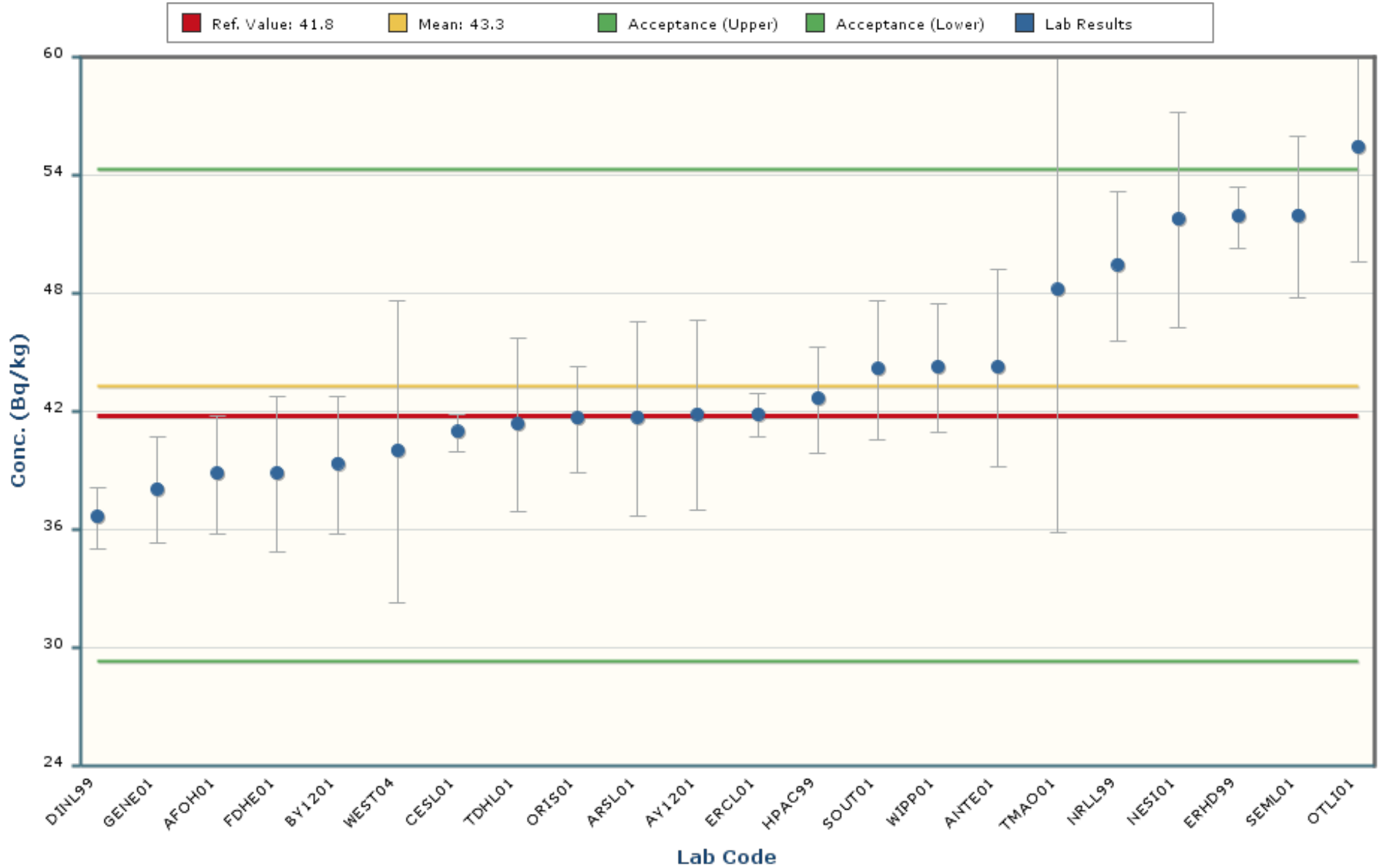
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 608 and 1320 (± 5 Standard Deviations).

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

Plutonium-239/240

MAPEP-20-MaS42



Notes:

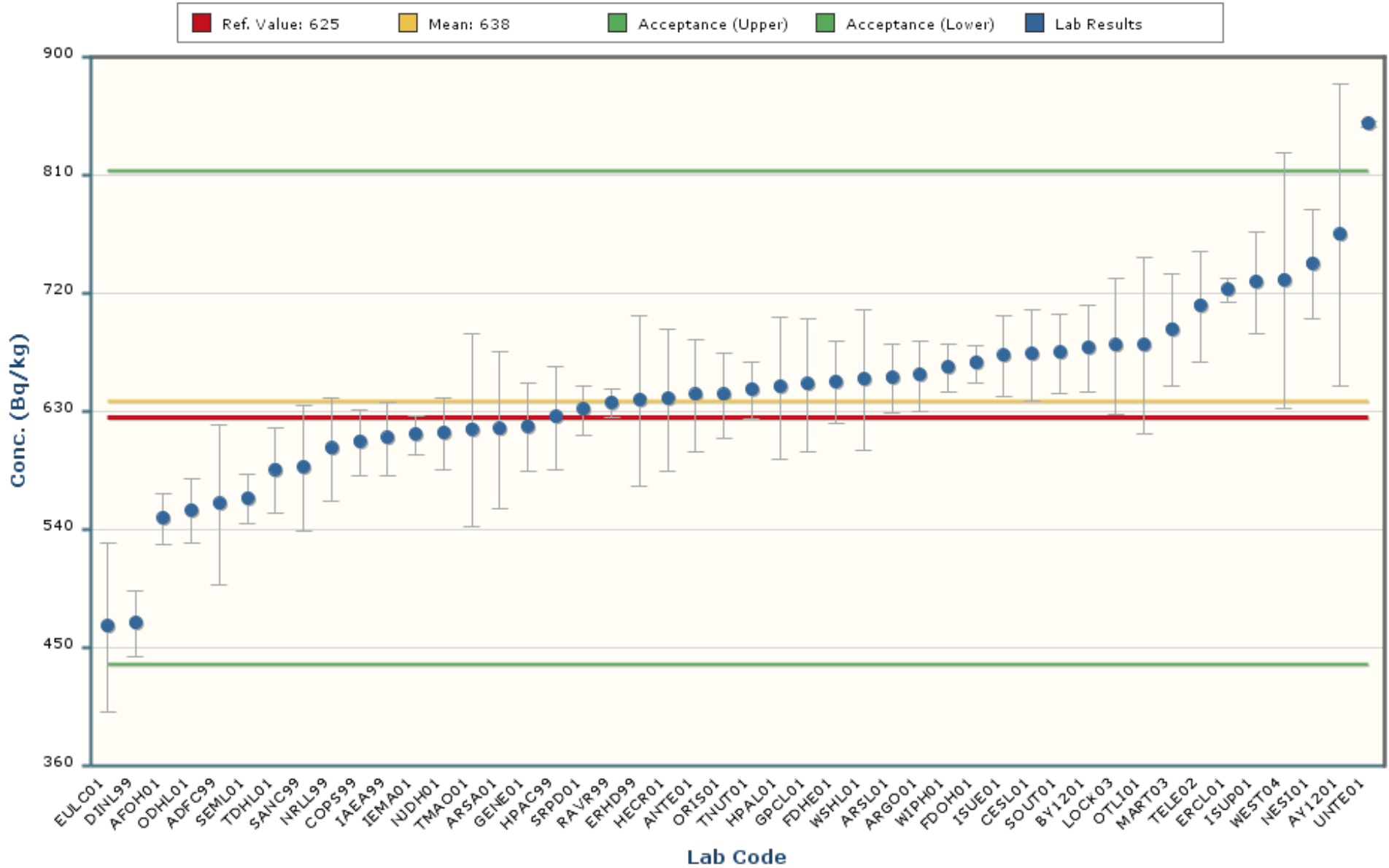
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 19.8 and 66.8 (± 5 Standard Deviations).

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

Potassium-40

MAPEP-20-MaS42



Notes:

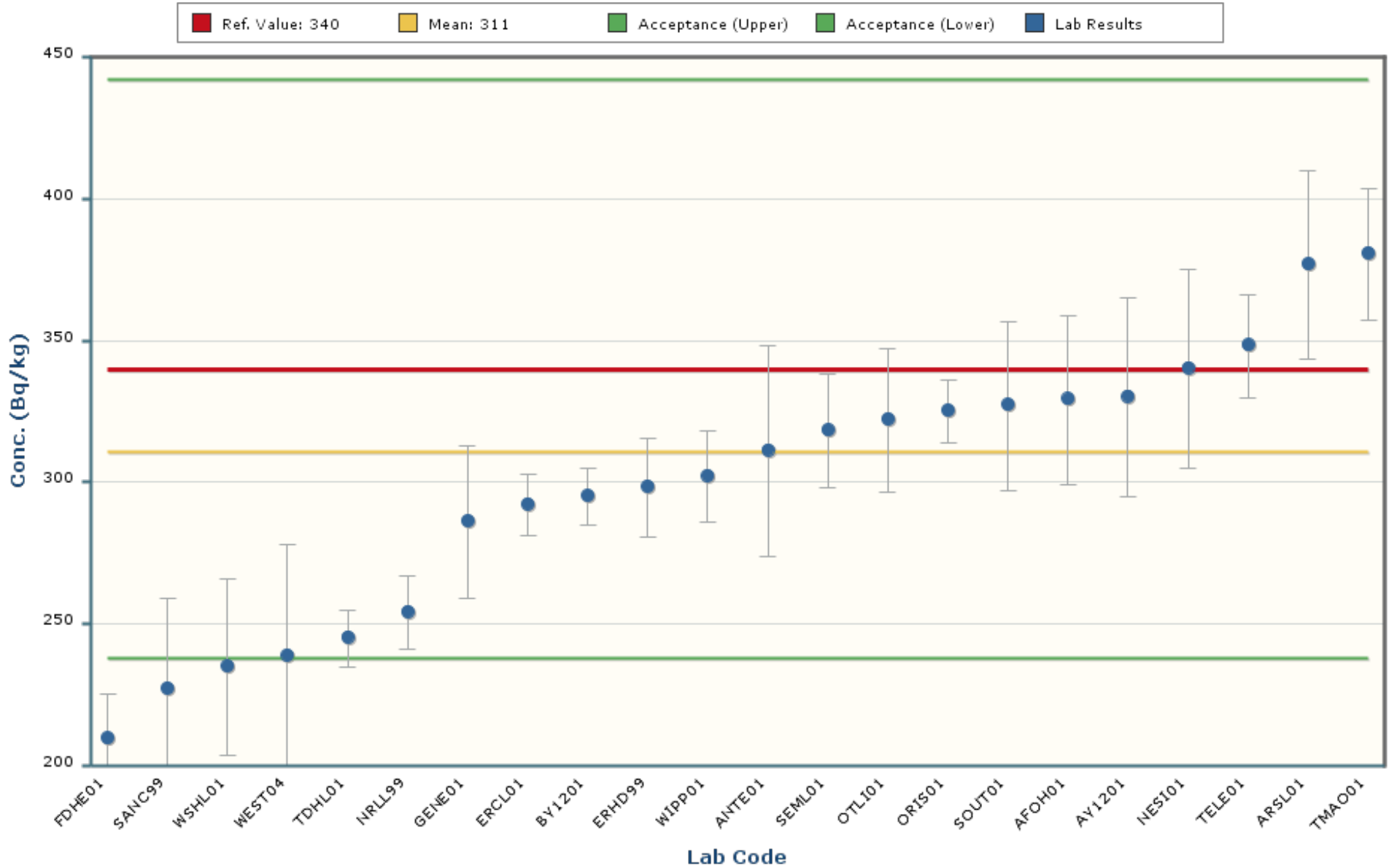
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 330 and 946 (± 5 Standard Deviations).

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

Strontium-90

MAPEP-20-MaS42



Notes:

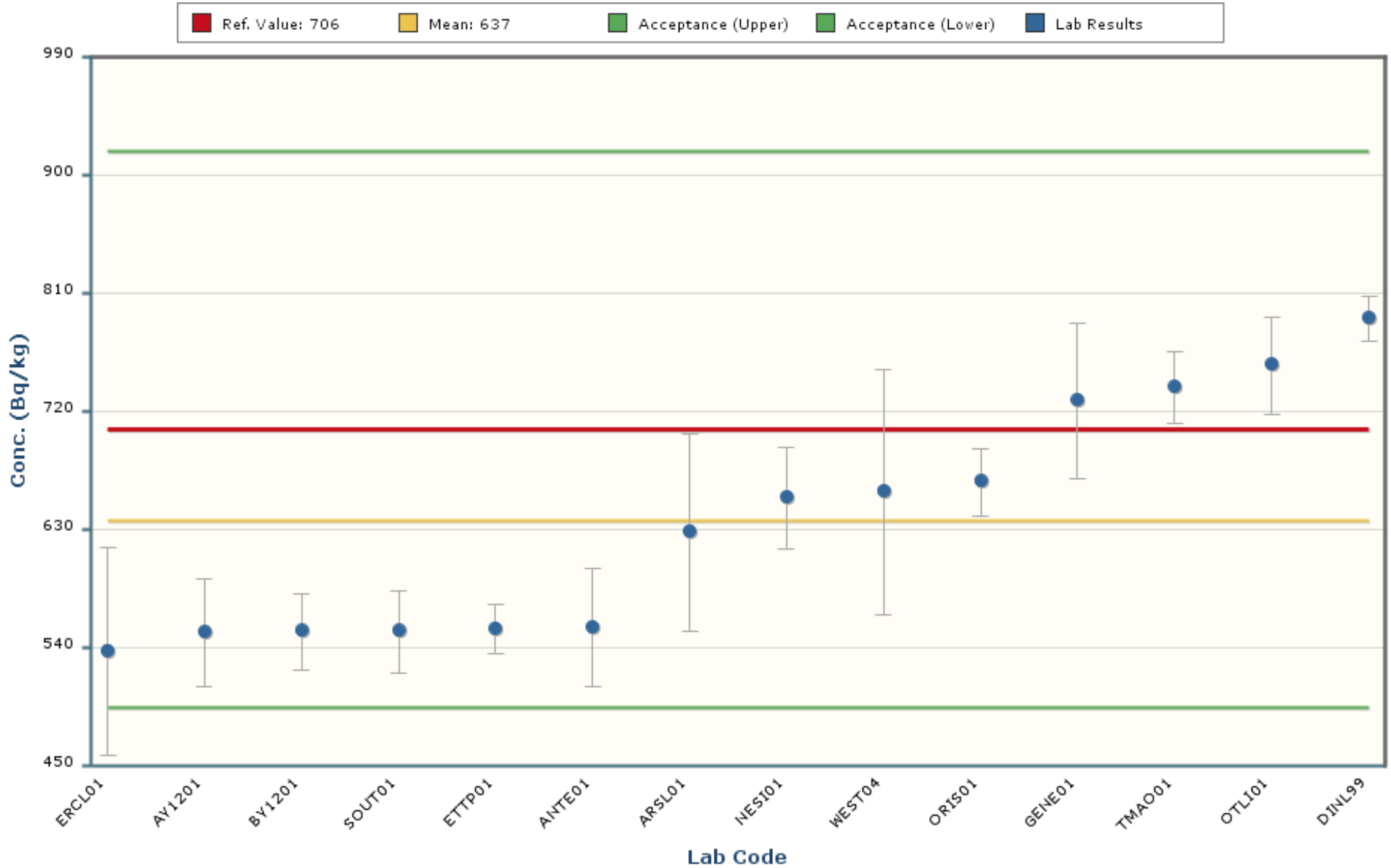
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 118 and 505 (± 5 Standard Deviations).

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

Technetium-99

MAPEP-20-MaS42



Notes:

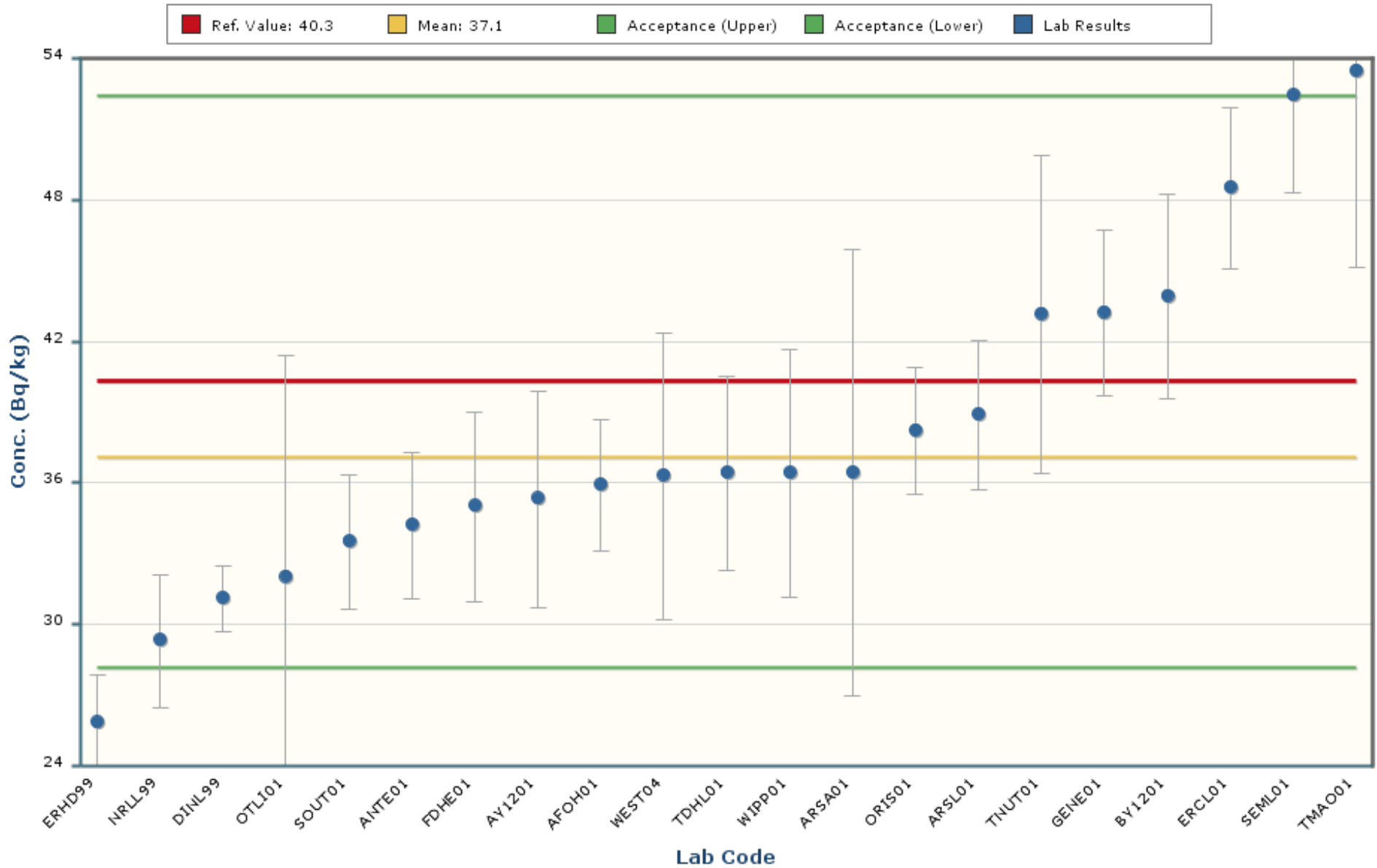
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 192 and 1082 (± 5 Standard Deviations).

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

Uranium-234

MAPEP-20-MaS42



Notes:

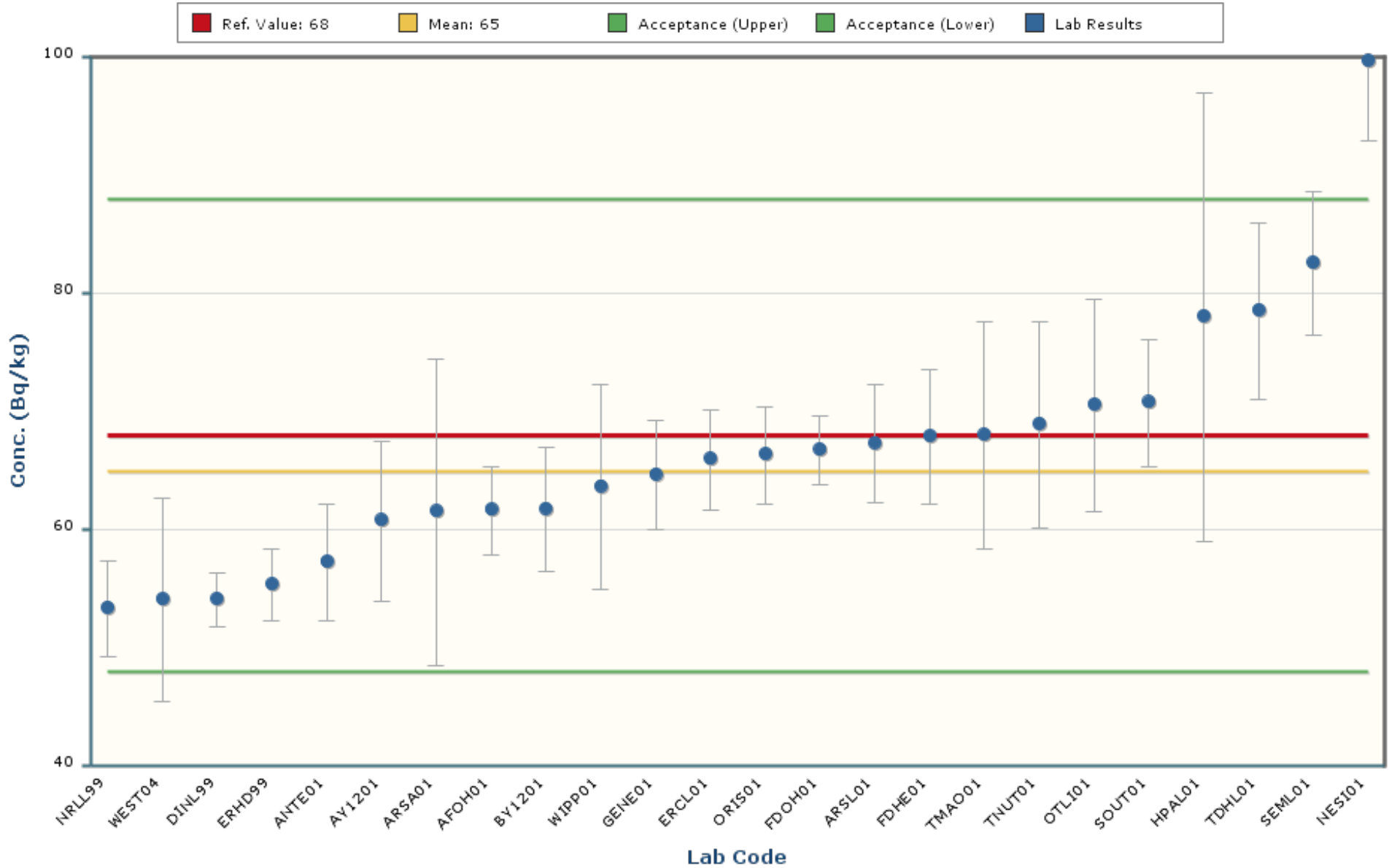
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 12.5 and 61.6 (± 5 Standard Deviations).

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

Uranium-238

MAPEP-20-MaS42



Notes:

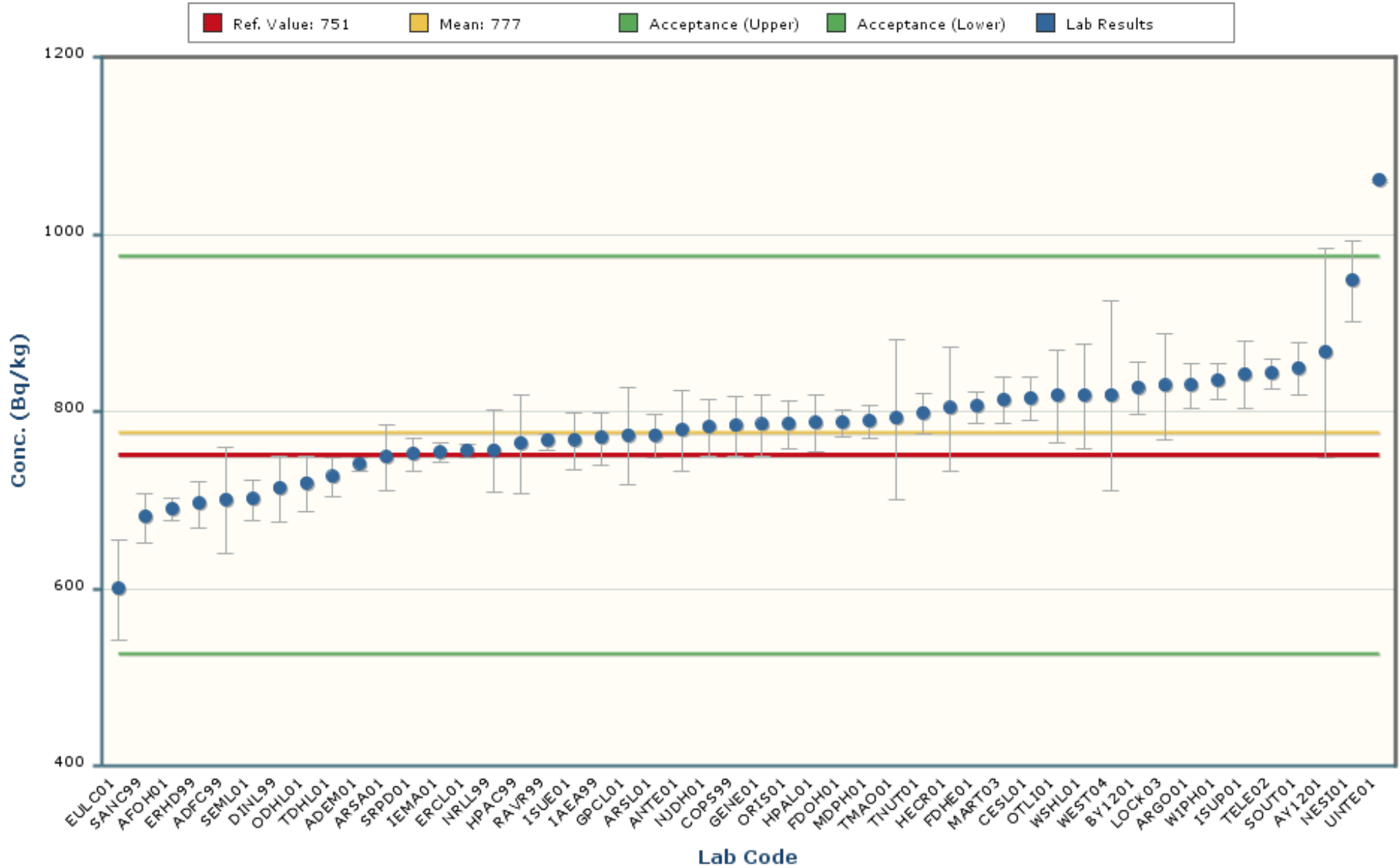
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 26 and 104 (± 5 Standard Deviations).

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

Zinc-65

MAPEP-20-MaS42



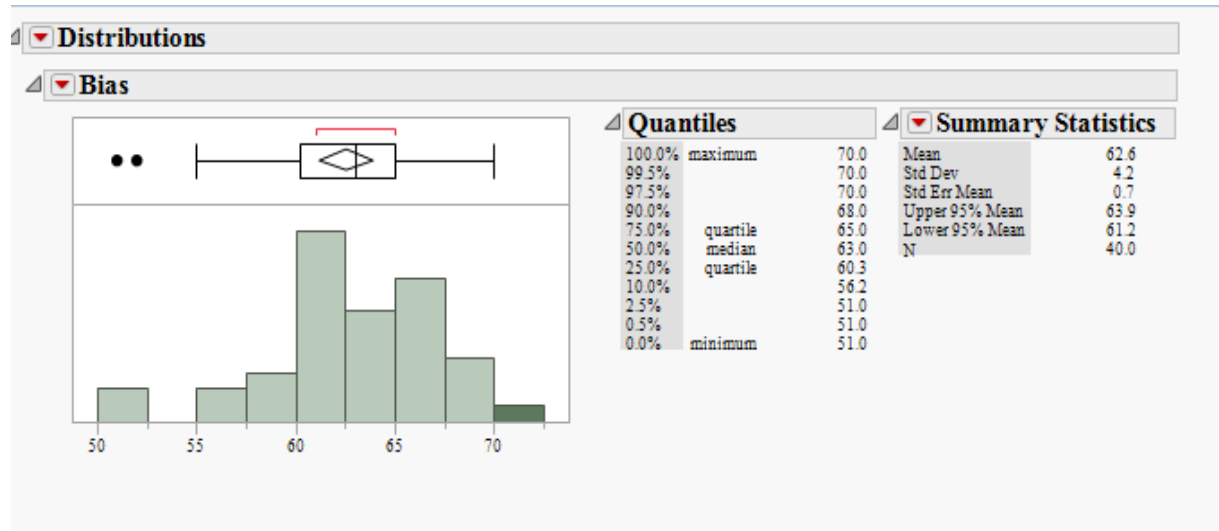
Notes:

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

The chart shows only data points with values between 488 and 1067 (± 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.

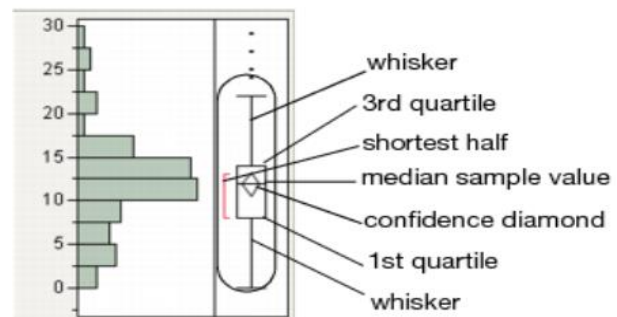


Outlier Box Plot

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)

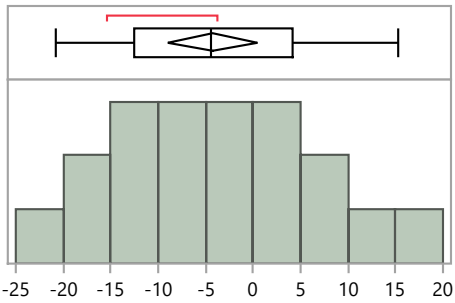


If the data points do not reach the computed ranges, then the whiskers are determined by the upper and lower data point values (not including outliers). The bracket outside of the box identifies the *shortest half*, which is the most dense 50% of the observations (Rousseuw and Leroy 1987).

MaS Distribution by Detection Method

Distributions Analyte_Detection=Americium-241 Alpha Spectrometry

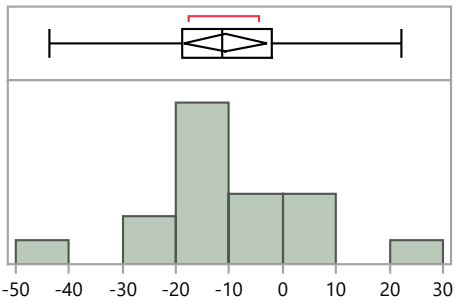
Bias



Quantiles			Summary Statistics	
100.0%	maximum	15.2	Mean	-4.3
99.5%		15.2	Std Dev	9.8
97.5%		15.2	Std Err Mean	2.3
90.0%		10.2	Upper 95% Mean	0.4
75.0%	quartile	4.2	Lower 95% Mean	-9.0
50.0%	median	-4.5	N	19.0
25.0%	quartile	-12.5		
10.0%		-17.0		
2.5%		-20.8		
0.5%		-20.8		
0.0%	minimum	-20.8		

Distributions Analyte_Detection=Americium-241 Gamma Spectrometry

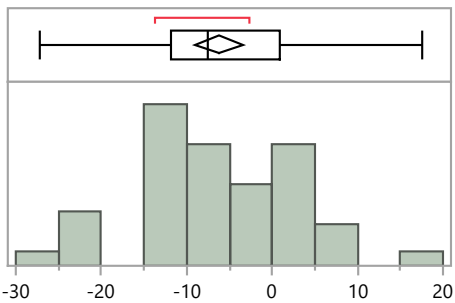
Bias



Quantiles			Summary Statistics	
100.0%	maximum	22.1	Mean	-10.7
99.5%		22.1	Std Dev	15.0
97.5%		22.1	Std Err Mean	3.6
90.0%		9.9	Upper 95% Mean	-3.0
75.0%	quartile	-2.0	Lower 95% Mean	-18.4
50.0%	median	-11.2	N	17.0
25.0%	quartile	-18.7		
10.0%		-32.2		
2.5%		-43.8		
0.5%		-43.8		
0.0%	minimum	-43.8		

Distributions Analyte_Detection=Cesium-134 Gamma Spectrometry

Bias

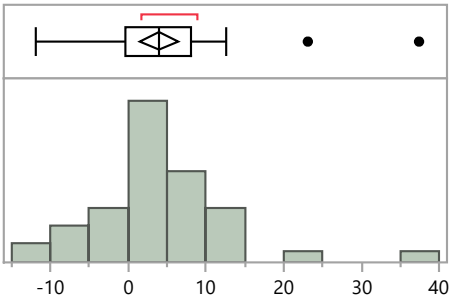


Quantiles			Summary Statistics	
100.0%	maximum	17.6	Mean	-6.2
99.5%		17.6	Std Dev	9.3
97.5%		16.4	Std Err Mean	1.4
90.0%		5.1	Upper 95% Mean	-3.4
75.0%	quartile	0.9	Lower 95% Mean	-9.0
50.0%	median	-7.6	N	45.0
25.0%	quartile	-11.8		
10.0%		-20.4		
2.5%		-26.7		
0.5%		-27.2		
0.0%	minimum	-27.2		

MaS Distribution by Detection Method

Distributions Analyte_Detection=Cesium-137 Gamma Spectrometry

Bias



Quantiles

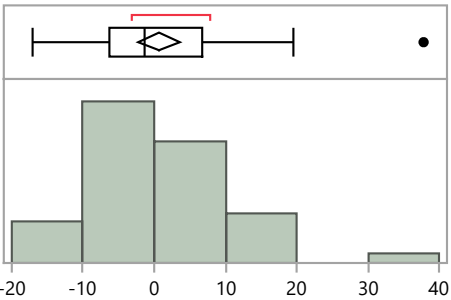
100.0%	maximum	37.4
99.5%		37.4
97.5%		34.2
90.0%		11.9
75.0%	quartile	8.2
50.0%	median	3.9
25.0%	quartile	-0.3
10.0%		-6.3
2.5%		-11.9
0.5%		-11.9
0.0%	minimum	-11.9

Summary Statistics

Mean	3.9
Std Dev	8.5
Std Err Mean	1.2
Upper 95% Mean	6.3
Lower 95% Mean	1.4
N	48.0

Distributions Analyte_Detection=Cobalt-57 Gamma Spectrometry

Bias



Quantiles

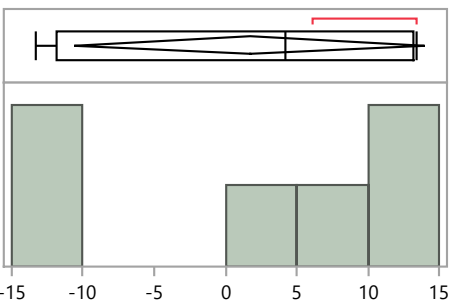
100.0%	maximum	37.8
99.5%		37.8
97.5%		34.1
90.0%		11.6
75.0%	quartile	6.7
50.0%	median	-1.4
25.0%	quartile	-6.2
10.0%		-10.5
2.5%		-16.5
0.5%		-17.1
0.0%	minimum	-17.1

Summary Statistics

Mean	0.6
Std Dev	9.9
Std Err Mean	1.4
Upper 95% Mean	3.5
Lower 95% Mean	-2.3
N	47.0

Distributions Analyte_Detection=Iron-55 Beta Counting - liquid scintillation counter

Bias



Quantiles

100.0%	maximum	13.4
99.5%		13.4
97.5%		13.4
90.0%		13.4
75.0%	quartile	13.2
50.0%	median	4.2
25.0%	quartile	-11.9
10.0%		-13.3
2.5%		-13.3
0.5%		-13.3
0.0%	minimum	-13.3

Summary Statistics

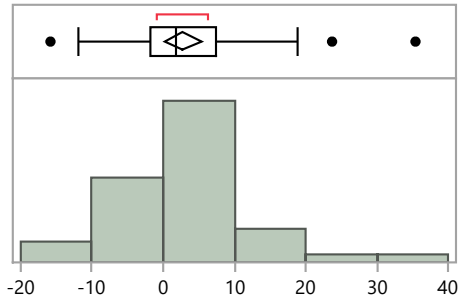
Mean	1.7
Std Dev	11.7
Std Err Mean	4.8
Upper 95% Mean	14.0
Lower 95% Mean	-10.6
N	6.0

MaS42 Distribution by Detection Method

MaS Distribution by Detection Method

Distributions Analyte_Detection=Manganese-54 Gamma Spectrometry

Bias



Quantiles

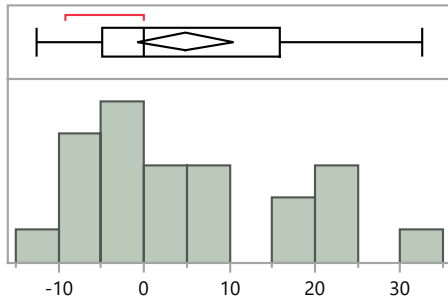
100.0%	maximum	35.4
99.5%		35.4
97.5%		32.8
90.0%		11.1
75.0%	quartile	7.3
50.0%	median	1.7
25.0%	quartile	-1.9
10.0%		-9.2
2.5%		-14.9
0.5%		-15.8
0.0%	minimum	-15.8

Summary Statistics

Mean	2.7
Std Dev	8.9
Std Err Mean	1.3
Upper 95% Mean	5.3
Lower 95% Mean	0.2
N	48.0

Distributions Analyte_Detection=Plutonium-239/240 Alpha Spectrometry

Bias



Quantiles

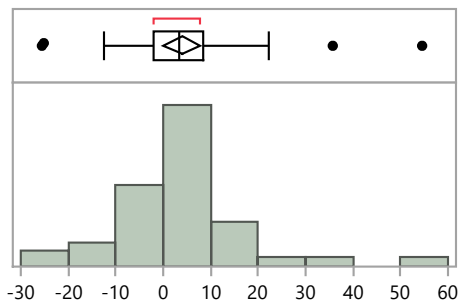
100.0%	maximum	32.5
99.5%		32.5
97.5%		32.5
90.0%		24.1
75.0%	quartile	15.9
50.0%	median	0.0
25.0%	quartile	-4.8
10.0%		-8.5
2.5%		-12.5
0.5%		-12.5
0.0%	minimum	-12.5

Summary Statistics

Mean	4.8
Std Dev	12.6
Std Err Mean	2.7
Upper 95% Mean	10.4
Lower 95% Mean	-0.8
N	22.0

Distributions Analyte_Detection=Potassium-40 Gamma Spectrometry

Bias



Quantiles

100.0%	maximum	54.5
99.5%		54.5
97.5%		50.7
90.0%		17.1
75.0%	quartile	8.4
50.0%	median	3.4
25.0%	quartile	-2.1
10.0%		-10.8
2.5%		-25.4
0.5%		-25.5
0.0%	minimum	-25.5

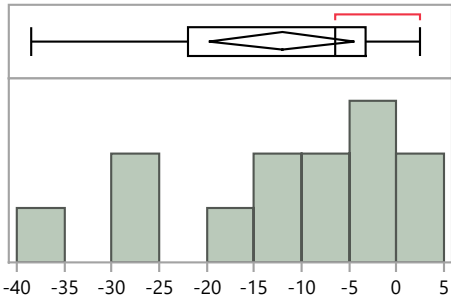
Summary Statistics

Mean	3.9
Std Dev	13.2
Std Err Mean	1.9
Upper 95% Mean	7.8
Lower 95% Mean	0.0
N	47.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Strontium-90 Beta Counting - 2 pi gas flow proportional counter

Bias



Quantiles

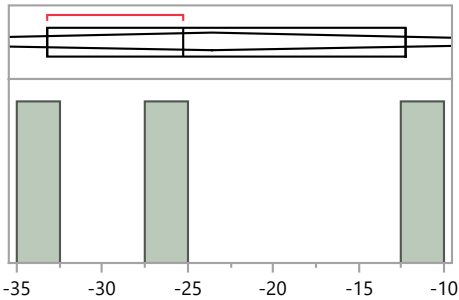
100.0%	maximum	2.4
99.5%		2.4
97.5%		2.4
90.0%		1.4
75.0%	quartile	-3.4
50.0%	median	-6.5
25.0%	quartile	-21.9
10.0%		-35.0
2.5%		-38.4
0.5%		-38.4
0.0%	minimum	-38.4

Summary Statistics

Mean	-12.1
Std Dev	12.6
Std Err Mean	3.5
Upper 95% Mean	-4.4
Lower 95% Mean	-19.7
N	13.0

Distributions Analyte_Detection=Strontium-90 Beta Counting - liquid scintillation counter

Bias



Quantiles

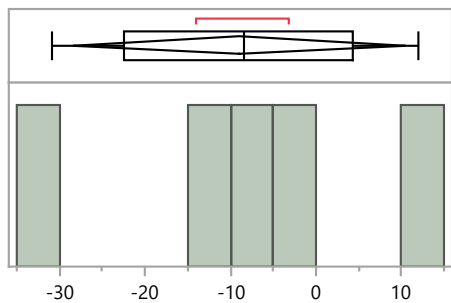
100.0%	maximum	-12.3
99.5%		-12.3
97.5%		-12.3
90.0%		-12.3
75.0%	quartile	-12.3
50.0%	median	-25.3
25.0%	quartile	-33.2
10.0%		-33.2
2.5%		-33.2
0.5%		-33.2
0.0%	minimum	-33.2

Summary Statistics

Mean	-23.6
Std Dev	10.6
Std Err Mean	6.1
Upper 95% Mean	2.6
Lower 95% Mean	-49.8
N	3.0

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

Bias



Quantiles

100.0%	maximum	11.9
99.5%		11.9
97.5%		11.9
90.0%		11.9
75.0%	quartile	4.4
50.0%	median	-8.5
25.0%	quartile	-22.5
10.0%		-30.9
2.5%		-30.9
0.5%		-30.9
0.0%	minimum	-30.9

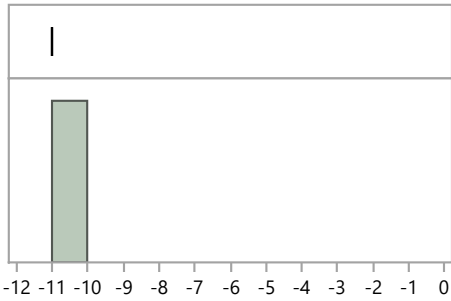
Summary Statistics

Mean	-9.0
Std Dev	15.6
Std Err Mean	7.0
Upper 95% Mean	10.4
Lower 95% Mean	-28.4
N	5.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Technetium-99 Beta Counting - 2 pi gas flow proportional counter

Bias



Quantiles

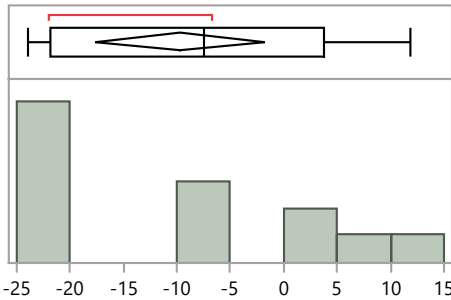
100.0%	maximum	-11.0
99.5%		-11.0
97.5%		-11.0
90.0%		-11.0
75.0%	quartile	-11.0
50.0%	median	-11.0
25.0%	quartile	-11.0
10.0%		-11.0
2.5%		-11.0
0.5%		-11.0
0.0%	minimum	-11.0

Summary Statistics

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

Distributions Analyte_Detection=Technetium-99 Beta Counting - liquid scintillation counter

Bias



Quantiles

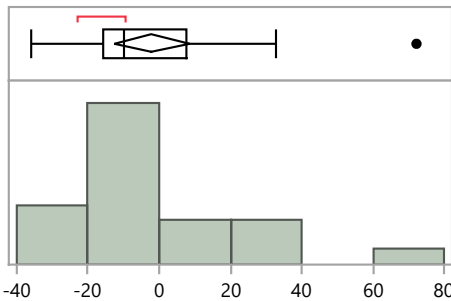
100.0%	maximum	11.9
99.5%		11.9
97.5%		11.9
90.0%		9.9
75.0%	quartile	3.8
50.0%	median	-7.4
25.0%	quartile	-21.8
10.0%		-23.1
2.5%		-23.9
0.5%		-23.9
0.0%	minimum	-23.9

Summary Statistics

Mean	-9.7
Std Dev	13.1
Std Err Mean	3.6
Upper 95% Mean	-1.8
Lower 95% Mean	-17.6
N	13.0

Distributions Analyte_Detection=Uranium-234 Alpha Spectrometry

Bias



Quantiles

100.0%	maximum	72.2
99.5%		72.2
97.5%		72.2
90.0%		31.8
75.0%	quartile	7.6
50.0%	median	-9.7
25.0%	quartile	-15.6
10.0%		-26.0
2.5%		-36.0
0.5%		-36.0
0.0%	minimum	-36.0

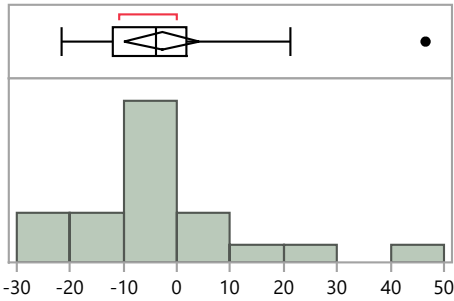
Summary Statistics

Mean	-2.0
Std Dev	23.9
Std Err Mean	5.1
Upper 95% Mean	8.6
Lower 95% Mean	-12.6
N	22.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Uranium-238 Alpha Spectrometry

Bias



Quantiles

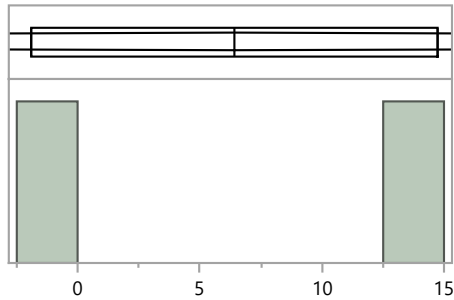
100.0%	maximum	46.5
99.5%		46.5
97.5%		46.5
90.0%		19.5
75.0%	quartile	1.9
50.0%	median	-4.1
25.0%	quartile	-12.0
10.0%		-20.6
2.5%		-21.6
0.5%		-21.6
0.0%	minimum	-21.6

Summary Statistics

Mean	-2.9
Std Dev	15.6
Std Err Mean	3.3
Upper 95% Mean	4.0
Lower 95% Mean	-9.7
N	22.0

Distributions Analyte_Detection=Uranium-238 Gamma Spectrometry

Bias



Quantiles

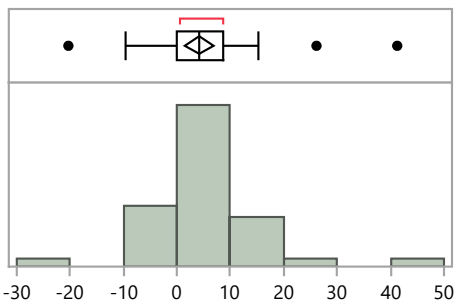
100.0%	maximum	14.7
99.5%		14.7
97.5%		14.7
90.0%		14.7
75.0%	quartile	14.7
50.0%	median	6.4
25.0%	quartile	-1.9
10.0%		-1.9
2.5%		-1.9
0.5%		-1.9
0.0%	minimum	-1.9

Summary Statistics

Mean	6.4
Std Dev	11.7
Std Err Mean	8.3
Upper 95% Mean	111.9
Lower 95% Mean	-99.1
N	2.0

Distributions Analyte_Detection=Zinc-65 Gamma Spectrometry

Bias



Quantiles

100.0%	maximum	41.2
99.5%		41.2
97.5%		37.8
90.0%		12.2
75.0%	quartile	8.8
50.0%	median	4.3
25.0%	quartile	0.1
10.0%		-7.0
2.5%		-17.9
0.5%		-20.3
0.0%	minimum	-20.3

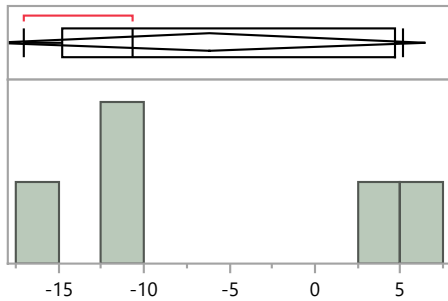
Summary Statistics

Mean	4.3
Std Dev	9.4
Std Err Mean	1.4
Upper 95% Mean	7.0
Lower 95% Mean	1.6
N	48.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Americium-241 Acid dissolution by strong Aqua Regia, hydrofluoric acid, etc.

Bias



Quantiles

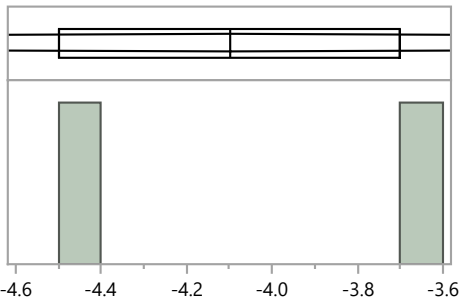
100.0%	maximum	5.1
99.5%		5.1
97.5%		5.1
90.0%		5.1
75.0%	quartile	4.7
50.0%	median	-10.7
25.0%	quartile	-14.8
10.0%		-17.0
2.5%		-17.0
0.5%		-17.0
0.0%	minimum	-17.0

Summary Statistics

Mean	-6.2
Std Dev	10.2
Std Err Mean	4.5
Upper 95% Mean	6.4
Lower 95% Mean	-18.8
N	5.0

Distributions Analyte_Method=Americium-241 Acid leaching without hydrofluoric acid

Bias



Quantiles

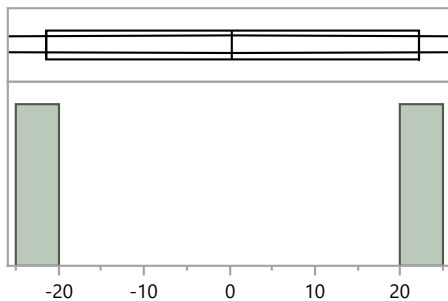
100.0%	maximum	-3.7
99.5%		-3.7
97.5%		-3.7
90.0%		-3.7
75.0%	quartile	-3.7
50.0%	median	-4.1
25.0%	quartile	-4.5
10.0%		-4.5
2.5%		-4.5
0.5%		-4.5
0.0%	minimum	-4.5

Summary Statistics

Mean	-4.1
Std Dev	0.6
Std Err Mean	0.4
Upper 95% Mean	1.0
Lower 95% Mean	-9.2
N	2.0

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

Bias



Quantiles

100.0%	maximum	22.1
99.5%		22.1
97.5%		22.1
90.0%		22.1
75.0%	quartile	22.1
50.0%	median	0.3
25.0%	quartile	-21.5
10.0%		-21.5
2.5%		-21.5
0.5%		-21.5
0.0%	minimum	-21.5

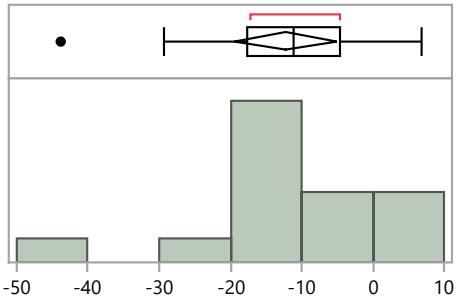
Summary Statistics

Mean	0.3
Std Dev	30.8
Std Err Mean	21.8
Upper 95% Mean	277.3
Lower 95% Mean	-276.7
N	2.0

MaS Distribution by Prep Method

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

Bias



Quantiles

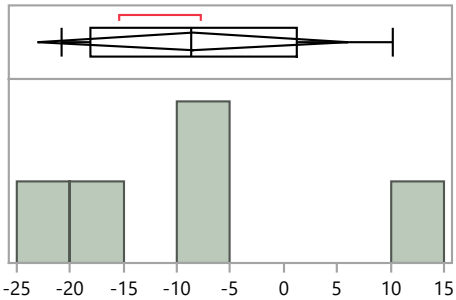
100.0%	maximum	6.8
99.5%		6.8
97.5%		6.8
90.0%		4.9
75.0%	quartile	-4.6
50.0%	median	-11.2
25.0%	quartile	-17.6
10.0%		-35.1
2.5%		-43.8
0.5%		-43.8
0.0%	minimum	-43.8

Summary Statistics

Mean	-12.2
Std Dev	13.0
Std Err Mean	3.4
Upper 95% Mean	-5.0
Lower 95% Mean	-19.4
N	15.0

Distributions Analyte_Method=Americium-241 Other

Bias



Quantiles

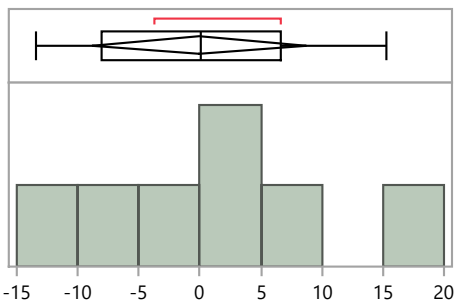
100.0%	maximum	10.2
99.5%		10.2
97.5%		10.2
90.0%		10.2
75.0%	quartile	1.2
50.0%	median	-8.6
25.0%	quartile	-18.1
10.0%		-20.8
2.5%		-20.8
0.5%		-20.8
0.0%	minimum	-20.8

Summary Statistics

Mean	-8.5
Std Dev	11.7
Std Err Mean	5.2
Upper 95% Mean	6.1
Lower 95% Mean	-23.0
N	5.0

Distributions Analyte_Method=Americium-241 Total dissolution by fusion

Bias



Quantiles

100.0%	maximum	15.2
99.5%		15.2
97.5%		15.2
90.0%		15.2
75.0%	quartile	6.6
50.0%	median	0.1
25.0%	quartile	-8.1
10.0%		-13.4
2.5%		-13.4
0.5%		-13.4
0.0%	minimum	-13.4

Summary Statistics

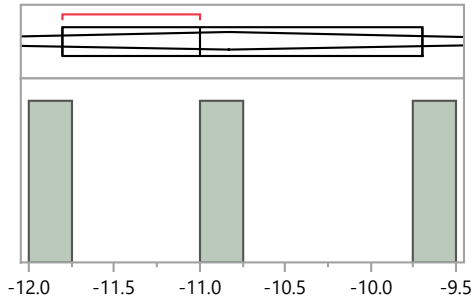
Mean	-0.1
Std Dev	9.5
Std Err Mean	3.6
Upper 95% Mean	8.7
Lower 95% Mean	-8.9
N	7.0

MaS42 Distribution by Preparation Method

MaS Distribution by Prep Method

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

Bias



Quantiles

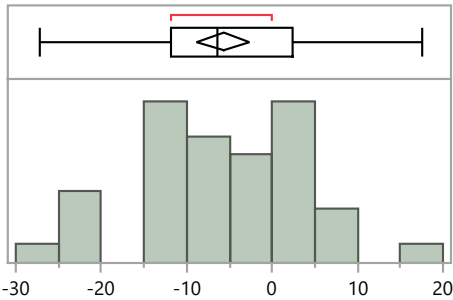
100.0%	maximum	-9.7
99.5%		-9.7
97.5%		-9.7
90.0%		-9.7
75.0%	quartile	-9.7
50.0%	median	-11.0
25.0%	quartile	-11.8
10.0%		-11.8
2.5%		-11.8
0.5%		-11.8
0.0%	minimum	-11.8

Summary Statistics

Mean	-10.8
Std Dev	1.1
Std Err Mean	0.6
Upper 95% Mean	-8.2
Lower 95% Mean	-13.5
N	3.0

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

Bias



Quantiles

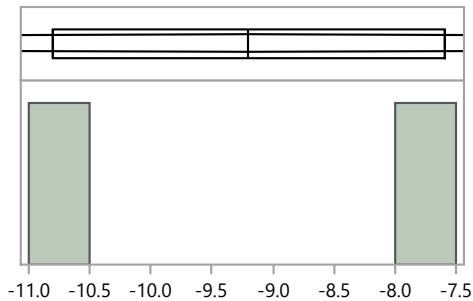
100.0%	maximum	17.6
99.5%		17.6
97.5%		17.4
90.0%		5.5
75.0%	quartile	2.5
50.0%	median	-6.5
25.0%	quartile	-11.9
10.0%		-20.5
2.5%		-27.1
0.5%		-27.2
0.0%	minimum	-27.2

Summary Statistics

Mean	-5.7
Std Dev	9.7
Std Err Mean	1.5
Upper 95% Mean	-2.6
Lower 95% Mean	-8.8
N	40.0

Distributions Analyte_Method=Cesium-134 Other

Bias



Quantiles

100.0%	maximum	-7.6
99.5%		-7.6
97.5%		-7.6
90.0%		-7.6
75.0%	quartile	-7.6
50.0%	median	-9.2
25.0%	quartile	-10.8
10.0%		-10.8
2.5%		-10.8
0.5%		-10.8
0.0%	minimum	-10.8

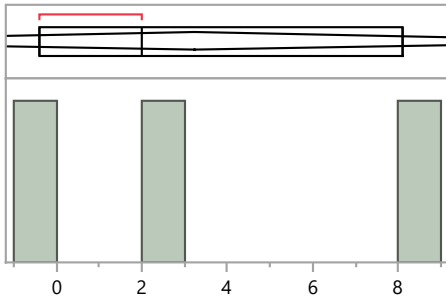
Summary Statistics

Mean	-9.2
Std Dev	2.3
Std Err Mean	1.6
Upper 95% Mean	11.1
Lower 95% Mean	-29.5
N	2.0

MaS Distribution by Prep Method

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

Bias



Quantiles

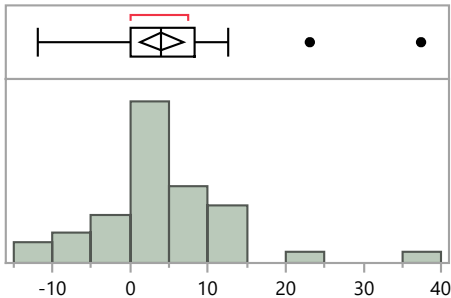
100.0%	maximum	8.1
99.5%		8.1
97.5%		8.1
90.0%		8.1
75.0%	quartile	8.1
50.0%	median	2.0
25.0%	quartile	-0.4
10.0%		-0.4
2.5%		-0.4
0.5%		-0.4
0.0%	minimum	-0.4

Summary Statistics

Mean	3.2
Std Dev	4.4
Std Err Mean	2.5
Upper 95% Mean	14.1
Lower 95% Mean	-7.7
N	3.0

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

Bias



Quantiles

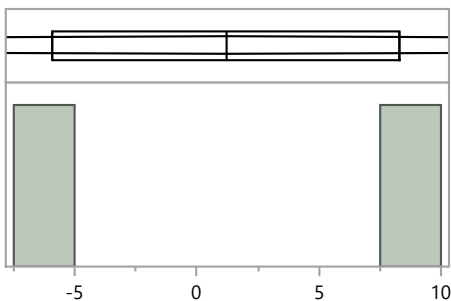
100.0%	maximum	37.4
99.5%		37.4
97.5%		36.0
90.0%		12.3
75.0%	quartile	8.2
50.0%	median	3.9
25.0%	quartile	0.0
10.0%		-8.0
2.5%		-11.9
0.5%		-11.9
0.0%	minimum	-11.9

Summary Statistics

Mean	4.1
Std Dev	8.7
Std Err Mean	1.3
Upper 95% Mean	6.8
Lower 95% Mean	1.4
N	43.0

Distributions Analyte_Method=Cesium-137 Other

Bias



Quantiles

100.0%	maximum	8.3
99.5%		8.3
97.5%		8.3
90.0%		8.3
75.0%	quartile	8.3
50.0%	median	1.2
25.0%	quartile	-5.9
10.0%		-5.9
2.5%		-5.9
0.5%		-5.9
0.0%	minimum	-5.9

Summary Statistics

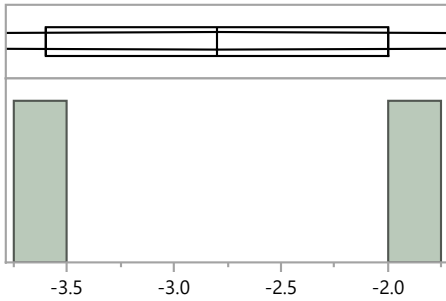
Mean	1.2
Std Dev	10.0
Std Err Mean	7.1
Upper 95% Mean	91.4
Lower 95% Mean	-89.0
N	2.0

MaS42 Distribution by Preparation Method

MaS Distribution by Prep Method

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

Bias



Quantiles

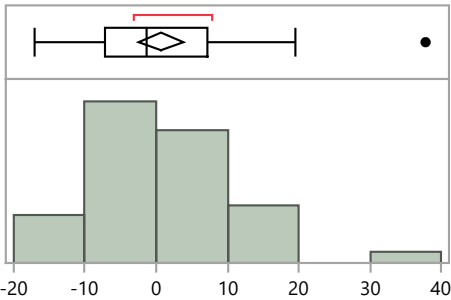
100.0%	maximum	-2.0
99.5%		-2.0
97.5%		-2.0
90.0%		-2.0
75.0%	quartile	-2.0
50.0%	median	-2.8
25.0%	quartile	-3.6
10.0%		-3.6
2.5%		-3.6
0.5%		-3.6
0.0%	minimum	-3.6

Summary Statistics

Mean	-2.8
Std Dev	1.1
Std Err Mean	0.8
Upper 95% Mean	7.4
Lower 95% Mean	-13.0
N	2.0

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

Bias



Quantiles

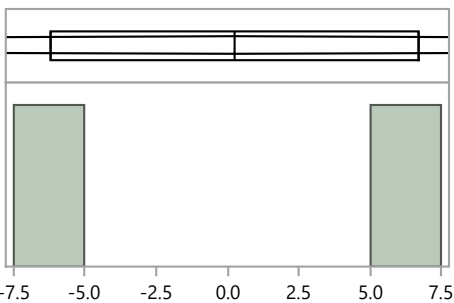
100.0%	maximum	37.8
99.5%		37.8
97.5%		36.0
90.0%		11.8
75.0%	quartile	7.2
50.0%	median	-1.3
25.0%	quartile	-7.2
10.0%		-11.0
2.5%		-16.8
0.5%		-17.1
0.0%	minimum	-17.1

Summary Statistics

Mean	0.8
Std Dev	10.2
Std Err Mean	1.6
Upper 95% Mean	3.9
Lower 95% Mean	-2.4
N	43.0

Distributions Analyte_Method=Cobalt-57 Other

Bias



Quantiles

100.0%	maximum	6.7
99.5%		6.7
97.5%		6.7
90.0%		6.7
75.0%	quartile	6.7
50.0%	median	0.3
25.0%	quartile	-6.2
10.0%		-6.2
2.5%		-6.2
0.5%		-6.2
0.0%	minimum	-6.2

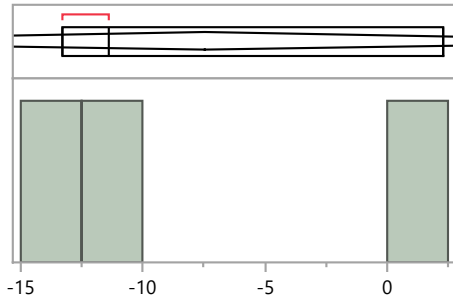
Summary Statistics

Mean	0.3
Std Dev	9.1
Std Err Mean	6.5
Upper 95% Mean	82.2
Lower 95% Mean	-81.7
N	2.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Iron-55 Acid dissolution by strong Aqua Regia, hydrofluoric acid, etc.

Bias



Quantiles

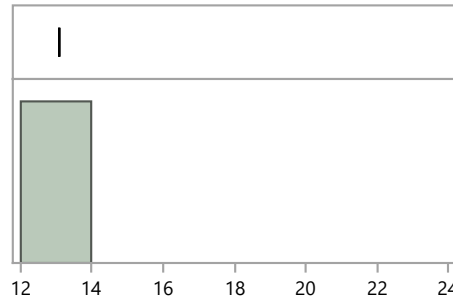
100.0%	maximum	2.3
99.5%		2.3
97.5%		2.3
90.0%		2.3
75.0%	quartile	2.3
50.0%	median	-11.4
25.0%	quartile	-13.3
10.0%		-13.3
2.5%		-13.3
0.5%		-13.3
0.0%	minimum	-13.3

Summary Statistics

Mean	-7.5
Std Dev	8.5
Std Err Mean	4.9
Upper 95% Mean	13.7
Lower 95% Mean	-28.6
N	3.0

Distributions Analyte_Method=Iron-55 Other

Bias



Quantiles

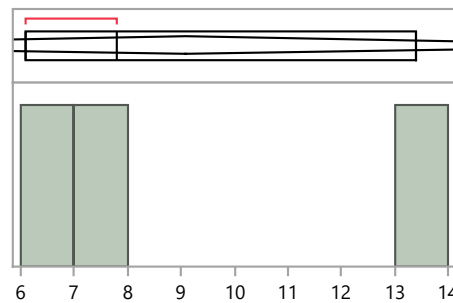
100.0%	maximum	13.1
99.5%		13.1
97.5%		13.1
90.0%		13.1
75.0%	quartile	13.1
50.0%	median	13.1
25.0%	quartile	13.1
10.0%		13.1
2.5%		13.1
0.5%		13.1
0.0%	minimum	13.1

Summary Statistics

Mean	13.1
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	13.4
99.5%		13.4
97.5%		13.4
90.0%		13.4
75.0%	quartile	13.4
50.0%	median	7.8
25.0%	quartile	6.1
10.0%		6.1
2.5%		6.1
0.5%		6.1
0.0%	minimum	6.1

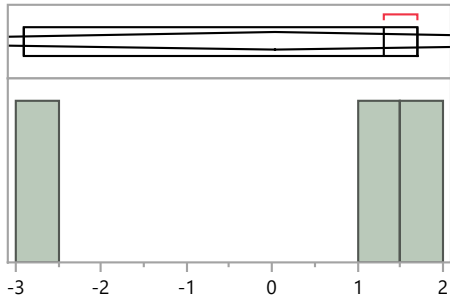
Summary Statistics

Mean	9.1
Std Dev	3.8
Std Err Mean	2.2
Upper 95% Mean	18.6
Lower 95% Mean	-0.4
N	3.0

MaS Distribution by Prep Method

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

Bias



Quantiles

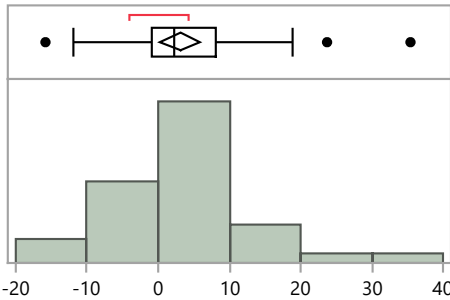
100.0%	maximum	1.7
99.5%		1.7
97.5%		1.7
90.0%		1.7
75.0%	quartile	1.7
50.0%	median	1.3
25.0%	quartile	-2.9
10.0%		-2.9
2.5%		-2.9
0.5%		-2.9
0.0%	minimum	-2.9

Summary Statistics

Mean	0.0
Std Dev	2.5
Std Err Mean	1.5
Upper 95% Mean	6.4
Lower 95% Mean	-6.3
N	3.0

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

Bias



Quantiles

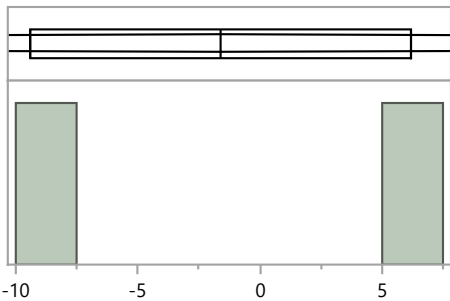
100.0%	maximum	35.4
99.5%		35.4
97.5%		34.2
90.0%		11.1
75.0%	quartile	8.1
50.0%	median	2.2
25.0%	quartile	-0.8
10.0%		-9.1
2.5%		-15.4
0.5%		-15.8
0.0%	minimum	-15.8

Summary Statistics

Mean	3.1
Std Dev	9.1
Std Err Mean	1.4
Upper 95% Mean	5.9
Lower 95% Mean	0.3
N	43.0

Distributions Analyte_Method=Manganese-54 Other

Bias



Quantiles

100.0%	maximum	6.2
99.5%		6.2
97.5%		6.2
90.0%		6.2
75.0%	quartile	6.2
50.0%	median	-1.6
25.0%	quartile	-9.4
10.0%		-9.4
2.5%		-9.4
0.5%		-9.4
0.0%	minimum	-9.4

Summary Statistics

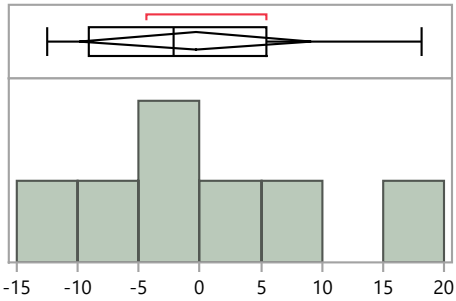
Mean	-1.6
Std Dev	11.0
Std Err Mean	7.8
Upper 95% Mean	97.5
Lower 95% Mean	-100.7
N	2.0

MaS42 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Plutonium-239/240 Acid dissolution by strong Aqua Regia, hydrofluoric acid, etc.

Bias



Quantiles

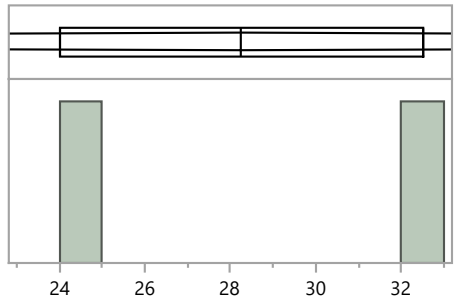
100.0%	maximum	18.2
99.5%		18.2
97.5%		18.2
90.0%		18.2
75.0%	quartile	5.5
50.0%	median	-2.2
25.0%	quartile	-9.1
10.0%		-12.5
2.5%		-12.5
0.5%		-12.5
0.0%	minimum	-12.5

Summary Statistics

Mean	-0.4
Std Dev	10.2
Std Err Mean	3.9
Upper 95% Mean	9.1
Lower 95% Mean	-9.8
N	7.0

Distributions Analyte_Method=Plutonium-239/240 Acid leaching without hydrofluoric acid

Bias



Quantiles

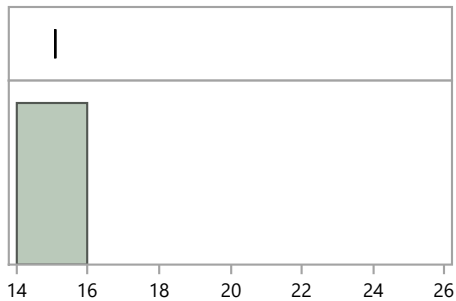
100.0%	maximum	32.5
99.5%		32.5
97.5%		32.5
90.0%		32.5
75.0%	quartile	32.5
50.0%	median	28.3
25.0%	quartile	24.0
10.0%		24.0
2.5%		24.0
0.5%		24.0
0.0%	minimum	24.0

Summary Statistics

Mean	28.3
Std Dev	6.0
Std Err Mean	4.3
Upper 95% Mean	82.3
Lower 95% Mean	-25.8
N	2.0

Distributions Analyte_Method=Plutonium-239/240 Coprecipitation, acidified

Bias



Quantiles

100.0%	maximum	15.1
99.5%		15.1
97.5%		15.1
90.0%		15.1
75.0%	quartile	15.1
50.0%	median	15.1
25.0%	quartile	15.1
10.0%		15.1
2.5%		15.1
0.5%		15.1
0.0%	minimum	15.1

Summary Statistics

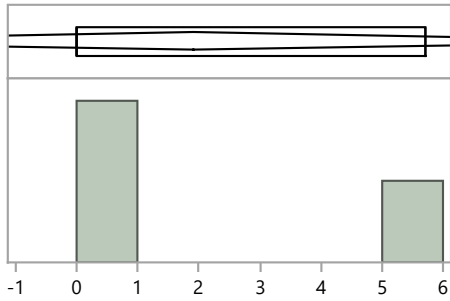
Mean	15.1
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaS42 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Plutonium-239/240 Other

Bias



Quantiles

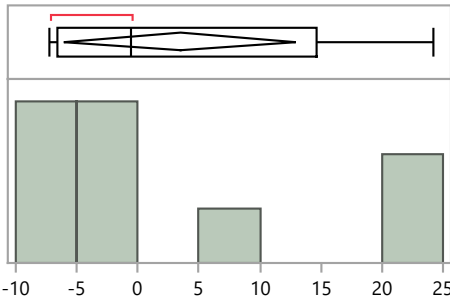
100.0%	maximum	5.7
99.5%		5.7
97.5%		5.7
90.0%		5.7
75.0%	quartile	5.7
50.0%	median	0.0
25.0%	quartile	0.0
10.0%		0.0
2.5%		0.0
0.5%		0.0
0.0%	minimum	0.0

Summary Statistics

Mean	1.9
Std Dev	3.3
Std Err Mean	1.9
Upper 95% Mean	10.1
Lower 95% Mean	-6.3
N	3.0

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

Bias



Quantiles

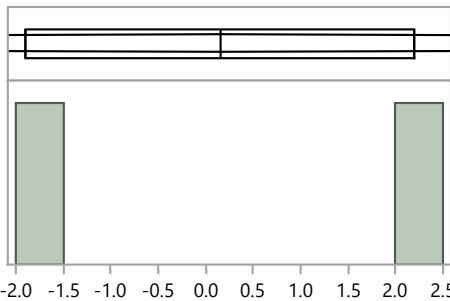
100.0%	maximum	24.2
99.5%		24.2
97.5%		24.2
90.0%		24.2
75.0%	quartile	14.7
50.0%	median	-0.5
25.0%	quartile	-6.6
10.0%		-7.2
2.5%		-7.2
0.5%		-7.2
0.0%	minimum	-7.2

Summary Statistics

Mean	3.5
Std Dev	12.3
Std Err Mean	4.1
Upper 95% Mean	12.9
Lower 95% Mean	-6.0
N	9.0

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

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	0.2
25.0%	quartile	-1.9
10.0%		-1.9
2.5%		-1.9
0.5%		-1.9
0.0%	minimum	-1.9

Summary Statistics

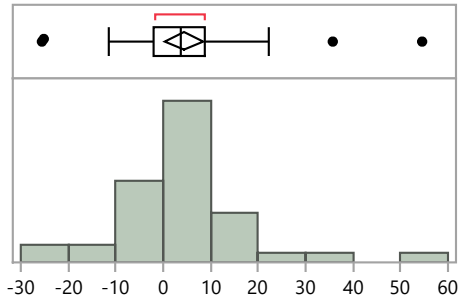
Mean	0.2
Std Dev	2.9
Std Err Mean	2.1
Upper 95% Mean	26.2
Lower 95% Mean	-25.9
N	2.0

MaS42 Distribution by Preparation Method

MaS Distribution by Prep Method

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

Bias



Quantiles

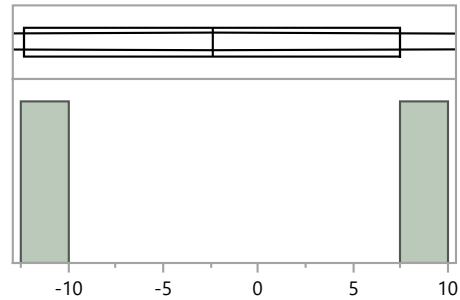
100.0%	maximum	54.5
99.5%		54.5
97.5%		52.6
90.0%		17.9
75.0%	quartile	8.7
50.0%	median	3.7
25.0%	quartile	-2.1
10.0%		-10.3
2.5%		-25.5
0.5%		-25.5
0.0%	minimum	-25.5

Summary Statistics

Mean	4.4
Std Dev	13.5
Std Err Mean	2.1
Upper 95% Mean	8.5
Lower 95% Mean	0.2
N	43.0

Distributions Analyte_Method=Potassium-40 Other

Bias



Quantiles

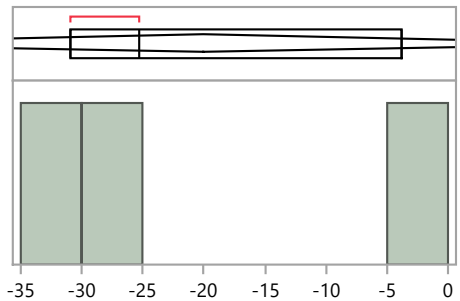
100.0%	maximum	7.5
99.5%		7.5
97.5%		7.5
90.0%		7.5
75.0%	quartile	7.5
50.0%	median	-2.4
25.0%	quartile	-12.3
10.0%		-12.3
2.5%		-12.3
0.5%		-12.3
0.0%	minimum	-12.3

Summary Statistics

Mean	-2.4
Std Dev	14.0
Std Err Mean	9.9
Upper 95% Mean	123.4
Lower 95% Mean	-128.2
N	2.0

Distributions Analyte_Method=Strontium-90 Acid dissolution by strong Aqua Regia, hydrofluoric acid, etc.

Bias



Quantiles

100.0%	maximum	-3.8
99.5%		-3.8
97.5%		-3.8
90.0%		-3.8
75.0%	quartile	-3.8
50.0%	median	-25.3
25.0%	quartile	-30.9
10.0%		-30.9
2.5%		-30.9
0.5%		-30.9
0.0%	minimum	-30.9

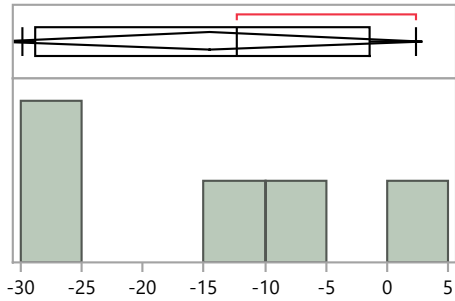
Summary Statistics

Mean	-20.0
Std Dev	14.3
Std Err Mean	8.3
Upper 95% Mean	15.5
Lower 95% Mean	-55.5
N	3.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Strontium-90 Acid leaching without hydrofluoric acid

Bias



Quantiles

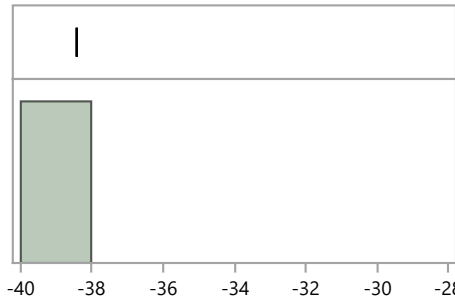
100.0%	maximum	2.4
99.5%		2.4
97.5%		2.4
90.0%		2.4
75.0%	quartile	-1.5
50.0%	median	-12.3
25.0%	quartile	-28.9
10.0%		-29.8
2.5%		-29.8
0.5%		-29.8
0.0%	minimum	-29.8

Summary Statistics

Mean	-14.6
Std Dev	14.0
Std Err Mean	6.3
Upper 95% Mean	2.9
Lower 95% Mean	-32.0
N	5.0

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

Bias



Quantiles

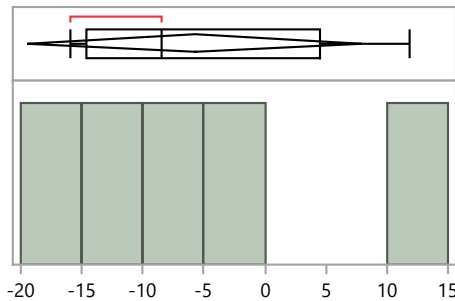
100.0%	maximum	-38.4
99.5%		-38.4
97.5%		-38.4
90.0%		-38.4
75.0%	quartile	-38.4
50.0%	median	-38.4
25.0%	quartile	-38.4
10.0%		-38.4
2.5%		-38.4
0.5%		-38.4
0.0%	minimum	-38.4

Summary Statistics

Mean	-38.4
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Strontium-90 Other

Bias



Quantiles

100.0%	maximum	11.9
99.5%		11.9
97.5%		11.9
90.0%		11.9
75.0%	quartile	4.5
50.0%	median	-8.5
25.0%	quartile	-14.6
10.0%		-15.9
2.5%		-15.9
0.5%		-15.9
0.0%	minimum	-15.9

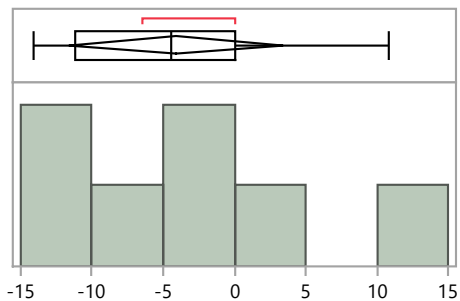
Summary Statistics

Mean	-5.7
Std Dev	11.0
Std Err Mean	4.9
Upper 95% Mean	8.0
Lower 95% Mean	-19.4
N	5.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Strontium-90 Total dissolution by fusion

Bias



Quantiles

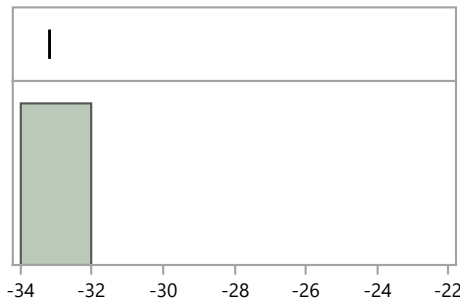
100.0%	maximum	10.8
99.5%		10.8
97.5%		10.8
90.0%		10.8
75.0%	quartile	0.0
50.0%	median	-4.4
25.0%	quartile	-11.2
10.0%		-14.1
2.5%		-14.1
0.5%		-14.1
0.0%	minimum	-14.1

Summary Statistics

Mean	-4.1
Std Dev	8.1
Std Err Mean	3.1
Upper 95% Mean	3.4
Lower 95% Mean	-11.6
N	7.0

Distributions Analyte_Method=Strontium-90 Wet ash - Acid digestion - the use of oxidizers to destroy organics

Bias



Quantiles

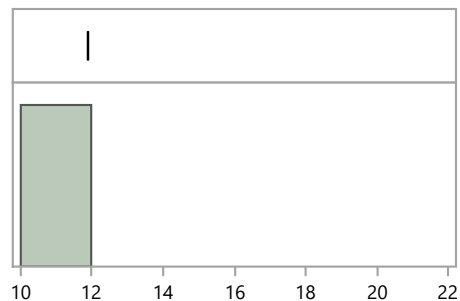
100.0%	maximum	-33.2
99.5%		-33.2
97.5%		-33.2
90.0%		-33.2
75.0%	quartile	-33.2
50.0%	median	-33.2
25.0%	quartile	-33.2
10.0%		-33.2
2.5%		-33.2
0.5%		-33.2
0.0%	minimum	-33.2

Summary Statistics

Mean	-33.2
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Technetium-99 Acid dissolution by strong Aqua Regia, hydrofluoric acid, etc.

Bias



Quantiles

100.0%	maximum	11.9
99.5%		11.9
97.5%		11.9
90.0%		11.9
75.0%	quartile	11.9
50.0%	median	11.9
25.0%	quartile	11.9
10.0%		11.9
2.5%		11.9
0.5%		11.9
0.0%	minimum	11.9

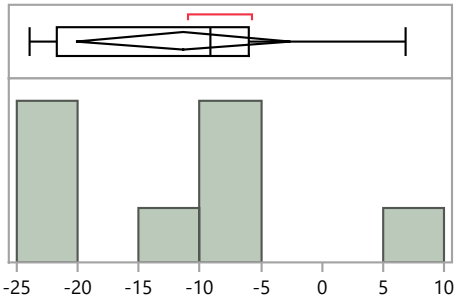
Summary Statistics

Mean	11.9
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

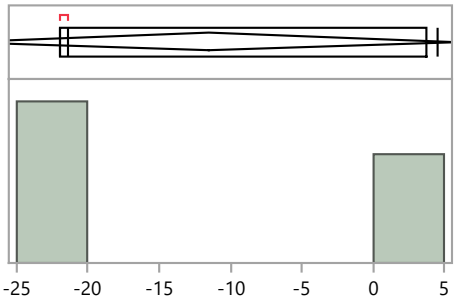
100.0%	maximum	6.9
99.5%		6.9
97.5%		6.9
90.0%		6.9
75.0%	quartile	-6.0
50.0%	median	-9.2
25.0%	quartile	-21.7
10.0%		-23.9
2.5%		-23.9
0.5%		-23.9
0.0%	minimum	-23.9

Summary Statistics

Mean	-11.4
Std Dev	10.5
Std Err Mean	3.7
Upper 95% Mean	-2.6
Lower 95% Mean	-20.2
N	8.0

Distributions Analyte_Method=Technetium-99 Other

Bias



Quantiles

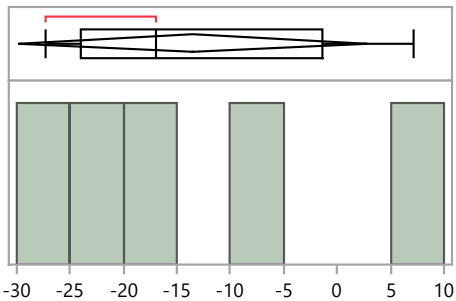
100.0%	maximum	4.5
99.5%		4.5
97.5%		4.5
90.0%		4.5
75.0%	quartile	3.8
50.0%	median	-21.4
25.0%	quartile	-21.9
10.0%		-22.0
2.5%		-22.0
0.5%		-22.0
0.0%	minimum	-22.0

Summary Statistics

Mean	-11.5
Std Dev	14.0
Std Err Mean	6.3
Upper 95% Mean	5.9
Lower 95% Mean	-28.9
N	5.0

Distributions Analyte_Method=Uranium-234 Acid dissolution by strong Aqua Regia, hydrofluoric acid, etc.

Bias



Quantiles

100.0%	maximum	7.2
99.5%		7.2
97.5%		7.2
90.0%		7.2
75.0%	quartile	-1.4
50.0%	median	-16.9
25.0%	quartile	-24.0
10.0%		-27.3
2.5%		-27.3
0.5%		-27.3
0.0%	minimum	-27.3

Summary Statistics

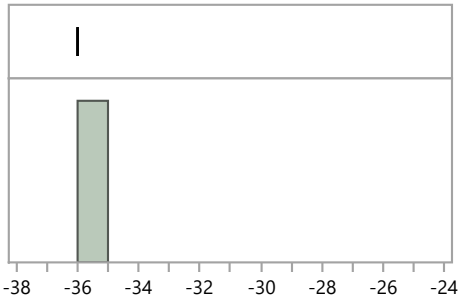
Mean	-13.5
Std Dev	13.2
Std Err Mean	5.9
Upper 95% Mean	2.9
Lower 95% Mean	-29.9
N	5.0

MaS42 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Uranium-234 Acid leaching without hydrofluoric acid

Bias



Quantiles

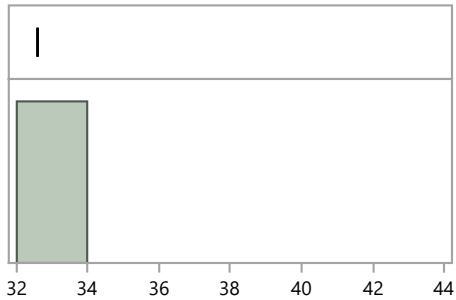
100.0%	maximum	-36.0
99.5%		-36.0
97.5%		-36.0
90.0%		-36.0
75.0%	quartile	-36.0
50.0%	median	-36.0
25.0%	quartile	-36.0
10.0%		-36.0
2.5%		-36.0
0.5%		-36.0
0.0%	minimum	-36.0

Summary Statistics

Mean	-36.0
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

Bias



Quantiles

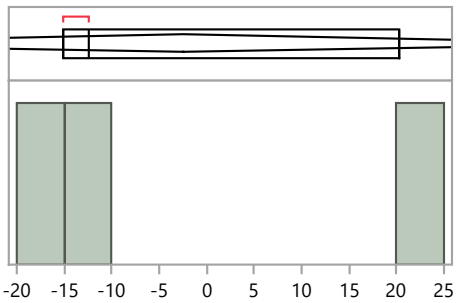
100.0%	maximum	32.6
99.5%		32.6
97.5%		32.6
90.0%		32.6
75.0%	quartile	32.6
50.0%	median	32.6
25.0%	quartile	32.6
10.0%		32.6
2.5%		32.6
0.5%		32.6
0.0%	minimum	32.6

Summary Statistics

Mean	32.6
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	20.3
99.5%		20.3
97.5%		20.3
90.0%		20.3
75.0%	quartile	20.3
50.0%	median	-12.4
25.0%	quartile	-15.1
10.0%		-15.1
2.5%		-15.1
0.5%		-15.1
0.0%	minimum	-15.1

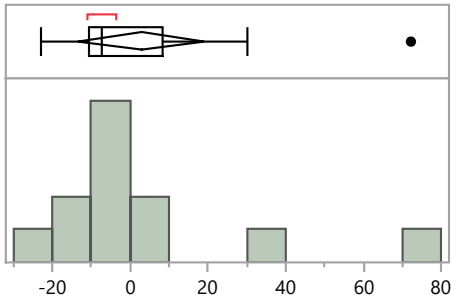
Summary Statistics

Mean	-2.4
Std Dev	19.7
Std Err Mean	11.4
Upper 95% Mean	46.6
Lower 95% Mean	-51.4
N	3.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Uranium-234 Total dissolution by fusion

Bias



Quantiles

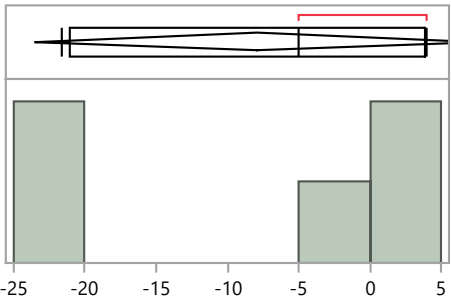
100.0%	maximum	72.2
99.5%		72.2
97.5%		72.2
90.0%		59.5
75.0%	quartile	8.5
50.0%	median	-7.4
25.0%	quartile	-10.6
10.0%		-19.9
2.5%		-22.8
0.5%		-22.8
0.0%	minimum	-22.8

Summary Statistics

Mean	2.8
Std Dev	25.7
Std Err Mean	7.4
Upper 95% Mean	19.1
Lower 95% Mean	-13.5
N	12.0

Distributions Analyte_Method=Uranium-238 Acid dissolution by strong Aqua Regia, hydrofluoric acid, etc.

Bias



Quantiles

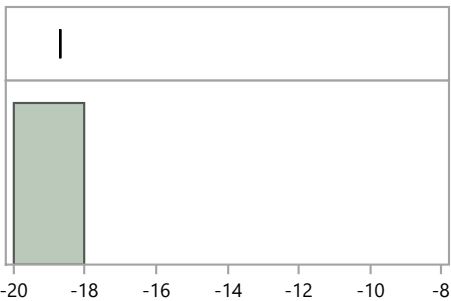
100.0%	maximum	4.0
99.5%		4.0
97.5%		4.0
90.0%		4.0
75.0%	quartile	3.9
50.0%	median	-5.0
25.0%	quartile	-21.1
10.0%		-21.6
2.5%		-21.6
0.5%		-21.6
0.0%	minimum	-21.6

Summary Statistics

Mean	-7.9
Std Dev	12.6
Std Err Mean	5.6
Upper 95% Mean	7.7
Lower 95% Mean	-23.5
N	5.0

Distributions Analyte_Method=Uranium-238 Acid leaching without hydrofluoric acid

Bias



Quantiles

100.0%	maximum	-18.7
99.5%		-18.7
97.5%		-18.7
90.0%		-18.7
75.0%	quartile	-18.7
50.0%	median	-18.7
25.0%	quartile	-18.7
10.0%		-18.7
2.5%		-18.7
0.5%		-18.7
0.0%	minimum	-18.7

Summary Statistics

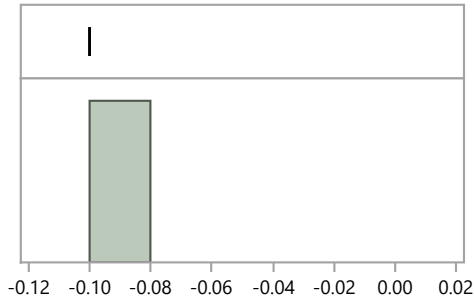
Mean	-18.7
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaS42 Distribution by Preparation Method

MaS Distribution by Prep Method

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

Bias



Quantiles

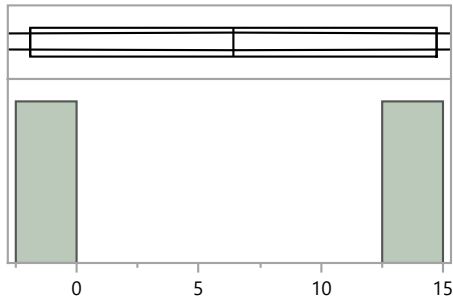
100.0%	maximum	-0.1
99.5%		-0.1
97.5%		-0.1
90.0%		-0.1
75.0%	quartile	-0.1
50.0%	median	-0.1
25.0%	quartile	-0.1
10.0%		-0.1
2.5%		-0.1
0.5%		-0.1
0.0%	minimum	-0.1

Summary Statistics

Mean	-0.1
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

Bias



Quantiles

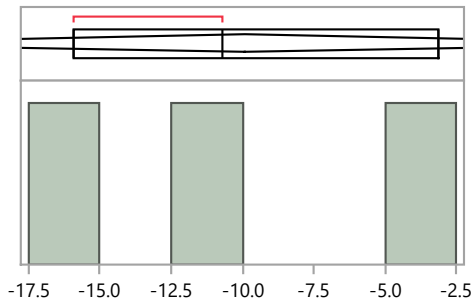
100.0%	maximum	14.7
99.5%		14.7
97.5%		14.7
90.0%		14.7
75.0%	quartile	14.7
50.0%	median	6.4
25.0%	quartile	-1.9
10.0%		-1.9
2.5%		-1.9
0.5%		-1.9
0.0%	minimum	-1.9

Summary Statistics

Mean	6.4
Std Dev	11.7
Std Err Mean	8.3
Upper 95% Mean	111.9
Lower 95% Mean	-99.1
N	2.0

Distributions Analyte_Method=Uranium-238 Other

Bias



Quantiles

100.0%	maximum	-3.1
99.5%		-3.1
97.5%		-3.1
90.0%		-3.1
75.0%	quartile	-3.1
50.0%	median	-10.7
25.0%	quartile	-15.9
10.0%		-15.9
2.5%		-15.9
0.5%		-15.9
0.0%	minimum	-15.9

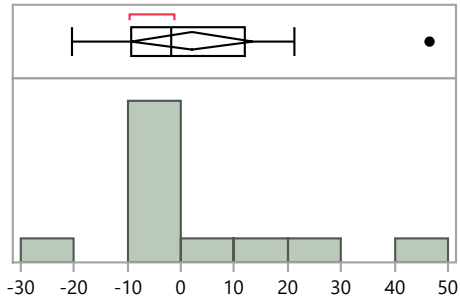
Summary Statistics

Mean	-9.9
Std Dev	6.4
Std Err Mean	3.7
Upper 95% Mean	6.1
Lower 95% Mean	-25.9
N	3.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Uranium-238 Total dissolution by fusion

Bias



Quantiles

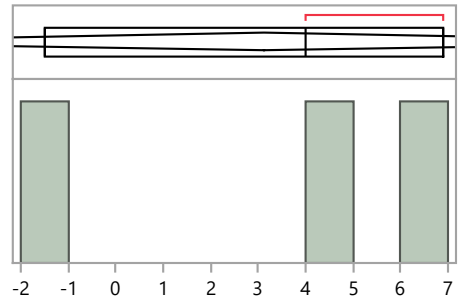
100.0%	maximum	46.5
99.5%		46.5
97.5%		46.5
90.0%		38.9
75.0%	quartile	11.9
50.0%	median	-1.8
25.0%	quartile	-9.4
10.0%		-17.2
2.5%		-20.5
0.5%		-20.5
0.0%	minimum	-20.5

Summary Statistics

Mean	2.1
Std Dev	17.9
Std Err Mean	5.2
Upper 95% Mean	13.5
Lower 95% Mean	-9.3
N	12.0

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

Bias



Quantiles

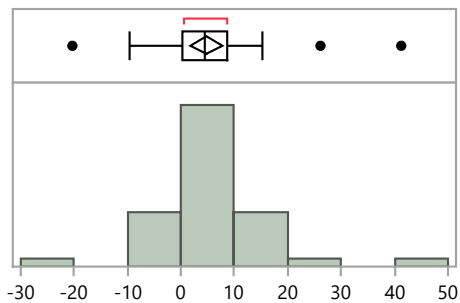
100.0%	maximum	6.9
99.5%		6.9
97.5%		6.9
90.0%		6.9
75.0%	quartile	6.9
50.0%	median	4.0
25.0%	quartile	-1.5
10.0%		-1.5
2.5%		-1.5
0.5%		-1.5
0.0%	minimum	-1.5

Summary Statistics

Mean	3.1
Std Dev	4.3
Std Err Mean	2.5
Upper 95% Mean	13.7
Lower 95% Mean	-7.5
N	3.0

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

Bias



Quantiles

100.0%	maximum	41.2
99.5%		41.2
97.5%		39.7
90.0%		12.6
75.0%	quartile	8.8
50.0%	median	4.5
25.0%	quartile	0.3
10.0%		-6.9
2.5%		-19.2
0.5%		-20.3
0.0%	minimum	-20.3

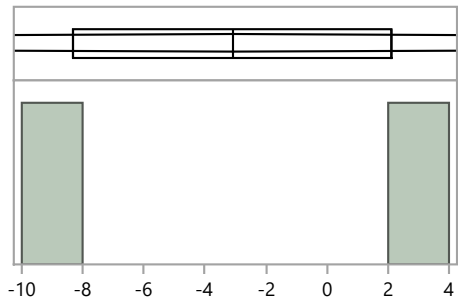
Summary Statistics

Mean	4.7
Std Dev	9.7
Std Err Mean	1.5
Upper 95% Mean	7.7
Lower 95% Mean	1.7
N	43.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Zinc-65 Other

Bias



Quantiles

100.0%	maximum	2.1
99.5%		2.1
97.5%		2.1
90.0%		2.1
75.0%	quartile	2.1
50.0%	median	-3.1
25.0%	quartile	-8.3
10.0%		-8.3
2.5%		-8.3
0.5%		-8.3
0.0%	minimum	-8.3

Summary Statistics

Mean	-3.1
Std Dev	7.4
Std Err Mean	5.2
Upper 95% Mean	63.0
Lower 95% Mean	-69.2
N	2.0