

## **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.

## RdF48 Participating Laboratories

Lab Code	Lab Name	Matrix Code
ADEM01	Alabama Department of Environmental Management	RdF
AFOH01	USAFSAM/OEA	RdF
AMEC99	Jacobs Clean Energy Limited - Analytical Services	RdF
ANLB01	Argonne National Laboratory	RdF
ARGO01	Idaho National Laboratory	RdF
ARPL01	Analytical Support Operations - Radiochemical Processing Lab	RdF
ARSL01	ARS Aleut Analytical, LLC	RdF
ASUK99	AWE (Aldermaston)	RdF
CESL01	Lawrence Livermore National Laboratory - EMRL	RdF
DEHS01	Department of Environmental Health & Safety	RdF
DINL99	Departamento Ingeniería Energética	RdF
ERCL01	Washington State Public Health Laboratories	RdF
ERHD99	National Monitoring Section, Radiation Protection Bureau, Health Canada	RdF
FDHE01	Florida Dept of Health Environmental Laboratory	RdF
FDOH01	Florida Dept. of Health, Mobile Environmental Radiological Lab	RdF
FNAL01	Fermi National Accelerator Laboratory (FermiLab)	RdF
GENE01	GEL Laboratories, LLC	RdF
GPCL01	Georgia Power Company Environmental Laboratory	RdF
HECR01	SC Dept. Health and Environmental Control Radiological Laboratory	RdF
HPAC99	UKHSA, RCE Glasgow	RdF
HPAL01	Los Alamos National Laboratory	RdF
IEMA01	Illinois Emergency Management Agency Radiochemistry Laboratory	RdF
ISUP01	ISU - Department of Physics/Health Physics/EAL	RdF
JLNN01	Jefferson Laboratory	RdF
JNRC99	Energy and Mineral Regulatory Commission	RdF
LOCK03	Advanced Test Reactor (ATR) Complex Radioanalytical Laboratory	RdF
MART01	Fluor-BWXT Portsmouth LLC, Analytical Laboratory	RdF
MART03	Radioactive Material Analysis Laboratory	RdF
MDPH01	MDPH-Radiation Control Program	RdF
MNDH01	Minnesota Department of Health, Public Health Lab. Division	RdF
MSDH01	Mississippi State Dept of Health	RdF
NARL01	National Analytical Radiation Environmental Laboratory	RdF
NESI01	BWXT-Radioisotope & Analytical Chemistry Laboratory	RdF
NJDH01	New Jersey Dept. of Health, ECLS	RdF
NOCS99	National Oceanography Centre, Southampton	RdF
NRLL99	Environmental Radioactivity - National Centre for Radiation Science	RdF
ODHL01	Ohio Department of Health Laboratory	RdF
RAVR99	Radiactividad Ambiental y Vigilancia Radiologica	RdF
RPSC01	Radiation Protection Service	RdF
SEML01	SRS Environmental Monitoring Laboratory	RdF
SMER01	State of Michigan EGLE Radiological Lab	RdF
SOUT01	Southwest Research Institute	RdF
SRPD01	Sandia National Laboratories, Radiation Protection Sample Diagnostics	RdF
TDHL01	Texas Department of State Health Services Laboratory	RdF

TELE02	ATI Environmental, Inc., Midwest Lab	RdF
TMAO01	EBERLINE Analytical Corporation	RdF
WIPH01	WI, DPH, Radiation Protection Section	RdF
WIPP01	WIPP Laboratories	RdF
WSHL01	Wisconsin State Laboratory of Hygiene	RdF
WSTP99	Cavendish Nuclear Limited	RdF
WVDP01	WVDP Environmental Laboratory	RdF
YPGA01	US Army Yuma Proving Ground / Material Analysis Lab	RdF

## Laboratories Not Reporting

<b>Lab Code</b>	<b>Lab Name</b>	<b>Matrix Code</b>
CMRC01	Carlsbad Environmental Monitoring and Research Center	RdF
COPS99	Health Canada Radiation Protection Bureau	RdF
IAEA20	IAEA Marine Environment Laboratories, Radiometrics Laboratory	RdF
IAEA99	International Atomic Energy Agency	RdF
LAWR01	LAWRENCE BERKELEY NATIONAL LABORATORY	RdF
UNEV01	University of Nevada, Reno	RdF

## Study Reference Values

MAPEP-23-RdF48

*Radiological Reference Date: 02/01/2023*

Analyte	Ref Value	Ref Unc
Inorganic	Units: (ug/sample)	
Uranium-235	0.0644	0.0019
Uranium-238	9.1	0.3
Uranium-Total	9.2	0.3

Analyte	Ref Value	Ref Unc
Radiological	Units: (Bq/sample)	
Cesium-134	1.52	0.03
Cesium-137	0.630	0.012
Cobalt-57	0.661	0.015
Cobalt-60	1.05	0.02
Manganese-54	2.14	0.05
Plutonium-238	0.111	0.002
Plutonium-239/240	0.109	0.002
Uranium-234	0.110	0.004
Uranium-238	0.114	0.004
Zinc-65	2.25	0.05

## Sample Statistical Summary

MAPEP-23-RdF48

Radiological Reference Date: 02/01/2023

Analyte	T(1)	A(2)	Grand(3) Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
							Units: (ug/sample)
Inorganic							
Uranium-235	6	6	0.0652	0.0071	0.0644	0.0019	0.0451 - 0.0837
Uranium-238	6	6	9.3	1.3	9.1	0.3	6.4 - 11.8
Uranium-Total	5	5			9.2	0.3	6.4 - 12.0

Analyte	T(1)	A(2)	Grand(3) Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
							Units: (Bq/sample)
							False Positive Test
Radiological							
Americium-241	28	27					False Positive Test
Cesium-134	49	46	1.37	0.16	1.52	0.03	1.06 - 1.98
Cesium-137	49	47	0.622	0.071	0.630	0.012	0.441 - 0.819
Cobalt-57	49	46	0.621	0.059	0.661	0.015	0.463 - 0.859
Cobalt-60	49	48	1.00	0.12	1.05	0.02	0.74 - 1.37
Manganese-54	49	47	2.08	0.18	2.14	0.05	1.50 - 2.78
Plutonium-238	26	21	0.105	0.009	0.111	0.002	0.078 - 0.144
Plutonium-239/240	26	23	0.103	0.012	0.109	0.002	0.076 - 0.142
Strontium-90	22	21					False Positive Test
Uranium-234	26	24	0.110	0.008	0.110	0.004	0.077 - 0.143
Uranium-238	27	25	0.114	0.009	0.114	0.004	0.080 - 0.148
Zinc-65	49	45	2.21	0.23	2.25	0.05	1.58 - 2.93

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

### Results Flags:

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

### Uncertainty Flags:

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

## Flag Summary Report

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MAPEP-23-RdF48

### Inorganic

Analyte	A	W	RW	N
Uranium-Total	5			
Uranium-235	6			
Uranium-238	5	1		

### Radiological

Analyte	A	W	RW	N
Americium-241	27			3
Cesium-134	37	9		3
Cesium-137	43	4		2
Cobalt-57	43	3		3
Cobalt-60	43	5		1
Manganese-54	44	3		2
Plutonium-238	19	2		5
Plutonium-239/240	20	3		3
Strontium-90	21			1
Uranium-234	24			2
Uranium-238	24	1		2
Zinc-65	42	3		4



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

Laboratory Results For MAPEP-23-RdF48  
 (ADEM01) Alabama Department of Environmental Management  
 1350 Coliseum Blvd.  
 Montgomery, AL 36110

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.7500	1.52	A		15.1	1.06 - 1.98	0.0570	A
Cesium-137	1.0400	0.630	N		65.1	0.441 - 0.819	0.0490	A
Cobalt-57	0.9010	0.661	N		36.3	0.463 - 0.859	0.2810	N
Cobalt-60	1.3300	1.05	W		26.7	0.74 - 1.37	0.0445	A
Manganese-54	3.2900	2.14	N		53.7	1.50 - 2.78	0.1030	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	3.4200	2.25	N		52.0	1.58 - 2.93	0.1530	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%



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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

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(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48

(AFOH01) USAFSAM/OEA

2510 Fifth Street, Area B

Wright-Patterson AFB, OH 45433-7913

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	-0.000008		A			False Positive Test	0.0002	
Cesium-134	1.290	1.52	A		-15.1	1.06 - 1.98	0.064	A
Cesium-137	0.512	0.630	A		-18.7	0.441 - 0.819	0.022	A
Cobalt-57	0.509	0.661	W		-23.0	0.463 - 0.859	0.016	A
Cobalt-60	0.868	1.05	A		-17.3	0.74 - 1.37	0.033	A
Manganese-54	1.702	2.14	W		-20.5	1.50 - 2.78	0.039	A
Plutonium-238	0.0937	0.111	A		-15.6	0.078 - 0.144	0.0052	A
Plutonium-239/240	0.0868	0.109	W		-20.4	0.076 - 0.142	0.0049	A
Strontium-90	0.003		A			False Positive Test	0.008	
Uranium-234	0.0927	0.110	A		-15.7	0.077 - 0.143	0.0055	A
Uranium-238	0.1027	0.114	A		-9.9	0.080 - 0.148	0.0059	A
Zinc-65	1.873	2.25	A		-16.8	1.58 - 2.93	0.051	A

Radiological Reference Date: February 1, 2023

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

Laboratory Results For MAPEP-23-RdF48  
 (AMEC99) Jacobs Clean Energy Limited - Analytical Services  
 612 Faraday Street  
 Birchwood Park, Warrington WA3 6GN

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.00047		A			False Positive Test	0.059	
Cesium-134	1.304	1.52	A		-14.2	1.06 - 1.98	0.061	A
Cesium-137	0.642	0.630	A		1.9	0.441 - 0.819	0.041	A
Cobalt-57	0.579	0.661	A		-12.4	0.463 - 0.859	0.026	A
Cobalt-60	1.065	1.05	A		1.4	0.74 - 1.37	0.060	A
Manganese-54	2.196	2.14	A		2.6	1.50 - 2.78	0.098	A
Plutonium-238	0.1066	0.111	A		-4.0	0.078 - 0.144	0.0053	A
Plutonium-239/240	0.1043	0.109	A		-4.3	0.076 - 0.142	0.0052	A
Strontium-90	0.030		A			False Positive Test	0.067	
Uranium-234	0.1076	0.110	A		-2.2	0.077 - 0.143	0.0049	A
Uranium-238	0.1122	0.114	A		-1.6	0.080 - 0.148	0.0050	A
Zinc-65	2.35	2.25	A		4.4	1.58 - 2.93	0.14	A

Radiological Reference Date: February 1, 2023

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

Laboratory Results For MAPEP-23-RdF48  
 (ANLB01) Argonne National Laboratory  
 9700 S. Cass Ave  
 Argonne, IL 60439

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0004		A			False Positive Test	0.0003	
Cesium-134	1.256	1.52	A		-17.4	1.06 - 1.98	0.146	A
Cesium-137	0.664	0.630	A		5.4	0.441 - 0.819	0.045	A
Cobalt-57	0.605	0.661	A		-8.5	0.463 - 0.859	0.019	A
Cobalt-60	1.041	1.05	A		-0.9	0.74 - 1.37	0.072	A
Manganese-54	2.153	2.14	A		0.6	1.50 - 2.78	0.176	A
Plutonium-238	0.113	0.111	A		1.8	0.078 - 0.144	0.013	A
Plutonium-239/240	0.116	0.109	A		6.4	0.076 - 0.142	0.011	A
Strontium-90	-0.001		A			False Positive Test	0.003	
Uranium-234	0.107	0.110	A		-2.7	0.077 - 0.143	0.008	A
Uranium-238	0.108	0.114	A		-5.3	0.080 - 0.148	0.008	A
Zinc-65	2.371	2.25	A		5.4	1.58 - 2.93	0.107	A

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Laboratory Results For MAPEP-23-RdF48

(ARGO01) Idaho National Laboratory  
INL, Materials and Fuels Complex  
Idaho Falls, ID 83415

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.05	1.52	N		-30.9	1.06 - 1.98	0.03	A
Cesium-137	0.506	0.630	A		-19.7	0.441 - 0.819	0.041	A
Cobalt-57	0.500	0.661	W		-24.4	0.463 - 0.859	0.025	A
Cobalt-60	0.894	1.05	A		-14.9	0.74 - 1.37	0.045	A
Manganese-54	1.92	2.14	A		-10.3	1.50 - 2.78	0.08	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.17	2.25	A		-3.6	1.58 - 2.93	0.11	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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**Uncertainty Flags:**

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



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

NOT ACCEPTABLE.....RP > 30%

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

Laboratory Results For MAPEP-23-RdF48

(ARPL01) Analytical Support Operations - Radiochemical Processing Lab

PO Box 999

Richland, WA 99354

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	-.0624		A			False Positive Test	.139	
Cesium-134	1.36	1.52	A		-10.5	1.06 - 1.98	.071	A
Cesium-137	.598	0.630	A		-5.1	0.441 - 0.819	.025	A
Cobalt-57	.586	0.661	A		-11.3	0.463 - 0.859	.035	A
Cobalt-60	.968	1.05	A		-7.8	0.74 - 1.37	.064	A
Manganese-54	1.98	2.14	A		-7.5	1.50 - 2.78	.117	A
Plutonium-238	.146	0.111	N		31.5	0.078 - 0.144	.00883	A
Plutonium-239/240	.0878	0.109	A		-19.5	0.076 - 0.142	.00729	A
Strontium-90	NR					False Positive Test		
Uranium-234	.101	0.110	A		-8.2	0.077 - 0.143	.00942	A
Uranium-238	.116	0.114	A		1.8	0.080 - 0.148	.00814	A
Zinc-65	2.12	2.25	A		-5.8	1.58 - 2.93	.128	A

Radiological Reference Date: February 1, 2023

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

N = Result not acceptable.....|Bias| > 30%

RW = Report Warning

NR = Not Reported

**Uncertainty Flags:**

NOT ACCEPTABLE.....RP < 2%

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

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

NOT ACCEPTABLE.....RP > 30%

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

Laboratory Results For MAPEP-23-RdF48  
 (ARSL01) ARS Aleut Analytical, LLC  
 2609 North River Road  
 Port Allen, LA 70767

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.003		A			False Positive Test	0.002	
Cesium-134	1.184	1.52	W		-22.1	1.06 - 1.98	0.055	A
Cesium-137	0.641	0.630	A		1.7	0.441 - 0.819	0.031	A
Cobalt-57	0.660	0.661	A		-0.2	0.463 - 0.859	0.027	A
Cobalt-60	1.130	1.05	A		7.6	0.74 - 1.37	0.038	A
Manganese-54	2.239	2.14	A		4.6	1.50 - 2.78	0.098	A
Plutonium-238	0.147	0.111	N		32.4	0.078 - 0.144	0.016	A
Plutonium-239/240	0.151	0.109	N		38.5	0.076 - 0.142	0.016	A
Strontium-90	0.015		A			False Positive Test	0.021	
Uranium-234	0.102	0.110	A		-7.3	0.077 - 0.143	0.010	A
Uranium-238	0.122	0.114	A		7.0	0.080 - 0.148	0.011	A
Zinc-65	2.440	2.25	A		8.4	1.58 - 2.93	0.117	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48

(ASUK99) AWE (Aldermaston)

A38.1 AWE

Reading, Berkshire RG7 4PR

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	NR	1.52				1.06 - 1.98		
Cesium-137	NR	0.630				0.441 - 0.819		
Cobalt-57	NR	0.661				0.463 - 0.859		
Cobalt-60	NR	1.05				0.74 - 1.37		
Manganese-54	NR	2.14				1.50 - 2.78		
Plutonium-238	0.1057	0.111	A		-4.8	0.078 - 0.144	0.01383	A
Plutonium-239/240	0.1028	0.109	A		-5.7	0.076 - 0.142	0.01342	A
Strontium-90	NR					False Positive Test		
Uranium-234	0.1128	0.110	A		2.5	0.077 - 0.143	0.0149	A
Uranium-238	0.1155	0.114	A		1.3	0.080 - 0.148	0.01526	A
Zinc-65	NR	2.25				1.58 - 2.93		

Radiological Reference Date: February 1, 2023

**Results Flags:**

A = Result acceptable.....|Bias| <= 20%

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

N = Result not acceptable.....|Bias| > 30%

RW = Report Warning

NR = Not Reported

**Uncertainty Flags:**

NOT ACCEPTABLE.....RP < 2%

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

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (CESL01) Lawrence Livermore National Laboratory - EMRL  
 7000 East Avenue  
 Livermore, CA 94551

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.36E+00	1.52	A		-10.5	1.06 - 1.98	4.28E-02	A
Cesium-137	6.15E-01	0.630	A		-2.4	0.441 - 0.819	4.18E-02	A
Cobalt-57	6.65E-01	0.661	A		0.6	0.463 - 0.859	2.31E-02	A
Cobalt-60	1.10E+00	1.05	A		4.8	0.74 - 1.37	4.38E-02	A
Manganese-54	2.03E+00	2.14	A		-5.1	1.50 - 2.78	8.38E-02	A
Plutonium-238	1.04E-01	0.111	A		-6.3	0.078 - 0.144	4.44E-03	A
Plutonium-239/240	1.02E-01	0.109	A		-6.4	0.076 - 0.142	4.37E-03	A
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.15E+00	2.25	A		-4.4	1.58 - 2.93	1.29E-01	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%



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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (DEHS01) Department of Environmental Health & Safety  
 North Carolina State Univ.  
 Raleigh, NC 27695-8007

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	0.9195395	1.52	N		-39.5	1.06 - 1.98	0.025782	A
Cesium-137	0.5828376	0.630	A		-7.5	0.441 - 0.819	0.027393	A
Cobalt-57	0.4577122	0.661	N		-30.8	0.463 - 0.859	0.031864	A
Cobalt-60	1.0369031	1.05	A		-1.2	0.74 - 1.37	0.028345	A
Manganese-54	1.9244565	2.14	A		-10.1	1.50 - 2.78	0.060120	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.2159148	2.25	A		-1.5	1.58 - 2.93	0.078157	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (DINL99) Departamento Ingeniería Energética  
 Escuela de Ingeniería de Bilbao  
 Bilbao, Vizcaya 48013

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.001575		A			False Positive Test	0.001575	
Cesium-134	1.32	1.52	A		-13.2	1.06 - 1.98	0.0702	A
Cesium-137	0.5872	0.630	A		-6.8	0.441 - 0.819	0.03575	A
Cobalt-57	0.5836	0.661	A		-11.7	0.463 - 0.859	0.03162	A
Cobalt-60	0.9464	1.05	A		-9.9	0.74 - 1.37	0.05165	A
Manganese-54	1.885	2.14	A		-11.9	1.50 - 2.78	0.1011	A
Plutonium-238	0.08771	0.111	W		-21.0	0.078 - 0.144	0.004764	A
Plutonium-239/240	0.07801	0.109	W		-28.4	0.076 - 0.142	0.004378	A
Strontium-90	0.01719		A			False Positive Test	0.01719	
Uranium-234	0.11	0.110	A		0.0	0.077 - 0.143	0.005920	A
Uranium-238	0.1094	0.114	A		-4.0	0.080 - 0.148	0.005895	A
Zinc-65	2.002	2.25	A		-11.0	1.58 - 2.93	0.1133	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (ERCL01) Washington State Public Health Laboratories  
 1610 N.E. 150th Street  
 Shoreline, WA 98155-9701

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	0.0719	0.0644	A		11.6	0.0451 - 0.0837	0.0041	A
Uranium-238	10.5	9.1	A		15.4	6.4 - 11.8	0.6	A
Uranium-Total	10.6	9.2	A		15.2	6.4 - 12.0	0.6	A

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.00026		A			False Positive Test	0.00036	
Cesium-134	1.54	1.52	A		1.3	1.06 - 1.98	0.05	A
Cesium-137	0.659	0.630	A		4.6	0.441 - 0.819	0.032	A
Cobalt-57	0.651	0.661	A		-1.5	0.463 - 0.859	0.021	A
Cobalt-60	1.12	1.05	A		6.7	0.74 - 1.37	0.034	A
Manganese-54	2.30	2.14	A		7.5	1.50 - 2.78	0.12	A
Plutonium-238	0.113	0.111	A		1.8	0.078 - 0.144	0.005	A
Plutonium-239/240	0.108	0.109	A		-0.9	0.076 - 0.142	0.005	A
Strontium-90	-0.0048		A			False Positive Test	0.0042	
Uranium-234	0.118	0.110	A		7.3	0.077 - 0.143	0.009	A
Uranium-238	0.129	0.114	A		13.2	0.080 - 0.148	0.010	A
Zinc-65	2.41	2.25	A		7.1	1.58 - 2.93	0.28	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48

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

Inorganic							Units: (ug/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	0.052	0.0644	A		-19.3	0.0451 - 0.0837	0.002	A
Uranium-238	7.0	9.1	W		-23.1	6.4 - 11.8	0.2	A
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological							Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	-0.0004		A			False Positive Test	0.0004	
Cesium-134	1.44	1.52	A		-5.3	1.06 - 1.98	0.16	A
Cesium-137	0.668	0.630	A		6.0	0.441 - 0.819	0.084	A
Cobalt-57	0.624	0.661	A		-5.6	0.463 - 0.859	0.065	A
Cobalt-60	0.91	1.05	A		-13.3	0.74 - 1.37	0.11	A
Manganese-54	2.12	2.14	A		-0.9	1.50 - 2.78	0.23	A
Plutonium-238	0.0961	0.111	A		-13.4	0.078 - 0.144	0.003	A
Plutonium-239/240	0.0899	0.109	A		-17.5	0.076 - 0.142	0.003	A
Strontium-90	0.015		A			False Positive Test	0.019	
Uranium-234	0.0924	0.110	A		-16.0	0.077 - 0.143	0.003	A
Uranium-238	0.0949	0.114	A		-16.8	0.080 - 0.148	0.003	A
Zinc-65	2.28	2.25	A		1.3	1.58 - 2.93	0.25	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%



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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (FDHE01) Florida Dept of Health Environmental Laboratory  
 2100 All Childrens Way  
 Orlando, FL 32818-5271

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.029		A			False Positive Test	0.03	
Cesium-134	1.336	1.52	A		-12.1	1.06 - 1.98	0.047	A
Cesium-137	0.608	0.630	A		-3.5	0.441 - 0.819	0.02	A
Cobalt-57	0.618	0.661	A		-6.5	0.463 - 0.859	0.041	A
Cobalt-60	1.003	1.05	A		-4.5	0.74 - 1.37	0.025	A
Manganese-54	2.133	2.14	A		-0.3	1.50 - 2.78	0.141	A
Plutonium-238	0.072	0.111	N		-35.1	0.078 - 0.144	0.021	W
Plutonium-239/240	0.11	0.109	A		0.9	0.076 - 0.142	0.033	W
Strontium-90	0.01		A			False Positive Test	0.02	
Uranium-234	0.116	0.110	A		5.5	0.077 - 0.143	0.04	N
Uranium-238	0.118	0.114	A		3.5	0.080 - 0.148	0.04	N
Zinc-65	2.402	2.25	A		6.8	1.58 - 2.93	0.082	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48

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

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.02		A			False Positive Test	0.02	
Cesium-134	1.321	1.52	A		-13.1	1.06 - 1.98	0.02	N
Cesium-137	0.635	0.630	A		0.8	0.441 - 0.819	0.017	A
Cobalt-57	0.631	0.661	A		-4.5	0.463 - 0.859	0.012	N
Cobalt-60	1.007	1.05	A		-4.1	0.74 - 1.37	0.018	N
Manganese-54	2.063	2.14	A		-3.6	1.50 - 2.78	0.042	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	0.11	0.114	A		-3.5	0.080 - 0.148	0.192	N
Zinc-65	2.31	2.25	A		2.7	1.58 - 2.93	0.063	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (FNAL01) Fermi National Accelerator Laboratory (FermiLab)  
 PO Box 500, MS325  
 Batavia, IL 60510

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.505	1.52	A		-1.0	1.06 - 1.98	0.094	A
Cesium-137	0.673	0.630	A		6.8	0.441 - 0.819	0.072	A
Cobalt-57	0.710	0.661	A		7.4	0.463 - 0.859	0.062	A
Cobalt-60	1.131	1.05	A		7.7	0.74 - 1.37	0.077	A
Manganese-54	2.27	2.14	A		6.1	1.50 - 2.78	0.19	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.43	2.25	A		8.0	1.58 - 2.93	0.24	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48

(GENE01) GEL Laboratories, LLC

2040 Savage Road

Charleston, SC 29407

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	0.0702	0.0644	A		9.0	0.0451 - 0.0837	0.0046	A
Uranium-238	10.3	9.1	A		13.2	6.4 - 11.8	0.739	A
Uranium-Total	10.37	9.2	A		12.7	6.4 - 12.0	0.739	A

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.000001		A			False Positive Test	0.000324	
Cesium-134	1.48	1.52	A		-2.6	1.06 - 1.98	0.0998	A
Cesium-137	0.676	0.630	A		7.3	0.441 - 0.819	0.0674	A
Cobalt-57	0.682	0.661	A		3.2	0.463 - 0.859	0.0513	A
Cobalt-60	1.12	1.05	A		6.7	0.74 - 1.37	0.0841	A
Manganese-54	2.15	2.14	A		0.5	1.50 - 2.78	0.135	A
Plutonium-238	0.106	0.111	A		-4.5	0.078 - 0.144	0.00466	A
Plutonium-239/240	0.106	0.109	A		-2.8	0.076 - 0.142	0.00465	A
Strontium-90	0.0159		A			False Positive Test	0.0235	
Uranium-234	0.117	0.110	A		6.4	0.077 - 0.143	0.00645	A
Uranium-238	0.116	0.114	A		1.8	0.080 - 0.148	0.00639	A
Zinc-65	2.42	2.25	A		7.6	1.58 - 2.93	0.190	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

A = Result acceptable.....|Bias| <= 20%

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

N = Result not acceptable.....|Bias| > 30%

RW = Report Warning

NR = Not Reported

**Uncertainty Flags:**

NOT ACCEPTABLE.....RP < 2%

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



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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (GPCL01) Georgia Power Company Environmental Laboratory  
 2480 Maner Road  
 Atlanta, GA 30339

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.4951	1.52	A		-1.6	1.06 - 1.98	.1360	A
Cesium-137	.6509	0.630	A		3.3	0.441 - 0.819	.1206	W
Cobalt-57	.6090	0.661	A		-7.9	0.463 - 0.859	.1014	W
Cobalt-60	.9921	1.05	A		-5.5	0.74 - 1.37	.1194	A
Manganese-54	2.1447	2.14	A		0.2	1.50 - 2.78	.2401	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.2828	2.25	A		1.5	1.58 - 2.93	.3555	W

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48

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

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.261	1.52	A		-17.0	1.06 - 1.98	0.2263	W
Cesium-137	0.5670	0.630	A		-10.0	0.441 - 0.819	0.2300	N
Cobalt-57	0.6553	0.661	A		-0.9	0.463 - 0.859	0.1763	W
Cobalt-60	0.8272	1.05	W		-21.2	0.74 - 1.37	0.2108	W
Manganese-54	2.365	2.14	A		10.5	1.50 - 2.78	0.4134	W
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	1.909	2.25	A		-15.2	1.58 - 2.93	0.5941	N

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48

(HPAC99) UKHSA, RCE Glasgow  
 155 Hardgate Road  
 Glasgow, Scotland G51 4LS

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR		N	(11)		False Positive Test		
Cesium-134	1.55	1.52	A		2.0	1.06 - 1.98	0.21	A
Cesium-137	0.732	0.630	A		16.2	0.441 - 0.819	0.102	A
Cobalt-57	0.762	0.661	A		15.3	0.463 - 0.859	0.104	A
Cobalt-60	1.156	1.05	A		10.1	0.74 - 1.37	0.158	A
Manganese-54	2.29	2.14	A		7.0	1.50 - 2.78	0.313	A
Plutonium-238	0.0835	0.111	W		-24.8	0.078 - 0.144	0.0037	A
Plutonium-239/240	0.0803	0.109	W		-26.3	0.076 - 0.142	0.0036	A
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.45	2.25	A		8.9	1.58 - 2.93	0.34	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (HPAL01) Los Alamos National Laboratory  
 Josh Chandler, z338219 MS G761  
 Los Alamos, NM 87545-1663

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	.01		A			False Positive Test	.07	
Cesium-134	1.41	1.52	A		-7.2	1.06 - 1.98	.09	A
Cesium-137	.79	0.630	W		25.4	0.441 - 0.819	.10	A
Cobalt-57	.63	0.661	A		-4.7	0.463 - 0.859	.04	A
Cobalt-60	1.35	1.05	W		28.6	0.74 - 1.37	.11	A
Manganese-54	2.37	2.14	A		10.7	1.50 - 2.78	.17	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	-5.07	0.110	N		-4709.1	0.077 - 0.143	20.49	N
Uranium-238	-0.16	0.114	N		-240.4	0.080 - 0.148	.68	N
Zinc-65	2.65	2.25	A		17.8	1.58 - 2.93	.26	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%



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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48

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

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0008		A			False Positive Test	0.0003	
Cesium-134	1.36	1.52	A		-10.5	1.06 - 1.98	0.041	A
Cesium-137	0.61	0.630	A		-3.2	0.441 - 0.819	0.046	A
Cobalt-57	0.61	0.661	A		-7.7	0.463 - 0.859	0.017	A
Cobalt-60	1.03	1.05	A		-1.9	0.74 - 1.37	0.05	A
Manganese-54	2.19	2.14	A		2.3	1.50 - 2.78	0.08	A
Plutonium-238	0.1145	0.111	A		3.2	0.078 - 0.144	0.0043	A
Plutonium-239/240	0.1106	0.109	A		1.5	0.076 - 0.142	0.0042	A
Strontium-90	0.0037		A			False Positive Test	0.025	
Uranium-234	0.1094	0.110	A		-0.5	0.077 - 0.143	0.0041	A
Uranium-238	0.1127	0.114	A		-1.1	0.080 - 0.148	0.0042	A
Zinc-65	2.23	2.25	A		-0.9	1.58 - 2.93	0.16	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48

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

785 S. 8th Ave, Rm 120

Pocatello, ID 83209-8106

Inorganic							Units: (ug/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological							Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.52	1.52	A		0.0	1.06 - 1.98	0.03	N
Cesium-137	0.73	0.630	A		15.9	0.441 - 0.819	0.04	A
Cobalt-57	0.71	0.661	A		7.4	0.463 - 0.859	0.03	A
Cobalt-60	1.17	1.05	A		11.4	0.74 - 1.37	0.07	A
Manganese-54	2.33	2.14	A		8.9	1.50 - 2.78	0.08	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.48	2.25	A		10.2	1.58 - 2.93	0.11	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

A = Result acceptable.....|Bias| <= 20%

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

N = Result not acceptable.....|Bias| > 30%

RW = Report Warning

NR = Not Reported

**Uncertainty Flags:**

NOT ACCEPTABLE.....RP < 2%

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

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48

(JLNN01) Jefferson Laboratory  
 111 Hadron Drive  
 Newport News, VA 23606

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.02159		A			False Positive Test	0.00951	
Cesium-134	1.1721	1.52	W		-22.9	1.06 - 1.98	0.04185	A
Cesium-137	0.5579	0.630	A		-11.4	0.441 - 0.819	0.03119	A
Cobalt-57	0.58505	0.661	A		-11.5	0.463 - 0.859	0.01962	A
Cobalt-60	0.98125	1.05	A		-6.5	0.74 - 1.37	0.04707	A
Manganese-54	2.0085	2.14	A		-6.1	1.50 - 2.78	0.06392	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.0305	2.25	A		-9.8	1.58 - 2.93	0.10771	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (JNRC99) Energy and Mineral Regulatory Commission  
 Radiological laboratories directorate  
 Amman, Amman 11821

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.15	1.52	W		-24.3	1.06 - 1.98	.04	A
Cesium-137	.64	0.630	A		1.6	0.441 - 0.819	.04	A
Cobalt-57	.7	0.661	A		5.9	0.463 - 0.859	.05	A
Cobalt-60	.9	1.05	A		-14.3	0.74 - 1.37	.2	W
Manganese-54	2.1	2.14	A		-1.9	1.50 - 2.78	.1	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.2	2.25	A		-2.2	1.58 - 2.93	.1	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%



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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48

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

INL/Battelle Energy Alliance, LLC

Idaho Falls, ID 83415-7111

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.22	1.52	A		-19.7	1.06 - 1.98	0.03	A
Cesium-137	0.66	0.630	A		4.8	0.441 - 0.819	0.03	A
Cobalt-57	0.59	0.661	A		-10.7	0.463 - 0.859	0.02	A
Cobalt-60	1.04	1.05	A		-1.0	0.74 - 1.37	0.03	A
Manganese-54	2.23	2.14	A		4.2	1.50 - 2.78	0.06	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.44	2.25	A		8.4	1.58 - 2.93	0.09	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

A = Result acceptable.....|Bias| <= 20%

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

N = Result not acceptable.....|Bias| > 30%

RW = Report Warning

NR = Not Reported

**Uncertainty Flags:**

NOT ACCEPTABLE.....RP < 2%

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

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (MART01) Fluor-BWXT Portsmouth LLC, Analytical Laboratory  
 COC, Bldg. X-705, Rm 106  
 Piketon, OH 45661

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.001077		A			False Positive Test	0.000763	
Cesium-134	NR	1.52				1.06 - 1.98		
Cesium-137	NR	0.630				0.441 - 0.819		
Cobalt-57	NR	0.661				0.463 - 0.859		
Cobalt-60	NR	1.05				0.74 - 1.37		
Manganese-54	NR	2.14				1.50 - 2.78		
Plutonium-238	0.1126	0.111	A		1.4	0.078 - 0.144	0.008518	A
Plutonium-239/240	0.1075	0.109	A		-1.4	0.076 - 0.142	0.008223	A
Strontium-90	NR					False Positive Test		
Uranium-234	0.1235	0.110	A		12.3	0.077 - 0.143	0.008809	A
Uranium-238	0.1160	0.114	A		1.8	0.080 - 0.148	0.008416	A
Zinc-65	NR	2.25				1.58 - 2.93		

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (MART03) Radioactive Material Analysis Laboratory  
 ORNL  
 Oak Ridge, TN 37830

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.003		A			False Positive Test	0.001	
Cesium-134	1.403	1.52	A		-7.7	1.06 - 1.98	0.029	A
Cesium-137	0.607	0.630	A		-3.7	0.441 - 0.819	0.031	A
Cobalt-57	0.616	0.661	A		-6.8	0.463 - 0.859	0.018	A
Cobalt-60	1.012	1.05	A		-3.6	0.74 - 1.37	0.031	A
Manganese-54	1.941	2.14	A		-9.3	1.50 - 2.78	0.053	A
Plutonium-238	0.106	0.111	A		-4.5	0.078 - 0.144	0.006	A
Plutonium-239/240	0.103	0.109	A		-5.5	0.076 - 0.142	0.006	A
Strontium-90	0.009		A			False Positive Test	0.006	
Uranium-234	0.115	0.110	A		4.5	0.077 - 0.143	0.007	A
Uranium-238	0.118	0.114	A		3.5	0.080 - 0.148	0.007	A
Zinc-65	2.069	2.25	A		-8.0	1.58 - 2.93	0.088	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (MDPH01) MDPH-Radiation Control Program  
 MERL-Room 362  
 Jamaica Plain, MA 02130-3597

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.36	1.52	A		-10.5	1.06 - 1.98	0.05	A
Cesium-137	0.59	0.630	A		-6.3	0.441 - 0.819	0.05	A
Cobalt-57	0.64	0.661	A		-3.2	0.463 - 0.859	0.04	A
Cobalt-60	0.98	1.05	A		-6.7	0.74 - 1.37	0.06	A
Manganese-54	2.12	2.14	A		-0.9	1.50 - 2.78	0.09	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.35	2.25	A		4.4	1.58 - 2.93	0.12	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%



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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48

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

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.034976		A			False Positive Test	0.08332	
Cesium-134	1.1633	1.52	W		-23.5	1.06 - 1.98	0.04056	A
Cesium-137	0.66266	0.630	A		5.2	0.441 - 0.819	0.03466	A
Cobalt-57	0.58474	0.661	A		-11.5	0.463 - 0.859	0.09349	W
Cobalt-60	0.86193	1.05	A		-17.9	0.74 - 1.37	0.02912	A
Manganese-54	2.0484	2.14	A		-4.3	1.50 - 2.78	0.05476	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.0973	2.25	A		-6.8	1.58 - 2.93	0.09233	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (MSDH01) Mississippi State Dept of Health  
 Radiological Environmental Laboratory  
 Jackson, MS 39216

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR		N	(11)		False Positive Test		
Cesium-134	-6.4713E-1	1.52	N		-142.6	1.06 - 1.98	9.391e+0	N
Cesium-137	-1.8558	0.630	N		-394.6	0.441 - 0.819	8.776e+0	N
Cobalt-57	NR	0.661	N	(28)		0.463 - 0.859		
Cobalt-60	-3.4780	1.05	N		-3412.4	0.74 - 1.37	4.942e+1	N
Manganese-54	-6.9182	2.14	N		-423.3	1.50 - 2.78	1.443e+1	N
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	7.0358e+0	2.25	N		212.7	1.58 - 2.93	3.122e+1	N

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (NARL01) National Analytical Radiation Environmental Laboratory  
 540 S. Morris Ave.  
 Montgomery, AL 36115-2601

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.00146		A			False Positive Test	0.00129	
Cesium-134	1.50	1.52	A		-1.3	1.06 - 1.98	0.0836	A
Cesium-137	0.655	0.630	A		4.0	0.441 - 0.819	0.040	A
Cobalt-57	0.628	0.661	A		-5.0	0.463 - 0.859	0.0355	A
Cobalt-60	0.971	1.05	A		-7.5	0.74 - 1.37	0.0544	A
Manganese-54	2.20	2.14	A		2.8	1.50 - 2.78	0.122	A
Plutonium-238	0.111	0.111	A		0.0	0.078 - 0.144	0.00881	A
Plutonium-239/240	0.100	0.109	A		-8.3	0.076 - 0.142	0.00829	A
Strontium-90	NR					False Positive Test		
Uranium-234	0.112	0.110	A		1.8	0.077 - 0.143	0.00793	A
Uranium-238	0.131	0.114	A		14.9	0.080 - 0.148	0.00880	A
Zinc-65	2.52	2.25	A		12.0	1.58 - 2.93	0.144	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (NESI01) BWXT-Radioisotope & Analytical Chemistry Laboratory  
 Lynchburg Technology Center  
 Lynchburg, VA 24504-5447

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.001		A			False Positive Test	0.002	
Cesium-134	1.42	1.52	A		-6.6	1.06 - 1.98	0.150	A
Cesium-137	0.794	0.630	W		26.0	0.441 - 0.819	0.076	A
Cobalt-57	0.765	0.661	A		15.7	0.463 - 0.859	0.063	A
Cobalt-60	1.15	1.05	A		9.5	0.74 - 1.37	0.104	A
Manganese-54	2.14	2.14	A		0.0	1.50 - 2.78	0.131	A
Plutonium-238	0.106	0.111	A		-4.5	0.078 - 0.144	0.007	A
Plutonium-239/240	0.102	0.109	A		-6.4	0.076 - 0.142	0.006	A
Strontium-90	0.002		A			False Positive Test	0.021	
Uranium-234	0.117	0.110	A		6.4	0.077 - 0.143	0.007	A
Uranium-238	0.113	0.114	A		-0.9	0.080 - 0.148	0.007	A
Zinc-65	2.05	2.25	A		-8.9	1.58 - 2.93	0.187	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%



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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (NJDH01) New Jersey Dept. of Health, ECLS  
 3 Schwarzkopf Drive  
 Ewing, NJ 08628

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.46	1.52	A		-3.9	1.06 - 1.98	0.15	A
Cesium-137	0.646	0.630	A		2.5	0.441 - 0.819	0.09	A
Cobalt-57	0.585	0.661	A		-11.5	0.463 - 0.859	0.07	A
Cobalt-60	0.939	1.05	A		-10.6	0.74 - 1.37	0.11	A
Manganese-54	2.41	2.14	A		12.6	1.50 - 2.78	0.20	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.94	2.25	N		30.7	1.58 - 2.93	0.27	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (NOCS99) National Oceanography Centre, Southampton  
 GAU-Radioanalytical  
 Southampton, Hampshire SO14 3ZH

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.011		N	(1)		False Positive Test	0.002	
Cesium-134	1.6	1.52	A		5.3	1.06 - 1.98	0.05	A
Cesium-137	0.63	0.630	A		0.0	0.441 - 0.819	0.02	A
Cobalt-57	0.59	0.661	A		-10.7	0.463 - 0.859	0.03	A
Cobalt-60	1.02	1.05	A		-2.9	0.74 - 1.37	0.03	A
Manganese-54	2.10	2.14	A		-1.9	1.50 - 2.78	0.05	A
Plutonium-238	0.095	0.111	A		-14.4	0.078 - 0.144	0.006	A
Plutonium-239/240	0.095	0.109	A		-12.8	0.076 - 0.142	0.006	A
Strontium-90	0.1		A			False Positive Test	10	
Uranium-234	0.102	0.110	A		-7.3	0.077 - 0.143	0.007	A
Uranium-238	0.112	0.114	A		-1.8	0.080 - 0.148	0.008	A
Zinc-65	2.2	2.25	A		-2.2	1.58 - 2.93	0.1	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48

(NRL99) Environmental Radioactivity - National Centre for Radiation Science

PO Box 29181

Christchurch, Christchurch 8540

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0110		A			False Positive Test	0.0053	
Cesium-134	1.487	1.52	A		-2.2	1.06 - 1.98	0.092	A
Cesium-137	0.624	0.630	A		-1.0	0.441 - 0.819	0.040	A
Cobalt-57	0.655	0.661	A		-0.9	0.463 - 0.859	0.043	A
Cobalt-60	0.983	1.05	A		-6.4	0.74 - 1.37	0.067	A
Manganese-54	2.08	2.14	A		-2.8	1.50 - 2.78	0.13	A
Plutonium-238	0.0137	0.111	N		-87.7	0.078 - 0.144	0.0016	A
Plutonium-239/240	0.0094	0.109	N		-91.4	0.076 - 0.142	0.0012	A
Strontium-90	0.0010		A			False Positive Test	0.0031	
Uranium-234	0.01414	0.110	N		-87.1	0.077 - 0.143	0.00096	A
Uranium-238	0.01343	0.114	N		-88.2	0.080 - 0.148	0.00094	A
Zinc-65	2.14	2.25	A		-4.9	1.58 - 2.93	0.14	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

A = Result acceptable.....|Bias| <= 20%

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

N = Result not acceptable.....|Bias| > 30%

RW = Report Warning

NR = Not Reported

**Uncertainty Flags:**

NOT ACCEPTABLE.....RP < 2%

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

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (ODHL01) Ohio Department of Health Laboratory  
 8995 E Main Street  
 Reynoldsburg, OH 43068

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.29	1.52	A		-15.1	1.06 - 1.98	0.0465	A
Cesium-137	0.539	0.630	A		-14.4	0.441 - 0.819	0.0373	A
Cobalt-57	0.580	0.661	A		-12.3	0.463 - 0.859	0.0436	A
Cobalt-60	0.891	1.05	A		-15.1	0.74 - 1.37	0.0308	A
Manganese-54	1.79	2.14	A		-16.4	1.50 - 2.78	0.111	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	1.85	2.25	A		-17.8	1.58 - 2.93	0.0947	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%



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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (RAVR99) Radiactividad Ambiental y Vigilancia Radiologica  
 CIEMAT (Ed 70 P2 D11)  
 Madrid, Madrid 28040

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0021		A			False Positive Test	0.0007	
Cesium-134	1.297	1.52	A		-14.7	1.06 - 1.98	0.035	A
Cesium-137	0.550	0.630	A		-12.7	0.441 - 0.819	0.023	A
Cobalt-57	0.542	0.661	A		-18.0	0.463 - 0.859	0.021	A
Cobalt-60	0.852	1.05	A		-18.9	0.74 - 1.37	0.033	A
Manganese-54	1.752	2.14	A		-18.1	1.50 - 2.78	0.048	A
Plutonium-238	0.1112	0.111	A		0.2	0.078 - 0.144	0.0068	A
Plutonium-239/240	0.1116	0.109	A		2.4	0.076 - 0.142	0.0067	A
Strontium-90	0.023		N	(1)		False Positive Test	0.003	
Uranium-234	0.1031	0.110	A		-6.3	0.077 - 0.143	0.0090	A
Uranium-238	0.111	0.114	A		-2.6	0.080 - 0.148	0.018	W
Zinc-65	1.766	2.25	W		-21.5	1.58 - 2.93	0.080	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (RPSC01) Radiation Protection Service  
 O. Ministry of Labour, Immigration, Training & Skills Development  
 Toronto, Ontario M9P 3T1

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.41	1.52	A		-7.2	1.06 - 1.98	0.0470	A
Cesium-137	0.612	0.630	A		-2.9	0.441 - 0.819	0.0430	A
Cobalt-57	0.662	0.661	A		0.2	0.463 - 0.859	0.0551	A
Cobalt-60	1.06	1.05	A		1.0	0.74 - 1.37	0.0448	A
Manganese-54	2.04	2.14	A		-4.7	1.50 - 2.78	0.0886	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.08	2.25	A		-7.6	1.58 - 2.93	0.127	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (SEML01) SRS Environmental Monitoring Laboratory  
 Bldg 735-B  
 Aiken, SC 29808

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0004		A			False Positive Test	0.0004	
Cesium-134	1.48	1.52	A		-2.6	1.06 - 1.98	0.073	A
Cesium-137	0.626	0.630	A		-0.6	0.441 - 0.819	0.055	A
Cobalt-57	0.59	0.661	A		-10.7	0.463 - 0.859	0.047	A
Cobalt-60	0.960	1.05	A		-8.6	0.74 - 1.37	0.047	A
Manganese-54	2.01	2.14	A		-6.1	1.50 - 2.78	0.12	A
Plutonium-238	0.107	0.111	A		-3.6	0.078 - 0.144	0.012	A
Plutonium-239/240	0.104	0.109	A		-4.6	0.076 - 0.142	0.011	A
Strontium-90	0.006		A			False Positive Test	0.005	
Uranium-234	0.118	0.110	A		7.3	0.077 - 0.143	0.012	A
Uranium-238	0.118	0.114	A		3.5	0.080 - 0.148	0.012	A
Zinc-65	2.09	2.25	A		-7.1	1.58 - 2.93	0.16	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (SMER01) State of Michigan EGLE Radiological Lab  
 815 Filley St.  
 Lansing, MI 48906

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.22	1.52	A		-19.7	1.06 - 1.98	0.1	A
Cesium-137	0.57	0.630	A		-9.5	0.441 - 0.819	0.1	W
Cobalt-57	0.54	0.661	A		-18.3	0.463 - 0.859	0.1	W
Cobalt-60	0.86	1.05	A		-18.1	0.74 - 1.37	0.1	A
Manganese-54	1.85	2.14	A		-13.6	1.50 - 2.78	0.2	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.07	2.25	A		-8.0	1.58 - 2.93	0.2	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%



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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (SOUT01) Southwest Research Institute  
 6220 Culebra Rd.  
 San Antonio, TX 78238-5166

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	0.0643	0.0644	A		-0.2	0.0451 - 0.0837	0.0107	W
Uranium-238	9.62	9.1	A		5.7	6.4 - 11.8	1.54	W
Uranium-Total	9.69	9.2	A		5.3	6.4 - 12.0	1.55	W

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	-0.00100		A			False Positive Test	0.000867	
Cesium-134	1.20	1.52	W		-21.1	1.06 - 1.98	0.0748	A
Cesium-137	0.685	0.630	A		8.7	0.441 - 0.819	0.0552	A
Cobalt-57	0.619	0.661	A		-6.4	0.463 - 0.859	0.0393	A
Cobalt-60	0.989	1.05	A		-5.8	0.74 - 1.37	0.0685	A
Manganese-54	2.10	2.14	A		-1.9	1.50 - 2.78	0.135	A
Plutonium-238	0.0537	0.111	N		-51.6	0.078 - 0.144	0.00633	A
Plutonium-239/240	0.0552	0.109	N		-49.4	0.076 - 0.142	0.00644	A
Strontium-90	0.0124		A			False Positive Test	0.0180	
Uranium-234	0.116	0.110	A		5.5	0.077 - 0.143	0.0103	A
Uranium-238	0.113	0.114	A		-0.9	0.080 - 0.148	0.0101	A
Zinc-65	2.47	2.25	A		9.8	1.58 - 2.93	0.172	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48

(SRPD01) Sandia National Laboratories, Radiation Protection Sample Diagnostics  
 PO Box 5800, MS1103  
 Albuquerque, NM 87185-1103

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.22E+00	1.52	A		-19.7	1.06 - 1.98	9.229E-	A
Cesium-137	4.67E-01	0.630	W		-25.9	0.441 - 0.819	4.300E-	A
Cobalt-57	4.89E-01	0.661	W		-26.0	0.463 - 0.859	5.209E-	A
Cobalt-60	7.78E-01	1.05	W		-25.9	0.74 - 1.37	5.213E-	A
Manganese-54	1.68E+00	2.14	W		-21.5	1.50 - 2.78	1.136E-	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	1.59E+00	2.25	W		-29.3	1.58 - 2.93	1.147E-	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (TDHL01) Texas Department of State Health Services Laboratory  
 1100 W 49th Street  
 Austin, TX 78756

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0026		A			False Positive Test	0.0015	
Cesium-134	1.154	1.52	W		-24.1	1.06 - 1.98	0.030	A
Cesium-137	0.568	0.630	A		-9.8	0.441 - 0.819	0.033	A
Cobalt-57	0.586	0.661	A		-11.3	0.463 - 0.859	0.021	A
Cobalt-60	0.885	1.05	A		-15.7	0.74 - 1.37	0.029	A
Manganese-54	2.016	2.14	A		-5.8	1.50 - 2.78	0.065	A
Plutonium-238	0.111	0.111	A		0.0	0.078 - 0.144	0.013	A
Plutonium-239/240	0.118	0.109	A		8.3	0.076 - 0.142	0.013	A
Strontium-90	0.0027		A			False Positive Test	0.0060	
Uranium-234	0.111	0.110	A		0.9	0.077 - 0.143	0.011	A
Uranium-238	0.131	0.114	A		14.9	0.080 - 0.148	0.013	A
Zinc-65	20107	2.25	N		893544.	1.58 - 2.93	0.093	N

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (TELE02) ATI Environmental, Inc., Midwest Lab  
 700 Landwehr Road  
 Northbrook, IL 60062-

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.12	1.52	W		-26.3	1.06 - 1.98	0.04	A
Cesium-137	0.56	0.630	A		-11.1	0.441 - 0.819	0.07	A
Cobalt-57	0.62	0.661	A		-6.2	0.463 - 0.859	0.30	N
Cobalt-60	0.89	1.05	A		-15.2	0.74 - 1.37	0.07	A
Manganese-54	2.02	2.14	A		-5.6	1.50 - 2.78	0.09	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	0.004		A			False Positive Test	0.061	
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.13	2.25	A		-5.3	1.58 - 2.93	0.14	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%



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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (TMAO01) EBERLINE Analytical Corporation  
 601 A SCARBORO RD  
 OAK RIDGE, TN 37830-

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.126	1.52	W		-25.9	1.06 - 1.98	0.206	W
Cesium-137	0.494	0.630	W		-21.6	0.441 - 0.819	0.170	N
Cobalt-57	0.682	0.661	A		3.2	0.463 - 0.859	0.137	W
Cobalt-60	1.092	1.05	A		4.0	0.74 - 1.37	0.157	A
Manganese-54	1.975	2.14	A		-7.7	1.50 - 2.78	0.691	N
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	0.022		A			False Positive Test	0.021	
Uranium-234	0.110	0.110	A		0.0	0.077 - 0.143	0.025	W
Uranium-238	0.091	0.114	W		-20.2	0.080 - 0.148	0.022	W
Zinc-65	2.156	2.25	A		-4.2	1.58 - 2.93	0.543	W

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (WIPH01) WI, DPH, Radiation Protection Section  
 1 West Wilson Street  
 Madison, WI 53701

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.012			A		False Positive Test	0.118	
Cesium-134	1.189	1.52	W		-21.8	1.06 - 1.98	0.044	A
Cesium-137	0.526	0.630	A		-16.5	0.441 - 0.819	0.0355	A
Cobalt-57	0.560	0.661	A		-15.3	0.463 - 0.859	0.0427	A
Cobalt-60	0.827	1.05	W		-21.2	0.74 - 1.37	0.029	A
Manganese-54	1.673	2.14	W		-21.8	1.50 - 2.78	0.105	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	1.751	2.25	W		-22.2	1.58 - 2.93	0.091	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48

(WIPP01) WIPP Laboratories

1400 University Drive

Carlsbad, NM 88220

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	2.68E-04		A			False Positive Test	1.42E-04	
Cesium-134	1.79E+00	1.52	A		17.8	1.06 - 1.98	5.26E-02	A
Cesium-137	6.94E-01	0.630	A		10.2	0.441 - 0.819	2.84E-02	A
Cobalt-57	6.37E-01	0.661	A		-3.6	0.463 - 0.859	1.76E-02	A
Cobalt-60	1.07E+00	1.05	A		1.9	0.74 - 1.37	4.71E-02	A
Manganese-54	2.07E+00	2.14	A		-3.3	1.50 - 2.78	5.02E-02	A
Plutonium-238	1.11E-01	0.111	A		0.0	0.078 - 0.144	8.10E-03	A
Plutonium-239/240	1.20E-01	0.109	A		10.1	0.076 - 0.142	8.74E-03	A
Strontium-90	-6.48E-03		A			False Positive Test	4.61E-03	
Uranium-234	1.23E-01	0.110	A		11.8	0.077 - 0.143	1.31E-02	A
Uranium-238	1.24E-01	0.114	A		8.8	0.080 - 0.148	1.32E-02	A
Zinc-65	2.08E+00	2.25	A		-7.6	1.58 - 2.93	7.91E-02	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

A = Result acceptable.....|Bias| <= 20%

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

N = Result not acceptable.....|Bias| > 30%

RW = Report Warning

NR = Not Reported

**Uncertainty Flags:**

NOT ACCEPTABLE.....RP < 2%

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

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (WSHL01) Wisconsin State Laboratory of Hygiene  
 2601 Agriculture Drive  
 Madison, WI 53718

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.54	1.52	A		1.3	1.06 - 1.98	0.038	A
Cesium-137	0.738	0.630	A		17.1	0.441 - 0.819	0.0278	A
Cobalt-57	0.653	0.661	A		-1.2	0.463 - 0.859	0.0212	A
Cobalt-60	1.05	1.05	A		0.0	0.74 - 1.37	0.061	A
Manganese-54	2.2	2.14	A		2.8	1.50 - 2.78	0.1	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.32	2.25	A		3.1	1.58 - 2.93	0.182	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%



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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (WSTP99) Cavendish Nuclear Limited  
 Greeson Court  
 Cumbria, UK CA24 3HZ

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	0.0650	0.0644	A		0.9	0.0451 - 0.0837	0.0035	A
Uranium-238	9.07	9.1	A		-0.3	6.4 - 11.8	0.45	A
Uranium-Total	11.00	9.2	A		19.6	6.4 - 12.0	0.48	A

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.00053		A			False Positive Test	0.00041	
Cesium-134	1.55	1.52	A		2.0	1.06 - 1.98	0.12	A
Cesium-137	0.635	0.630	A		0.8	0.441 - 0.819	0.057	A
Cobalt-57	0.617	0.661	A		-6.7	0.463 - 0.859	0.032	A
Cobalt-60	1.004	1.05	A		-4.4	0.74 - 1.37	0.045	A
Manganese-54	2.27	2.14	A		6.1	1.50 - 2.78	0.15	A
Plutonium-238	0.116	0.111	A		4.5	0.078 - 0.144	0.011	A
Plutonium-239/240	0.125	0.109	A		14.7	0.076 - 0.142	0.012	A
Strontium-90	0.0106		A			False Positive Test	0.0065	
Uranium-234	0.110	0.110	A		0.0	0.077 - 0.143	0.025	W
Uranium-238	0.1106	0.114	A		-3.0	0.080 - 0.148	0.0027	A
Zinc-65	2.58	2.25	A		14.7	1.58 - 2.93	0.13	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (WVDP01) WVDP Environmental Laboratory  
 10282 Rock Springs Road  
 West Valley, NY 14171

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0644				0.0451 - 0.0837		
Uranium-238	NR	9.1				6.4 - 11.8		
Uranium-Total	NR	9.2				6.4 - 12.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	1.36	1.52	A		-10.5	1.06 - 1.98	0.0668	A
Cesium-137	0.566	0.630	A		-10.2	0.441 - 0.819	0.0378	A
Cobalt-57	0.648	0.661	A		-2.0	0.463 - 0.859	0.0412	A
Cobalt-60	0.951	1.05	A		-9.4	0.74 - 1.37	0.0401	A
Manganese-54	2.21	2.14	A		3.3	1.50 - 2.78	0.101	A
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	2.33	2.25	A		3.6	1.58 - 2.93	0.133	A

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

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

NOT ACCEPTABLE.....RP > 30%

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

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte



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

Laboratory Results For MAPEP-23-RdF48  
 (YPGA01) US Army Yuma Proving Ground / Material Analysis Lab  
 301 C. Street  
 Yuma, AZ 85365

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	0.068	0.0644	A		5.6	0.0451 - 0.0837	0.06	N
Uranium-238	9.34	9.1	A		2.6	6.4 - 11.8	0.6	A
Uranium-Total	9.41	9.2	A		2.3	6.4 - 12.0	0.6	A

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR					False Positive Test		
Cesium-134	NR	1.52				1.06 - 1.98		
Cesium-137	NR	0.630				0.441 - 0.819		
Cobalt-57	NR	0.661				0.463 - 0.859		
Cobalt-60	NR	1.05				0.74 - 1.37		
Manganese-54	NR	2.14				1.50 - 2.78		
Plutonium-238	NR	0.111				0.078 - 0.144		
Plutonium-239/240	NR	0.109				0.076 - 0.142		
Strontium-90	NR					False Positive Test		
Uranium-234	NR	0.110				0.077 - 0.143		
Uranium-238	NR	0.114				0.080 - 0.148		
Zinc-65	NR	2.25				1.58 - 2.93		

Radiological Reference Date: February 1, 2023

**Results Flags:**

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

**Uncertainty Flags:**

- NOT ACCEPTABLE.....RP < 2%
- ACCEPTABLE.....2% <= RP <= 15%

Radiological Units: (Bq/sample)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
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ACCEPTABLE WITH WARNING.....15% < RP <= 30%

NOT ACCEPTABLE.....RP > 30%

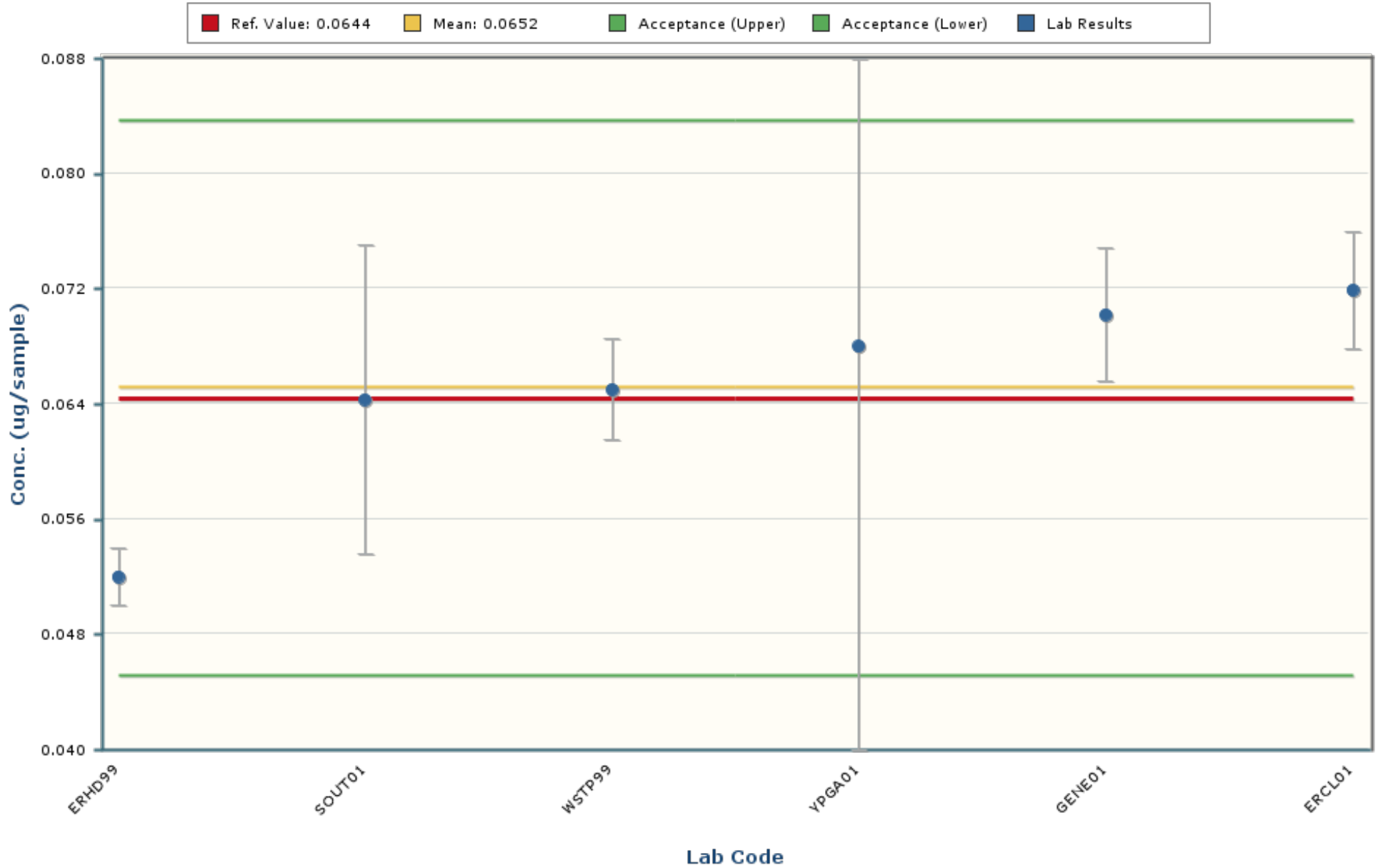
Relative Precision (RP) = (Reported Uncertainty / Reported Result) x 100

**Notes:**

- (1) = False Positive
- (11) = False Positive Test, Result Not Reported
- (28) = Not Reporting Previously Reported Analyte

# Uranium-235

## MAPEP-23-RdF48



### Notes:

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

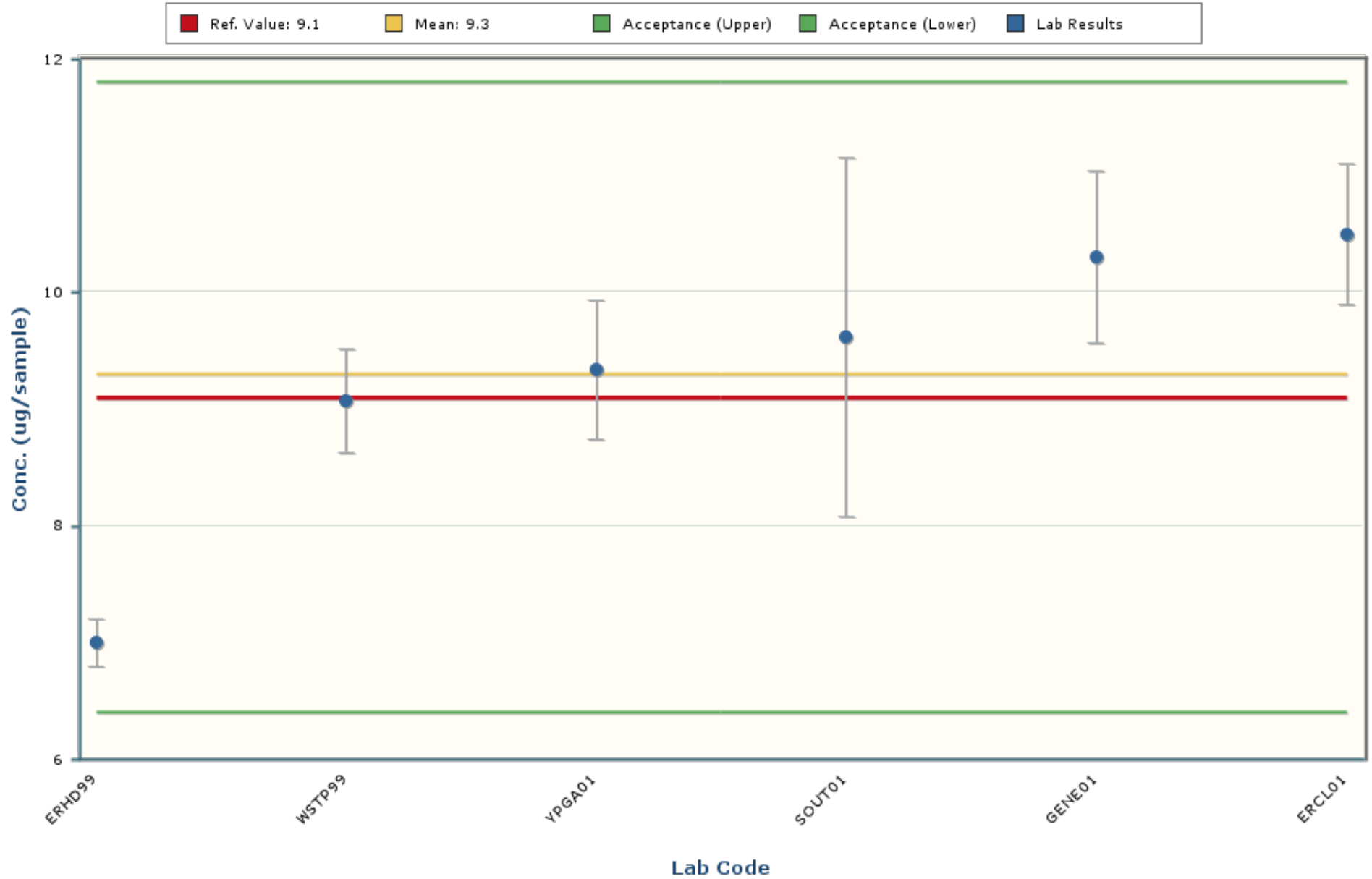
The chart shows only data points with values between 0.0297 and 0.1008 ( $\pm 5$  Standard Deviations).

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



# Uranium-238

## MAPEP-23-RdF48



### Notes:

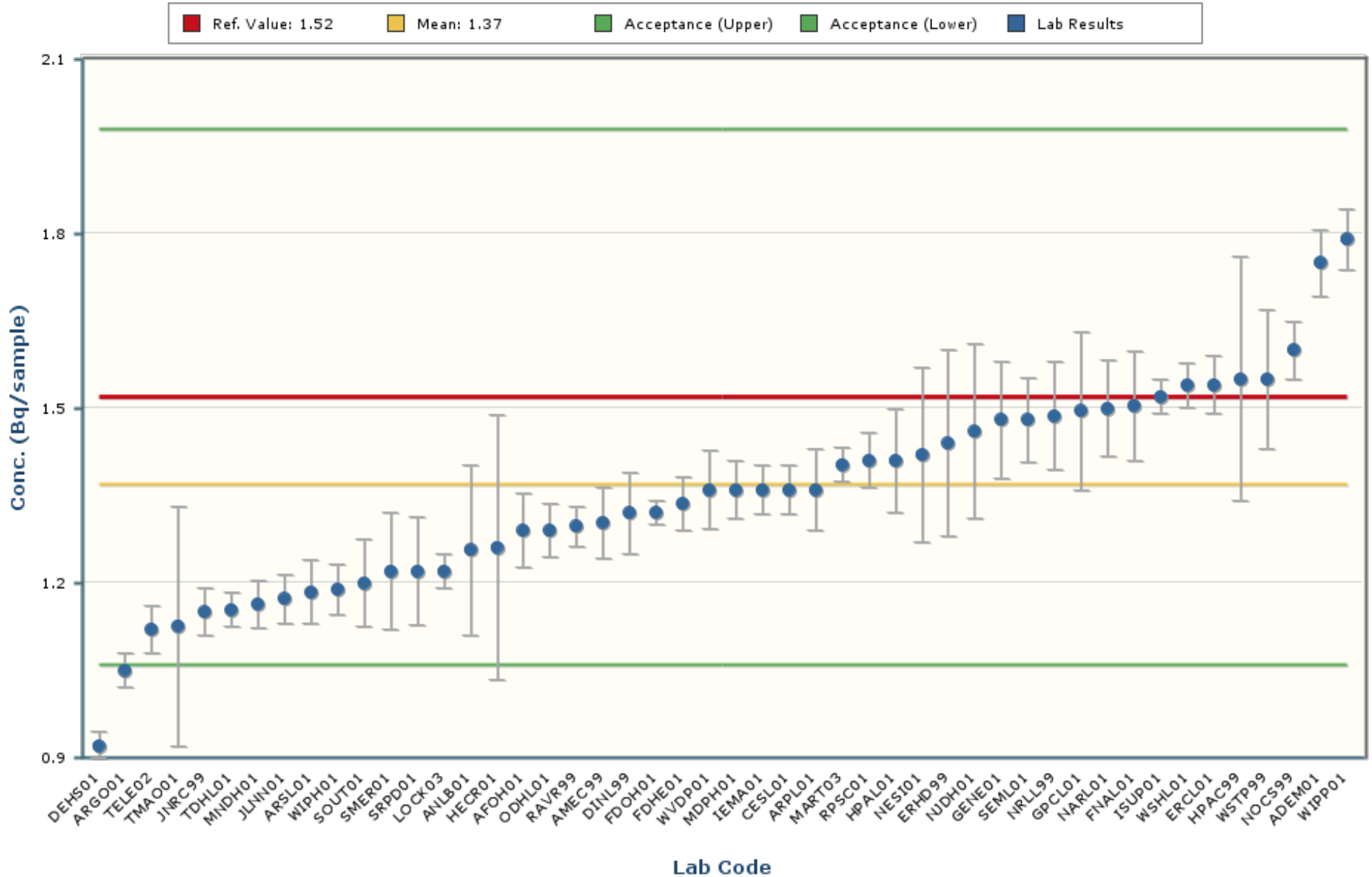
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 3.0 and 15.6 ( $\pm 5$  Standard Deviations).

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

# Cesium-134

## MAPEP-23-RdF48



### Notes:

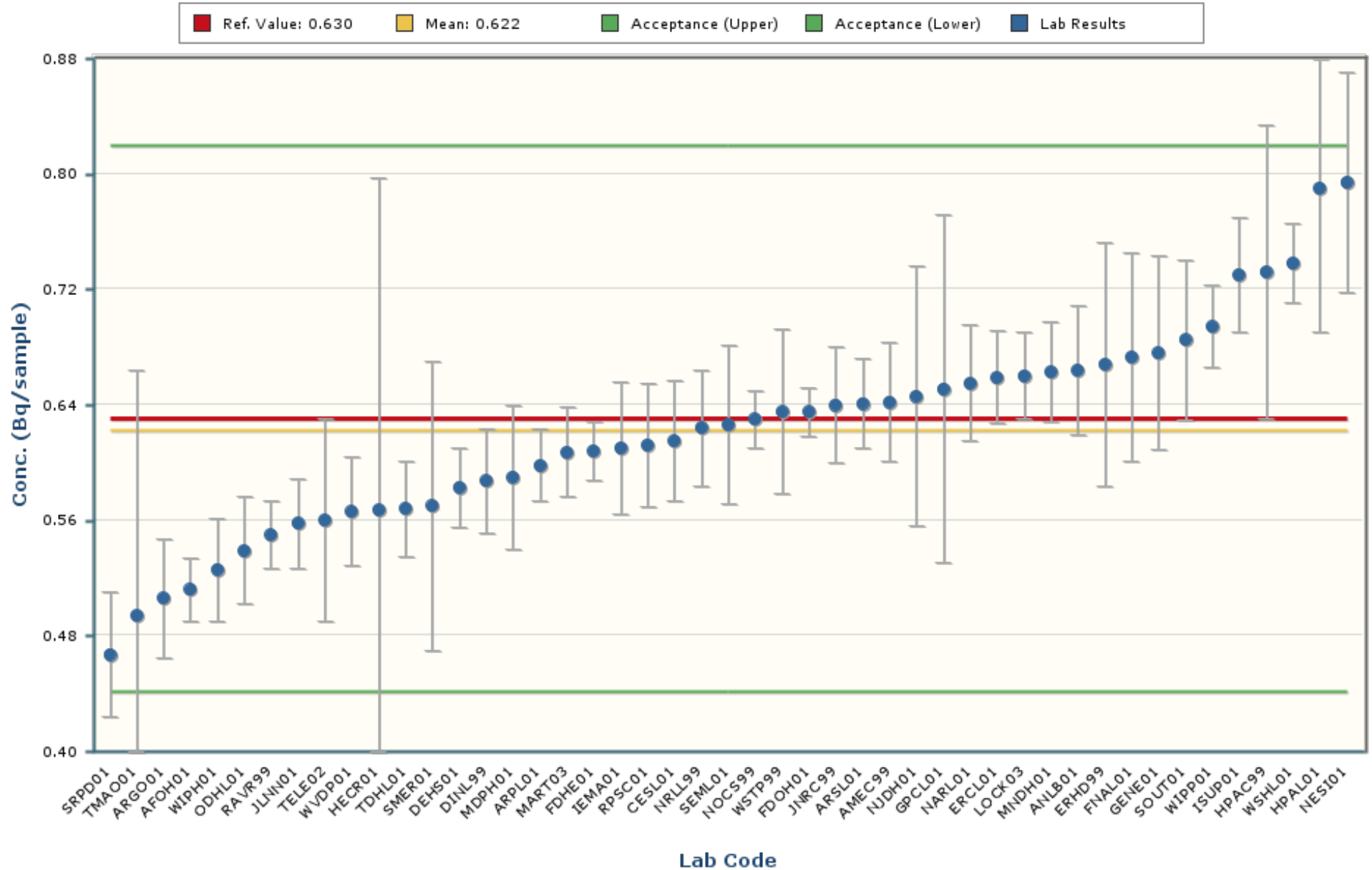
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 0.57 and 2.17 ( $\pm 5$  Standard Deviations).

The error bars encompassing each result are plotted at  $\pm 1$  standard deviation.

# Cesium-137

## MAPEP-23-RdF48



### Notes:

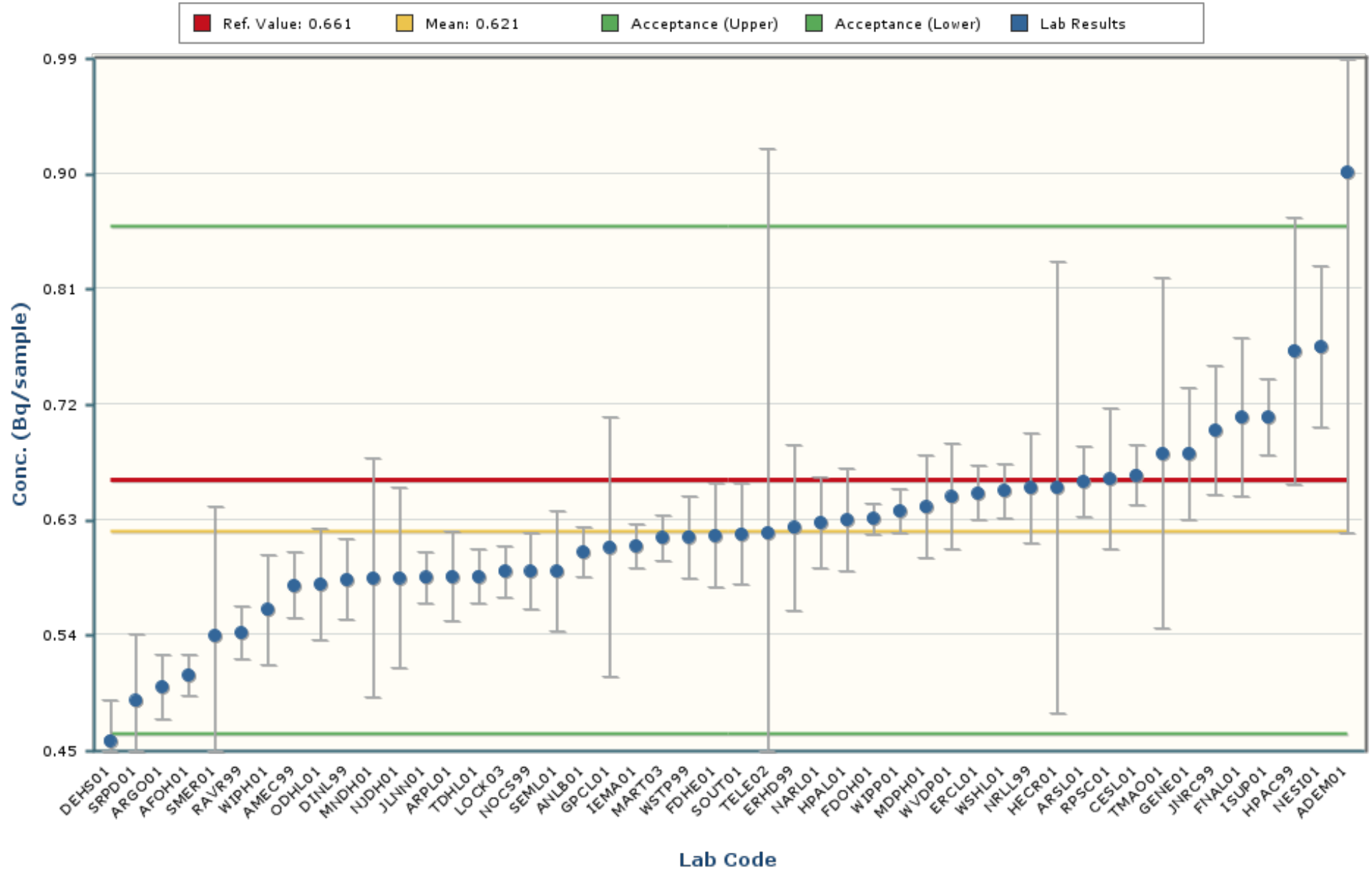
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 0.266 and 0.979 ( $\pm 5$  Standard Deviations).

The error bars encompassing each result are plotted at  $\pm 1$  standard deviation.

# Cobalt-57

## MAPEP-23-RdF48



### Notes:

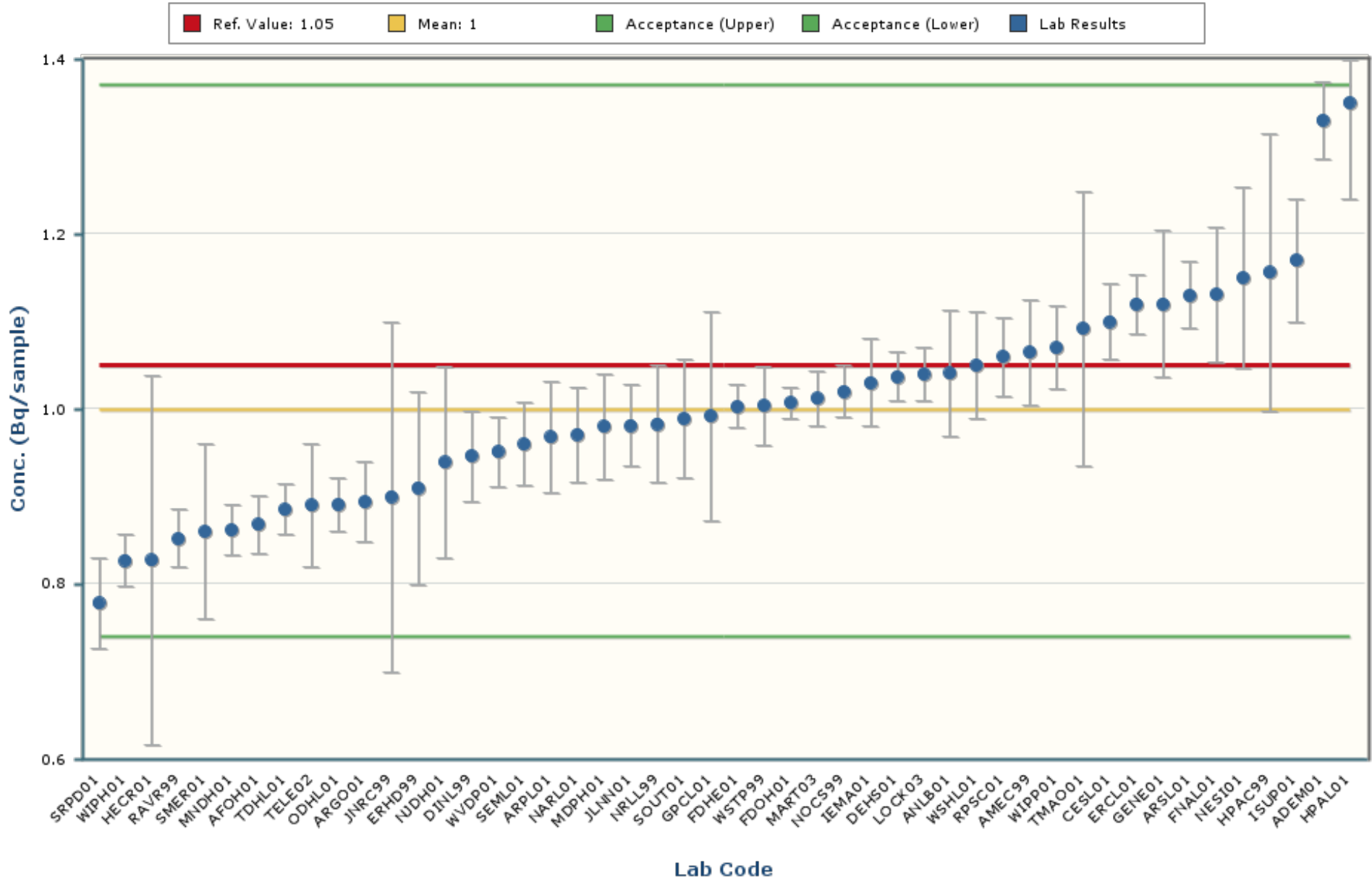
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 0.325 and 0.916 ( $\pm 5$  Standard Deviations).

The error bars encompassing each result are plotted at  $\pm 1$  standard deviation.

# Cobalt-60

## MAPEP-23-RdF48



### Notes:

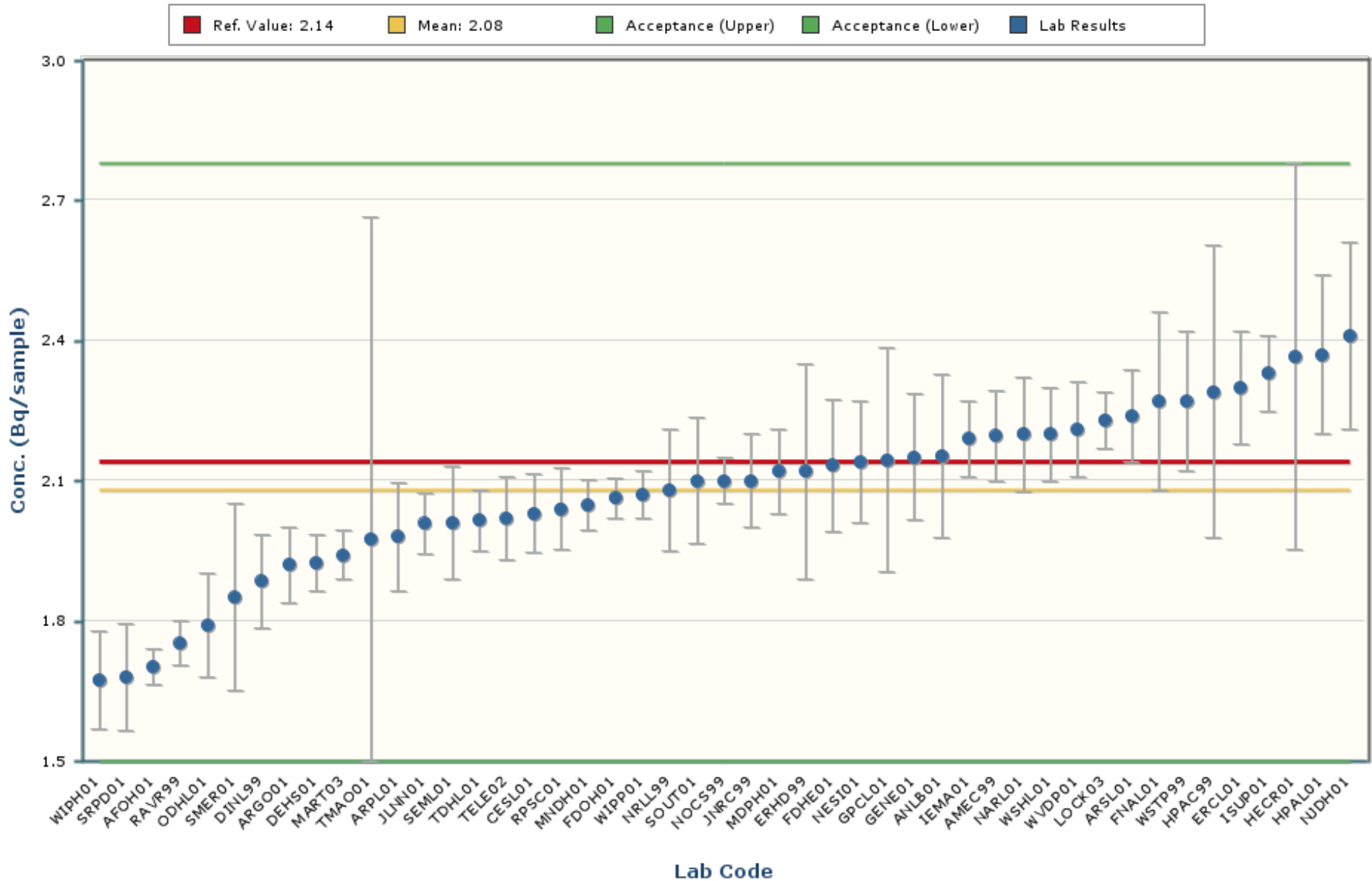
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 0.40 and 1.60 ( $\pm 5$  Standard Deviations).

The error bars encompassing each result are plotted at  $\pm 1$  standard deviation.

# Manganese-54

## MAPEP-23-RdF48



### Notes:

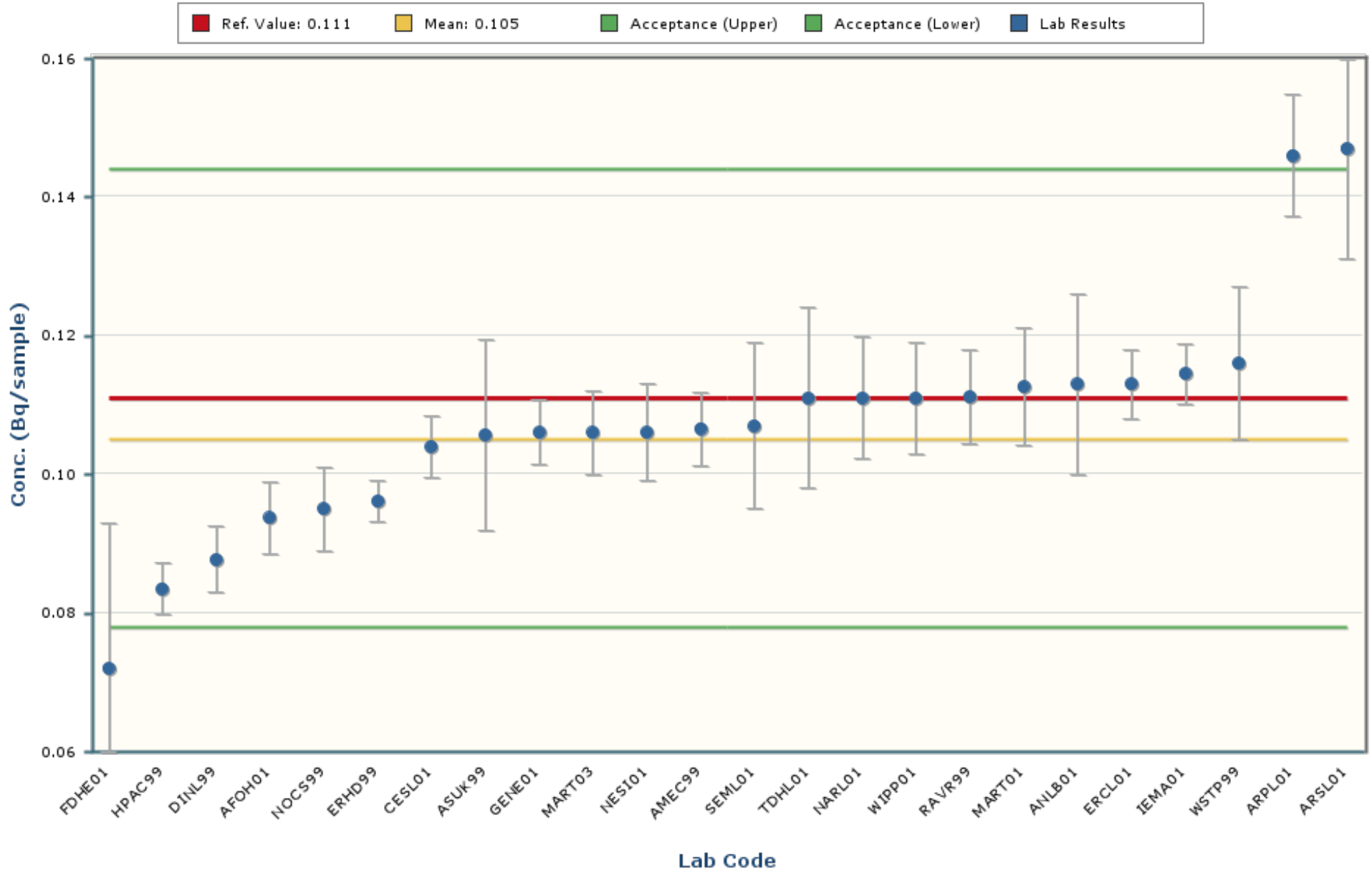
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 1.17 and 2.99 ( $\pm 5$  Standard Deviations).

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

# Plutonium-238

## MAPEP-23-RdF48



### Notes:

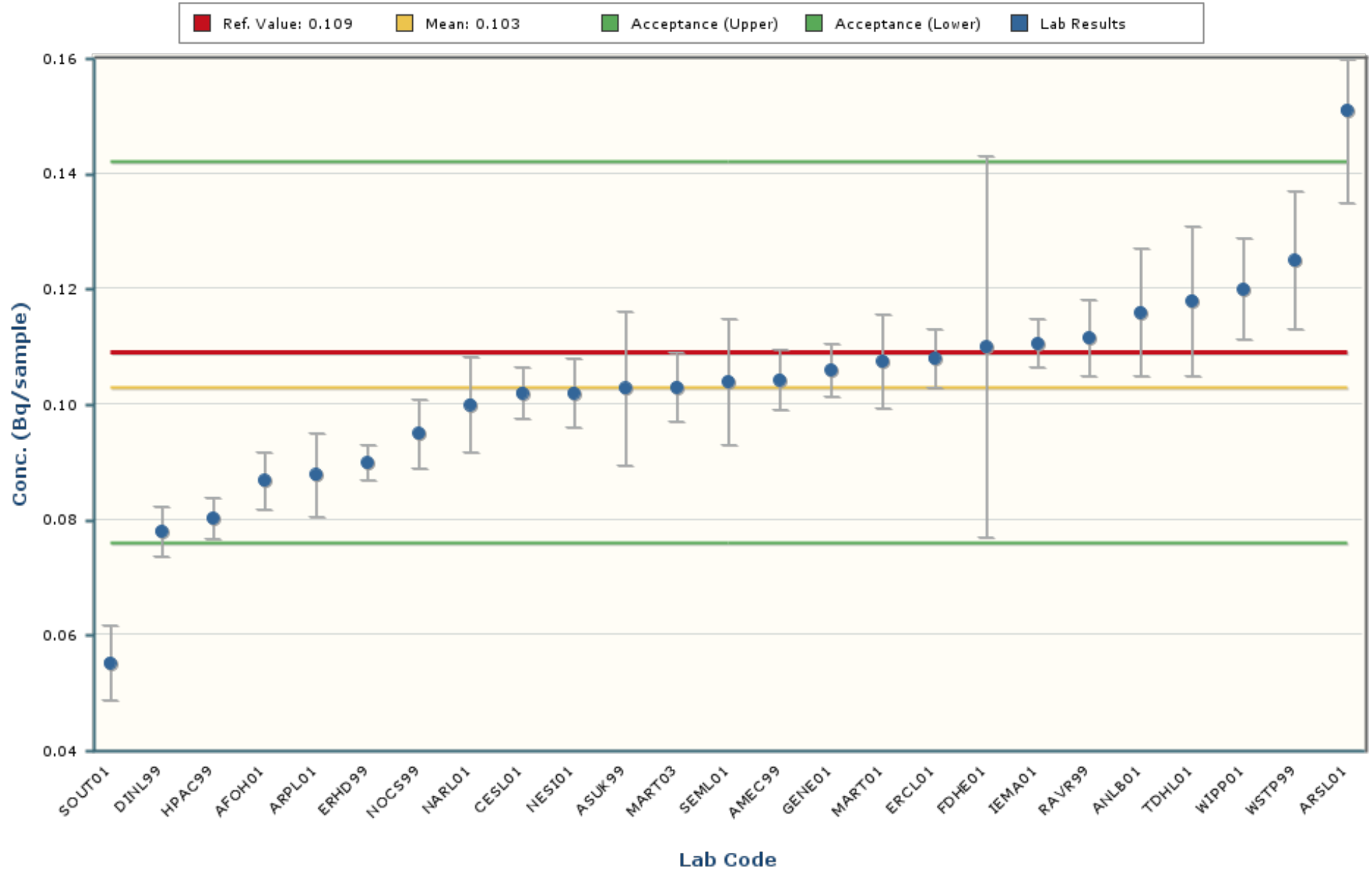
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 0.060 and 0.150 ( $\pm 5$  Standard Deviations).

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

# Plutonium-239/240

## MAPEP-23-RdF48



### Notes:

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

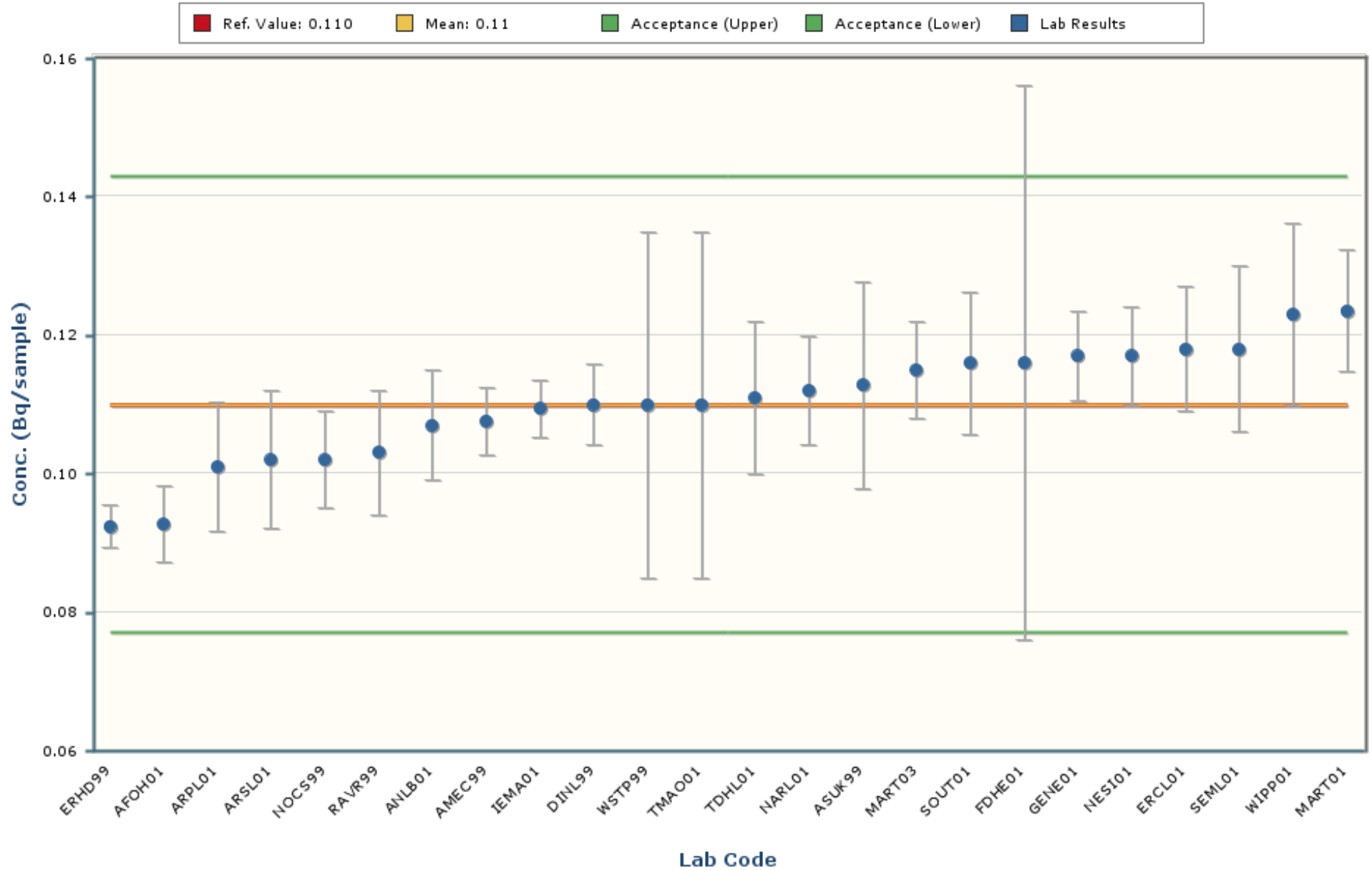
The chart shows only data points with values between 0.042 and 0.164 ( $\pm 5$  Standard Deviations).

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



# Uranium-234

## MAPEP-23-RdF48



### Notes:

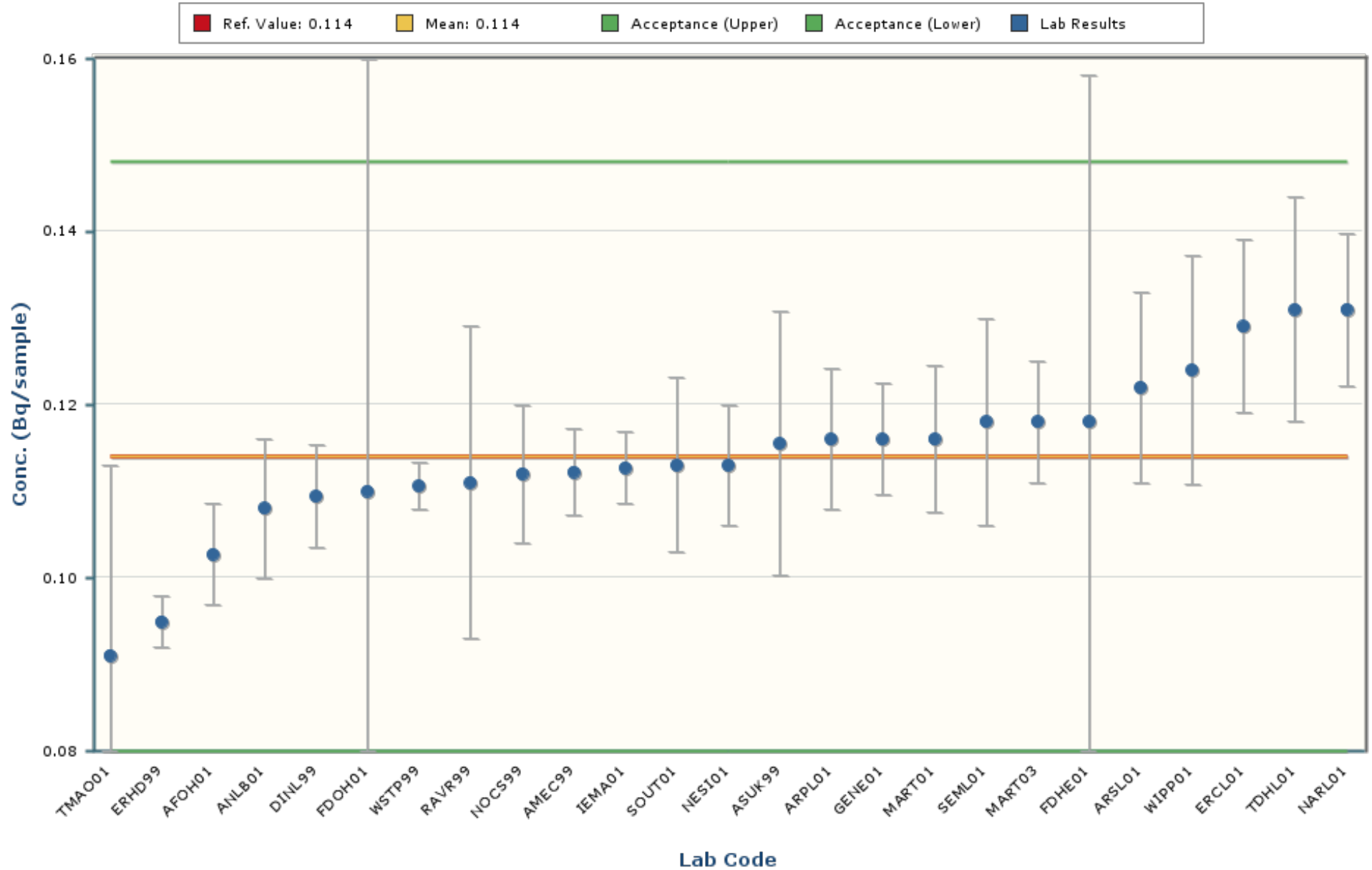
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 0.069 and 0.152 ( $\pm 5$  Standard Deviations).

The error bars encompassing each result are plotted at  $\pm 1$  standard deviation.

# Uranium-238

## MAPEP-23-RdF48



### Notes:

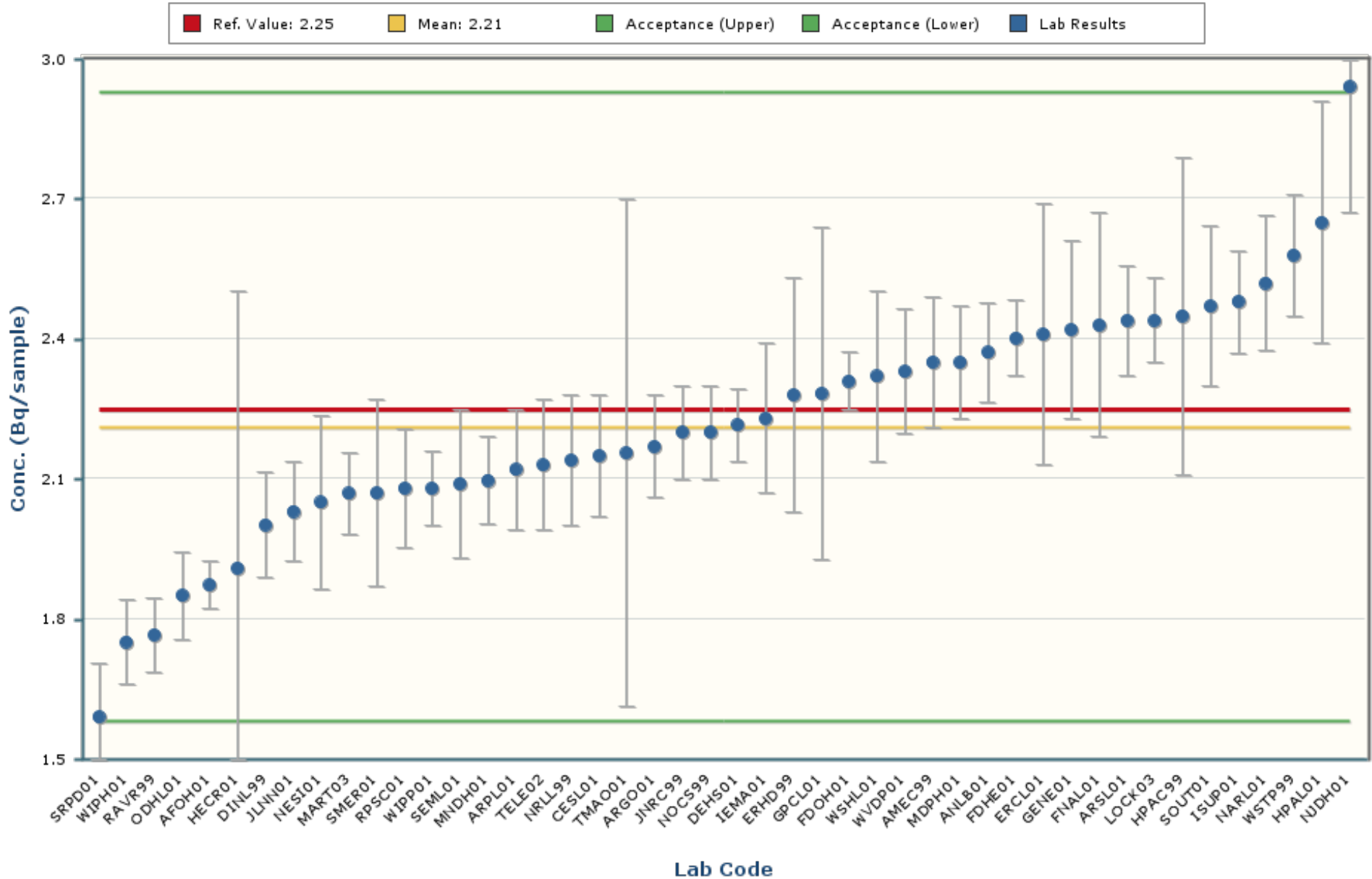
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 0.067 and 0.162 ( $\pm 5$  Standard Deviations).

The error bars encompassing each result are plotted at  $\pm 1$  standard deviation.

# Zinc-65

## MAPEP-23-RdF48



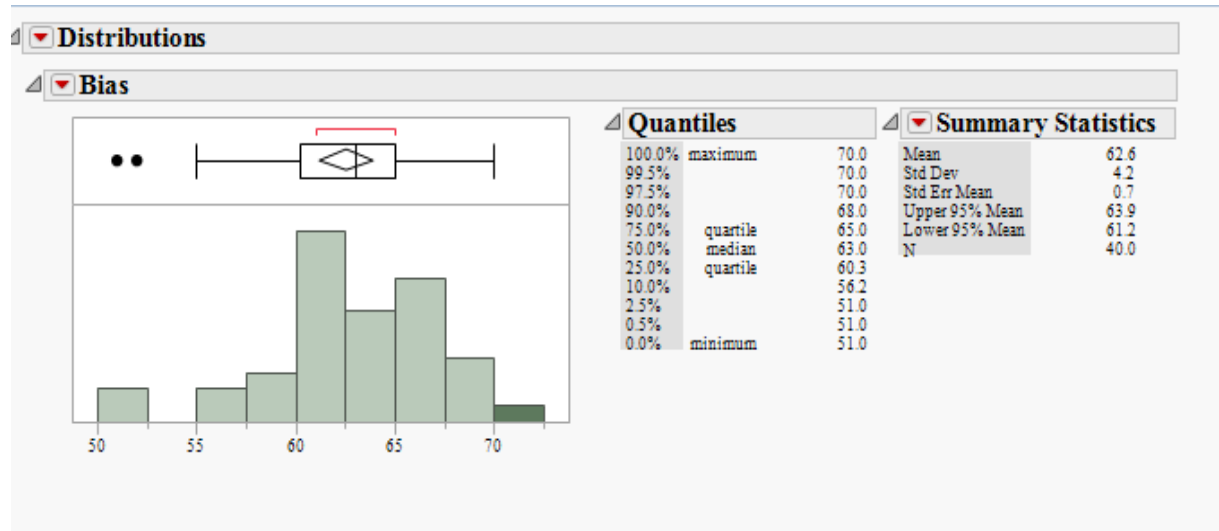
### Notes:

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

The chart shows only data points with values between 1.05 and 3.37 ( $\pm 5$  Standard Deviations).

The error bars encompassing each result are plotted at  $\pm 1$  standard deviation.

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

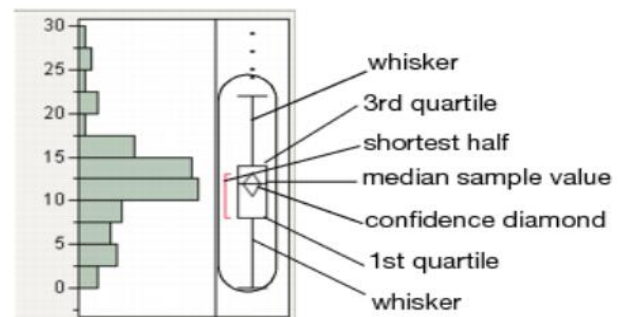


### Outlier Box Plot

The BLACK small vertical line inside the small rectangle at the top of the data distribution graph is the median of the population of the bias shown for that analyte in the matrix. The confidence diamond contains the mean and the upper and lower 95% of the mean. If you drew a line through the middle of the diamond, you would have the mean. The top and bottom points of the diamond represent the upper and lower 95% of the mean. The ends of the box represent the 25th and 75th quantiles, also expressed as 1<sup>st</sup> and 3<sup>rd</sup> quartile. The difference between the 1<sup>st</sup> and 3<sup>rd</sup> 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)

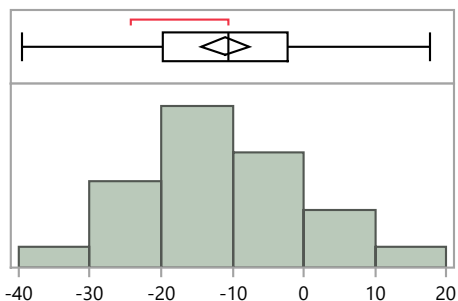


If the data points do not reach the computed ranges, then the whiskers are determined by the upper and lower data point values (not including outliers). The bracket outside of the box identifies the *shortest half*, which is the most dense 50% of the observations (Rousseuw and Leroy 1987).

### RdF Distribution by Detection Method

#### Distributions Analyte\_Detection=Cesium-134 Gamma Spectrometry

##### Bias



##### Quantiles

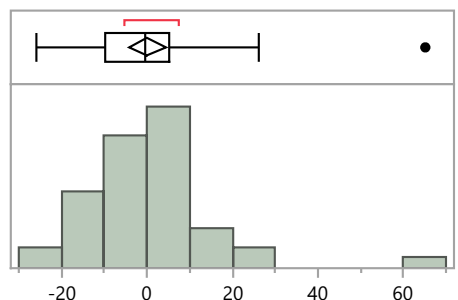
100.0%	maximum	17.8
99.5%		17.8
97.5%		17.2
90.0%		2.0
75.0%	quartile	-2.3
50.0%	median	-10.5
25.0%	quartile	-19.7
10.0%		-24.5
2.5%		-37.6
0.5%		-39.5
0.0%	minimum	-39.5

##### Summary Statistics

Mean	-11.0
Std Dev	11.5
Std Err Mean	1.7
Upper 95% Mean	-7.7
Lower 95% Mean	-14.4
N	48.0

#### Distributions Analyte\_Detection=Cesium-137 Gamma Spectrometry

##### Bias



##### Quantiles

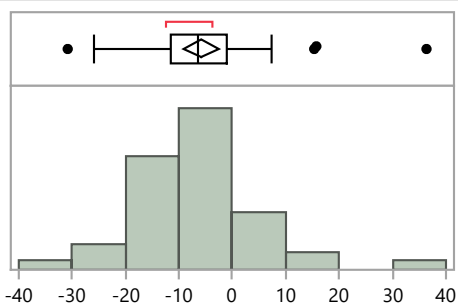
100.0%	maximum	65.1
99.5%		65.1
97.5%		56.3
90.0%		16.3
75.0%	quartile	5.4
50.0%	median	-0.3
25.0%	quartile	-9.7
10.0%		-16.7
2.5%		-24.9
0.5%		-25.9
0.0%	minimum	-25.9

##### Summary Statistics

Mean	0.1
Std Dev	14.7
Std Err Mean	2.1
Upper 95% Mean	4.4
Lower 95% Mean	-4.1
N	48.0

#### Distributions Analyte\_Detection=Cobalt-57 Gamma Spectrometry

##### Bias



##### Quantiles

100.0%	maximum	36.3
99.5%		36.3
97.5%		31.7
90.0%		7.4
75.0%	quartile	-0.9
50.0%	median	-6.5
25.0%	quartile	-11.5
10.0%		-18.8
2.5%		-29.7
0.5%		-30.8
0.0%	minimum	-30.8

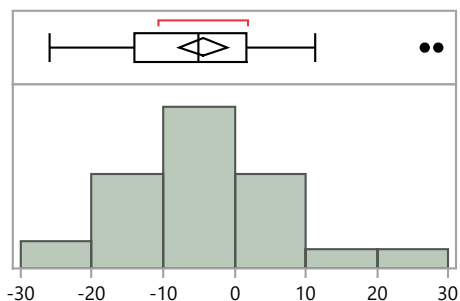
##### Summary Statistics

Mean	-5.8
Std Dev	11.3
Std Err Mean	1.6
Upper 95% Mean	-2.5
Lower 95% Mean	-9.0
N	48.0

### RdF Distribution by Detection Method

#### Distributions Analyte\_Detection=Cobalt-60 Gamma Spectrometry

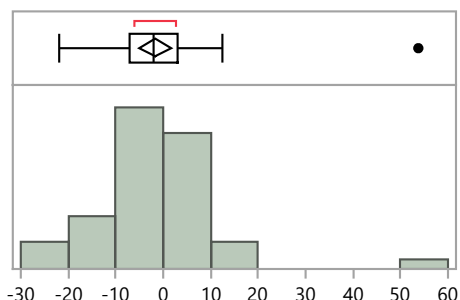
##### Bias



Quantiles			Summary Statistics	
100.0%	maximum	28.6	Mean	-4.4
99.5%		28.6	Std Dev	11.4
97.5%		28.2	Std Err Mean	1.6
90.0%		9.6	Upper 95% Mean	-1.1
75.0%	quartile	1.8	Lower 95% Mean	-7.7
50.0%	median	-5.0	N	48.0
25.0%	quartile	-14.1		
10.0%		-18.2		
2.5%		-24.8		
0.5%		-25.9		
0.0%	minimum	-25.9		

#### Distributions Analyte\_Detection=Manganese-54 Gamma Spectrometry

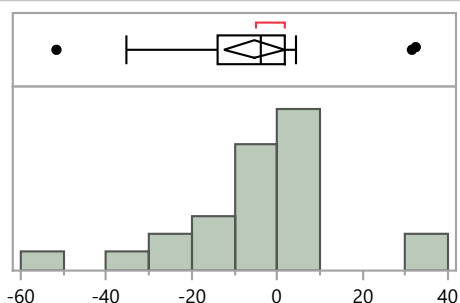
##### Bias



Quantiles			Summary Statistics	
100.0%	maximum	53.7	Mean	-1.6
99.5%		53.7	Std Dev	11.7
97.5%		44.5	Std Err Mean	1.7
90.0%		9.1	Upper 95% Mean	1.8
75.0%	quartile	3.2	Lower 95% Mean	-5.0
50.0%	median	-1.9	N	48.0
25.0%	quartile	-7.2		
10.0%		-16.6		
2.5%		-21.7		
0.5%		-21.8		
0.0%	minimum	-21.8		

#### Distributions Analyte\_Detection=Plutonium-238 Alpha Spectrometry

##### Bias

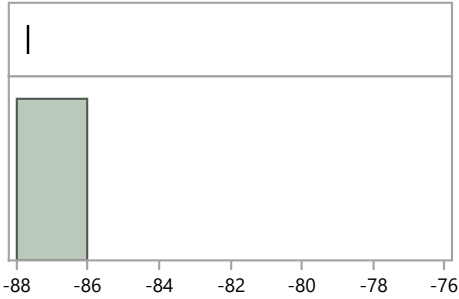


Quantiles			Summary Statistics	
100.0%	maximum	32.4	Mean	-5.3
99.5%		32.4	Std Dev	17.2
97.5%		32.4	Std Err Mean	3.4
90.0%		15.3	Upper 95% Mean	1.9
75.0%	quartile	1.6	Lower 95% Mean	-12.4
50.0%	median	-4.0	N	25.0
25.0%	quartile	-13.9		
10.0%		-28.9		
2.5%		-51.6		
0.5%		-51.6		
0.0%	minimum	-51.6		

**RdF Distribution by Detection Method**

**Distributions Analyte\_Detection=Plutonium-238 Liquid Scintillation Counter**

**Bias**



**Quantiles**

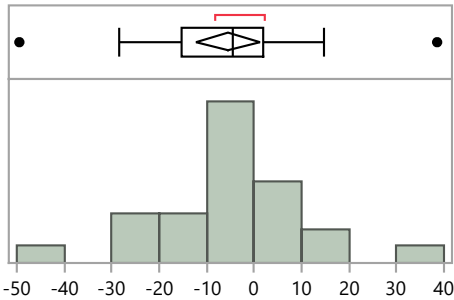
100.0%	maximum	-87.7
99.5%		-87.7
97.5%		-87.7
90.0%		-87.7
75.0%	quartile	-87.7
50.0%	median	-87.7
25.0%	quartile	-87.7
10.0%		-87.7
2.5%		-87.7
0.5%		-87.7
0.0%	minimum	-87.7

**Summary Statistics**

Mean	-87.7
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

**Distributions Analyte\_Detection=Plutonium-239/240 Alpha Spectrometry**

**Bias**



**Quantiles**

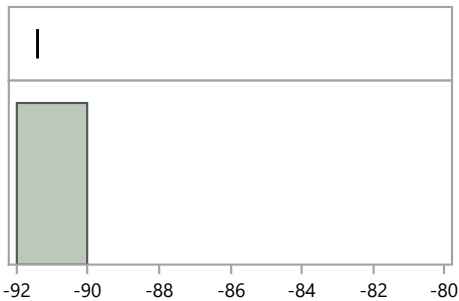
100.0%	maximum	38.5
99.5%		38.5
97.5%		38.5
90.0%		11.9
75.0%	quartile	2.0
50.0%	median	-4.6
25.0%	quartile	-15.2
10.0%		-27.1
2.5%		-49.4
0.5%		-49.4
0.0%	minimum	-49.4

**Summary Statistics**

Mean	-5.5
Std Dev	16.6
Std Err Mean	3.3
Upper 95% Mean	1.3
Lower 95% Mean	-12.4
N	25.0

**Distributions Analyte\_Detection=Plutonium-239/240 Liquid Scintillation Counter**

**Bias**



**Quantiles**

100.0%	maximum	-91.4
99.5%		-91.4
97.5%		-91.4
90.0%		-91.4
75.0%	quartile	-91.4
50.0%	median	-91.4
25.0%	quartile	-91.4
10.0%		-91.4
2.5%		-91.4
0.5%		-91.4
0.0%	minimum	-91.4

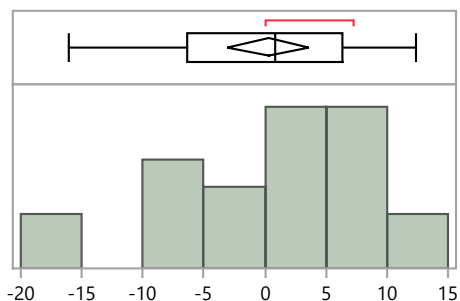
**Summary Statistics**

Mean	-91.4
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

### RdF Distribution by Detection Method

#### Distributions Analyte\_Detection=Uranium-234 Alpha Spectrometry

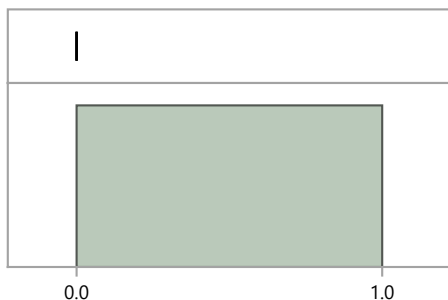
##### Bias



Quantiles			Summary Statistics	
100.0%	maximum	12.3	Mean	0.3
99.5%		12.3	Std Dev	7.7
97.5%		12.3	Std Err Mean	1.6
90.0%		10.0	Upper 95% Mean	3.6
75.0%	quartile	6.4	Lower 95% Mean	-3.1
50.0%	median	0.9	N	23.0
25.0%	quartile	-6.3		
10.0%		-12.7		
2.5%		-16.0		
0.5%		-16.0		
0.0%	minimum	-16.0		

#### Distributions Analyte\_Detection=Uranium-234 Inductively Coupled Plasma Mass Spectrometry

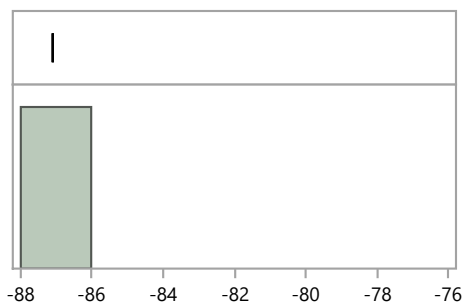
##### Bias



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

#### Distributions Analyte\_Detection=Uranium-234 Liquid Scintillation Counter

##### Bias



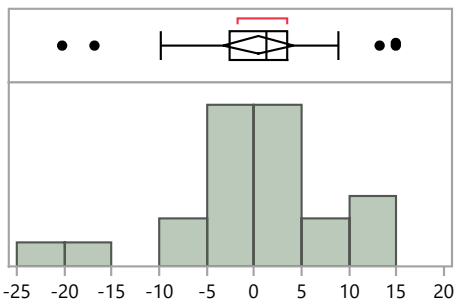
Quantiles			Summary Statistics	
100.0%	maximum	-87.1	Mean	-87.1
99.5%		-87.1	Std Dev	.
97.5%		-87.1	Std Err Mean	.
90.0%		-87.1	Upper 95% Mean	.
75.0%	quartile	-87.1	Lower 95% Mean	.
50.0%	median	-87.1	N	1.0
25.0%	quartile	-87.1		
10.0%		-87.1		
2.5%		-87.1		
0.5%		-87.1		
0.0%	minimum	-87.1		



**RdF Distribution by Detection Method**

**Distributions Analyte\_Detection=Uranium-238 Alpha Spectrometry**

**Bias**



**Quantiles**

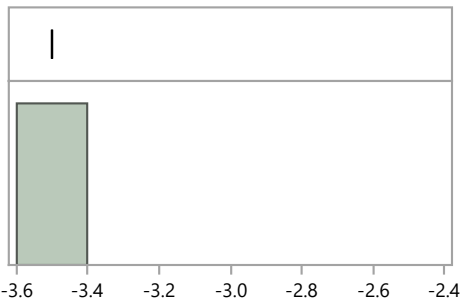
100.0%	maximum	14.9
99.5%		14.9
97.5%		14.9
90.0%		14.2
75.0%	quartile	3.5
50.0%	median	1.3
25.0%	quartile	-2.6
10.0%		-14.0
2.5%		-20.2
0.5%		-20.2
0.0%	minimum	-20.2

**Summary Statistics**

Mean	0.5
Std Dev	8.6
Std Err Mean	1.8
Upper 95% Mean	4.2
Lower 95% Mean	-3.3
N	23.0

**Distributions Analyte\_Detection=Uranium-238 Gamma Spectrometry**

**Bias**



**Quantiles**

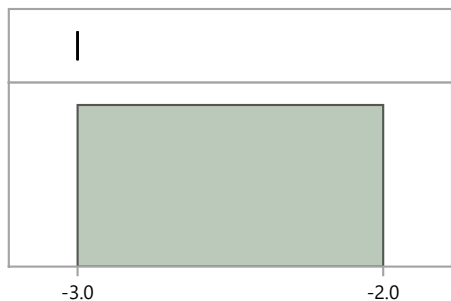
100.0%	maximum	-3.5
99.5%		-3.5
97.5%		-3.5
90.0%		-3.5
75.0%	quartile	-3.5
50.0%	median	-3.5
25.0%	quartile	-3.5
10.0%		-3.5
2.5%		-3.5
0.5%		-3.5
0.0%	minimum	-3.5

**Summary Statistics**

Mean	-3.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

**Distributions Analyte\_Detection=Uranium-238 Inductively Coupled Plasma Mass Spectrometry**

**Bias**



**Quantiles**

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

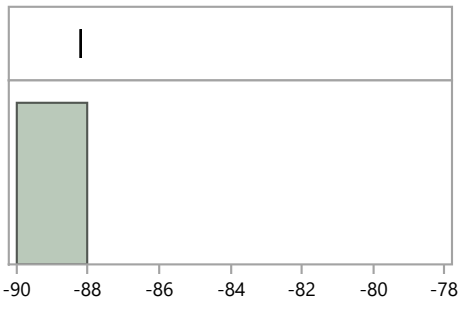
**Summary Statistics**

Mean	-3.0
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

**RdF Distribution by Detection Method**

**Distributions Analyte\_Detection=Uranium-238 Liquid Scintillation Counter**

**Bias**

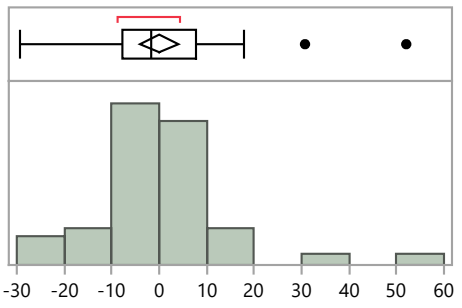


Quantiles		
100.0%	maximum	-88.2
99.5%		-88.2
97.5%		-88.2
90.0%		-88.2
75.0%	quartile	-88.2
50.0%	median	-88.2
25.0%	quartile	-88.2
10.0%		-88.2
2.5%		-88.2
0.5%		-88.2
0.0%	minimum	-88.2

Summary Statistics	
Mean	-88.2
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

**Distributions Analyte\_Detection=Zinc-65 Gamma Spectrometry**

**Bias**



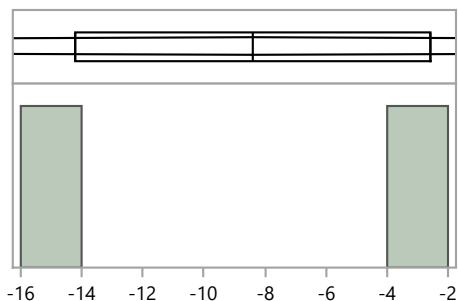
Quantiles		
100.0%	maximum	52.0
99.5%		52.0
97.5%		47.7
90.0%		12.5
75.0%	quartile	7.6
50.0%	median	-1.5
25.0%	quartile	-7.6
10.0%		-17.0
2.5%		-27.9
0.5%		-29.3
0.0%	minimum	-29.3

Summary Statistics	
Mean	-0.1
Std Dev	13.6
Std Err Mean	2.0
Upper 95% Mean	3.9
Lower 95% Mean	-4.1
N	47.0

### RdF Distribution by Preparation Method

#### Distributions Analyte\_Method=Cesium-134 Acid dissolution with hydrofluoric acid

##### Bias



##### Quantiles

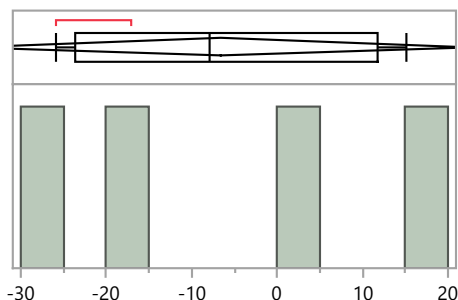
100.0%	maximum	-2.6
99.5%		-2.6
97.5%		-2.6
90.0%		-2.6
75.0%	quartile	-2.6
50.0%	median	-8.4
25.0%	quartile	-14.2
10.0%		-14.2
2.5%		-14.2
0.5%		-14.2
0.0%	minimum	-14.2

##### Summary Statistics

Mean	-8.4
Std Dev	8.2
Std Err Mean	5.8
Upper 95% Mean	65.3
Lower 95% Mean	-82.1
N	2.0

#### Distributions Analyte\_Method=Cesium-134 EPA 901.1, Gamma Emitting, 600/4-80-032

##### Bias



##### Quantiles

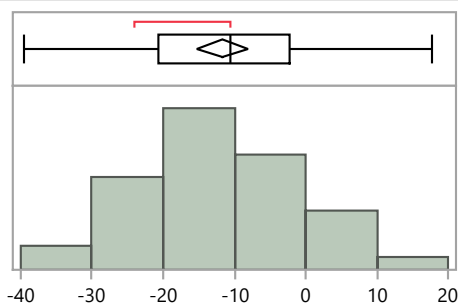
100.0%	maximum	15.1
99.5%		15.1
97.5%		15.1
90.0%		15.1
75.0%	quartile	11.7
50.0%	median	-7.9
25.0%	quartile	-23.7
10.0%		-25.9
2.5%		-25.9
0.5%		-25.9
0.0%	minimum	-25.9

##### Summary Statistics

Mean	-6.6
Std Dev	18.4
Std Err Mean	9.2
Upper 95% Mean	22.6
Lower 95% Mean	-35.9
N	4.0

#### Distributions Analyte\_Method=Cesium-134 No preparation - analyzed as received

##### Bias



##### Quantiles

100.0%	maximum	17.8
99.5%		17.8
97.5%		17.5
90.0%		1.9
75.0%	quartile	-2.3
50.0%	median	-10.5
25.0%	quartile	-20.8
10.0%		-24.3
2.5%		-39.3
0.5%		-39.5
0.0%	minimum	-39.5

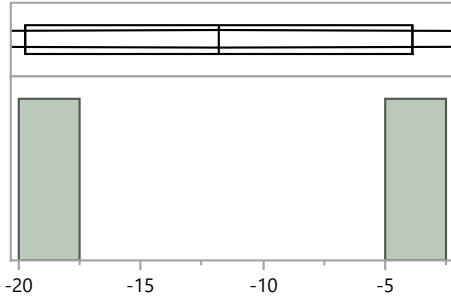
##### Summary Statistics

Mean	-11.6
Std Dev	11.2
Std Err Mean	1.8
Upper 95% Mean	-8.0
Lower 95% Mean	-15.2
N	40.0

**RdF Distribution by Preparation Method**

**Distributions Analyte\_Method=Cesium-134 Other**

**Bias**



**Quantiles**

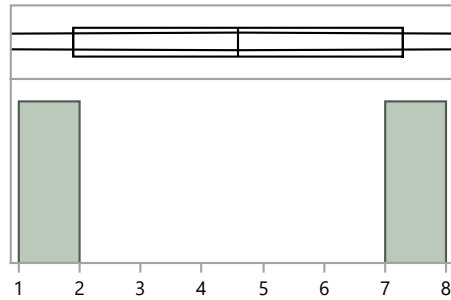
100.0%	maximum	-3.9
99.5%		-3.9
97.5%		-3.9
90.0%		-3.9
75.0%	quartile	-3.9
50.0%	median	-11.8
25.0%	quartile	-19.7
10.0%		-19.7
2.5%		-19.7
0.5%		-19.7
0.0%	minimum	-19.7

**Summary Statistics**

Mean	-11.8
Std Dev	11.2
Std Err Mean	7.9
Upper 95% Mean	88.6
Lower 95% Mean	-112.2
N	2.0

**Distributions Analyte\_Method=Cesium-137 Acid dissolution with hydrofluoric acid**

**Bias**



**Quantiles**

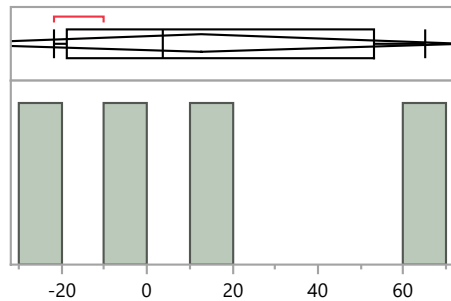
100.0%	maximum	7.3
99.5%		7.3
97.5%		7.3
90.0%		7.3
75.0%	quartile	7.3
50.0%	median	4.6
25.0%	quartile	1.9
10.0%		1.9
2.5%		1.9
0.5%		1.9
0.0%	minimum	1.9

**Summary Statistics**

Mean	4.6
Std Dev	3.8
Std Err Mean	2.7
Upper 95% Mean	38.9
Lower 95% Mean	-29.7
N	2.0

**Distributions Analyte\_Method=Cesium-137 EPA 901.1, Gamma Emitting, 600/4-80-032**

**Bias**



**Quantiles**

100.0%	maximum	65.1
99.5%		65.1
97.5%		65.1
90.0%		65.1
75.0%	quartile	53.1
50.0%	median	3.6
25.0%	quartile	-18.7
10.0%		-21.6
2.5%		-21.6
0.5%		-21.6
0.0%	minimum	-21.6

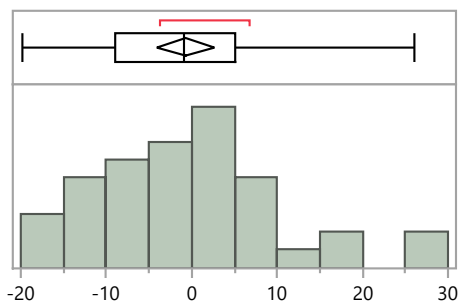
**Summary Statistics**

Mean	12.7
Std Dev	38.5
Std Err Mean	19.3
Upper 95% Mean	74.0
Lower 95% Mean	-48.7
N	4.0

### RdF Distribution by Preparation Method

#### Distributions Analyte\_Method=Cesium-137 No preparation - analyzed as received

##### Bias



##### Quantiles

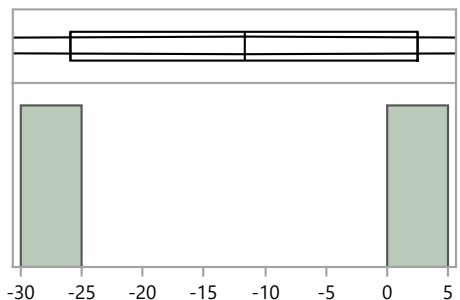
100.0%	maximum	26.0
99.5%		26.0
97.5%		26.0
90.0%		15.3
75.0%	quartile	5.1
50.0%	median	-0.8
25.0%	quartile	-9.0
10.0%		-14.2
2.5%		-19.7
0.5%		-19.7
0.0%	minimum	-19.7

##### Summary Statistics

Mean	-0.7
Std Dev	10.6
Std Err Mean	1.7
Upper 95% Mean	2.6
Lower 95% Mean	-4.1
N	40.0

#### Distributions Analyte\_Method=Cesium-137 Other

##### Bias



##### Quantiles

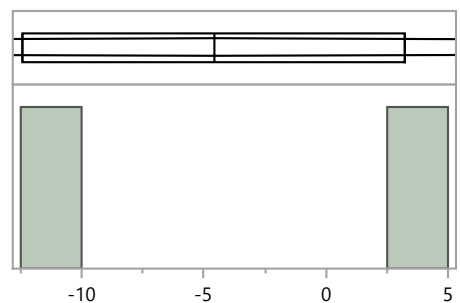
100.0%	maximum	2.5
99.5%		2.5
97.5%		2.5
90.0%		2.5
75.0%	quartile	2.5
50.0%	median	-11.7
25.0%	quartile	-25.9
10.0%		-25.9
2.5%		-25.9
0.5%		-25.9
0.0%	minimum	-25.9

##### Summary Statistics

Mean	-11.7
Std Dev	20.1
Std Err Mean	14.2
Upper 95% Mean	168.7
Lower 95% Mean	-192.1
N	2.0

#### Distributions Analyte\_Method=Cobalt-57 Acid dissolution with hydrofluoric acid

##### Bias



##### Quantiles

100.0%	maximum	3.2
99.5%		3.2
97.5%		3.2
90.0%		3.2
75.0%	quartile	3.2
50.0%	median	-4.6
25.0%	quartile	-12.4
10.0%		-12.4
2.5%		-12.4
0.5%		-12.4
0.0%	minimum	-12.4

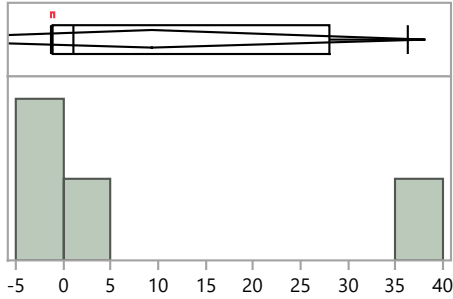
##### Summary Statistics

Mean	-4.6
Std Dev	11.0
Std Err Mean	7.8
Upper 95% Mean	94.5
Lower 95% Mean	-103.7
N	2.0

**RdF Distribution by Preparation Method**

**Distributions Analyte\_Method=Cobalt-57 EPA 901.1, Gamma Emitting, 600/4-80-032**

**Bias**



**Quantiles**

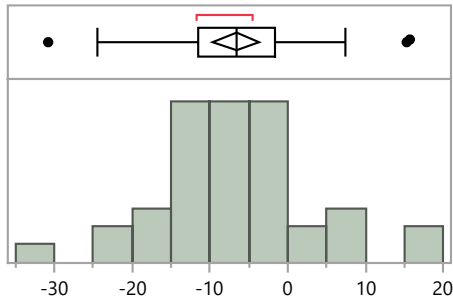
100.0%	maximum	36.3
99.5%		36.3
97.5%		36.3
90.0%		36.3
75.0%	quartile	28.0
50.0%	median	1.2
25.0%	quartile	-1.1
10.0%		-1.2
2.5%		-1.2
0.5%		-1.2
0.0%	minimum	-1.2

**Summary Statistics**

Mean	9.4
Std Dev	18.1
Std Err Mean	9.0
Upper 95% Mean	38.1
Lower 95% Mean	-19.4
N	4.0

**Distributions Analyte\_Method=Cobalt-57 No preparation - analyzed as received**

**Bias**



**Quantiles**

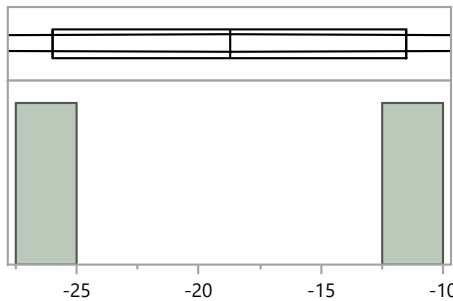
100.0%	maximum	15.7
99.5%		15.7
97.5%		15.7
90.0%		7.3
75.0%	quartile	-1.6
50.0%	median	-6.6
25.0%	quartile	-11.5
10.0%		-18.3
2.5%		-30.6
0.5%		-30.8
0.0%	minimum	-30.8

**Summary Statistics**

Mean	-6.7
Std Dev	9.5
Std Err Mean	1.5
Upper 95% Mean	-3.6
Lower 95% Mean	-9.7
N	40.0

**Distributions Analyte\_Method=Cobalt-57 Other**

**Bias**



**Quantiles**

100.0%	maximum	-11.5
99.5%		-11.5
97.5%		-11.5
90.0%		-11.5
75.0%	quartile	-11.5
50.0%	median	-18.8
25.0%	quartile	-26.0
10.0%		-26.0
2.5%		-26.0
0.5%		-26.0
0.0%	minimum	-26.0

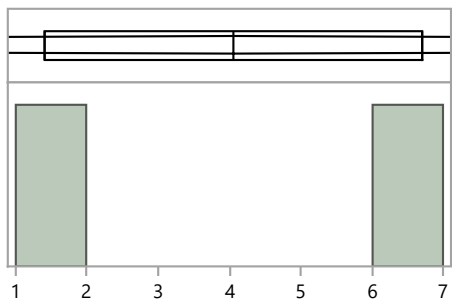
**Summary Statistics**

Mean	-18.8
Std Dev	10.3
Std Err Mean	7.3
Upper 95% Mean	73.4
Lower 95% Mean	-110.9
N	2.0

### RdF Distribution by Preparation Method

#### Distributions Analyte\_Method=Cobalt-60 Acid dissolution with hydrofluoric acid

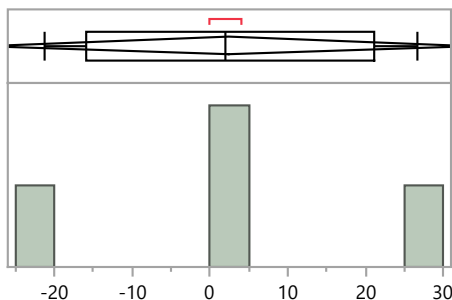
##### Bias



Quantiles		Summary Statistics		
100.0%	maximum	6.7	Mean	4.1
99.5%		6.7	Std Dev	3.7
97.5%		6.7	Std Err Mean	2.7
90.0%		6.7	Upper 95% Mean	37.7
75.0%	quartile	6.7	Lower 95% Mean	-29.6
50.0%	median	4.1	N	2.0
25.0%	quartile	1.4		
10.0%		1.4		
2.5%		1.4		
0.5%		1.4		
0.0%	minimum	1.4		

#### Distributions Analyte\_Method=Cobalt-60 EPA 901.1, Gamma Emitting, 600/4-80-032

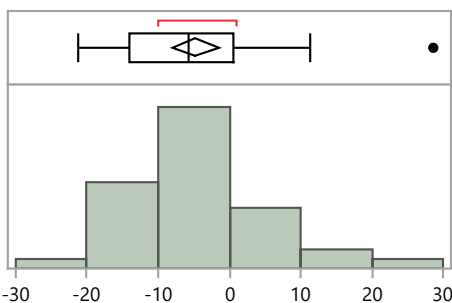
##### Bias



Quantiles		Summary Statistics		
100.0%	maximum	26.7	Mean	2.4
99.5%		26.7	Std Dev	19.6
97.5%		26.7	Std Err Mean	9.8
90.0%		26.7	Upper 95% Mean	33.6
75.0%	quartile	21.0	Lower 95% Mean	-28.9
50.0%	median	2.0	N	4.0
25.0%	quartile	-15.9		
10.0%		-21.2		
2.5%		-21.2		
0.5%		-21.2		
0.0%	minimum	-21.2		

#### Distributions Analyte\_Method=Cobalt-60 No preparation - analyzed as received

##### Bias

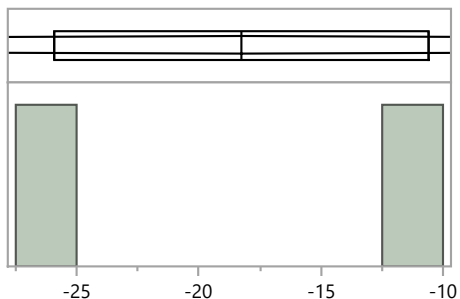


Quantiles		Summary Statistics		
100.0%	maximum	28.6	Mean	-4.8
99.5%		28.6	Std Dev	10.3
97.5%		28.2	Std Err Mean	1.6
90.0%		9.3	Upper 95% Mean	-1.5
75.0%	quartile	0.5	Lower 95% Mean	-8.1
50.0%	median	-5.7	N	40.0
25.0%	quartile	-14.1		
10.0%		-17.8		
2.5%		-21.1		
0.5%		-21.2		
0.0%	minimum	-21.2		

### RdF Distribution by Preparation Method

Distributions Analyte\_Method=Cobalt-60 Other

Bias



#### Quantiles

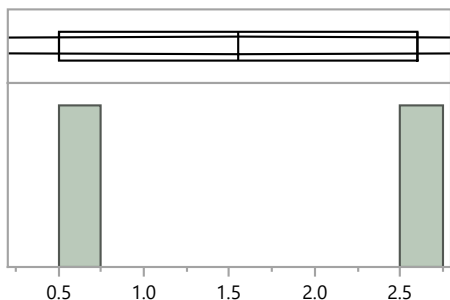
100.0%	maximum	-10.6
99.5%		-10.6
97.5%		-10.6
90.0%		-10.6
75.0%	quartile	-10.6
50.0%	median	-18.3
25.0%	quartile	-25.9
10.0%		-25.9
2.5%		-25.9
0.5%		-25.9
0.0%	minimum	-25.9

#### Summary Statistics

Mean	-18.3
Std Dev	10.8
Std Err Mean	7.7
Upper 95% Mean	79.0
Lower 95% Mean	-115.5
N	2.0

Distributions Analyte\_Method=Manganese-54 Acid dissolution with hydrofluoric acid

Bias



#### Quantiles

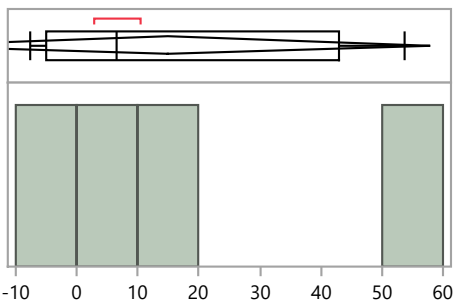
100.0%	maximum	2.6
99.5%		2.6
97.5%		2.6
90.0%		2.6
75.0%	quartile	2.6
50.0%	median	1.6
25.0%	quartile	0.5
10.0%		0.5
2.5%		0.5
0.5%		0.5
0.0%	minimum	0.5

#### Summary Statistics

Mean	1.6
Std Dev	1.5
Std Err Mean	1.1
Upper 95% Mean	14.9
Lower 95% Mean	-11.8
N	2.0

Distributions Analyte\_Method=Manganese-54 EPA 901.1, Gamma Emitting, 600/4-80-032

Bias



#### Quantiles

100.0%	maximum	53.7
99.5%		53.7
97.5%		53.7
90.0%		53.7
75.0%	quartile	42.9
50.0%	median	6.7
25.0%	quartile	-5.1
10.0%		-7.7
2.5%		-7.7
0.5%		-7.7
0.0%	minimum	-7.7

#### Summary Statistics

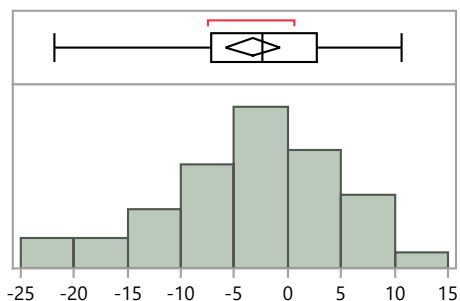
Mean	14.8
Std Dev	27.0
Std Err Mean	13.5
Upper 95% Mean	57.7
Lower 95% Mean	-28.1
N	4.0



**RdF Distribution by Preparation Method**

**Distributions Analyte\_Method=Manganese-54 No preparation - analyzed as received**

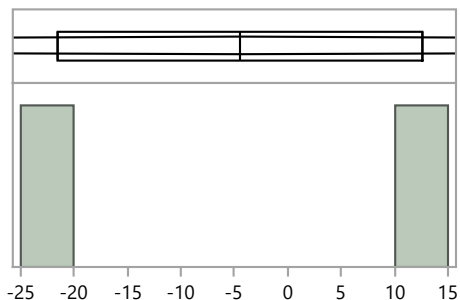
**Bias**



Quantiles			Summary Statistics	
100.0%	maximum	10.7	Mean	-3.3
99.5%		10.7	Std Dev	7.9
97.5%		10.7	Std Err Mean	1.2
90.0%		6.9	Upper 95% Mean	-0.7
75.0%	quartile	2.7	Lower 95% Mean	-5.8
50.0%	median	-2.4	N	40.0
25.0%	quartile	-7.2		
10.0%		-16.1		
2.5%		-21.8		
0.5%		-21.8		
0.0%	minimum	-21.8		

**Distributions Analyte\_Method=Manganese-54 Other**

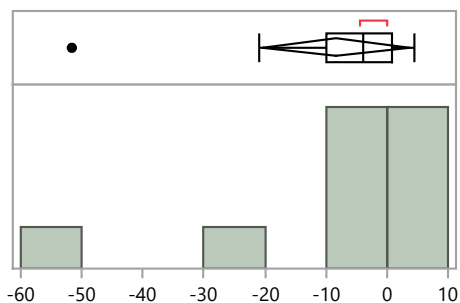
**Bias**



Quantiles			Summary Statistics	
100.0%	maximum	12.6	Mean	-4.5
99.5%		12.6	Std Dev	24.1
97.5%		12.6	Std Err Mean	17.1
90.0%		12.6	Upper 95% Mean	212.2
75.0%	quartile	12.6	Lower 95% Mean	-221.1
50.0%	median	-4.5	N	2.0
25.0%	quartile	-21.5		
10.0%		-21.5		
2.5%		-21.5		
0.5%		-21.5		
0.0%	minimum	-21.5		

**Distributions Analyte\_Method=Plutonium-238 Acid dissolution with hydrofluoric acid**

**Bias**

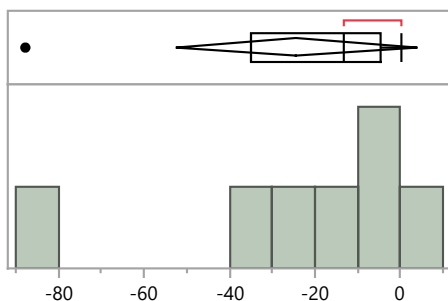


Quantiles			Summary Statistics	
100.0%	maximum	4.5	Mean	-8.3
99.5%		4.5	Std Dev	16.8
97.5%		4.5	Std Err Mean	5.3
90.0%		4.4	Upper 95% Mean	3.7
75.0%	quartile	0.8	Lower 95% Mean	-20.3
50.0%	median	-3.8	N	10.0
25.0%	quartile	-10.0		
10.0%		-48.5		
2.5%		-51.6		
0.5%		-51.6		
0.0%	minimum	-51.6		

### RdF Distribution by Preparation Method

#### Distributions Analyte\_Method=Plutonium-238 Acid leaching without hydrofluoric acid

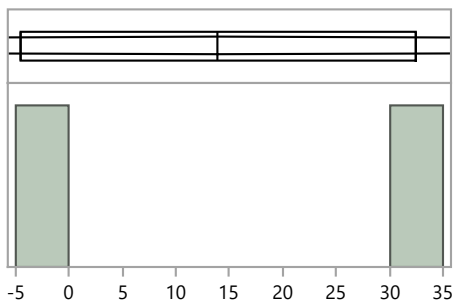
##### Bias



Quantiles			Summary Statistics	
100.0%	maximum	0.2	Mean	-24.3
99.5%		0.2	Std Dev	30.6
97.5%		0.2	Std Err Mean	11.6
90.0%		0.2	Upper 95% Mean	4.0
75.0%	quartile	-4.5	Lower 95% Mean	-52.6
50.0%	median	-13.4	N	7.0
25.0%	quartile	-35.1		
10.0%		-87.7		
2.5%		-87.7		
0.5%		-87.7		
0.0%	minimum	-87.7		

#### Distributions Analyte\_Method=Plutonium-238 Coprecipitation, acidified

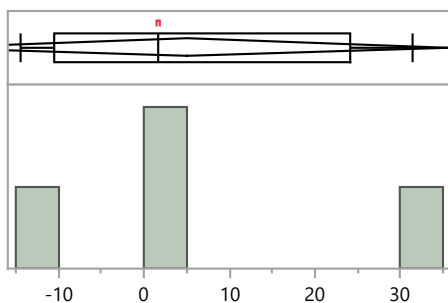
##### Bias



Quantiles			Summary Statistics	
100.0%	maximum	32.4	Mean	14.0
99.5%		32.4	Std Dev	26.1
97.5%		32.4	Std Err Mean	18.4
90.0%		32.4	Upper 95% Mean	248.4
75.0%	quartile	32.4	Lower 95% Mean	-220.5
50.0%	median	14.0	N	2.0
25.0%	quartile	-4.5		
10.0%		-4.5		
2.5%		-4.5		
0.5%		-4.5		
0.0%	minimum	-4.5		

#### Distributions Analyte\_Method=Plutonium-238 Other

##### Bias

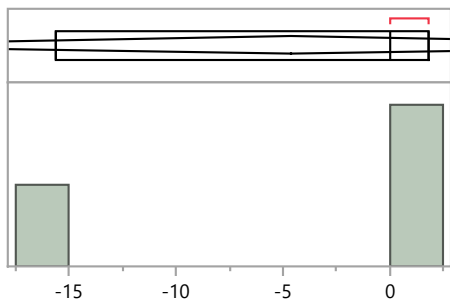


Quantiles			Summary Statistics	
100.0%	maximum	31.5	Mean	5.1
99.5%		31.5	Std Dev	19.2
97.5%		31.5	Std Err Mean	9.6
90.0%		31.5	Upper 95% Mean	35.6
75.0%	quartile	24.1	Lower 95% Mean	-25.4
50.0%	median	1.6	N	4.0
25.0%	quartile	-10.5		
10.0%		-14.4		
2.5%		-14.4		
0.5%		-14.4		
0.0%	minimum	-14.4		

### RdF Distribution by Preparation Method

#### Distributions Analyte\_Method=Plutonium-238 Total dissolution by fusion

##### Bias



##### Quantiles

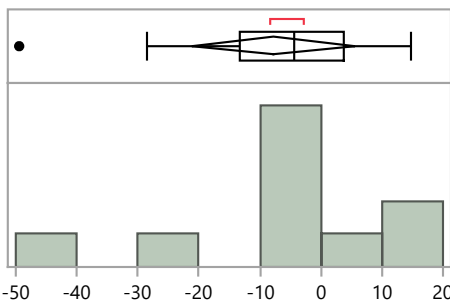
100.0%	maximum	1.8
99.5%		1.8
97.5%		1.8
90.0%		1.8
75.0%	quartile	1.8
50.0%	median	0.0
25.0%	quartile	-15.6
10.0%		-15.6
2.5%		-15.6
0.5%		-15.6
0.0%	minimum	-15.6

##### Summary Statistics

Mean	-4.6
Std Dev	9.6
Std Err Mean	5.5
Upper 95% Mean	19.2
Lower 95% Mean	-28.4
N	3.0

#### Distributions Analyte\_Method=Plutonium-239/240 Acid dissolution with hydrofluoric acid

##### Bias



##### Quantiles

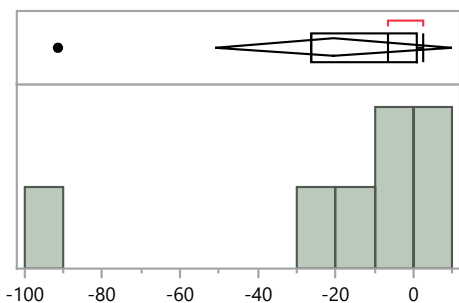
100.0%	maximum	14.7
99.5%		14.7
97.5%		14.7
90.0%		14.2
75.0%	quartile	3.7
50.0%	median	-4.5
25.0%	quartile	-13.3
10.0%		-47.3
2.5%		-49.4
0.5%		-49.4
0.0%	minimum	-49.4

##### Summary Statistics

Mean	-7.8
Std Dev	18.6
Std Err Mean	5.9
Upper 95% Mean	5.5
Lower 95% Mean	-21.1
N	10.0

#### Distributions Analyte\_Method=Plutonium-239/240 Acid leaching without hydrofluoric acid

##### Bias



##### Quantiles

100.0%	maximum	2.4
99.5%		2.4
97.5%		2.4
90.0%		2.4
75.0%	quartile	0.9
50.0%	median	-6.4
25.0%	quartile	-26.3
10.0%		-91.4
2.5%		-91.4
0.5%		-91.4
0.0%	minimum	-91.4

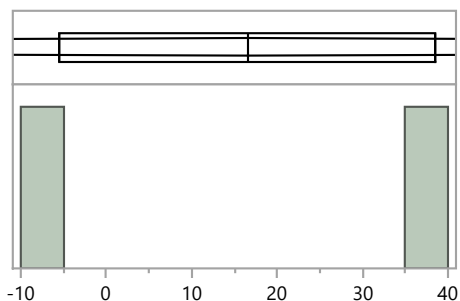
##### Summary Statistics

Mean	-20.6
Std Dev	32.8
Std Err Mean	12.4
Upper 95% Mean	9.8
Lower 95% Mean	-50.9
N	7.0

### RdF Distribution by Preparation Method

#### Distributions Analyte\_Method=Plutonium-239/240 Coprecipitation, acidified

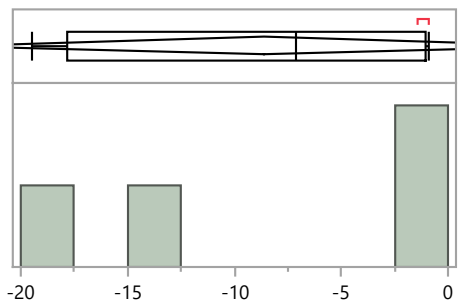
##### Bias



Quantiles			Summary Statistics	
100.0%	maximum	38.5	Mean	16.5
99.5%		38.5	Std Dev	31.1
97.5%		38.5	Std Err Mean	22.0
90.0%		38.5	Upper 95% Mean	296.0
75.0%	quartile	38.5	Lower 95% Mean	-263.0
50.0%	median	16.5	N	2.0
25.0%	quartile	-5.5		
10.0%		-5.5		
2.5%		-5.5		
0.5%		-5.5		
0.0%	minimum	-5.5		

#### Distributions Analyte\_Method=Plutonium-239/240 Other

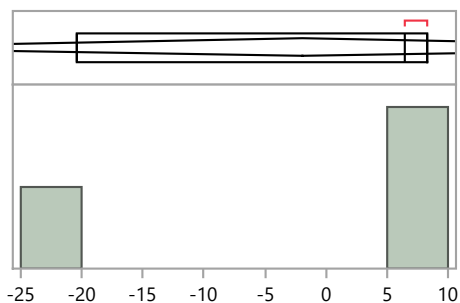
##### Bias



Quantiles			Summary Statistics	
100.0%	maximum	-0.9	Mean	-8.7
99.5%		-0.9	Std Dev	9.1
97.5%		-0.9	Std Err Mean	4.5
90.0%		-0.9	Upper 95% Mean	5.8
75.0%	quartile	-1.0	Lower 95% Mean	-23.1
50.0%	median	-7.1	N	4.0
25.0%	quartile	-17.8		
10.0%		-19.5		
2.5%		-19.5		
0.5%		-19.5		
0.0%	minimum	-19.5		

#### Distributions Analyte\_Method=Plutonium-239/240 Total dissolution by fusion

##### Bias

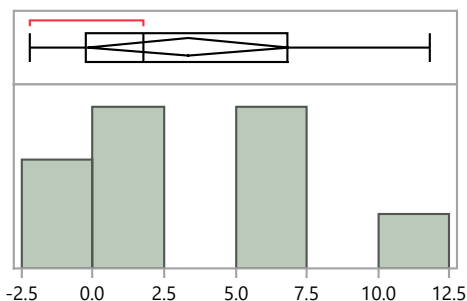


Quantiles			Summary Statistics	
100.0%	maximum	8.3	Mean	-1.9
99.5%		8.3	Std Dev	16.0
97.5%		8.3	Std Err Mean	9.3
90.0%		8.3	Upper 95% Mean	38.0
75.0%	quartile	8.3	Lower 95% Mean	-41.8
50.0%	median	6.4	N	3.0
25.0%	quartile	-20.4		
10.0%		-20.4		
2.5%		-20.4		
0.5%		-20.4		
0.0%	minimum	-20.4		

**RdF Distribution by Preparation Method**

**Distributions Analyte\_Method=Uranium-234 Acid dissolution with hydrofluoric acid**

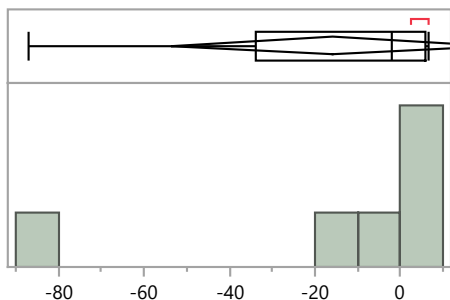
**Bias**



Quantiles		Summary Statistics		
100.0%	maximum	11.8	Mean	3.3
99.5%		11.8	Std Dev	4.6
97.5%		11.8	Std Err Mean	1.5
90.0%		11.8	Upper 95% Mean	6.9
75.0%	quartile	6.9	Lower 95% Mean	-0.2
50.0%	median	1.8	N	9.0
25.0%	quartile	-0.3		
10.0%		-2.2		
2.5%		-2.2		
0.5%		-2.2		
0.0%	minimum	-2.2		

**Distributions Analyte\_Method=Uranium-234 Acid leaching without hydrofluoric acid**

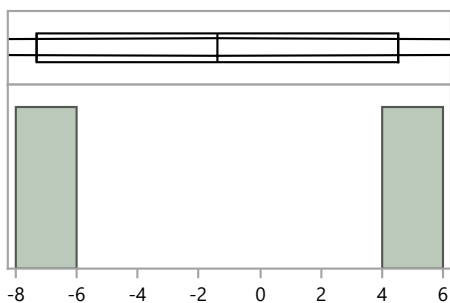
**Bias**



Quantiles		Summary Statistics		
100.0%	maximum	6.4	Mean	-15.8
99.5%		6.4	Std Dev	35.9
97.5%		6.4	Std Err Mean	14.7
90.0%		6.4	Upper 95% Mean	21.9
75.0%	quartile	5.7	Lower 95% Mean	-53.5
50.0%	median	-1.9	N	6.0
25.0%	quartile	-33.8		
10.0%		-87.1		
2.5%		-87.1		
0.5%		-87.1		
0.0%	minimum	-87.1		

**Distributions Analyte\_Method=Uranium-234 Coprecipitation, acidified**

**Bias**

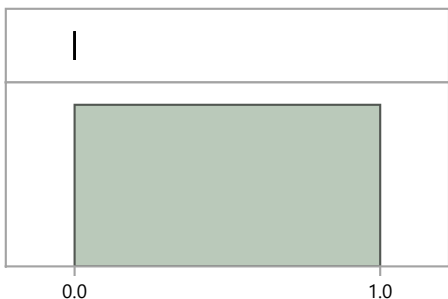


Quantiles		Summary Statistics		
100.0%	maximum	4.5	Mean	-1.4
99.5%		4.5	Std Dev	8.3
97.5%		4.5	Std Err Mean	5.9
90.0%		4.5	Upper 95% Mean	73.6
75.0%	quartile	4.5	Lower 95% Mean	-76.4
50.0%	median	-1.4	N	2.0
25.0%	quartile	-7.3		
10.0%		-7.3		
2.5%		-7.3		
0.5%		-7.3		
0.0%	minimum	-7.3		

**RdF Distribution by Preparation Method**

**Distributions Analyte\_Method=Uranium-234 EPA 908, Uranium-Radiochemical Method, 600/4/80-032**

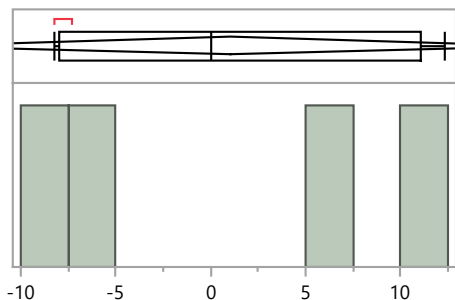
**Bias**



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

**Distributions Analyte\_Method=Uranium-234 Other**

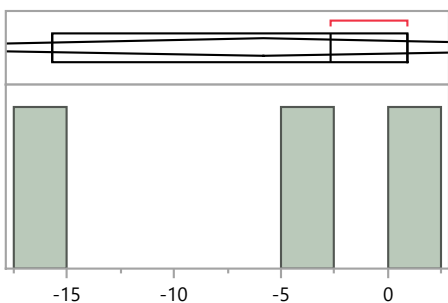
**Bias**



Quantiles			Summary Statistics	
100.0%	maximum	12.3	Mean	1.0
99.5%		12.3	Std Dev	10.3
97.5%		12.3	Std Err Mean	5.2
90.0%		12.3	Upper 95% Mean	17.5
75.0%	quartile	11.1	Lower 95% Mean	-15.4
50.0%	median	0.0	N	4.0
25.0%	quartile	-8.0		
10.0%		-8.2		
2.5%		-8.2		
0.5%		-8.2		
0.0%	minimum	-8.2		

**Distributions Analyte\_Method=Uranium-234 Total dissolution by fusion**

**Bias**

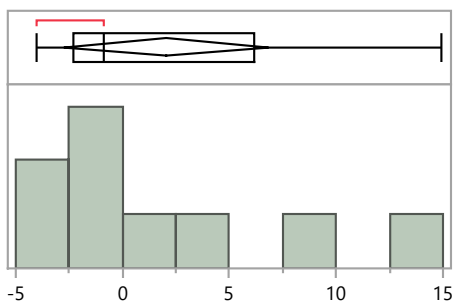


Quantiles			Summary Statistics	
100.0%	maximum	0.9	Mean	-5.8
99.5%		0.9	Std Dev	8.7
97.5%		0.9	Std Err Mean	5.0
90.0%		0.9	Upper 95% Mean	15.9
75.0%	quartile	0.9	Lower 95% Mean	-27.5
50.0%	median	-2.7	N	3.0
25.0%	quartile	-15.7		
10.0%		-15.7		
2.5%		-15.7		
0.5%		-15.7		
0.0%	minimum	-15.7		

### RdF Distribution by Preparation Method

#### Distributions Analyte\_Method=Uranium-238 Acid dissolution with hydrofluoric acid

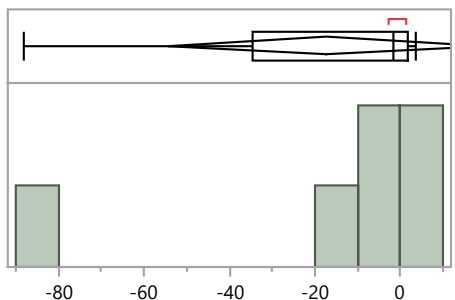
##### Bias



Quantiles		Summary Statistics		
100.0%	maximum	14.9	Mean	2.0
99.5%		14.9	Std Dev	6.2
97.5%		14.9	Std Err Mean	2.1
90.0%		14.9	Upper 95% Mean	6.8
75.0%	quartile	6.2	Lower 95% Mean	-2.7
50.0%	median	-0.9	N	9.0
25.0%	quartile	-2.3		
10.0%		-4.0		
2.5%		-4.0		
0.5%		-4.0		
0.0%	minimum	-4.0		

#### Distributions Analyte\_Method=Uranium-238 Acid leaching without hydrofluoric acid

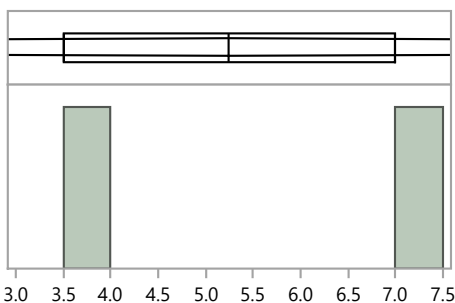
##### Bias



Quantiles		Summary Statistics		
100.0%	maximum	3.5	Mean	-17.3
99.5%		3.5	Std Dev	35.5
97.5%		3.5	Std Err Mean	14.5
90.0%		3.5	Upper 95% Mean	19.9
75.0%	quartile	1.9	Lower 95% Mean	-54.5
50.0%	median	-1.8	N	6.0
25.0%	quartile	-34.7		
10.0%		-88.2		
2.5%		-88.2		
0.5%		-88.2		
0.0%	minimum	-88.2		

#### Distributions Analyte\_Method=Uranium-238 Coprecipitation, acidified

##### Bias

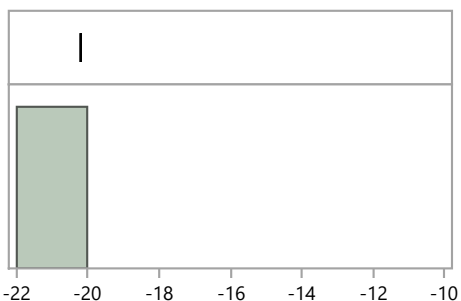


Quantiles		Summary Statistics		
100.0%	maximum	7.0	Mean	5.3
99.5%		7.0	Std Dev	2.5
97.5%		7.0	Std Err Mean	1.8
90.0%		7.0	Upper 95% Mean	27.5
75.0%	quartile	7.0	Lower 95% Mean	-17.0
50.0%	median	5.3	N	2.0
25.0%	quartile	3.5		
10.0%		3.5		
2.5%		3.5		
0.5%		3.5		
0.0%	minimum	3.5		

**RdF Distribution by Preparation Method**

**Distributions Analyte\_Method=Uranium-238 EPA 908, Uranium-Radiochemical Method, 600/4/80-032**

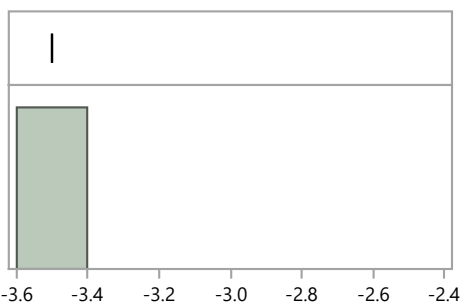
**Bias**



Quantiles			Summary Statistics	
100.0%	maximum	-20.2	Mean	-20.2
99.5%		-20.2	Std Dev	.
97.5%		-20.2	Std Err Mean	.
90.0%		-20.2	Upper 95% Mean	.
75.0%	quartile	-20.2	Lower 95% Mean	.
50.0%	median	-20.2	N	1.0
25.0%	quartile	-20.2		
10.0%		-20.2		
2.5%		-20.2		
0.5%		-20.2		
0.0%	minimum	-20.2		

**Distributions Analyte\_Method=Uranium-238 No preparation - analyzed as received**

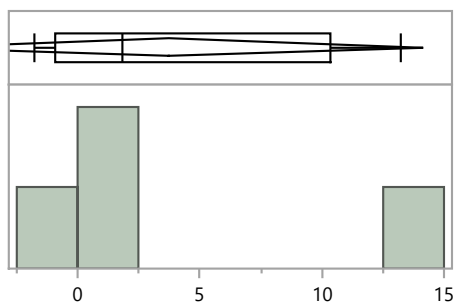
**Bias**



Quantiles			Summary Statistics	
100.0%	maximum	-3.5	Mean	-3.5
99.5%		-3.5	Std Dev	.
97.5%		-3.5	Std Err Mean	.
90.0%		-3.5	Upper 95% Mean	.
75.0%	quartile	-3.5	Lower 95% Mean	.
50.0%	median	-3.5	N	1.0
25.0%	quartile	-3.5		
10.0%		-3.5		
2.5%		-3.5		
0.5%		-3.5		
0.0%	minimum	-3.5		

**Distributions Analyte\_Method=Uranium-238 Other**

**Bias**



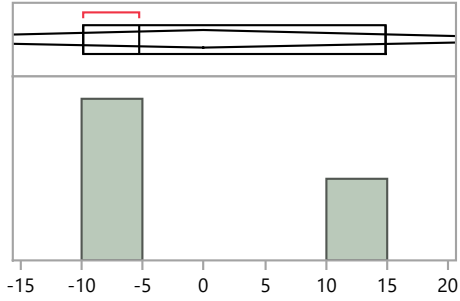
Quantiles			Summary Statistics	
100.0%	maximum	13.2	Mean	3.8
99.5%		13.2	Std Dev	6.5
97.5%		13.2	Std Err Mean	3.3
90.0%		13.2	Upper 95% Mean	14.1
75.0%	quartile	10.3	Lower 95% Mean	-6.6
50.0%	median	1.8	N	4.0
25.0%	quartile	-0.9		
10.0%		-1.8		
2.5%		-1.8		
0.5%		-1.8		
0.0%	minimum	-1.8		



**RdF Distribution by Preparation Method**

**Distributions Analyte\_Method=Uranium-238 Total dissolution by fusion**

**Bias**



**Quantiles**

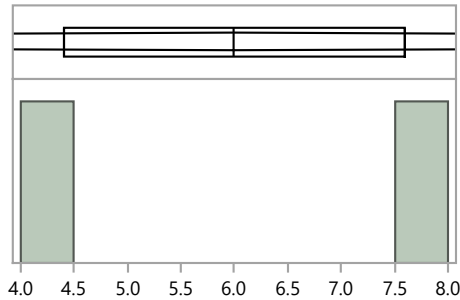
100.0%	maximum	14.9
99.5%		14.9
97.5%		14.9
90.0%		14.9
75.0%	quartile	14.9
50.0%	median	-5.3
25.0%	quartile	-9.9
10.0%		-9.9
2.5%		-9.9
0.5%		-9.9
0.0%	minimum	-9.9

**Summary Statistics**

Mean	-0.1
Std Dev	13.2
Std Err Mean	7.6
Upper 95% Mean	32.7
Lower 95% Mean	-32.9
N	3.0

**Distributions Analyte\_Method=Zinc-65 Acid dissolution with hydrofluoric acid**

**Bias**



**Quantiles**

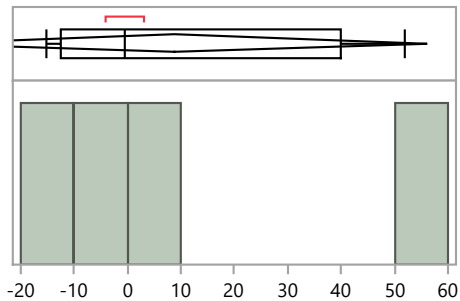
100.0%	maximum	7.6
99.5%		7.6
97.5%		7.6
90.0%		7.6
75.0%	quartile	7.6
50.0%	median	6.0
25.0%	quartile	4.4
10.0%		4.4
2.5%		4.4
0.5%		4.4
0.0%	minimum	4.4

**Summary Statistics**

Mean	6.0
Std Dev	2.3
Std Err Mean	1.6
Upper 95% Mean	26.3
Lower 95% Mean	-14.3
N	2.0

**Distributions Analyte\_Method=Zinc-65 EPA 901.1, Gamma Emitting, 600/4-80-032**

**Bias**



**Quantiles**

100.0%	maximum	52.0
99.5%		52.0
97.5%		52.0
90.0%		52.0
75.0%	quartile	39.8
50.0%	median	-0.6
25.0%	quartile	-12.5
10.0%		-15.2
2.5%		-15.2
0.5%		-15.2
0.0%	minimum	-15.2

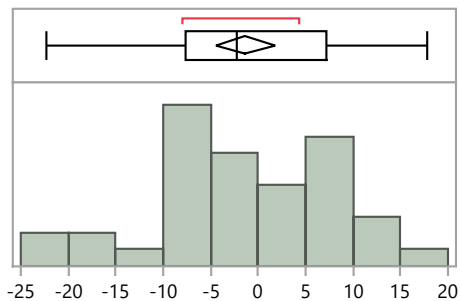
**Summary Statistics**

Mean	8.9
Std Dev	29.7
Std Err Mean	14.8
Upper 95% Mean	56.2
Lower 95% Mean	-38.3
N	4.0

### RdF Distribution by Preparation Method

#### Distributions Analyte\_Method=Zinc-65 No preparation - analyzed as received

##### Bias



##### Quantiles

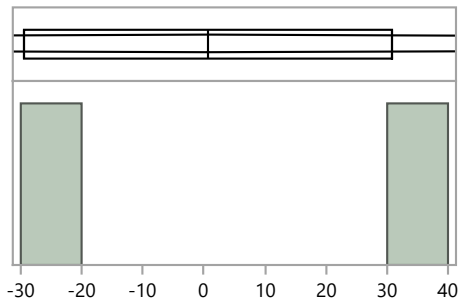
100.0%	maximum	17.8
99.5%		17.8
97.5%		17.8
90.0%		10.2
75.0%	quartile	7.1
50.0%	median	-2.2
25.0%	quartile	-7.6
10.0%		-16.8
2.5%		-22.2
0.5%		-22.2
0.0%	minimum	-22.2

##### Summary Statistics

Mean	-1.4
Std Dev	9.7
Std Err Mean	1.6
Upper 95% Mean	1.8
Lower 95% Mean	-4.5
N	39.0

#### Distributions Analyte\_Method=Zinc-65 Other

##### 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	0.7
25.0%	quartile	-29.3
10.0%		-29.3
2.5%		-29.3
0.5%		-29.3
0.0%	minimum	-29.3

##### Summary Statistics

Mean	0.7
Std Dev	42.4
Std Err Mean	30.0
Upper 95% Mean	381.9
Lower 95% Mean	-380.5
N	2.0