

## **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.

## RdF46 Participating Laboratories

<b>Lab Code</b>	<b>Lab Name</b>	<b>Matrix Code</b>
ADEM01	Alabama Department of Environmental Management	RdF
ADFC99	Abu Dhabi Quality and Conformity Council-Central Testing Lab	RdF
AFOH01	USAFSAM/OEA	RdF
AMEC99	Jacobs Clean Energy Limited - Analytical Services	RdF
ANLB01	Argonne National Laboratory	RdF
ANTE01	ALS Environmental - Fort Collins, CO	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
CMRC01	Carlsbad Environmental Monitoring and Research Center	RdF
COPS99	Health Canada Radiation Protection Bureau	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	PHE, CRCE 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
LANL01	Los Alamos National Laboratory	RdF
LAWR01	LAWRENCE BERKELEY NATIONAL LABORATORY	RdF
LOCK03	Advanced Test Reactor (ATR) Complex Radioanalytical 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
ODHL01	Ohio Department of Health Laboratory	RdF
ORIS01	ORISE/IEAV	RdF
OTLI01	Pace Analytical National Center for Testing & Innovation	RdF
RAVR99	Radiactividad Ambiental y Vigilancia Radiologica	RdF
RPSC01	Radiation Protection Service	RdF
SANC99	RadioAnalysis, South Africa Nuclear Energy Corp.	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
UNTE01	UniTech-235	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>
AREV01	Framatome - CMC	RdF
DEHS01	Department of Environmental Health & Safety	RdF
DLEA01	DLE Associates	RdF
EULC01	EnergySolutions, LLC	RdF
HSSB99	HG SOLUTION SDN BHD	RdF
IAEA99	International Atomic Energy Agency	RdF
TELE01	Teledyne Brown Engineering - Environmental Services	RdF
UNEV01	University of Nevada, Reno	RdF
WIPH01	WI, DPH, Radiation Protection Section	RdF

## Study Reference Values

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MAPEP-22-RdF46

*Radiological Reference Date: 02/01/2022*

Analyte	Ref Value	Ref Unc
Inorganic	Units: (ug/sample)	
Uranium-235	0.041	0.008
Uranium-238	5.35	0.17
Uranium-Total	5.4	0.17

Analyte	Ref Value	Ref Unc
Radiological	Units: (Bq/sample)	
Americium-241	0.0439	0.0011
Cesium-134	0.93	0.02
Cesium-137	0.726	0.018
Cobalt-60	0.72	0.02
Plutonium-238	0.0221	0.0007
Plutonium-239/240	0.0141	0.0003
Strontium-90	0.54	0.014
Uranium-234	0.064	0.002
Uranium-238	0.067	0.002

## Sample Statistical Summary

MAPEP-22-RdF46

Radiological Reference Date: 02/01/2022

Analyte	T(1)	A(2)	Grand(3) Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
Inorganic							Units: (ug/sample)
Uranium-235	8	7	0.037	0.003	0.041	0.008	0.029 - 0.053
Uranium-238	8	7	5.21	0.38	5.35	0.17	3.75 - 6.96
Uranium-Total	9	8	5.4	0.2	5.4	0.17	3.8 - 7.0

Analyte	T(1)	A(2)	Grand(3) Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
Radiological							Units: (Bq/sample)
Americium-241	31	24	0.0423	0.0059	0.0439	0.0011	0.0307 - 0.0571
Cesium-134	55	52	0.87	0.10	0.93	0.02	0.65 - 1.21
Cesium-137	55	53	0.738	0.068	0.726	0.018	0.508 - 0.944
Cobalt-57	52	32					False Positive Test
Cobalt-60	55	52	0.71	0.08	0.72	0.02	0.50 - 0.94
Manganese-54	50	50					False Positive Test
Plutonium-238	26	23	0.0220	0.0023	0.0221	0.0007	0.0155 - 0.0287
Plutonium-239/240	26	24	0.0152	0.0018	0.0141	0.0003	0.0099 - 0.0183
Strontium-90	24	21	0.50	0.05	0.54	0.014	0.38 - 0.70
Uranium-234	28	25	0.064	0.007	0.064	0.002	0.045 - 0.083
Uranium-238	29	26	0.065	0.006	0.067	0.002	0.047 - 0.087
Zinc-65	50	44					False Positive Test

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

### Results Flags:

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

## Flag Summary Report

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MAPEP-22-RdF46

### Inorganic

Analyte	A	W	RW	N
Uranium-Total	8			1
Uranium-235	6	1		1
Uranium-238	7			1

### Radiological

Analyte	A	W	RW	N
Americium-241	20	4		7
Cesium-134	45	7		3
Cesium-137	51	2		2
Cobalt-57	32			21
Cobalt-60	47	5		3
Manganese-54	50			2
Plutonium-238	21	2		3
Plutonium-239/240	19	5		2
Strontium-90	19	2		3
Uranium-234	23	2		3
Uranium-238	25	1		3
Zinc-65	44			6



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.799	0.93	A		-14.1	0.65 - 1.21	0.0492	A
Cesium-137	0.832	0.726	A		14.6	0.508 - 0.944	0.0421	A
Cobalt-57	1.25			A		False Positive Test	0.671	
Cobalt-60	0.791	0.72	A		9.9	0.50 - 0.94	0.0352	A
Manganese-54	NR		N	(11)		False Positive Test		
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	NR					False Positive Test		

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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



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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46

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

Radiation Lab

Abu Dhabi, - -

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.98	0.93	A		5.4	0.65 - 1.21	0.02	A
Cesium-137	0.73	0.726	A		0.6	0.508 - 0.944	0.02	A
Cobalt-57	0.61		N	(1)		False Positive Test	0.11	
Cobalt-60	0.76	0.72	A		5.6	0.50 - 0.94	0.02	A
Manganese-54	-0.02		A			False Positive Test	0.02	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	0.02		A			False Positive Test	0.02	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

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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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

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

Laboratory Results For MAPEP-22-RdF46

(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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0414	0.0439	A		-5.7	0.0307 - 0.0571	0.0029	A
Cesium-134	0.83	0.93	A		-10.8	0.65 - 1.21	0.08	A
Cesium-137	0.606	0.726	A		-16.5	0.508 - 0.944	0.030	A
Cobalt-57	0.08			A		False Positive Test	0.17	
Cobalt-60	0.68	0.72	A		-5.6	0.50 - 0.94	0.04	A
Manganese-54	-0.001			A		False Positive Test	0.020	
Plutonium-238	0.0203	0.0221	A		-8.1	0.0155 - 0.0287	0.0019	A
Plutonium-239/240	0.0139	0.0141	A		-1.4	0.0099 - 0.0183	0.0015	A
Strontium-90	0.474	0.54	A		-12.2	0.38 - 0.70	0.026	A
Uranium-234	0.0582	0.064	A		-9.1	0.045 - 0.083	0.0037	A
Uranium-238	0.0588	0.067	A		-12.2	0.047 - 0.087	0.0037	A
Zinc-65	-0.08			A		False Positive Test	0.04	

Radiological Reference Date: February 1, 2022

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NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.107	0.0439	N		143.7	0.0307 - 0.0571	0.058	N
Cesium-134	0.896	0.93	A		-3.7	0.65 - 1.21	0.094	A
Cesium-137	0.754	0.726	A		3.9	0.508 - 0.944	0.083	A
Cobalt-57	0.141		N	(1)		False Positive Test	0.045	
Cobalt-60	0.800	0.72	A		11.1	0.50 - 0.94	0.089	A
Manganese-54	0.166		A			False Positive Test	0.061	
Plutonium-238	0.0227	0.0221	A		2.7	0.0155 - 0.0287	0.0025	A
Plutonium-239/240	0.0168	0.0141	A		19.1	0.0099 - 0.0183	0.0022	A
Strontium-90	0.513	0.54	A		-5.0	0.38 - 0.70	0.058	A
Uranium-234	0.0546	0.064	A		-14.7	0.045 - 0.083	0.0058	A
Uranium-238	0.0600	0.067	A		-10.4	0.047 - 0.087	0.0063	A
Zinc-65	0.18		A			False Positive Test	0.13	

Radiological Reference Date: February 1, 2022

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**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.045	0.0439	A		2.5	0.0307 - 0.0571	0.005	A
Cesium-134	0.77	0.93	A		-17.2	0.65 - 1.21	0.08	A
Cesium-137	0.746	0.726	A		2.8	0.508 - 0.944	0.052	A
Cobalt-57	0.054			A		False Positive Test	0.044	
Cobalt-60	0.732	0.72	A		1.7	0.50 - 0.94	0.040	A
Manganese-54	0.012			A		False Positive Test	0.01	
Plutonium-238	0.02	0.0221	A		-9.5	0.0155 - 0.0287	0.002	A
Plutonium-239/240	0.018	0.0141	W		27.7	0.0099 - 0.0183	0.002	A
Strontium-90	0.53	0.54	A		-1.9	0.38 - 0.70	0.016	A
Uranium-234	0.061	0.064	A		-4.7	0.045 - 0.083	0.005	A
Uranium-238	0.065	0.067	A		-3.0	0.047 - 0.087	0.007	A
Zinc-65	0.005			A		False Positive Test	0.019	

Radiological Reference Date: February 1, 2022

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**Uncertainty Flags:**

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

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



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

Laboratory Results For MAPEP-22-RdF46  
 (ANTE01) ALS Environmental - Fort Collins, CO  
 225 Commerce Drive  
 Fort Collins, CO 80524-1416

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.040	0.0439	A		-8.9	0.0307 - 0.0571	0.004	A
Cesium-134	0.831	0.93	A		-10.6	0.65 - 1.21	0.064	A
Cesium-137	0.701	0.726	A		-3.4	0.508 - 0.944	0.066	A
Cobalt-57	0.040			A		False Positive Test	0.040	
Cobalt-60	0.653	0.72	A		-9.3	0.50 - 0.94	0.054	A
Manganese-54	0.092			A		False Positive Test	0.092	
Plutonium-238	0.024	0.0221	A		8.6	0.0155 - 0.0287	0.003	A
Plutonium-239/240	0.018	0.0141	W		27.7	0.0099 - 0.0183	0.002	A
Strontium-90	0.505	0.54	A		-6.5	0.38 - 0.70	0.060	A
Uranium-234	0.068	0.064	A		6.3	0.045 - 0.083	0.007	A
Uranium-238	0.067	0.067	A		0.0	0.047 - 0.087	0.006	A
Zinc-65	0.344			A		False Positive Test	0.344	

Radiological Reference Date: February 1, 2022

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- RW = Report 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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

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

Laboratory Results For MAPEP-22-RdF46

(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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.644	0.93	N		-30.8	0.65 - 1.21	0.020	A
Cesium-137	0.663	0.726	A		-8.7	0.508 - 0.944	0.049	A
Cobalt-57	0.037		A			False Positive Test	0.037	
Cobalt-60	0.615	0.72	A		-14.6	0.50 - 0.94	0.047	A
Manganese-54	0.049		A			False Positive Test	0.049	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	0.123		A			False Positive Test	0.123	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46

(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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	.89	0.93	A		-4.3	0.65 - 1.21	.019	A
Cesium-137	.72	0.726	A		-0.8	0.508 - 0.944	.025	A
Cobalt-57	-.02		A			False Positive Test	.134	
Cobalt-60	.73	0.72	A		1.4	0.50 - 0.94	.018	A
Manganese-54	.01		A			False Positive Test	.026	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54	N	(28)		0.38 - 0.70		
Uranium-234	.088	0.064	N		37.5	0.045 - 0.083	.0037	A
Uranium-238	.183	0.067	N		173.1	0.047 - 0.087	.0059	A
Zinc-65	.25		A			False Positive Test	.391	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

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

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

RW = Report Warning

NR = Not Reported

**Uncertainty Flags:**

NOT ACCEPTABLE.....RP < 2%

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.053	0.0439	W		20.7	0.0307 - 0.0571	0.007	A
Cesium-134	0.812	0.93	A		-12.7	0.65 - 1.21	0.039	A
Cesium-137	0.749	0.726	A		3.2	0.508 - 0.944	0.034	A
Cobalt-57	0.746		N	(1)		False Positive Test	0.030	
Cobalt-60	0.727	0.72	A		1.0	0.50 - 0.94	0.036	A
Manganese-54	0.00077		A			False Positive Test	0.026	
Plutonium-238	0.023	0.0221	A		4.1	0.0155 - 0.0287	0.005	W
Plutonium-239/240	0.005	0.0141	N		-64.5	0.0099 - 0.0183	0.005	N
Strontium-90	0.451	0.54	A		-16.5	0.38 - 0.70	0.050	A
Uranium-234	0.053	0.064	A		-17.2	0.045 - 0.083	0.007	A
Uranium-238	0.055	0.067	A		-17.9	0.047 - 0.087	0.007	A
Zinc-65	-0.060		A			False Positive Test	0.072	

Radiological Reference Date: February 1, 2022

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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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

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

Laboratory Results For MAPEP-22-RdF46

(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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	NR	0.93				0.65 - 1.21		
Cesium-137	NR	0.726				0.508 - 0.944		
Cobalt-57	NR					False Positive Test		
Cobalt-60	NR	0.72				0.50 - 0.94		
Manganese-54	NR					False Positive Test		
Plutonium-238	0.0200	0.0221	A		-9.5	0.0155 - 0.0287	0.0055	W
Plutonium-239/240	0.0129	0.0141	A		-8.5	0.0099 - 0.0183	0.0036	W
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	0.0574	0.064	A		-10.3	0.045 - 0.083	0.0158	W
Uranium-238	0.061	0.067	A		-9.0	0.047 - 0.087	0.0167	W
Zinc-65	NR					False Positive Test		

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

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

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

RW = Report Warning

NR = Not Reported

**Uncertainty Flags:**

NOT ACCEPTABLE.....RP < 2%

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	8.56E-01	0.93	A		-8.0	0.65 - 1.21	4.99E-02	A
Cesium-137	7.16E-01	0.726	A		-1.4	0.508 - 0.944	6.81E-02	A
Cobalt-57	8.58E-01		N	(1)		False Positive Test	4.86E-02	
Cobalt-60	6.99E-01	0.72	A		-2.9	0.50 - 0.94	5.57E-02	A
Manganese-54	-3.23E-02		A			False Positive Test	7.93E-02	
Plutonium-238	2.43E-02	0.0221	A		10.0	0.0155 - 0.0287	6.71E-04	A
Plutonium-239/240	1.60E-02	0.0141	A		13.5	0.0099 - 0.0183	5.30E-04	A
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	-1.66E-01		A			False Positive Test	3.03E-01	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

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(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (CMRC01) Carlsbad Environmental Monitoring and Research Center  
 1400 University Dr.  
 Carlsbad, NM 88220

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.044	0.0439	A		0.2	0.0307 - 0.0571	0.003	A
Cesium-134	0.756	0.93	A		-18.7	0.65 - 1.21	0.030	A
Cesium-137	0.737	0.726	A		1.5	0.508 - 0.944	0.038	A
Cobalt-57	0.838		N	(1)		False Positive Test	0.029	
Cobalt-60	0.532	0.72	W		-26.1	0.50 - 0.94	0.029	A
Manganese-54	0.009		A			False Positive Test	0.023	
Plutonium-238	0.021	0.0221	A		-5.0	0.0155 - 0.0287	0.002	A
Plutonium-239/240	0.015	0.0141	A		6.4	0.0099 - 0.0183	0.001	A
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	0.065	0.064	A		1.6	0.045 - 0.083	0.005	A
Uranium-238	0.064	0.067	A		-4.5	0.047 - 0.087	0.005	A
Zinc-65	0.774		N	(1)		False Positive Test	0.088	

Radiological Reference Date: February 1, 2022

**Results Flags:**

- A = Result acceptable.....|Bias| <= 20%
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- N = Result not acceptable.....|Bias| > 30%
- RW = Report 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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

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



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

Laboratory Results For MAPEP-22-RdF46  
 (COPS99) Health Canada Radiation Protection Bureau  
 2720 Riverside drive  
 Ottawa, Ontario K1A0K9

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.979	0.93	A		5.3	0.65 - 1.21	0.035	A
Cesium-137	0.711	0.726	A		-2.1	0.508 - 0.944	0.045	A
Cobalt-57	0.0578		A			False Positive Test	0.086	
Cobalt-60	0.728	0.72	A		1.1	0.50 - 0.94	0.023	A
Manganese-54	-0.003		A			False Positive Test	0.011	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	-0.078		A			False Positive Test	0.093	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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



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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

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

Laboratory Results For MAPEP-22-RdF46  
 (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	3.213E-2	0.041	W		-21.6	0.029 - 0.053	1.019E-2	N
Uranium-238	4.542E+0	5.35	A		-15.1	3.75 - 6.96	3.133E-1	A
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	3.257E-2	0.0439	W		-25.8	0.0307 - 0.0571	2.891E-3	A
Cesium-134	8.037E-1	0.93	A		-13.6	0.65 - 1.21	4.343E-2	A
Cesium-137	7.010E-1	0.726	A		-3.4	0.508 - 0.944	3.848E-2	A
Cobalt-57	2.908E-2		A			False Positive Test	2.908E-2	
Cobalt-60	6.769E-1	0.72	A		-6.0	0.50 - 0.94	3.665E-2	A
Manganese-54	1.625E-2		A			False Positive Test	1.625E-2	
Plutonium-238	2.266E-2	0.0221	A		2.5	0.0155 - 0.0287	1.765E-3	A
Plutonium-239/240	1.543E-2	0.0141	A		9.4	0.0099 - 0.0183	1.406E-3	A
Strontium-90	4.443E-1	0.54	A		-17.7	0.38 - 0.70	2.689E-2	A
Uranium-234	5.823E-2	0.064	A		-9.0	0.045 - 0.083	3.992E-3	A
Uranium-238	5.650E-2	0.067	A		-15.7	0.047 - 0.087	3.897E-3	A
Zinc-65	8.250E-2		A			False Positive Test	8.250E-2	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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**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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

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

Laboratory Results For MAPEP-22-RdF46  
 (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	43.8	0.041	N		106729.	0.029 - 0.053	2.2	A
Uranium-238	6780	5.35	N		126629.	3.75 - 6.96	350	A
Uranium-Total	6820	5.4	N		126196.	3.8 - 7.0	350	A

Radiological							Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0485	0.0439	A		10.5	0.0307 - 0.0571	0.0053	A
Cesium-134	0.944	0.93	A		1.5	0.65 - 1.21	0.023	A
Cesium-137	0.666	0.726	A		-8.3	0.508 - 0.944	0.021	A
Cobalt-57	-1.5		A			False Positive Test	2.8	
Cobalt-60	0.759	0.72	A		5.4	0.50 - 0.94	0.021	A
Manganese-54	0.007		A			False Positive Test	0.010	
Plutonium-238	0.0266	0.0221	W		20.4	0.0155 - 0.0287	0.0019	A
Plutonium-239/240	0.0175	0.0141	W		24.1	0.0099 - 0.0183	0.0015	A
Strontium-90	0.503	0.54	A		-6.9	0.38 - 0.70	0.034	A
Uranium-234	0.0699	0.064	A		9.2	0.045 - 0.083	0.0051	A
Uranium-238	0.0685	0.067	A		2.2	0.047 - 0.087	0.0051	A
Zinc-65	-0.026		A			False Positive Test	0.019	

Radiological Reference Date: February 1, 2022

**Results Flags:**

- A = Result acceptable.....|Bias| <= 20%
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**Uncertainty Flags:**

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

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**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

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



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

Laboratory Results For MAPEP-22-RdF46

(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	0.035	0.041	A		-14.6	0.029 - 0.053	0.00031	N
Uranium-238	5.32	5.35	A		-0.6	3.75 - 6.96	0.05	N
Uranium-Total	5.35	5.4	A		-0.9	3.8 - 7.0	0.05	N

Radiological							Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0362	0.0439	A		-17.5	0.0307 - 0.0571	0.0016	A
Cesium-134	0.889	0.93	A		-4.4	0.65 - 1.21	0.068	A
Cesium-137	0.761	0.726	A		4.8	0.508 - 0.944	0.063	A
Cobalt-57	0.007					False Positive Test	0.012	
Cobalt-60	0.556	0.72	W		-22.8	0.50 - 0.94	0.046	A
Manganese-54	0.019					False Positive Test	0.036	
Plutonium-238	0.0189	0.0221	A		-14.5	0.0155 - 0.0287	0.0012	A
Plutonium-239/240	0.0133	0.0141	A		-5.7	0.0099 - 0.0183	0.0010	A
Strontium-90	0.525	0.54	A		-2.8	0.38 - 0.70	0.013	A
Uranium-234	0.0610	0.064	A		-4.7	0.045 - 0.083	0.0025	A
Uranium-238	0.0637	0.067	A		-4.9	0.047 - 0.087	0.0025	A
Zinc-65	0.017					False Positive Test	0.029	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (FDHE01) Florida Dept of Health Environmental Laboratory  
 PO Box 680069  
 Orlando, FL 32868-0069

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.041	0.0439	A		-6.6	0.0307 - 0.0571	0.106	N
Cesium-134	0.852	0.93	A		-8.4	0.65 - 1.21	0.024	A
Cesium-137	0.733	0.726	A		1.0	0.508 - 0.944	0.029	A
Cobalt-57	0.018			A		False Positive Test	0.028	
Cobalt-60	0.728	0.72	A		1.1	0.50 - 0.94	0.025	A
Manganese-54	0.004			A		False Positive Test	0.060	
Plutonium-238	0.0236	0.0221	A		6.8	0.0155 - 0.0287	0.0032	A
Plutonium-239/240	0.0169	0.0141	A		19.9	0.0099 - 0.0183	0.0027	W
Strontium-90	0.46768	0.54	A		-13.4	0.38 - 0.70	0.04033	A
Uranium-234	0.0648	0.064	A		1.3	0.045 - 0.083	0.0039	A
Uranium-238	0.0644	0.067	A		-3.9	0.047 - 0.087	0.0039	A
Zinc-65	-0.005			A		False Positive Test	0.198	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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



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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46

(FDOH01) Florida Dept. of Health, Mobile Environmental Radiological Lab  
 PO Box 680069  
 Orlando, FL 32868-0069

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.04	0.0439	A		-8.9	0.0307 - 0.0571	0.038	N
Cesium-134	0.851	0.93	A		-8.5	0.65 - 1.21	0.035	A
Cesium-137	0.77	0.726	A		6.1	0.508 - 0.944	0.02	A
Cobalt-57	0.017			A		False Positive Test	0.017	
Cobalt-60	0.739	0.72	A		2.6	0.50 - 0.94	0.015	A
Manganese-54	-0.006			A		False Positive Test	0.066	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	0.073	0.067	A		9.0	0.047 - 0.087	0.129	N
Zinc-65	0.021			A		False Positive Test	0.138	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.993	0.93	A		6.8	0.65 - 1.21	0.082	A
Cesium-137	0.83	0.726	A		14.3	0.508 - 0.944	0.10	A
Cobalt-57	0.14		A			False Positive Test	0.17	
Cobalt-60	0.813	0.72	A		12.9	0.50 - 0.94	0.074	A
Manganese-54	0.015		A			False Positive Test	0.050	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	0.05		A			False Positive Test	0.10	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.0407	0.041	A		-0.7	0.029 - 0.053	0.00205	A
Uranium-238	5.8	5.35	A		8.4	3.75 - 6.96	0.287	A
Uranium-Total	5.84	5.4	A		8.1	3.8 - 7.0	0.289	A

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0392	0.0439	A		-10.7	0.0307 - 0.0571	0.00234	A
Cesium-134	0.936	0.93	A		0.6	0.65 - 1.21	0.0748	A
Cesium-137	0.759	0.726	A		4.5	0.508 - 0.944	0.0657	A
Cobalt-57	0.0000000		A			False Positive Test	0.218	
Cobalt-60	0.831	0.72	A		15.4	0.50 - 0.94	0.0698	A
Manganese-54	0.00527		A			False Positive Test	0.0223	
Plutonium-238	0.0212	0.0221	A		-4.1	0.0155 - 0.0287	0.00139	A
Plutonium-239/240	0.0142	0.0141	A		0.7	0.0099 - 0.0183	0.00108	A
Strontium-90	0.500	0.54	A		-7.4	0.38 - 0.70	0.0771	W
Uranium-234	0.0629	0.064	A		-1.7	0.045 - 0.083	0.00361	A
Uranium-238	0.0685	0.067	A		2.2	0.047 - 0.087	0.00387	A
Zinc-65	0.0755		A			False Positive Test	0.0575	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.9110	0.93	A		-2.0	0.65 - 1.21	0.1092	A
Cesium-137	0.7318	0.726	A		0.8	0.508 - 0.944	0.1240	W
Cobalt-57	0.8315		N	(1)		False Positive Test	0.1185	
Cobalt-60	0.6735	0.72	A		-6.5	0.50 - 0.94	0.1059	W
Manganese-54	-0.0121		A			False Positive Test	0.1225	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	-0.0984		A			False Positive Test	0.3745	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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



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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46

(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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.8121	0.93	A		-12.7	0.65 - 1.21	0.2114	W
Cesium-137	0.7631	0.726	A		5.1	0.508 - 0.944	0.2381	N
Cobalt-57	0.7088		N	(1)		False Positive Test	0.1783	
Cobalt-60	0.5478	0.72	W		-23.9	0.50 - 0.94	0.1825	N
Manganese-54	-.03492		A			False Positive Test	0.2867	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	0.1328		A			False Positive Test	0.4202	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46

(HPAC99) PHE, CRCE 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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.059	0.0439	N		34.4	0.0307 - 0.0571	0.016	W
Cesium-134	1.117	0.93	W		20.1	0.65 - 1.21	0.152	A
Cesium-137	0.959	0.726	N		32.1	0.508 - 0.944	0.133	A
Cobalt-57	NR					False Positive Test		
Cobalt-60	0.91	0.72	W		26.4	0.50 - 0.94	0.125	A
Manganese-54	NR					False Positive Test		
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	NR					False Positive Test		

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

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

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

RW = Report Warning

NR = Not Reported

**Uncertainty Flags:**

NOT ACCEPTABLE.....RP < 2%

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (HPAL01) Los Alamos National Laboratory  
 Milan Gadd, 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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.03	0.0439	N		-31.7	0.0307 - 0.0571	0.07	N
Cesium-134	0.99	0.93	A		6.5	0.65 - 1.21	0.07	A
Cesium-137	0.88	0.726	W		21.2	0.508 - 0.944	0.10	A
Cobalt-57	0.82		N	(1)		False Positive Test	0.05	
Cobalt-60	0.94	0.72	N		30.6	0.50 - 0.94	0.09	A
Manganese-54	0.02		A			False Positive Test	0.30	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	0.09	0.064	N		40.6	0.045 - 0.083	0.07	N
Uranium-238	-0.25	0.067	N		-473.1	0.047 - 0.087	0.81	N
Zinc-65	0.02		A			False Positive Test	0.30	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46

(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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0354	0.0439	A		-19.4	0.0307 - 0.0571	0.0019	A
Cesium-134	0.79	0.93	A		-15.1	0.65 - 1.21	0.06	A
Cesium-137	0.72	0.726	A		-0.8	0.508 - 0.944	0.09	A
Cobalt-57	-0.064		A			False Positive Test	0.115	
Cobalt-60	0.68	0.72	A		-5.6	0.50 - 0.94	0.09	A
Manganese-54	-0.02		A			False Positive Test	0.07	
Plutonium-238	0.0226	0.0221	A		2.3	0.0155 - 0.0287	0.0014	A
Plutonium-239/240	0.0152	0.0141	A		7.8	0.0099 - 0.0183	0.0011	A
Strontium-90	0.440	0.54	A		-18.5	0.38 - 0.70	0.028	A
Uranium-234	0.0712	0.064	A		11.3	0.045 - 0.083	0.0042	A
Uranium-238	0.0683	0.067	A		1.9	0.047 - 0.087	0.0041	A
Zinc-65	-0.02		A			False Positive Test	0.11	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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



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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46

(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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.948	0.93	A		1.9	0.65 - 1.21	0.048	A
Cesium-137	0.815	0.726	A		12.3	0.508 - 0.944	0.047	A
Cobalt-57	0.899		N	(1)		False Positive Test	0.029	
Cobalt-60	0.667	0.72	A		-7.4	0.50 - 0.94	0.065	A
Manganese-54	0.056		A			False Positive Test	0.03	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	-0.114		A			False Positive Test	0.284	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

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

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

RW = Report Warning

NR = Not Reported

**Uncertainty Flags:**

NOT ACCEPTABLE.....RP < 2%

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46

(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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	5.432E-02	0.0439	W		23.7	0.0307 - 0.0571	1.056E-	W
Cesium-134	8.095E-01	0.93	A		-13.0	0.65 - 1.21	2.477E-	A
Cesium-137	7.149E-01	0.726	A		-1.5	0.508 - 0.944	3.401E-	A
Cobalt-57	8.218E-01		N	(1)		False Positive Test	2.372E-	
Cobalt-60	7.141E-01	0.72	A		-0.8	0.50 - 0.94	2.965E-	A
Manganese-54	-2.282E-02		A			False Positive Test	2.444E-	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	-3.589E-01		N	(29)		False Positive Test	7.682E-	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (LANL01) Los Alamos National Laboratory  
 P. O. Box 1663  
 Los Alamos, NM 87545

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.815	0.93	A		-12.4	0.65 - 1.21	0.079	A
Cesium-137	0.733	0.726	A		1.0	0.508 - 0.944	0.049	A
Cobalt-57	0.890		N	(1)		False Positive Test	0.045	
Cobalt-60	0.641	0.72	A		-11.0	0.50 - 0.94	0.048	A
Manganese-54	NR					False Positive Test		
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	NR					False Positive Test		

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (LAWR01) LAWRENCE BERKELEY NATIONAL LABORATORY  
 1 CYCLOTRON RD.  
 BERKELEY, CA 94720

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.8529	0.93	A		-8.3	0.65 - 1.21	0.04177	A
Cesium-137	0.6740	0.726	A		-7.2	0.508 - 0.944	0.03926	A
Cobalt-57	-0.07616			A		False Positive Test	0.7616	
Cobalt-60	0.6889	0.72	A		-4.3	0.50 - 0.94	0.0458	A
Manganese-54	0.009183			A		False Positive Test	0.02871	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	0.04492			A		False Positive Test	0.0688	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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



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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46

(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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.719	0.93	W		-22.7	0.65 - 1.21	0.046	A
Cesium-137	0.77	0.726	A		6.1	0.508 - 0.944	0.062	A
Cobalt-57	-0.008		A			False Positive Test	0.401	
Cobalt-60	0.679	0.72	A		-5.7	0.50 - 0.94	0.057	A
Manganese-54	0.015		A			False Positive Test	0.023	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	0.036		A			False Positive Test	0.054	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.052	0.0439	A		18.5	0.0307 - 0.0571	0.004	A
Cesium-134	0.866	0.93	A		-6.9	0.65 - 1.21	0.027	A
Cesium-137	0.722	0.726	A		-0.6	0.508 - 0.944	0.031	A
Cobalt-57	0.030		A			False Positive Test	0.015	
Cobalt-60	0.709	0.72	A		-1.5	0.50 - 0.94	0.026	A
Manganese-54	0.009		A			False Positive Test	0.026	
Plutonium-238	0.029	0.0221	N		31.2	0.0155 - 0.0287	0.003	A
Plutonium-239/240	0.017	0.0141	W		20.6	0.0099 - 0.0183	0.002	A
Strontium-90	0.539	0.54	A		-0.2	0.38 - 0.70	0.022	A
Uranium-234	0.074	0.064	A		15.6	0.045 - 0.083	0.005	A
Uranium-238	0.075	0.067	A		11.9	0.047 - 0.087	0.005	A
Zinc-65	0.22		A			False Positive Test	0.11	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.85	0.93	A		-8.6	0.65 - 1.21	0.04	A
Cesium-137	0.71	0.726	A		-2.2	0.508 - 0.944	0.05	A
Cobalt-57	NR		N	(11)		False Positive Test		
Cobalt-60	0.74	0.72	A		2.8	0.50 - 0.94	0.05	A
Manganese-54	NR		N	(11)		False Positive Test		
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	NR					False Positive Test		

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46

(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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	-0.0376	0.0439	N		-185.6	0.0307 - 0.0571	0.1008	N
Cesium-134	0.6724	0.93	W		-27.7	0.65 - 1.21	0.0288	A
Cesium-137	0.6936	0.726	A		-4.5	0.508 - 0.944	0.0373	A
Cobalt-57	-0.0141		A			False Positive Test	0.1420	
Cobalt-60	0.6399	0.72	A		-11.1	0.50 - 0.94	0.0408	A
Manganese-54	-0.0180		A			False Positive Test	0.0317	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	-0.0186		A			False Positive Test	0.0889	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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



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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	-4.3818	0.0439	N		-998132	0.0307 - 0.0571	1.579	N
Cesium-134	9.5459E+5	0.93	N		1026439	0.65 - 1.21	1.840	W
Cesium-137	1.0384E+6	0.726	N		1430302	0.508 - 0.944	2.431	W
Cobalt-57	9.4854E+5		N	(1)		False Positive Test	1.427	
Cobalt-60	6.8450E+5	0.72	N		9506934	0.50 - 0.94	2.152	N
Manganese-54	-3.1216		A			False Positive Test	3.798	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	4.2270E+5		A			False Positive Test	1.243	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46

(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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0475	0.0439	A		8.2	0.0307 - 0.0571	0.00523	A
Cesium-134	0.959	0.93	A		3.1	0.65 - 1.21	0.0547	A
Cesium-137	0.750	0.726	A		3.3	0.508 - 0.944	0.0458	A
Cobalt-57	-0.0568			A		False Positive Test	0.0708	
Cobalt-60	0.662	0.72	A		-8.1	0.50 - 0.94	0.0392	A
Manganese-54	-0.0217			A		False Positive Test	0.0203	
Plutonium-238	0.0206	0.0221	A		-6.8	0.0155 - 0.0287	0.00185	A
Plutonium-239/240	0.0162	0.0141	A		14.9	0.0099 - 0.0183	0.00163	A
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	0.0671	0.064	A		4.8	0.045 - 0.083	0.0061	A
Uranium-238	0.0678	0.067	A		1.2	0.047 - 0.087	0.00612	A
Zinc-65	-0.0492			A		False Positive Test	0.0516	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.026	0.0439	N		-40.8	0.0307 - 0.0571	0.005	W
Cesium-134	0.827	0.93	A		-11.1	0.65 - 1.21	0.053	A
Cesium-137	0.822	0.726	A		13.2	0.508 - 0.944	0.069	A
Cobalt-57	0.948		N	(1)		False Positive Test	0.059	
Cobalt-60	0.801	0.72	A		11.3	0.50 - 0.94	0.094	A
Manganese-54	0.024		A			False Positive Test	0.079	
Plutonium-238	0.031	0.0221	N		40.3	0.0155 - 0.0287	0.003	A
Plutonium-239/240	0.016	0.0141	A		13.5	0.0099 - 0.0183	0.003	W
Strontium-90	0.417	0.54	W		-22.8	0.38 - 0.70	0.034	A
Uranium-234	0.071	0.064	A		10.9	0.045 - 0.083	0.005	A
Uranium-238	0.074	0.067	A		10.4	0.047 - 0.087	0.005	A
Zinc-65	0.122		A			False Positive Test	0.130	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.87	0.93	A		-6.5	0.65 - 1.21	0.06	A
Cesium-137	0.71	0.726	A		-2.2	0.508 - 0.944	0.05	A
Cobalt-57	0.73		N	(1)		False Positive Test	0.07	
Cobalt-60	0.69	0.72	A		-4.2	0.50 - 0.94	0.04	A
Manganese-54	-0.02		A			False Positive Test	0.02	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	0.11		A			False Positive Test	0.05	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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



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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.038	0.041	A		-7.3	0.029 - 0.053	0.002	A
Uranium-238	5.07	5.35	A		-5.2	3.75 - 6.96	0.04	N
Uranium-Total	5.27	5.4	A		-2.4	3.8 - 7.0	0.08	N

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.045	0.0439	A		2.5	0.0307 - 0.0571	0.003	A
Cesium-134	0.92	0.93	A		-1.1	0.65 - 1.21	0.03	A
Cesium-137	0.70	0.726	A		-3.6	0.508 - 0.944	0.02	A
Cobalt-57	0.02		A			False Positive Test	0.09	
Cobalt-60	0.69	0.72	A		-4.2	0.50 - 0.94	0.02	A
Manganese-54	0.04		A			False Positive Test	0.2	
Plutonium-238	0.023	0.0221	A		4.1	0.0155 - 0.0287	0.002	A
Plutonium-239/240	0.016	0.0141	A		13.5	0.0099 - 0.0183	0.001	A
Strontium-90	0.53	0.54	A		-1.9	0.38 - 0.70	0.06	A
Uranium-234	0.070	0.064	A		9.4	0.045 - 0.083	0.005	A
Uranium-238	0.069	0.067	A		3.0	0.047 - 0.087	0.005	A
Zinc-65	0.1		A			False Positive Test	0.7	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	6.00	0.93	N		545.2	0.65 - 1.21	0.0329	N
Cesium-137	0.669	0.726	A		-7.9	0.508 - 0.944	0.0445	A
Cobalt-57	0.0415		A			False Positive Test	0.0343	
Cobalt-60	0.663	0.72	A		-7.9	0.50 - 0.94	0.0248	A
Manganese-54	0.00253		A			False Positive Test	0.00991	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	0.025		A			False Positive Test	0.0113	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46

(ORIS01) ORISE/IEAV  
 1299 Bethel Valley Road SC-10  
 Oak Ridge, TN 37830

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.044	0.0439	A		0.2	0.0307 - 0.0571	0.003	A
Cesium-134	0.986	0.93	A		6.0	0.65 - 1.21	0.062	A
Cesium-137	0.800	0.726	A		10.2	0.508 - 0.944	0.060	A
Cobalt-57	-0.13		A			False Positive Test	0.19	
Cobalt-60	0.690	0.72	A		-4.2	0.50 - 0.94	0.057	A
Manganese-54	0.001		A			False Positive Test	0.044	
Plutonium-238	0.021	0.0221	A		-5.0	0.0155 - 0.0287	0.002	A
Plutonium-239/240	0.014	0.0141	A		-0.7	0.0099 - 0.0183	0.001	A
Strontium-90	0.519	0.54	A		-3.9	0.38 - 0.70	0.015	A
Uranium-234	0.072	0.064	A		12.5	0.045 - 0.083	0.004	A
Uranium-238	0.069	0.067	A		3.0	0.047 - 0.087	0.004	A
Zinc-65	-0.130		A			False Positive Test	0.091	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (OTLI01) Pace Analytical National Center for Testing & Innovation  
 12065 Lebanon Road  
 Mt. Juliet, TN 37122

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	5.29	5.4	A		-2.0	3.8 - 7.0	0.1	N

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.031	0.0439	W		-29.4	0.0307 - 0.0571	0.028	N
Cesium-134	0.839	0.93	A		-9.8	0.65 - 1.21	0.093	A
Cesium-137	0.783	0.726	A		7.9	0.508 - 0.944	0.101	A
Cobalt-57	.09		A			False Positive Test	0.195	
Cobalt-60	0.808	0.72	A		12.2	0.50 - 0.94	0.089	A
Manganese-54	0.046		A			False Positive Test	0.052	
Plutonium-238	0.052	0.0221	N		135.3	0.0155 - 0.0287	0.023	N
Plutonium-239/240	0.032	0.0141	N		127.0	0.0099 - 0.0183	0.018	N
Strontium-90	0.583	0.54	A		8.0	0.38 - 0.70	0.027	A
Uranium-234	0.091	0.064	N		42.2	0.045 - 0.083	0.0186	W
Uranium-238	0.0998	0.067	N		49.0	0.047 - 0.087	0.017	W
Zinc-65	-0.29		A			False Positive Test	0.17	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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



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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	5.6	5.4	A		3.7	3.8 - 7.0	0.2	A

Radiological							Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0421	0.0439	A		-4.1	0.0307 - 0.0571	0.0038	A
Cesium-134	0.891	0.93	A		-4.2	0.65 - 1.21	0.078	A
Cesium-137	0.888	0.726	W		22.3	0.508 - 0.944	0.047	A
Cobalt-57	0.01		A			False Positive Test	1.1	
Cobalt-60	0.797	0.72	A		10.7	0.50 - 0.94	0.026	A
Manganese-54	0.01		A			False Positive Test	0.1	
Plutonium-238	0.0172	0.0221	W		-22.2	0.0155 - 0.0287	0.0028	W
Plutonium-239/240	0.0134	0.0141	A		-5.0	0.0099 - 0.0183	0.0025	W
Strontium-90	0.49	0.54	A		-9.3	0.38 - 0.70	0.02	A
Uranium-234	0.0498	0.064	W		-22.2	0.045 - 0.083	0.0030	A
Uranium-238	0.0551	0.067	A		-17.8	0.047 - 0.087	0.0031	A
Zinc-65	0.1		A			False Positive Test	0.3	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (RPSC01) Radiation Protection Service  
 Ontario Ministry of Labour, Training And 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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.935	0.93	A		0.5	0.65 - 1.21	0.0337	A
Cesium-137	0.719	0.726	A		-1.0	0.508 - 0.944	0.0466	A
Cobalt-57	-0.158			A		False Positive Test	0.269	
Cobalt-60	0.737	0.72	A		2.4	0.50 - 0.94	0.0393	A
Manganese-54	0.0114			A		False Positive Test	0.0449	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	-0.0710			A		False Positive Test	0.153	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

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



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

Laboratory Results For MAPEP-22-RdF46  
 (SANC99) RadioAnalysis, South Africa Nuclear Energy Corp.  
 Sample Receipt Gate 1  
 Pretoria, Gauteng 0001

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.039	0.0439	A		-11.2	0.0307 - 0.0571	0.007	W
Cesium-134	0.912	0.93	A		-1.9	0.65 - 1.21	0.057	A
Cesium-137	0.750	0.726	A		3.3	0.508 - 0.944	0.047	A
Cobalt-57	0.514		N	(1)		False Positive Test	0.052	
Cobalt-60	0.785	0.72	A		9.0	0.50 - 0.94	0.036	A
Manganese-54	0.020		A			False Positive Test	0.020	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	0.468		N	(1)		False Positive Test	0.027	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0420	0.0439	A		-4.3	0.0307 - 0.0571	0.0043	A
Cesium-134	1.06	0.93	A		14.0	0.65 - 1.21	0.10	A
Cesium-137	0.75	0.726	A		3.3	0.508 - 0.944	0.12	W
Cobalt-57	0.017		A			False Positive Test	0.32	
Cobalt-60	0.741	0.72	A		2.9	0.50 - 0.94	0.086	A
Manganese-54	-0.006		A			False Positive Test	0.057	
Plutonium-238	0.0213	0.0221	A		-3.6	0.0155 - 0.0287	0.0018	A
Plutonium-239/240	0.0147	0.0141	A		4.3	0.0099 - 0.0183	0.0013	A
Strontium-90	0.565	0.54	A		4.6	0.38 - 0.70	0.035	A
Uranium-234	0.0671	0.064	A		4.8	0.045 - 0.083	0.0047	A
Uranium-238	0.0707	0.067	A		5.5	0.047 - 0.087	0.0047	A
Zinc-65	-0.071		A			False Positive Test	0.163	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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



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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.698	0.93	W		-24.9	0.65 - 1.21	0.05	A
Cesium-137	0.631	0.726	A		-13.1	0.508 - 0.944	0.07	A
Cobalt-57	NR					False Positive Test		
Cobalt-60	0.589	0.72	A		-18.2	0.50 - 0.94	0.04	A
Manganese-54	NR					False Positive Test		
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	NR					False Positive Test		

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (SOUT01) Southwest Research Institute  
 6220 Culebra Rd.  
 San Antonio, TX 78228-0510

Inorganic							Units: (ug/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	0.0389	0.041	A		-5.1	0.029 - 0.053	0.00686	W
Uranium-238	5.15	5.35	A		-3.7	3.75 - 6.96	0.824	W
Uranium-Total	5.19	5.4	A		-3.9	3.8 - 7.0	0.830	W

Radiological							Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0389	0.0439	A		-11.4	0.0307 - 0.0571	0.00526	A
Cesium-134	0.733	0.93	W		-21.2	0.65 - 1.21	0.0559	A
Cesium-137	0.789	0.726	A		8.7	0.508 - 0.944	0.0611	A
Cobalt-57	-0.127		A			False Positive Test	0.104	
Cobalt-60	0.778	0.72	A		8.1	0.50 - 0.94	0.0600	A
Manganese-54	0.0907		A			False Positive Test	0.0430	
Plutonium-238	0.0225	0.0221	A		1.8	0.0155 - 0.0287	0.00367	W
Plutonium-239/240	0.0127	0.0141	A		-9.9	0.0099 - 0.0183	0.00266	W
Strontium-90	0.133	0.54	N		-75.4	0.38 - 0.70	0.0700	N
Uranium-234	0.0693	0.064	A		8.3	0.045 - 0.083	0.00707	A
Uranium-238	0.0667	0.067	A		-0.4	0.047 - 0.087	0.00689	A
Zinc-65	-0.0748		A			False Positive Test	0.0396	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

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



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

Laboratory Results For MAPEP-22-RdF46

(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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	7.27E-01	0.93	W		-21.8	0.65 - 1.21	9.16E-02	A
Cesium-137	5.87E-01	0.726	A		-19.1	0.508 - 0.944	4.64E-02	A
Cobalt-57	-2.05E-01			A		False Positive Test	1.20E-01	
Cobalt-60	5.84E-01	0.72	A		-18.9	0.50 - 0.94	4.42E-02	A
Manganese-54	1.81E-02			A		False Positive Test	2.41E-02	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	-7.12E-02			A		False Positive Test	4.32E-02	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0223	0.0439	N		-49.2	0.0307 - 0.0571	0.0031	A
Cesium-134	0.665	0.93	W		-28.5	0.65 - 1.21	0.018	A
Cesium-137	0.717	0.726	A		-1.2	0.508 - 0.944	0.027	A
Cobalt-57	-0.145		A			False Positive Test	0.049	
Cobalt-60	0.722	0.72	A		0.3	0.50 - 0.94	0.021	A
Manganese-54	-0.010		A			False Positive Test	0.015	
Plutonium-238	0.0191	0.0221	A		-13.6	0.0155 - 0.0287	0.0027	A
Plutonium-239/240	0.0109	0.0141	W		-22.7	0.0099 - 0.0183	0.0020	W
Strontium-90	0.473	0.54	A		-12.4	0.38 - 0.70	0.022	A
Uranium-234	0.0595	0.064	A		-7.0	0.045 - 0.083	0.0072	A
Uranium-238	0.0528	0.067	W		-21.2	0.047 - 0.087	0.0067	A
Zinc-65	-0.098		N	(29)		False Positive Test	0.026	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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



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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.83	0.93	A		-10.8	0.65 - 1.21	0.05	A
Cesium-137	0.87	0.726	A		19.8	0.508 - 0.944	0.07	A
Cobalt-57	0.87		N	(1)		False Positive Test	0.05	
Cobalt-60	0.83	0.72	A		15.3	0.50 - 0.94	0.07	A
Manganese-54	0.02		A			False Positive Test	0.02	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	0.719	0.54	N		33.1	0.38 - 0.70	0.104	A
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	-0.46		N	(29)		False Positive Test	0.07	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.775	0.93	A		-16.7	0.65 - 1.21	0.132	W
Cesium-137	0.654	0.726	A		-9.9	0.508 - 0.944	0.179	W
Cobalt-57	0.647		N	(1)		False Positive Test	0.105	
Cobalt-60	0.798	0.72	A		10.8	0.50 - 0.94	0.164	W
Manganese-54	0.006		A			False Positive Test	0.091	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	0.422	0.54	W		-21.9	0.38 - 0.70	0.038	A
Uranium-234	0.065	0.064	A		1.6	0.045 - 0.083	0.014	W
Uranium-238	0.066	0.067	A		-1.5	0.047 - 0.087	0.014	W
Zinc-65	0.014		A			False Positive Test	0.276	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

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



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

Laboratory Results For MAPEP-22-RdF46

(UNTE01) UniTech-235

178 Aldo Drive

Barnwell, SC 29812

Inorganic						Units: (ug/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.9	0.93	A		-3.2	0.65 - 1.21	0.5	N
Cesium-137	0.6	0.726	A		-17.4	0.508 - 0.944	0.5	N
Cobalt-57	0.9		N	(1)		False Positive Test	0.2	
Cobalt-60	0.02	0.72	N		-97.2	0.50 - 0.94	0.01	N
Manganese-54	0.01		A			False Positive Test	0.01	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	0.01		A			False Positive Test	0.01	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

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

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

RW = Report Warning

NR = Not Reported

**Uncertainty Flags:**

NOT ACCEPTABLE.....RP < 2%

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

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



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

Laboratory Results For MAPEP-22-RdF46

(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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	4.14E-02	0.0439	A		-5.7	0.0307 - 0.0571	7.41E-03	W
Cesium-134	9.74E-01	0.93	A		4.7	0.65 - 1.21	3.03E-02	A
Cesium-137	8.22E-01	0.726	A		13.2	0.508 - 0.944	2.42E-02	A
Cobalt-57	7.54E-01		N	(1)		False Positive Test	2.02E-02	
Cobalt-60	8.65E-01	0.72	W		20.1	0.50 - 0.94	3.14E-02	A
Manganese-54	2.55E-03		A			False Positive Test	9.38E-03	
Plutonium-238	2.39E-02	0.0221	A		8.1	0.0155 - 0.0287	4.58E-03	W
Plutonium-239/240	1.61E-02	0.0141	A		14.2	0.0099 - 0.0183	3.19E-03	W
Strontium-90	5.77E-01	0.54	A		6.9	0.38 - 0.70	2.95E-02	A
Uranium-234	7.14E-02	0.064	A		11.6	0.045 - 0.083	6.41E-03	A
Uranium-238	7.13E-02	0.067	A		6.4	0.047 - 0.087	6.40E-03	A
Zinc-65	-2.56E-02		A			False Positive Test	1.88E-02	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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



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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.994	0.93	A		6.9	0.65 - 1.21	0.0289	A
Cesium-137	0.849	0.726	A		16.9	0.508 - 0.944	0.031	A
Cobalt-57	0.808		N	(1)		False Positive Test	0.0277	
Cobalt-60	0.775	0.72	A		7.6	0.50 - 0.94	0.0468	A
Manganese-54	0.00882		A			False Positive Test	0.0196	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	0.666		N	(1)		False Positive Test	0.0795	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.03688	0.041	A		-10.0	0.029 - 0.053	0.00199	A
Uranium-238	5.149	5.35	A		-3.8	3.75 - 6.96	0.223	A
Uranium-Total	5.355	5.4	A		-0.8	3.8 - 7.0	0.197	A

Radiological							Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.0406	0.0439	A		-7.5	0.0307 - 0.0571	0.0078	W
Cesium-134	0.989	0.93	A		6.3	0.65 - 1.21	0.048	A
Cesium-137	0.762	0.726	A		5.0	0.508 - 0.944	0.034	A
Cobalt-57	0.0044		A			False Positive Test	0.0066	
Cobalt-60	0.667	0.72	A		-7.4	0.50 - 0.94	0.032	A
Manganese-54	0.006		A			False Positive Test	0.014	
Plutonium-238	0.0259	0.0221	A		17.2	0.0155 - 0.0287	0.0055	W
Plutonium-239/240	0.0151	0.0141	A		7.1	0.0099 - 0.0183	0.0042	W
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	0.0508	0.064	W		-20.6	0.045 - 0.083	0.0133	W
Uranium-238	0.06405	0.067	A		-4.4	0.047 - 0.087	0.00278	A
Zinc-65	0.028		A			False Positive Test	0.024	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.041				0.029 - 0.053		
Uranium-238	NR	5.35				3.75 - 6.96		
Uranium-Total	NR	5.4				3.8 - 7.0		

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	0.842	0.93	A		-9.5	0.65 - 1.21	0.0569	A
Cesium-137	0.662	0.726	A		-8.8	0.508 - 0.944	0.0413	A
Cobalt-57	0.0299			A		False Positive Test	0.0449	
Cobalt-60	0.642	0.72	A		-10.8	0.50 - 0.94	0.0317	A
Manganese-54	-0.0169			A		False Positive Test	0.0161	
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	-0.0319			A		False Positive Test	0.0278	

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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

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

NOT ACCEPTABLE.....RP > 30%

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

**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

(1) = False Positive

(11) = False Positive Test, Result Not Reported

(28) = Not Reporting Previously Reported Analyte

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



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

Laboratory Results For MAPEP-22-RdF46  
 (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	0.039	0.041	A		-4.9	0.029 - 0.053	0.03	N
Uranium-238	5.44	5.35	A		1.7	3.75 - 6.96	0.3	A
Uranium-Total	5.48	5.4	A		1.5	3.8 - 7.0	0.3	A

Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	NR	0.0439				0.0307 - 0.0571		
Cesium-134	NR	0.93				0.65 - 1.21		
Cesium-137	NR	0.726				0.508 - 0.944		
Cobalt-57	NR					False Positive Test		
Cobalt-60	NR	0.72				0.50 - 0.94		
Manganese-54	NR					False Positive Test		
Plutonium-238	NR	0.0221				0.0155 - 0.0287		
Plutonium-239/240	NR	0.0141				0.0099 - 0.0183		
Strontium-90	NR	0.54				0.38 - 0.70		
Uranium-234	NR	0.064				0.045 - 0.083		
Uranium-238	NR	0.067				0.047 - 0.087		
Zinc-65	NR					False Positive Test		

Radiological Reference Date: February 1, 2022

**Results Flags:**

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

**Uncertainty Flags:**

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



Radiological						Units: (Bq/sample)		
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag

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

NOT ACCEPTABLE.....RP > 30%

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

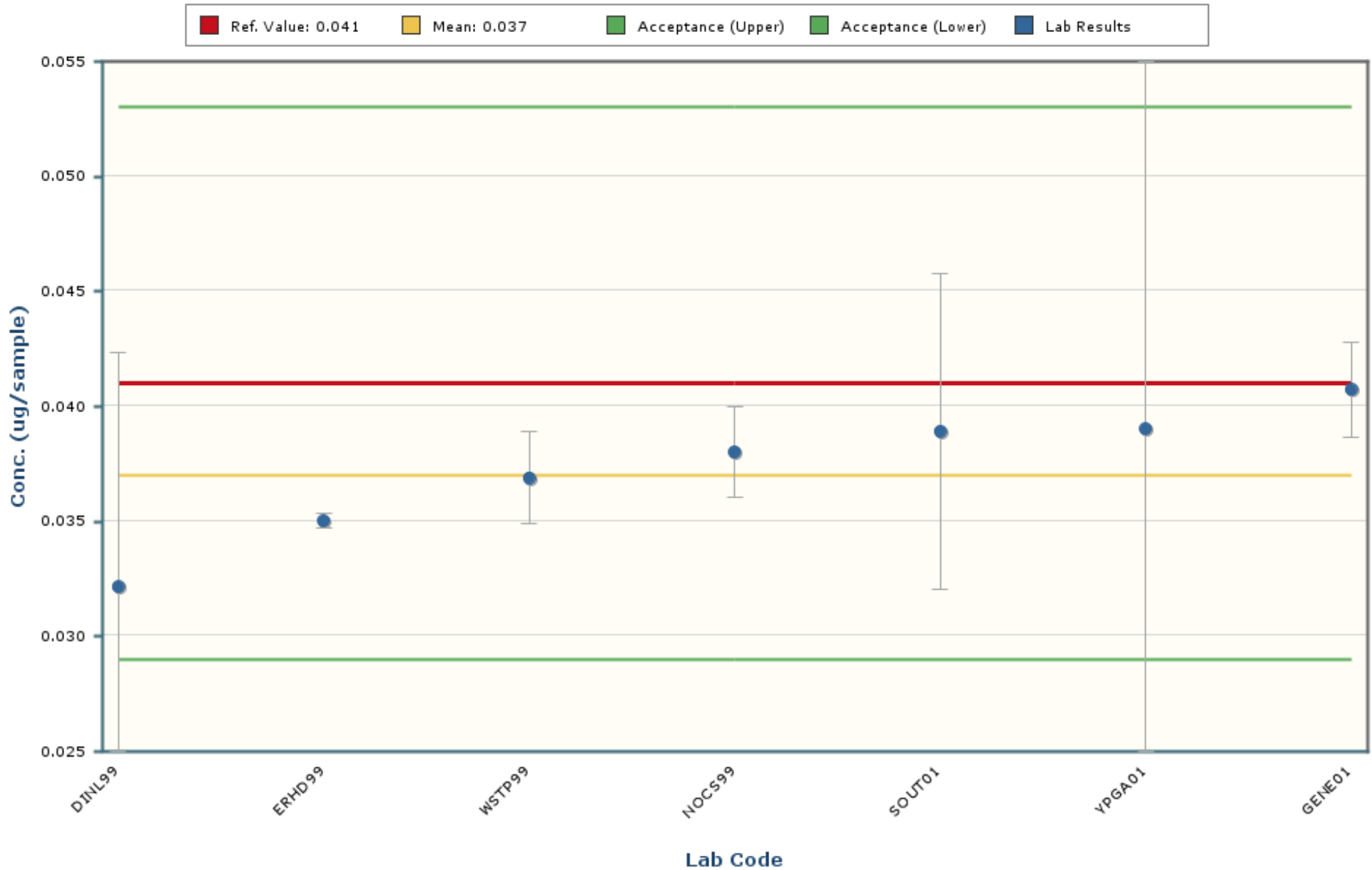
**The RdF46 sample contains 2.53 +/- 0.06 Bq/Sample of Eu-152**

**Notes:**

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

# Uranium-235

## MAPEP-22-RdF46



### Notes:

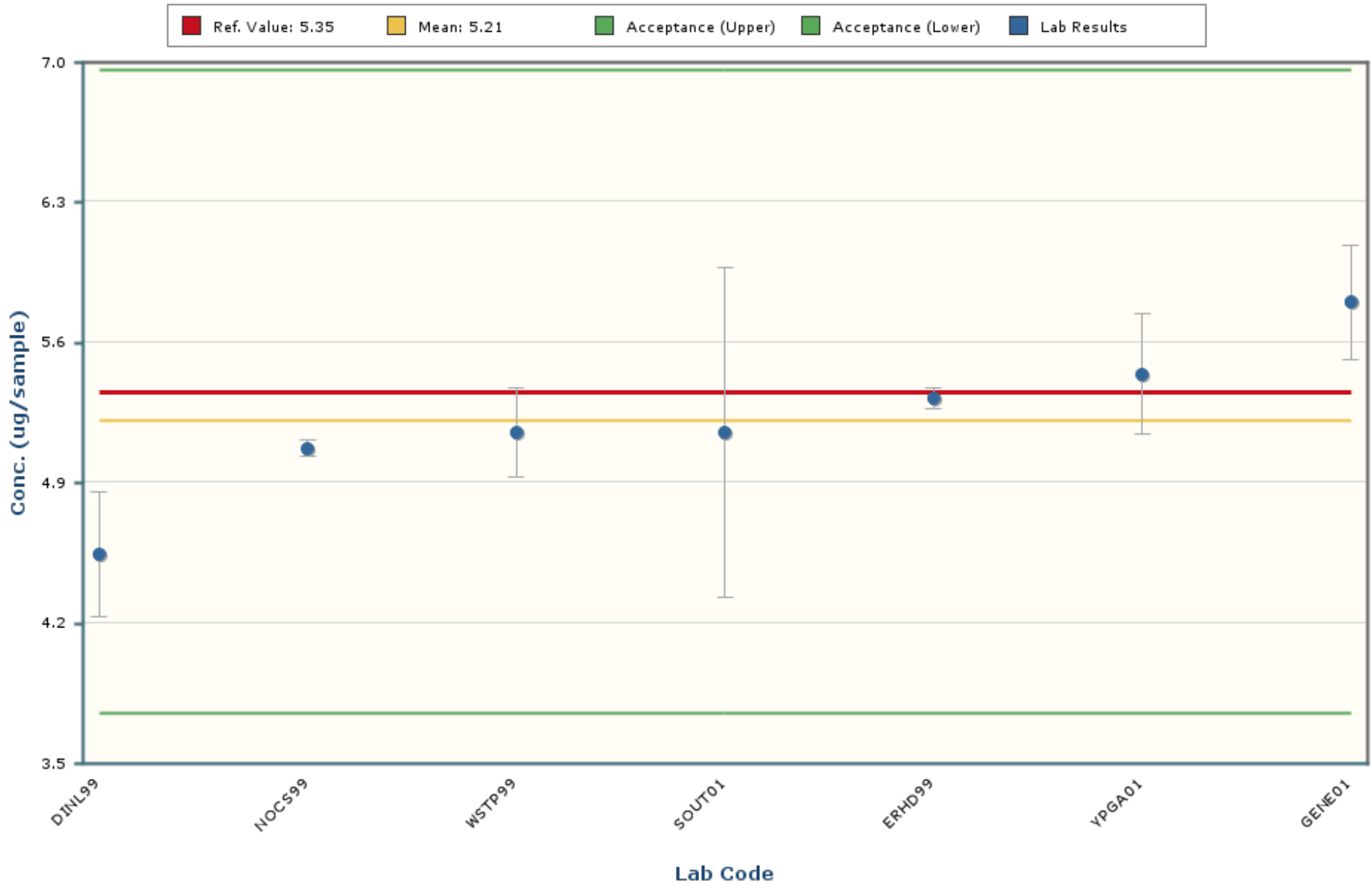
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 0.023 and 0.052 ( $\pm 5$  Standard Deviations).

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

# Uranium-238

## MAPEP-22-RdF46



### Notes:

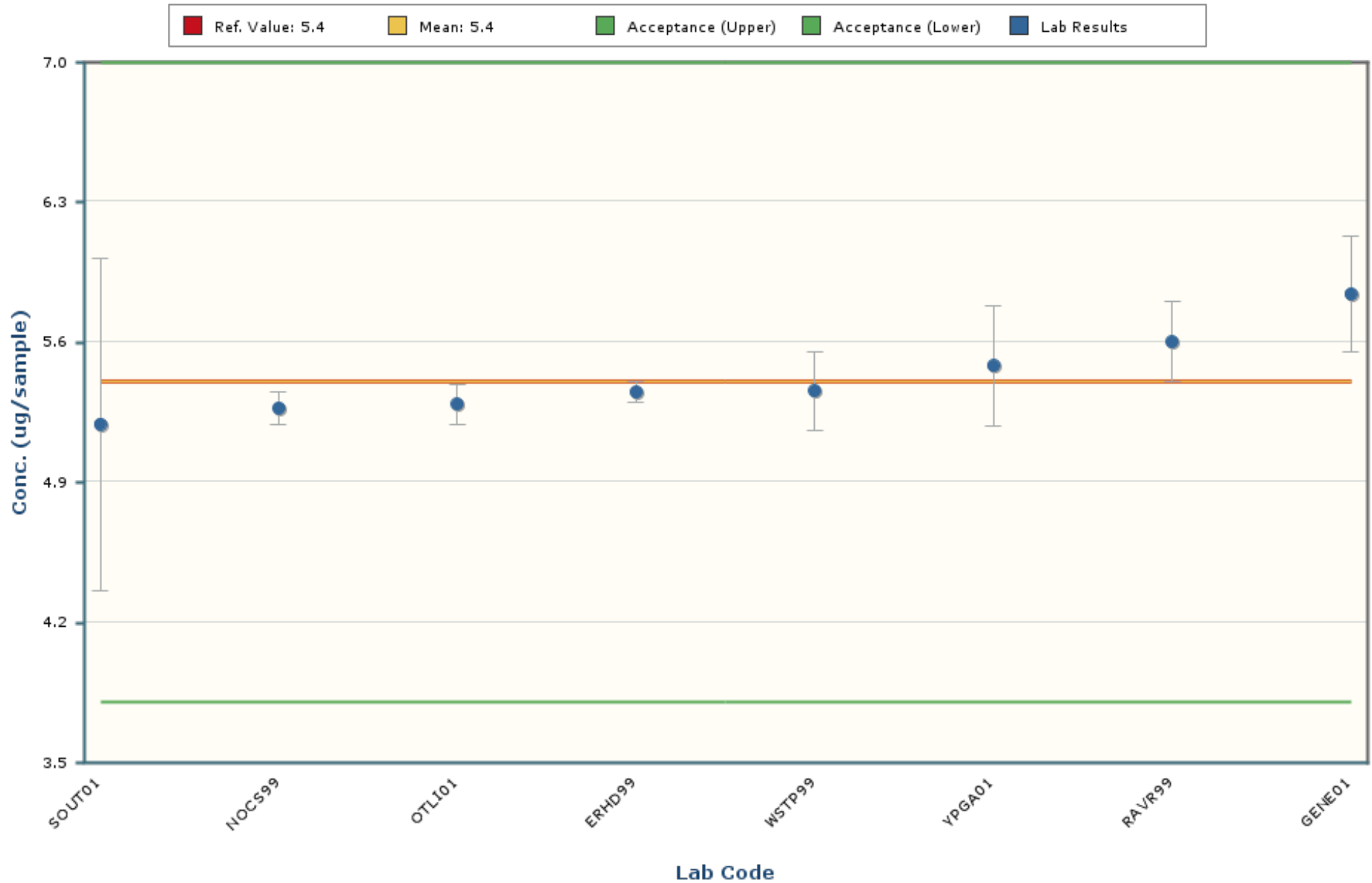
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 3.29 and 7.13 ( $\pm 5$  Standard Deviations).

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

# Uranium-Total

## MAPEP-22-RdF46



### Notes:

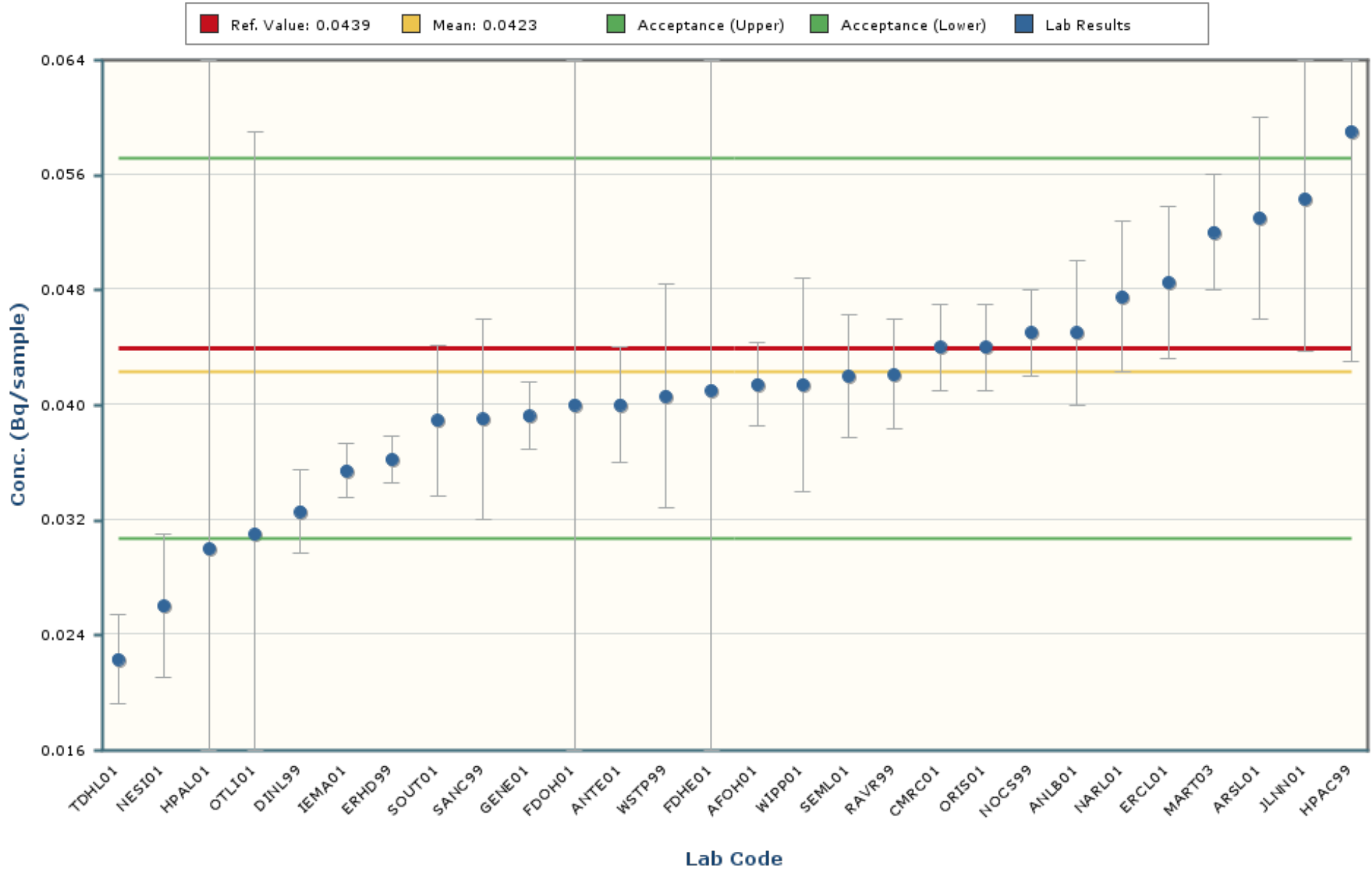
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 4.4 and 6.5 ( $\pm 5$  Standard Deviations).

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

# Americium-241

## MAPEP-22-RdF46



### Notes:

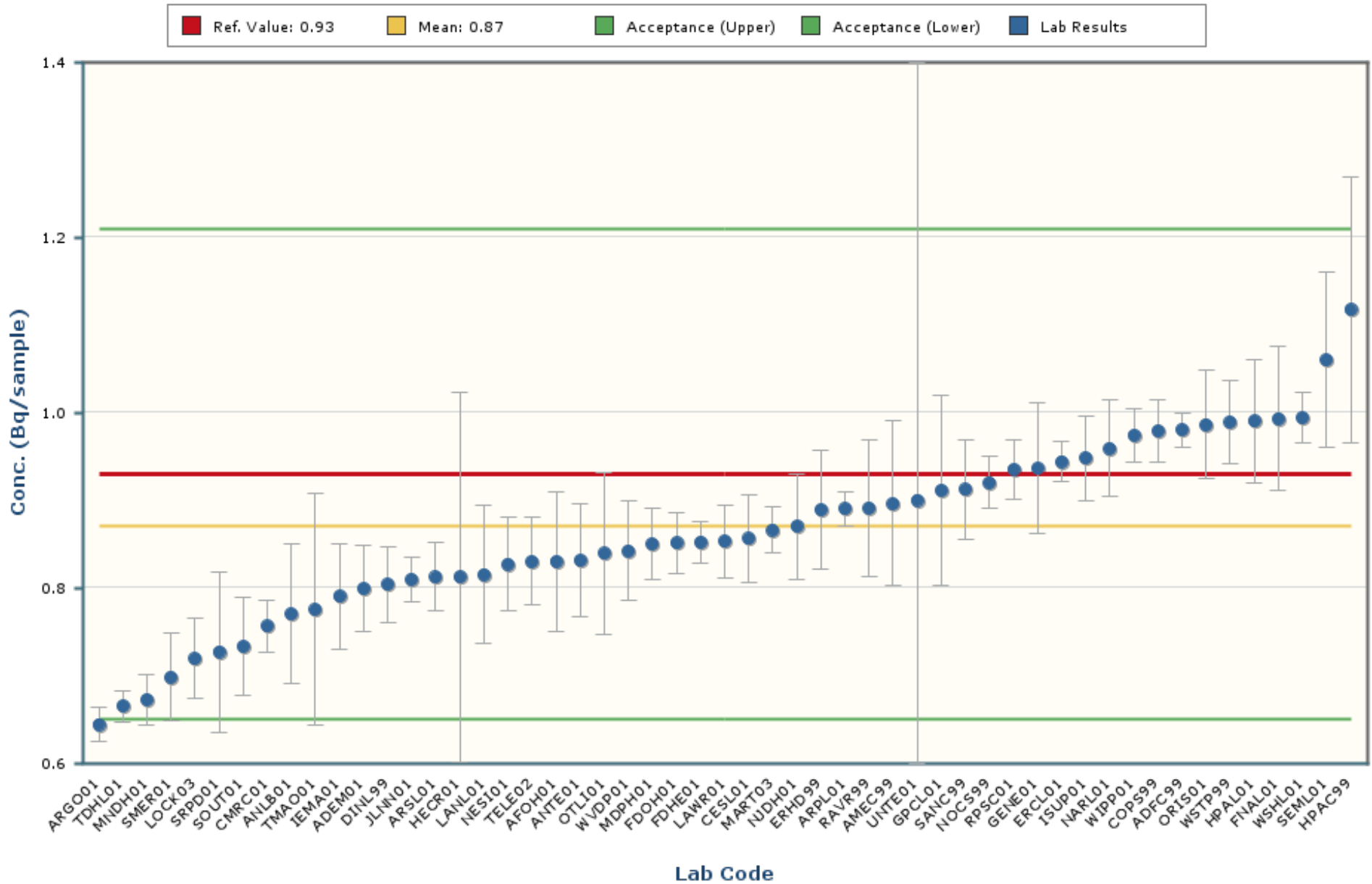
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 0.0129 and 0.0716 ( $\pm 5$  Standard Deviations).

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

# Cesium-134

## MAPEP-22-RdF46



### Notes:

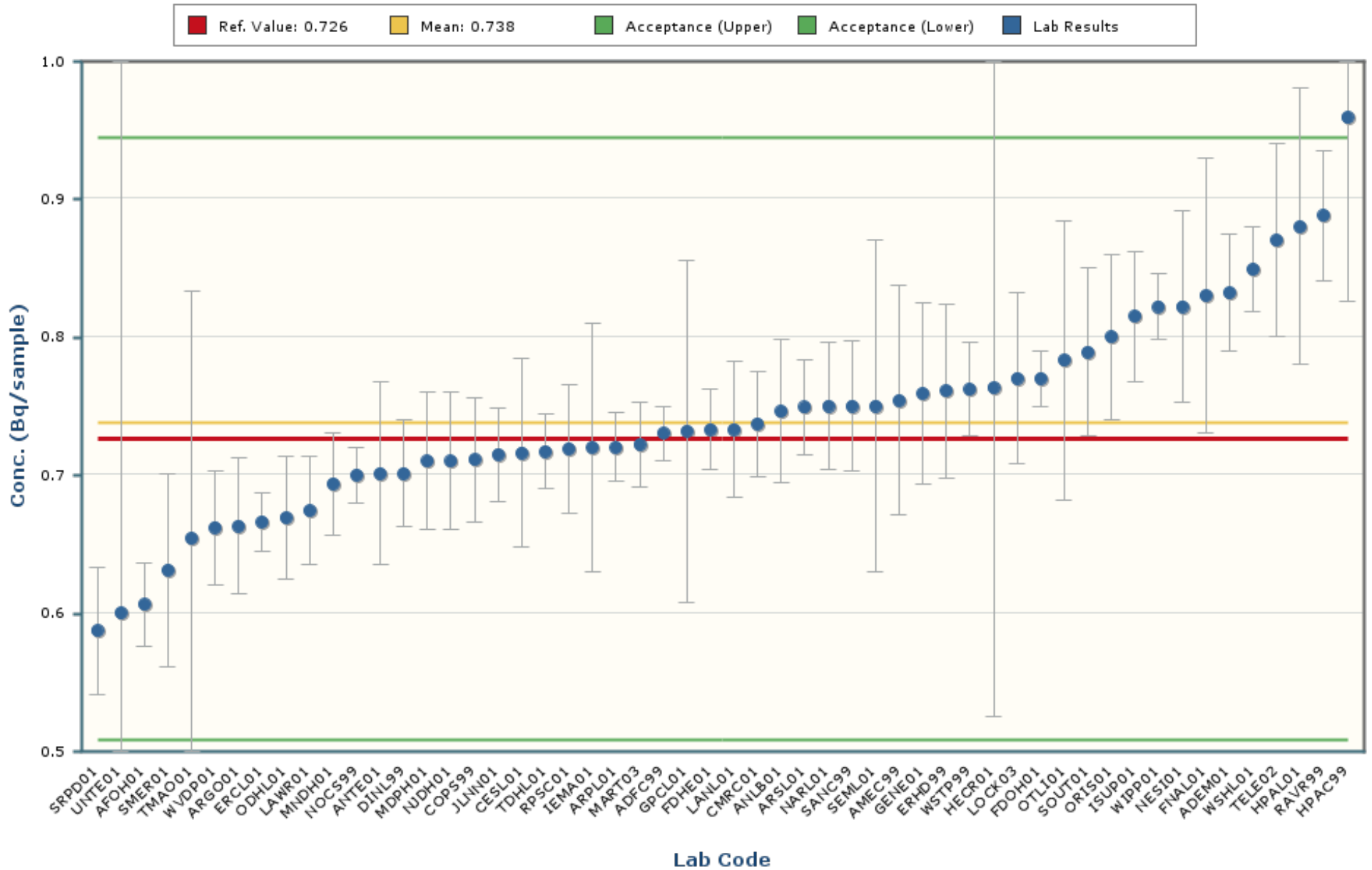
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 0.38 and 1.36 ( $\pm 5$  Standard Deviations).

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

# Cesium-137

## MAPEP-22-RdF46



### Notes:

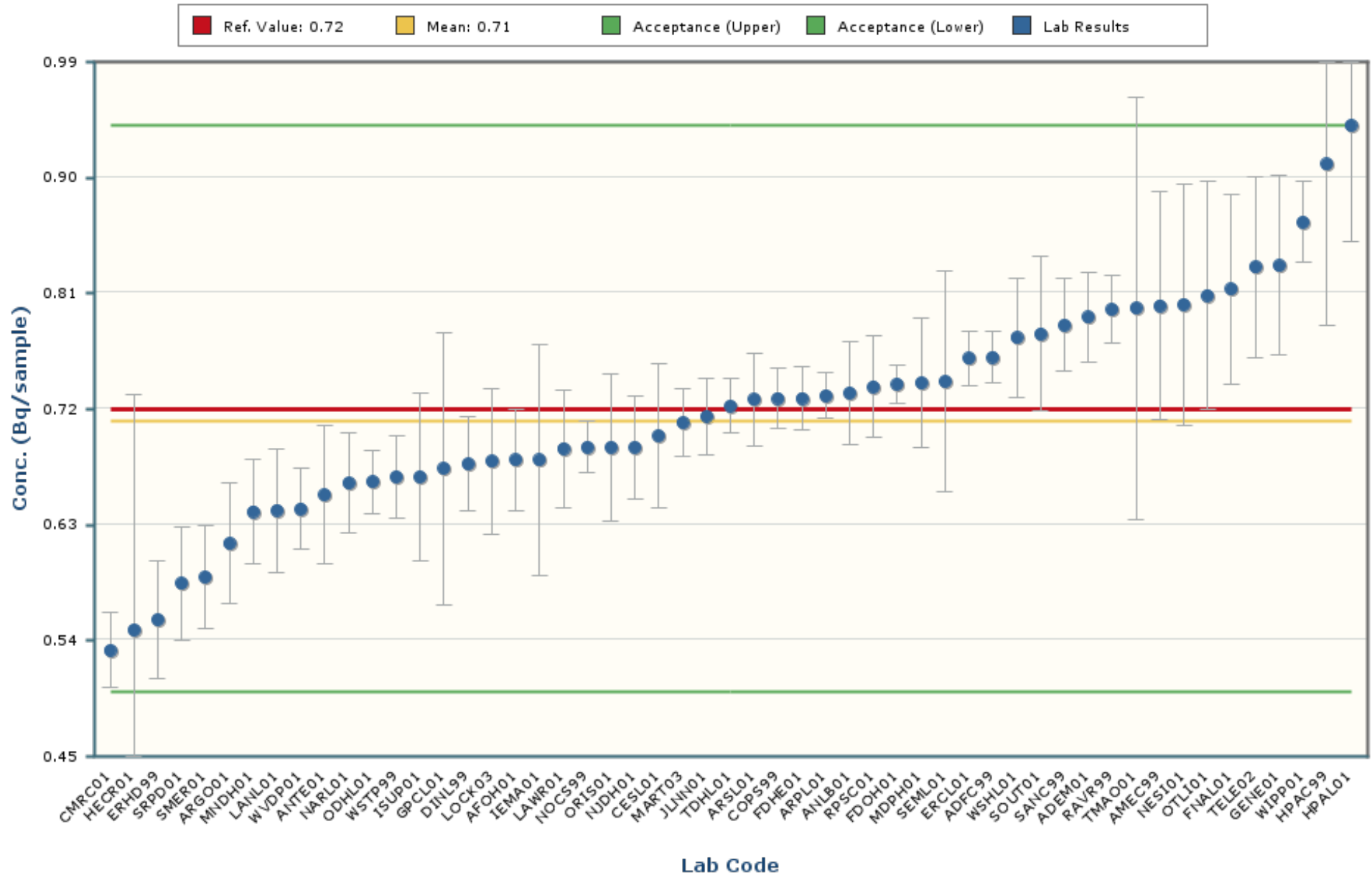
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 0.400 and 1.076 ( $\pm 5$  Standard Deviations).

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

# Cobalt-60

## MAPEP-22-RdF46



### Notes:

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

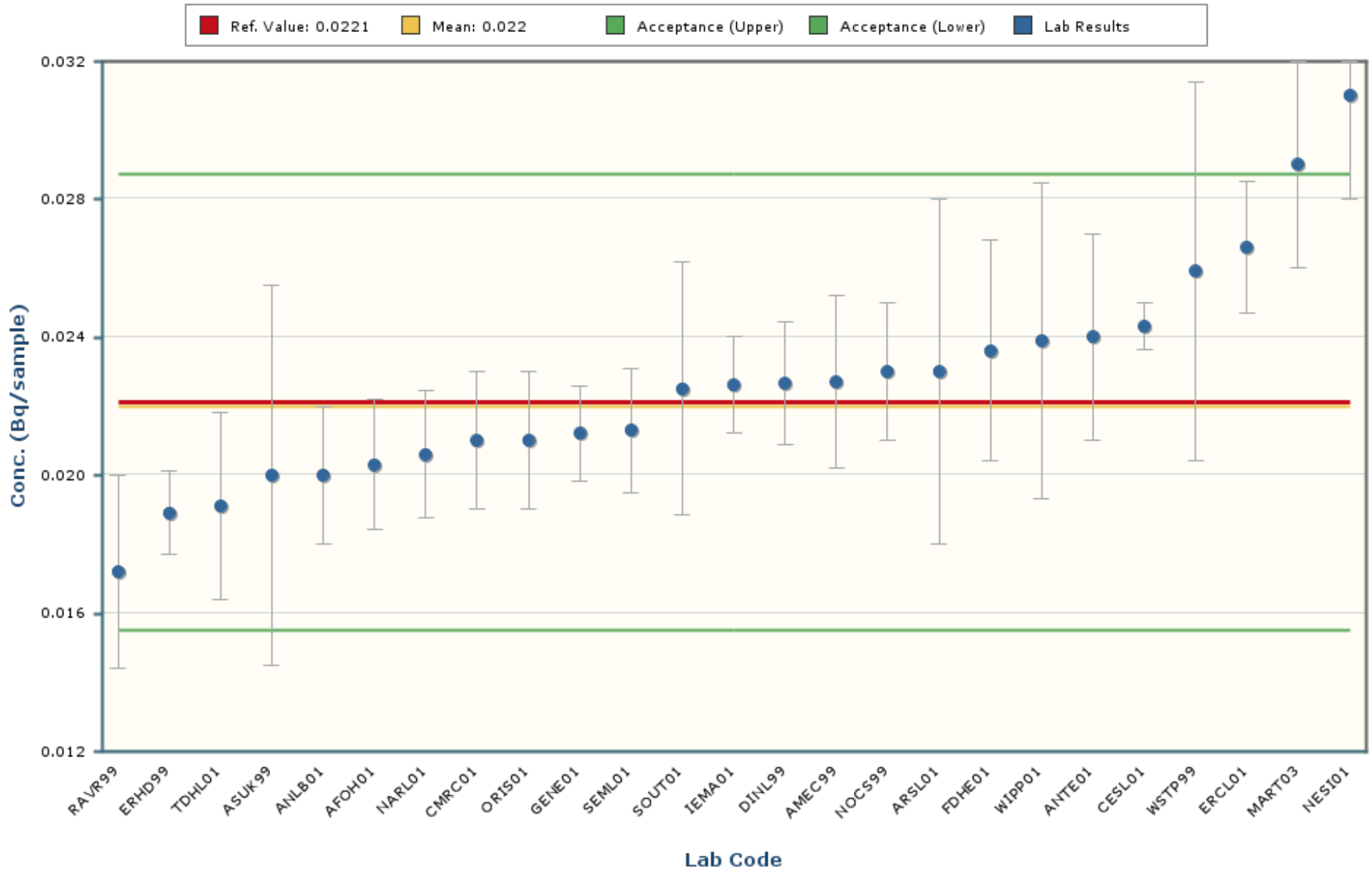
The chart shows only data points with values between 0.31 and 1.12 ( $\pm 5$  Standard Deviations).

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



# Plutonium-238

## MAPEP-22-RdF46



### Notes:

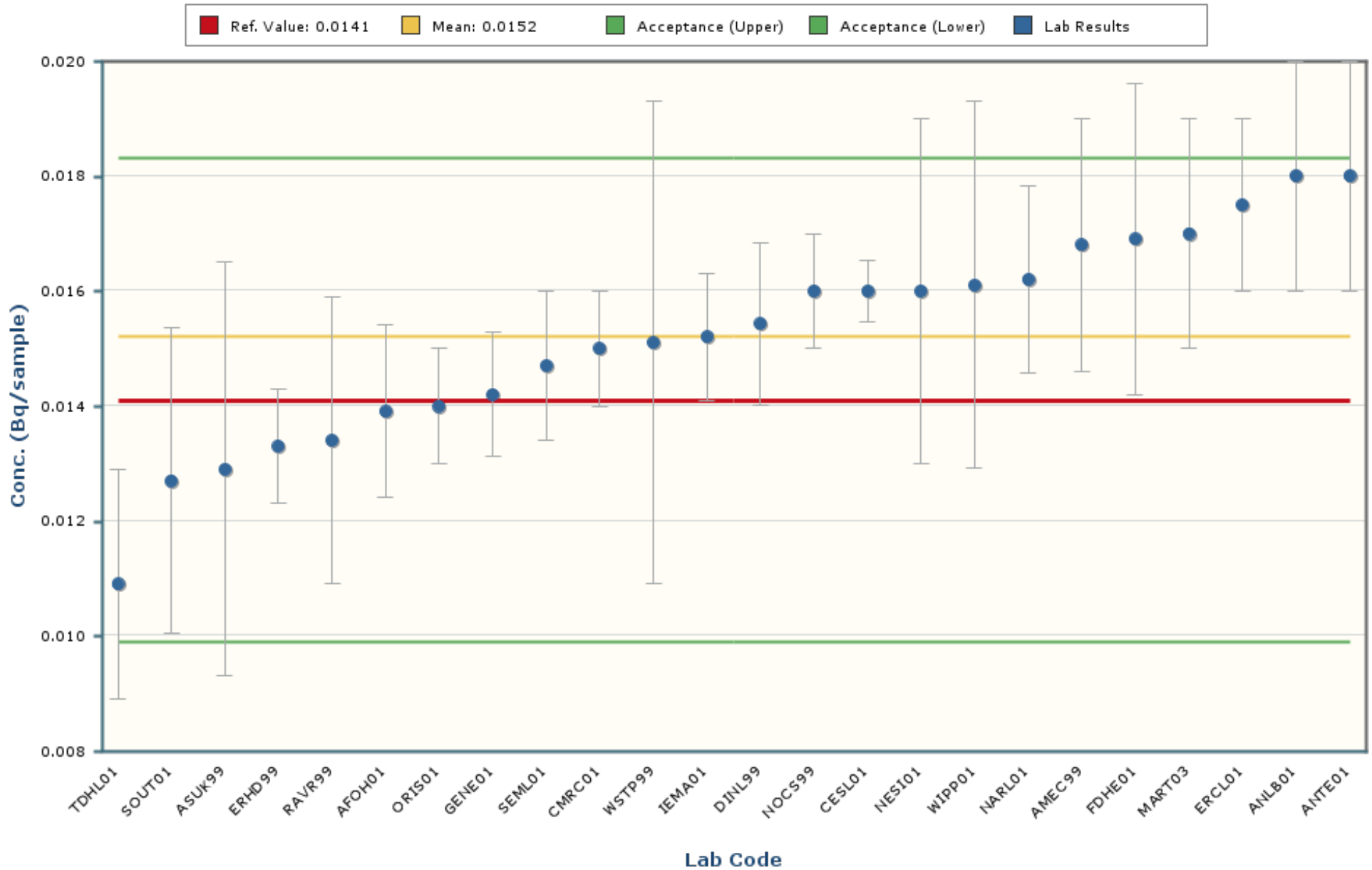
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 0.0107 and 0.0333 ( $\pm 5$  Standard Deviations).

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

# Plutonium-239/240

## MAPEP-22-RdF46



### Notes:

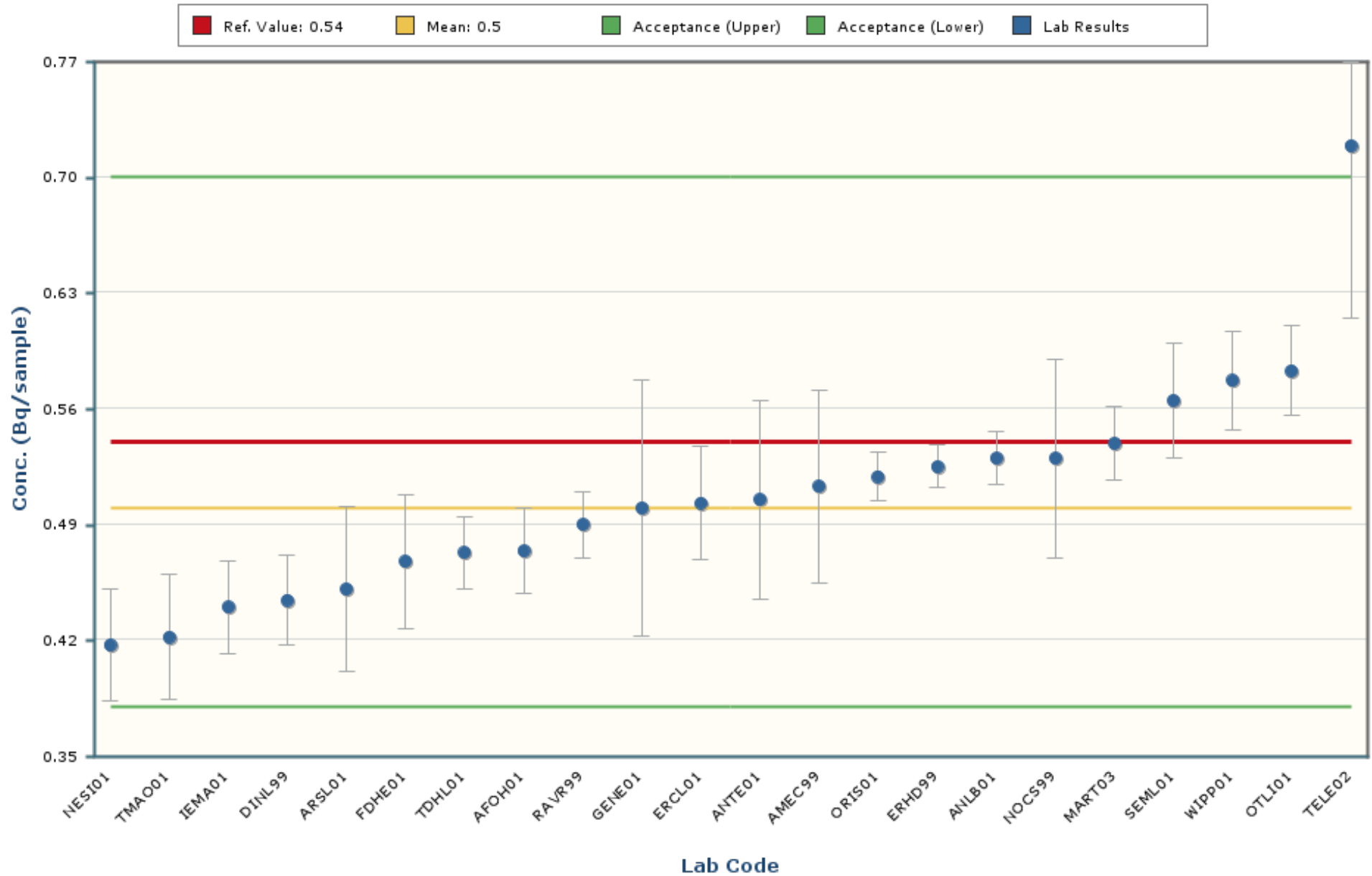
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 0.0062 and 0.0242 ( $\pm 5$  Standard Deviations).

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

# Strontium-90

## MAPEP-22-RdF46



### Notes:

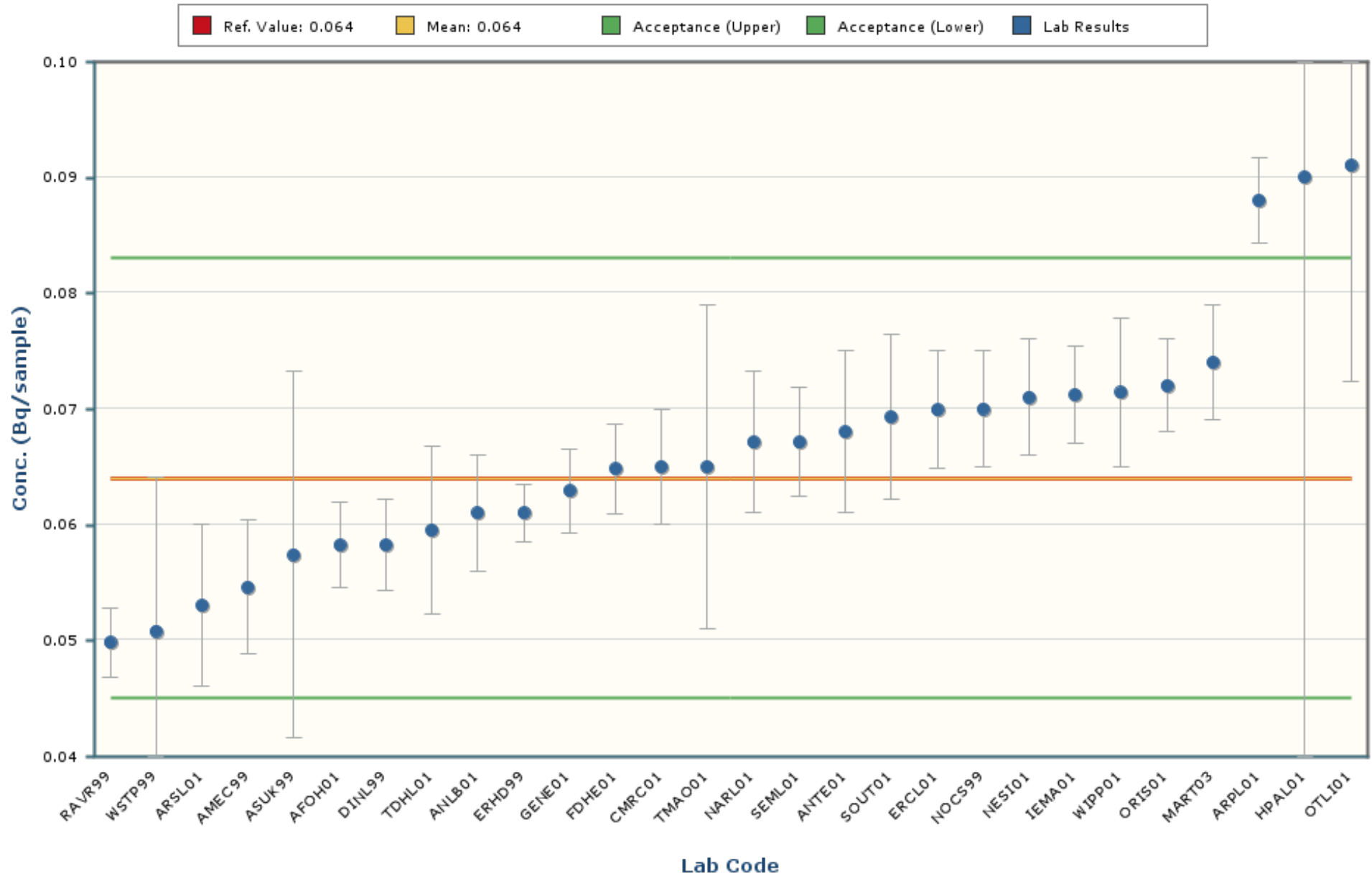
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 0.26 and 0.74 ( $\pm 5$  Standard Deviations).

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

# Uranium-234

## MAPEP-22-RdF46



### Notes:

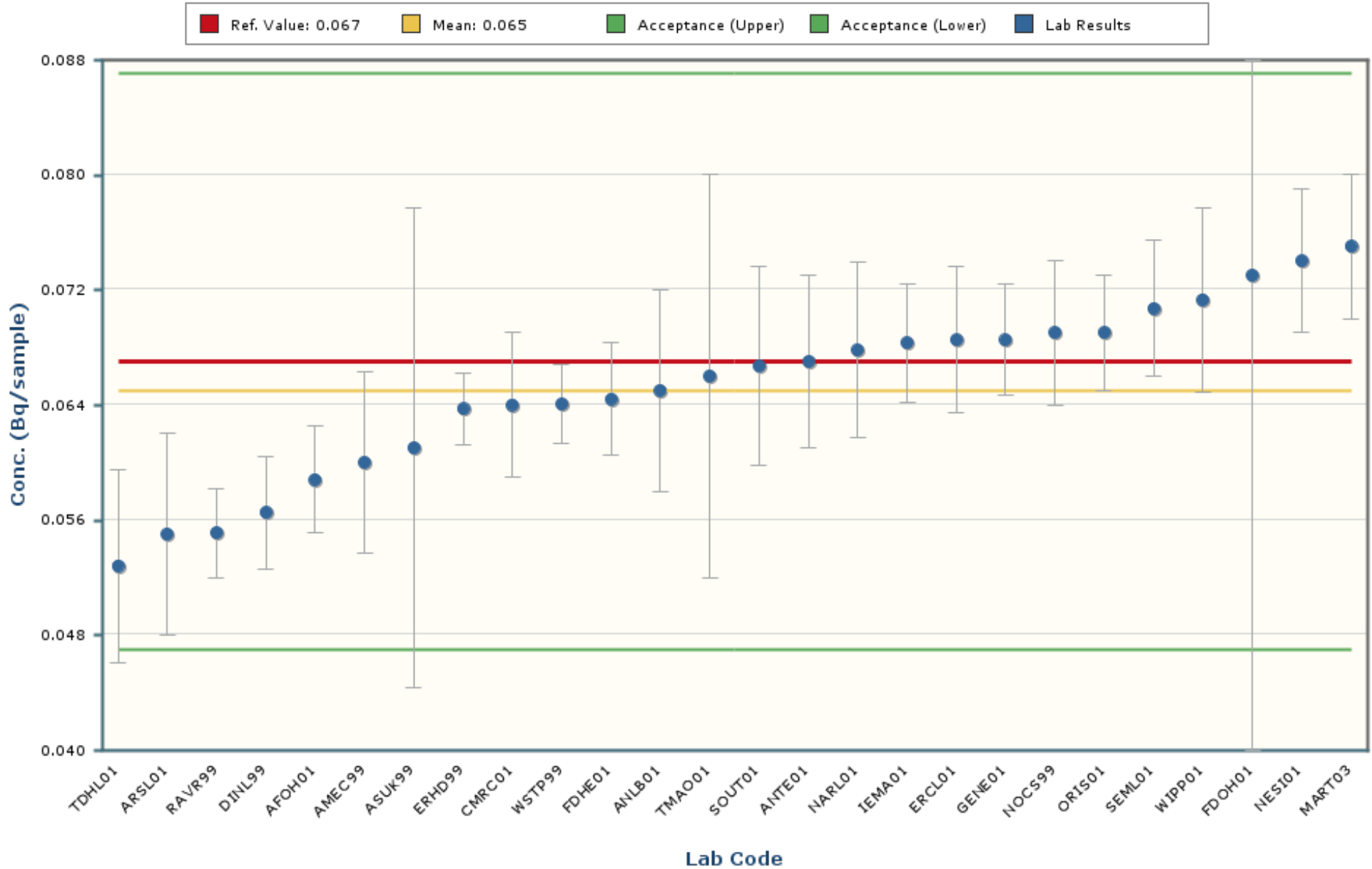
The chart mean excludes values outside of a bias range of  $\pm 30\%$ .

The chart shows only data points with values between 0.028 and 0.099 ( $\pm 5$  Standard Deviations).

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

# Uranium-238

## MAPEP-22-RdF46



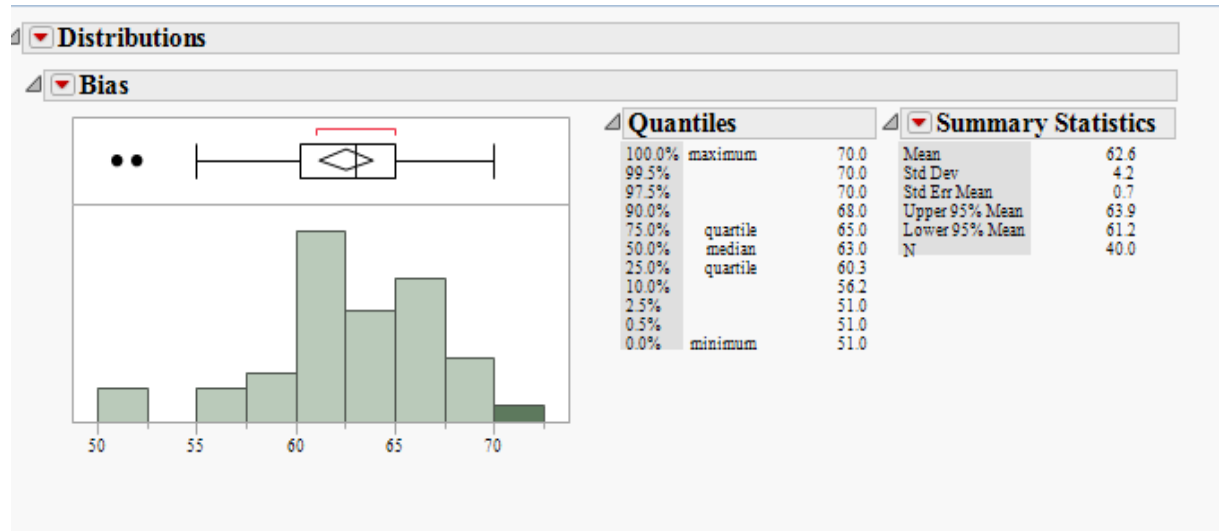
### Notes:

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

The chart shows only data points with values between 0.035 and 0.095 ( $\pm 5$  Standard Deviations).

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

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

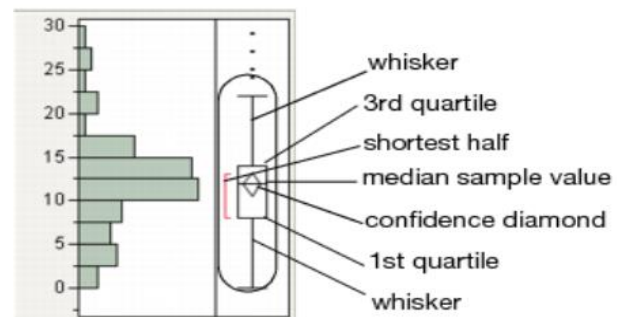


### Outlier Box Plot

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

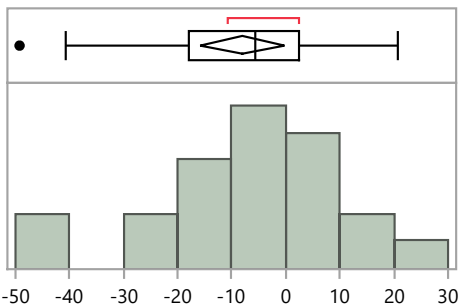


If the data points do not reach the computed ranges, then the whiskers are determined by the upper and lower data point values (not including outliers). The bracket outside of the box identifies the *shortest half*, which is the most dense 50% of the observations (Rousseuw and Leroy 1987).

**RdF Distribution by Detection Method**

**Distributions Analyte\_Detection=Americium-241 Alpha Spectrometry**

**Bias**

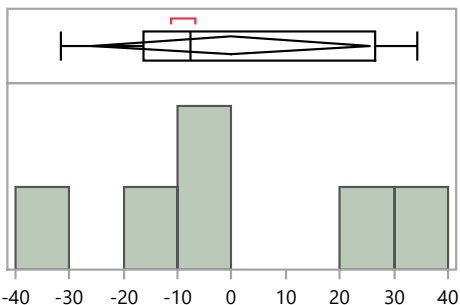


Quantiles		
100.0%	maximum	20.7
99.5%		20.7
97.5%		20.7
90.0%		16.1
75.0%	quartile	2.5
50.0%	median	-5.7
25.0%	quartile	-18.0
10.0%		-37.4
2.5%		-49.2
0.5%		-49.2
0.0%	minimum	-49.2

Summary Statistics	
Mean	-8.1
Std Dev	17.3
Std Err Mean	3.7
Upper 95% Mean	-0.4
Lower 95% Mean	-15.7
N	22.0

**Distributions Analyte\_Detection=Americium-241 Gamma Spectrometry**

**Bias**

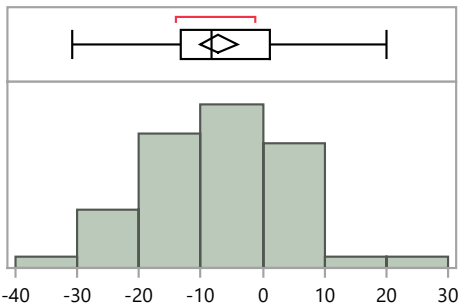


Quantiles		
100.0%	maximum	34.4
99.5%		34.4
97.5%		34.4
90.0%		34.4
75.0%	quartile	26.4
50.0%	median	-7.8
25.0%	quartile	-16.3
10.0%		-31.7
2.5%		-31.7
0.5%		-31.7
0.0%	minimum	-31.7

Summary Statistics	
Mean	-0.1
Std Dev	24.5
Std Err Mean	10.0
Upper 95% Mean	25.6
Lower 95% Mean	-25.7
N	6.0

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

**Bias**



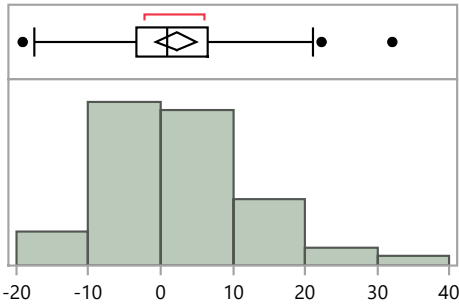
Quantiles		
100.0%	maximum	20.1
99.5%		20.1
97.5%		18.0
90.0%		6.4
75.0%	quartile	1.1
50.0%	median	-8.3
25.0%	quartile	-13.3
10.0%		-22.3
2.5%		-30.0
0.5%		-30.8
0.0%	minimum	-30.8

Summary Statistics	
Mean	-7.1
Std Dev	10.9
Std Err Mean	1.5
Upper 95% Mean	-4.1
Lower 95% Mean	-10.1
N	53.0

**RdF Distribution by Detection Method**

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

**Bias**

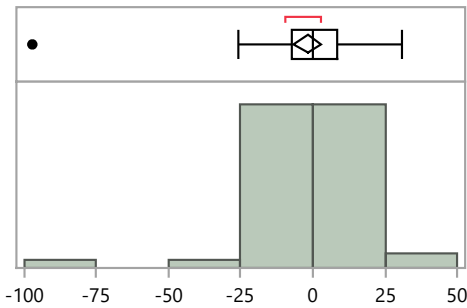


Quantiles		
100.0%	maximum	32.1
99.5%		32.1
97.5%		28.4
90.0%		15.8
75.0%	quartile	6.6
50.0%	median	1.0
25.0%	quartile	-3.4
10.0%		-9.4
2.5%		-18.5
0.5%		-19.1
0.0%	minimum	-19.1

Summary Statistics	
Mean	2.2
Std Dev	10.1
Std Err Mean	1.4
Upper 95% Mean	4.9
Lower 95% Mean	-0.6
N	54.0

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

**Bias**

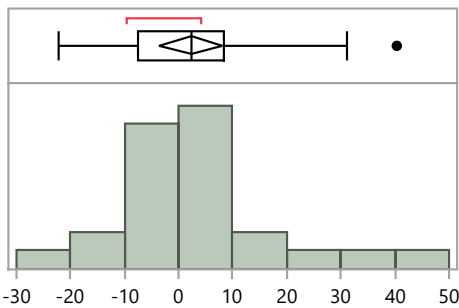


Quantiles		
100.0%	maximum	30.6
99.5%		30.6
97.5%		29.0
90.0%		14.1
75.0%	quartile	8.3
50.0%	median	-0.3
25.0%	quartile	-7.5
10.0%		-18.6
2.5%		-70.5
0.5%		-97.2
0.0%	minimum	-97.2

Summary Statistics	
Mean	-2.0
Std Dev	17.7
Std Err Mean	2.4
Upper 95% Mean	2.9
Lower 95% Mean	-6.8
N	54.0

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

**Bias**



Quantiles		
100.0%	maximum	40.3
99.5%		40.3
97.5%		40.3
90.0%		24.7
75.0%	quartile	8.4
50.0%	median	2.3
25.0%	quartile	-7.5
10.0%		-14.0
2.5%		-22.2
0.5%		-22.2
0.0%	minimum	-22.2

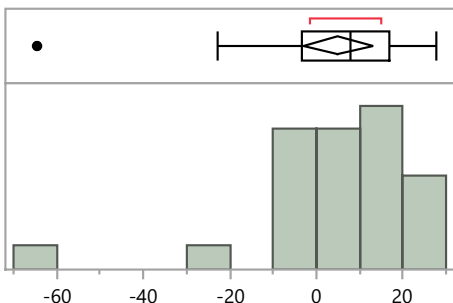
Summary Statistics	
Mean	2.3
Std Dev	14.1
Std Err Mean	2.8
Upper 95% Mean	8.2
Lower 95% Mean	-3.5
N	25.0



**RdF Distribution by Detection Method**

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

**Bias**



**Quantiles**

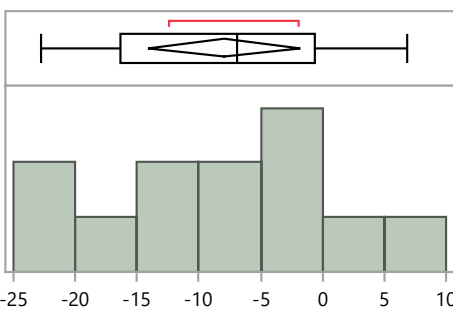
100.0%	maximum	27.7
99.5%		27.7
97.5%		27.7
90.0%		25.5
75.0%	quartile	17.0
50.0%	median	7.8
25.0%	quartile	-3.2
10.0%		-15.0
2.5%		-64.5
0.5%		-64.5
0.0%	minimum	-64.5

**Summary Statistics**

Mean	5.0
Std Dev	19.1
Std Err Mean	3.8
Upper 95% Mean	12.9
Lower 95% Mean	-2.9
N	25.0

**Distributions Analyte\_Detection=Strontium-90 Gas Flow Proportional Counter**

**Bias**



**Quantiles**

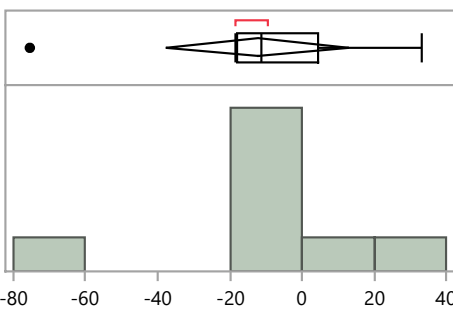
100.0%	maximum	6.9
99.5%		6.9
97.5%		6.9
90.0%		6.2
75.0%	quartile	-0.6
50.0%	median	-7.0
25.0%	quartile	-16.4
10.0%		-22.5
2.5%		-22.8
0.5%		-22.8
0.0%	minimum	-22.8

**Summary Statistics**

Mean	-8.0
Std Dev	9.7
Std Err Mean	2.8
Upper 95% Mean	-1.8
Lower 95% Mean	-14.1
N	12.0

**Distributions Analyte\_Detection=Strontium-90 Gross Alpha/Beta - 2 pi gas flow proportional counter**

**Bias**



**Quantiles**

100.0%	maximum	33.1
99.5%		33.1
97.5%		33.1
90.0%		33.1
75.0%	quartile	4.3
50.0%	median	-11.4
25.0%	quartile	-18.0
10.0%		-75.4
2.5%		-75.4
0.5%		-75.4
0.0%	minimum	-75.4

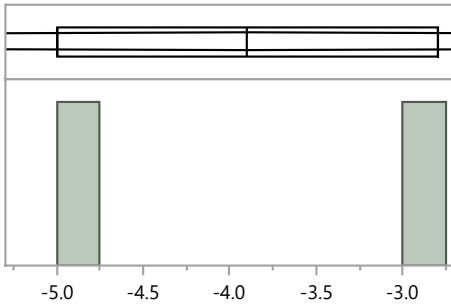
**Summary Statistics**

Mean	-12.4
Std Dev	30.6
Std Err Mean	10.8
Upper 95% Mean	13.2
Lower 95% Mean	-37.9
N	8.0

**RdF Distribution by Detection Method**

**Distributions Analyte\_Detection=Strontium-90 Liquid Scintillation Counter**

**Bias**



**Quantiles**

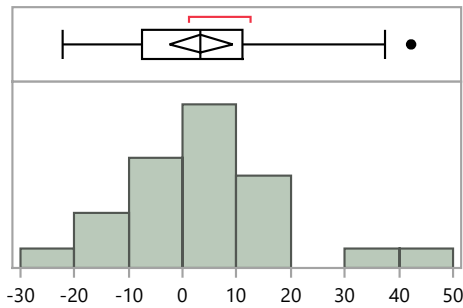
100.0%	maximum	-2.8
99.5%		-2.8
97.5%		-2.8
90.0%		-2.8
75.0%	quartile	-2.8
50.0%	median	-3.9
25.0%	quartile	-5.0
10.0%		-5.0
2.5%		-5.0
0.5%		-5.0
0.0%	minimum	-5.0

**Summary Statistics**

Mean	-3.9
Std Dev	1.6
Std Err Mean	1.1
Upper 95% Mean	10.1
Lower 95% Mean	-17.9
N	2.0

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

**Bias**



**Quantiles**

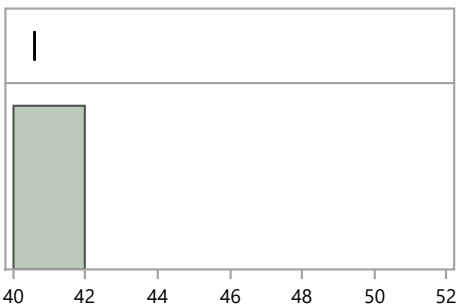
100.0%	maximum	42.2
99.5%		42.2
97.5%		42.2
90.0%		22.2
75.0%	quartile	11.0
50.0%	median	3.2
25.0%	quartile	-7.5
10.0%		-15.5
2.5%		-22.2
0.5%		-22.2
0.0%	minimum	-22.2

**Summary Statistics**

Mean	3.4
Std Dev	14.7
Std Err Mean	2.9
Upper 95% Mean	9.3
Lower 95% Mean	-2.5
N	26.0

**Distributions Analyte\_Detection=Uranium-234 Gamma Spectrometry**

**Bias**



**Quantiles**

100.0%	maximum	40.6
99.5%		40.6
97.5%		40.6
90.0%		40.6
75.0%	quartile	40.6
50.0%	median	40.6
25.0%	quartile	40.6
10.0%		40.6
2.5%		40.6
0.5%		40.6
0.0%	minimum	40.6

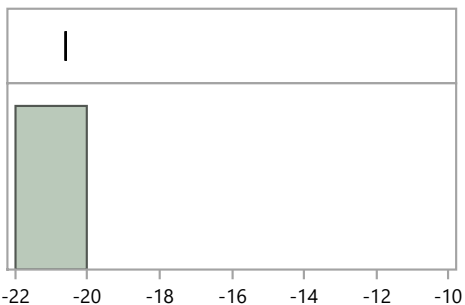
**Summary Statistics**

Mean	40.6
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

**RdF Distribution by Detection Method**

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

**Bias**



**Quantiles**

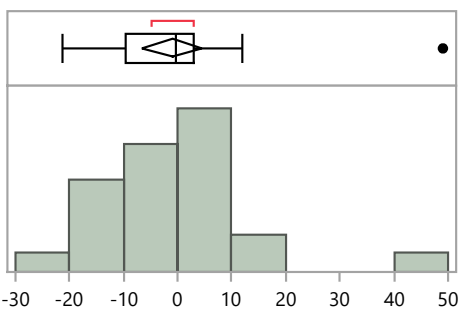
100.0%	maximum	-20.6
99.5%		-20.6
97.5%		-20.6
90.0%		-20.6
75.0%	quartile	-20.6
50.0%	median	-20.6
25.0%	quartile	-20.6
10.0%		-20.6
2.5%		-20.6
0.5%		-20.6
0.0%	minimum	-20.6

**Summary Statistics**

Mean	-20.6
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

**Bias**



**Quantiles**

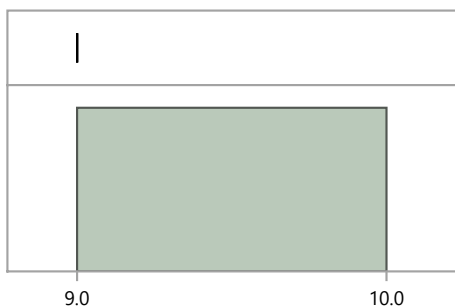
100.0%	maximum	49.0
99.5%		49.0
97.5%		49.0
90.0%		11.0
75.0%	quartile	3.0
50.0%	median	-0.4
25.0%	quartile	-9.7
10.0%		-17.8
2.5%		-21.2
0.5%		-21.2
0.0%	minimum	-21.2

**Summary Statistics**

Mean	-1.0
Std Dev	13.6
Std Err Mean	2.7
Upper 95% Mean	4.6
Lower 95% Mean	-6.7
N	25.0

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

**Bias**



**Quantiles**

100.0%	maximum	9.0
99.5%		9.0
97.5%		9.0
90.0%		9.0
75.0%	quartile	9.0
50.0%	median	9.0
25.0%	quartile	9.0
10.0%		9.0
2.5%		9.0
0.5%		9.0
0.0%	minimum	9.0

**Summary Statistics**

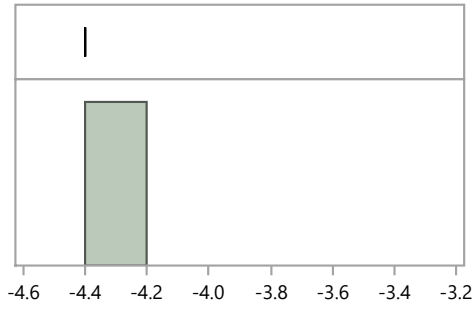
Mean	9.0
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

RdF46 Distribution by Detection Method

**RdF Distribution by Detection Method**

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

**Bias**



**Quantiles**

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

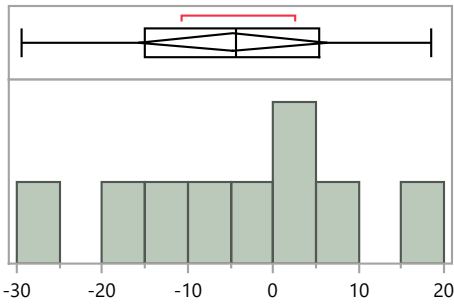
**Summary Statistics**

Mean	-4.4
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

**RdF Distribution by Prep Method**

**Distributions Analyte\_Method=Americium-241 Acid dissolution with hydrofluoric acid**

**Bias**



**Quantiles**

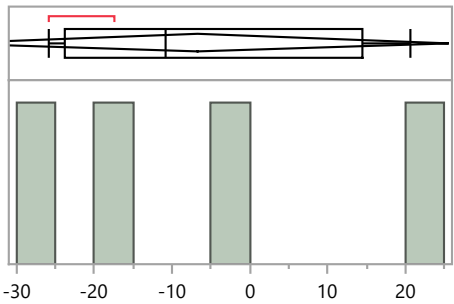
100.0%	maximum	18.5
99.5%		18.5
97.5%		18.5
90.0%		18.5
75.0%	quartile	5.4
50.0%	median	-4.3
25.0%	quartile	-15.1
10.0%		-29.4
2.5%		-29.4
0.5%		-29.4
0.0%	minimum	-29.4

**Summary Statistics**

Mean	-4.7
Std Dev	14.4
Std Err Mean	4.8
Upper 95% Mean	6.4
Lower 95% Mean	-15.7
N	9.0

**Distributions Analyte\_Method=Americium-241 Acid leaching without hydrofluoric acid**

**Bias**



**Quantiles**

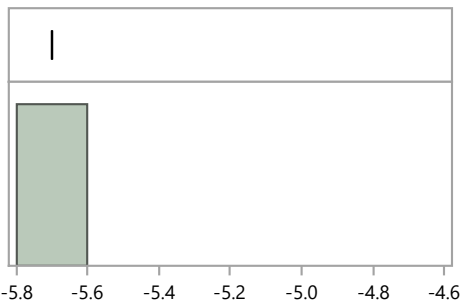
100.0%	maximum	20.7
99.5%		20.7
97.5%		20.7
90.0%		20.7
75.0%	quartile	14.5
50.0%	median	-10.8
25.0%	quartile	-23.7
10.0%		-25.8
2.5%		-25.8
0.5%		-25.8
0.0%	minimum	-25.8

**Summary Statistics**

Mean	-6.7
Std Dev	20.3
Std Err Mean	10.2
Upper 95% Mean	25.7
Lower 95% Mean	-39.0
N	4.0

**Distributions Analyte\_Method=Americium-241 Coprecipitation, acidified**

**Bias**



**Quantiles**

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

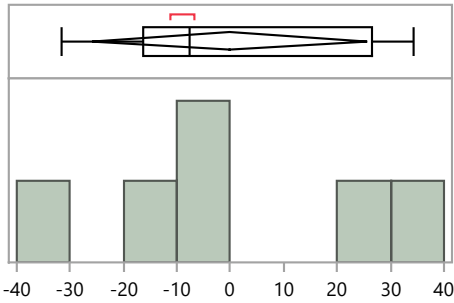
**Summary Statistics**

Mean	-5.7
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

**RdF Distribution by Prep Method**

**Distributions Analyte\_Method=Americium-241 No preparation - analyzed as received**

**Bias**



**Quantiles**

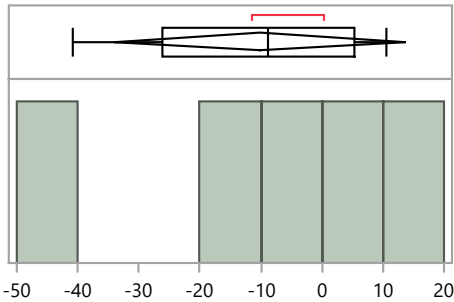
100.0%	maximum	34.4
99.5%		34.4
97.5%		34.4
90.0%		34.4
75.0%	quartile	26.4
50.0%	median	-7.8
25.0%	quartile	-16.3
10.0%		-31.7
2.5%		-31.7
0.5%		-31.7
0.0%	minimum	-31.7

**Summary Statistics**

Mean	-0.1
Std Dev	24.5
Std Err Mean	10.0
Upper 95% Mean	25.6
Lower 95% Mean	-25.7
N	6.0

**Distributions Analyte\_Method=Americium-241 Other**

**Bias**



**Quantiles**

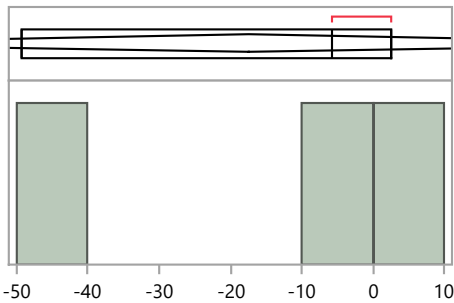
100.0%	maximum	10.5
99.5%		10.5
97.5%		10.5
90.0%		10.5
75.0%	quartile	5.4
50.0%	median	-8.9
25.0%	quartile	-26.1
10.0%		-40.8
2.5%		-40.8
0.5%		-40.8
0.0%	minimum	-40.8

**Summary Statistics**

Mean	-10.1
Std Dev	19.2
Std Err Mean	8.6
Upper 95% Mean	13.8
Lower 95% Mean	-33.9
N	5.0

**Distributions Analyte\_Method=Americium-241 Total dissolution by fusion**

**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	-5.7
25.0%	quartile	-49.2
10.0%		-49.2
2.5%		-49.2
0.5%		-49.2
0.0%	minimum	-49.2

**Summary Statistics**

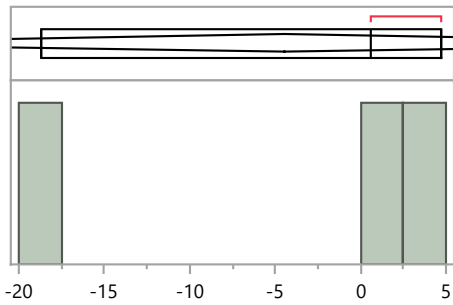
Mean	-17.5
Std Dev	27.8
Std Err Mean	16.0
Upper 95% Mean	51.6
Lower 95% Mean	-86.5
N	3.0

RdF46 Distribution by Preparation Method

**RdF Distribution by Prep Method**

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

**Bias**



**Quantiles**

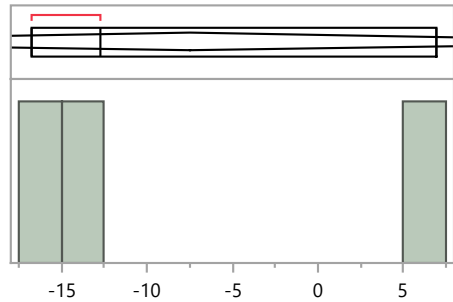
100.0%	maximum	4.7
99.5%		4.7
97.5%		4.7
90.0%		4.7
75.0%	quartile	4.7
50.0%	median	0.6
25.0%	quartile	-18.7
10.0%		-18.7
2.5%		-18.7
0.5%		-18.7
0.0%	minimum	-18.7

**Summary Statistics**

Mean	-4.5
Std Dev	12.5
Std Err Mean	7.2
Upper 95% Mean	26.6
Lower 95% Mean	-35.5
N	3.0

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

**Bias**



**Quantiles**

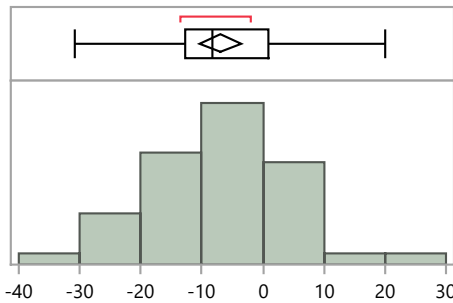
100.0%	maximum	6.9
99.5%		6.9
97.5%		6.9
90.0%		6.9
75.0%	quartile	6.9
50.0%	median	-12.7
25.0%	quartile	-16.7
10.0%		-16.7
2.5%		-16.7
0.5%		-16.7
0.0%	minimum	-16.7

**Summary Statistics**

Mean	-7.5
Std Dev	12.6
Std Err Mean	7.3
Upper 95% Mean	23.9
Lower 95% Mean	-38.9
N	3.0

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

**Bias**



**Quantiles**

100.0%	maximum	20.1
99.5%		20.1
97.5%		19.2
90.0%		6.4
75.0%	quartile	1.0
50.0%	median	-8.3
25.0%	quartile	-12.9
10.0%		-23.6
2.5%		-30.5
0.5%		-30.8
0.0%	minimum	-30.8

**Summary Statistics**

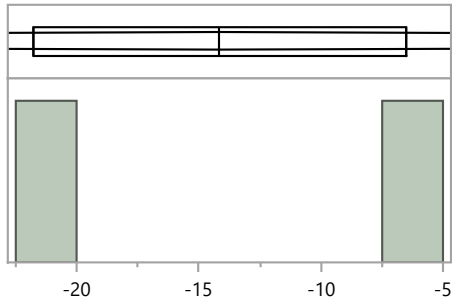
Mean	-6.9
Std Dev	11.0
Std Err Mean	1.6
Upper 95% Mean	-3.6
Lower 95% Mean	-10.2
N	45.0

RdF46 Distribution by Preparation Method

**RdF Distribution by Prep Method**

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

**Bias**



**Quantiles**

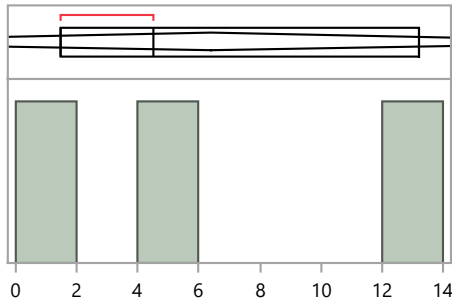
100.0%	maximum	-6.5
99.5%		-6.5
97.5%		-6.5
90.0%		-6.5
75.0%	quartile	-6.5
50.0%	median	-14.2
25.0%	quartile	-21.8
10.0%		-21.8
2.5%		-21.8
0.5%		-21.8
0.0%	minimum	-21.8

**Summary Statistics**

Mean	-14.2
Std Dev	10.8
Std Err Mean	7.7
Upper 95% Mean	83.1
Lower 95% Mean	-111.4
N	2.0

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

**Bias**



**Quantiles**

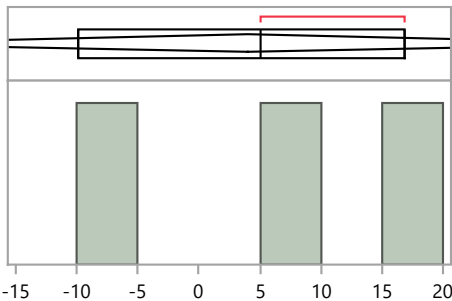
100.0%	maximum	13.2
99.5%		13.2
97.5%		13.2
90.0%		13.2
75.0%	quartile	13.2
50.0%	median	4.5
25.0%	quartile	1.5
10.0%		1.5
2.5%		1.5
0.5%		1.5
0.0%	minimum	1.5

**Summary Statistics**

Mean	6.4
Std Dev	6.1
Std Err Mean	3.5
Upper 95% Mean	21.5
Lower 95% Mean	-8.7
N	3.0

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

**Bias**



**Quantiles**

100.0%	maximum	16.9
99.5%		16.9
97.5%		16.9
90.0%		16.9
75.0%	quartile	16.9
50.0%	median	5.1
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	4.0
Std Dev	13.4
Std Err Mean	7.8
Upper 95% Mean	37.4
Lower 95% Mean	-29.3
N	3.0

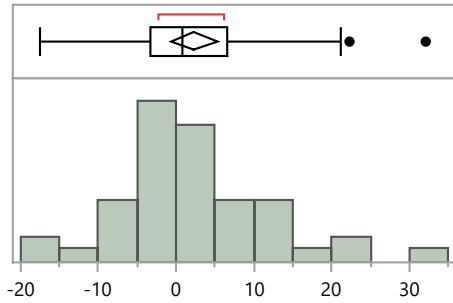


RdF46 Distribution by Preparation Method

**RdF Distribution by Prep Method**

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

**Bias**



**Quantiles**

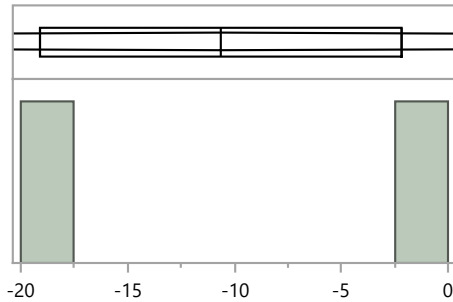
100.0%	maximum	32.1
99.5%		32.1
97.5%		30.4
90.0%		16.2
75.0%	quartile	6.6
50.0%	median	0.9
25.0%	quartile	-3.4
10.0%		-8.7
2.5%		-17.2
0.5%		-17.4
0.0%	minimum	-17.4

**Summary Statistics**

Mean	2.3
Std Dev	9.9
Std Err Mean	1.5
Upper 95% Mean	5.3
Lower 95% Mean	-0.6
N	46.0

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

**Bias**



**Quantiles**

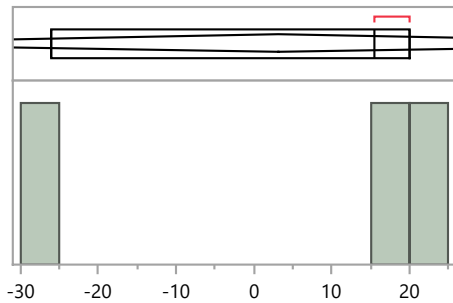
100.0%	maximum	-2.2
99.5%		-2.2
97.5%		-2.2
90.0%		-2.2
75.0%	quartile	-2.2
50.0%	median	-10.7
25.0%	quartile	-19.1
10.0%		-19.1
2.5%		-19.1
0.5%		-19.1
0.0%	minimum	-19.1

**Summary Statistics**

Mean	-10.7
Std Dev	12.0
Std Err Mean	8.5
Upper 95% Mean	96.7
Lower 95% Mean	-118.0
N	2.0

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

**Bias**



**Quantiles**

100.0%	maximum	20.1
99.5%		20.1
97.5%		20.1
90.0%		20.1
75.0%	quartile	20.1
50.0%	median	15.4
25.0%	quartile	-26.1
10.0%		-26.1
2.5%		-26.1
0.5%		-26.1
0.0%	minimum	-26.1

**Summary Statistics**

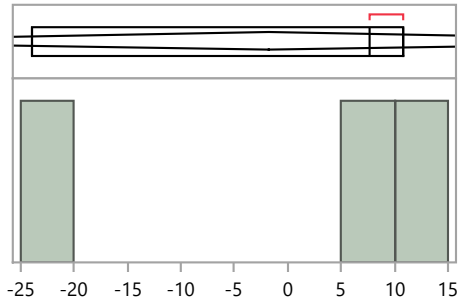
Mean	3.1
Std Dev	25.4
Std Err Mean	14.7
Upper 95% Mean	66.3
Lower 95% Mean	-60.0
N	3.0

RdF46 Distribution by Preparation Method

**RdF Distribution by Prep Method**

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

**Bias**



**Quantiles**

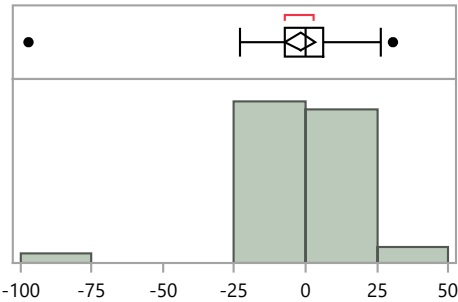
100.0%	maximum	10.8
99.5%		10.8
97.5%		10.8
90.0%		10.8
75.0%	quartile	10.8
50.0%	median	7.6
25.0%	quartile	-23.9
10.0%		-23.9
2.5%		-23.9
0.5%		-23.9
0.0%	minimum	-23.9

**Summary Statistics**

Mean	-1.8
Std Dev	19.2
Std Err Mean	11.1
Upper 95% Mean	45.8
Lower 95% Mean	-49.5
N	3.0

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

**Bias**



**Quantiles**

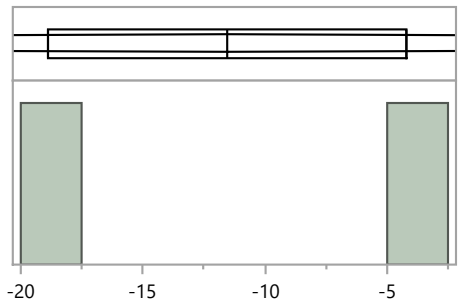
100.0%	maximum	30.6
99.5%		30.6
97.5%		29.9
90.0%		12.4
75.0%	quartile	6.2
50.0%	median	-0.3
25.0%	quartile	-7.4
10.0%		-12.2
2.5%		-84.2
0.5%		-97.2
0.0%	minimum	-97.2

**Summary Statistics**

Mean	-1.9
Std Dev	17.7
Std Err Mean	2.6
Upper 95% Mean	3.4
Lower 95% Mean	-7.2
N	46.0

**Distributions Analyte\_Method=Cobalt-60 Other**

**Bias**



**Quantiles**

100.0%	maximum	-4.2
99.5%		-4.2
97.5%		-4.2
90.0%		-4.2
75.0%	quartile	-4.2
50.0%	median	-11.6
25.0%	quartile	-18.9
10.0%		-18.9
2.5%		-18.9
0.5%		-18.9
0.0%	minimum	-18.9

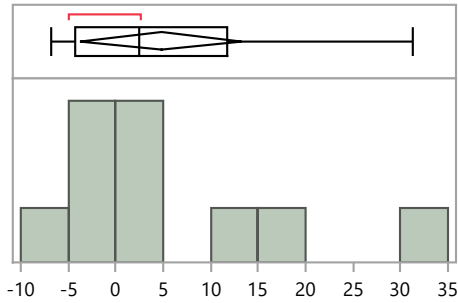
**Summary Statistics**

Mean	-11.6
Std Dev	10.4
Std Err Mean	7.4
Upper 95% Mean	81.8
Lower 95% Mean	-104.9
N	2.0

**RdF Distribution by Prep Method**

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

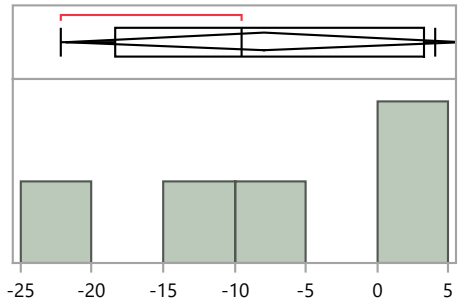
**Bias**



Quantiles		Summary Statistics		
100.0%	maximum	31.2	Mean	4.8
99.5%		31.2	Std Dev	11.9
97.5%		31.2	Std Err Mean	3.8
90.0%		29.8	Upper 95% Mean	13.3
75.0%	quartile	11.8	Lower 95% Mean	-3.7
50.0%	median	2.5	N	10.0
25.0%	quartile	-4.3		
10.0%		-6.6		
2.5%		-6.8		
0.5%		-6.8		
0.0%	minimum	-6.8		

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

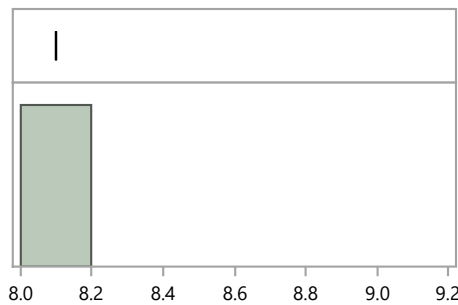
**Bias**



Quantiles		Summary Statistics		
100.0%	maximum	4.1	Mean	-7.9
99.5%		4.1	Std Dev	11.2
97.5%		4.1	Std Err Mean	5.0
90.0%		4.1	Upper 95% Mean	6.0
75.0%	quartile	3.3	Lower 95% Mean	-21.8
50.0%	median	-9.5	N	5.0
25.0%	quartile	-18.4		
10.0%		-22.2		
2.5%		-22.2		
0.5%		-22.2		
0.0%	minimum	-22.2		

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

**Bias**



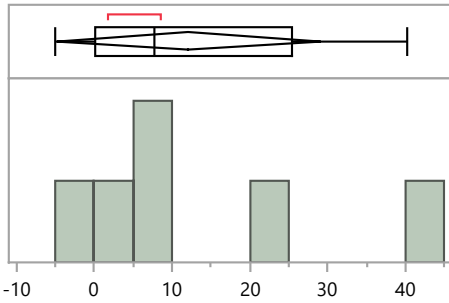
Quantiles		Summary Statistics		
100.0%	maximum	8.1	Mean	8.1
99.5%		8.1	Std Dev	.
97.5%		8.1	Std Err Mean	.
90.0%		8.1	Upper 95% Mean	.
75.0%	quartile	8.1	Lower 95% Mean	.
50.0%	median	8.1	N	1.0
25.0%	quartile	8.1		
10.0%		8.1		
2.5%		8.1		
0.5%		8.1		
0.0%	minimum	8.1		

RdF46 Distribution by Preparation Method

**RdF Distribution by Prep Method**

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

**Bias**



**Quantiles**

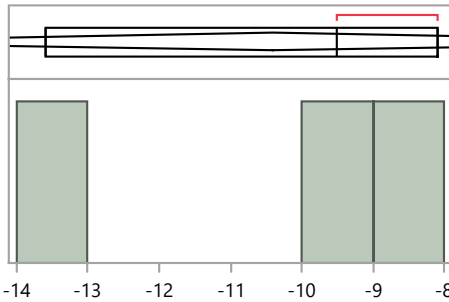
100.0%	maximum	40.3
99.5%		40.3
97.5%		40.3
90.0%		40.3
75.0%	quartile	25.4
50.0%	median	7.7
25.0%	quartile	0.1
10.0%		-5.0
2.5%		-5.0
0.5%		-5.0
0.0%	minimum	-5.0

**Summary Statistics**

Mean	12.2
Std Dev	16.1
Std Err Mean	6.6
Upper 95% Mean	29.1
Lower 95% Mean	-4.8
N	6.0

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

**Bias**



**Quantiles**

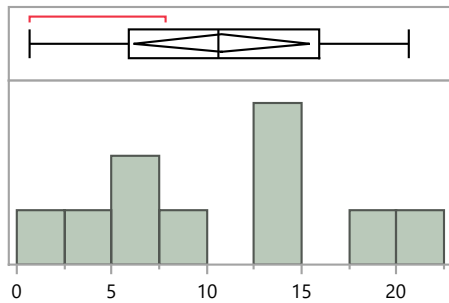
100.0%	maximum	-8.1
99.5%		-8.1
97.5%		-8.1
90.0%		-8.1
75.0%	quartile	-8.1
50.0%	median	-9.5
25.0%	quartile	-13.6
10.0%		-13.6
2.5%		-13.6
0.5%		-13.6
0.0%	minimum	-13.6

**Summary Statistics**

Mean	-10.4
Std Dev	2.9
Std Err Mean	1.7
Upper 95% Mean	-3.3
Lower 95% Mean	-17.5
N	3.0

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

**Bias**



**Quantiles**

100.0%	maximum	20.6
99.5%		20.6
97.5%		20.6
90.0%		20.5
75.0%	quartile	16.0
50.0%	median	10.7
25.0%	quartile	5.9
10.0%		1.1
2.5%		0.7
0.5%		0.7
0.0%	minimum	0.7

**Summary Statistics**

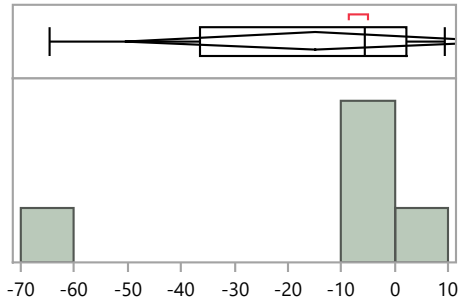
Mean	10.8
Std Dev	6.5
Std Err Mean	2.1
Upper 95% Mean	15.5
Lower 95% Mean	6.1
N	10.0

RdF46 Distribution by Preparation Method

**RdF Distribution by Prep Method**

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

**Bias**



**Quantiles**

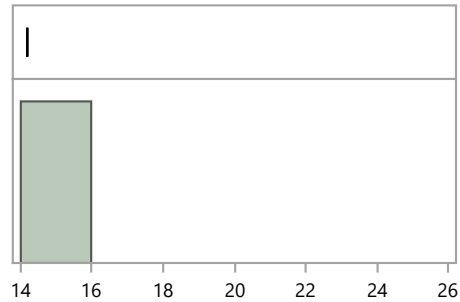
100.0%	maximum	9.4
99.5%		9.4
97.5%		9.4
90.0%		9.4
75.0%	quartile	2.2
50.0%	median	-5.7
25.0%	quartile	-36.5
10.0%		-64.5
2.5%		-64.5
0.5%		-64.5
0.0%	minimum	-64.5

**Summary Statistics**

Mean	-14.9
Std Dev	28.6
Std Err Mean	12.8
Upper 95% Mean	20.7
Lower 95% Mean	-50.4
N	5.0

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

**Bias**



**Quantiles**

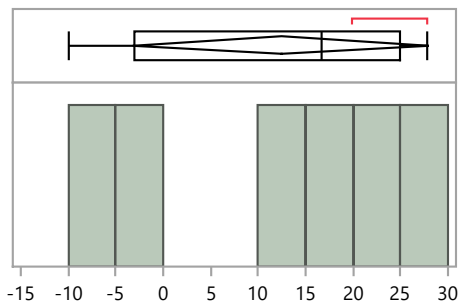
100.0%	maximum	14.2
99.5%		14.2
97.5%		14.2
90.0%		14.2
75.0%	quartile	14.2
50.0%	median	14.2
25.0%	quartile	14.2
10.0%		14.2
2.5%		14.2
0.5%		14.2
0.0%	minimum	14.2

**Summary Statistics**

Mean	14.2
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

**Bias**



**Quantiles**

100.0%	maximum	27.7
99.5%		27.7
97.5%		27.7
90.0%		27.7
75.0%	quartile	25.0
50.0%	median	16.7
25.0%	quartile	-3.0
10.0%		-9.9
2.5%		-9.9
0.5%		-9.9
0.0%	minimum	-9.9

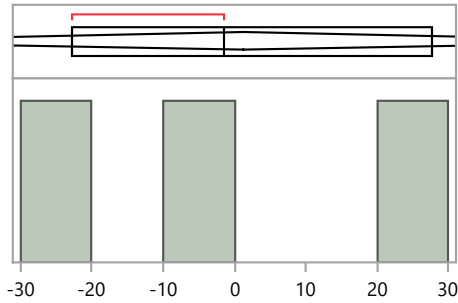
**Summary Statistics**

Mean	12.4
Std Dev	14.8
Std Err Mean	6.0
Upper 95% Mean	28.0
Lower 95% Mean	-3.1
N	6.0

**RdF Distribution by Prep Method**

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

**Bias**



**Quantiles**

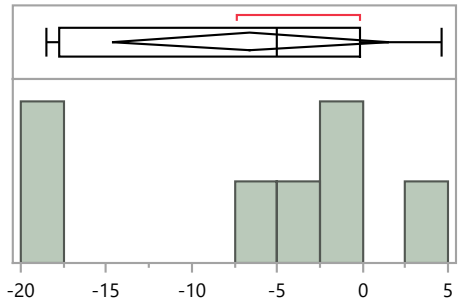
100.0%	maximum	27.7
99.5%		27.7
97.5%		27.7
90.0%		27.7
75.0%	quartile	27.7
50.0%	median	-1.4
25.0%	quartile	-22.7
10.0%		-22.7
2.5%		-22.7
0.5%		-22.7
0.0%	minimum	-22.7

**Summary Statistics**

Mean	1.2
Std Dev	25.3
Std Err Mean	14.6
Upper 95% Mean	64.0
Lower 95% Mean	-61.6
N	3.0

**Distributions Analyte\_Method=Strontium-90 Acid dissolution with hydrofluoric acid**

**Bias**



**Quantiles**

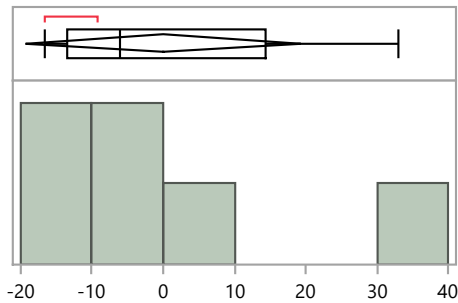
100.0%	maximum	4.6
99.5%		4.6
97.5%		4.6
90.0%		4.6
75.0%	quartile	-0.2
50.0%	median	-5.0
25.0%	quartile	-17.7
10.0%		-18.5
2.5%		-18.5
0.5%		-18.5
0.0%	minimum	-18.5

**Summary Statistics**

Mean	-6.6
Std Dev	8.7
Std Err Mean	3.3
Upper 95% Mean	1.5
Lower 95% Mean	-14.7
N	7.0

**Distributions Analyte\_Method=Strontium-90 Acid leaching without hydrofluoric acid**

**Bias**



**Quantiles**

100.0%	maximum	33.1
99.5%		33.1
97.5%		33.1
90.0%		33.1
75.0%	quartile	14.3
50.0%	median	-6.1
25.0%	quartile	-13.4
10.0%		-16.5
2.5%		-16.5
0.5%		-16.5
0.0%	minimum	-16.5

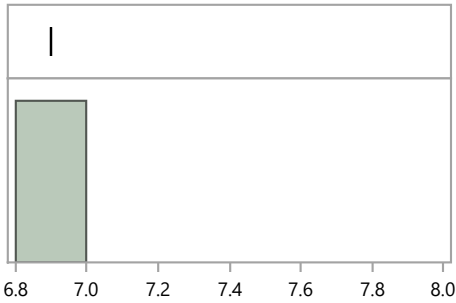
**Summary Statistics**

Mean	0.0
Std Dev	18.3
Std Err Mean	7.5
Upper 95% Mean	19.3
Lower 95% Mean	-19.2
N	6.0

**RdF Distribution by Prep Method**

**Distributions Analyte\_Method=Strontium-90 Coprecipitation, acidified**

**Bias**



**Quantiles**

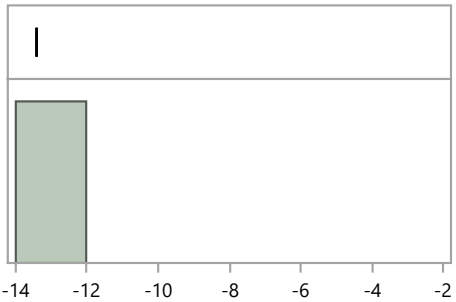
100.0%	maximum	6.9
99.5%		6.9
97.5%		6.9
90.0%		6.9
75.0%	quartile	6.9
50.0%	median	6.9
25.0%	quartile	6.9
10.0%		6.9
2.5%		6.9
0.5%		6.9
0.0%	minimum	6.9

**Summary Statistics**

Mean	6.9
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

**Distributions Analyte\_Method=Strontium-90 EPA 905, Radioactive Strontium, 600/4-80-032**

**Bias**



**Quantiles**

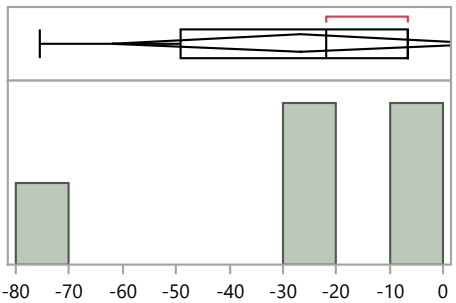
100.0%	maximum	-13.4
99.5%		-13.4
97.5%		-13.4
90.0%		-13.4
75.0%	quartile	-13.4
50.0%	median	-13.4
25.0%	quartile	-13.4
10.0%		-13.4
2.5%		-13.4
0.5%		-13.4
0.0%	minimum	-13.4

**Summary Statistics**

Mean	-13.4
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

**Distributions Analyte\_Method=Strontium-90 Other**

**Bias**



**Quantiles**

100.0%	maximum	-6.5
99.5%		-6.5
97.5%		-6.5
90.0%		-6.5
75.0%	quartile	-6.7
50.0%	median	-21.9
25.0%	quartile	-49.1
10.0%		-75.4
2.5%		-75.4
0.5%		-75.4
0.0%	minimum	-75.4

**Summary Statistics**

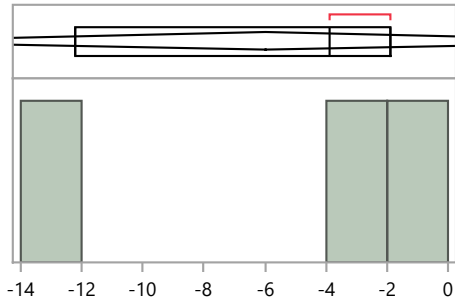
Mean	-26.7
Std Dev	28.3
Std Err Mean	12.7
Upper 95% Mean	8.5
Lower 95% Mean	-61.9
N	5.0

RdF46 Distribution by Preparation Method

**RdF Distribution by Prep Method**

**Distributions Analyte\_Method=Strontium-90 Total dissolution by fusion**

**Bias**



**Quantiles**

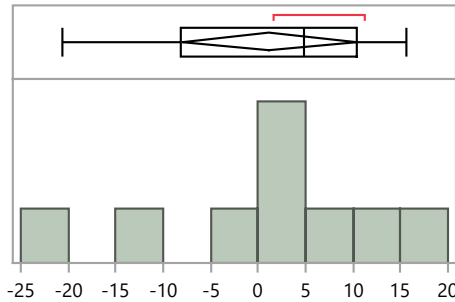
100.0%	maximum	-1.9
99.5%		-1.9
97.5%		-1.9
90.0%		-1.9
75.0%	quartile	-1.9
50.0%	median	-3.9
25.0%	quartile	-12.2
10.0%		-12.2
2.5%		-12.2
0.5%		-12.2
0.0%	minimum	-12.2

**Summary Statistics**

Mean	-6.0
Std Dev	5.5
Std Err Mean	3.2
Upper 95% Mean	7.6
Lower 95% Mean	-19.6
N	3.0

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

**Bias**



**Quantiles**

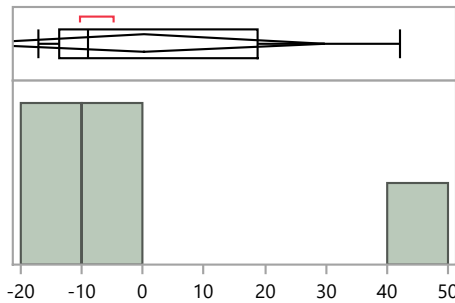
100.0%	maximum	15.6
99.5%		15.6
97.5%		15.6
90.0%		15.6
75.0%	quartile	10.4
50.0%	median	4.8
25.0%	quartile	-8.2
10.0%		-20.6
2.5%		-20.6
0.5%		-20.6
0.0%	minimum	-20.6

**Summary Statistics**

Mean	1.2
Std Dev	11.9
Std Err Mean	4.0
Upper 95% Mean	10.3
Lower 95% Mean	-8.0
N	9.0

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

**Bias**



**Quantiles**

100.0%	maximum	42.2
99.5%		42.2
97.5%		42.2
90.0%		42.2
75.0%	quartile	18.8
50.0%	median	-9.0
25.0%	quartile	-13.8
10.0%		-17.2
2.5%		-17.2
0.5%		-17.2
0.0%	minimum	-17.2

**Summary Statistics**

Mean	0.2
Std Dev	23.9
Std Err Mean	10.7
Upper 95% Mean	29.9
Lower 95% Mean	-29.5
N	5.0

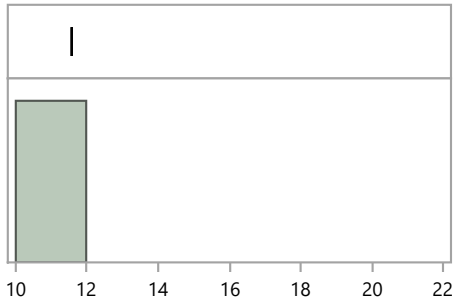


RdF46 Distribution by Preparation Method

**RdF Distribution by Prep Method**

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

**Bias**



**Quantiles**

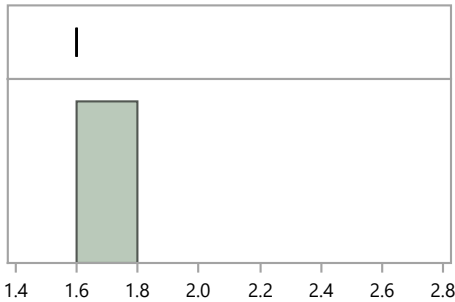
100.0%	maximum	11.6
99.5%		11.6
97.5%		11.6
90.0%		11.6
75.0%	quartile	11.6
50.0%	median	11.6
25.0%	quartile	11.6
10.0%		11.6
2.5%		11.6
0.5%		11.6
0.0%	minimum	11.6

**Summary Statistics**

Mean	11.6
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

**Bias**



**Quantiles**

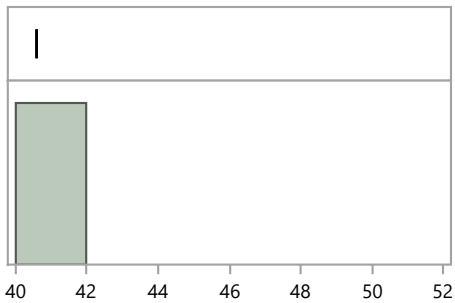
100.0%	maximum	1.6
99.5%		1.6
97.5%		1.6
90.0%		1.6
75.0%	quartile	1.6
50.0%	median	1.6
25.0%	quartile	1.6
10.0%		1.6
2.5%		1.6
0.5%		1.6
0.0%	minimum	1.6

**Summary Statistics**

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

**Distributions Analyte\_Method=Uranium-234 No preparation - analyzed as received**

**Bias**



**Quantiles**

100.0%	maximum	40.6
99.5%		40.6
97.5%		40.6
90.0%		40.6
75.0%	quartile	40.6
50.0%	median	40.6
25.0%	quartile	40.6
10.0%		40.6
2.5%		40.6
0.5%		40.6
0.0%	minimum	40.6

**Summary Statistics**

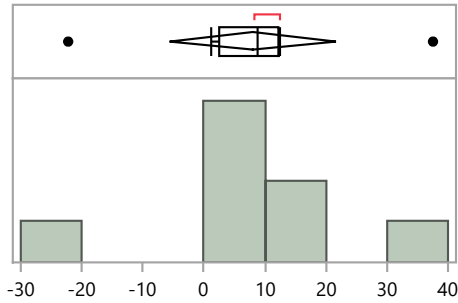
Mean	40.6
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

RdF46 Distribution by Preparation Method

**RdF Distribution by Prep Method**

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

**Bias**



**Quantiles**

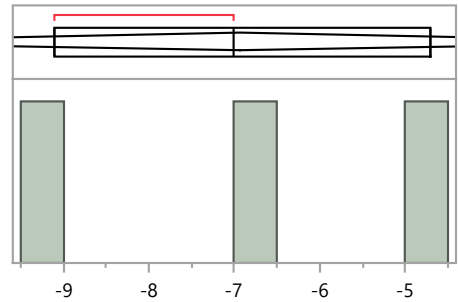
100.0%	maximum	37.5
99.5%		37.5
97.5%		37.5
90.0%		37.5
75.0%	quartile	12.1
50.0%	median	8.8
25.0%	quartile	2.6
10.0%		-22.2
2.5%		-22.2
0.5%		-22.2
0.0%	minimum	-22.2

**Summary Statistics**

Mean	8.0
Std Dev	16.3
Std Err Mean	5.8
Upper 95% Mean	21.6
Lower 95% Mean	-5.7
N	8.0

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

**Bias**



**Quantiles**

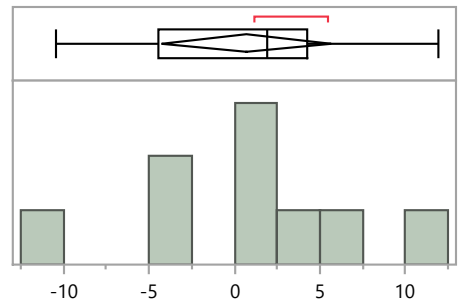
100.0%	maximum	-4.7
99.5%		-4.7
97.5%		-4.7
90.0%		-4.7
75.0%	quartile	-4.7
50.0%	median	-7.0
25.0%	quartile	-9.1
10.0%		-9.1
2.5%		-9.1
0.5%		-9.1
0.0%	minimum	-9.1

**Summary Statistics**

Mean	-6.9
Std Dev	2.2
Std Err Mean	1.3
Upper 95% Mean	-1.5
Lower 95% Mean	-12.4
N	3.0

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

**Bias**



**Quantiles**

100.0%	maximum	11.9
99.5%		11.9
97.5%		11.9
90.0%		11.9
75.0%	quartile	4.3
50.0%	median	1.9
25.0%	quartile	-4.5
10.0%		-10.4
2.5%		-10.4
0.5%		-10.4
0.0%	minimum	-10.4

**Summary Statistics**

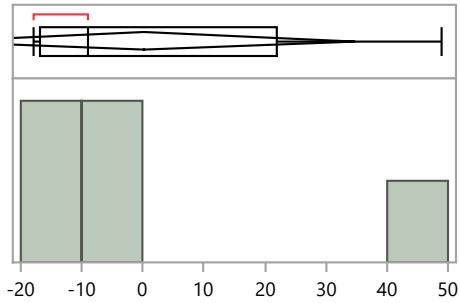
Mean	0.7
Std Dev	6.5
Std Err Mean	2.2
Upper 95% Mean	5.7
Lower 95% Mean	-4.3
N	9.0

RdF46 Distribution by Preparation Method

**RdF Distribution by Prep Method**

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

**Bias**



**Quantiles**

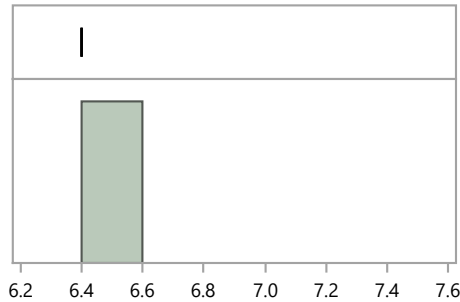
100.0%	maximum	49.0
99.5%		49.0
97.5%		49.0
90.0%		49.0
75.0%	quartile	22.1
50.0%	median	-9.0
25.0%	quartile	-16.8
10.0%		-17.9
2.5%		-17.9
0.5%		-17.9
0.0%	minimum	-17.9

**Summary Statistics**

Mean	0.3
Std Dev	27.7
Std Err Mean	12.4
Upper 95% Mean	34.7
Lower 95% Mean	-34.1
N	5.0

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

**Bias**



**Quantiles**

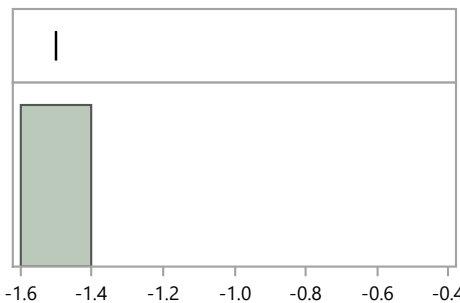
100.0%	maximum	6.4
99.5%		6.4
97.5%		6.4
90.0%		6.4
75.0%	quartile	6.4
50.0%	median	6.4
25.0%	quartile	6.4
10.0%		6.4
2.5%		6.4
0.5%		6.4
0.0%	minimum	6.4

**Summary Statistics**

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

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

**Bias**



**Quantiles**

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

**Summary Statistics**

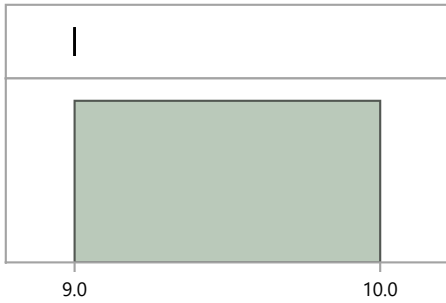
Mean	-1.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

RdF46 Distribution by Preparation Method

**RdF Distribution by Prep Method**

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

**Bias**



**Quantiles**

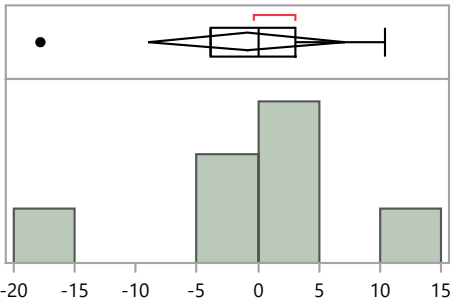
100.0%	maximum	9.0
99.5%		9.0
97.5%		9.0
90.0%		9.0
75.0%	quartile	9.0
50.0%	median	9.0
25.0%	quartile	9.0
10.0%		9.0
2.5%		9.0
0.5%		9.0
0.0%	minimum	9.0

**Summary Statistics**

Mean	9.0
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

**Bias**



**Quantiles**

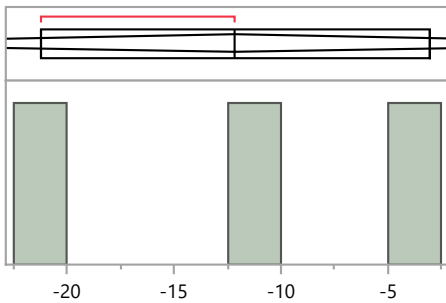
100.0%	maximum	10.4
99.5%		10.4
97.5%		10.4
90.0%		10.4
75.0%	quartile	3.0
50.0%	median	0.0
25.0%	quartile	-3.9
10.0%		-17.8
2.5%		-17.8
0.5%		-17.8
0.0%	minimum	-17.8

**Summary Statistics**

Mean	-0.9
Std Dev	8.6
Std Err Mean	3.3
Upper 95% Mean	7.1
Lower 95% Mean	-8.9
N	7.0

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

**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	-12.2
25.0%	quartile	-21.2
10.0%		-21.2
2.5%		-21.2
0.5%		-21.2
0.0%	minimum	-21.2

**Summary Statistics**

Mean	-12.1
Std Dev	9.1
Std Err Mean	5.3
Upper 95% Mean	10.5
Lower 95% Mean	-34.7
N	3.0