

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.

MaS41 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
CDHS01	California Department of Public Health	MaS
CEBM01	Cebam Analytical, Inc	MaS
CESL01	Lawrence Livermore National Laboratory - EMRL	MaS
CHMH01	222-S Laboratory	MaS
CMRC01	Carlsbad Environmental Monitoring and Research Center	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
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
FMEC99	Foods and Water Laboratories Center	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
JAEC99	Research Laboratories and Information Directorate	MaS
JLNN01	Jefferson Laboratory	MaS
LANL01	Los Alamos National Laboratory	MaS
LAWR01	LAWRENCE BERKELEY NATIONAL LABORATORY	MaS
LDRA99	Laboratori de Radiologia Ambiental-Universitat de Barcelona	MaS
LOCK03	Advanced Test Reactor (ATR) Complex Radioanalytical Laboratory	MaS
MART01	Fluor B&W Ports Analytical Laboratory	MaS
MART03	Radioactive Material Analysis Laboratory	MaS
MSDH01	Mississippi State Dept of Health	MaS
NARL01	National Analytical Radiation Environmental Laboratory	MaS

NARL02	USEPA - NAREL - MERL	MaS
NESI01	BWXT-Radioisotope & Analytical Chemistry Laboratory	MaS
NJDH01	New Jersey Dept. of Health, PHEL, ECLS	MaS
NOCS99	National Oceanography Centre, Southampton	MaS
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
SLAC01	SLAC DOE National Accelerator Laboratory	MaS
SOUT01	Southwest Research Institute	MaS
SRPD01	Sandia National Laboratories, Radiation Protection Sample Diagnostics	MaS
TDHL01	Texas Department of State Health Services Laboratory	MaS
TELE01	Teledyne Brown Engineering - Environmental Services	MaS
TELE02	ATI Environmental, Inc., Midwest Lab	MaS
TMAO01	EBERLINE SERVICES OAK RIDGE LABORATORY	MaS
TNUT01	St. Louis USACE FUSRAP Laboratory	MaS
UNTE01	UniTech-235	MaS
WEST04	PACE ANALYTICAL SERVICES, PITTSBURGH	MaS
WIPH01	WI, DPH, Radiation Protection Section	MaS
WIPP01	WIPP Laboratories	MaS
WSHL01	Wisconsin State Laboratory of Hygiene	MaS
WSTP99	Cavendish Nuclear Limited	MaS
YPGA01	US Army Yuma Proving Ground / Material Analysis Lab	MaS

Laboratories Not Reporting

Lab Code	Lab Name	Matrix Code
ASUK99	AWE (Aldermaston)	MaS
CSSL99	Chemistry Support Services	MaS
OLML01	Pace National Rad Lab Mobile Laboratory	MaS
QUAN01	TestAmerica St. Louis	MaS
RPSC01	Radiation Protection Service	MaS

Study Reference Values

MAPEP-19-MaS41

Radiological Reference Date: 08/01/2019

Analyte	Ref Value	Ref Unc	Tot Mtl Ref Val	Tot Mtl Ref Unc
Inorganic Units: (mg/kg)				
Antimony	119	5	133	3
Arsenic	35.1	1.8	35.8	0.6
Barium	292	5	685	14
Beryllium	10.6	0.2	11.6	0.2
Cadmium	18.0	0.4	18.1	0.4
Chromium	60.4	1.1	91.5	1.4
Cobalt	51.9	1.0	54.2	1.0
Copper	94.9	1.8	98.5	1.9
Lead	85.1	1.6	92.0	1.7
Mercury	1.01	0.06	1.01	0.06
Nickel	106.9	1.9	114	2
Selenium	3.53	0.07	3.63	0.07
Technetium-99	0.00094	1.90E-5		
Thallium	21.6	0.4	21.8	0.4
Uranium-235	0.0679	0.0014		
Uranium-238	9.4	0.3		
Uranium-Total	9.4	0.3		
Vanadium	176	3	209	3
Zinc	374	7	393	8

Analyte	Ref Value	Ref Unc		
Radiological Units: (Bq/kg)				
Americium-241	74.7	1.4		
Cesium-134	1020	20		
Cesium-137	789	12		
Cobalt-60	760	15		
Manganese-54	745	15		
Nickel-63	629	13		
Plutonium-238	52.1	1.0		
Plutonium-239/240	61.4	1.2		
Potassium-40	555	11		
Strontium-90	572	11		
Technetium-99	593	12		
Uranium-234	116	4		
Uranium-238	117	4		

Sample Statistical Summary

MAPEP-19-MaS41

Radiological Reference Date: 08/01/2019

Analyte	T(1)	A(2)	Grand ⁽³⁾ Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
Inorganic							Units: (mg/kg)
Antimony	16	14	109	9	119	5	83 - 155
Arsenic	18	17	33.4	4.1	35.1	1.8	24.6 - 45.6
Barium	18	17	288	17	292	5	204 - 380
Beryllium	17	17	10.3	0.6	10.6	0.2	7.4 - 13.8
Cadmium	18	18	16.8	1.4	18.0	0.4	12.6 - 23.4
Chromium	18	17	62.2	5.5	60.4	1.1	42.3 - 78.5
Cobalt	17	17	49.7	3.7	51.9	1.0	36.3 - 67.5
Copper	17	16	91.6	6.4	94.9	1.8	66.4 - 123.4
Lead	18	18	82.6	5.0	85.1	1.6	59.6 - 110.6
Mercury	16	14	0.88	0.09	1.01	0.06	0.71 - 1.31
Nickel	17	17	103.4	9.2	106.9	1.9	74.8 - 139.0
Selenium	15	13	3.34	0.52	3.53	0.07	2.47 - 4.59
Silver	17	6					False Positive Test
Technetium-99	3	3			0.00094	1.90E-5	0.00066 - 0.00122
Thallium	17	15	20.7	1.1	21.6	0.4	15.1 - 28.1
Uranium-235	12	7	0.0700	0.0107	0.0679	0.0014	0.0475 - 0.0883
Uranium-238	14	7	9.5	1.4	9.4	0.3	6.6 - 12.2
Uranium-Total	17	8	9.3	1.5	9.4	0.3	6.6 - 12.2
Vanadium	15	15	173	12	176	3	123 - 229
Zinc	18	18	354	30	374	7	262 - 486

Analyte	T(1)	A(2)	Grand ⁽³⁾ Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
Radiological							Units: (Bq/kg)
Americium-241	47	43	68.1	7.0	74.7	1.4	52.3 - 97.1
Cesium-134	63	59	974	97	1020	20	714 - 1326
Cesium-137	63	61	831	67	789	12	552 - 1026
Cobalt-57	57	57					False Positive Test
Cobalt-60	63	61	772	64	760	15	532 - 988
Iron-55	10	10					False Positive Test
Manganese-54	63	60	772	66	745	15	522 - 969
Nickel-63	14	12	617	69	629	13	440 - 818
Plutonium-238	33	32	50.6	4.2	52.1	1.0	36.5 - 67.7
Plutonium-239/240	33	32	58.9	4.8	61.4	1.2	43.0 - 79.8
Potassium-40	63	58	567	54	555	11	389 - 722
Strontium-90	27	25	514	64	572	11	400 - 744
Technetium-99	19	15	519	66	593	12	415 - 771
Uranium-234	34	21	112	9	116	4	81 - 151
Uranium-238	36	23	117	9	117	4	82 - 152
Zinc-65	58	53					False Positive Test

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-19-MaS41

Inorganic				
Analyte	A	W	RW	N
Antimony	13	1		2
Arsenic	15	2		1
Barium	17			1
Beryllium	17			
Cadmium	17	1		
Chromium	16	1		1
Cobalt	17			
Copper	14	2		1
Lead	18			
Mercury	12	2		2
Nickel	16	1		
Selenium	11	2		2
Silver	6			11
Thallium	15			2
Uranium-Total	6	2		9
Uranium-235	5	2		5
Uranium-238	6	1		7
Vanadium	15			
Zinc	16	2		
Technetium-99	1	2		

Radiological				
Analyte	A	W	RW	N
Americium-241	39	4		4
Cesium-134	56	3		2
Cesium-137	57	4		2
Cobalt-57	57			6
Cobalt-60	59	2		2
Iron-55	10			
Manganese-54	57	3		3
Nickel-63	12			2
Plutonium-238	30	2		1
Plutonium-239/240	31	1		1
Potassium-40	55	3		5
Strontium-90	21	4		2
Technetium-99	12	3		4
Uranium-234	21			13
Uranium-238	22	1		13
Zinc-65	53			10



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	65.30	74.7	A		-12.6	52.3 - 97.1	7.89	A
Cesium-134	1160	1020	A		13.7	714 - 1326	28	A
Cesium-137	989.0	789	W		25.3	552 - 1026	27.0	A
Cobalt-57	NR		N	(11)		False Positive Test		
Cobalt-60	NR	760	N	(25)		532 - 988		
Iron-55	NR					False Positive Test		
Manganese-54	932.0	745	W		25.1	522 - 969	21.70	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	674.0	555	W		21.4	389 - 722	21.10	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	NR		N	(11)		False Positive Test		

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	71.00	74.7	A		-5.0	52.3 - 97.1	1.90	A
Cesium-134	1028.12	1020	A		0.8	714 - 1326	20.37	N
Cesium-137	733.61	789	A		-7.0	552 - 1026	3.89	N
Cobalt-57	-0.17			A		False Positive Test	1.13	
Cobalt-60	766.79	760	A		0.9	532 - 988	13.54	N
Iron-55	NR					False Positive Test		
Manganese-54	696.49	745	A		-6.5	522 - 969	12.48	N
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	487.51	555	A		-12.2	389 - 722	20.18	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	-9.97		A			False Positive Test	10.40	

Radiological Reference Date: August 1, 2019

Results Flags:

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

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

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

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

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

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

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

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

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	70.1	74.7	A		-6.2	52.3 - 97.1	4.5	A
Cesium-134	929	1020	A		-8.9	714 - 1326	11	N
Cesium-137	838	789	A		6.2	552 - 1026	10	N
Cobalt-57	0.4		A			False Positive Test	0.8	
Cobalt-60	797	760	A		4.9	532 - 988	11	N
Iron-55	NR					False Positive Test		
Manganese-54	793.7	745	A		6.5	522 - 969	9.5	N
Nickel-63	NR	629				440 - 818		
Plutonium-238	44.6	52.1	A		-14.4	36.5 - 67.7	4.1	A
Plutonium-239/240	58.8	61.4	A		-4.2	43.0 - 79.8	4.8	A
Potassium-40	604	555	A		8.8	389 - 722	19	A
Strontium-90	470	572	A		-17.8	400 - 744	29	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	120.2	116	A		3.6	81 - 151	6.7	A
Uranium-238	119.3	117	A		2.0	82 - 152	6.6	A
Zinc-65	-0.3		A			False Positive Test	2	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (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	113	119	A		-5.0	83 - 155	7.913989	A
Arsenic	32.1	35.1	A		-8.5	24.6 - 45.6	2.660254	A
Barium	280	292	A		-4.1	204 - 380	19.68126	A
Beryllium	9.79	10.6	A		-7.6	7.4 - 13.8	0.551684	A
Cadmium	16.6	18.0	A		-7.8	12.6 - 23.4	1.038838	A
Chromium	60	60.4	A		-0.7	42.3 - 78.5	3.405880	A
Cobalt	50.3	51.9	A		-3.1	36.3 - 67.5	2.669126	A
Copper	96.2	94.9	A		1.4	66.4 - 123.4	6.262625	A
Lead	78.5	85.1	A		-7.8	59.6 - 110.6	4.331046	A
Mercury	0.853	1.01	A		-15.5	0.71 - 1.31	0.047884	A
Nickel	103	106.9	A		-3.6	74.8 - 139.0	7.142678	A
Selenium	2.91	3.53	A		-17.6	2.47 - 4.59	0.261101	A
Silver	0.984		A			False Positive Test	0.984	
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	3.31	21.6	N		-84.7	15.1 - 28.1	0.328588	A
Uranium-235	0.0667	0.0679	A		-1.8	0.0475 - 0.0883	0.006165	A
Uranium-238	8.89	9.4	A		-5.4	6.6 - 12.2	0.821635	A
Uranium-Total	8.96	9.4	A		-4.7	6.6 - 12.2	0.828104	A
Vanadium	163	176	A		-7.4	123 - 229	7.944665	A
Zinc	341	374	A		-8.8	262 - 486	23.27044	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	64.2	74.7	A		-14.1	52.3 - 97.1	5.5	A
Cesium-134	845	1020	A		-17.2	714 - 1326	50	A
Cesium-137	746	789	A		-5.5	552 - 1026	44	A
Cobalt-57	2.19		A			False Positive Test	2.19	
Cobalt-60	693	760	A		-8.8	532 - 988	41	A
Iron-55	92		A			False Positive Test	92	
Manganese-54	708	745	A		-5.0	522 - 969	42	A
Nickel-63	613	629	A		-2.5	440 - 818	84	A
Plutonium-238	53.6	52.1	A		2.9	36.5 - 67.7	4.7	A
Plutonium-239/240	62.2	61.4	A		1.3	43.0 - 79.8	5.4	A
Potassium-40	489	555	A		-11.9	389 - 722	33	A
Strontium-90	574	572	A		0.4	400 - 744	68	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	382	593	N		-35.6	415 - 771	31	A
Uranium-234	115	116	A		-0.9	81 - 151	9	A
Uranium-238	119	117	A		1.7	82 - 152	10	A
Zinc-65	14.2		A			False Positive Test	14.2	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	1107	1020	A		8.5	714 - 1326	33	A
Cesium-137	904	789	A		14.6	552 - 1026	27	A
Cobalt-57	1.70			A		False Positive Test	1.70	
Cobalt-60	812	760	A		6.8	532 - 988	24	A
Iron-55	NR					False Positive Test		
Manganese-54	837	745	A		12.3	522 - 969	25	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	607	555	A		9.4	389 - 722	25	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	7.80		A			False Positive Test	7.80	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (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	119				83 - 155		
Arsenic	24.8	35.1	W		-29.3	24.6 - 45.6	2.4	A
Barium	278	292	A		-4.8	204 - 380	1.4	N
Beryllium	9.36	10.6	A		-11.7	7.4 - 13.8	3.9	N
Cadmium	16.3	18.0	A		-9.4	12.6 - 23.4	2.0	A
Chromium	41.3	60.4	N		-31.6	42.3 - 78.5	1.6	A
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	80.2	85.1	A		-5.8	59.6 - 110.6	1.2	N
Mercury	0.730	1.01	W		-27.7	0.71 - 1.31	0.676	N
Nickel	NR	106.9				74.8 - 139.0		
Selenium	3.28	3.53	A		-7.1	2.47 - 4.59	0.88	W
Silver	0.163		A			False Positive Test	0.7	
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	272	374	W		-27.3	262 - 486	2.8	N

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	62.549	74.7	A		-16.3	52.3 - 97.1	6.65	A
Cesium-134	855.070	1020	A		-16.2	714 - 1326	38.277	A
Cesium-137	901.468	789	A		14.3	552 - 1026	41.869	A
Cobalt-57	NR		N	(11)		False Positive Test		
Cobalt-60	830.724	760	A		9.3	532 - 988	45.632	A
Iron-55	NR					False Positive Test		
Manganese-54	737.373	745	A		-1.0	522 - 969	35.001	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	812.668	555	N		46.4	389 - 722	93.677	A
Strontium-90	NR	572				400 - 744		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	93.107	116	A		-19.7	81 - 151	21.073	W
Uranium-238	78.191	117	N		-33.2	82 - 152	18.772	W
Zinc-65	5.878		A			False Positive Test	29.029	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	101	119	A		-15.1	83 - 155	12.33	A
Arsenic	30.7	35.1	A		-12.5	24.6 - 45.6	4.68	W
Barium	294	292	A		0.7	204 - 380	44.57	W
Beryllium	10.2	10.6	A		-3.8	7.4 - 13.8	1.593	W
Cadmium	16.5	18.0	A		-8.3	12.6 - 23.4	2.62	W
Chromium	68.3	60.4	A		13.1	42.3 - 78.5	10.26	W
Cobalt	51.9	51.9	A		0.0	36.3 - 67.5	9.00	W
Copper	87.8	94.9	A		-7.5	66.4 - 123.4	15.75	W
Lead	84.6	85.1	A		-0.6	59.6 - 110.6	20.80	W
Mercury	.853	1.01	A		-15.5	0.71 - 1.31	.164	W
Nickel	108	106.9	A		1.0	74.8 - 139.0	18.88	W
Selenium	3.44	3.53	A		-2.6	2.47 - 4.59	.537	W
Silver	.415		N	(1)		False Positive Test	.050	
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	22.0	21.6	A		1.9	15.1 - 28.1	3.84	W
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	.768	9.4	N		-91.8	6.6 - 12.2	.101	A
Vanadium	182	176	A		3.4	123 - 229	32.089	W
Zinc	346	374	A		-7.5	262 - 486	41.18	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	75.995	74.7	A		1.7	52.3 - 97.1	5.482	A
Cesium-134	935.160	1020	A		-8.3	714 - 1326	30.297	A
Cesium-137	796.570	789	A		1.0	552 - 1026	16.667	A
Cobalt-57	.580		A			False Positive Test	1.764	
Cobalt-60	750.700	760	A		-1.2	532 - 988	14.616	N
Iron-55	NR					False Positive Test		
Manganese-54	743.030	745	A		-0.3	522 - 969	23.573	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	48.513	52.1	A		-6.9	36.5 - 67.7	3.754	A
Plutonium-239/240	58.303	61.4	A		-5.0	43.0 - 79.8	4.359	A
Potassium-40	535.560	555	A		-3.5	389 - 722	23.176	A
Strontium-90	564.192	572	A		-1.4	400 - 744	43.862	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	495.800	593	A		-16.4	415 - 771	62.296	A
Uranium-234	33.570	116	N		-71.1	81 - 151	2.466	A
Uranium-238	34.560	117	N		-70.5	82 - 152	2.523	A
Zinc-65	-12.993		A			False Positive Test	4.590	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	112	119	A		-5.9	83 - 155	5.91	A
Arsenic	32.6	35.1	A		-7.1	24.6 - 45.6	1.83	A
Barium	309	292	A		5.8	204 - 380	12.6	A
Beryllium	9.48	10.6	A		-10.6	7.4 - 13.8	0.59	A
Cadmium	15.6	18.0	A		-13.3	12.6 - 23.4	0.944	A
Chromium	60.5	60.4	A		0.2	42.3 - 78.5	1.91	A
Cobalt	53.1	51.9	A		2.3	36.3 - 67.5	2.66	A
Copper	98.3	94.9	A		3.6	66.4 - 123.4	4.00	A
Lead	84.8	85.1	A		-0.4	59.6 - 110.6	5.53	A
Mercury	1.08	1.01	A		6.9	0.71 - 1.31	0.113	A
Nickel	109	106.9	A		2.0	74.8 - 139.0	5.38	A
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	21.0	21.6	A		-2.8	15.1 - 28.1	1.43	A
Uranium-235	0.077	0.0679	A		13.4	0.0475 - 0.0883	0.0077	A
Uranium-238	10.12	9.4	A		7.7	6.6 - 12.2	0.5	A
Uranium-Total	10.2	9.4	A		8.5	6.6 - 12.2	0.5	A
Vanadium	174	176	A		-1.1	123 - 229	6.61	A
Zinc	376	374	A		0.5	262 - 486	23.5	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	57.2	74.7	W		-23.4	52.3 - 97.1	5.9	A
Cesium-134	NR	1020		(6)		714 - 1326		
Cesium-137	851	789	A		7.9	552 - 1026	64	A
Cobalt-57	0.315		A			False Positive Test	1.6	
Cobalt-60	828	760	A		8.9	532 - 988	64	A
Iron-55	NR					False Positive Test		
Manganese-54	802	745	A		7.7	522 - 969	130	W
Nickel-63	NR	629				440 - 818		
Plutonium-238	45.5	52.1	A		-12.7	36.5 - 67.7	7.0	W
Plutonium-239/240	56.6	61.4	A		-7.8	43.0 - 79.8	8.0	A
Potassium-40	618	555	A		11.4	389 - 722	96	W
Strontium-90	466	572	A		-18.5	400 - 744	44	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	511	593	A		-13.8	415 - 771	46	A
Uranium-234	106	116	A		-8.6	81 - 151	14	A
Uranium-238	113	117	A		-3.4	82 - 152	15	A
Zinc-65	1.05		A			False Positive Test	14	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	68.54	74.7	A		-8.2	52.3 - 97.1	6.55	A
Cesium-134	NR	1020		(6)		714 - 1326		
Cesium-137	847.00	789	A		7.4	552 - 1026	22.60	A
Cobalt-57	-0.12			A		False Positive Test	0.40	
Cobalt-60	760.00	760	A		0.0	532 - 988	27.10	A
Iron-55	NR					False Positive Test		
Manganese-54	794.00	745	A		6.6	522 - 969	23.70	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	47.92	52.1	A		-8.0	36.5 - 67.7	3.52	A
Plutonium-239/240	51.52	61.4	A		-16.1	43.0 - 79.8	3.80	A
Potassium-40	569.00	555	A		2.5	389 - 722	28.65	A
Strontium-90	498.58	572	A		-12.8	400 - 744	24.98	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	498.30	593	A		-16.0	415 - 771	20.81	A
Uranium-234	155.68	116	N		34.2	81 - 151	10.79	A
Uranium-238	120.44	117	A		2.9	82 - 152	8.76	A
Zinc-65	3.43		A			False Positive Test	1.78	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (CDHS01) California Department of Public Health
 Drinking Water & Radiation Lab.
 Richmond, CA 94804-6403

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	69.5	74.7	A		-7.0	52.3 - 97.1	1.596	A
Cesium-134	1034	1020	A		1.4	714 - 1326	21	A
Cesium-137	813	789	A		3.0	552 - 1026	16.1	N
Cobalt-57	0.000992			A		False Positive Test	0.00045	
Cobalt-60	759.5	760	A		-0.1	532 - 988	9.24	N
Iron-55	-15.0			A		False Positive Test	26.66	
Manganese-54	777	745	A		4.3	522 - 969	14.0	N
Nickel-63	750.8	629	A		19.4	440 - 818	30.8	A
Plutonium-238	51.59	52.1	A		-1.0	36.5 - 67.7	1.51	A
Plutonium-239/240	59.49	61.4	A		-3.1	43.0 - 79.8	1.65	A
Potassium-40	583	555	A		5.0	389 - 722	17.1	A
Strontium-90	520.1	572	A		-9.1	400 - 744	15.2	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	511.8	593	A		-13.7	415 - 771	18.55	A
Uranium-234	104.8	116	A		-9.7	81 - 151	1.96	N
Uranium-238	108.8	117	A		-7.0	82 - 152	2.01	N
Zinc-65	0.6011		A			False Positive Test	0.8467	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(CEBM01) Cebam Analytical, Inc

11812 North Creek Parkway N

Bothell, WA 98011-8202

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	0.957	1.01	A		-5.2	0.71 - 1.31	0.011	N
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	NR	1020				714 - 1326		
Cesium-137	NR	789				552 - 1026		
Cobalt-57	NR					False Positive Test		
Cobalt-60	NR	760				532 - 988		
Iron-55	NR					False Positive Test		
Manganese-54	NR	745				522 - 969		
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	NR	555				389 - 722		
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	NR					False Positive Test		

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	6.19E+01	74.7	A		-17.1	52.3 - 97.1	4.30	A
Cesium-134	1.04E+03	1020	A		2.0	714 - 1326	3.62	A
Cesium-137	8.87E+02	789	A		12.4	552 - 1026	6.36	A
Cobalt-57	-1.81E-01			A		False Positive Test	4.25	
Cobalt-60	8.48E+02	760	A		11.6	532 - 988	3.52	A
Iron-55	NR					False Positive Test		
Manganese-54	8.38E+02	745	A		12.5	522 - 969	5.08	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	5.10E+01	52.1	A		-2.1	36.5 - 67.7	2.61	A
Plutonium-239/240	5.81E+01	61.4	A		-5.4	43.0 - 79.8	2.94	A
Potassium-40	6.05E+02	555	A		9.0	389 - 722	7.17	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	1.46E+01		A			False Positive Test	3.68	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(CHMH01) 222-S Laboratory

295 Bradley Blvd., Suite 203

Richland, WA 99352

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	0.045056	0.0679	N		-33.6	0.0475 - 0.0883	0.0045	A
Uranium-238	5.9956	9.4	N		-36.2	6.6 - 12.2	0.5996	A
Uranium-Total	6.0407	9.4	N		-35.7	6.6 - 12.2	0.60407	A
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	68.82	74.7	A		-7.9	52.3 - 97.1	12.0	W
Cesium-134	986.4	1020	A		-3.3	714 - 1326	32.4	A
Cesium-137	834.7	789	A		5.8	552 - 1026	27.3	A
Cobalt-57	0.2995			A		False Positive Test	0.892	
Cobalt-60	771.1	760	A		1.5	532 - 988	23.7	A
Iron-55	NR					False Positive Test		
Manganese-54	774.0	745	A		3.9	522 - 969	24.5	A
Nickel-63	510.6	629	A		-18.8	440 - 818	60.5	A
Plutonium-238	55.69	52.1	A		6.9	36.5 - 67.7	8.42	W
Plutonium-239/240	65.49	61.4	A		6.7	43.0 - 79.8	9.88	W
Potassium-40	585.0	555	A		5.4	389 - 722	25	A
Strontium-90	494.0	572	A		-13.6	400 - 744	28.4	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	377.8	593	N		-36.3	415 - 771	13.3	A
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	3.974			A		False Positive Test	2.84	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(CMRC01) Carlsbad Environmental Monitoring and Research Center

1400 University Dr.

Carlsbad, NM 88220

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	7.26E+01	74.7	A		-2.8	52.3 - 97.1	5.66	A
Cesium-134	1.05E+03	1020	A		2.9	714 - 1326	1.51	N
Cesium-137	9.55E+02	789	W		21.0	552 - 1026	2.90	A
Cobalt-57	6.23E-01		A			False Positive Test	8.21E-01	
Cobalt-60	8.50E+02	760	A		11.8	532 - 988	1.62	N
Iron-55	NR					False Positive Test		
Manganese-54	8.78E+02	745	A		17.9	522 - 969	2.15	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	5.54E+01	52.1	A		6.3	36.5 - 67.7	3.69	A
Plutonium-239/240	6.30E+01	61.4	A		2.6	43.0 - 79.8	4.18	A
Potassium-40	6.29E+02	555	A		13.3	389 - 722	3.65	A
Strontium-90	NR	572				400 - 744		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	1.09E+02	116	A		-6.0	81 - 151	2.13	W
Uranium-238	1.12E+02	117	A		-4.3	82 - 152	2.26	W
Zinc-65	-3.44E+00		A			False Positive Test	5.56	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	75.4	74.7	A		0.9	52.3 - 97.1	2.96	A
Cesium-134	1005	1020	A		-1.5	714 - 1326	10.4	N
Cesium-137	868	789	A		10.0	552 - 1026	17.4	A
Cobalt-57	0.565			A		False Positive Test	0.35	
Cobalt-60	807	760	A		6.2	532 - 988	10.7	N
Iron-55	NR					False Positive Test		
Manganese-54	802	745	A		7.7	522 - 969	15.7	N
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	562	555	A		1.3	389 - 722	51.7	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	-1.96		A			False Positive Test	9.17	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	116	119	A		-2.5	83 - 155	5.41	A
Arsenic	30.7	35.1	A		-12.5	24.6 - 45.6	1.28	A
Barium	294	292	A		0.7	204 - 380	12.25	A
Beryllium	9.59	10.6	A		-9.5	7.4 - 13.8	0.48	A
Cadmium	15.9	18.0	A		-11.7	12.6 - 23.4	0.610	A
Chromium	57.8	60.4	A		-4.3	42.3 - 78.5	2.89	A
Cobalt	45.5	51.9	A		-12.3	36.3 - 67.5	1.74	A
Copper	84.5	94.9	A		-11.0	66.4 - 123.4	3.10	A
Lead	76.5	85.1	A		-10.1	59.6 - 110.6	3.06	A
Mercury	0.806	1.01	W		-20.2	0.71 - 1.31	0.126	W
Nickel	98.2	106.9	A		-8.1	74.8 - 139.0	3.76	A
Selenium	3.20	3.53	A		-9.3	2.47 - 4.59	0.160	A
Silver	-0.002813		N	(29)		False Positive Test	0.000127	
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	19.6	21.6	A		-9.3	15.1 - 28.1	1.31	A
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	0.743	9.4	N		-92.1	6.6 - 12.2	0.0320	A
Vanadium	157	176	A		-10.8	123 - 229	5.76	A
Zinc	327	374	A		-12.6	262 - 486	20.71	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	NR	1020				714 - 1326		
Cesium-137	NR	789				552 - 1026		
Cobalt-57	NR					False Positive Test		
Cobalt-60	NR	760				532 - 988		
Iron-55	NR					False Positive Test		
Manganese-54	NR	745				522 - 969		
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	NR	555				389 - 722		
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	NR					False Positive Test		

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	67.35	74.7	A		-9.8	52.3 - 97.1	3.22	A
Cesium-134	929.4	1020	A		-8.9	714 - 1326	47.7	A
Cesium-137	735.6	789	A		-6.8	552 - 1026	37.8	A
Cobalt-57	1.95			A		False Positive Test	1.95	
Cobalt-60	685.5	760	A		-9.8	532 - 988	35.2	A
Iron-55	12.7			A		False Positive Test	12.7	
Manganese-54	672.3	745	A		-9.8	522 - 969	34.6	A
Nickel-63	553.6	629	A		-12.0	440 - 818	14.0	A
Plutonium-238	40.45	52.1	W		-22.4	36.5 - 67.7	1.99	A
Plutonium-239/240	48.43	61.4	W		-21.1	43.0 - 79.8	2.35	A
Potassium-40	484.8	555	A		-12.6	389 - 722	25.8	A
Strontium-90	486.0	572	A		-15.0	400 - 744	26.7	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	520.2	593	A		-12.3	415 - 771	14.1	A
Uranium-234	115.8	116	A		-0.2	81 - 151	4.8	A
Uranium-238	122.1	117	A		4.4	82 - 152	5.0	A
Zinc-65	4.5		A			False Positive Test	4.5	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	0.967	1.01	A		-4.3	0.71 - 1.31	0.22	W
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	NR	1020				714 - 1326		
Cesium-137	NR	789				552 - 1026		
Cobalt-57	NR					False Positive Test		
Cobalt-60	NR	760				532 - 988		
Iron-55	NR					False Positive Test		
Manganese-54	NR	745				522 - 969		
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	NR	555				389 - 722		
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	NR					False Positive Test		

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	81.4	119	N		-31.6	83 - 155	0.172	N
Arsenic	34.2	35.1	A		-2.6	24.6 - 45.6	0.646	N
Barium	300	292	A		2.7	204 - 380	2.32	N
Beryllium	10.8	10.6	A		1.9	7.4 - 13.8	0.039	N
Cadmium	17.63	18.0	A		-2.1	12.6 - 23.4	0.017	N
Chromium	63.5	60.4	A		5.1	42.3 - 78.5	0.037	N
Cobalt	49.5	51.9	A		-4.6	36.3 - 67.5	0.32	N
Copper	91.1	94.9	A		-4.0	66.4 - 123.4	1.5	N
Lead	91.9	85.1	A		8.0	59.6 - 110.6	0.054	N
Mercury	0.842	1.01	A		-16.6	0.71 - 1.31	0.0263	A
Nickel	114	106.9	A		6.6	74.8 - 139.0	0.5	N
Selenium	2.84	3.53	A		-19.5	2.47 - 4.59	0.293	A
Silver	0.787		N	(1)		False Positive Test	0.159	
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	21.4	21.6	A		-0.9	15.1 - 28.1	0.387	N
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	0.683	9.4	N		-92.7	6.6 - 12.2	0.032	A
Vanadium	169	176	A		-4.0	123 - 229	0.33	N
Zinc	387	374	A		3.5	262 - 486	0.27	N

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	NR	1020				714 - 1326		
Cesium-137	NR	789				552 - 1026		
Cobalt-57	NR					False Positive Test		
Cobalt-60	NR	760				532 - 988		
Iron-55	NR					False Positive Test		
Manganese-54	NR	745				522 - 969		
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	NR	555				389 - 722		
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	NR					False Positive Test		

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (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	118	133	A	(5)	-11.3	93 - 173	6	A	
Arsenic	27.8	35.8	W	(5)	-22.3	25.1 - 46.5	0.8	A	
Barium	610	685	A	(5)	-10.9	480 - 891	31	A	
Beryllium	9.72	11.6	A	(5)	-16.2	8.1 - 15.1	0.28	A	
Cadmium	15.7	18.1	A	(5)	-13.3	12.7 - 23.5	0.8	A	
Chromium	107	91.5	A	(5)	16.9	64.1 - 119.0	5	A	
Cobalt	47.9	54.2	A	(5)	-11.6	37.9 - 70.5	1.5	A	
Copper	75.8	98.5	W	(5)	-23.0	69.0 - 128.1	2.1	A	
Lead	91.2	92.0	A	(5)	-0.9	64.4 - 119.6	4.6	A	
Mercury	NR	1.01				0.71 - 1.31			
Nickel	100	114	A	(5)	-12.3	79.8 - 148.2	5	A	
Selenium	3.58	3.63	A	(5)	-1.4	2.54 - 4.72	0.18	A	
Silver	1.22		N	(1)		False Positive Test	0.04		
Technetium-99	NR	0.00094				0.00066 - 0.00122			
Thallium	21.8	21.8	A	(5)	0.0	15.3 - 28.3	1.1	A	
Uranium-235	0.0736	0.0679	A		8.4	0.0475 - 0.0883	0.0029	A	
Uranium-238	10.1	9.4	A		7.4	6.6 - 12.2	0.4	A	
Uranium-Total	10.2	9.4	A		8.5	6.6 - 12.2	0.4	A	
Vanadium	NR	176				123 - 229			
Zinc	302	393	W	(5)	-23.2	275 - 511	9	A	

Radiological								Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag	
Americium-241	69.2	74.7	A		-7.4	52.3 - 97.1	4.2	A	
Cesium-134	958	1020	A		-6.1	714 - 1326	9	N	
Cesium-137	866	789	A		9.8	552 - 1026	9	N	
Cobalt-57	0.01		A			False Positive Test	0.42		
Cobalt-60	818	760	A		7.6	532 - 988	4	N	
Iron-55	NR					False Positive Test			
Manganese-54	781	745	A		4.8	522 - 969	43	A	
Nickel-63	700	629	A		11.3	440 - 818	120	W	
Plutonium-238	53.7	52.1	A		3.1	36.5 - 67.7	2.8	A	
Plutonium-239/240	61.4	61.4	A		0.0	43.0 - 79.8	3.0	A	
Potassium-40	655	555	A		18.0	389 - 722	9	N	
Strontium-90	559	572	A		-2.3	400 - 744	21	A	

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	444	593	W		-25.1	415 - 771	66	A
Uranium-234	118	116	A		1.7	81 - 151	6	A
Uranium-238	120	117	A		2.6	82 - 152	6	A
Zinc-65	1.2		A			False Positive Test	1.4	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	14.5	119	N		-87.8	83 - 155	5.46	N
Arsenic	38.15	35.1	A		8.7	24.6 - 45.6	9.13	W
Barium	286.58	292	A		-1.9	204 - 380	15.92	A
Beryllium	9.96	10.6	A		-6.0	7.4 - 13.8	0.22	A
Cadmium	17.42	18.0	A		-3.2	12.6 - 23.4	0.47	A
Chromium	56.72	60.4	A		-6.1	42.3 - 78.5	2.48	A
Cobalt	45.87	51.9	A		-11.6	36.3 - 67.5	3.53	A
Copper	45.87	94.9	N		-51.7	66.4 - 123.4	3.53	A
Lead	77.56	85.1	A		-8.9	59.6 - 110.6	6.83	A
Mercury	1.029	1.01	A		1.9	0.71 - 1.31	0.097	A
Nickel	102.23	106.9	A		-4.4	74.8 - 139.0	2.26	A
Selenium	12.00	3.53	N		239.9	2.47 - 4.59	1.02	A
Silver	1.90		N	(1)		False Positive Test	0.11	
Technetium-99	0.0007013	0.00094	W		-25.4	0.00066 - 0.00122	0.0001	A
Thallium	19.24	21.6	A		-10.9	15.1 - 28.1	0.55	A
Uranium-235	0.0218	0.0679	N		-67.9	0.0475 - 0.0883	0.004	W
Uranium-238	2.887	9.4	N		-69.3	6.6 - 12.2	0.085	A
Uranium-Total	2.9088	9.4	N		-69.1	6.6 - 12.2	0.0985	A
Vanadium	146.66	176	A		-16.7	123 - 229	5.78	A
Zinc	378.72	374	A		1.3	262 - 486	17.20	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	NR	1020				714 - 1326		
Cesium-137	NR	789				552 - 1026		
Cobalt-57	NR					False Positive Test		
Cobalt-60	NR	760				532 - 988		
Iron-55	NR					False Positive Test		
Manganese-54	NR	745				522 - 969		
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	NR	555				389 - 722		
Strontium-90	NR	572				400 - 744		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	312	593	N		-47.4	415 - 771	3.46	N
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	NR					False Positive Test		

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	56.09	74.7	W		-24.9	52.3 - 97.1	14.38	W
Cesium-134	822.14	1020	A		-19.4	714 - 1326	46.47	A
Cesium-137	697.08	789	A		-11.7	552 - 1026	86.28	A
Cobalt-57	-13.366		A			False Positive Test	9.82	
Cobalt-60	608.28	760	A		-20.0	532 - 988	36.99	A
Iron-55	NR					False Positive Test		
Manganese-54	648.98	745	A		-12.9	522 - 969	70.52	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	430.75	555	W		-22.4	389 - 722	61.35	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	-24.739		A			False Positive Test	16.72	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	60.13	74.7	A		-19.5	52.3 - 97.1	1.53	A
Cesium-134	999.60	1020	A		-2.0	714 - 1326	13.02	N
Cesium-137	762.50	789	A		-3.4	552 - 1026	14.24	N
Cobalt-57	0.14		A			False Positive Test	2.36	
Cobalt-60	715.67	760	A		-5.8	532 - 988	10.73	N
Iron-55	NR					False Positive Test		
Manganese-54	721.33	745	A		-3.2	522 - 969	13.12	N
Nickel-63	NR	629				440 - 818		
Plutonium-238	50.26	52.1	A		-3.5	36.5 - 67.7	3.68	A
Plutonium-239/240	62.30	61.4	A		1.5	43.0 - 79.8	4.86	A
Potassium-40	525.33	555	A		-5.3	389 - 722	17.02	A
Strontium-90	368.66	572	N		-35.5	400 - 744	15.56	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	98.999	116	A		-14.7	81 - 151	9.516	A
Uranium-238	121.03	117	A		3.4	82 - 152	9.91	A
Zinc-65	1.80		A			False Positive Test	8.50	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	67.09	74.7	A		-10.2	52.3 - 97.1	2.08	A
Cesium-134	1034.07	1020	A		1.4	714 - 1326	12.28	N
Cesium-137	752.09	789	A		-4.7	552 - 1026	12.88	N
Cobalt-57	0.44			A		False Positive Test	1.33	
Cobalt-60	703.97	760	A		-7.4	532 - 988	9.68	N
Iron-55	NR					False Positive Test		
Manganese-54	709.02	745	A		-4.8	522 - 969	11.91	N
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	559.58	555	A		0.8	389 - 722	14.71	A
Strontium-90	NR	572				400 - 744		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	118.31	117	A		1.1	82 - 152	2.88	A
Zinc-65	1.94		A			False Positive Test	5.48	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (FMCEC99) Foods and Water Laboratories Center
 Ministry of Regional Municipalities and Water Resources
 Muscat, seeb 111

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	49.5	74.7	N		-33.7	52.3 - 97.1	4.6	A
Cesium-134	796.1	1020	W		-22.0	714 - 1326	8.11	N
Cesium-137	677.3	789	A		-14.2	552 - 1026	6.26	N
Cobalt-57	NR		N	(11)		False Positive Test		
Cobalt-60	668.3	760	A		-12.1	532 - 988	6.7	N
Iron-55	NR					False Positive Test		
Manganese-54	NR	745	N	(25)		522 - 969		
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	494	555	A		-11.0	389 - 722	17.7	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	NR		N	(11)		False Positive Test		

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	111	119	A		-6.7	83 - 155	7.45	A
Arsenic	33.5	35.1	A		-4.6	24.6 - 45.6	2.24	A
Barium	260	292	A		-11.0	204 - 380	17.3	A
Beryllium	10.8	10.6	A		1.9	7.4 - 13.8	0.720	A
Cadmium	15.6	18.0	A		-13.3	12.6 - 23.4	1.04	A
Chromium	55.7	60.4	A		-7.8	42.3 - 78.5	3.71	A
Cobalt	44.9	51.9	A		-13.5	36.3 - 67.5	2.99	A
Copper	94.5	94.9	A		-0.4	66.4 - 123.4	6.30	A
Lead	75.7	85.1	A		-11.0	59.6 - 110.6	5.04	A
Mercury	0.815	1.01	A		-19.3	0.71 - 1.31	0.0544	A
Nickel	93.0	106.9	A		-13.0	74.8 - 139.0	6.2	A
Selenium	3.45	3.53	A		-2.3	2.47 - 4.59	0.257	A
Silver	0.0234		A			False Positive Test	0.0331	
Technetium-99	0.000698	0.00094	W		-25.7	0.00066 - 0.00122	7.42E-5	A
Thallium	20.2	21.6	A		-6.5	15.1 - 28.1	1.36	A
Uranium-235	0.0817	0.0679	W		20.3	0.0475 - 0.0883	0.00613	A
Uranium-238	10.8	9.4	A		14.9	6.6 - 12.2	0.426	A
Uranium-Total	10.882	9.4	A		15.8	6.6 - 12.2	0.432	A
Vanadium	169	176	A		-4.0	123 - 229	11.3	A
Zinc	324	374	A		-13.4	262 - 486	21.6	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	86.1	74.7	A		15.3	52.3 - 97.1	5.61	A
Cesium-134	896	1020	A		-12.2	714 - 1326	45.8	A
Cesium-137	865	789	A		9.6	552 - 1026	36.6	A
Cobalt-57	0.227		A			False Positive Test	0.345	
Cobalt-60	761	760	A		0.1	532 - 988	37.1	A
Iron-55	-48.0		A			False Positive Test	67.1	
Manganese-54	816	745	A		9.5	522 - 969	44.0	A
Nickel-63	552	629	A		-12.2	440 - 818	56.4	A
Plutonium-238	55.3	52.1	A		6.1	36.5 - 67.7	3.68	A
Plutonium-239/240	59.9	61.4	A		-2.4	43.0 - 79.8	3.90	A
Potassium-40	604	555	A		8.8	389 - 722	31.6	A
Strontium-90	609	572	A		6.5	400 - 744	57.1	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	514	593	A		-13.3	415 - 771	36.5	A
Uranium-234	125	116	A		7.8	81 - 151	7.50	A
Uranium-238	122	117	A		4.3	82 - 152	7.34	A
Zinc-65	-0.650		A			False Positive Test	1.43	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	NR	1020	N	(25)		714 - 1326		
Cesium-137	779.77	789	A		-1.2	552 - 1026	55.73	A
Cobalt-57	-0.52		A			False Positive Test	3.25	
Cobalt-60	713.76	760	A		-6.1	532 - 988	49.02	A
Iron-55	NR					False Positive Test		
Manganese-54	733.65	745	A		-1.5	522 - 969	52.64	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	589.42	555	A		6.2	389 - 722	47.79	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	-1.12		A			False Positive Test	9.52	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	936.4	1020	A		-8.2	714 - 1326	38.79	A
Cesium-137	812.2	789	A		2.9	552 - 1026	74.61	A
Cobalt-57	0.4470			A		False Positive Test	2.653	
Cobalt-60	759.1	760	A		-0.1	532 - 988	43.73	A
Iron-55	NR					False Positive Test		
Manganese-54	784.7	745	A		5.3	522 - 969	74.24	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	583.2	555	A		5.1	389 - 722	50.80	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	-7.546		A			False Positive Test	5.288	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	50	74.7	N		-33.1	52.3 - 97.1	15	W
Cesium-134	1070	1020	A		4.9	714 - 1326	65	A
Cesium-137	846	789	A		7.2	552 - 1026	54	A
Cobalt-57	1		A			False Positive Test	1	
Cobalt-60	794	760	A		4.5	532 - 988	48	A
Iron-55	NR					False Positive Test		
Manganese-54	775	745	A		4.0	522 - 969	48	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	48.9	52.1	A		-6.1	36.5 - 67.7	2.7	A
Plutonium-239/240	51.5	61.4	A		-16.1	43.0 - 79.8	2.8	A
Potassium-40	545	555	A		-1.8	389 - 722	35	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	24.6	116	N		-78.8	81 - 151	1.5	A
Uranium-238	26.5	117	N		-77.4	82 - 152	1.6	A
Zinc-65	4.4		A			False Positive Test	5	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	62.44	74.7	A		-16.4	52.3 - 97.1	3.85	A
Cesium-134	846.50	1020	A		-17.0	714 - 1326	68.05	A
Cesium-137	753.00	789	A		-4.6	552 - 1026	29.80	A
Cobalt-57	-0.44			A		False Positive Test	1.75	
Cobalt-60	689.25	760	A		-9.3	532 - 988	34.42	A
Iron-55	NR					False Positive Test		
Manganese-54	734.38	745	A		-1.4	522 - 969	65.26	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	715.50	555	W		28.9	389 - 722	112.86	W
Strontium-90	NR	572				400 - 744		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	1014.29	116	N		774.4	81 - 151	659.14	N
Uranium-238	186.50	117	N		59.4	82 - 152	14.20	A
Zinc-65	1.59		A			False Positive Test	7.08	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (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	119				83 - 155		
Arsenic	35.6	35.8	A	(5)	-0.6	25.1 - 46.5	1.3	A
Barium	704	685	A	(5)	2.8	480 - 891	29	A
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	18.0	18.1	A	(5)	-0.6	12.7 - 23.5	1.2	A
Chromium	91	91.5	A	(5)	-0.5	64.1 - 119.0	5	A
Cobalt	53.8	54.2	A	(5)	-0.7	37.9 - 70.5	2.2	A
Copper	96	98.5	A	(5)	-2.5	69.0 - 128.1	4	A
Lead	91.0	92.0	A	(5)	-1.1	64.4 - 119.6	2.6	A
Mercury	NR	1.01				0.71 - 1.31		
Nickel	114	114	A	(5)	0.0	79.8 - 148.2	4	A
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	395	393	A	(5)	0.5	275 - 511	12	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	68.5	74.7	A		-8.3	52.3 - 97.1	1.8	A
Cesium-134	979	1020	A		-4.0	714 - 1326	32	A
Cesium-137	796	789	A		0.9	552 - 1026	24	A
Cobalt-57	0.4		A			False Positive Test	0.5	
Cobalt-60	752	760	A		-1.1	532 - 988	25	A
Iron-55	NR					False Positive Test		
Manganese-54	739	745	A		-0.8	522 - 969	26	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	50.9	52.1	A		-2.3	36.5 - 67.7	1.5	A
Plutonium-239/240	56.6	61.4	A		-7.8	43.0 - 79.8	1.6	A
Potassium-40	518	555	A		-6.7	389 - 722	20	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	-1.8		A			False Positive Test	3.3	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	65.1	74.7	A		-12.9	52.3 - 97.1	2.9	A
Cesium-134	1027	1020	A		0.7	714 - 1326	11	N
Cesium-137	890	789	A		12.8	552 - 1026	14	N
Cobalt-57	0.25			A		False Positive Test	0.75	
Cobalt-60	827.6	760	A		8.9	532 - 988	8.1	N
Iron-55	NR					False Positive Test		
Manganese-54	828	745	A		11.1	522 - 969	11	N
Nickel-63	NR	629				440 - 818		
Plutonium-238	51.0	52.1	A		-2.1	36.5 - 67.7	2.4	A
Plutonium-239/240	57.0	61.4	A		-7.2	43.0 - 79.8	2.6	A
Potassium-40	607	555	A		9.4	389 - 722	17	A
Strontium-90	461	572	A		-19.4	400 - 744	21	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	105.9	116	A		-8.7	81 - 151	4.0	A
Uranium-238	109.8	117	A		-6.2	82 - 152	4.1	A
Zinc-65	1.3		A			False Positive Test	2.2	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7	N	(28)		52.3 - 97.1		
Cesium-134	951.8	1020	A		-6.7	714 - 1326	19.8	A
Cesium-137	827.5	789	A		4.9	552 - 1026	49.8	A
Cobalt-57	1.0		A			False Positive Test	0.6	
Cobalt-60	726.5	760	A		-4.4	532 - 988	20.9	A
Iron-55	NR					False Positive Test		
Manganese-54	762.3	745	A		2.3	522 - 969	39.1	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	545.8	555	A		-1.7	389 - 722	25.6	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	2.9		A			False Positive Test	1.0	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	916.5	1020	A		-10.1	714 - 1326	36.2	A
Cesium-137	876.5	789	A		11.1	552 - 1026	39.0	A
Cobalt-57	0.29			A		False Positive Test	0.69	
Cobalt-60	845.8	760	A		11.3	532 - 988	35.2	A
Iron-55	NR					False Positive Test		
Manganese-54	836.6	745	A		12.3	522 - 969	36.5	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	655.1	555	A		18.0	389 - 722	35.9	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	-1.81		A			False Positive Test	1.23	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(JAEC99) Research Laboratories and Information Directorate

Jordan Atomic Energy Commission

Amman, Jordan 70 (11934)

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	94.860	119	W		-20.3	83 - 155	9.486	A
Arsenic	23.920	35.1	N		-31.9	24.6 - 45.6	2.392	A
Barium	598.600	292	N		105.0	204 - 380	59.86	A
Beryllium	10.380	10.6	A		-2.1	7.4 - 13.8	1.038	A
Cadmium	13.240	18.0	W		-26.4	12.6 - 23.4	1.324	A
Chromium	76.770	60.4	W		27.1	42.3 - 78.5	7.677	A
Cobalt	43.220	51.9	A		-16.7	36.3 - 67.5	4.322	A
Copper	74.63	94.9	W		-21.4	66.4 - 123.4	7.463	A
Lead	79.830	85.1	A		-6.2	59.6 - 110.6	7.983	A
Mercury	NR	1.01				0.71 - 1.31		
Nickel	79.840	106.9	W		-25.3	74.8 - 139.0	7.984	A
Selenium	NR	3.53				2.47 - 4.59		
Silver	1.452		N	(1)		False Positive Test	0.145	
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	18.900	21.6	A		-12.5	15.1 - 28.1	1.89	A
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	3.651	9.4	N		-61.2	6.6 - 12.2	0.365	A
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	195.700	176	A		11.2	123 - 229	19.57	A
Zinc	362.400	374	A		-3.1	262 - 486	36.24	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	1060.5	1020	A		4.0	714 - 1326	4.8	N
Cesium-137	825.4	789	A		4.6	552 - 1026	5.9	N
Cobalt-57	NR		N	(11)		False Positive Test		
Cobalt-60	754.3	760	A		-0.8	532 - 988	4.0	N
Iron-55	NR					False Positive Test		
Manganese-54	781.6	745	A		4.9	522 - 969	5.2	N
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	602.2	555	A		8.5	389 - 722	11.8	N
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	NR		N	(11)		False Positive Test		

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(JLNN01) Jefferson Laboratory

111 Hadron Drive

Newport News, VA 23606

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	73.44	74.7	A		-1.7	52.3 - 97.1	2.57	A
Cesium-134	966	1020	A		-5.3	714 - 1326	10.1	N
Cesium-137	854	789	A		8.2	552 - 1026	21.8	A
Cobalt-57	2.6			A		False Positive Test	3.87	
Cobalt-60	795	760	A		4.6	532 - 988	13.5	N
Iron-55	NR					False Positive Test		
Manganese-54	777	745	A		4.3	522 - 969	17.5	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	577	555	A		4.0	389 - 722	16.3	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	1.50		N	(1)		False Positive Test	0.45	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (LANL01) Los Alamos National Laboratory
 Mail Stop J514
 Los Alamos, NM 87545

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	853	1020	A		-16.4	714 - 1326	40	A
Cesium-137	808	789	A		2.4	552 - 1026	37	A
Cobalt-57	NR		N	(11)		False Positive Test		
Cobalt-60	743	760	A		-2.2	532 - 988	36	A
Iron-55	NR					False Positive Test		
Manganese-54	765	745	A		2.7	522 - 969	36	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	NR	555	N	(28)		389 - 722		
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	NR		N	(11)		False Positive Test		

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

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

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	925.8	1020	A		-9.2	714 - 1326	49.7	A
Cesium-137	803.9	789	A		1.9	552 - 1026	43.35	A
Cobalt-57	1.039			A		False Positive Test	1.839	
Cobalt-60	743.4	760	A		-2.2	532 - 988	40.9	A
Iron-55	NR					False Positive Test		
Manganese-54	755.8	745	A		1.5	522 - 969	40.95	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	542.9	555	A		-2.2	389 - 722	50.81	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	-2.874		A			False Positive Test	28.74	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(LDRA99) Laboratori de Radiologia Ambiental-Universitat de Barcelona

Facultat de Química

Barcelona, Catalunya 08028

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	72	74.7	A		-3.6	52.3 - 97.1	7	A
Cesium-134	960	1020	A		-5.9	714 - 1326	70	A
Cesium-137	810	789	A		2.7	552 - 1026	60	A
Cobalt-57	0.002		A			False Positive Test	0.003	
Cobalt-60	750	760	A		-1.3	532 - 988	60	A
Iron-55	NR					False Positive Test		
Manganese-54	560	745	W		-24.8	522 - 969	40	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	48.5	52.1	A		-6.9	36.5 - 67.7	1.1	A
Plutonium-239/240	57.6	61.4	A		-6.2	43.0 - 79.8	1.4	A
Potassium-40	560	555	A		0.9	389 - 722	40	A
Strontium-90	547	572	A		-4.4	400 - 744	22	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	30.0	116	N		-74.1	81 - 151	1.2	A
Uranium-238	34.6	117	N		-70.4	82 - 152	1.3	A
Zinc-65	0.02		A			False Positive Test	0.03	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	1033.33	1020	A		1.3	714 - 1326	70.00	A
Cesium-137	865.33	789	A		9.7	552 - 1026	61.67	A
Cobalt-57	-0.18			A		False Positive Test	0.71	
Cobalt-60	801.33	760	A		5.4	532 - 988	57.67	A
Iron-55	NR					False Positive Test		
Manganese-54	807.67	745	A		8.4	522 - 969	57.67	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	578.67	555	A		4.3	389 - 722	45.33	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	3.89		A			False Positive Test	2.20	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (MART01) Fluor B&W Ports Analytical Laboratory
 Lab COC, Bldg. X-710, Rm 222
 Piketon, OH 45661-

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	104	119	A		-12.6	83 - 155	3.12	A
Arsenic	31.7	35.1	A		-9.7	24.6 - 45.6	0.951	A
Barium	261	292	A		-10.6	204 - 380	7.83	A
Beryllium	11.2	10.6	A		5.7	7.4 - 13.8	0.336	A
Cadmium	18.4	18.0	A		2.2	12.6 - 23.4	0.552	A
Chromium	56.2	60.4	A		-7.0	42.3 - 78.5	1.69	A
Cobalt	46.3	51.9	A		-10.8	36.3 - 67.5	1.39	A
Copper	98.4	94.9	A		3.7	66.4 - 123.4	2.95	A
Lead	75.5	85.1	A		-11.3	59.6 - 110.6	2.26	A
Mercury	0.876	1.01	A		-13.3	0.71 - 1.31	0.272	N
Nickel	93.3	106.9	A		-12.7	74.8 - 139.0	2.80	A
Selenium	5.14	3.53	N		45.6	2.47 - 4.59	5.14	N
Silver	0.722		A			False Positive Test	0.722	
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	5.26	21.6	N		-75.6	15.1 - 28.1	2.86	N
Uranium-235	0.0490	0.0679	W		-27.8	0.0475 - 0.0883	0.00818	W
Uranium-238	6.77	9.4	W		-28.0	6.6 - 12.2	0.677	A
Uranium-Total	6.82	9.4	W		-27.4	6.6 - 12.2	0.682	A
Vanadium	163	176	A		-7.4	123 - 229	4.89	A
Zinc	367	374	A		-1.9	262 - 486	11.0	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	74.00	74.7	A		-0.9	52.3 - 97.1	4.450	A
Cesium-134	936.3	1020	A		-8.2	714 - 1326	25.71	A
Cesium-137	844.3	789	A		7.0	552 - 1026	30.61	A
Cobalt-57	-0.4933		A			False Positive Test	0.7410	
Cobalt-60	781.8	760	A		2.9	532 - 988	15.61	N
Iron-55	NR					False Positive Test		
Manganese-54	800.1	745	A		7.4	522 - 969	58.36	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	58.55	52.1	A		12.4	36.5 - 67.7	4.490	A
Plutonium-239/240	68.55	61.4	A		11.6	43.0 - 79.8	5.174	A
Potassium-40	522.1	555	A		-5.9	389 - 722	37.49	A
Strontium-90	NR	572				400 - 744		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	548	593	A		-7.6	415 - 771	9.31	N
Uranium-234	72.71	116	N		-37.3	81 - 151	5.462	A
Uranium-238	75.06	117	N		-35.8	82 - 152	5.703	A
Zinc-65	0.8057		A			False Positive Test	8.871	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	893	1020	A		-12.5	714 - 1326	16	N
Cesium-137	819	789	A		3.8	552 - 1026	23	A
Cobalt-57	-4.45			A		False Positive Test	10.4	
Cobalt-60	779	760	A		2.5	532 - 988	17	A
Iron-55	NR					False Positive Test		
Manganese-54	782	745	A		5.0	522 - 969	20	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	609	555	A		9.7	389 - 722	34	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	-12		A			False Positive Test	11	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (MSDH01) Mississippi State Dept of Health
 Radiological Environmental Laboratory
 Jackson, MS 39216

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	105.4	74.7	N		41.1	52.3 - 97.1	77.0	N
Cesium-134	1187.6	1020	A		16.4	714 - 1326	10.7	N
Cesium-137	1020.2	789	W		29.3	552 - 1026	15.1	N
Cobalt-57	-0.073		A			False Positive Test	6.75	
Cobalt-60	951.0	760	W		25.1	532 - 988	10.6	N
Iron-55	NR					False Positive Test		
Manganese-54	953.7	745	W		28.0	522 - 969	14.0	N
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	801.0	555	N		44.3	389 - 722	49.8	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	-18.94		A			False Positive Test	18.54	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

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



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

Laboratory Results For MAPEP-19-MaS41

(NARL01) National Analytical Radiation Environmental Laboratory

540 S. Morris Ave.

Montgomery, AL 36115-2601

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	65.3	74.7	A		-12.6	52.3 - 97.1	9.06	A
Cesium-134	993	1020	A		-2.6	714 - 1326	53.3	A
Cesium-137	813	789	A		3.0	552 - 1026	43.7	A
Cobalt-57	-0.00417			A		False Positive Test	0.283	
Cobalt-60	734	760	A		-3.4	532 - 988	38.2	A
Iron-55	NR					False Positive Test		
Manganese-54	760	745	A		2.0	522 - 969	40.7	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	49.6	52.1	A		-4.8	36.5 - 67.7	3.06	A
Plutonium-239/240	56.0	61.4	A		-8.8	43.0 - 79.8	3.35	A
Potassium-40	568	555	A		2.3	389 - 722	31.2	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	116	116	A		0.0	81 - 151	6.74	A
Uranium-238	122	117	A		4.3	82 - 152	7.01	A
Zinc-65	0.104		A			False Positive Test	1.14	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(NARL02) USEPA - NAREL - MERL

540 S Morris Ave

Montgomery, AL 36115

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	1140	1020	A		11.8	714 - 1326	15.0	N
Cesium-137	904	789	A		14.6	552 - 1026	20.0	A
Cobalt-57	0.0489			A		False Positive Test	1.40	
Cobalt-60	840	760	A		10.5	532 - 988	12.0	N
Iron-55	NR					False Positive Test		
Manganese-54	818	745	A		9.8	522 - 969	18.0	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	545	555	A		-1.8	389 - 722	19.0	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	4.41		A			False Positive Test	1.90	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	114.7	119	A		-3.6	83 - 155	1.70	N
Arsenic	40.0	35.1	A		14.0	24.6 - 45.6	0.97	A
Barium	314	292	A		7.5	204 - 380	8.92	A
Beryllium	10.9	10.6	A		2.8	7.4 - 13.8	0.62	A
Cadmium	17.2	18.0	A		-4.4	12.6 - 23.4	0.31	N
Chromium	59.9	60.4	A		-0.8	42.3 - 78.5	1.30	A
Cobalt	50.8	51.9	A		-2.1	36.3 - 67.5	1.32	A
Copper	94.1	94.9	A		-0.8	66.4 - 123.4	2.72	A
Lead	85.8	85.1	A		0.8	59.6 - 110.6	1.61	N
Mercury	7.93	1.01	N		685.1	0.71 - 1.31	0.06	N
Nickel	107	106.9	A		0.1	74.8 - 139.0	3.40	A
Selenium	4.42	3.53	W		25.2	2.47 - 4.59	0.40	A
Silver	1.24		N	(1)		False Positive Test	0.13	
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	20.8	21.6	A		-3.7	15.1 - 28.1	0.38	N
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	176	176	A		0.0	123 - 229	3.70	A
Zinc	350	374	A		-6.4	262 - 486	12.9	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	53.6	74.7	W		-28.2	52.3 - 97.1	6.53	A
Cesium-134	986	1020	A		-3.3	714 - 1326	57.9	A
Cesium-137	910	789	A		15.3	552 - 1026	47.4	A
Cobalt-57	4.81		A			False Positive Test	3.52	
Cobalt-60	849	760	A		11.7	532 - 988	40.0	A
Iron-55	43.5		A			False Positive Test	71.6	
Manganese-54	857	745	A		15.0	522 - 969	46.3	A
Nickel-63	654	629	A		4.0	440 - 818	98.5	W
Plutonium-238	41.6	52.1	W		-20.2	36.5 - 67.7	6.38	W
Plutonium-239/240	61.1	61.4	A		-0.5	43.0 - 79.8	5.90	A
Potassium-40	594	555	A		7.0	389 - 722	36.1	A
Strontium-90	645	572	A		12.8	400 - 744	52.5	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	712	593	W		20.1	415 - 771	41.3	A
Uranium-234	114	116	A		-1.7	81 - 151	7.42	A
Uranium-238	123	117	A		5.1	82 - 152	7.71	A
Zinc-65	-4.07		A			False Positive Test	5.92	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	63.4	74.7	A		-15.1	52.3 - 97.1	2.5	A
Cesium-134	868	1020	A		-14.9	714 - 1326	39	A
Cesium-137	789	789	A		0.0	552 - 1026	34	A
Cobalt-57	0.44			A		False Positive Test	0.73	
Cobalt-60	740	760	A		-2.6	532 - 988	32	A
Iron-55	NR					False Positive Test		
Manganese-54	699	745	A		-6.2	522 - 969	25	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	548	555	A		-1.3	389 - 722	24	A
Strontium-90	NR	572				400 - 744		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	121.0	117	A		3.4	82 - 152	6.1	A
Zinc-65	2.31		N	(1)		False Positive Test	0.48	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (NOCS99) National Oceanography Centre, Southampton
 GAU-Radioanalytical
 Southampton, Hampshire SO14 3ZH

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	66	74.7	A		-11.6	52.3 - 97.1	5	A
Cesium-134	1120	1020	A		9.8	714 - 1326	30	A
Cesium-137	850	789	A		7.7	552 - 1026	20	A
Cobalt-57	2		A			False Positive Test	9	
Cobalt-60	810	760	A		6.6	532 - 988	20	A
Iron-55	40		A			False Positive Test	40	
Manganese-54	780	745	A		4.7	522 - 969	20	A
Nickel-63	570	629	A		-9.4	440 - 818	30	A
Plutonium-238	49	52.1	A		-6.0	36.5 - 67.7	3	A
Plutonium-239/240	56	61.4	A		-8.8	43.0 - 79.8	3	A
Potassium-40	530	555	A		-4.5	389 - 722	20	A
Strontium-90	480	572	A		-16.1	400 - 744	30	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	550	593	A		-7.3	415 - 771	30	A
Uranium-234	120	116	A		3.4	81 - 151	10	A
Uranium-238	130	117	A		11.1	82 - 152	10	A
Zinc-65	10		A			False Positive Test	70	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	69.6	74.7	A		-6.8	52.3 - 97.1	5.0	A
Cesium-134	984	1020	A		-3.5	714 - 1326	59	A
Cesium-137	790	789	A		0.1	552 - 1026	48	A
Cobalt-57	NR		N	(11)		False Positive Test		
Cobalt-60	731	760	A		-3.8	532 - 988	46	A
Iron-55	NR					False Positive Test		
Manganese-54	724	745	A		-2.8	522 - 969	44	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	52.7	52.1	A		1.2	36.5 - 67.7	3.3	A
Plutonium-239/240	60.7	61.4	A		-1.1	43.0 - 79.8	3.6	A
Potassium-40	496	555	A		-10.6	389 - 722	33	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	30.0	116	N		-74.1	81 - 151	2.3	A
Uranium-238	26.1	117	N		-77.7	82 - 152	2.1	A
Zinc-65	NR		N	(11)		False Positive Test		

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	1050	1020	A		2.9	714 - 1326	30.0	A
Cesium-137	831	789	A		5.3	552 - 1026	50.0	A
Cobalt-57	0.504			A		False Positive Test	2.51	
Cobalt-60	774	760	A		1.8	532 - 988	22.0	A
Iron-55	NR					False Positive Test		
Manganese-54	763	745	A		2.4	522 - 969	45.9	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	515	555	A		-7.2	389 - 722	23.1	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	2.67		A			False Positive Test	1.18	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	105.6	119	A		-11.3	83 - 155	4.8	A
Arsenic	41.6	35.1	A		18.5	24.6 - 45.6	2.4	A
Barium	262	292	A		-10.3	204 - 380	11	A
Beryllium	9.45	10.6	A		-10.8	7.4 - 13.8	0.34	A
Cadmium	17.23	18.0	A		-4.3	12.6 - 23.4	0.71	A
Chromium	59.8	60.4	A		-1.0	42.3 - 78.5	3.6	A
Cobalt	50.2	51.9	A		-3.3	36.3 - 67.5	1.6	A
Copper	87.9	94.9	A		-7.4	66.4 - 123.4	2.8	A
Lead	86.5	85.1	A		1.6	59.6 - 110.6	3.6	A
Mercury	NR	1.01				0.71 - 1.31		
Nickel	101.9	106.9	A		-4.7	74.8 - 139.0	4.1	A
Selenium	2.87	3.53	A		-18.7	2.47 - 4.59	0.34	A
Silver	2.0		A			False Positive Test	2.0	
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	20.74	21.6	A		-4.0	15.1 - 28.1	0.89	A
Uranium-235	0.067	0.0679	A		-1.3	0.0475 - 0.0883	0.002	A
Uranium-238	9.39	9.4	A		-0.1	6.6 - 12.2	0.29	A
Uranium-Total	9.46	9.4	A		0.6	6.6 - 12.2	0.29	A
Vanadium	188	176	A		6.8	123 - 229	11	A
Zinc	354	374	A		-5.3	262 - 486	13	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	66.6	74.7	A		-10.8	52.3 - 97.1	3.9	A
Cesium-134	980	1020	A		-3.9	714 - 1326	42	A
Cesium-137	783	789	A		-0.8	552 - 1026	30	A
Cobalt-57	0.05		A			False Positive Test	0.99	
Cobalt-60	731	760	A		-3.8	532 - 988	24	A
Iron-55	-12		A			False Positive Test	19	
Manganese-54	728	745	A		-2.3	522 - 969	32	A
Nickel-63	642	629	A		2.1	440 - 818	26	A
Plutonium-238	51.8	52.1	A		-0.6	36.5 - 67.7	3.2	A
Plutonium-239/240	61.3	61.4	A		-0.2	43.0 - 79.8	3.7	A
Potassium-40	555	555	A		0.0	389 - 722	30	A
Strontium-90	550	572	A		-3.8	400 - 744	16	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	573	593	A		-3.4	415 - 771	27	A
Uranium-234	111.9	116	A		-3.5	81 - 151	6.2	A
Uranium-238	119.7	117	A		2.3	82 - 152	6.5	A
Zinc-65	-10.3		A			False Positive Test	5.3	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	97.1	119	A		-18.4	83 - 155	0.1	N
Arsenic	32.9	35.1	A		-6.3	24.6 - 45.6	0.1	N
Barium	288	292	A		-1.4	204 - 380	0.1	N
Beryllium	10.3	10.6	A		-2.8	7.4 - 13.8	0.1	N
Cadmium	17.2	18.0	A		-4.4	12.6 - 23.4	0.1	N
Chromium	62.7	60.4	A		3.8	42.3 - 78.5	0.1	N
Cobalt	53.3	51.9	A		2.7	36.3 - 67.5	0.1	N
Copper	91.1	94.9	A		-4.0	66.4 - 123.4	0.1	N
Lead	83.8	85.1	A		-1.5	59.6 - 110.6	0.1	N
Mercury	0.851	1.01	A		-15.7	0.71 - 1.31	0.001	N
Nickel	110	106.9	A		2.9	74.8 - 139.0	0.1	N
Selenium	3.4	3.53	A		-3.7	2.47 - 4.59	0.1	A
Silver	-1		N	(29)		False Positive Test	0.1	
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	19.2	21.6	A		-11.1	15.1 - 28.1	0.1	N
Uranium-235	0.0152	0.0679	N		-77.6	0.0475 - 0.0883	0.001	A
Uranium-238	2.18	9.4	N		-76.8	6.6 - 12.2	0.1	A
Uranium-Total	1.86	9.4	N		-80.2	6.6 - 12.2	0.2	A
Vanadium	178	176	A		1.1	123 - 229	0.1	N
Zinc	334	374	A		-10.7	262 - 486	0.1	N

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	70.7	74.7	A		-5.4	52.3 - 97.1	5.42	A
Cesium-134	1020	1020	A		0.0	714 - 1326	63.9	A
Cesium-137	864	789	A		9.5	552 - 1026	55.2	A
Cobalt-57	-.04		A			False Positive Test	1.25	
Cobalt-60	835	760	A		9.9	532 - 988	40	A
Iron-55	NR					False Positive Test		
Manganese-54	829	745	A		11.3	522 - 969	48.8	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	35.4	52.1	N		-32.1	36.5 - 67.7	2.91	A
Plutonium-239/240	40.6	61.4	N		-33.9	43.0 - 79.8	3.11	A
Potassium-40	622	555	A		12.1	389 - 722	37.8	A
Strontium-90	577	572	A		0.9	400 - 744	13.5	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	418	593	W		-29.5	415 - 771	23.1	A
Uranium-234	24.9	116	N		-78.5	81 - 151	6	W
Uranium-238	30.9	117	N		-73.6	82 - 152	6.5	W
Zinc-65	21.8		A			False Positive Test	7.76	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	124	119	A		4.2	83 - 155	4.13333	A
Arsenic	33.8	35.1	A		-3.7	24.6 - 45.6	1.12667	A
Barium	295	292	A		1.0	204 - 380	9.83333	A
Beryllium	10.9	10.6	A		2.8	7.4 - 13.8	0.36333	A
Cadmium	18.1	18.0	A		0.6	12.6 - 23.4	0.60333	A
Chromium	66.1	60.4	A		9.4	42.3 - 78.5	2.20333	A
Cobalt	52.3	51.9	A		0.8	36.3 - 67.5	1.74333	A
Copper	93.0	94.9	A		-2.0	66.4 - 123.4	3.10000	A
Lead	86.5	85.1	A		1.6	59.6 - 110.6	2.88333	A
Mercury	0.8270	1.01	A		-18.1	0.71 - 1.31	0.02757	A
Nickel	113	106.9	A		5.7	74.8 - 139.0	3.76667	A
Selenium	2.70	3.53	W		-23.5	2.47 - 4.59	0.09000	A
Silver	0.3110		N	(1)		False Positive Test	0.09067	
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	21.8	21.6	A		0.9	15.1 - 28.1	0.72667	A
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	178	176	A		1.1	123 - 229	5.93333	A
Zinc	374	374	A		0.0	262 - 486	15.58333	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	NR	1020				714 - 1326		
Cesium-137	NR	789				552 - 1026		
Cobalt-57	NR					False Positive Test		
Cobalt-60	NR	760				532 - 988		
Iron-55	NR					False Positive Test		
Manganese-54	NR	745				522 - 969		
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	NR	555				389 - 722		
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	NR					False Positive Test		

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	2.2	9.4	N		-76.6	6.6 - 12.2	0.2	A
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	70.0	74.7	A		-6.3	52.3 - 97.1	4.0	A
Cesium-134	755	1020	W		-26.0	714 - 1326	31	A
Cesium-137	720	789	A		-8.7	552 - 1026	26	A
Cobalt-57	-0.13		A			False Positive Test	2.6	
Cobalt-60	685	760	A		-9.9	532 - 988	15	A
Iron-55	NR					False Positive Test		
Manganese-54	688	745	A		-7.7	522 - 969	20	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	45.3	52.1	A		-13.1	36.5 - 67.7	1.7	A
Plutonium-239/240	53.1	61.4	A		-13.5	43.0 - 79.8	1.9	A
Potassium-40	524	555	A		-5.6	389 - 722	21	A
Strontium-90	374.68	572	N		-34.5	400 - 744	10.99	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	26.7	116	N		-77.0	81 - 151	4.4	W
Uranium-238	29.55	117	N		-74.7	82 - 152	4.6	W
Zinc-65	2.82		A			False Positive Test	4.37	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	98.132	119	A		-17.5	83 - 155	12932	N
Arsenic	31.536	35.1	A		-10.2	24.6 - 45.6	1.165	A
Barium	290.192	292	A		-0.6	204 - 380	378.31	N
Beryllium	10.609	10.6	A		0.1	7.4 - 13.8	14.118	N
Cadmium	19.572	18.0	A		8.7	12.6 - 23.4	25.326	N
Chromium	64.417	60.4	A		6.7	42.3 - 78.5	0.133	N
Cobalt	55.520	51.9	A		7.0	36.3 - 67.5	72.578	N
Copper	93.767	94.9	A		-1.2	66.4 - 123.4	122.64	N
Lead	88.656	85.1	A		4.2	59.6 - 110.6	62.479	N
Mercury	1.549	1.01	N		53.4	0.71 - 1.31	0.008	N
Nickel	108.839	106.9	A		1.8	74.8 - 139.0	16769	N
Selenium	4.169	3.53	A		18.1	2.47 - 4.59	5.013	N
Silver	0.198		N	(1)		False Positive Test	0.007	
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	22.006	21.6	A		1.9	15.1 - 28.1	29.295	N
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	0.675	9.4	N		-92.8	6.6 - 12.2	0.811	N
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	168.588	176	A		-4.2	123 - 229	1.039	N
Zinc	368.987	374	A		-1.3	262 - 486	477.357	N

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	NR	1020				714 - 1326		
Cesium-137	NR	789				552 - 1026		
Cobalt-57	NR					False Positive Test		
Cobalt-60	NR	760				532 - 988		
Iron-55	NR					False Positive Test		
Manganese-54	NR	745				522 - 969		
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	NR	555				389 - 722		
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	NR					False Positive Test		

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	7.30	9.4	W		-22.3	6.6 - 12.2	0.10	N
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	900	1020	A		-11.8	714 - 1326	15	N
Cesium-137	768	789	A		-2.7	552 - 1026	14	N
Cobalt-57	3.5		A			False Positive Test	3.5	
Cobalt-60	681	760	A		-10.4	532 - 988	12	N
Iron-55	NR					False Positive Test		
Manganese-54	713	745	A		-4.3	522 - 969	12	N
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	465	555	A		-16.2	389 - 722	41	A
Strontium-90	504	572	A		-11.9	400 - 744	101	W

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	121	116	A		4.3	81 - 151	5	A
Uranium-238	90.2	117	W		-22.9	82 - 152	4.2	A
Zinc-65	7		A			False Positive Test	7	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	63.8	74.7	A		-14.6	52.3 - 97.1	6.1	A
Cesium-134	993	1020	A		-2.6	714 - 1326	23	A
Cesium-137	762	789	A		-3.4	552 - 1026	25	A
Cobalt-57	0.75		A			False Positive Test	0.39	
Cobalt-60	712	760	A		-6.3	532 - 988	20	A
Iron-55	NR					False Positive Test		
Manganese-54	722	745	A		-3.1	522 - 969	24	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	47.6	52.1	A		-8.6	36.5 - 67.7	7.3	W
Plutonium-239/240	52.4	61.4	A		-14.7	43.0 - 79.8	4.0	A
Potassium-40	503	555	A		-9.4	389 - 722	17	A
Strontium-90	537	572	A		-6.1	400 - 744	30	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	96.8	116	A		-16.6	81 - 151	6.8	A
Uranium-238	104.6	117	A		-10.6	82 - 152	7.0	A
Zinc-65	-1.3		A			False Positive Test	1.2	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (SLAC01) SLAC DOE National Accelerator Laboratory
 2575 Sand Hill Road
 Menlo Park, CA 94025

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	896	1020	A		-12.2	714 - 1326	90	A
Cesium-137	799	789	A		1.3	552 - 1026	80	A
Cobalt-57	2			A		False Positive Test	2	
Cobalt-60	727	760	A		-4.3	532 - 988	73	A
Iron-55	NR					False Positive Test		
Manganese-54	739	745	A		-0.8	522 - 969	74	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	538	555	A		-3.1	389 - 722	54	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	3		A			False Positive Test		3

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	120	119	A		0.8	83 - 155	8.17	A
Arsenic	32.6	35.1	A		-7.1	24.6 - 45.6	2.44	A
Barium	311	292	A		6.5	204 - 380	21.1	A
Beryllium	11.1	10.6	A		4.7	7.4 - 13.8	0.778	A
Cadmium	16.7	18.0	A		-7.2	12.6 - 23.4	1.15	A
Chromium	64.4	60.4	A		6.6	42.3 - 78.5	4.83	A
Cobalt	52.6	51.9	A		1.3	36.3 - 67.5	4.12	A
Copper	96.8	94.9	A		2.0	66.4 - 123.4	6.54	A
Lead	85.7	85.1	A		0.7	59.6 - 110.6	6.58	A
Mercury	0.841	1.01	A		-16.7	0.71 - 1.31	0.0574	A
Nickel	110	106.9	A		2.9	74.8 - 139.0	7.71	A
Selenium	3.41	3.53	A		-3.4	2.47 - 4.59	0.478	A
Silver	0.0528		A			False Positive Test	0.419	
Technetium-99	0.00111	0.00094	A		18.1	0.00066 - 0.00122	0.00034	N
Thallium	20.8	21.6	A		-3.7	15.1 - 28.1	1.42	A
Uranium-235	0.0750	0.0679	A		10.5	0.0475 - 0.0883	0.0202	W
Uranium-238	10.6	9.4	A		12.8	6.6 - 12.2	1.21	A
Uranium-Total	10.8	9.4	A		14.9	6.6 - 12.2	1.22	A
Vanadium	181	176	A		2.8	123 - 229	12.4	A
Zinc	396	374	A		5.9	262 - 486	26.8	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	78.5	74.7	A		5.1	52.3 - 97.1	6.48	A
Cesium-134	793	1020	W		-22.3	714 - 1326	15.9	A
Cesium-137	881	789	A		11.7	552 - 1026	39.3	A
Cobalt-57	-0.659		A			False Positive Test	0.537	
Cobalt-60	811	760	A		6.7	532 - 988	16.1	N
Iron-55	-4.59		A			False Positive Test	46.6	
Manganese-54	841	745	A		12.9	522 - 969	28.7	A
Nickel-63	619	629	A		-1.6	440 - 818	40.7	A
Plutonium-238	54.1	52.1	A		3.8	36.5 - 67.7	3.96	A
Plutonium-239/240	68.1	61.4	A		10.9	43.0 - 79.8	4.85	A
Potassium-40	596	555	A		7.4	389 - 722	19.6	A
Strontium-90	622	572	A		8.7	400 - 744	42.2	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	396	593	N		-33.2	415 - 771	23.3	A
Uranium-234	33.3	116	N		-71.3	81 - 151	2.48	A
Uranium-238	38.1	117	N		-67.4	82 - 152	2.81	A
Zinc-65	1.05		A			False Positive Test	0.985	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	1060	1020	A		3.9	714 - 1326	28.5	A
Cesium-137	846	789	A		7.2	552 - 1026	21.3	A
Cobalt-57	0.0530			A		False Positive Test	1.00	
Cobalt-60	805	760	A		5.9	532 - 988	19.3	A
Iron-55	NR					False Positive Test		
Manganese-54	774	745	A		3.9	522 - 969	18.1	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	544	555	A		-2.0	389 - 722	16.2	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	2.68		A			False Positive Test	2.14	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	60.1	74.7	A		-19.5	52.3 - 97.1	6.6	A
Cesium-134	942	1020	A		-7.6	714 - 1326	18	N
Cesium-137	762	789	A		-3.4	552 - 1026	23	A
Cobalt-57	-5.8		A			False Positive Test	6.8	
Cobalt-60	708	760	A		-6.8	532 - 988	16	A
Iron-55	NR					False Positive Test		
Manganese-54	690	745	A		-7.4	522 - 969	19	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	54.6	52.1	A		4.8	36.5 - 67.7	5.4	A
Plutonium-239/240	63.0	61.4	A		2.6	43.0 - 79.8	6.0	A
Potassium-40	511	555	A		-7.9	389 - 722	34	A
Strontium-90	478	572	A		-16.4	400 - 744	15	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	113	116	A		-2.6	81 - 151	10	A
Uranium-238	118	117	A		0.9	82 - 152	11	A
Zinc-65	19		A			False Positive Test	15	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	NR	1020				714 - 1326		
Cesium-137	NR	789				552 - 1026		
Cobalt-57	NR					False Positive Test		
Cobalt-60	NR	760				532 - 988		
Iron-55	NR					False Positive Test		
Manganese-54	NR	745				522 - 969		
Nickel-63	436	629	N		-30.7	440 - 818	22.8	A
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	NR	555				389 - 722		
Strontium-90	444	572	W		-22.4	400 - 744	11.4	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	NR					False Positive Test		

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	881.98	1020	A		-13.5	714 - 1326	9.03	N
Cesium-137	871.50	789	A		10.5	552 - 1026	10.83	N
Cobalt-57	-1.72			A		False Positive Test	3.01	
Cobalt-60	783.69	760	A		3.1	532 - 988	8.21	N
Iron-55	NR					False Positive Test		
Manganese-54	834.48	745	A		12.0	522 - 969	11.29	N
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	662.91	555	A		19.4	389 - 722	42.65	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	-3.01		A			False Positive Test	5.27	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	58.94	74.7	W		-21.1	52.3 - 97.1	13.58	W
Cesium-134	936.02	1020	A		-8.2	714 - 1326	43.43	A
Cesium-137	860.80	789	A		9.1	552 - 1026	76.17	A
Cobalt-57	-0.01		A			False Positive Test	3.52	
Cobalt-60	800.78	760	A		5.4	532 - 988	48.29	A
Iron-55	NR					False Positive Test		
Manganese-54	806.49	745	A		8.3	522 - 969	69	A
Nickel-63	663.37	629	A		5.5	440 - 818	41.19	A
Plutonium-238	52.94	52.1	A		1.6	36.5 - 67.7	10.82	W
Plutonium-239/240	65.85	61.4	A		7.2	43.0 - 79.8	12.20	W
Potassium-40	571.98	555	A		3.1	389 - 722	76.64	A
Strontium-90	410.40	572	W		-28.3	400 - 744	16.39	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	498.66	593	A		-15.9	415 - 771	26.27	A
Uranium-234	128.05	116	A		10.4	81 - 151	20.12	W
Uranium-238	136.37	117	A		16.6	82 - 152	21.02	W
Zinc-65	0.02		A			False Positive Test	10.19	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (TNUT01) St. Louis USACE FUSRAP Laboratory
 8945 LATTY AVE
 BERKELEY, MO 63134-1024

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	64.892	74.7	A		-13.1	52.3 - 97.1	6.031	A
Cesium-134	856.123	1020	A		-16.1	714 - 1326	12.697	N
Cesium-137	813.458	789	A		3.1	552 - 1026	23.775	A
Cobalt-57	-3.909			A		False Positive Test	8.893	
Cobalt-60	753.165	760	A		-0.9	532 - 988	14.080	N
Iron-55	NR					False Positive Test		
Manganese-54	771.863	745	A		3.6	522 - 969	19.501	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	595.350	555	A		7.3	389 - 722	23.893	A
Strontium-90	NR	572				400 - 744		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	105.850	116	A		-8.8	81 - 151	7.794	A
Uranium-238	115.682	117	A		-1.1	82 - 152	8.310	A
Zinc-65	-3.310		A			False Positive Test	3.874	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	74.7				52.3 - 97.1		
Cesium-134	1201.76	1020	A		17.8	714 - 1326	49.84	A
Cesium-137	1095.20	789	N		38.8	552 - 1026	62.72	A
Cobalt-57	0.1		A			False Positive Test	0.7	
Cobalt-60	987.16	760	W		29.9	532 - 988	40.37	A
Iron-55	NR					False Positive Test		
Manganese-54	1022.68	745	N		37.3	522 - 969	50.88	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	762.2	555	N		37.3	389 - 722	74.96	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	0.3		N	(1)		False Positive Test	.06	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	69.93	74.7	A		-6.4	52.3 - 97.1	11.91	W
Cesium-134	1011.5	1020	A		-0.8	714 - 1326	134.5	A
Cesium-137	956.16	789	W		21.2	552 - 1026	127.23	A
Cobalt-57	0.0001		A			False Positive Test	1.424	
Cobalt-60	817.81	760	A		7.6	532 - 988	107.22	A
Iron-55	18.8		A			False Positive Test	50.21	
Manganese-54	884.07	745	A		18.7	522 - 969	117.52	A
Nickel-63	NR	629	N	(28)		440 - 818		
Plutonium-238	49.21	52.1	A		-5.5	36.5 - 67.7	8.21	W
Plutonium-239/240	52.91	61.4	A		-13.8	43.0 - 79.8	8.73	W
Potassium-40	625.89	555	A		12.8	389 - 722	84.835	A
Strontium-90	408.11	572	W		-28.7	400 - 744	67.71	W

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	503.2	593	A		-15.1	415 - 771	72.89	A
Uranium-234	37.37	116	N		-67.8	81 - 151	5.96	W
Uranium-238	35.04	117	N		-70.1	82 - 152	5.62	W
Zinc-65	26.714		N	(1)		False Positive Test	7.826	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	68.73	74.7	A		-8.0	52.3 - 97.1	12.57	W
Cesium-134	1368.67	1020	N		34.2	714 - 1326	14.29	N
Cesium-137	1185.94	789	N		50.3	552 - 1026	29.55	A
Cobalt-57	1.28		A			False Positive Test	1.03	
Cobalt-60	1111.86	760	N		46.3	532 - 988	18.30	N
Iron-55	NR					False Positive Test		
Manganese-54	1130.21	745	N		51.7	522 - 969	24.98	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	NR	52.1				36.5 - 67.7		
Plutonium-239/240	NR	61.4				43.0 - 79.8		
Potassium-40	777.75	555	N		40.1	389 - 722	22.42	A
Strontium-90	NR	572				400 - 744		

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	-4.48		A			False Positive Test	3.93	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	79.8	74.7	A		6.8	52.3 - 97.1	5.09	A
Cesium-134	1070	1020	A		4.9	714 - 1326	29.5	A
Cesium-137	873	789	A		10.6	552 - 1026	28.8	A
Cobalt-57	.350			A		False Positive Test	.672	
Cobalt-60	814	760	A		7.1	532 - 988	22.8	A
Iron-55	NR					False Positive Test		
Manganese-54	796	745	A		6.8	522 - 969	18.1	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	50.1	52.1	A		-3.8	36.5 - 67.7	2.54	A
Plutonium-239/240	59.3	61.4	A		-3.4	43.0 - 79.8	2.9	A
Potassium-40	573	555	A		3.2	389 - 722	27.3	A
Strontium-90	511	572	A		-10.7	400 - 744	25.6	A

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	110	116	A		-5.2	81 - 151	14.6	A
Uranium-238	111	117	A		-5.1	82 - 152	14.7	A
Zinc-65	-2.45		A			False Positive Test	2.83	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41
 (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	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	NR					False Positive Test		
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	NR	21.6				15.1 - 28.1		
Uranium-235	NR	0.0679				0.0475 - 0.0883		
Uranium-238	NR	9.4				6.6 - 12.2		
Uranium-Total	NR	9.4				6.6 - 12.2		
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	87.09	74.7	A		16.6	52.3 - 97.1	6.773	A
Cesium-134	1060	1020	A		3.9	714 - 1326	19	N
Cesium-137	881	789	A		11.7	552 - 1026	24.7	A
Cobalt-57	1.07			A		False Positive Test	0.652	
Cobalt-60	821	760	A		8.0	532 - 988	45.2	A
Iron-55	NR					False Positive Test		
Manganese-54	804	745	A		7.9	522 - 969	33.7	A
Nickel-63	NR	629				440 - 818		
Plutonium-238	58.06	52.1	A		11.4	36.5 - 67.7	3.614	A
Plutonium-239/240	59.71	61.4	A		-2.8	43.0 - 79.8	3.612	A
Potassium-40	566	555	A		2.0	389 - 722	45.9	A
Strontium-90	423.58	572	W		-25.9	400 - 744	26.34	A

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	30.42	116	N		-73.8	81 - 151	3.129	A
Uranium-238	30.52	117	N		-73.9	82 - 152	2.637	A
Zinc-65	1.78		A			False Positive Test	1.07	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(WSTP99) Cavendish Nuclear Limited

Greson Court

Cumbria, UK CA24 3HZ

Inorganic							Units: (mg/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	119				83 - 155		
Arsenic	NR	35.1				24.6 - 45.6		
Barium	NR	292				204 - 380		
Beryllium	NR	10.6				7.4 - 13.8		
Cadmium	NR	18.0				12.6 - 23.4		
Chromium	NR	60.4				42.3 - 78.5		
Cobalt	NR	51.9				36.3 - 67.5		
Copper	NR	94.9				66.4 - 123.4		
Lead	NR	85.1				59.6 - 110.6		
Mercury	NR	1.01				0.71 - 1.31		
Nickel	NR	106.9				74.8 - 139.0		
Selenium	NR	3.53				2.47 - 4.59		
Silver	1.46		N	(1)		False Positive Test	0.07	
Technetium-99	NR	0.00094				0.00066 - 0.00122		
Thallium	21.5	21.6	A		-0.5	15.1 - 28.1	0.8	A
Uranium-235	0.0081	0.0679	N		-88.1	0.0475 - 0.0883	0.0004	A
Uranium-238	1.13	9.4	N		-88.0	6.6 - 12.2	0.04	A
Uranium-Total	1.14	9.4	N		-87.9	6.6 - 12.2	0.04	A
Vanadium	NR	176				123 - 229		
Zinc	NR	374				262 - 486		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	66.1	74.7	A		-11.5	52.3 - 97.1	13.4	W
Cesium-134	993	1020	A		-2.6	714 - 1326	45	A
Cesium-137	797	789	A		1.0	552 - 1026	53	A
Cobalt-57	1.3		A			False Positive Test	2.3	
Cobalt-60	726	760	A		-4.5	532 - 988	19	A
Iron-55	-6		A			False Positive Test	11	
Manganese-54	689	745	A		-7.5	522 - 969	26	A
Nickel-63	581	629	A		-7.6	440 - 818	19	A
Plutonium-238	52.1	52.1	A		0.0	36.5 - 67.7	4.0	A
Plutonium-239/240	59.2	61.4	A		-3.6	43.0 - 79.8	4.5	A
Potassium-40	565	555	A		1.8	389 - 722	29	A
Strontium-90	NR	572				400 - 744		

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	481	593	A		-18.9	415 - 771	19	A
Uranium-234	13.1	116	N		-88.7	81 - 151	0.6	A
Uranium-238	14.1	117	N		-87.9	82 - 152	0.5	A
Zinc-65	-21.7		N	(29)		False Positive Test	6.2	

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-19-MaS41

(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	119			83 - 155			
Arsenic	NR	35.1			24.6 - 45.6			
Barium	NR	292			204 - 380			
Beryllium	NR	10.6			7.4 - 13.8			
Cadmium	NR	18.0			12.6 - 23.4			
Chromium	NR	60.4			42.3 - 78.5			
Cobalt	NR	51.9			36.3 - 67.5			
Copper	NR	94.9			66.4 - 123.4			
Lead	NR	85.1			59.6 - 110.6			
Mercury	NR	1.01			0.71 - 1.31			
Nickel	NR	106.9			74.8 - 139.0			
Selenium	NR	3.53			2.47 - 4.59			
Silver	NR				False Positive Test			
Technetium-99	NR	0.00094			0.00066 - 0.00122			
Thallium	NR	21.6			15.1 - 28.1			
Uranium-235	0.024	0.0679	N	-64.7	0.0475 - 0.0883	0.001	A	
Uranium-238	3.33	9.4	N	-64.6	6.6 - 12.2	0.1	A	
Uranium-Total	3.4	9.4	N	-63.8	6.6 - 12.2	0.1	A	
Vanadium	NR	176			123 - 229			
Zinc	NR	374			262 - 486			

Radiological							Units: (Bq/kg)	
Analyte	Result	Ref Value	Flag Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag	
Americium-241	NR	74.7			52.3 - 97.1			
Cesium-134	NR	1020			714 - 1326			
Cesium-137	NR	789			552 - 1026			
Cobalt-57	NR				False Positive Test			
Cobalt-60	NR	760			532 - 988			
Iron-55	NR				False Positive Test			
Manganese-54	NR	745			522 - 969			
Nickel-63	NR	629			440 - 818			
Plutonium-238	NR	52.1			36.5 - 67.7			
Plutonium-239/240	NR	61.4			43.0 - 79.8			
Potassium-40	NR	555			389 - 722			
Strontium-90	NR	572			400 - 744			

Radiological						Units: (Bq/kg)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	593				415 - 771		
Uranium-234	NR	116				81 - 151		
Uranium-238	NR	117				82 - 152		
Zinc-65	NR					False Positive Test		

Radiological Reference Date: August 1, 2019

Results Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

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

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision

Notes:

(1) = False Positive

(5) = Total Metal

(6) = Not Evaluated

(11) = False Positive Test, Result Not Reported

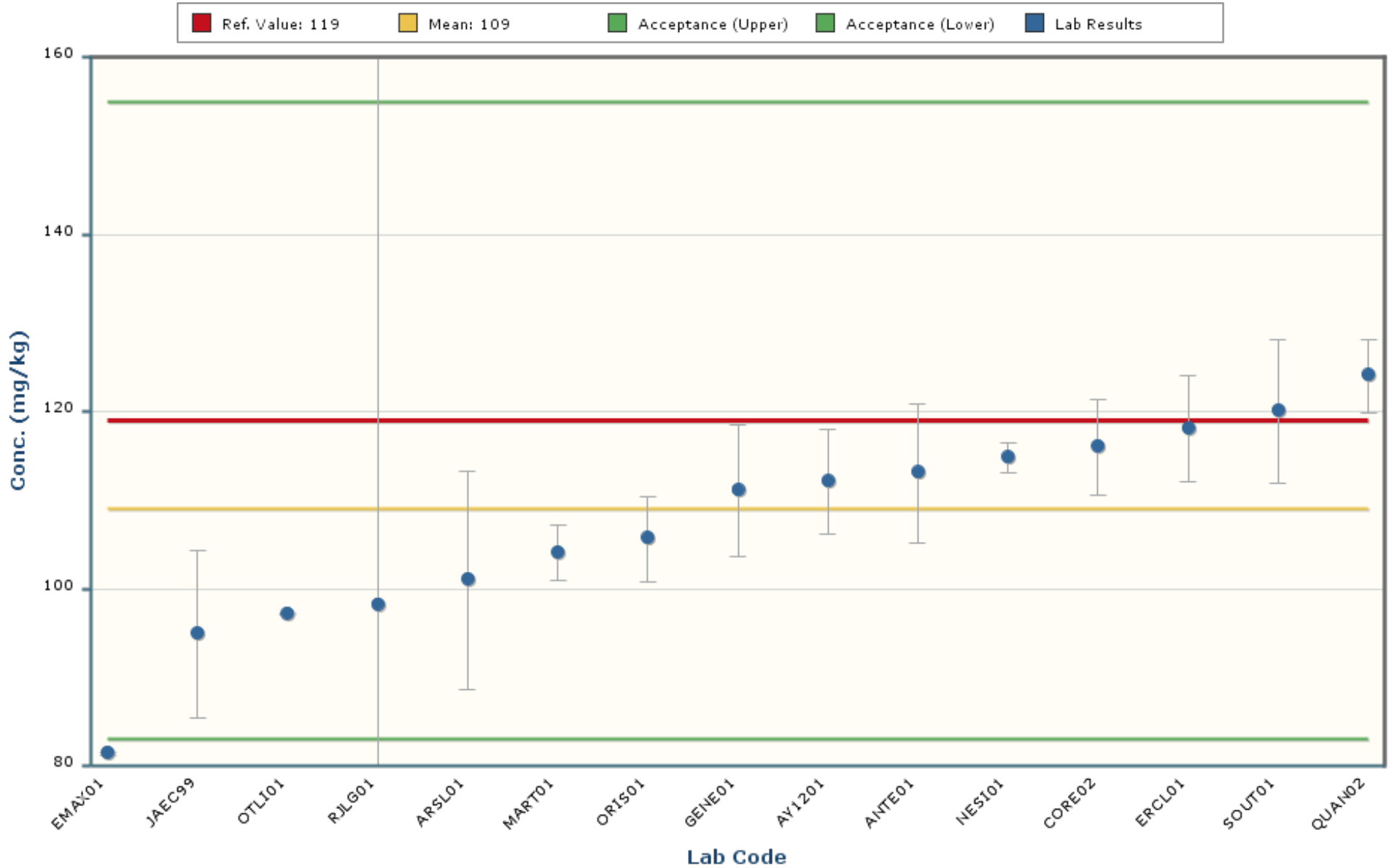
(25) = Result not reported with other gamma results

(28) = Not Reporting Previously Reported Analyte

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

Antimony

MAPEP-19-MaS41



Notes:

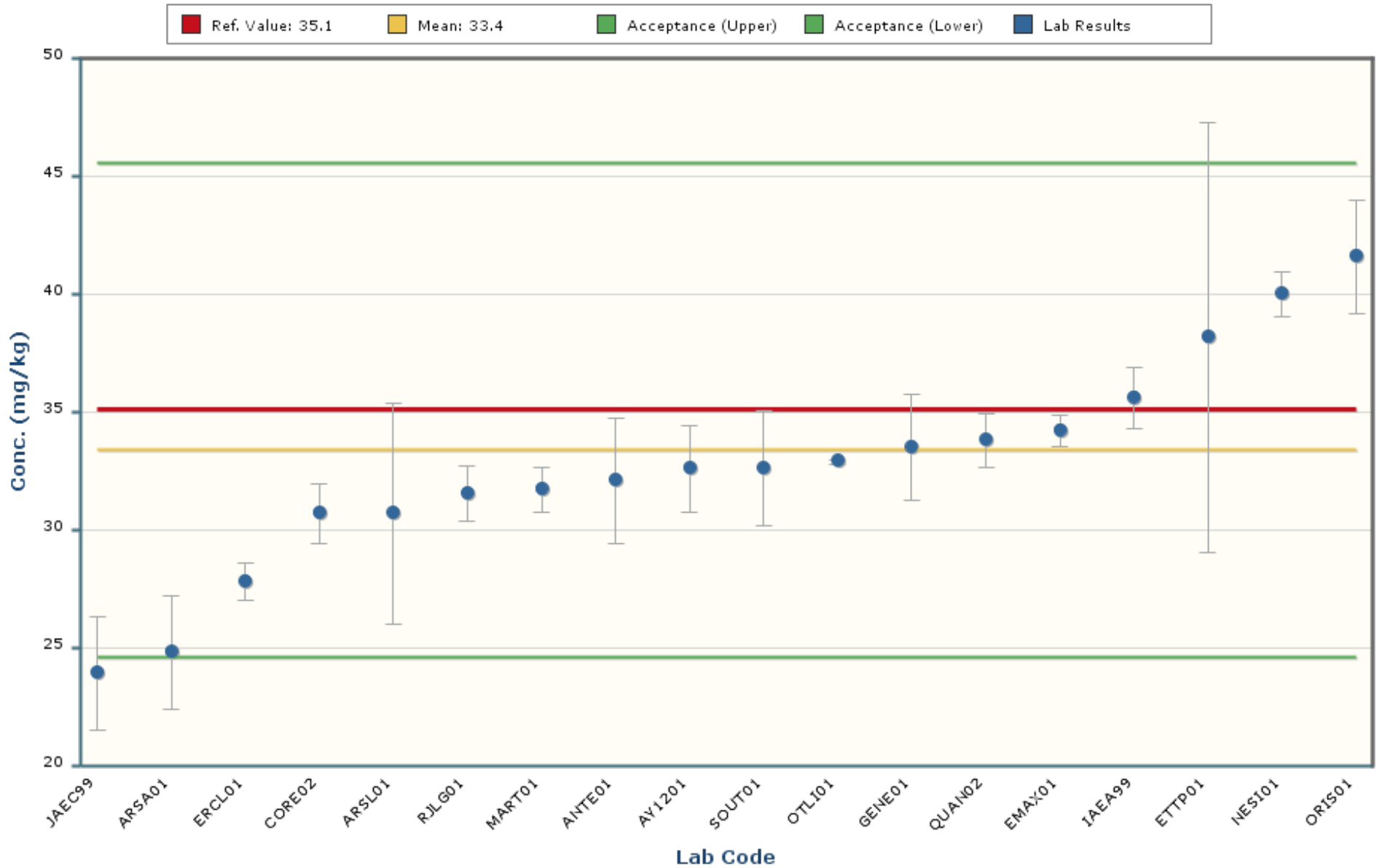
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 63 and 155 (± 5 Standard Deviations).

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

Arsenic

MAPEP-19-MaS41



Notes:

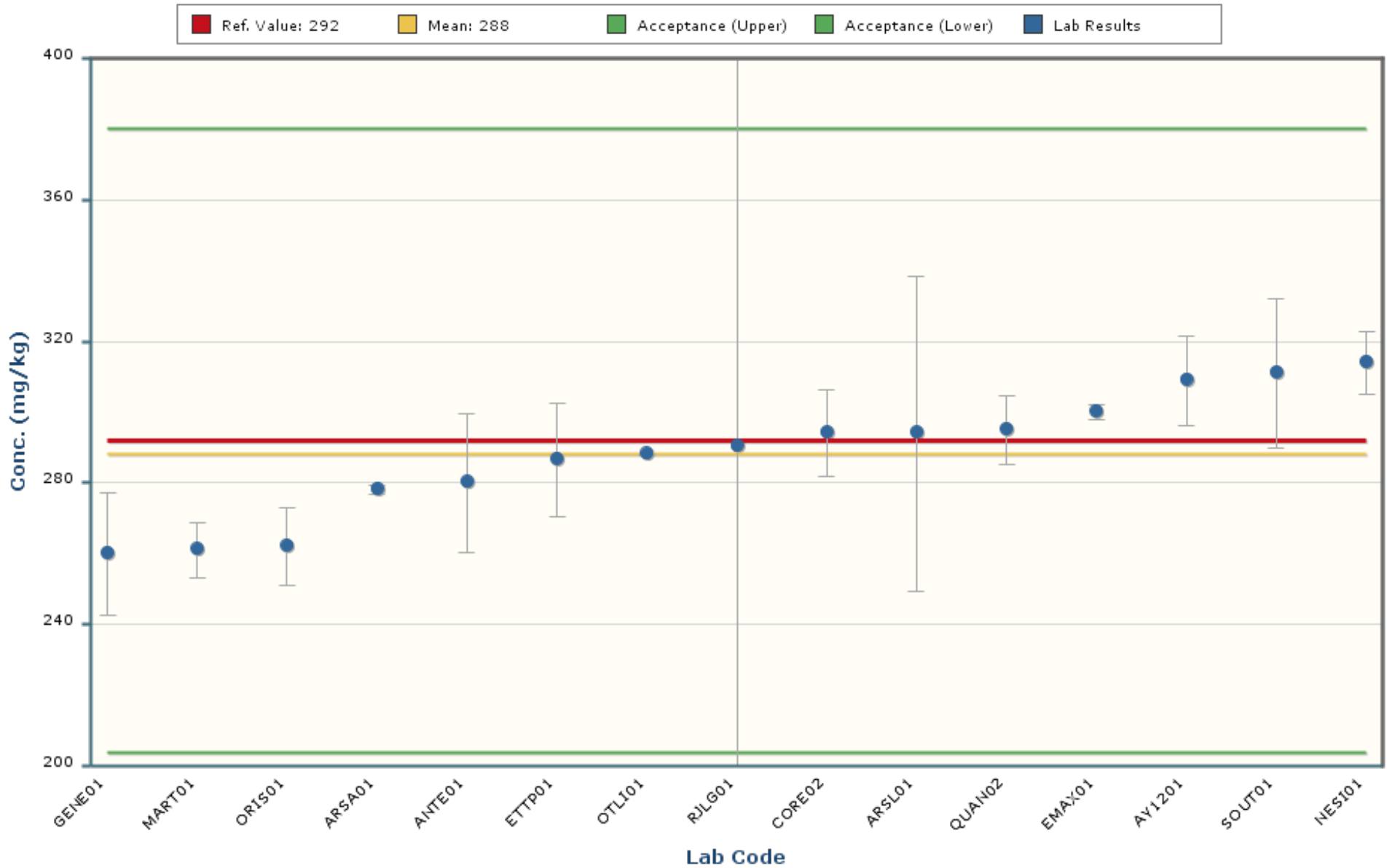
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 13.0 and 53.8 (± 5 Standard Deviations).

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

Barium

MAPEP-19-MaS41



Notes:

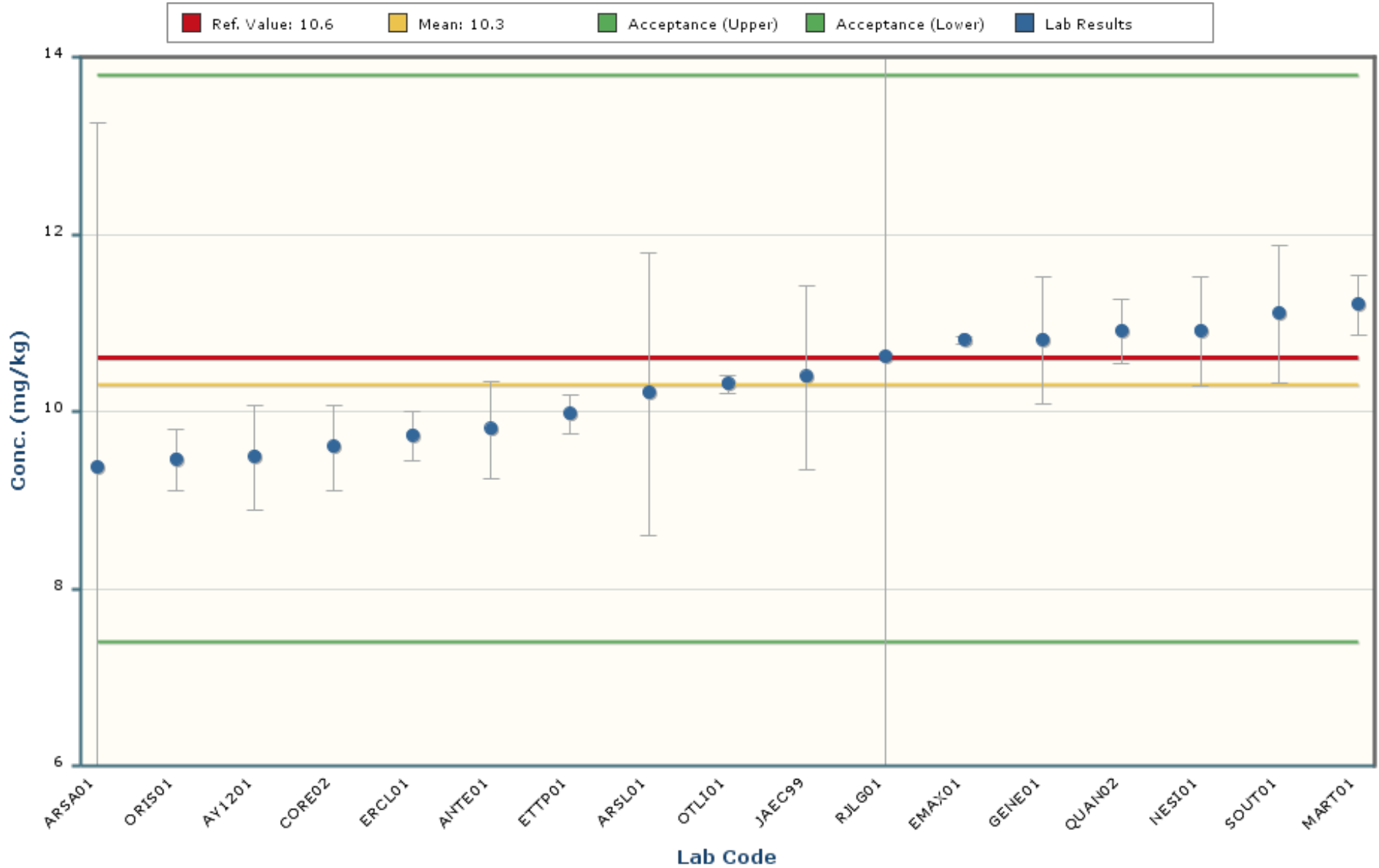
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 201 and 376 (± 5 Standard Deviations).

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

Beryllium

MAPEP-19-MaS41



Notes:

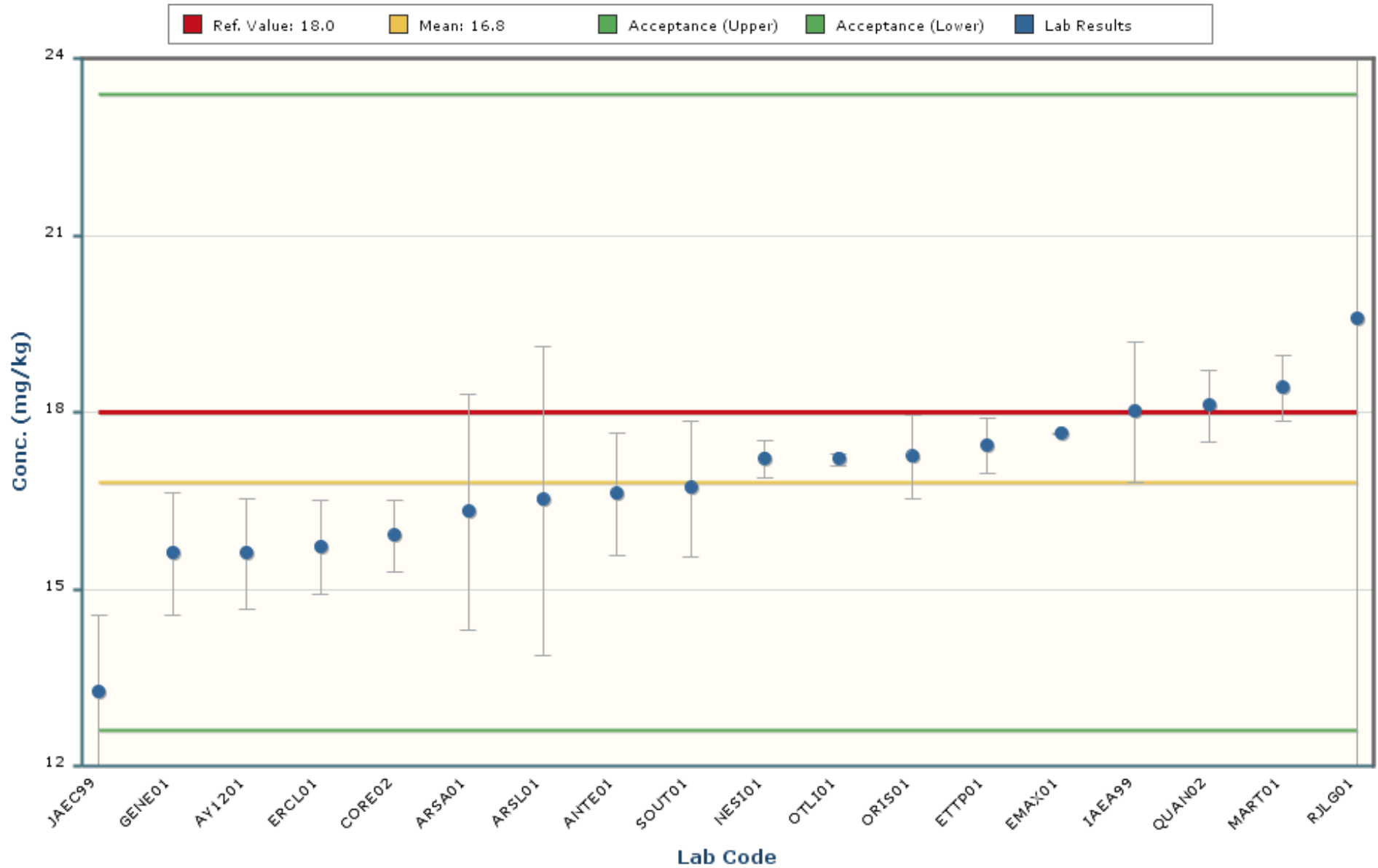
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 7.2 and 13.4 (± 5 Standard Deviations).

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

Cadmium

MAPEP-19-MaS41



Notes:

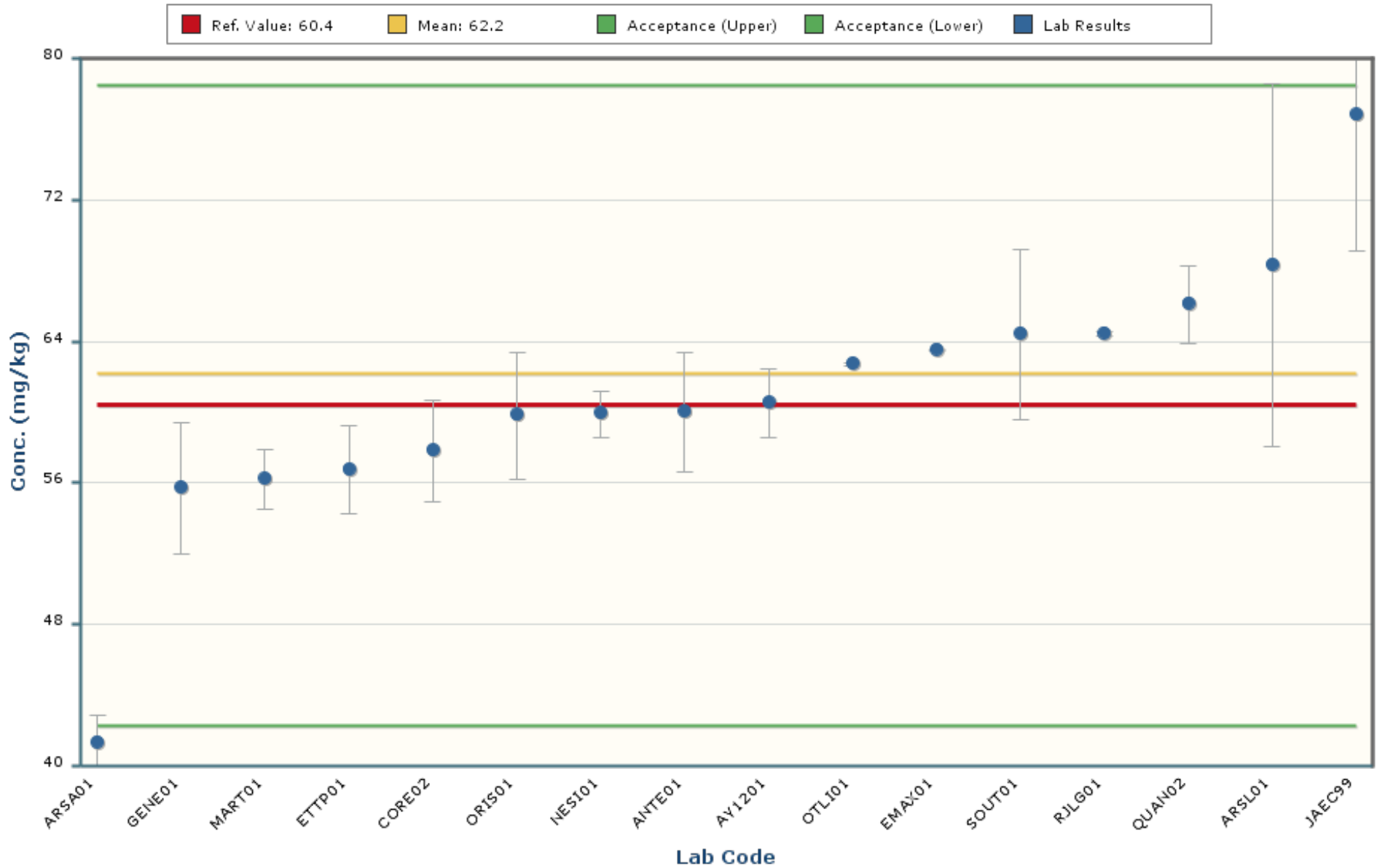
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 9.7 and 23.9 (± 5 Standard Deviations).

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

Chromium

MAPEP-19-MaS41



Notes:

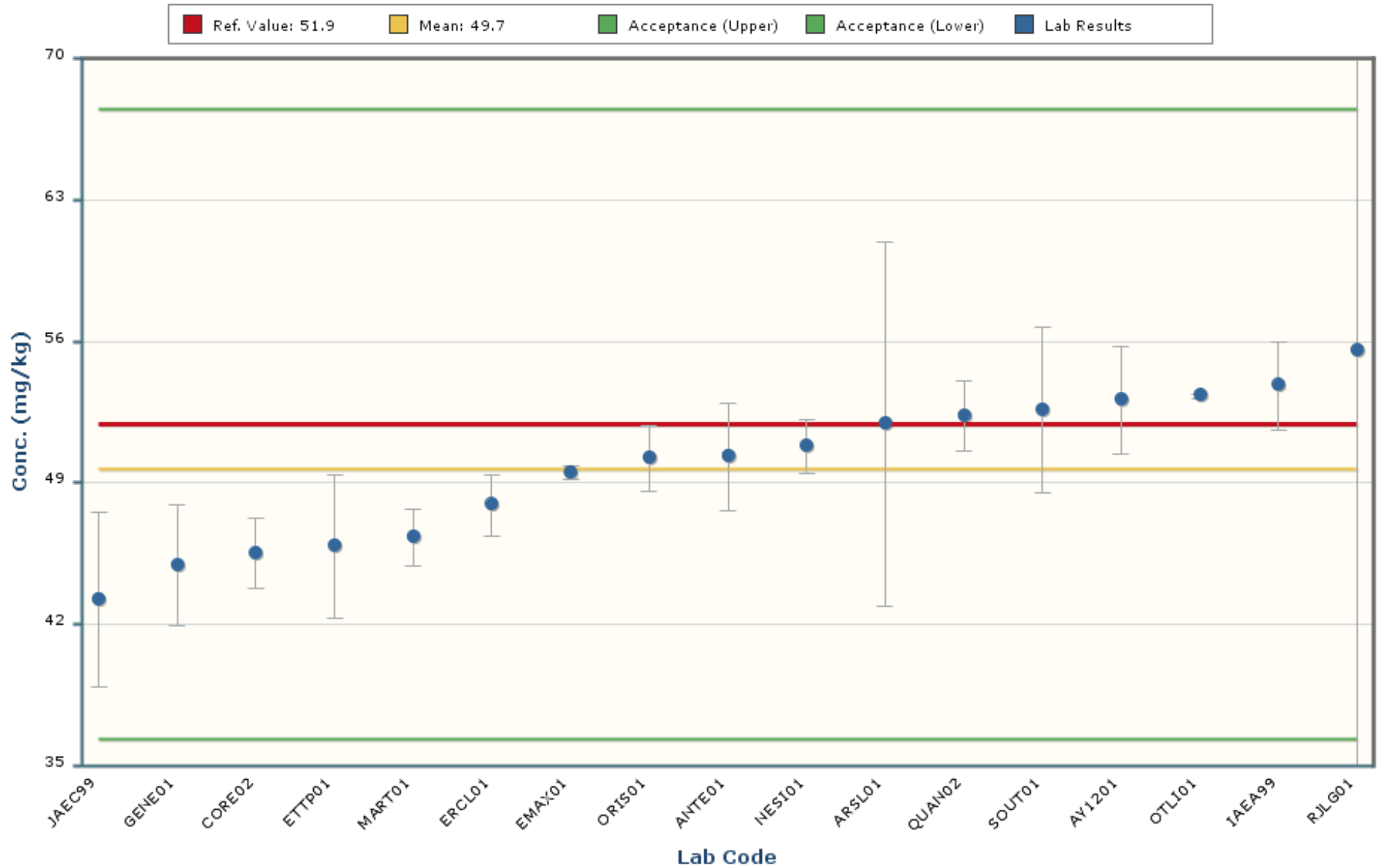
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 34.7 and 89.7 (± 5 Standard Deviations).

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

Cobalt

MAPEP-19-MaS41



Notes:

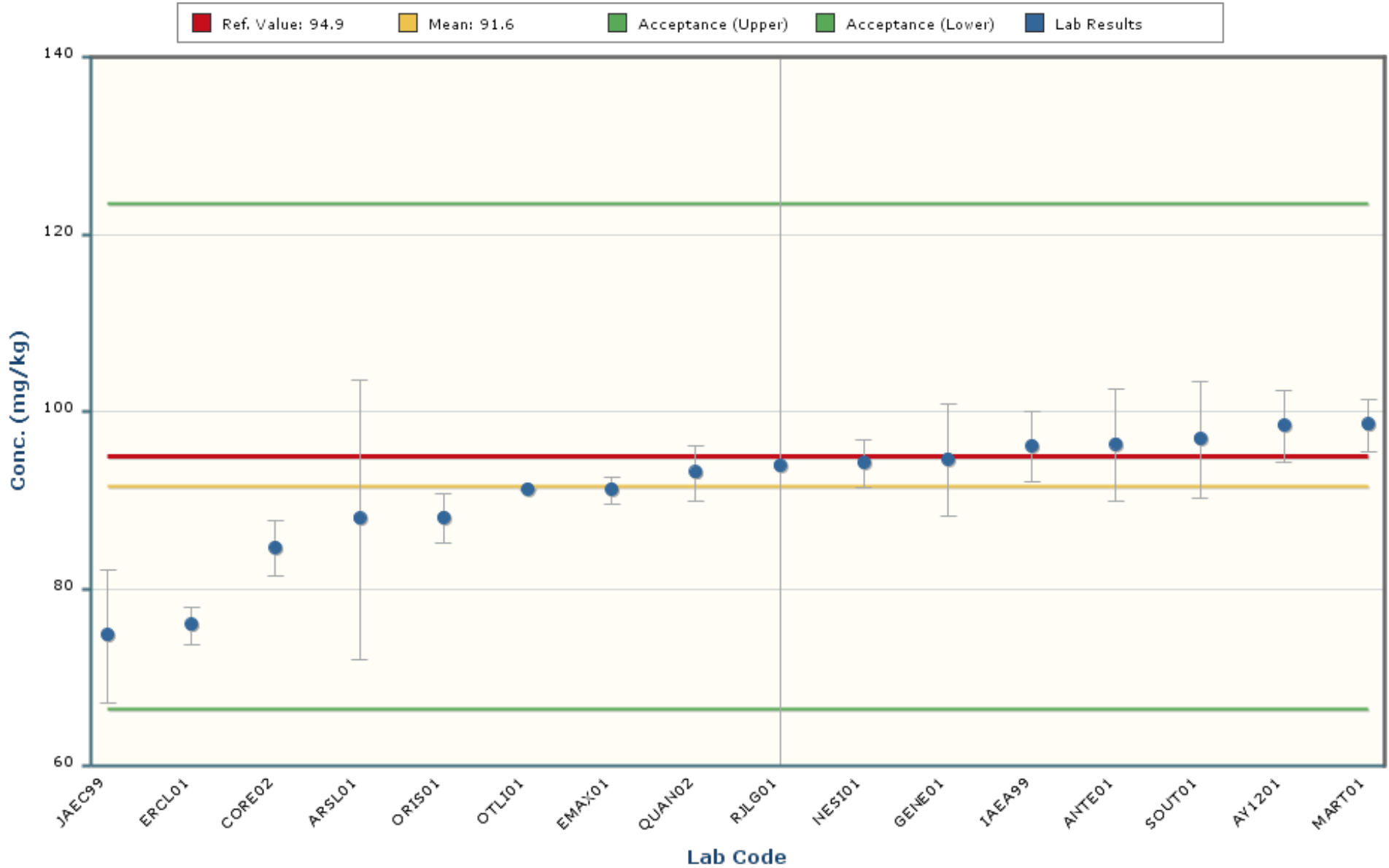
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 31.3 and 68.1 (± 5 Standard Deviations).

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

Copper

MAPEP-19-MaS41



Notes:

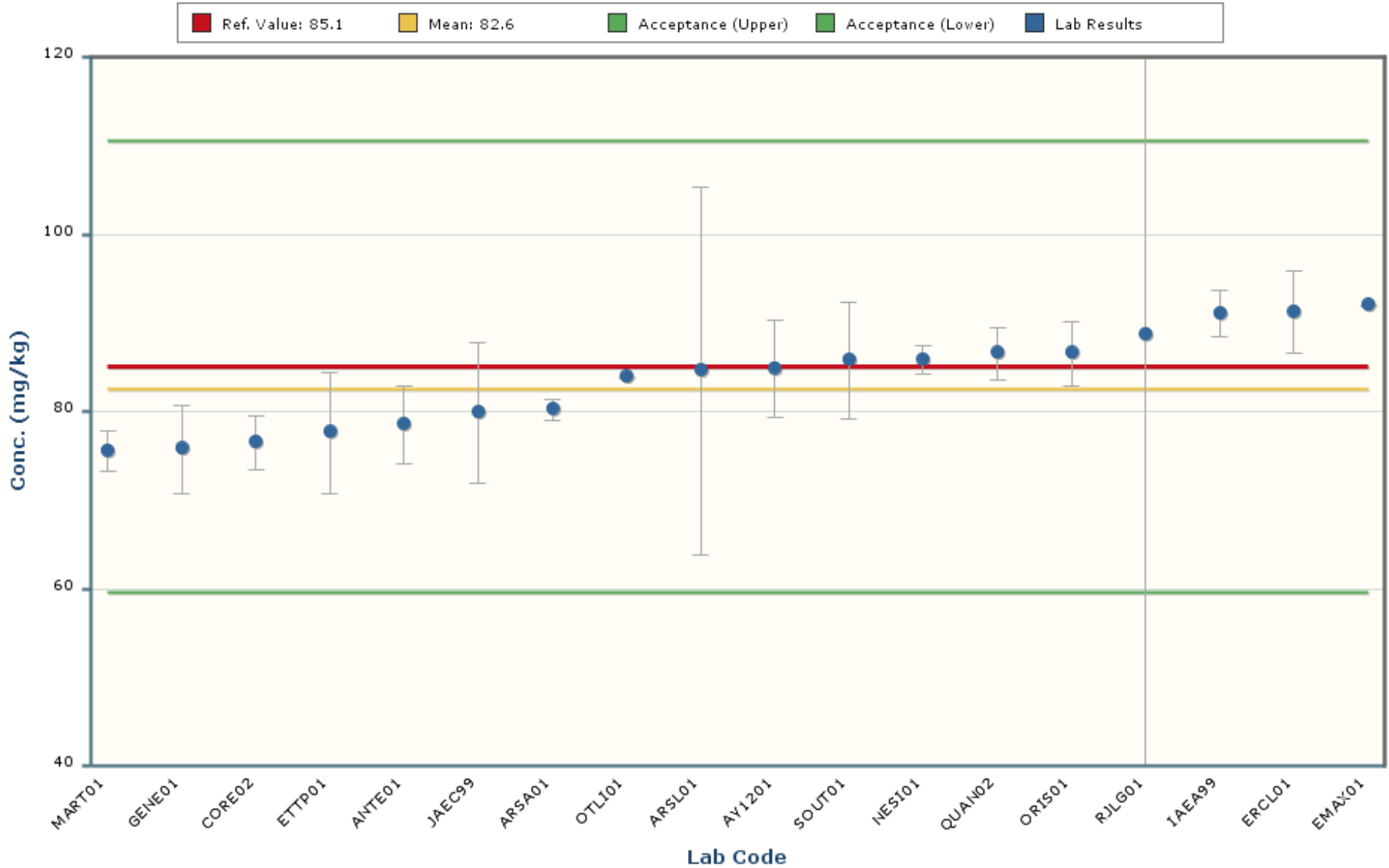
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 59.7 and 123.4 (± 5 Standard Deviations).

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

Lead

MAPEP-19-MaS41



Notes:

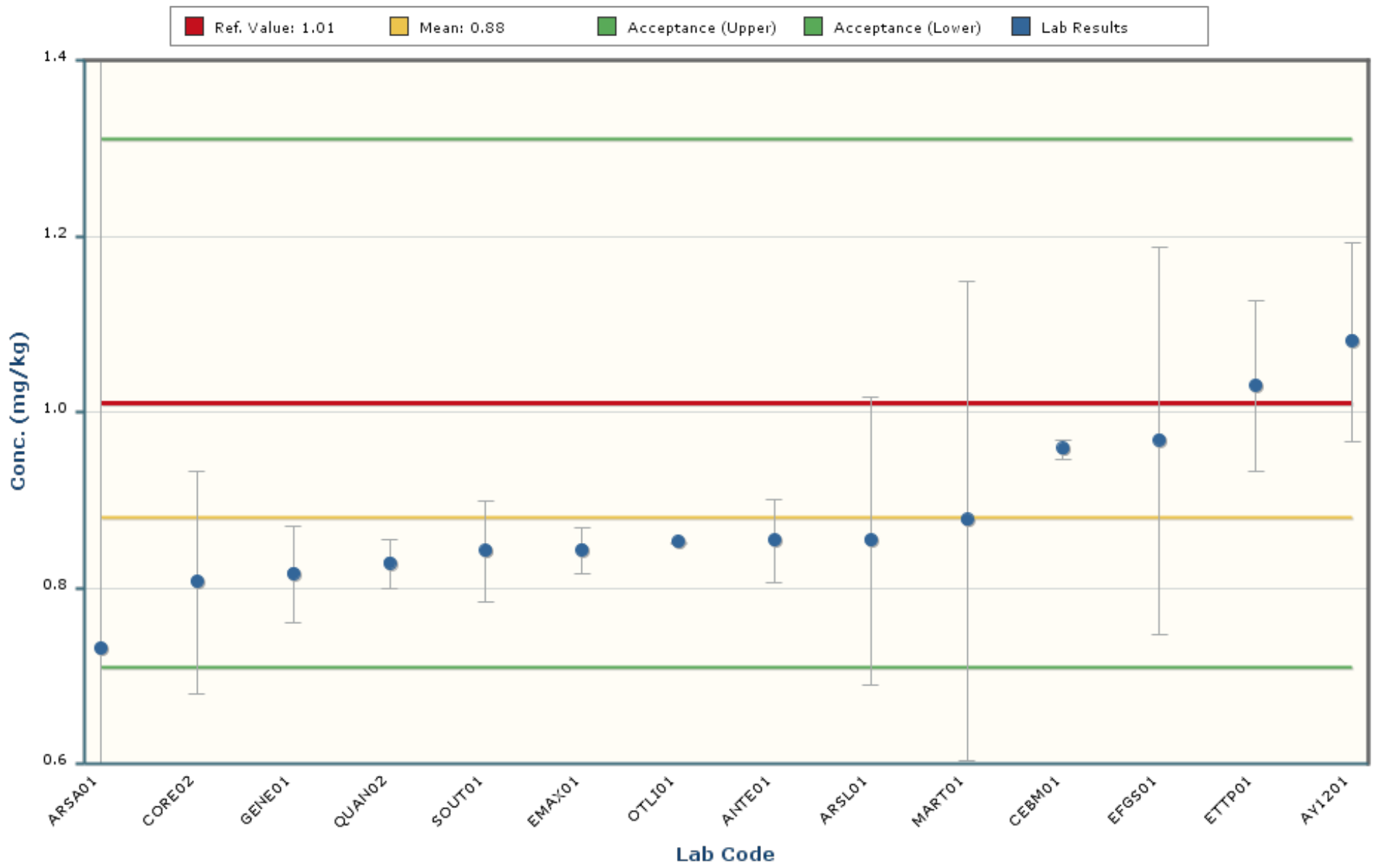
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 57.6 and 107.6 (± 5 Standard Deviations).

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

Mercury

MAPEP-19-MaS41

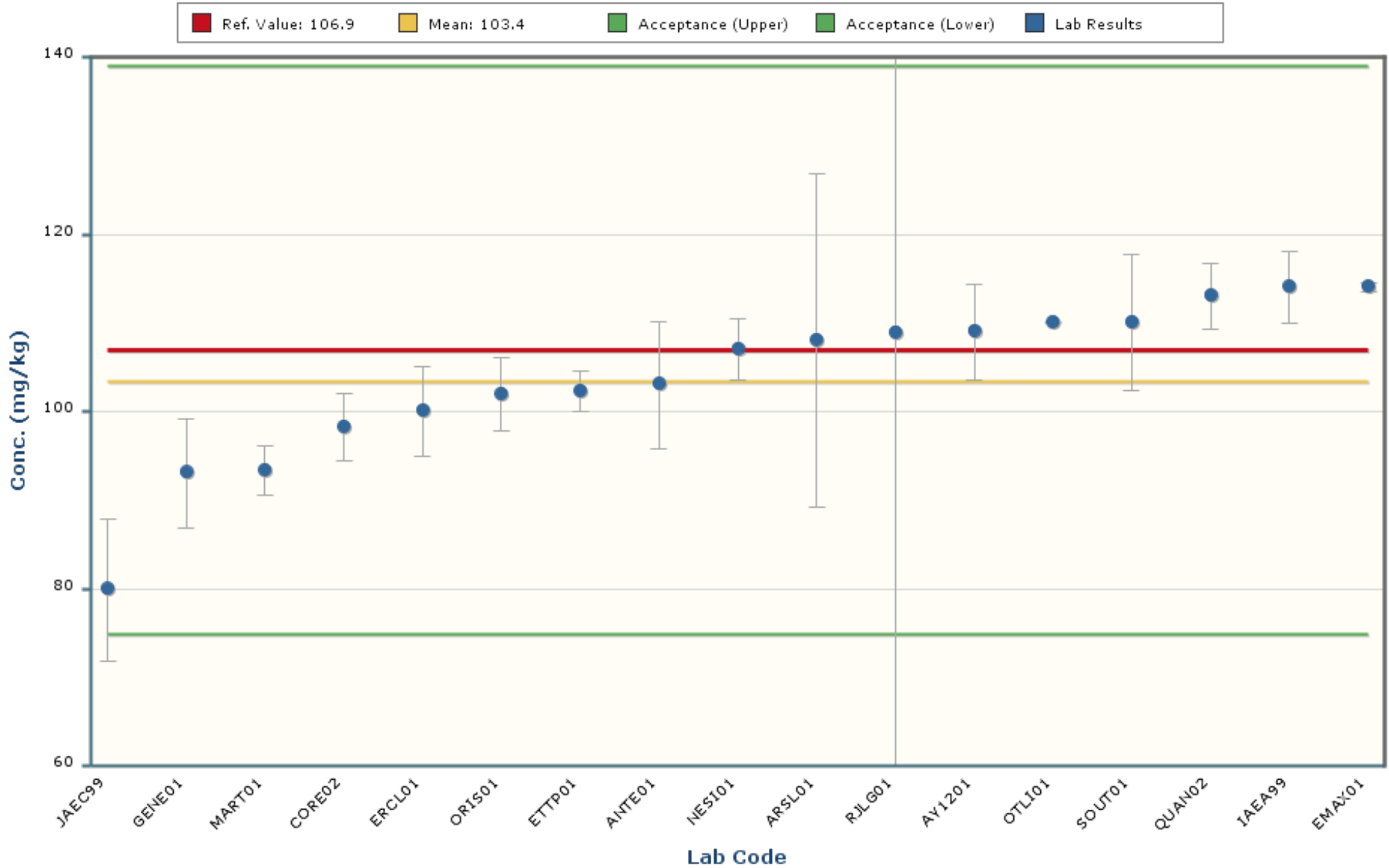


Notes:

The chart mean excludes values outside of a bias range of $\pm 30\%$.
The chart shows only data points with values between 0.41 and 1.35 (± 5 Standard Deviations).
The error bars encompassing each result are plotted at \pm one standard deviation.

Nickel

MAPEP-19-MaS41



Notes:

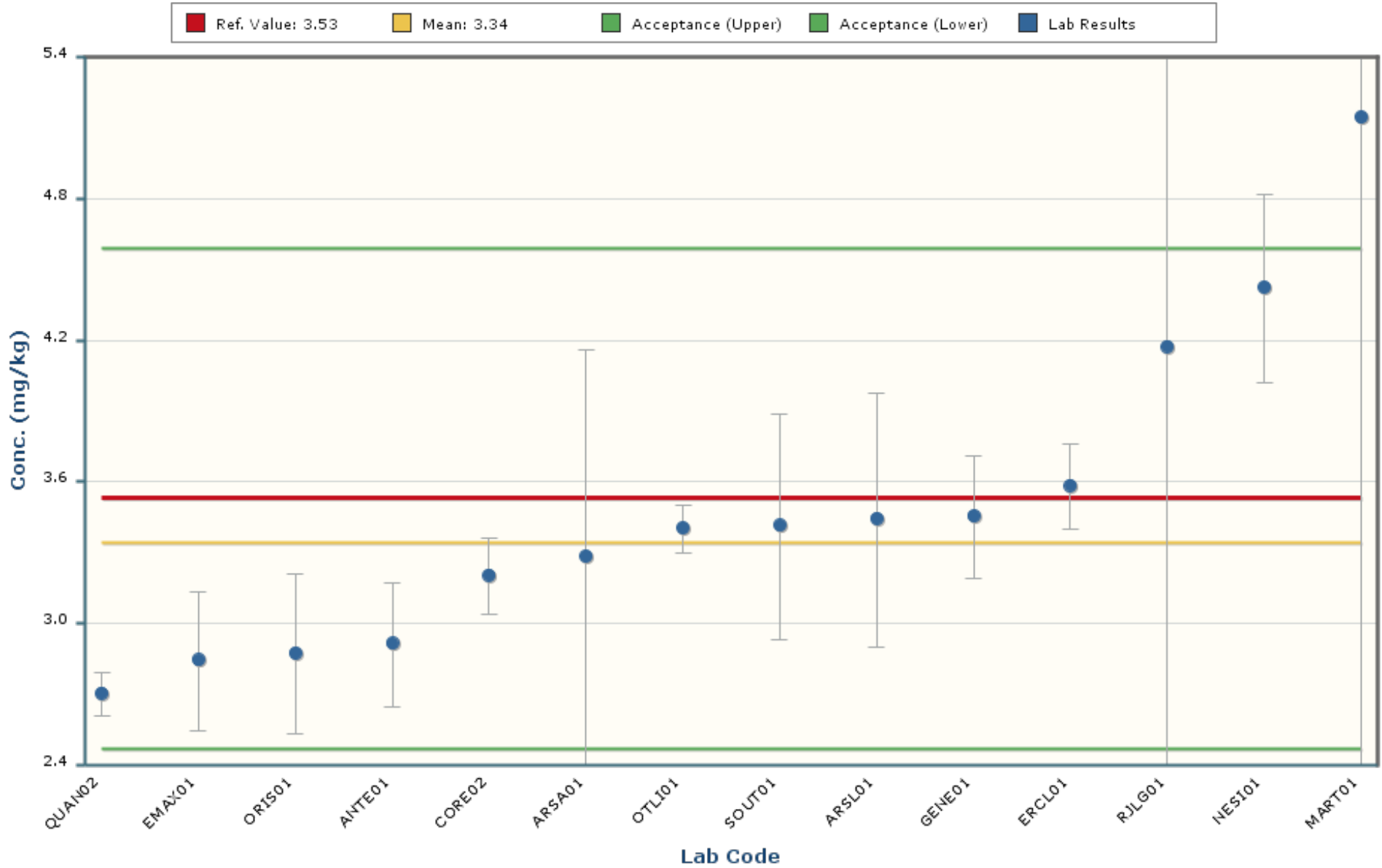
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 57.5 and 149.4 (± 5 Standard Deviations).

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

Selenium

MAPEP-19-MaS41



Notes:

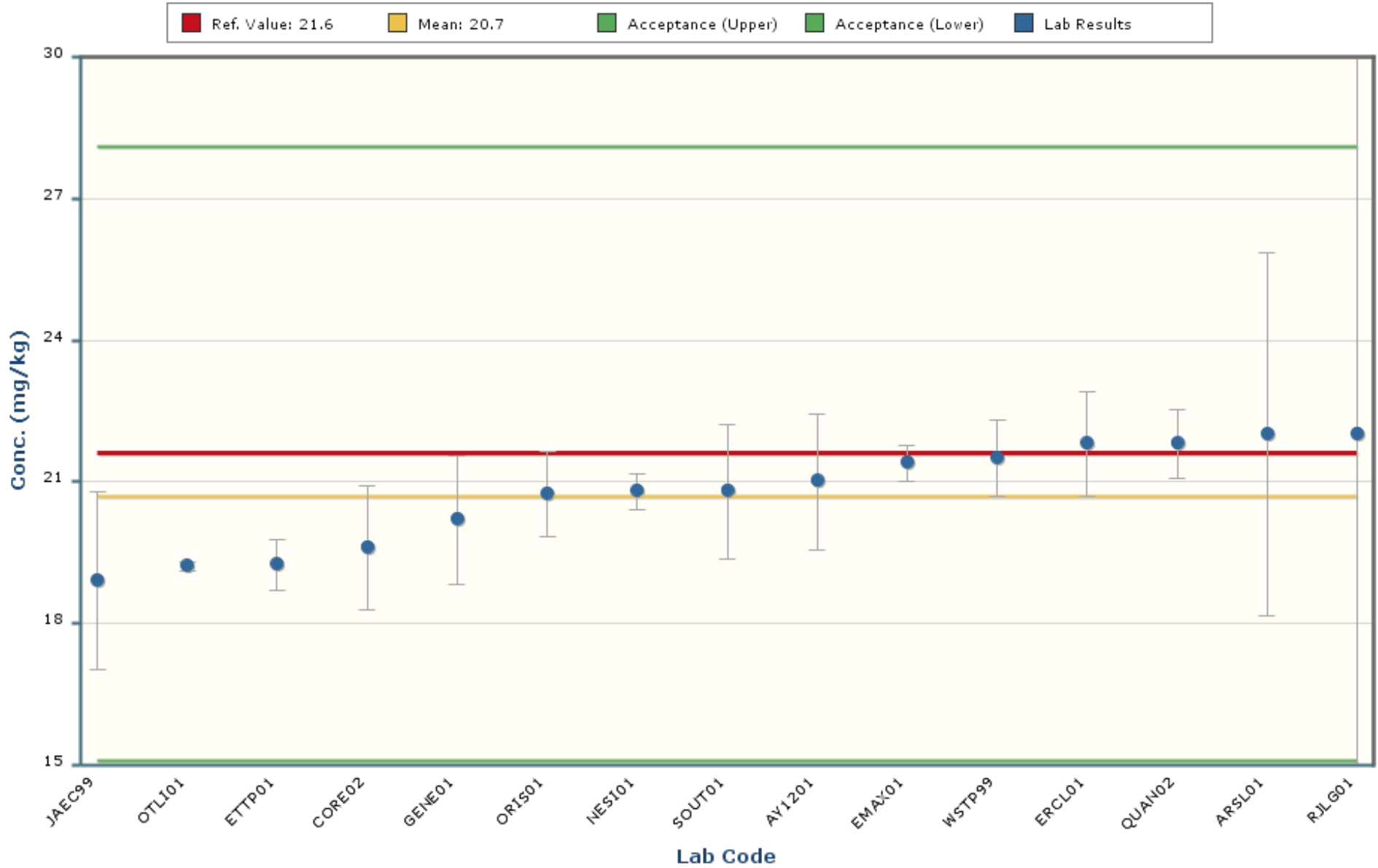
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 0.74 and 5.94 (± 5 Standard Deviations).

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

Thallium

MAPEP-19-MaS41



Notes:

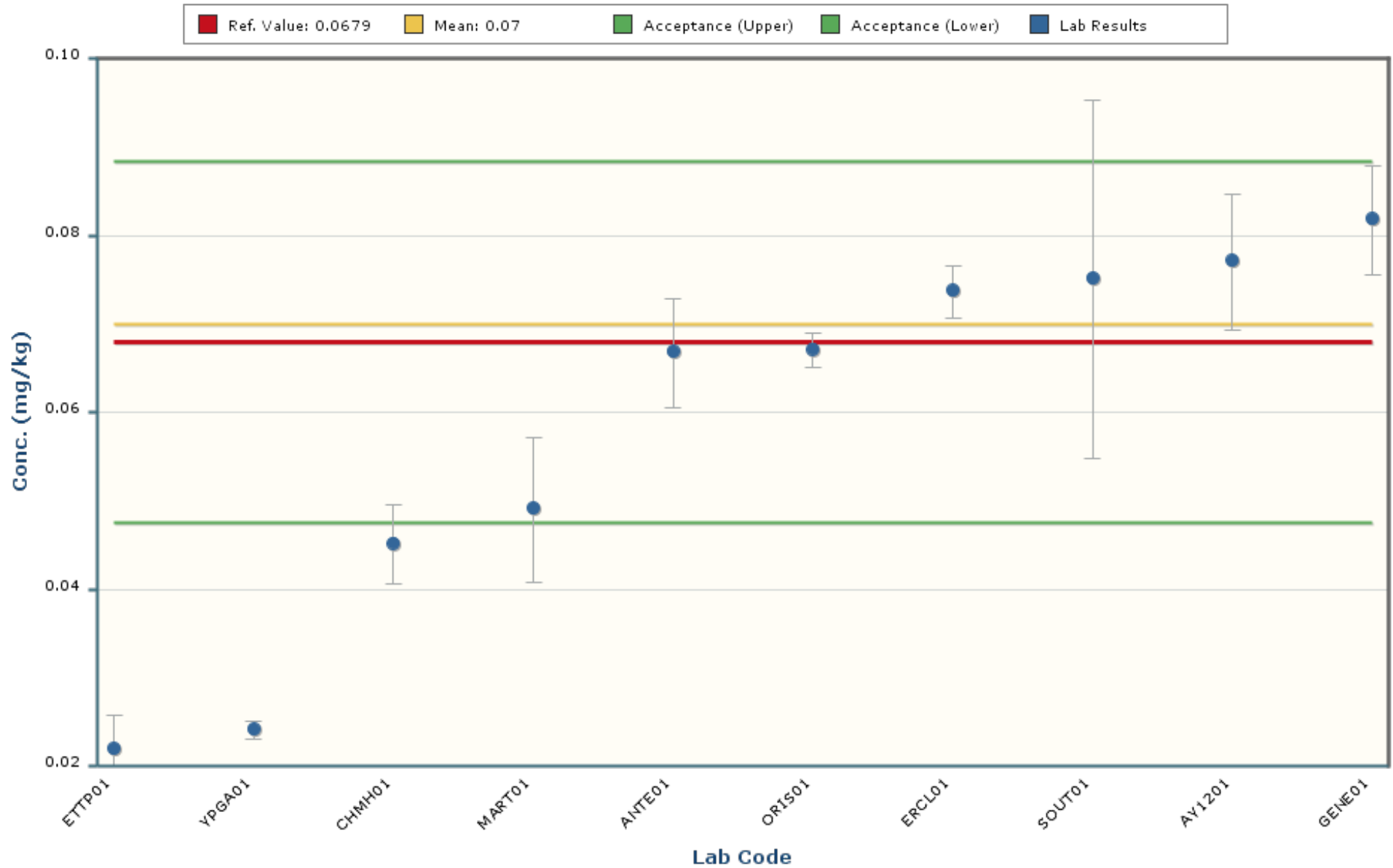
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 15.3 and 26.0 (± 5 Standard Deviations).

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

Uranium-235

MAPEP-19-MaS41



Notes:

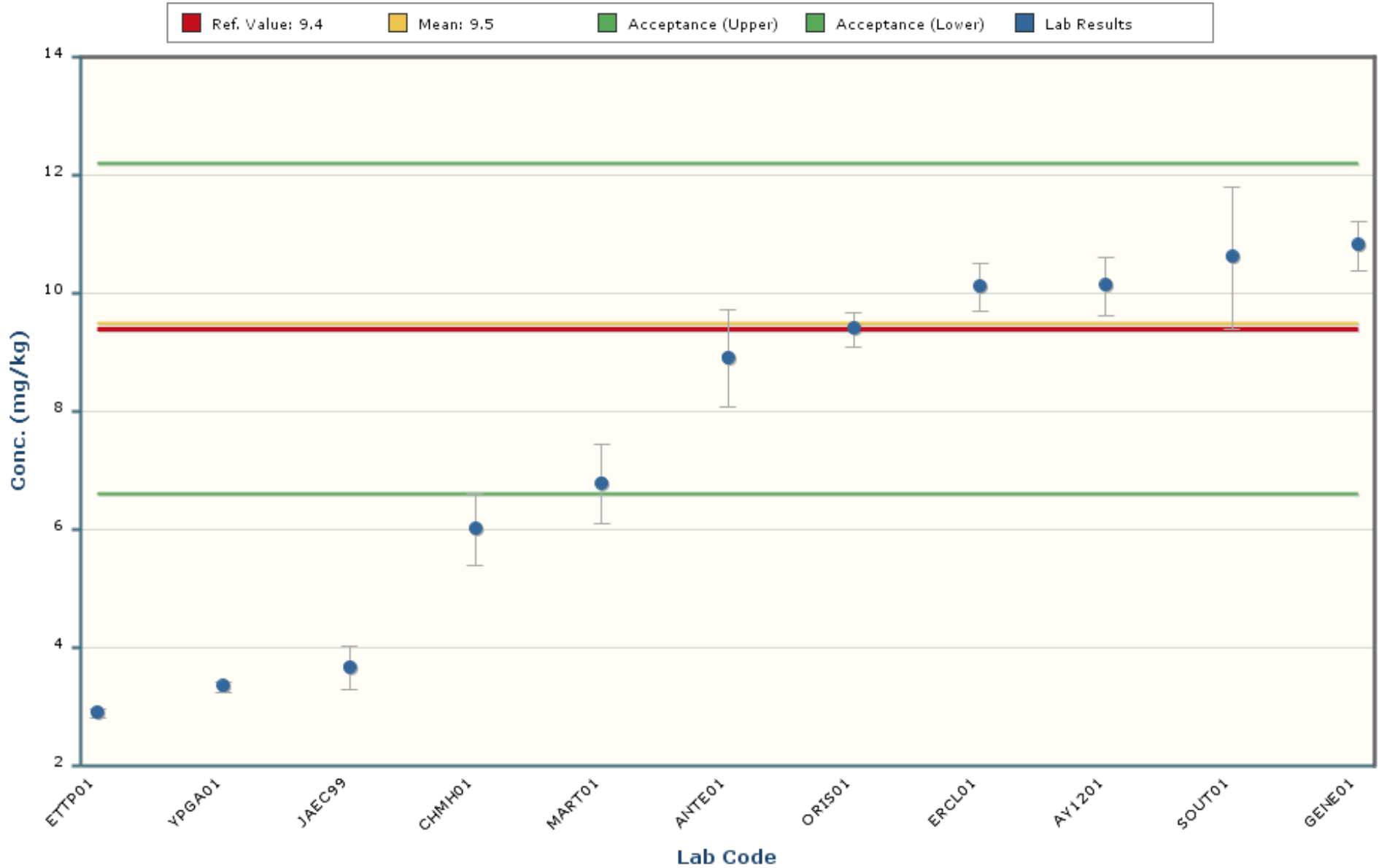
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 0.0166 and 0.1234 (± 5 Standard Deviations).

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

Uranium-238

MAPEP-19-MaS41



Notes:

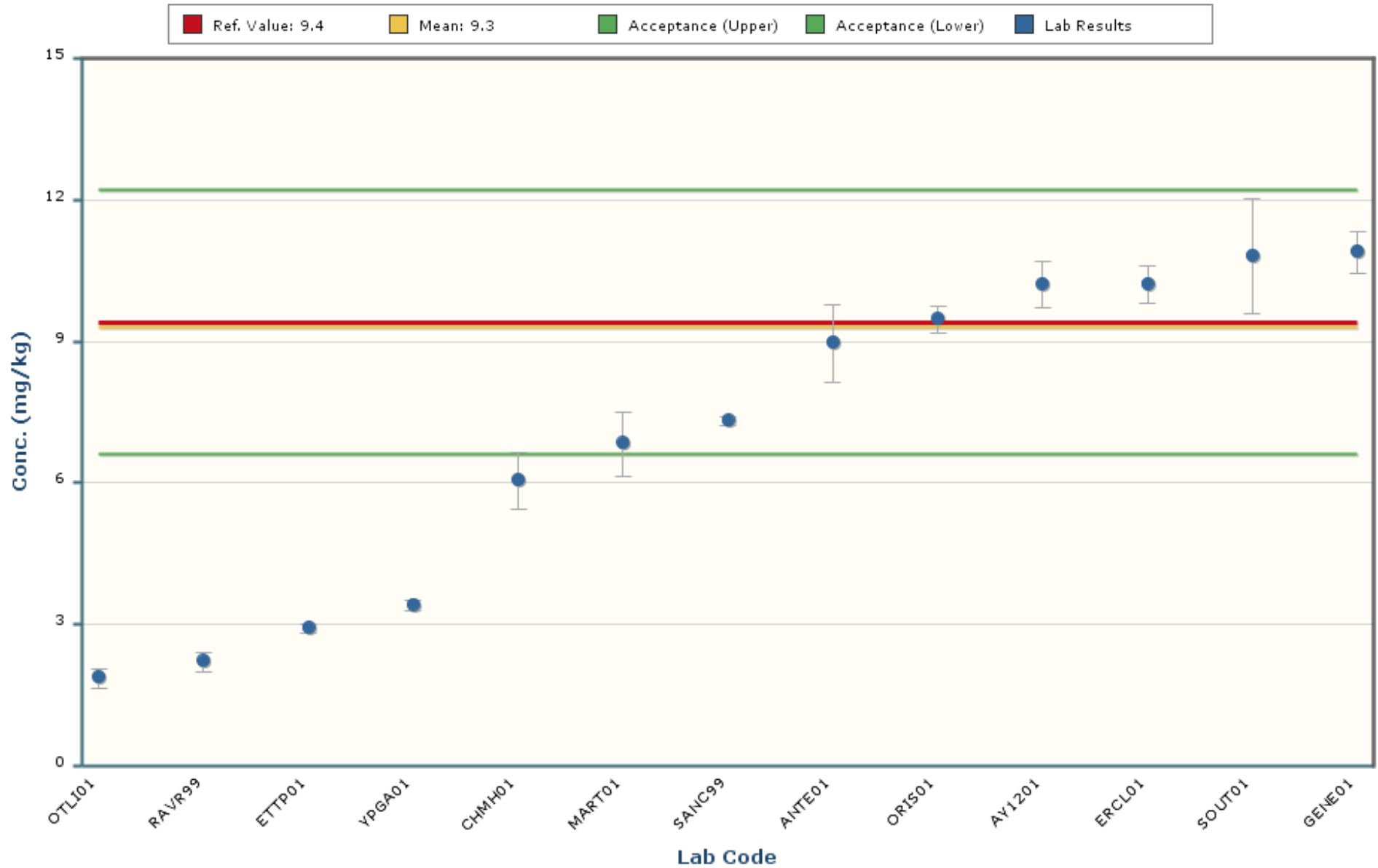
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 2.6 and 16.4 (± 5 Standard Deviations).

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

Uranium-Total

MAPEP-19-MaS41



Notes:

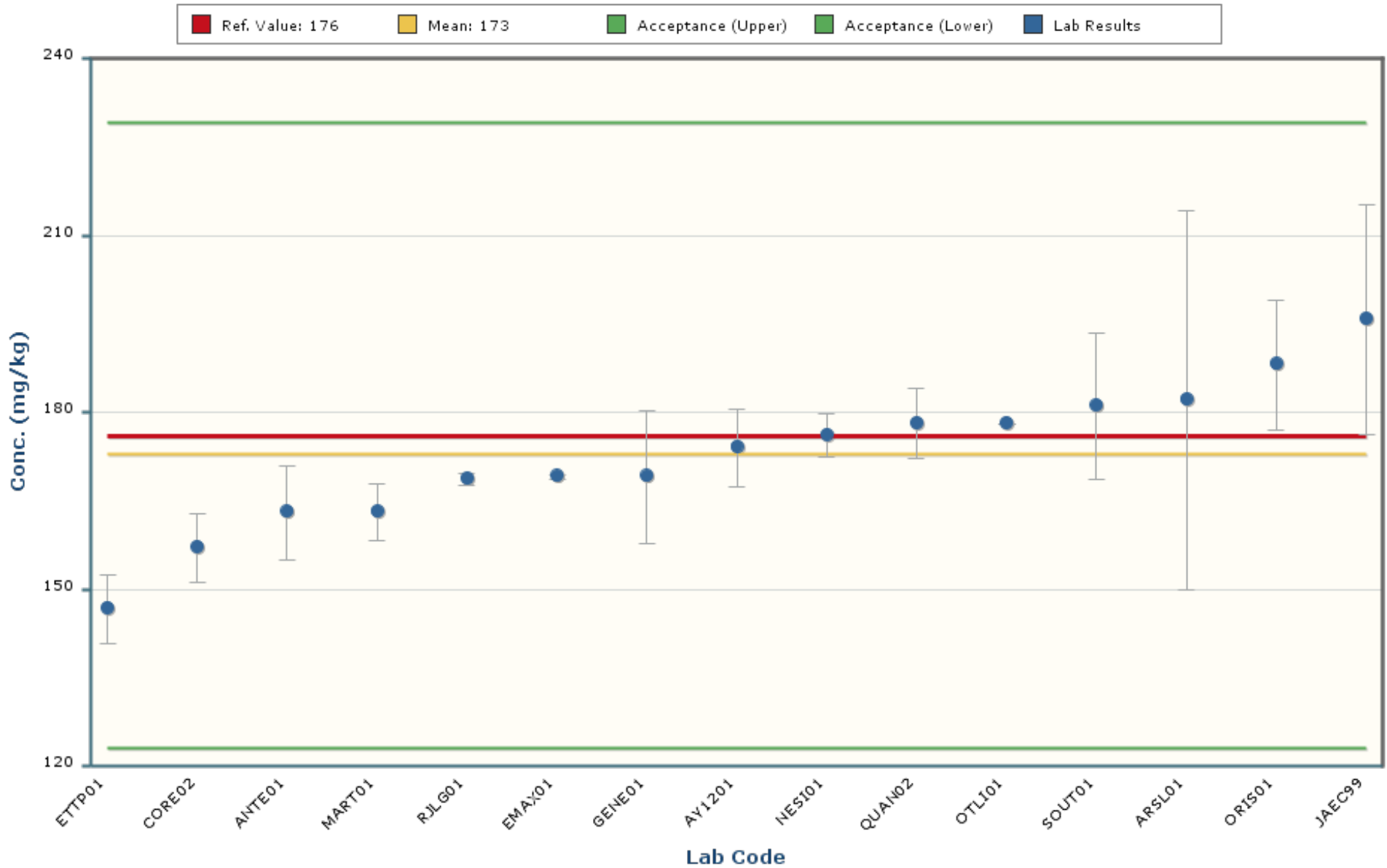
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 1.6 and 17.0 (± 5 Standard Deviations).

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

Vanadium

MAPEP-19-MaS41



Notes:

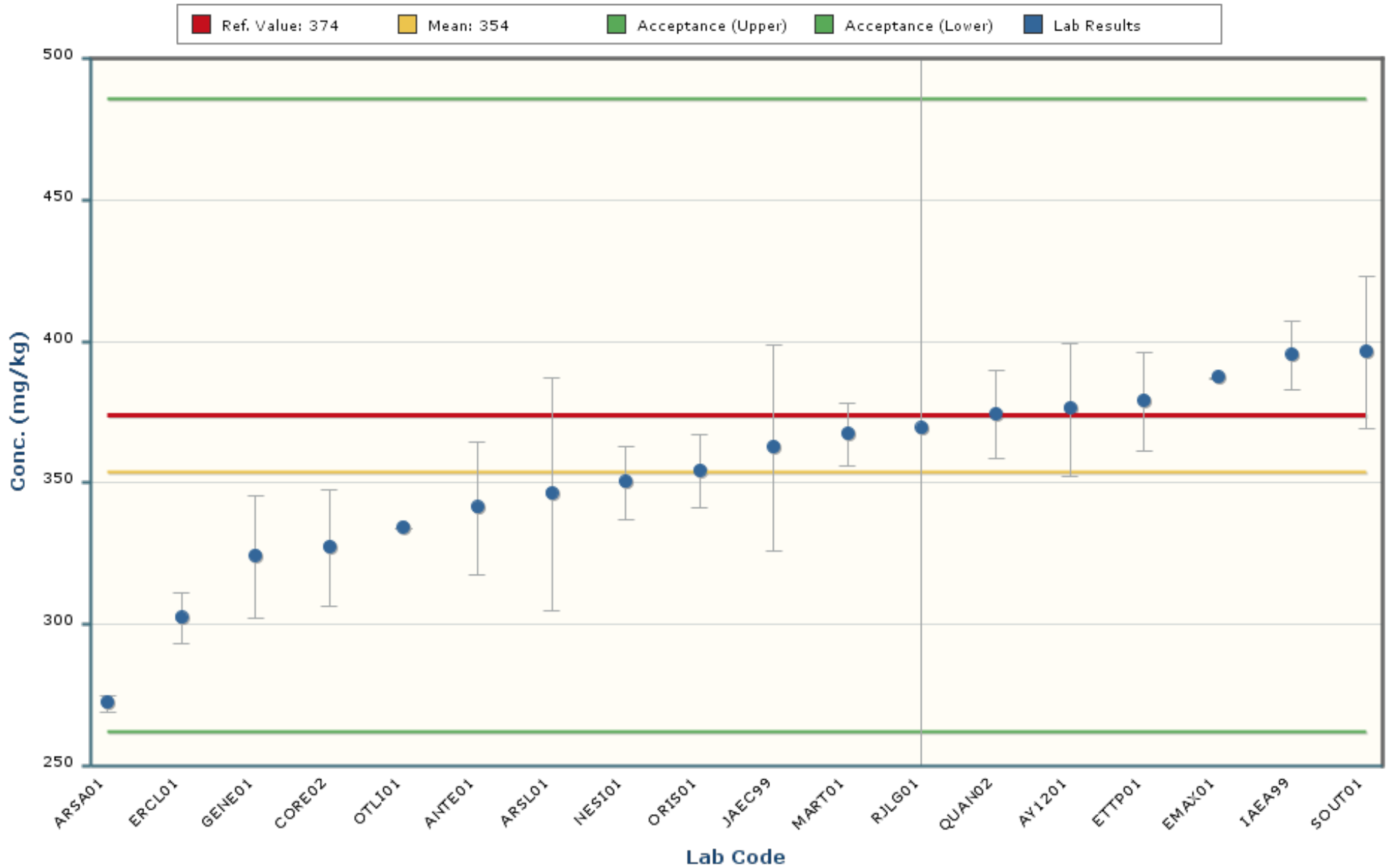
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 111 and 234 (± 5 Standard Deviations).

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

Zinc

MAPEP-19-MaS41



Notes:

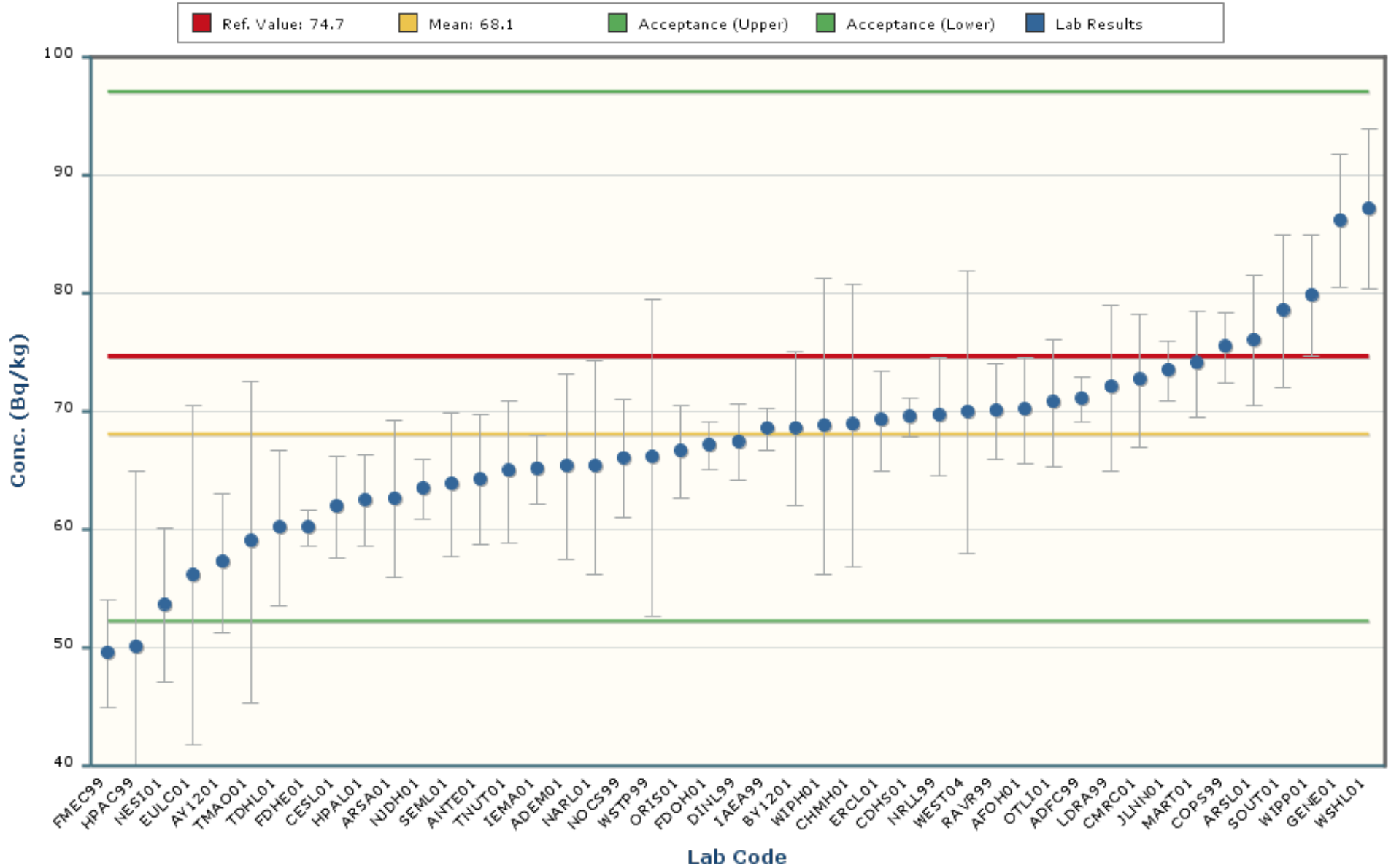
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 202 and 505 (± 5 Standard Deviations).

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

Americium-241

MAPEP-19-MaS41



Notes:

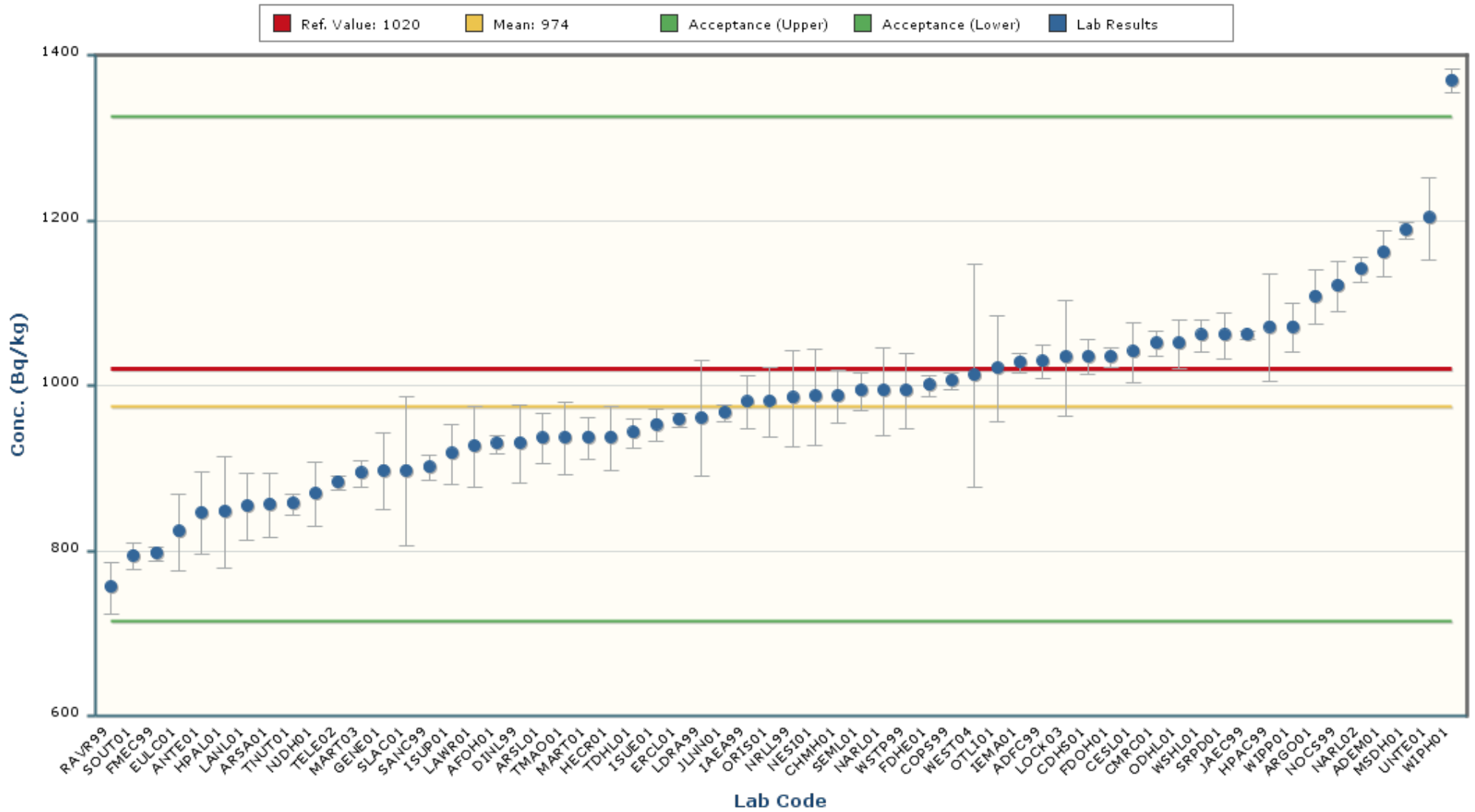
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 33.0 and 103.2 (± 5 Standard Deviations).

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

Cesium-134

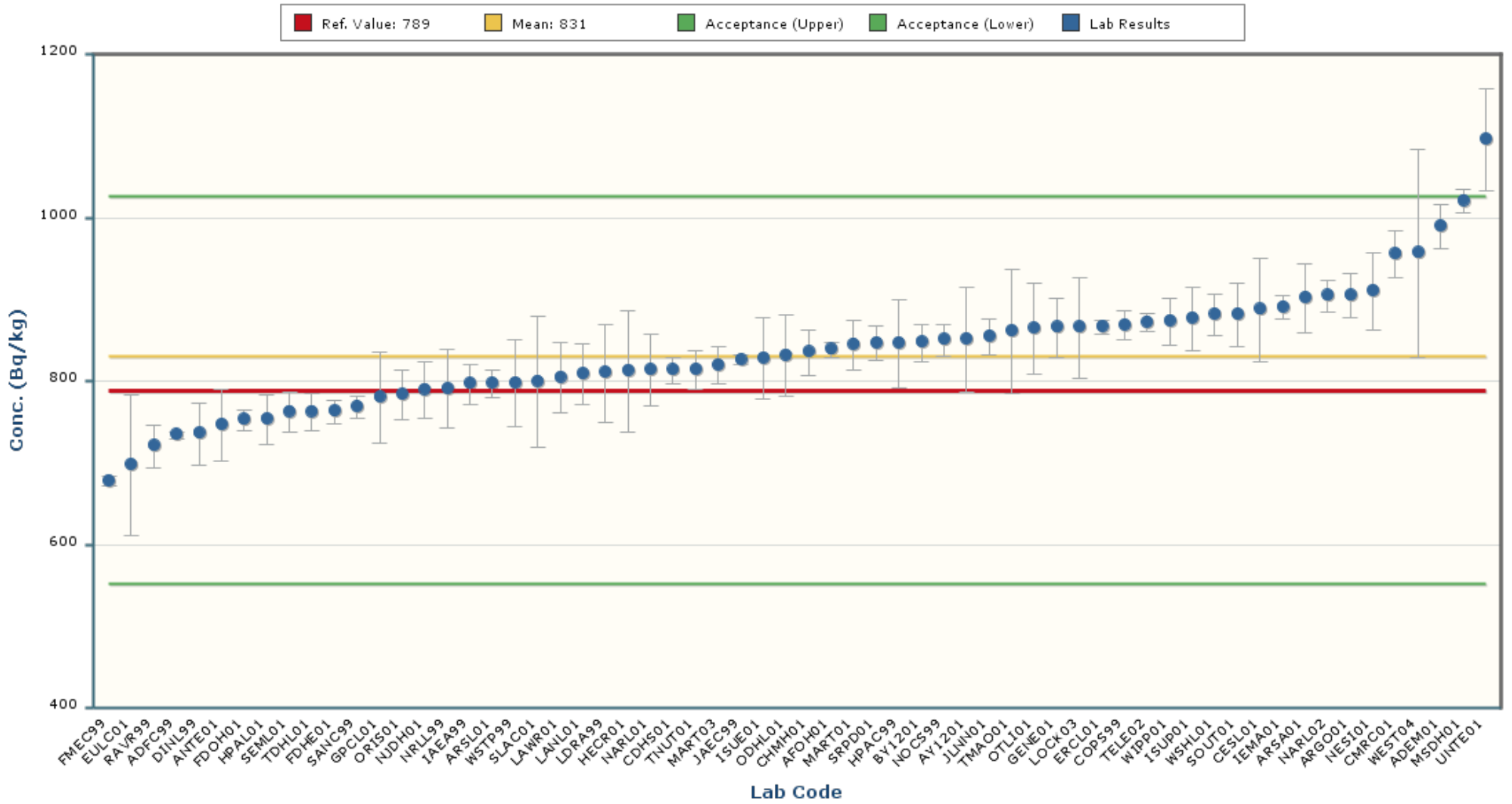
MAPEP-19-MaS41



Notes:
The chart mean excludes values outside of a bias range of $\pm 30\%$.
The chart shows only data points with values between 486 and 1461 (± 5 Standard Deviations).
The error bars encompassing each result are plotted at \pm one standard deviation.

Cesium-137

MAPEP-19-MaS41

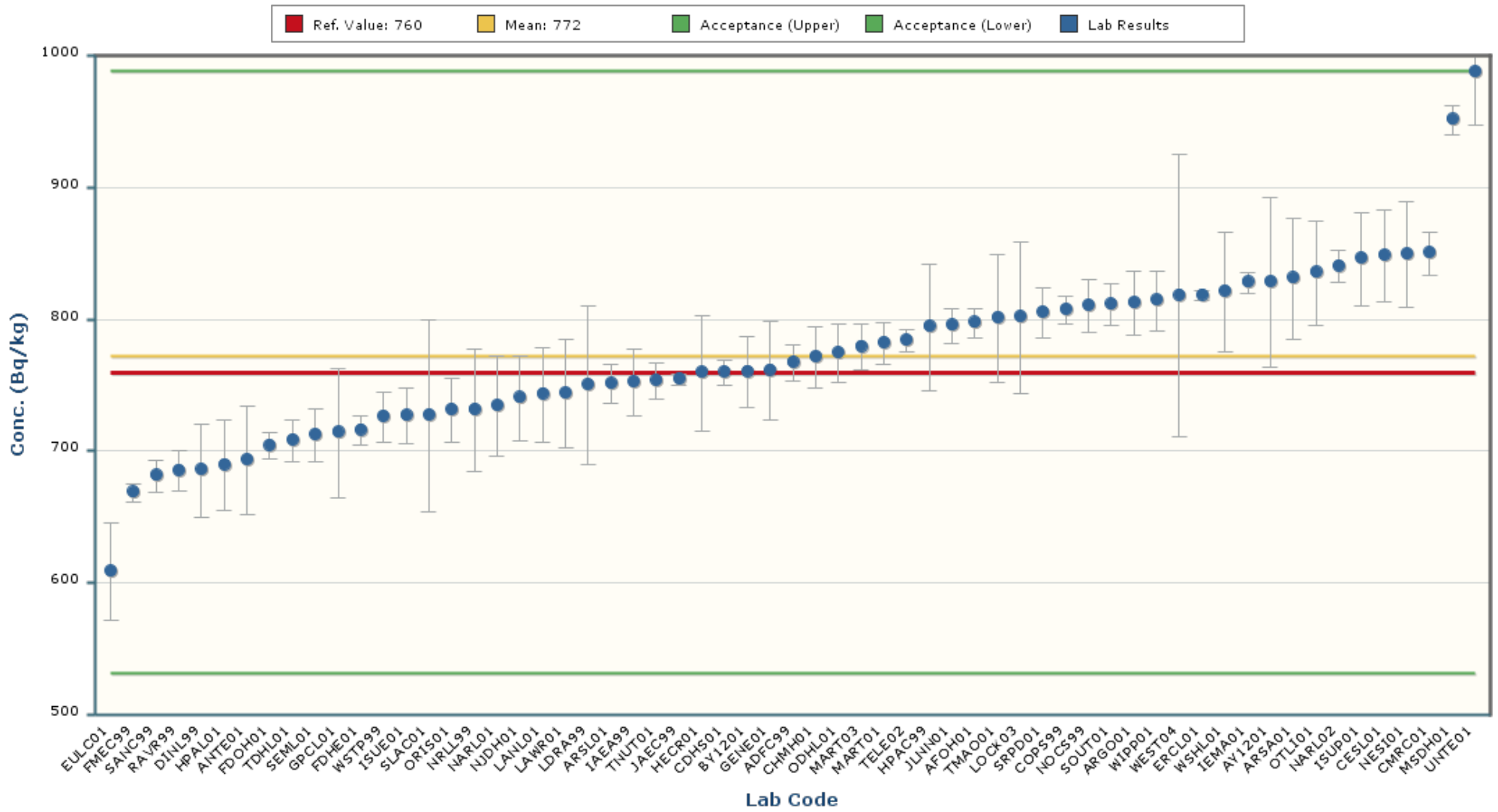


Notes:

- The chart mean excludes values outside of a bias range of $\pm 30\%$.
- The chart shows only data points with values between 498 and 1164 (± 5 Standard Deviations).
- The error bars encompassing each result are plotted at \pm one standard deviation.

Cobalt-60

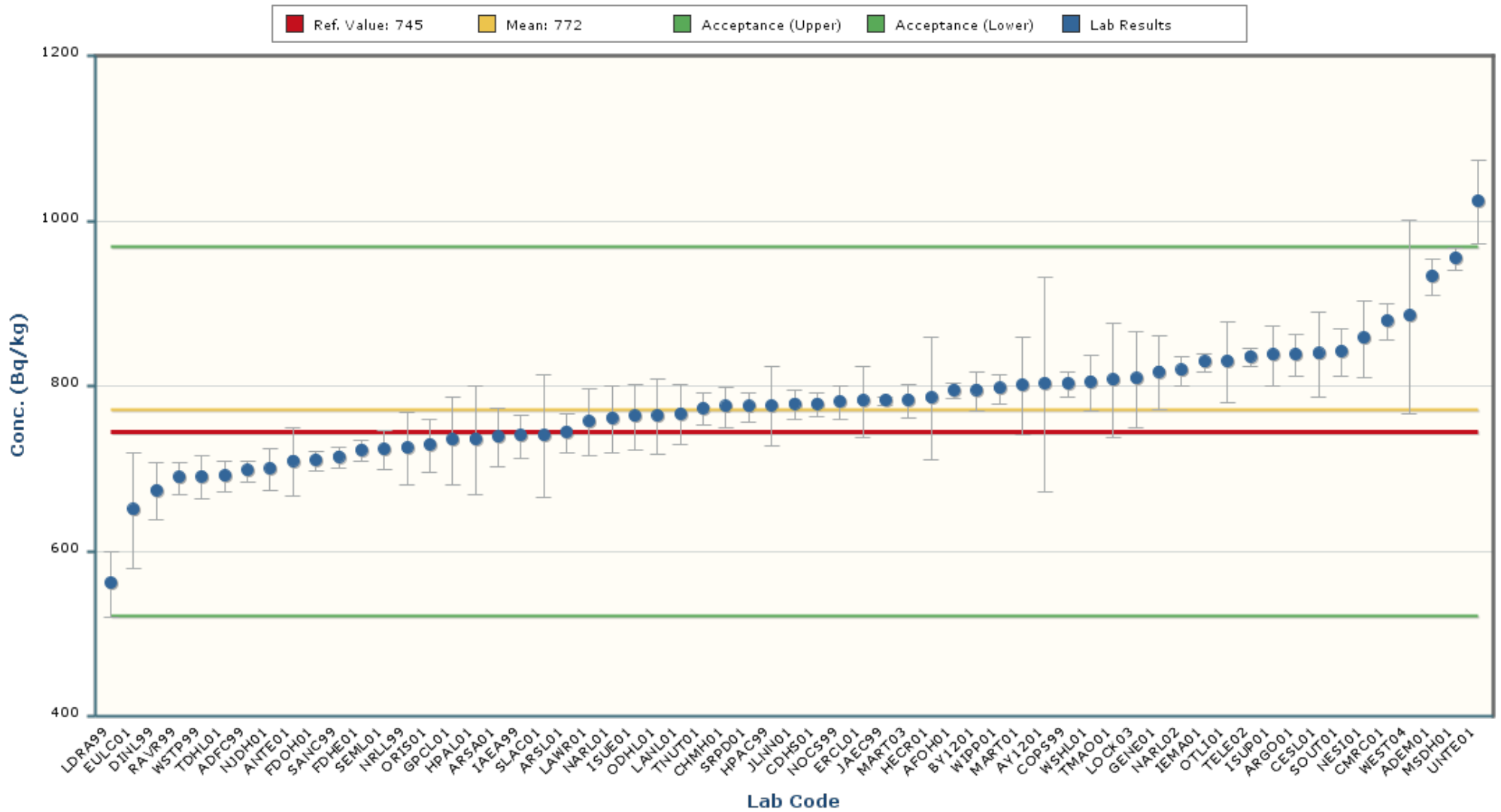
MAPEP-19-MaS41



Notes:
The chart mean excludes values outside of a bias range of $\pm 30\%$.
The chart shows only data points with values between 451 and 1094 (± 5 Standard Deviations).
The error bars encompassing each result are plotted at \pm one standard deviation.

Manganese-54

MAPEP-19-MaS41

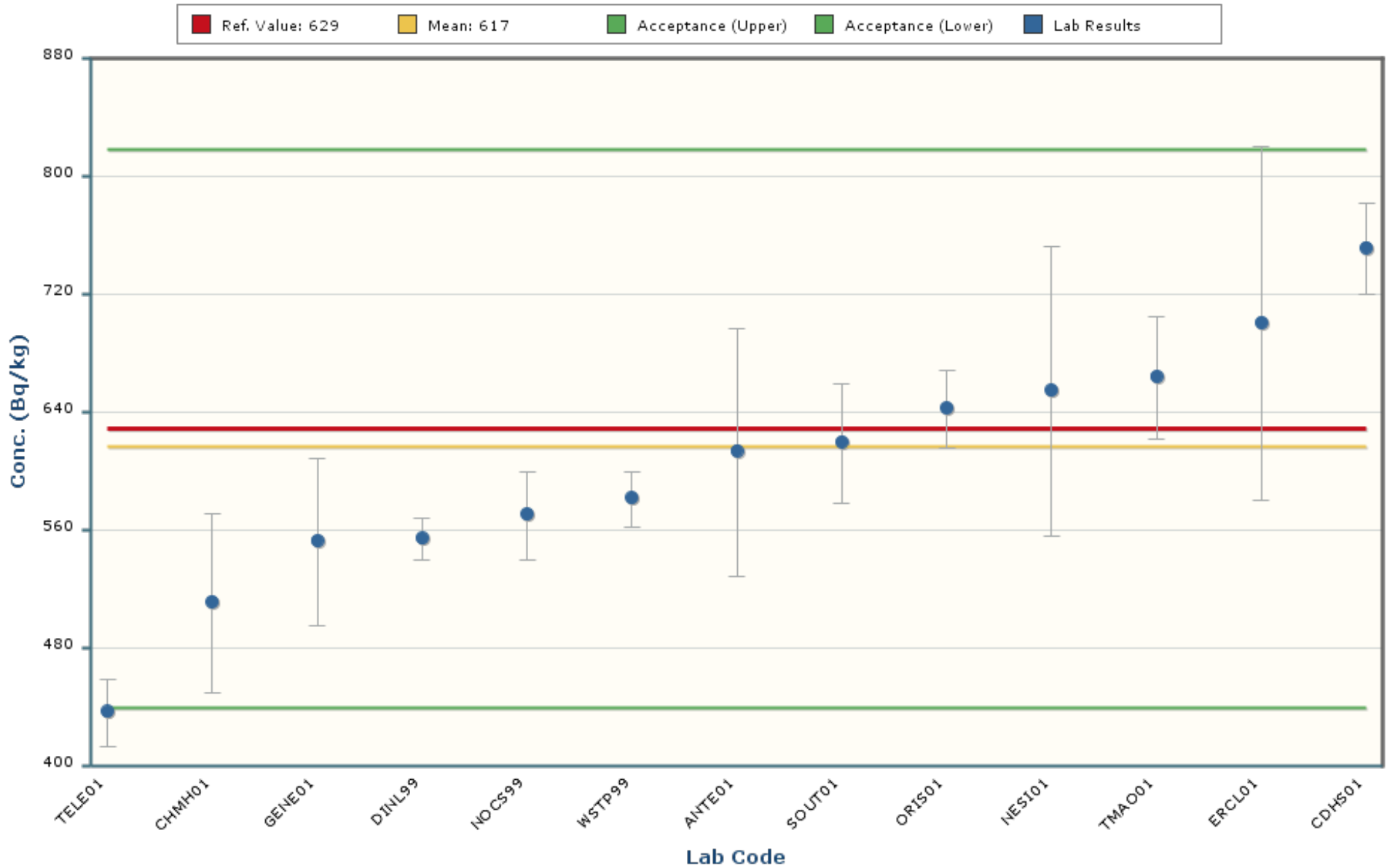


Notes:

- The chart mean excludes values outside of a bias range of $\pm 30\%$.
- The chart shows only data points with values between 441 and 1104 (± 5 Standard Deviations).
- The error bars encompassing each result are plotted at \pm one standard deviation.

Nickel-63

MAPEP-19-MaS41



Notes:

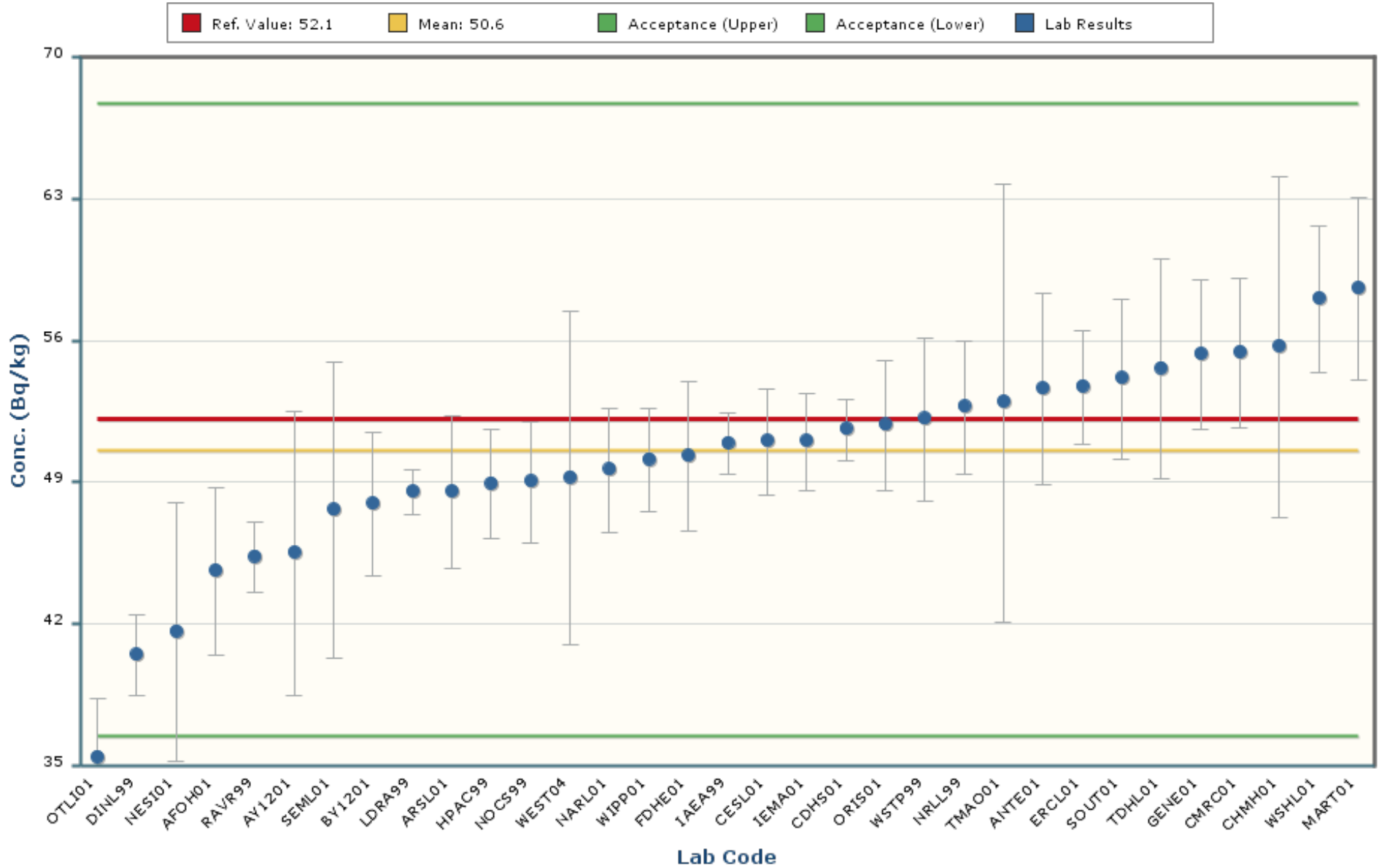
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 274 and 961 (± 5 Standard Deviations).

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

Plutonium-238

MAPEP-19-MaS41



Notes:

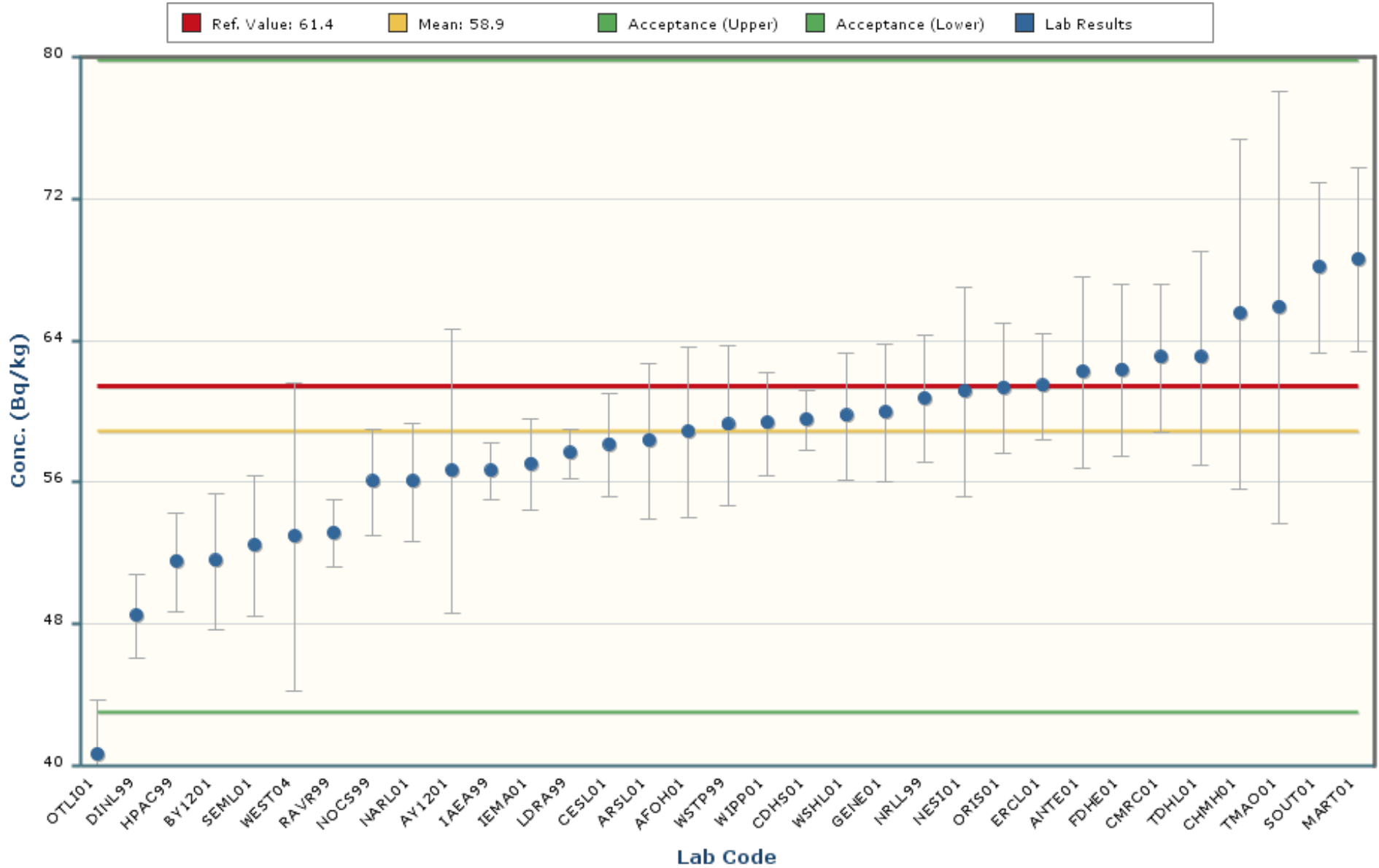
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 29.4 and 71.9 (± 5 Standard Deviations).

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

Plutonium-239/240

MAPEP-19-MaS41



Notes:

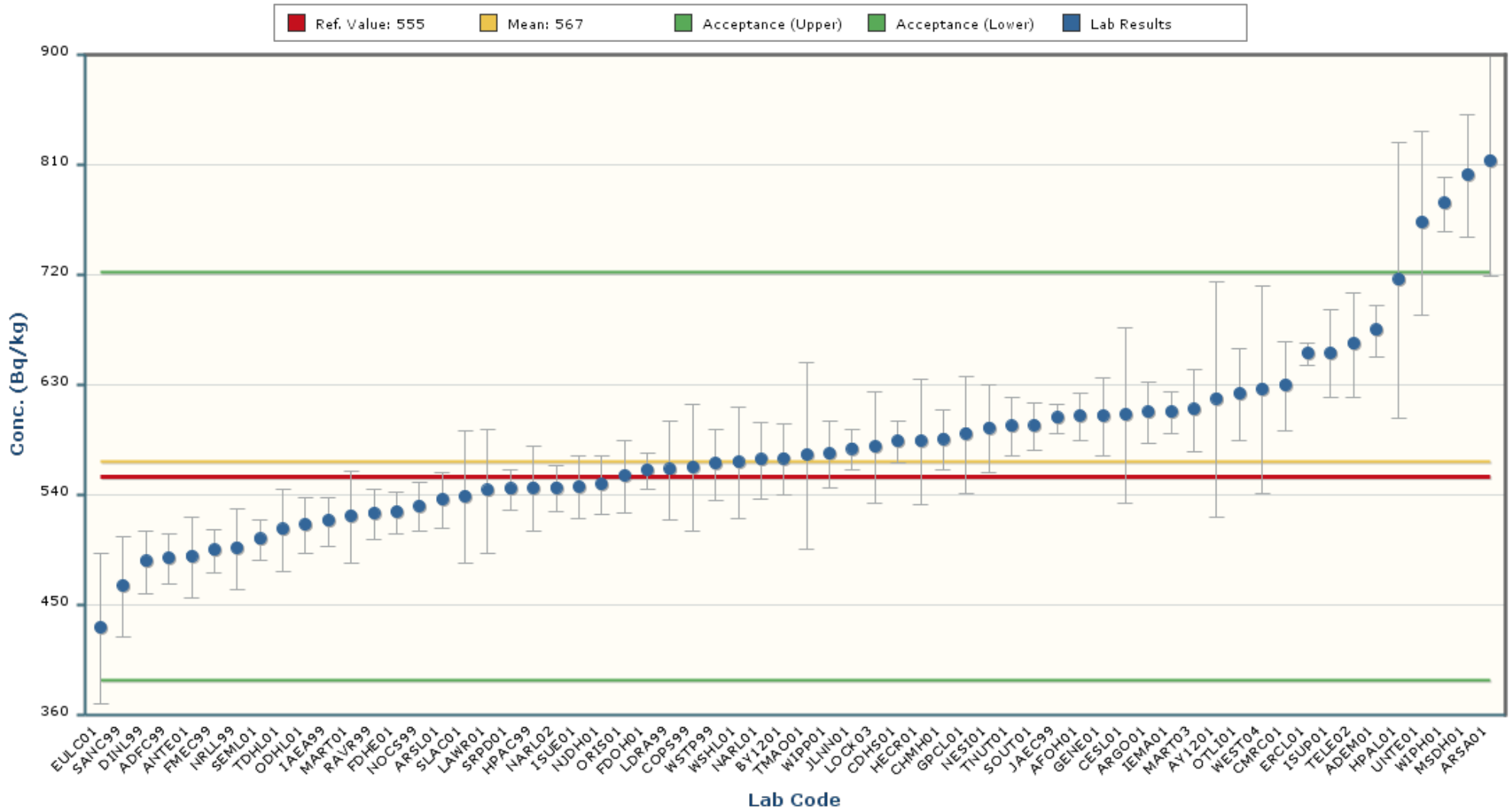
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 35.0 and 82.9 (± 5 Standard Deviations).

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

Potassium-40

MAPEP-19-MaS41

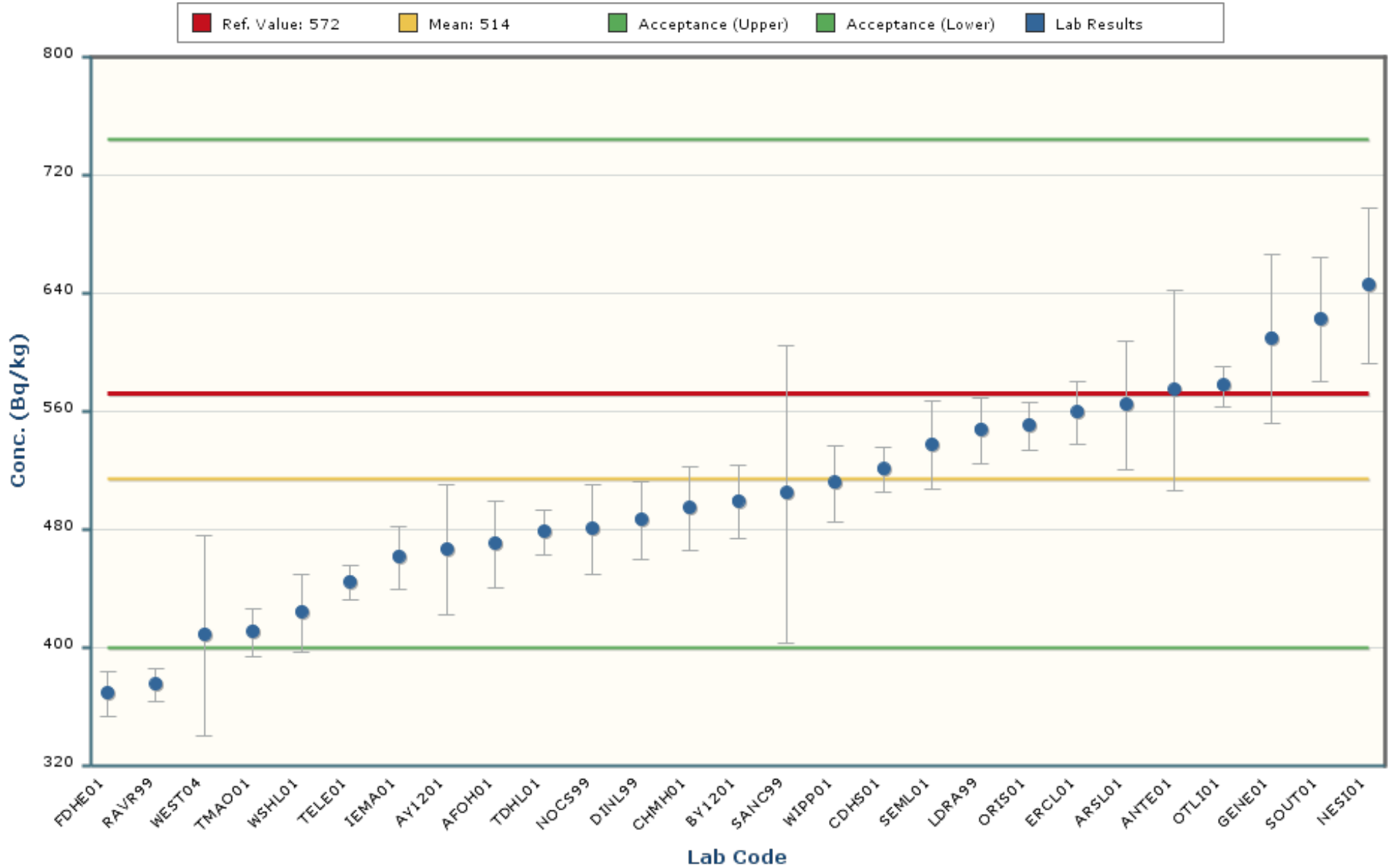


Notes:

- The chart mean excludes values outside of a bias range of $\pm 30\%$.
- The chart shows only data points with values between 295 and 838 (± 5 Standard Deviations).
- The error bars encompassing each result are plotted at \pm one standard deviation.

Strontium-90

MAPEP-19-MaS41



Notes:

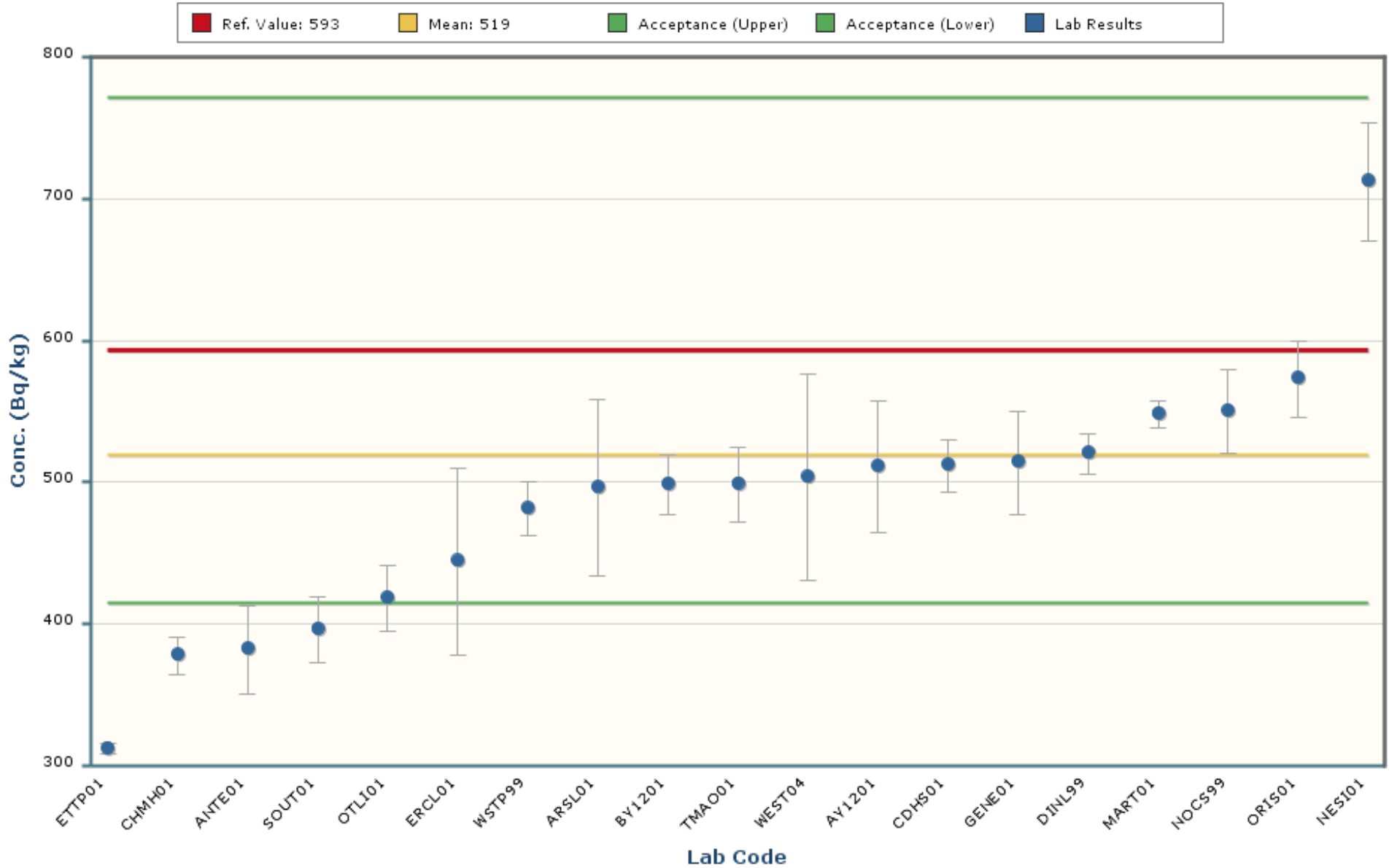
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 192 and 835 (± 5 Standard Deviations).

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

Technetium-99

MAPEP-19-MaS41



Notes:

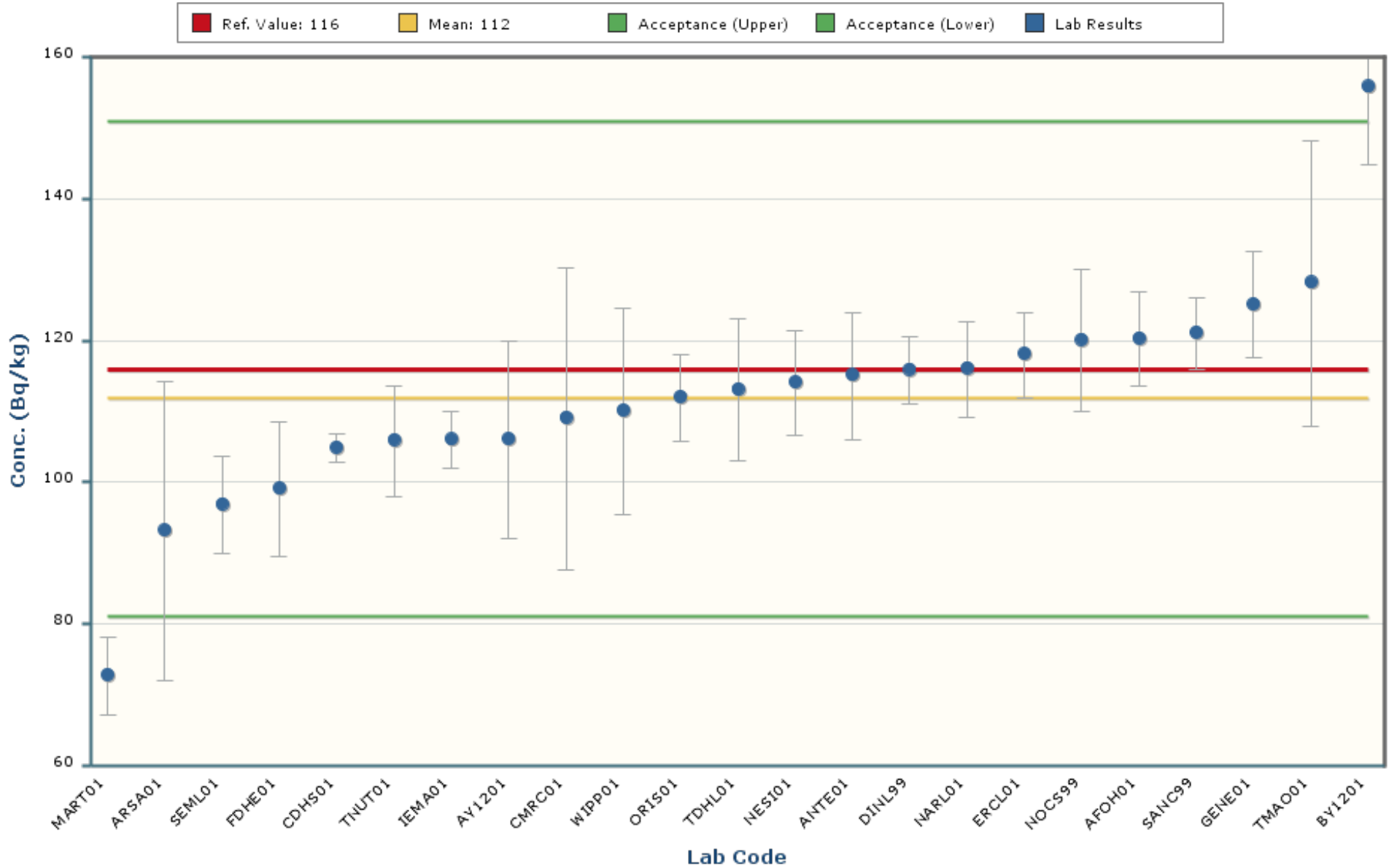
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 189 and 849 (± 5 Standard Deviations).

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

Uranium-234

MAPEP-19-MaS41



Notes:

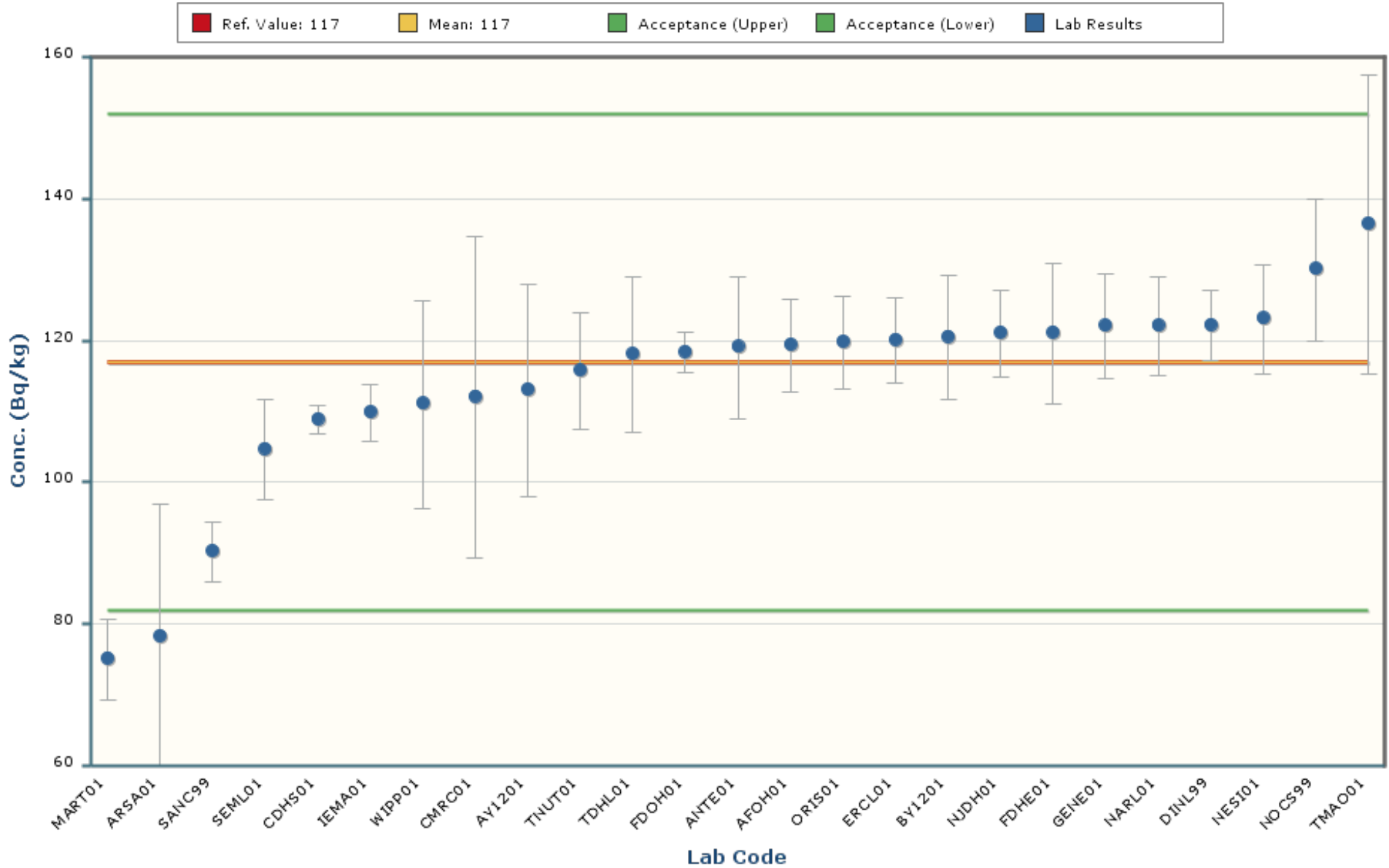
The chart mean excludes values outside of a bias range of $\pm 30\%$.

The chart shows only data points with values between 66 and 157 (± 5 Standard Deviations).

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

Uranium-238

MAPEP-19-MaS41



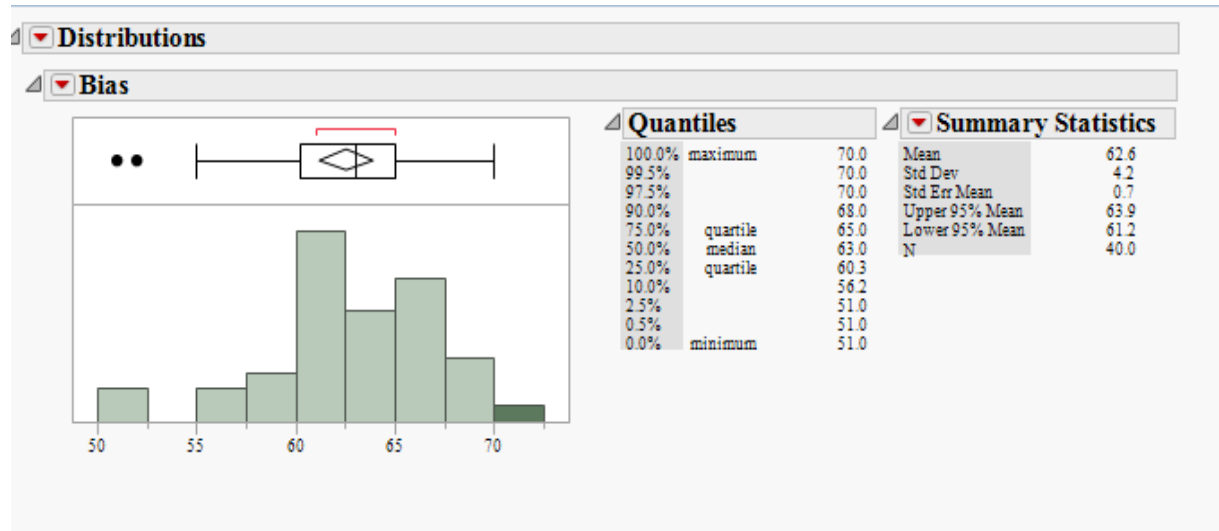
Notes:

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

The chart shows only data points with values between 72 and 162 (± 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.

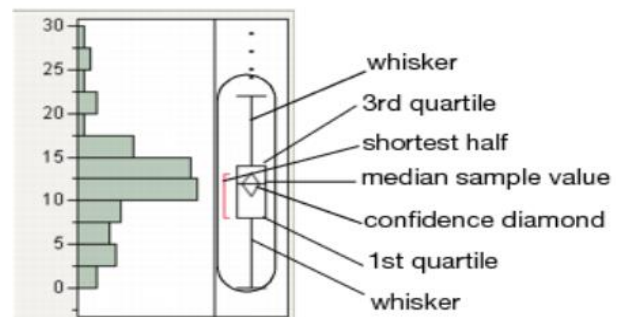


Outlier Box Plot

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)

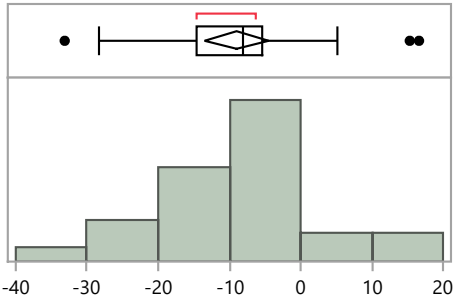


If the data points do not reach the computed ranges, then the whiskers are determined by the upper and lower data point values (not including outliers). The bracket outside of the box identifies the *shortest half*, which is the most dense 50% of the observations (Rousseuw and Leroy 1987).

MaS Distribution by Detection Method

Distributions Analyte_Detection=Americium-241 Alpha Spectrometry

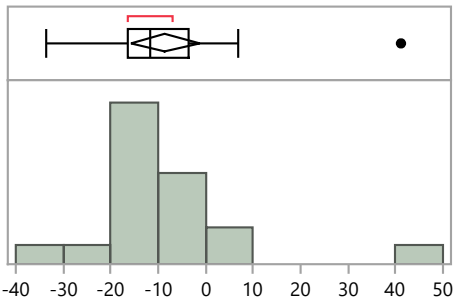
Bias



Quantiles			Summary Statistics	
100.0%	maximum	16.6	Mean	-9.0
99.5%		16.6	Std Dev	11.2
97.5%		16.6	Std Err Mean	2.2
90.0%		7.1	Upper 95% Mean	-4.6
75.0%	quartile	-5.4	Lower 95% Mean	-13.5
50.0%	median	-8.2	N	27.0
25.0%	quartile	-14.6		
10.0%		-24.4		
2.5%		-33.1		
0.5%		-33.1		
0.0%	minimum	-33.1		

Distributions Analyte_Detection=Americium-241 Gamma Spectrometry

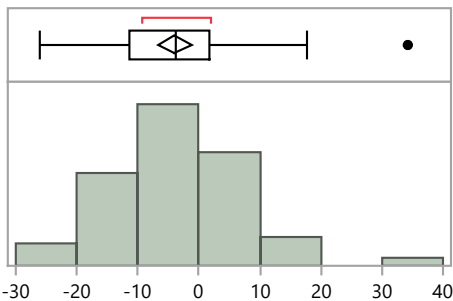
Bias



Quantiles			Summary Statistics	
100.0%	maximum	41.1	Mean	-8.6
99.5%		41.1	Std Dev	15.1
97.5%		41.1	Std Err Mean	3.5
90.0%		6.8	Upper 95% Mean	-1.3
75.0%	quartile	-3.6	Lower 95% Mean	-15.9
50.0%	median	-11.5	N	19.0
25.0%	quartile	-16.3		
10.0%		-24.9		
2.5%		-33.7		
0.5%		-33.7		
0.0%	minimum	-33.7		

Distributions Analyte_Detection=Cesium-134 Gamma Spectrometry

Bias

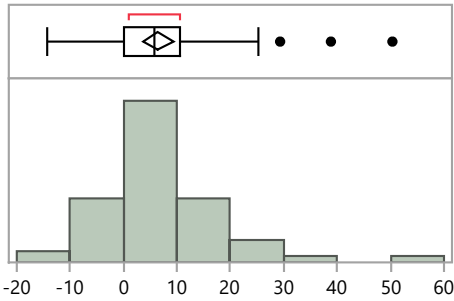


Quantiles			Summary Statistics	
100.0%	maximum	34.2	Mean	-3.9
99.5%		34.2	Std Dev	10.7
97.5%		25.6	Std Err Mean	1.4
90.0%		9.7	Upper 95% Mean	-1.1
75.0%	quartile	1.9	Lower 95% Mean	-6.7
50.0%	median	-3.7	N	60.0
25.0%	quartile	-11.4		
10.0%		-16.9		
2.5%		-24.1		
0.5%		-26.0		
0.0%	minimum	-26.0		

MaS Distribution by Detection Method

Distributions Analyte_Detection=Cesium-137 Gamma Spectrometry

Bias



Quantiles

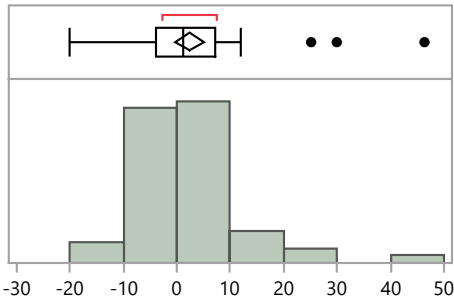
100.0%	maximum	50.3
99.5%		50.3
97.5%		43.4
90.0%		18.7
75.0%	quartile	10.6
50.0%	median	5.8
25.0%	quartile	0.1
10.0%		-5.2
2.5%		-12.7
0.5%		-14.2
0.0%	minimum	-14.2

Summary Statistics

Mean	6.5
Std Dev	10.9
Std Err Mean	1.4
Upper 95% Mean	9.3
Lower 95% Mean	3.8
N	63.0

Distributions Analyte_Detection=Cobalt-60 Gamma Spectrometry

Bias



Quantiles

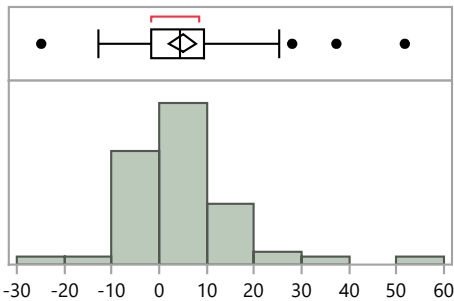
100.0%	maximum	46.3
99.5%		46.3
97.5%		36.9
90.0%		11.5
75.0%	quartile	7.2
50.0%	median	1.2
25.0%	quartile	-3.9
10.0%		-9.2
2.5%		-15.5
0.5%		-20.0
0.0%	minimum	-20.0

Summary Statistics

Mean	2.4
Std Dev	10.1
Std Err Mean	1.3
Upper 95% Mean	4.9
Lower 95% Mean	-0.2
N	62.0

Distributions Analyte_Detection=Manganese-54 Gamma Spectrometry

Bias



Quantiles

100.0%	maximum	51.7
99.5%		51.7
97.5%		43.4
90.0%		17.0
75.0%	quartile	9.6
50.0%	median	4.3
25.0%	quartile	-1.7
10.0%		-7.1
2.5%		-18.0
0.5%		-24.8
0.0%	minimum	-24.8

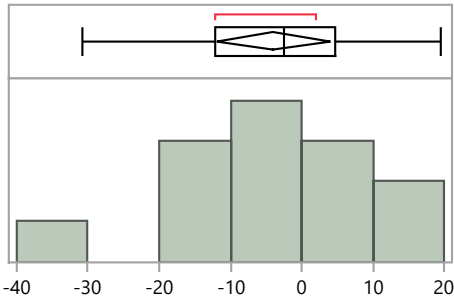
Summary Statistics

Mean	5.0
Std Dev	11.5
Std Err Mean	1.5
Upper 95% Mean	7.9
Lower 95% Mean	2.1
N	62.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Nickel-63 Beta Counting - liquid scintillation counter

Bias



Quantiles

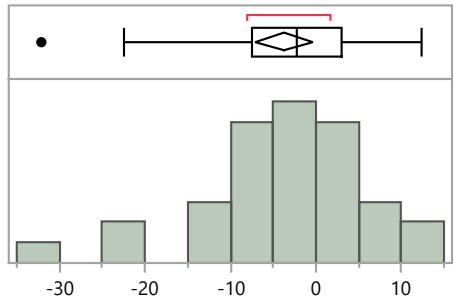
100.0%	maximum	19.4
99.5%		19.4
97.5%		19.4
90.0%		16.2
75.0%	quartile	4.8
50.0%	median	-2.5
25.0%	quartile	-12.1
10.0%		-25.9
2.5%		-30.7
0.5%		-30.7
0.0%	minimum	-30.7

Summary Statistics

Mean	-4.0
Std Dev	13.2
Std Err Mean	3.7
Upper 95% Mean	3.9
Lower 95% Mean	-12.0
N	13.0

Distributions Analyte_Detection=Plutonium-238 Alpha Spectrometry

Bias



Quantiles

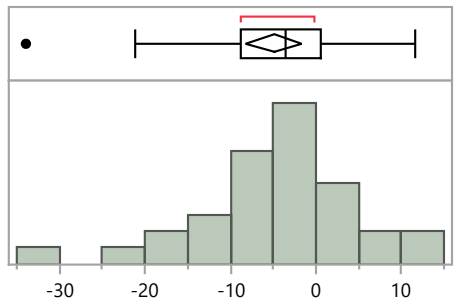
100.0%	maximum	12.4
99.5%		12.4
97.5%		12.4
90.0%		6.7
75.0%	quartile	3.0
50.0%	median	-2.3
25.0%	quartile	-7.5
10.0%		-17.9
2.5%		-32.1
0.5%		-32.1
0.0%	minimum	-32.1

Summary Statistics

Mean	-3.7
Std Dev	9.5
Std Err Mean	1.7
Upper 95% Mean	-0.3
Lower 95% Mean	-7.1
N	33.0

Distributions Analyte_Detection=Plutonium-239/240 Alpha Spectrometry

Bias



Quantiles

100.0%	maximum	11.6
99.5%		11.6
97.5%		11.6
90.0%		7.0
75.0%	quartile	0.7
50.0%	median	-3.6
25.0%	quartile	-8.8
10.0%		-16.1
2.5%		-33.9
0.5%		-33.9
0.0%	minimum	-33.9

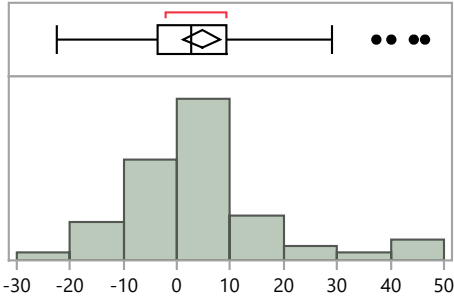
Summary Statistics

Mean	-4.9
Std Dev	9.3
Std Err Mean	1.6
Upper 95% Mean	-1.7
Lower 95% Mean	-8.2
N	33.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Potassium-40 Gamma Spectrometry

Bias



Quantiles

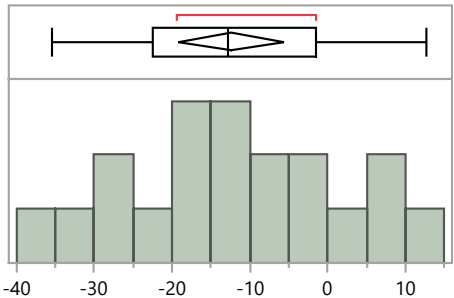
100.0%	maximum	46.4
99.5%		46.4
97.5%		45.2
90.0%		20.8
75.0%	quartile	9.4
50.0%	median	2.8
25.0%	quartile	-3.8
10.0%		-10.9
2.5%		-18.8
0.5%		-22.4
0.0%	minimum	-22.4

Summary Statistics

Mean	4.7
Std Dev	13.7
Std Err Mean	1.7
Upper 95% Mean	8.2
Lower 95% Mean	1.2
N	62.0

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

Bias



Quantiles

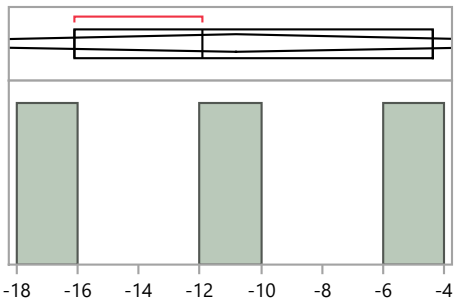
100.0%	maximum	12.8
99.5%		12.8
97.5%		12.8
90.0%		8.7
75.0%	quartile	-1.4
50.0%	median	-12.8
25.0%	quartile	-22.4
10.0%		-34.5
2.5%		-35.5
0.5%		-35.5
0.0%	minimum	-35.5

Summary Statistics

Mean	-12.3
Std Dev	14.1
Std Err Mean	3.2
Upper 95% Mean	-5.5
Lower 95% Mean	-19.1
N	19.0

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

Bias



Quantiles

100.0%	maximum	-4.4
99.5%		-4.4
97.5%		-4.4
90.0%		-4.4
75.0%	quartile	-4.4
50.0%	median	-11.9
25.0%	quartile	-16.1
10.0%		-16.1
2.5%		-16.1
0.5%		-16.1
0.0%	minimum	-16.1

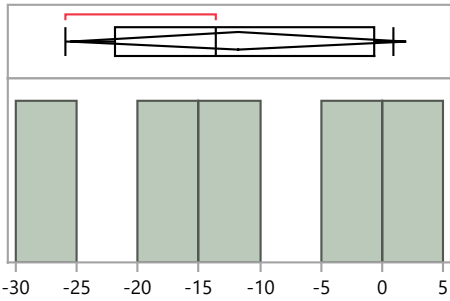
Summary Statistics

Mean	-10.8
Std Dev	5.9
Std Err Mean	3.4
Upper 95% Mean	3.9
Lower 95% Mean	-25.5
N	3.0

MaS Distribution by Detection Method

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

Bias



Quantiles

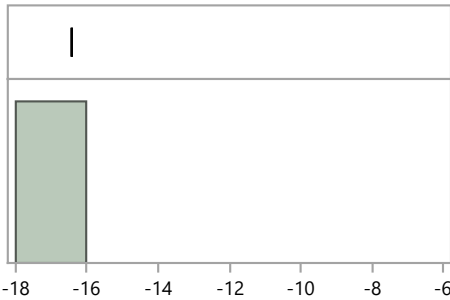
100.0%	maximum	0.9
99.5%		0.9
97.5%		0.9
90.0%		0.9
75.0%	quartile	-0.7
50.0%	median	-13.6
25.0%	quartile	-21.9
10.0%		-25.9
2.5%		-25.9
0.5%		-25.9
0.0%	minimum	-25.9

Summary Statistics

Mean	-11.7
Std Dev	11.1
Std Err Mean	4.9
Upper 95% Mean	2.0
Lower 95% Mean	-25.5
N	5.0

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

Bias



Quantiles

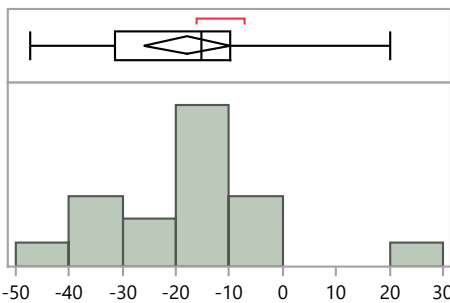
100.0%	maximum	-16.4
99.5%		-16.4
97.5%		-16.4
90.0%		-16.4
75.0%	quartile	-16.4
50.0%	median	-16.4
25.0%	quartile	-16.4
10.0%		-16.4
2.5%		-16.4
0.5%		-16.4
0.0%	minimum	-16.4

Summary Statistics

Mean	-16.4
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	20.1
99.5%		20.1
97.5%		20.1
90.0%		1.3
75.0%	quartile	-10.0
50.0%	median	-15.1
25.0%	quartile	-31.4
10.0%		-38.5
2.5%		-47.4
0.5%		-47.4
0.0%	minimum	-47.4

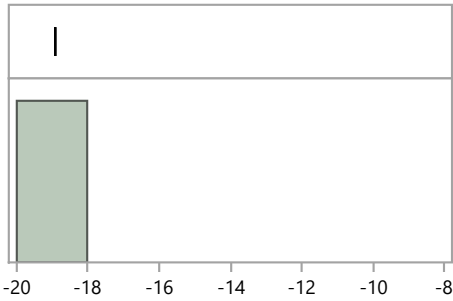
Summary Statistics

Mean	-18.0
Std Dev	15.6
Std Err Mean	3.8
Upper 95% Mean	-9.9
Lower 95% Mean	-26.0
N	17.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Technetium-99 Inductively Coupled Plasma Mass Spectrometry

Bias

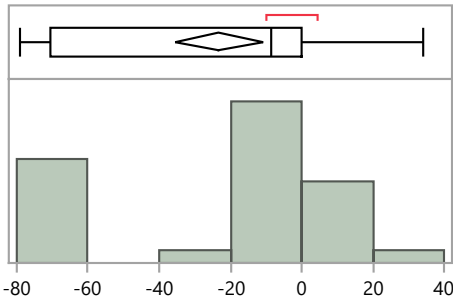


Quantiles		
100.0%	maximum	-18.9
99.5%		-18.9
97.5%		-18.9
90.0%		-18.9
75.0%	quartile	-18.9
50.0%	median	-18.9
25.0%	quartile	-18.9
10.0%		-18.9
2.5%		-18.9
0.5%		-18.9
0.0%	minimum	-18.9

Summary Statistics	
Mean	-18.9
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Detection=Uranium-234 Alpha Spectrometry

Bias

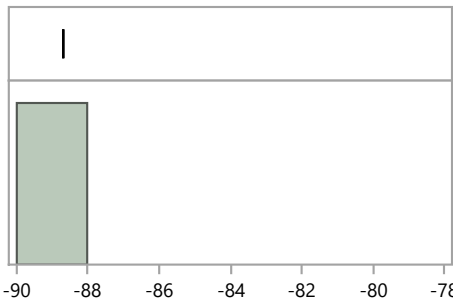


Quantiles		
100.0%	maximum	34.2
99.5%		34.2
97.5%		34.2
90.0%		6.7
75.0%	quartile	-0.1
50.0%	median	-8.7
25.0%	quartile	-70.3
10.0%		-76.1
2.5%		-78.8
0.5%		-78.8
0.0%	minimum	-78.8

Summary Statistics	
Mean	-23.3
Std Dev	34.2
Std Err Mean	6.0
Upper 95% Mean	-11.0
Lower 95% Mean	-35.6
N	32.0

Distributions Analyte_Detection=Uranium-234 Inductively Coupled Plasma Mass Spectrometry

Bias



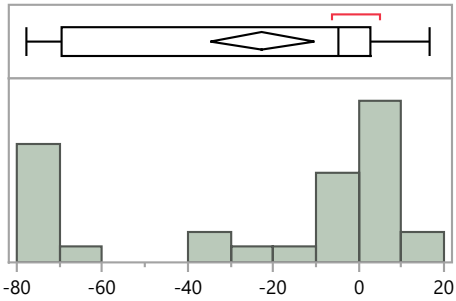
Quantiles		
100.0%	maximum	-88.7
99.5%		-88.7
97.5%		-88.7
90.0%		-88.7
75.0%	quartile	-88.7
50.0%	median	-88.7
25.0%	quartile	-88.7
10.0%		-88.7
2.5%		-88.7
0.5%		-88.7
0.0%	minimum	-88.7

Summary Statistics	
Mean	-88.7
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaS Distribution by Detection Method

Distributions Analyte_Detection=Uranium-238 Alpha Spectrometry

Bias



Quantiles

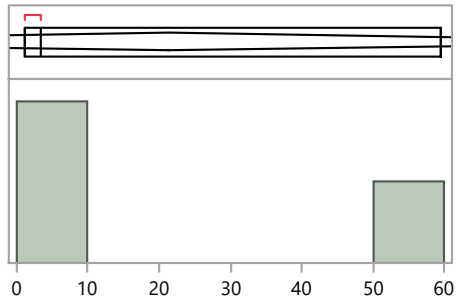
100.0%	maximum	16.6
99.5%		16.6
97.5%		16.6
90.0%		4.9
75.0%	quartile	2.8
50.0%	median	-4.7
25.0%	quartile	-69.4
10.0%		-74.5
2.5%		-77.7
0.5%		-77.7
0.0%	minimum	-77.7

Summary Statistics

Mean	-22.6
Std Dev	33.7
Std Err Mean	6.0
Upper 95% Mean	-10.5
Lower 95% Mean	-34.8
N	32.0

Distributions Analyte_Detection=Uranium-238 Gamma Spectrometry

Bias



Quantiles

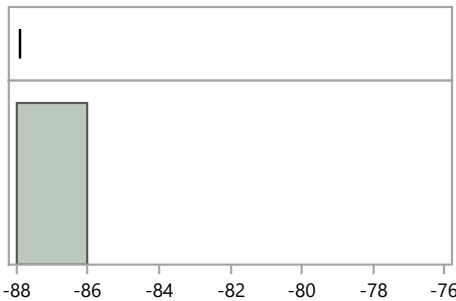
100.0%	maximum	59.4
99.5%		59.4
97.5%		59.4
90.0%		59.4
75.0%	quartile	59.4
50.0%	median	3.4
25.0%	quartile	1.1
10.0%		1.1
2.5%		1.1
0.5%		1.1
0.0%	minimum	1.1

Summary Statistics

Mean	21.3
Std Dev	33.0
Std Err Mean	19.1
Upper 95% Mean	103.3
Lower 95% Mean	-60.7
N	3.0

Distributions Analyte_Detection=Uranium-238 Inductively Coupled Plasma Mass Spectrometry

Bias



Quantiles

100.0%	maximum	-87.9
99.5%		-87.9
97.5%		-87.9
90.0%		-87.9
75.0%	quartile	-87.9
50.0%	median	-87.9
25.0%	quartile	-87.9
10.0%		-87.9
2.5%		-87.9
0.5%		-87.9
0.0%	minimum	-87.9

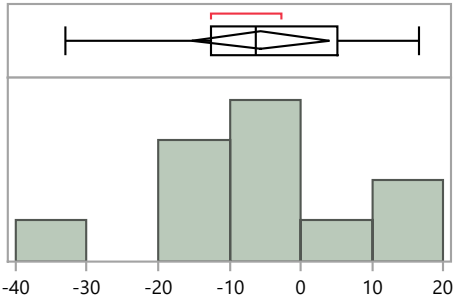
Summary Statistics

Mean	-87.9
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaS Distribution by Prep Method

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

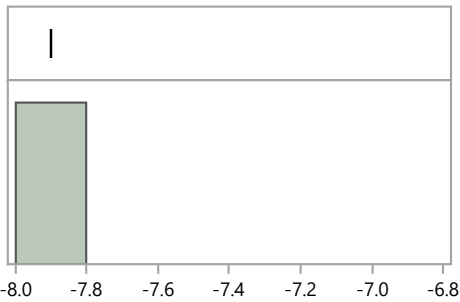
Bias



Quantiles			Summary Statistics	
100.0%	maximum	16.6	Mean	-5.6
99.5%		16.6	Std Dev	14.3
97.5%		16.6	Std Err Mean	4.3
90.0%		16.3	Upper 95% Mean	4.0
75.0%	quartile	5.1	Lower 95% Mean	-15.2
50.0%	median	-6.4	N	11.0
25.0%	quartile	-12.6		
10.0%		-29.9		
2.5%		-33.1		
0.5%		-33.1		
0.0%	minimum	-33.1		

Distributions Analyte_Method=Americium-241 Acid leaching without hydrofluoric acid

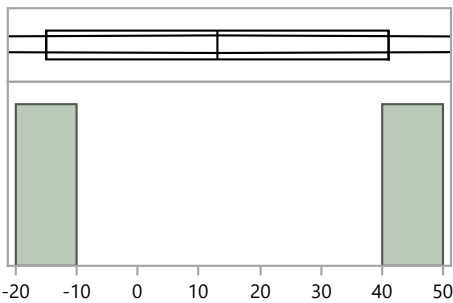
Bias



Quantiles			Summary Statistics	
100.0%	maximum	-7.9	Mean	-7.9
99.5%		-7.9	Std Dev	.
97.5%		-7.9	Std Err Mean	.
90.0%		-7.9	Upper 95% Mean	.
75.0%	quartile	-7.9	Lower 95% Mean	.
50.0%	median	-7.9	N	1.0
25.0%	quartile	-7.9		
10.0%		-7.9		
2.5%		-7.9		
0.5%		-7.9		
0.0%	minimum	-7.9		

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

Bias



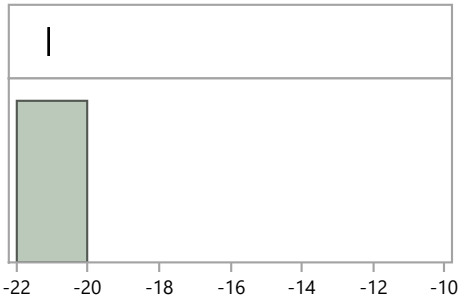
Quantiles			Summary Statistics	
100.0%	maximum	41.1	Mean	13.0
99.5%		41.1	Std Dev	39.7
97.5%		41.1	Std Err Mean	28.1
90.0%		41.1	Upper 95% Mean	370.0
75.0%	quartile	41.1	Lower 95% Mean	-344.0
50.0%	median	13.0	N	2.0
25.0%	quartile	-15.1		
10.0%		-15.1		
2.5%		-15.1		
0.5%		-15.1		
0.0%	minimum	-15.1		

MaS41 Distribution by Preparation Method

MaS Distribution by Prep Method

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

Bias



Quantiles

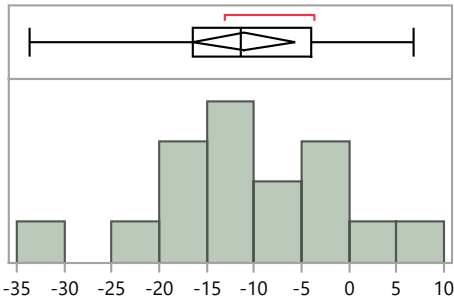
100.0%	maximum	-21.1
99.5%		-21.1
97.5%		-21.1
90.0%		-21.1
75.0%	quartile	-21.1
50.0%	median	-21.1
25.0%	quartile	-21.1
10.0%		-21.1
2.5%		-21.1
0.5%		-21.1
0.0%	minimum	-21.1

Summary Statistics

Mean	-21.1
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

Bias



Quantiles

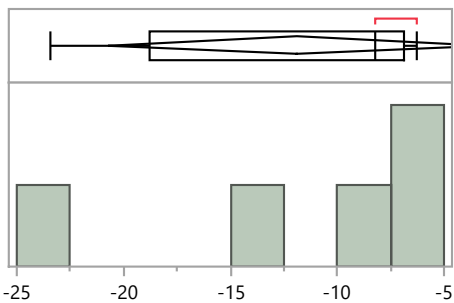
100.0%	maximum	6.8
99.5%		6.8
97.5%		6.8
90.0%		2.7
75.0%	quartile	-4.0
50.0%	median	-11.4
25.0%	quartile	-16.4
10.0%		-27.5
2.5%		-33.7
0.5%		-33.7
0.0%	minimum	-33.7

Summary Statistics

Mean	-11.1
Std Dev	10.0
Std Err Mean	2.5
Upper 95% Mean	-5.7
Lower 95% Mean	-16.4
N	16.0

Distributions Analyte_Method=Americium-241 Other

Bias



Quantiles

100.0%	maximum	-6.3
99.5%		-6.3
97.5%		-6.3
90.0%		-6.3
75.0%	quartile	-6.9
50.0%	median	-8.2
25.0%	quartile	-18.8
10.0%		-23.4
2.5%		-23.4
0.5%		-23.4
0.0%	minimum	-23.4

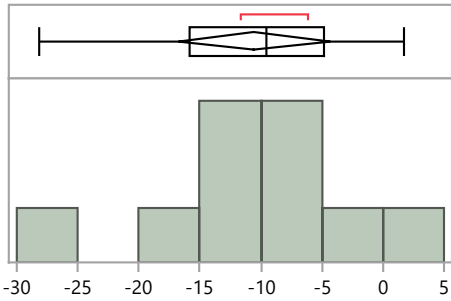
Summary Statistics

Mean	-11.9
Std Dev	7.1
Std Err Mean	3.2
Upper 95% Mean	-3.0
Lower 95% Mean	-20.7
N	5.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Americium-241 Total dissolution by fusion

Bias



Quantiles

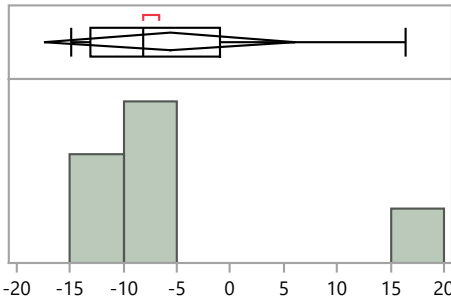
100.0%	maximum	1.7
99.5%		1.7
97.5%		1.7
90.0%		1.4
75.0%	quartile	-4.9
50.0%	median	-9.6
25.0%	quartile	-15.8
10.0%		-27.3
2.5%		-28.2
0.5%		-28.2
0.0%	minimum	-28.2

Summary Statistics

Mean	-10.5
Std Dev	8.7
Std Err Mean	2.8
Upper 95% Mean	-4.3
Lower 95% Mean	-16.8
N	10.0

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

Bias



Quantiles

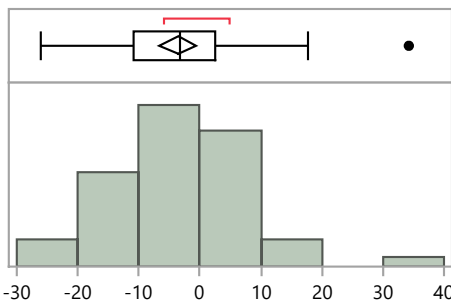
100.0%	maximum	16.4
99.5%		16.4
97.5%		16.4
90.0%		16.4
75.0%	quartile	-0.9
50.0%	median	-8.2
25.0%	quartile	-13.1
10.0%		-14.9
2.5%		-14.9
0.5%		-14.9
0.0%	minimum	-14.9

Summary Statistics

Mean	-5.7
Std Dev	11.2
Std Err Mean	4.6
Upper 95% Mean	6.1
Lower 95% Mean	-17.5
N	6.0

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

Bias



Quantiles

100.0%	maximum	34.2
99.5%		34.2
97.5%		28.5
90.0%		9.3
75.0%	quartile	2.5
50.0%	median	-3.3
25.0%	quartile	-11.0
10.0%		-17.1
2.5%		-24.7
0.5%		-26.0
0.0%	minimum	-26.0

Summary Statistics

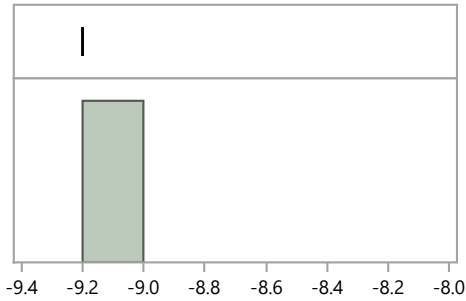
Mean	-3.6
Std Dev	10.8
Std Err Mean	1.5
Upper 95% Mean	-0.6
Lower 95% Mean	-6.6
N	53.0

MaS41 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Cesium-134 Other

Bias



Quantiles

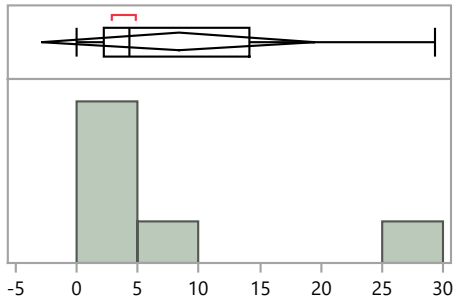
100.0%	maximum	-9.2
99.5%		-9.2
97.5%		-9.2
90.0%		-9.2
75.0%	quartile	-9.2
50.0%	median	-9.2
25.0%	quartile	-9.2
10.0%		-9.2
2.5%		-9.2
0.5%		-9.2
0.0%	minimum	-9.2

Summary Statistics

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

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

Bias



Quantiles

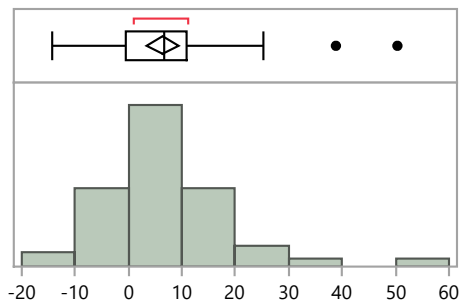
100.0%	maximum	29.3
99.5%		29.3
97.5%		29.3
90.0%		29.3
75.0%	quartile	14.2
50.0%	median	4.4
25.0%	quartile	2.2
10.0%		0.0
2.5%		0.0
0.5%		0.0
0.0%	minimum	0.0

Summary Statistics

Mean	8.3
Std Dev	10.7
Std Err Mean	4.4
Upper 95% Mean	19.6
Lower 95% Mean	-2.9
N	6.0

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

Bias



Quantiles

100.0%	maximum	50.3
99.5%		50.3
97.5%		45.4
90.0%		17.0
75.0%	quartile	11.0
50.0%	median	6.6
25.0%	quartile	-0.6
10.0%		-5.9
2.5%		-13.1
0.5%		-14.2
0.0%	minimum	-14.2

Summary Statistics

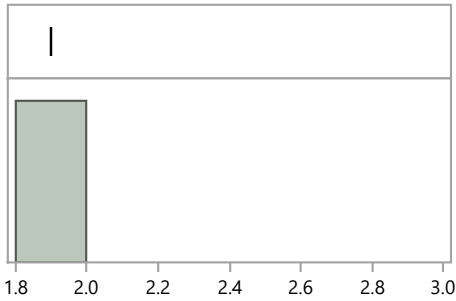
Mean	6.4
Std Dev	11.1
Std Err Mean	1.5
Upper 95% Mean	9.4
Lower 95% Mean	3.5
N	56.0

MaS41 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Cesium-137 Other

Bias



Quantiles

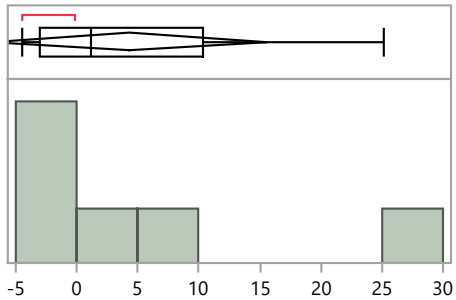
100.0%	maximum	1.9
99.5%		1.9
97.5%		1.9
90.0%		1.9
75.0%	quartile	1.9
50.0%	median	1.9
25.0%	quartile	1.9
10.0%		1.9
2.5%		1.9
0.5%		1.9
0.0%	minimum	1.9

Summary Statistics

Mean	1.9
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

Bias



Quantiles

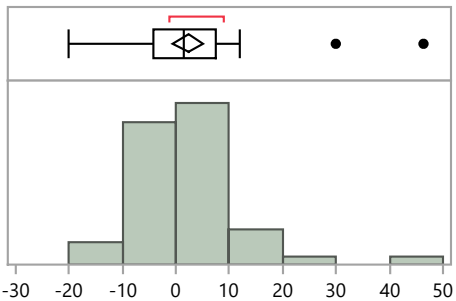
100.0%	maximum	25.1
99.5%		25.1
97.5%		25.1
90.0%		25.1
75.0%	quartile	10.3
50.0%	median	1.2
25.0%	quartile	-3.1
10.0%		-4.4
2.5%		-4.4
0.5%		-4.4
0.0%	minimum	-4.4

Summary Statistics

Mean	4.3
Std Dev	10.8
Std Err Mean	4.4
Upper 95% Mean	15.6
Lower 95% Mean	-7.0
N	6.0

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

Bias



Quantiles

100.0%	maximum	46.3
99.5%		46.3
97.5%		39.7
90.0%		11.4
75.0%	quartile	7.6
50.0%	median	1.5
25.0%	quartile	-4.3
10.0%		-9.5
2.5%		-16.8
0.5%		-20.0
0.0%	minimum	-20.0

Summary Statistics

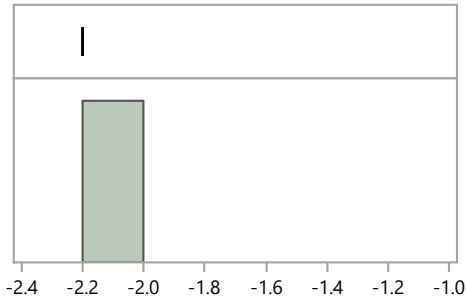
Mean	2.2
Std Dev	10.2
Std Err Mean	1.4
Upper 95% Mean	5.0
Lower 95% Mean	-0.5
N	55.0

MaS41 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Cobalt-60 Other

Bias



Quantiles

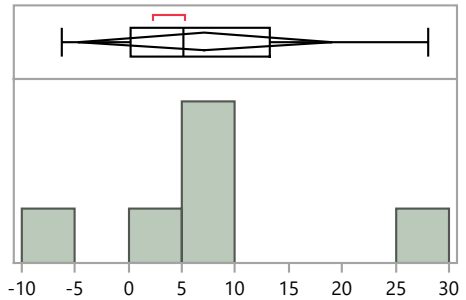
100.0%	maximum	-2.2
99.5%		-2.2
97.5%		-2.2
90.0%		-2.2
75.0%	quartile	-2.2
50.0%	median	-2.2
25.0%	quartile	-2.2
10.0%		-2.2
2.5%		-2.2
0.5%		-2.2
0.0%	minimum	-2.2

Summary Statistics

Mean	-2.2
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

Bias



Quantiles

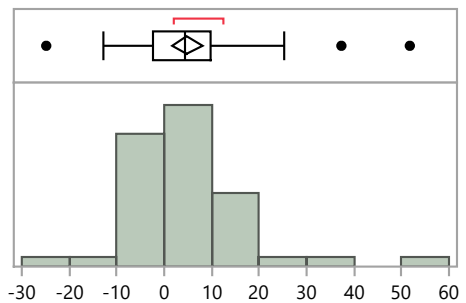
100.0%	maximum	28.0
99.5%		28.0
97.5%		28.0
90.0%		28.0
75.0%	quartile	13.2
50.0%	median	5.2
25.0%	quartile	0.2
10.0%		-6.2
2.5%		-6.2
0.5%		-6.2
0.0%	minimum	-6.2

Summary Statistics

Mean	7.1
Std Dev	11.4
Std Err Mean	4.6
Upper 95% Mean	19.0
Lower 95% Mean	-4.8
N	6.0

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

Bias



Quantiles

100.0%	maximum	51.7
99.5%		51.7
97.5%		45.9
90.0%		16.2
75.0%	quartile	9.8
50.0%	median	4.3
25.0%	quartile	-2.3
10.0%		-7.4
2.5%		-20.0
0.5%		-24.8
0.0%	minimum	-24.8

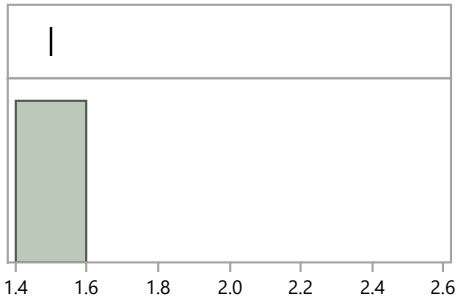
Summary Statistics

Mean	4.8
Std Dev	11.6
Std Err Mean	1.6
Upper 95% Mean	8.0
Lower 95% Mean	1.7
N	55.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Manganese-54 Other

Bias



Quantiles

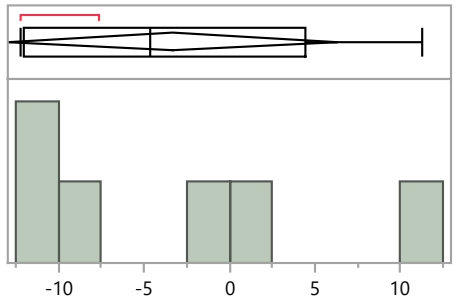
100.0%	maximum	1.5
99.5%		1.5
97.5%		1.5
90.0%		1.5
75.0%	quartile	1.5
50.0%	median	1.5
25.0%	quartile	1.5
10.0%		1.5
2.5%		1.5
0.5%		1.5
0.0%	minimum	1.5

Summary Statistics

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

Distributions Analyte_Method=Nickel-63 Acid dissolution by strong Aqua Regia, hydrofluoric acid, etc.

Bias



Quantiles

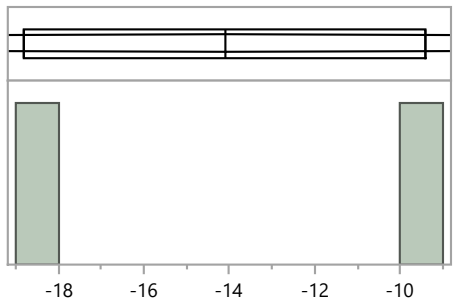
100.0%	maximum	11.3
99.5%		11.3
97.5%		11.3
90.0%		11.3
75.0%	quartile	4.4
50.0%	median	-4.6
25.0%	quartile	-12.1
10.0%		-12.2
2.5%		-12.2
0.5%		-12.2
0.0%	minimum	-12.2

Summary Statistics

Mean	-3.3
Std Dev	9.1
Std Err Mean	3.7
Upper 95% Mean	6.3
Lower 95% Mean	-12.9
N	6.0

Distributions Analyte_Method=Nickel-63 Acid leaching without hydrofluoric acid

Bias



Quantiles

100.0%	maximum	-9.4
99.5%		-9.4
97.5%		-9.4
90.0%		-9.4
75.0%	quartile	-9.4
50.0%	median	-14.1
25.0%	quartile	-18.8
10.0%		-18.8
2.5%		-18.8
0.5%		-18.8
0.0%	minimum	-18.8

Summary Statistics

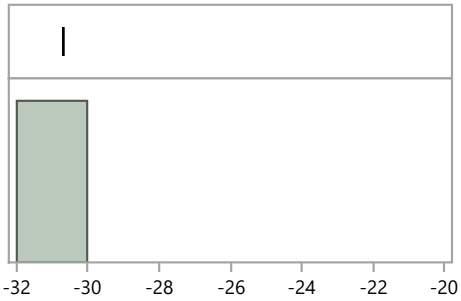
Mean	-14.1
Std Dev	6.6
Std Err Mean	4.7
Upper 95% Mean	45.6
Lower 95% Mean	-73.8
N	2.0

MaS41 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Nickel-63 Coprecipitation, straight

Bias



Quantiles

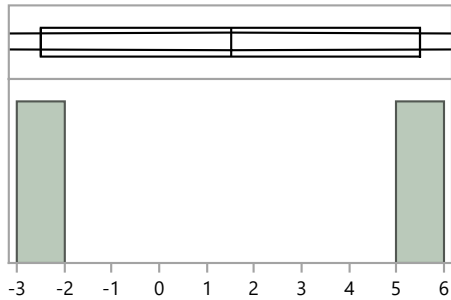
100.0%	maximum	-30.7
99.5%		-30.7
97.5%		-30.7
90.0%		-30.7
75.0%	quartile	-30.7
50.0%	median	-30.7
25.0%	quartile	-30.7
10.0%		-30.7
2.5%		-30.7
0.5%		-30.7
0.0%	minimum	-30.7

Summary Statistics

Mean	-30.7
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Nickel-63 Other

Bias



Quantiles

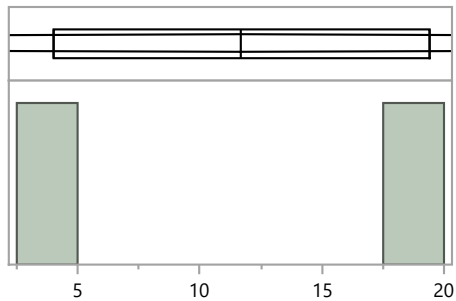
100.0%	maximum	5.5
99.5%		5.5
97.5%		5.5
90.0%		5.5
75.0%	quartile	5.5
50.0%	median	1.5
25.0%	quartile	-2.5
10.0%		-2.5
2.5%		-2.5
0.5%		-2.5
0.0%	minimum	-2.5

Summary Statistics

Mean	1.5
Std Dev	5.7
Std Err Mean	4.0
Upper 95% Mean	52.3
Lower 95% Mean	-49.3
N	2.0

Distributions Analyte_Method=Nickel-63 Total dissolution by fusion

Bias



Quantiles

100.0%	maximum	19.4
99.5%		19.4
97.5%		19.4
90.0%		19.4
75.0%	quartile	19.4
50.0%	median	11.7
25.0%	quartile	4.0
10.0%		4.0
2.5%		4.0
0.5%		4.0
0.0%	minimum	4.0

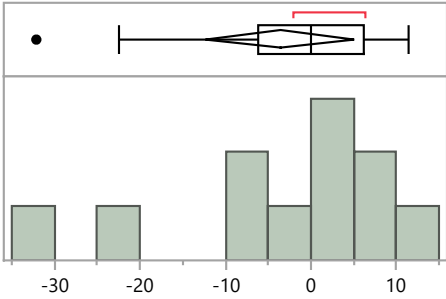
Summary Statistics

Mean	11.7
Std Dev	10.9
Std Err Mean	7.7
Upper 95% Mean	109.5
Lower 95% Mean	-86.1
N	2.0

MaS Distribution by Prep Method

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

Bias



Quantiles

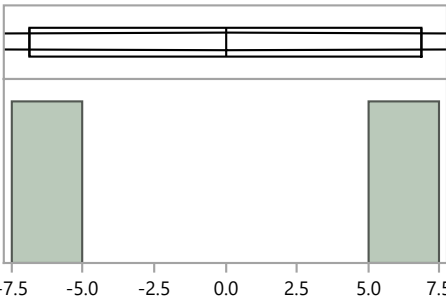
100.0%	maximum	11.4
99.5%		11.4
97.5%		11.4
90.0%		10.4
75.0%	quartile	6.1
50.0%	median	0.0
25.0%	quartile	-6.1
10.0%		-30.2
2.5%		-32.1
0.5%		-32.1
0.0%	minimum	-32.1

Summary Statistics

Mean	-3.6
Std Dev	13.0
Std Err Mean	3.9
Upper 95% Mean	5.1
Lower 95% Mean	-12.3
N	11.0

Distributions Analyte_Method=Plutonium-238 Acid leaching without hydrofluoric acid

Bias



Quantiles

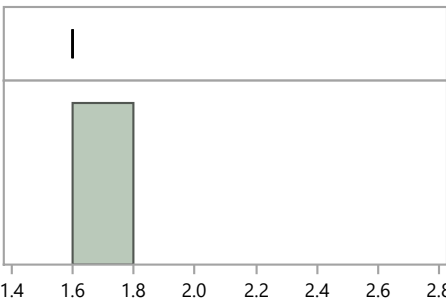
100.0%	maximum	6.9
99.5%		6.9
97.5%		6.9
90.0%		6.9
75.0%	quartile	6.9
50.0%	median	0.0
25.0%	quartile	-6.9
10.0%		-6.9
2.5%		-6.9
0.5%		-6.9
0.0%	minimum	-6.9

Summary Statistics

Mean	0.0
Std Dev	9.8
Std Err Mean	6.9
Upper 95% Mean	87.7
Lower 95% Mean	-87.7
N	2.0

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

Bias



Quantiles

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

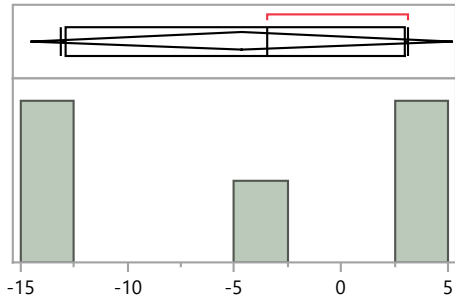
Summary Statistics

Mean	1.6
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Plutonium-238 Other

Bias



Quantiles

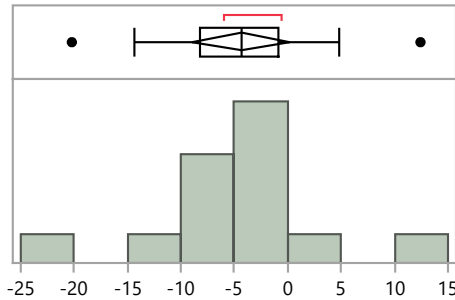
100.0%	maximum	3.1
99.5%		3.1
97.5%		3.1
90.0%		3.1
75.0%	quartile	3.0
50.0%	median	-3.5
25.0%	quartile	-12.9
10.0%		-13.1
2.5%		-13.1
0.5%		-13.1
0.0%	minimum	-13.1

Summary Statistics

Mean	-4.7
Std Dev	8.0
Std Err Mean	3.6
Upper 95% Mean	5.2
Lower 95% Mean	-14.6
N	5.0

Distributions Analyte_Method=Plutonium-238 Total dissolution by fusion

Bias



Quantiles

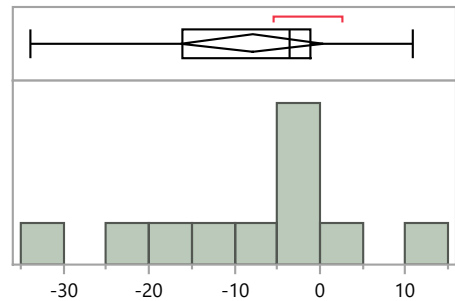
100.0%	maximum	12.4
99.5%		12.4
97.5%		12.4
90.0%		8.6
75.0%	quartile	-0.9
50.0%	median	-4.3
25.0%	quartile	-8.2
10.0%		-17.3
2.5%		-20.2
0.5%		-20.2
0.0%	minimum	-20.2

Summary Statistics

Mean	-4.4
Std Dev	7.8
Std Err Mean	2.1
Upper 95% Mean	0.1
Lower 95% Mean	-8.9
N	14.0

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

Bias



Quantiles

100.0%	maximum	10.9
99.5%		10.9
97.5%		10.9
90.0%		9.2
75.0%	quartile	-1.1
50.0%	median	-3.6
25.0%	quartile	-16.1
10.0%		-31.3
2.5%		-33.9
0.5%		-33.9
0.0%	minimum	-33.9

Summary Statistics

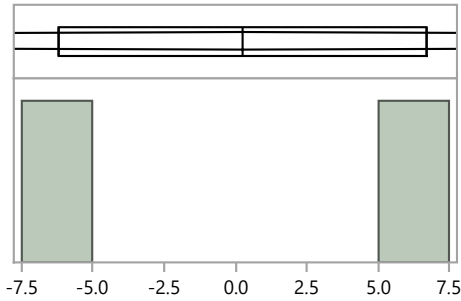
Mean	-7.9
Std Dev	12.4
Std Err Mean	3.7
Upper 95% Mean	0.5
Lower 95% Mean	-16.2
N	11.0

MaS41 Distribution by Preparation Method

MaS Distribution by Prep Method

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

Bias



Quantiles

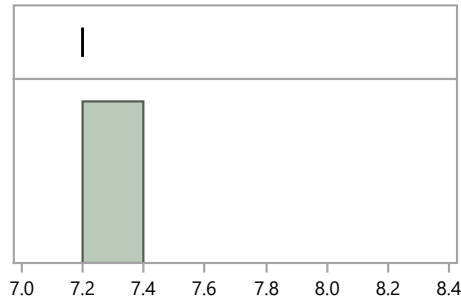
100.0%	maximum	6.7
99.5%		6.7
97.5%		6.7
90.0%		6.7
75.0%	quartile	6.7
50.0%	median	0.3
25.0%	quartile	-6.2
10.0%		-6.2
2.5%		-6.2
0.5%		-6.2
0.0%	minimum	-6.2

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

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

Bias



Quantiles

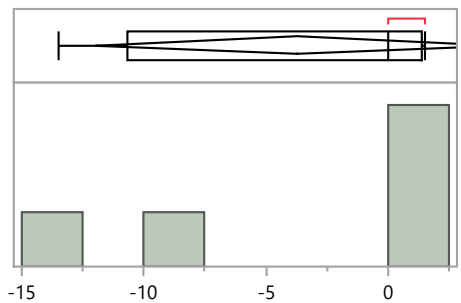
100.0%	maximum	7.2
99.5%		7.2
97.5%		7.2
90.0%		7.2
75.0%	quartile	7.2
50.0%	median	7.2
25.0%	quartile	7.2
10.0%		7.2
2.5%		7.2
0.5%		7.2
0.0%	minimum	7.2

Summary Statistics

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

Distributions Analyte_Method=Plutonium-239/240 Other

Bias



Quantiles

100.0%	maximum	1.5
99.5%		1.5
97.5%		1.5
90.0%		1.5
75.0%	quartile	1.4
50.0%	median	0.0
25.0%	quartile	-10.7
10.0%		-13.5
2.5%		-13.5
0.5%		-13.5
0.0%	minimum	-13.5

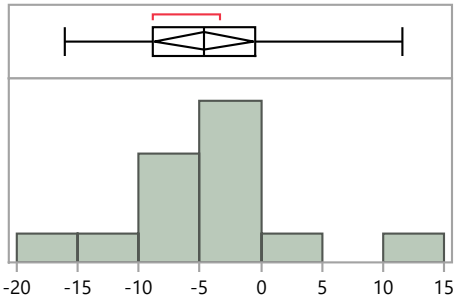
Summary Statistics

Mean	-3.7
Std Dev	6.7
Std Err Mean	3.0
Upper 95% Mean	4.6
Lower 95% Mean	-12.0
N	5.0

MaS Distribution by Prep Method

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

Bias



Quantiles

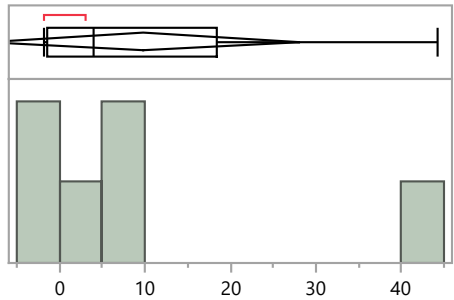
100.0%	maximum	11.6
99.5%		11.6
97.5%		11.6
90.0%		7.1
75.0%	quartile	-0.4
50.0%	median	-4.6
25.0%	quartile	-8.8
10.0%		-15.4
2.5%		-16.1
0.5%		-16.1
0.0%	minimum	-16.1

Summary Statistics

Mean	-4.7
Std Dev	7.0
Std Err Mean	1.9
Upper 95% Mean	-0.6
Lower 95% Mean	-8.7
N	14.0

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

Bias



Quantiles

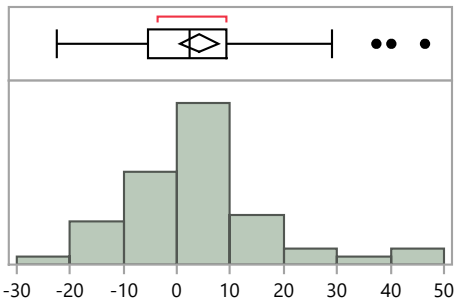
100.0%	maximum	44.3
99.5%		44.3
97.5%		44.3
90.0%		44.3
75.0%	quartile	18.4
50.0%	median	4.1
25.0%	quartile	-1.4
10.0%		-1.7
2.5%		-1.7
0.5%		-1.7
0.0%	minimum	-1.7

Summary Statistics

Mean	9.9
Std Dev	17.4
Std Err Mean	7.1
Upper 95% Mean	28.1
Lower 95% Mean	-8.4
N	6.0

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

Bias



Quantiles

100.0%	maximum	46.4
99.5%		46.4
97.5%		43.9
90.0%		20.2
75.0%	quartile	9.4
50.0%	median	2.5
25.0%	quartile	-5.3
10.0%		-11.4
2.5%		-19.9
0.5%		-22.4
0.0%	minimum	-22.4

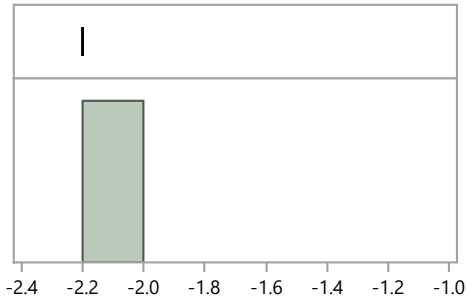
Summary Statistics

Mean	4.2
Std Dev	13.4
Std Err Mean	1.8
Upper 95% Mean	7.9
Lower 95% Mean	0.6
N	55.0

MaS Distribution by Prep Method

Distributions Analyte_Method=Potassium-40 Other

Bias



Quantiles

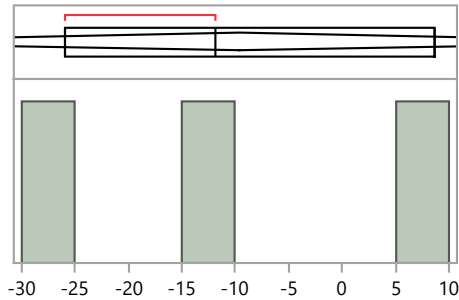
100.0%	maximum	-2.2
99.5%		-2.2
97.5%		-2.2
90.0%		-2.2
75.0%	quartile	-2.2
50.0%	median	-2.2
25.0%	quartile	-2.2
10.0%		-2.2
2.5%		-2.2
0.5%		-2.2
0.0%	minimum	-2.2

Summary Statistics

Mean	-2.2
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

Bias



Quantiles

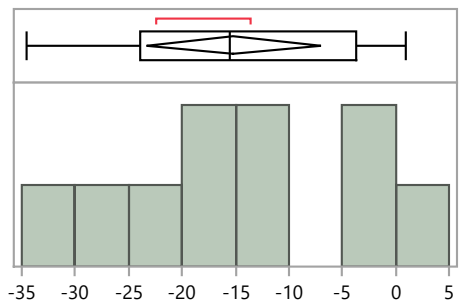
100.0%	maximum	8.7
99.5%		8.7
97.5%		8.7
90.0%		8.7
75.0%	quartile	8.7
50.0%	median	-11.9
25.0%	quartile	-25.9
10.0%		-25.9
2.5%		-25.9
0.5%		-25.9
0.0%	minimum	-25.9

Summary Statistics

Mean	-9.7
Std Dev	17.4
Std Err Mean	10.0
Upper 95% Mean	33.5
Lower 95% Mean	-52.9
N	3.0

Distributions Analyte_Method=Strontium-90 Acid leaching without hydrofluoric acid

Bias



Quantiles

100.0%	maximum	0.9
99.5%		0.9
97.5%		0.9
90.0%		0.7
75.0%	quartile	-3.7
50.0%	median	-15.6
25.0%	quartile	-24.0
10.0%		-33.9
2.5%		-34.5
0.5%		-34.5
0.0%	minimum	-34.5

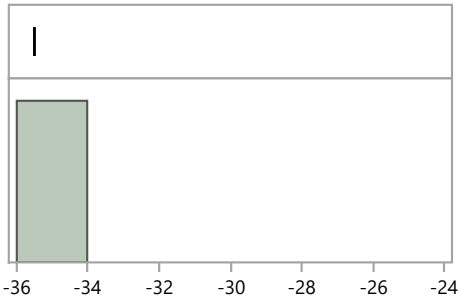
Summary Statistics

Mean	-15.2
Std Dev	11.4
Std Err Mean	3.6
Upper 95% Mean	-7.0
Lower 95% Mean	-23.3
N	10.0

MaS Distribution by Prep Method

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

Bias



Quantiles

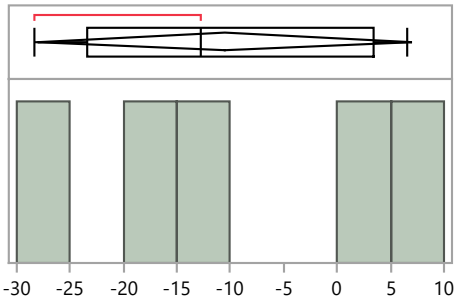
100.0%	maximum	-35.5
99.5%		-35.5
97.5%		-35.5
90.0%		-35.5
75.0%	quartile	-35.5
50.0%	median	-35.5
25.0%	quartile	-35.5
10.0%		-35.5
2.5%		-35.5
0.5%		-35.5
0.0%	minimum	-35.5

Summary Statistics

Mean	-35.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

Distributions Analyte_Method=Strontium-90 Other

Bias



Quantiles

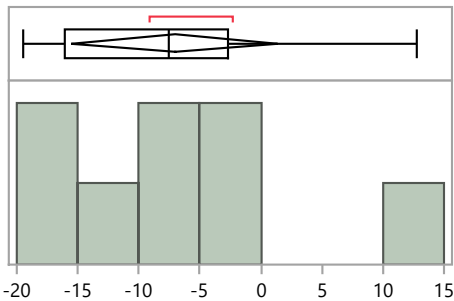
100.0%	maximum	6.5
99.5%		6.5
97.5%		6.5
90.0%		6.5
75.0%	quartile	3.5
50.0%	median	-12.8
25.0%	quartile	-23.4
10.0%		-28.3
2.5%		-28.3
0.5%		-28.3
0.0%	minimum	-28.3

Summary Statistics

Mean	-10.5
Std Dev	14.1
Std Err Mean	6.3
Upper 95% Mean	7.0
Lower 95% Mean	-28.0
N	5.0

Distributions Analyte_Method=Strontium-90 Total dissolution by fusion

Bias



Quantiles

100.0%	maximum	12.8
99.5%		12.8
97.5%		12.8
90.0%		12.8
75.0%	quartile	-2.7
50.0%	median	-7.6
25.0%	quartile	-16.0
10.0%		-19.4
2.5%		-19.4
0.5%		-19.4
0.0%	minimum	-19.4

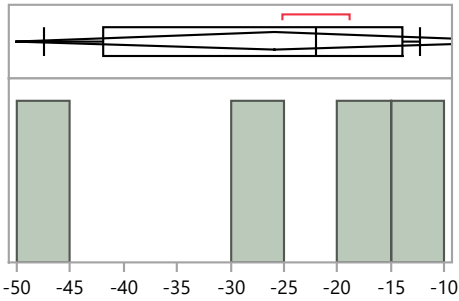
Summary Statistics

Mean	-7.1
Std Dev	10.1
Std Err Mean	3.6
Upper 95% Mean	1.4
Lower 95% Mean	-15.5
N	8.0

MaS Distribution by Prep Method

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

Bias



Quantiles

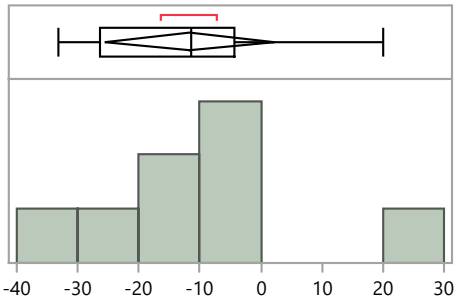
100.0%	maximum	-12.3
99.5%		-12.3
97.5%		-12.3
90.0%		-12.3
75.0%	quartile	-14.0
50.0%	median	-22.0
25.0%	quartile	-41.8
10.0%		-47.4
2.5%		-47.4
0.5%		-47.4
0.0%	minimum	-47.4

Summary Statistics

Mean	-25.9
Std Dev	15.2
Std Err Mean	7.6
Upper 95% Mean	-1.7
Lower 95% Mean	-50.2
N	4.0

Distributions Analyte_Method=Technetium-99 Acid leaching without hydrofluoric acid

Bias



Quantiles

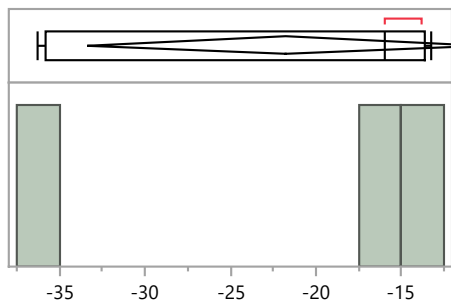
100.0%	maximum	20.1
99.5%		20.1
97.5%		20.1
90.0%		20.1
75.0%	quartile	-4.4
50.0%	median	-11.4
25.0%	quartile	-26.2
10.0%		-33.2
2.5%		-33.2
0.5%		-33.2
0.0%	minimum	-33.2

Summary Statistics

Mean	-11.6
Std Dev	16.6
Std Err Mean	5.9
Upper 95% Mean	2.3
Lower 95% Mean	-25.4
N	8.0

Distributions Analyte_Method=Technetium-99 Other

Bias



Quantiles

100.0%	maximum	-13.3
99.5%		-13.3
97.5%		-13.3
90.0%		-13.3
75.0%	quartile	-13.7
50.0%	median	-16.0
25.0%	quartile	-35.8
10.0%		-36.3
2.5%		-36.3
0.5%		-36.3
0.0%	minimum	-36.3

Summary Statistics

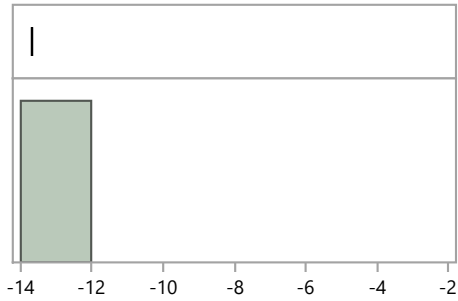
Mean	-21.8
Std Dev	11.0
Std Err Mean	4.5
Upper 95% Mean	-10.3
Lower 95% Mean	-33.4
N	6.0

MaS41 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Technetium-99 Total dissolution by fusion

Bias



Quantiles

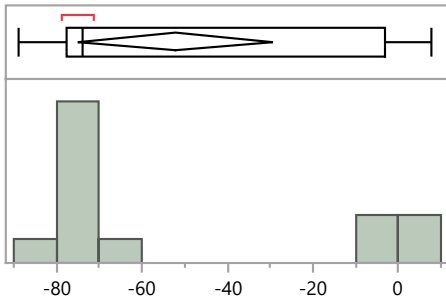
100.0%	maximum	-13.7
99.5%		-13.7
97.5%		-13.7
90.0%		-13.7
75.0%	quartile	-13.7
50.0%	median	-13.7
25.0%	quartile	-13.7
10.0%		-13.7
2.5%		-13.7
0.5%		-13.7
0.0%	minimum	-13.7

Summary Statistics

Mean	-13.7
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

Bias



Quantiles

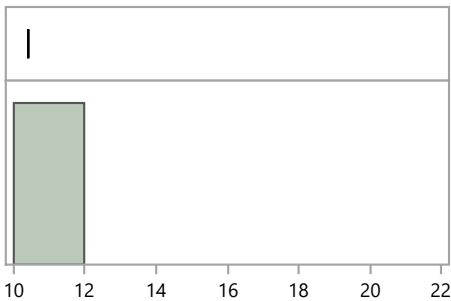
100.0%	maximum	7.8
99.5%		7.8
97.5%		7.8
90.0%		6.4
75.0%	quartile	-3.1
50.0%	median	-73.8
25.0%	quartile	-77.8
10.0%		-84.7
2.5%		-88.7
0.5%		-88.7
0.0%	minimum	-88.7

Summary Statistics

Mean	-52.2
Std Dev	37.7
Std Err Mean	10.4
Upper 95% Mean	-29.4
Lower 95% Mean	-74.9
N	13.0

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

Bias



Quantiles

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

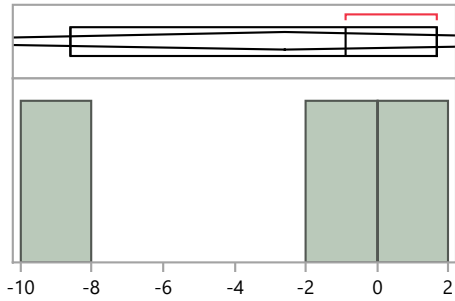
Summary Statistics

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

MaS Distribution by Prep Method

Distributions Analyte_Method=Uranium-234 Other

Bias



Quantiles

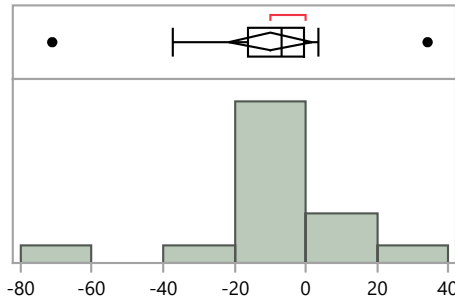
100.0%	maximum	1.7
99.5%		1.7
97.5%		1.7
90.0%		1.7
75.0%	quartile	1.7
50.0%	median	-0.9
25.0%	quartile	-8.6
10.0%		-8.6
2.5%		-8.6
0.5%		-8.6
0.0%	minimum	-8.6

Summary Statistics

Mean	-2.6
Std Dev	5.4
Std Err Mean	3.1
Upper 95% Mean	10.7
Lower 95% Mean	-15.9
N	3.0

Distributions Analyte_Method=Uranium-234 Total dissolution by fusion

Bias



Quantiles

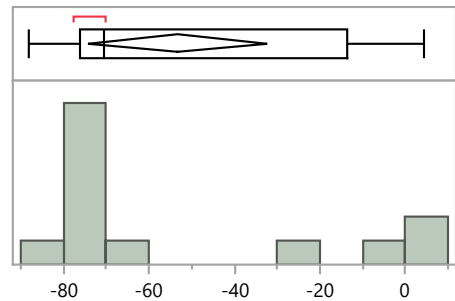
100.0%	maximum	34.2
99.5%		34.2
97.5%		34.2
90.0%		12.8
75.0%	quartile	-0.4
50.0%	median	-7.0
25.0%	quartile	-16.1
10.0%		-47.4
2.5%		-71.1
0.5%		-71.1
0.0%	minimum	-71.1

Summary Statistics

Mean	-9.9
Std Dev	22.0
Std Err Mean	5.5
Upper 95% Mean	1.8
Lower 95% Mean	-21.6
N	16.0

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

Bias



Quantiles

100.0%	maximum	4.4
99.5%		4.4
97.5%		4.4
90.0%		4.4
75.0%	quartile	-13.6
50.0%	median	-70.4
25.0%	quartile	-76.1
10.0%		-83.8
2.5%		-87.9
0.5%		-87.9
0.0%	minimum	-87.9

Summary Statistics

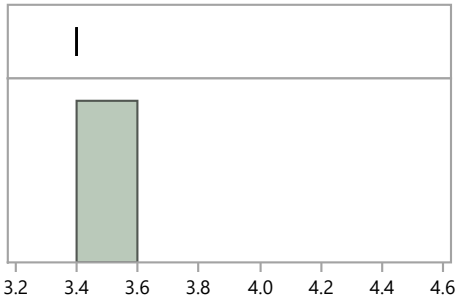
Mean	-53.2
Std Dev	34.7
Std Err Mean	9.6
Upper 95% Mean	-32.3
Lower 95% Mean	-74.1
N	13.0

MaS41 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Uranium-238 EPA 901.1, Gamma Emitting, 600/4-80-032

Bias



Quantiles

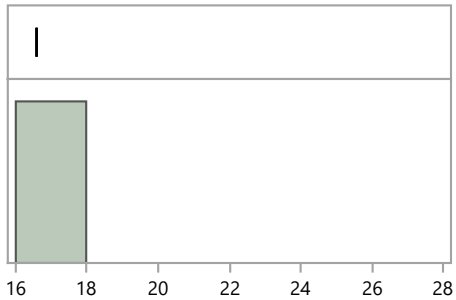
100.0%	maximum	3.4
99.5%		3.4
97.5%		3.4
90.0%		3.4
75.0%	quartile	3.4
50.0%	median	3.4
25.0%	quartile	3.4
10.0%		3.4
2.5%		3.4
0.5%		3.4
0.0%	minimum	3.4

Summary Statistics

Mean	3.4
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

Bias



Quantiles

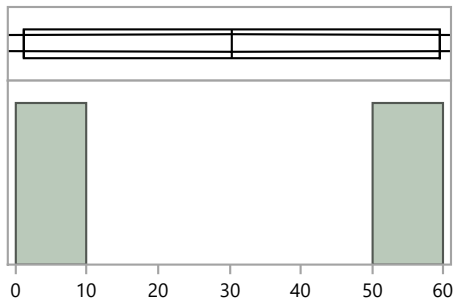
100.0%	maximum	16.6
99.5%		16.6
97.5%		16.6
90.0%		16.6
75.0%	quartile	16.6
50.0%	median	16.6
25.0%	quartile	16.6
10.0%		16.6
2.5%		16.6
0.5%		16.6
0.0%	minimum	16.6

Summary Statistics

Mean	16.6
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	59.4
99.5%		59.4
97.5%		59.4
90.0%		59.4
75.0%	quartile	59.4
50.0%	median	30.3
25.0%	quartile	1.1
10.0%		1.1
2.5%		1.1
0.5%		1.1
0.0%	minimum	1.1

Summary Statistics

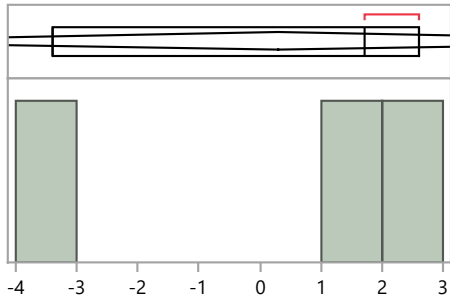
Mean	30.3
Std Dev	41.2
Std Err Mean	29.2
Upper 95% Mean	400.6
Lower 95% Mean	-340.1
N	2.0

MaS41 Distribution by Preparation Method

MaS Distribution by Prep Method

Distributions Analyte_Method=Uranium-238 Other

Bias



Quantiles

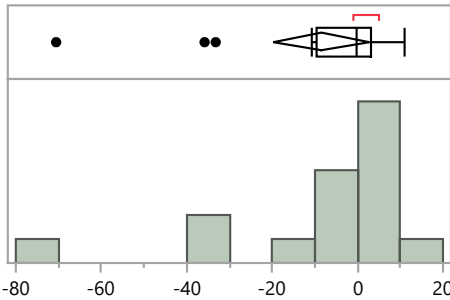
100.0%	maximum	2.6
99.5%		2.6
97.5%		2.6
90.0%		2.6
75.0%	quartile	2.6
50.0%	median	1.7
25.0%	quartile	-3.4
10.0%		-3.4
2.5%		-3.4
0.5%		-3.4
0.0%	minimum	-3.4

Summary Statistics

Mean	0.3
Std Dev	3.2
Std Err Mean	1.9
Upper 95% Mean	8.3
Lower 95% Mean	-7.7
N	3.0

Distributions Analyte_Method=Uranium-238 Total dissolution by fusion

Bias



Quantiles

100.0%	maximum	11.1
99.5%		11.1
97.5%		11.1
90.0%		6.9
75.0%	quartile	3.3
50.0%	median	-0.1
25.0%	quartile	-9.7
10.0%		-46.2
2.5%		-70.5
0.5%		-70.5
0.0%	minimum	-70.5

Summary Statistics

Mean	-8.6
Std Dev	21.0
Std Err Mean	5.2
Upper 95% Mean	2.6
Lower 95% Mean	-19.8
N	16.0