

## 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.

## MaSF51 Participating Laboratories

<b>Lab Code</b>	<b>Lab Name</b>	<b>Matrix Code</b>
AFOH01	USAFSAM/OEA	MaSF
FDHE01	Florida Dept of Health Environmental Laboratory	MaSF
FDOH01	Florida Dept. of Health, Mobile Environmental Radiological Lab	MaSF
HCAL01	Lawrence Livermore National Laboratory	MaSF
ODHL01	Ohio Department of Health Laboratory	MaSF
WIPP01	WIPP Laboratories	MaSF
WSHL01	Wisconsin State Laboratory of Hygiene	MaSF

# Laboratories Not Reporting

Lab Code

Lab Name

Matrix Code

## Study Reference Values

*MAPEP-24-MaSF51: Radiological fecal standard*

*Radiological Reference Date: 08/01/2024*

Radiological		Units: (Bq/sample)	
Analyte	Reference Value	Reference Uncertainty	
Americium-241	0.0599	0.0009	
Cesium-137	4.03	0.07	
Cobalt-60	6.09	0.13	
Plutonium-238	0.129	0.002	
Plutonium-239/240	0.1181	0.0018	
Strontium-90	6.73	0.14	
Uranium-234	0.101	0.002	
Uranium-238	0.105	0.002	

## Sample Statistical Summary

MAPEP-24-MaSF51: Radiological fecal standard

Radiological Reference Date: 08/01/2024

Radiological							Units: (Bq/sample)
Analyte	T <sup>(1)</sup>	A <sup>(2)</sup>	Grand <sup>(3)</sup> Mean	Standard Deviation	Reference Value	Reference Uncertainty	Acceptance Range
Americium-241	4	3			0.0599	0.0009	0.0419 - 0.0779
Cesium-134	4	4					False Positive Test
Cesium-137	6	6	4.19	0.62	4.03	0.07	2.82 - 5.24
Cobalt-57	4	4					False Positive Test
Cobalt-60	6	6	5.85	1.13	6.09	0.13	4.26 - 7.92
Curium-244	1	1					False Positive Test
Manganese-54	4	4					False Positive Test
Plutonium-238	5	3			0.129	0.002	0.090 - 0.168
Plutonium-239/240	5	3			0.1181	0.0018	0.0827 - 0.1535
Strontium-90	4	3			6.73	0.14	4.71 - 8.75
Uranium-234	4	3			0.101	0.002	0.071 - 0.131
Uranium-238	4	4			0.105	0.002	0.074 - 0.137
Zinc-65	4	4					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

## Flag Summary Report

MAPEP-24-MaSF51: Radiological fecal standard

Radiological Reference Date: 08/01/2024

Radiological				
Analyte	A	W	RW	N
Americium-241	3			1
Cesium-134	4			
Cesium-137	5	1		
Cobalt-57	4			
Cobalt-60	4	2		
Curium-244	1			
Manganese-54	4			
Plutonium-238	3			2
Plutonium-239/240	3			2
Strontium-90	3			1
Uranium-234	3			1
Uranium-238	3	1		
Zinc-65	4			

Laboratory Results For MAPEP Series 51  
(AFOH01) USAFSAM/OEA  
2510 Fifth Street, Area B  
Wright-Patterson AFB, OH 45433-7913

Radiological								Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag	
Americium-241	0.056	0.0599	A		-6.5	0.0419 - 0.0779	0.004	A	
Cesium-134	NR					False Positive Test			
Cesium-137	NR	4.03				2.82 - 5.24			
Cobalt-57	NR					False Positive Test			
Cobalt-60	NR	6.09				4.26 - 7.92			
Curium-244	NR					False Positive Test			
Manganese-54	NR					False Positive Test			
Plutonium-238	0.129	0.129	A		0.0	0.090 - 0.168	0.007	A	
Plutonium-239/240	0.111	0.1181	A		-6.0	0.0827 - 0.1535	0.006	A	
Strontium-90	6.0	6.73	A		-10.8	4.71 - 8.75	0.3	A	
Uranium-234	0.102	0.101	A		1.0	0.071 - 0.131	0.007	A	
Uranium-238	0.091	0.105	A		-13.3	0.074 - 0.137	0.007	A	
Zinc-65	NR					False Positive Test			

Radiological Reference Date: August 1, 2024

**Results Flags:**

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

Laboratory Results For MAPEP Series 51  
(FDHE01) Florida Dept of Health Environmental Laboratory  
2100 All Childrens Way  
Orlando, FL 32818-5271

Radiological								Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag	
Americium-241	NR	0.0599				0.0419 - 0.0779			
Cesium-134	NR					False Positive Test			
Cesium-137	3.89	4.03	A		-3.5	2.82 - 5.24	0.11	A	
Cobalt-57	NR					False Positive Test			
Cobalt-60	5.67	6.09	A		-6.9	4.26 - 7.92	0.14	A	
Curium-244	NR					False Positive Test			
Manganese-54	NR					False Positive Test			
Plutonium-238	0.713	0.129	N		452.7	0.090 - 0.168	0.713	N	
Plutonium-239/240	0.235	0.1181	N		99.0	0.0827 - 0.1535	0.235	N	
Strontium-90	6.64	6.73	A		-1.3	4.71 - 8.75	0.44	A	
Uranium-234	0.42	0.101	N		315.8	0.071 - 0.131	0.16	N	
Uranium-238	0.129	0.105	W		22.9	0.074 - 0.137	0.05	N	
Zinc-65	NR					False Positive Test			

Radiological Reference Date: August 1, 2024

**Results Flags:**

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



Laboratory Results For MAPEP Series 51  
(FDOH01) Florida Dept. of Health, Mobile Environmental Radiological Lab  
2100 All Childrens Way  
Orlando, FL 32818-5271

Radiological								Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag	
Americium-241	NR	0.0599				0.0419 - 0.0779			
Cesium-134	NR					False Positive Test			
Cesium-137	4.13	4.03	A		2.5	2.82 - 5.24	0.11	A	
Cobalt-57	NR					False Positive Test			
Cobalt-60	6.03	6.09	A		-1.0	4.26 - 7.92	0.12	N	
Curium-244	NR					False Positive Test			
Manganese-54	NR					False Positive Test			
Plutonium-238	NR	0.129				0.090 - 0.168			
Plutonium-239/240	NR	0.1181				0.0827 - 0.1535			
Strontium-90	NR	6.73				4.71 - 8.75			
Uranium-234	NR	0.101				0.071 - 0.131			
Uranium-238	NR	0.105				0.074 - 0.137			
Zinc-65	NR					False Positive Test			

Radiological Reference Date: August 1, 2024

**Results Flags:**

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

Laboratory Results For MAPEP Series 51  
(HCAL01) Lawrence Livermore National Laboratory  
Analytical Services and Instrumentation Analytical Lab  
Livermore, CA 94550

Radiological								Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag	
Americium-241	5.75e-02	0.0599	A		-4.0	0.0419 - 0.0779	2.85e-03	A	
Cesium-134	2.05e-01		A			False Positive Test	2.11e-01		
Cesium-137	4.68	4.03	A		16.1	2.82 - 5.24	3.43e-01	A	
Cobalt-57	1.04		A			False Positive Test	5.20e-01		
Cobalt-60	6.16	6.09	A		1.1	4.26 - 7.92	2.51e-01	A	
Curium-244	2.03e-05		A			False Positive Test	1.02e-05		
Manganese-54	1.30		A			False Positive Test	6.51e-01		
Plutonium-238	1.30e-01	0.129	A		0.8	0.090 - 0.168	6.11e-03	A	
Plutonium-239/240	1.14e-01	0.1181	A		-3.5	0.0827 - 0.1535	5.39e-03	A	
Strontium-90	NR	6.73				4.71 - 8.75			
Uranium-234	NR	0.101				0.071 - 0.131			
Uranium-238	NR	0.105				0.074 - 0.137			
Zinc-65	2.30		A			False Positive Test	1.15		

Radiological Reference Date: August 1, 2024

**Results Flags:**

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

Laboratory Results For MAPEP Series 51  
(ODHL01) Ohio Department of Health Laboratory  
8995 E Main Street  
Reynoldsburg, OH 43068

Radiological								Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag	
Americium-241	NR	0.0599				0.0419 - 0.0779			
Cesium-134	0.0103		A			False Positive Test	0.0202		
Cesium-137	3.80	4.03	A		-5.7	2.82 - 5.24	0.258	A	
Cobalt-57	-0.0401		A			False Positive Test	0.0408		
Cobalt-60	4.92	6.09	A		-19.2	4.26 - 7.92	0.169	A	
Curium-244	NR					False Positive Test			
Manganese-54	-0.0178		A			False Positive Test	0.0609		
Plutonium-238	NR	0.129				0.090 - 0.168			
Plutonium-239/240	NR	0.1181				0.0827 - 0.1535			
Strontium-90	NR	6.73				4.71 - 8.75			
Uranium-234	NR	0.101				0.071 - 0.131			
Uranium-238	NR	0.105				0.074 - 0.137			
Zinc-65	-0.0793		A			False Positive Test	0.147		

Radiological Reference Date: August 1, 2024

**Results Flags:**

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

Laboratory Results For MAPEP Series 51  
(WIPP01) WIPP Laboratories  
1400 University Drive  
Carlsbad, NM 88220

Radiological							Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	5.21E-002	0.0599	A		-13.0	0.0419 - 0.0779	4.09E-003	A
Cesium-134	-1.00E-002		A			False Positive Test	5.56E-002	
Cesium-137	5.15E+000	4.03	W		27.8	2.82 - 5.24	1.82E-001	A
Cobalt-57	-2.46E-003		A			False Positive Test	2.57E-002	
Cobalt-60	7.77E+000	6.09	W		27.6	4.26 - 7.92	2.56E-001	A
Curium-244	NR					False Positive Test		
Manganese-54	-1.75E-002		A			False Positive Test	7.50E-002	
Plutonium-238	1.10E-001	0.129	A		-14.7	0.090 - 0.168	1.05E-002	A
Plutonium-239/240	1.08E-001	0.1181	A		-8.6	0.0827 - 0.1535	1.03E-002	A
Strontium-90	6.40E+000	6.73	A		-4.9	4.71 - 8.75	2.53E-001	A
Uranium-234	8.84E-002	0.101	A		-12.5	0.071 - 0.131	1.18E-002	A
Uranium-238	1.02E-001	0.105	A		-2.9	0.074 - 0.137	1.35E-002	A
Zinc-65	4.32E-002		A			False Positive Test	1.65E-001	

Radiological Reference Date: August 1, 2024

**Results Flags:**

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

Laboratory Results For MAPEP Series 51  
(WSHL01) Wisconsin State Laboratory of Hygiene  
2601 Agriculture Drive  
Madison, WI 53718

Radiological								Units: (Bq/sample)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag	
Americium-241	0.0395	0.0599	N		-34.1	0.0419 - 0.0779	0.0092	W	
Cesium-134	-0.0372		A			False Positive Test	0.0262		
Cesium-137	3.46	4.03	A		-14.1	2.82 - 5.24	0.125	A	
Cobalt-57	-0.0369		A			False Positive Test	0.0221		
Cobalt-60	4.576	6.09	W		-24.9	4.26 - 7.92	0.291	A	
Curium-244	NR					False Positive Test			
Manganese-54	0.0340		A			False Positive Test	0.0261		
Plutonium-238	0.0487	0.129	N		-62.2	0.090 - 0.168	0.01238	W	
Plutonium-239/240	0.05117	0.1181	N		-56.7	0.0827 - 0.1535	0.0099	W	
Strontium-90	3.74	6.73	N		-44.4	4.71 - 8.75	0.118	A	
Uranium-234	0.0845	0.101	A		-16.3	0.071 - 0.131	0.0159	W	
Uranium-238	0.0856	0.105	A		-18.5	0.074 - 0.137	0.0154	W	
Zinc-65	-0.0257		A			False Positive Test	0.0697		

Radiological Reference Date: August 1, 2024

**Results Flags:**

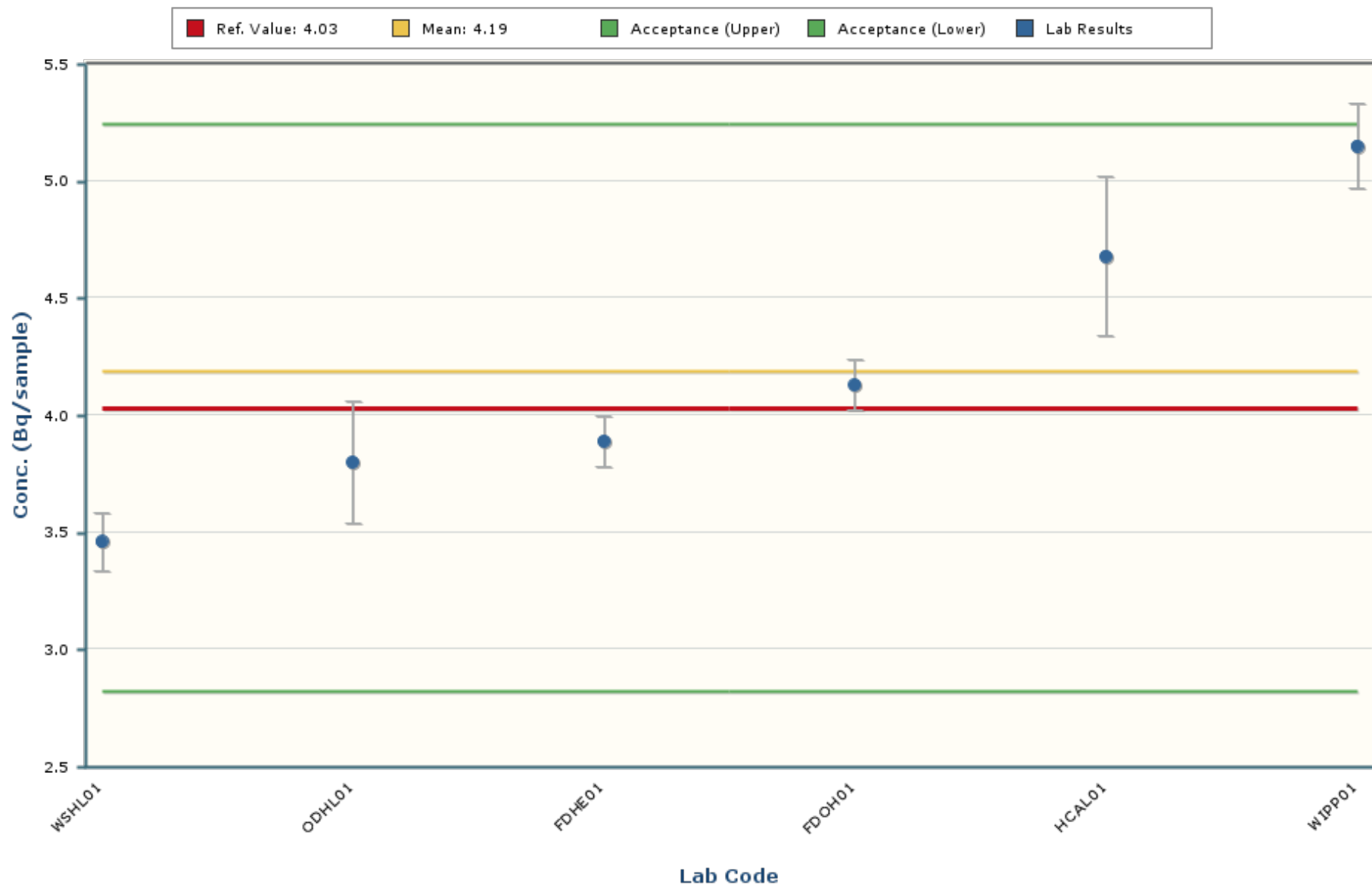
- A = Result acceptable.....|Bias| <= 20%
- W = Result acceptable with warning.....20% < |Bias| <= 30%
- N = Result not acceptable.....|Bias| > 30%
- RW = Report Warning
- NR = Not Reported

**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

# Cesium-137

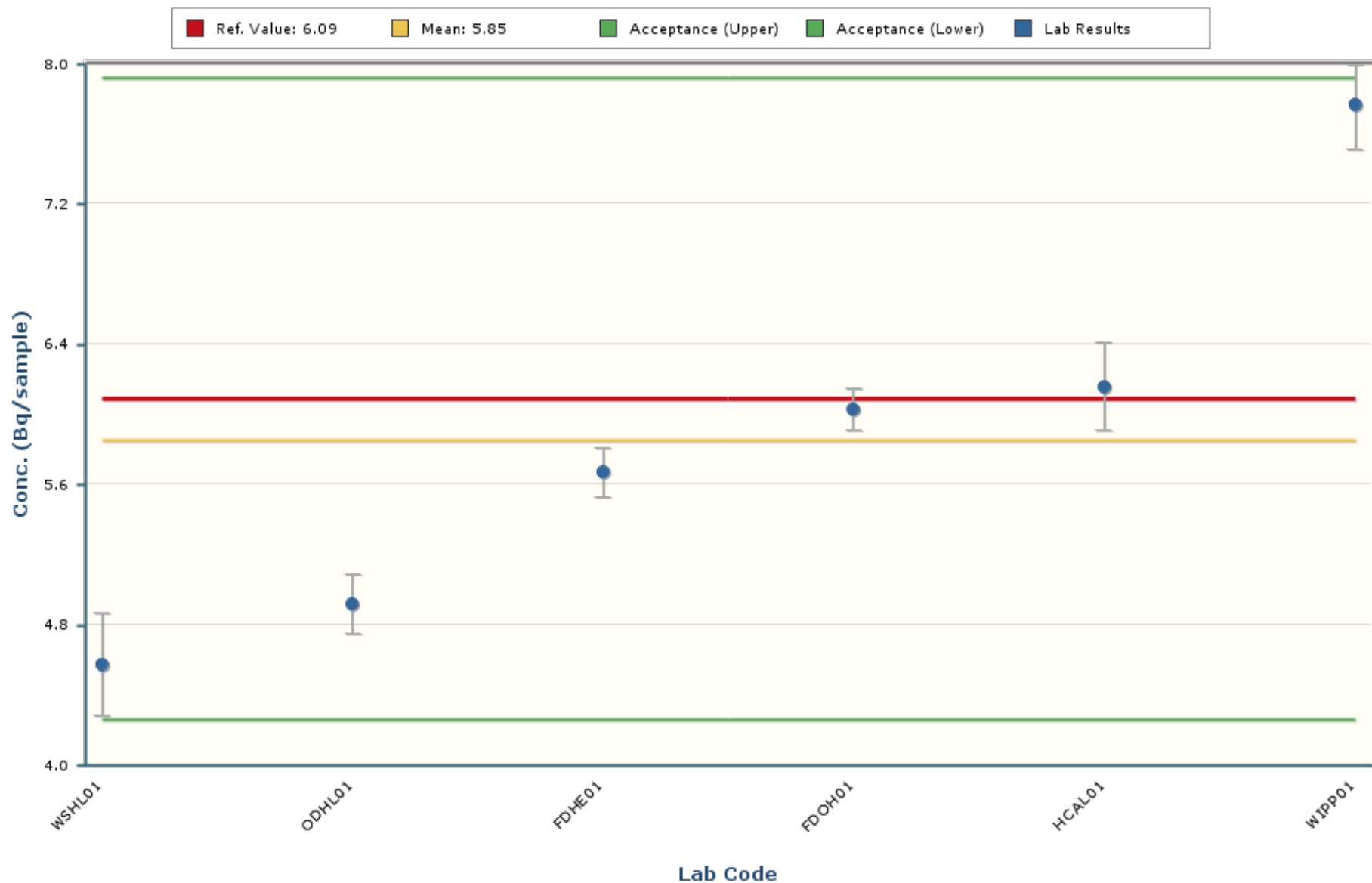
## MAPEP-24-MaSF51



**Notes:**

The chart mean excludes values outside of a bias range of  $\pm 30\%$ .  
The chart shows only data points with values between 1.07 and 7.30 ( $\pm 5$  Standard Deviations).  
The error bars encompassing each result are plotted at  $\pm$  one standard deviation.

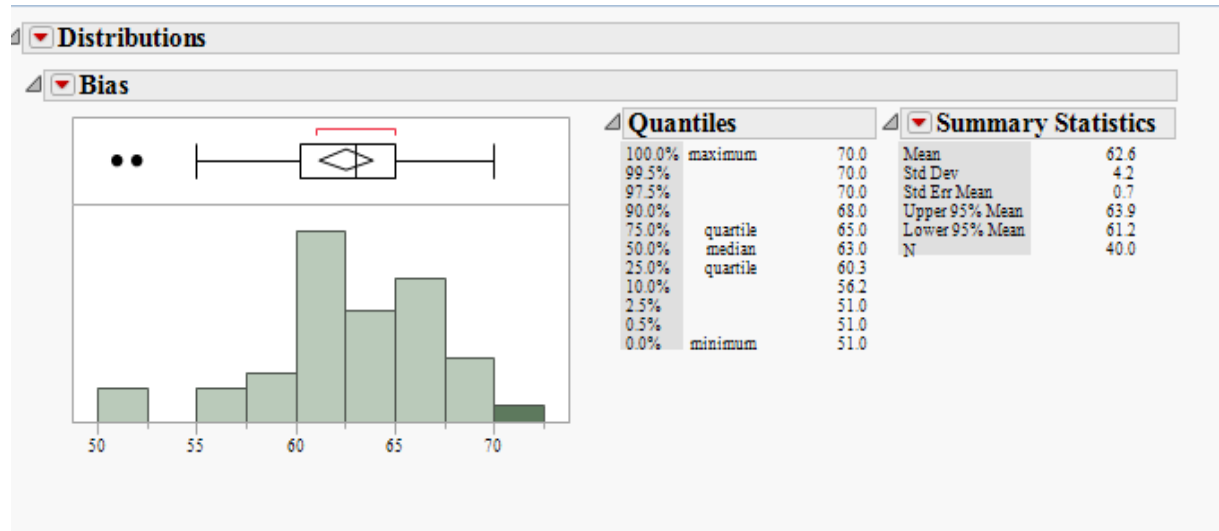
**Cobalt-60**  
**MAPEP-24-MaSF51**



**Notes:**

The chart mean excludes values outside of a bias range of  $\pm 30\%$ .  
The chart shows only data points with values between 0.23 and 11.48 ( $\pm 5$  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.

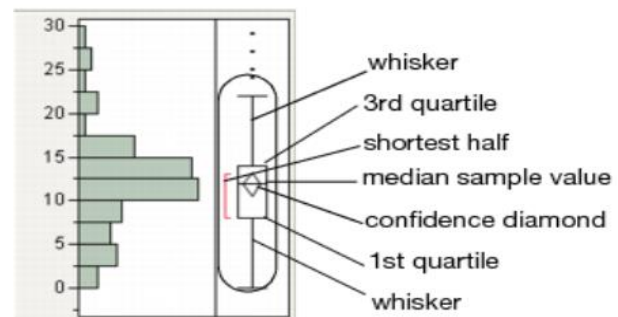


### Outlier Box Plot

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)



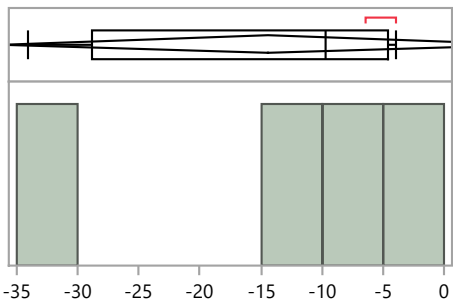
If the data points do not reach the computed ranges, then the whiskers are determined by the upper and lower data point values (not including outliers). The bracket outside of the box identifies the *shortest half*, which is the most dense 50% of the observations (Rousseuw and Leroy 1987).



**MaF51 Distribution by Detection Method**

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

**Bias**

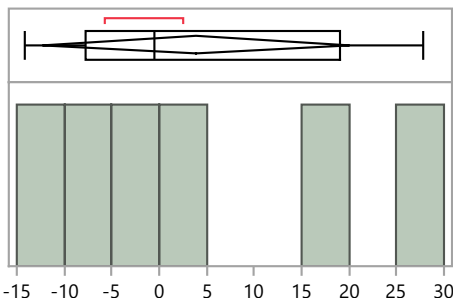


Quantiles		
100.0%	maximum	-4.0
99.5%		-4.0
97.5%		-4.0
90.0%		-4.0
75.0%	quartile	-4.6
50.0%	median	-9.8
25.0%	quartile	-28.8
10.0%		-34.1
2.5%		-34.1
0.5%		-34.1
0.0%	minimum	-34.1

Summary Statistics	
Mean	-14.4
Std Dev	13.7
Std Err Mean	6.8
Upper 95% Mean	7.4
Lower 95% Mean	-36.2
N	4.0

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

**Bias**

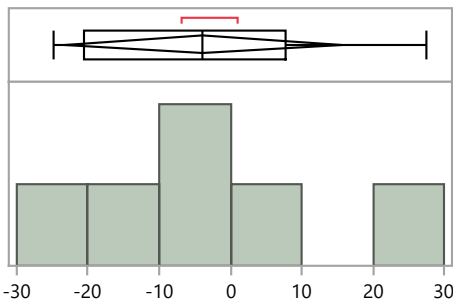


Quantiles		
100.0%	maximum	27.8
99.5%		27.8
97.5%		27.8
90.0%		27.8
75.0%	quartile	19.0
50.0%	median	-0.5
25.0%	quartile	-7.8
10.0%		-14.1
2.5%		-14.1
0.5%		-14.1
0.0%	minimum	-14.1

Summary Statistics	
Mean	3.9
Std Dev	15.4
Std Err Mean	6.3
Upper 95% Mean	20.1
Lower 95% Mean	-12.4
N	6.0

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

**Bias**



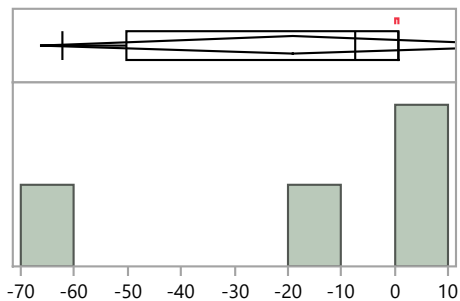
Quantiles		
100.0%	maximum	27.6
99.5%		27.6
97.5%		27.6
90.0%		27.6
75.0%	quartile	7.7
50.0%	median	-4.0
25.0%	quartile	-20.6
10.0%		-24.9
2.5%		-24.9
0.5%		-24.9
0.0%	minimum	-24.9

Summary Statistics	
Mean	-3.9
Std Dev	18.5
Std Err Mean	7.5
Upper 95% Mean	15.5
Lower 95% Mean	-23.3
N	6.0

**MaF51 Distribution by Detection Method**

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

**Bias**



**Quantiles**

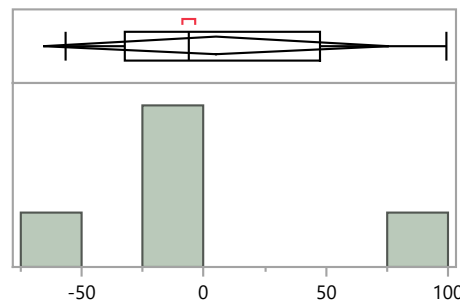
100.0%	maximum	0.8
99.5%		0.8
97.5%		0.8
90.0%		0.8
75.0%	quartile	0.6
50.0%	median	-7.4
25.0%	quartile	-50.3
10.0%		-62.2
2.5%		-62.2
0.5%		-62.2
0.0%	minimum	-62.2

**Summary Statistics**

Mean	-19.0
Std Dev	29.7
Std Err Mean	14.8
Upper 95% Mean	28.2
Lower 95% Mean	-66.2
N	4.0

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

**Bias**



**Quantiles**

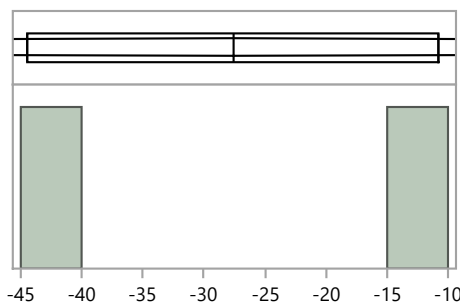
100.0%	maximum	99.0
99.5%		99.0
97.5%		99.0
90.0%		99.0
75.0%	quartile	47.8
50.0%	median	-6.0
25.0%	quartile	-32.7
10.0%		-56.7
2.5%		-56.7
0.5%		-56.7
0.0%	minimum	-56.7

**Summary Statistics**

Mean	4.8
Std Dev	57.1
Std Err Mean	25.5
Upper 95% Mean	75.7
Lower 95% Mean	-66.0
N	5.0

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

**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	-27.6
25.0%	quartile	-44.4
10.0%		-44.4
2.5%		-44.4
0.5%		-44.4
0.0%	minimum	-44.4

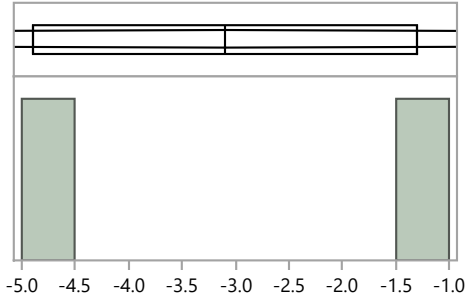
**Summary Statistics**

Mean	-27.6
Std Dev	23.8
Std Err Mean	16.8
Upper 95% Mean	185.9
Lower 95% Mean	-241.1
N	2.0

**MaF51 Distribution by Detection Method**

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

**Bias**



**Quantiles**

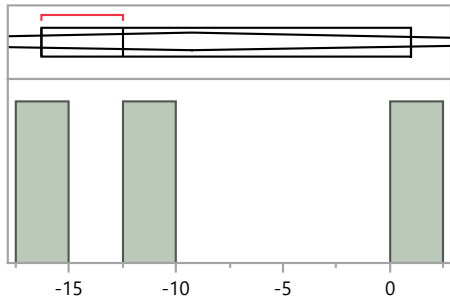
100.0%	maximum	-1.3
99.5%		-1.3
97.5%		-1.3
90.0%		-1.3
75.0%	quartile	-1.3
50.0%	median	-3.1
25.0%	quartile	-4.9
10.0%		-4.9
2.5%		-4.9
0.5%		-4.9
0.0%	minimum	-4.9

**Summary Statistics**

Mean	-3.1
Std Dev	2.5
Std Err Mean	1.8
Upper 95% Mean	19.8
Lower 95% Mean	-26.0
N	2.0

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

**Bias**



**Quantiles**

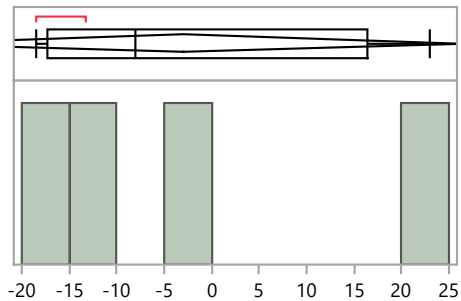
100.0%	maximum	1.0
99.5%		1.0
97.5%		1.0
90.0%		1.0
75.0%	quartile	1.0
50.0%	median	-12.5
25.0%	quartile	-16.3
10.0%		-16.3
2.5%		-16.3
0.5%		-16.3
0.0%	minimum	-16.3

**Summary Statistics**

Mean	-9.3
Std Dev	9.1
Std Err Mean	5.2
Upper 95% Mean	13.3
Lower 95% Mean	-31.9
N	3.0

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

**Bias**



**Quantiles**

100.0%	maximum	22.9
99.5%		22.9
97.5%		22.9
90.0%		22.9
75.0%	quartile	16.4
50.0%	median	-8.1
25.0%	quartile	-17.2
10.0%		-18.5
2.5%		-18.5
0.5%		-18.5
0.0%	minimum	-18.5

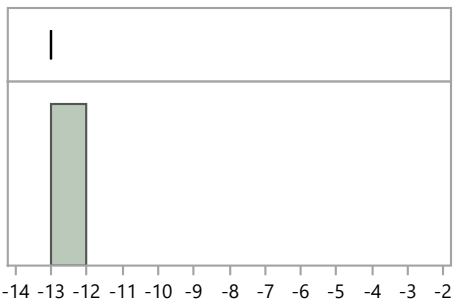
**Summary Statistics**

Mean	-3.0
Std Dev	18.4
Std Err Mean	9.2
Upper 95% Mean	26.3
Lower 95% Mean	-32.2
N	4.0

**MaF51 Distribution by Preparation Method**

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

**Bias**



**Quantiles**

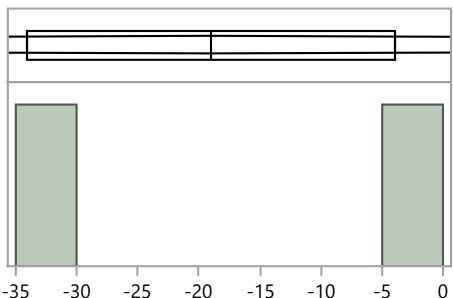
100.0%	maximum	-13.0
99.5%		-13.0
97.5%		-13.0
90.0%		-13.0
75.0%	quartile	-13.0
50.0%	median	-13.0
25.0%	quartile	-13.0
10.0%		-13.0
2.5%		-13.0
0.5%		-13.0
0.0%	minimum	-13.0

**Summary Statistics**

Mean	-13.0
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

**Bias**



**Quantiles**

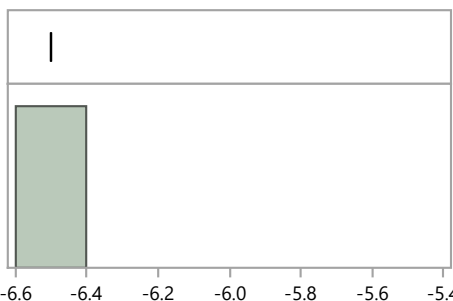
100.0%	maximum	-4.0
99.5%		-4.0
97.5%		-4.0
90.0%		-4.0
75.0%	quartile	-4.0
50.0%	median	-19.1
25.0%	quartile	-34.1
10.0%		-34.1
2.5%		-34.1
0.5%		-34.1
0.0%	minimum	-34.1

**Summary Statistics**

Mean	-19.1
Std Dev	21.3
Std Err Mean	15.1
Upper 95% Mean	172.2
Lower 95% Mean	-210.3
N	2.0

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

**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	-6.5
25.0%	quartile	-6.5
10.0%		-6.5
2.5%		-6.5
0.5%		-6.5
0.0%	minimum	-6.5

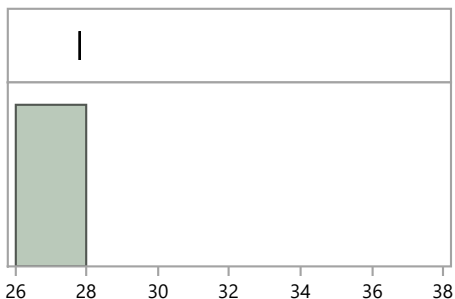
**Summary Statistics**

Mean	-6.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

**MaF51 Distribution by Preparation Method**

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

**Bias**



**Quantiles**

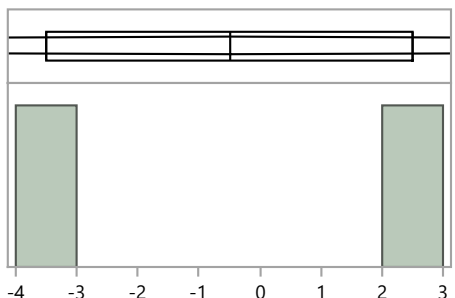
100.0%	maximum	27.8
99.5%		27.8
97.5%		27.8
90.0%		27.8
75.0%	quartile	27.8
50.0%	median	27.8
25.0%	quartile	27.8
10.0%		27.8
2.5%		27.8
0.5%		27.8
0.0%	minimum	27.8

**Summary Statistics**

Mean	27.8
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

**Bias**



**Quantiles**

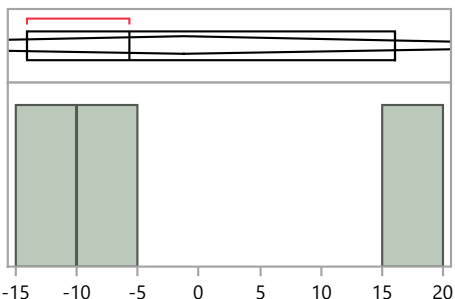
100.0%	maximum	2.5
99.5%		2.5
97.5%		2.5
90.0%		2.5
75.0%	quartile	2.5
50.0%	median	-0.5
25.0%	quartile	-3.5
10.0%		-3.5
2.5%		-3.5
0.5%		-3.5
0.0%	minimum	-3.5

**Summary Statistics**

Mean	-0.5
Std Dev	4.2
Std Err Mean	3.0
Upper 95% Mean	37.6
Lower 95% Mean	-38.6
N	2.0

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

**Bias**



**Quantiles**

100.0%	maximum	16.1
99.5%		16.1
97.5%		16.1
90.0%		16.1
75.0%	quartile	16.1
50.0%	median	-5.7
25.0%	quartile	-14.1
10.0%		-14.1
2.5%		-14.1
0.5%		-14.1
0.0%	minimum	-14.1

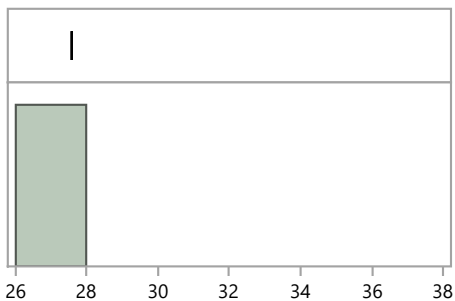
**Summary Statistics**

Mean	-1.2
Std Dev	15.6
Std Err Mean	9.0
Upper 95% Mean	37.5
Lower 95% Mean	-40.0
N	3.0

**MaF51 Distribution by Preparation Method**

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

**Bias**

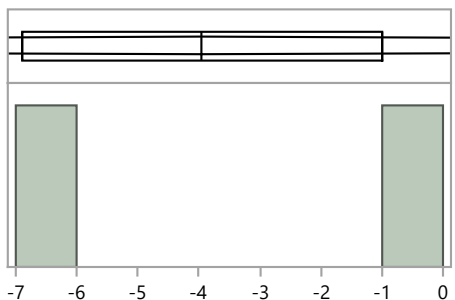


Quantiles		
100.0%	maximum	27.6
99.5%		27.6
97.5%		27.6
90.0%		27.6
75.0%	quartile	27.6
50.0%	median	27.6
25.0%	quartile	27.6
10.0%		27.6
2.5%		27.6
0.5%		27.6
0.0%	minimum	27.6

Summary Statistics	
Mean	27.6
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

**Bias**

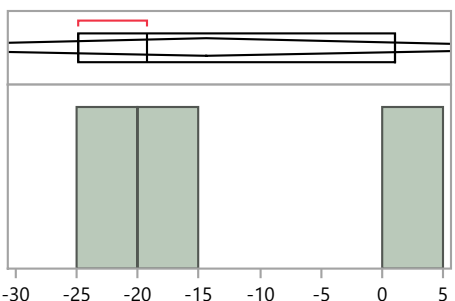


Quantiles		
100.0%	maximum	-1.0
99.5%		-1.0
97.5%		-1.0
90.0%		-1.0
75.0%	quartile	-1.0
50.0%	median	-4.0
25.0%	quartile	-6.9
10.0%		-6.9
2.5%		-6.9
0.5%		-6.9
0.0%	minimum	-6.9

Summary Statistics	
Mean	-4.0
Std Dev	4.2
Std Err Mean	3.0
Upper 95% Mean	33.5
Lower 95% Mean	-41.4
N	2.0

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

**Bias**



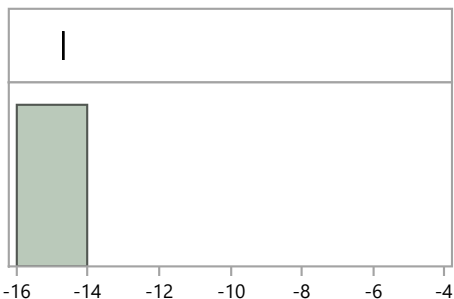
Quantiles		
100.0%	maximum	1.1
99.5%		1.1
97.5%		1.1
90.0%		1.1
75.0%	quartile	1.1
50.0%	median	-19.2
25.0%	quartile	-24.9
10.0%		-24.9
2.5%		-24.9
0.5%		-24.9
0.0%	minimum	-24.9

Summary Statistics	
Mean	-14.3
Std Dev	13.7
Std Err Mean	7.9
Upper 95% Mean	19.6
Lower 95% Mean	-48.3
N	3.0

**MaF51 Distribution by Preparation Method**

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

**Bias**



**Quantiles**

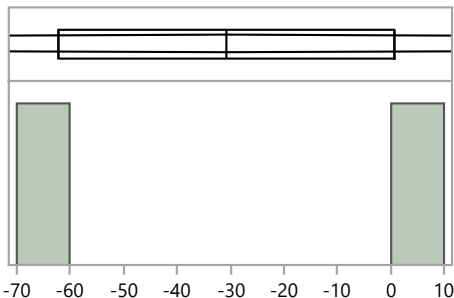
100.0%	maximum	-14.7
99.5%		-14.7
97.5%		-14.7
90.0%		-14.7
75.0%	quartile	-14.7
50.0%	median	-14.7
25.0%	quartile	-14.7
10.0%		-14.7
2.5%		-14.7
0.5%		-14.7
0.0%	minimum	-14.7

**Summary Statistics**

Mean	-14.7
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

**Bias**



**Quantiles**

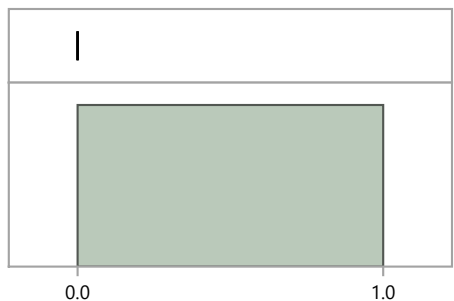
100.0%	maximum	0.8
99.5%		0.8
97.5%		0.8
90.0%		0.8
75.0%	quartile	0.8
50.0%	median	-30.7
25.0%	quartile	-62.2
10.0%		-62.2
2.5%		-62.2
0.5%		-62.2
0.0%	minimum	-62.2

**Summary Statistics**

Mean	-30.7
Std Dev	44.5
Std Err Mean	31.5
Upper 95% Mean	369.5
Lower 95% Mean	-430.9
N	2.0

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

**Bias**



**Quantiles**

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

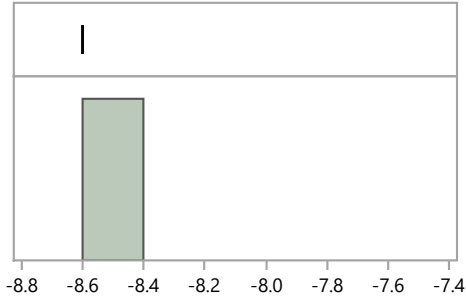
**Summary Statistics**

Mean	0.0
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

**MaF51 Distribution by Preparation Method**

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

**Bias**



**Quantiles**

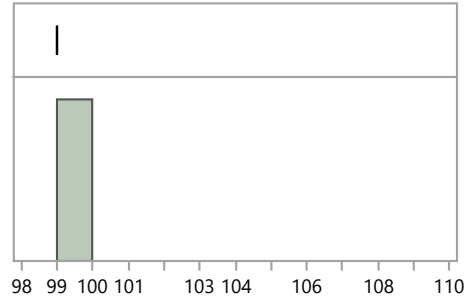
100.0%	maximum	-8.6
99.5%		-8.6
97.5%		-8.6
90.0%		-8.6
75.0%	quartile	-8.6
50.0%	median	-8.6
25.0%	quartile	-8.6
10.0%		-8.6
2.5%		-8.6
0.5%		-8.6
0.0%	minimum	-8.6

**Summary Statistics**

Mean	-8.6
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

**Bias**



**Quantiles**

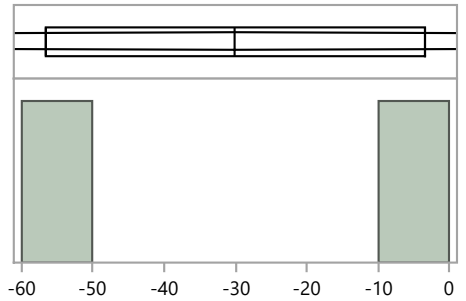
100.0%	maximum	99.0
99.5%		99.0
97.5%		99.0
90.0%		99.0
75.0%	quartile	99.0
50.0%	median	99.0
25.0%	quartile	99.0
10.0%		99.0
2.5%		99.0
0.5%		99.0
0.0%	minimum	99.0

**Summary Statistics**

Mean	99.0
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	-3.5
99.5%		-3.5
97.5%		-3.5
90.0%		-3.5
75.0%	quartile	-3.5
50.0%	median	-30.1
25.0%	quartile	-56.7
10.0%		-56.7
2.5%		-56.7
0.5%		-56.7
0.0%	minimum	-56.7

**Summary Statistics**

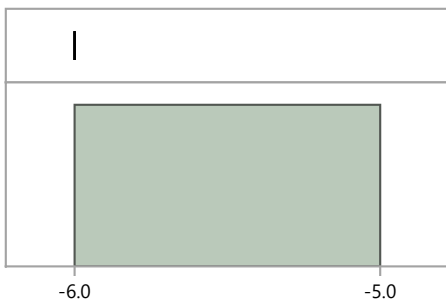
Mean	-30.1
Std Dev	37.6
Std Err Mean	26.6
Upper 95% Mean	307.9
Lower 95% Mean	-368.1
N	2.0



**MaF51 Distribution by Preparation Method**

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

**Bias**



**Quantiles**

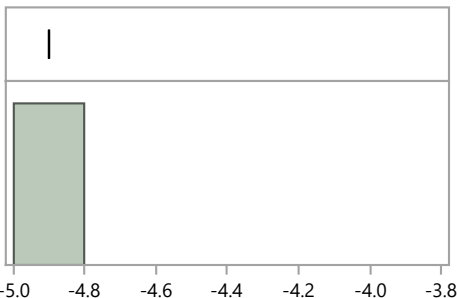
100.0%	maximum	-6.0
99.5%		-6.0
97.5%		-6.0
90.0%		-6.0
75.0%	quartile	-6.0
50.0%	median	-6.0
25.0%	quartile	-6.0
10.0%		-6.0
2.5%		-6.0
0.5%		-6.0
0.0%	minimum	-6.0

**Summary Statistics**

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

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

**Bias**



**Quantiles**

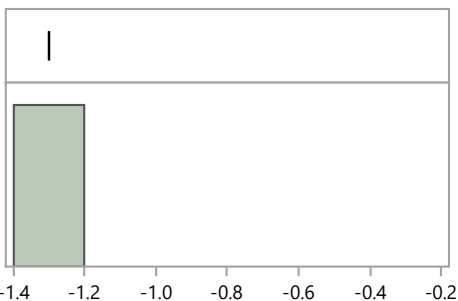
100.0%	maximum	-4.9
99.5%		-4.9
97.5%		-4.9
90.0%		-4.9
75.0%	quartile	-4.9
50.0%	median	-4.9
25.0%	quartile	-4.9
10.0%		-4.9
2.5%		-4.9
0.5%		-4.9
0.0%	minimum	-4.9

**Summary Statistics**

Mean	-4.9
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	-1.3
99.5%		-1.3
97.5%		-1.3
90.0%		-1.3
75.0%	quartile	-1.3
50.0%	median	-1.3
25.0%	quartile	-1.3
10.0%		-1.3
2.5%		-1.3
0.5%		-1.3
0.0%	minimum	-1.3

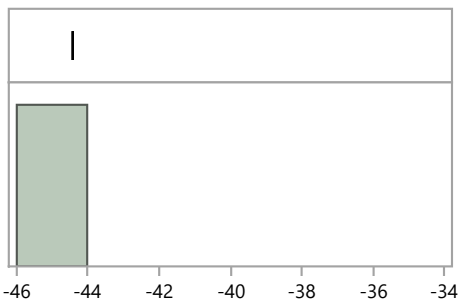
**Summary Statistics**

Mean	-1.3
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

**MaF51 Distribution by Preparation Method**

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

**Bias**

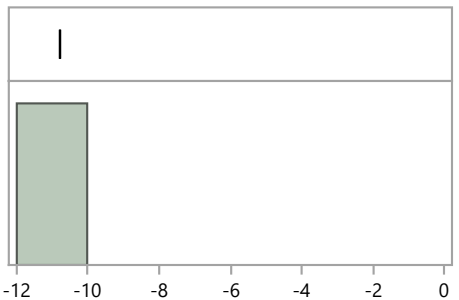


Quantiles		
100.0%	maximum	-44.4
99.5%		-44.4
97.5%		-44.4
90.0%		-44.4
75.0%	quartile	-44.4
50.0%	median	-44.4
25.0%	quartile	-44.4
10.0%		-44.4
2.5%		-44.4
0.5%		-44.4
0.0%	minimum	-44.4

Summary Statistics	
Mean	-44.4
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

**Bias**

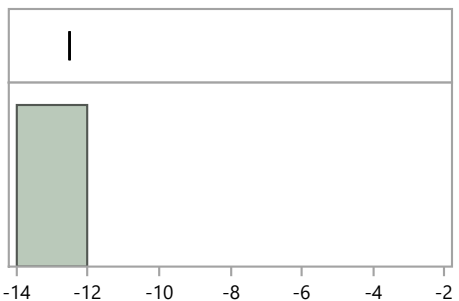


Quantiles		
100.0%	maximum	-10.8
99.5%		-10.8
97.5%		-10.8
90.0%		-10.8
75.0%	quartile	-10.8
50.0%	median	-10.8
25.0%	quartile	-10.8
10.0%		-10.8
2.5%		-10.8
0.5%		-10.8
0.0%	minimum	-10.8

Summary Statistics	
Mean	-10.8
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

**Bias**



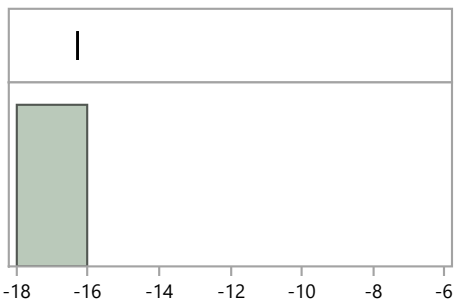
Quantiles		
100.0%	maximum	-12.5
99.5%		-12.5
97.5%		-12.5
90.0%		-12.5
75.0%	quartile	-12.5
50.0%	median	-12.5
25.0%	quartile	-12.5
10.0%		-12.5
2.5%		-12.5
0.5%		-12.5
0.0%	minimum	-12.5

Summary Statistics	
Mean	-12.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

**MaF51 Distribution by Preparation Method**

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

**Bias**



**Quantiles**

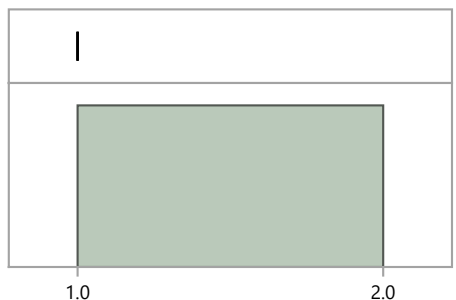
100.0%	maximum	-16.3
99.5%		-16.3
97.5%		-16.3
90.0%		-16.3
75.0%	quartile	-16.3
50.0%	median	-16.3
25.0%	quartile	-16.3
10.0%		-16.3
2.5%		-16.3
0.5%		-16.3
0.0%	minimum	-16.3

**Summary Statistics**

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

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

**Bias**



**Quantiles**

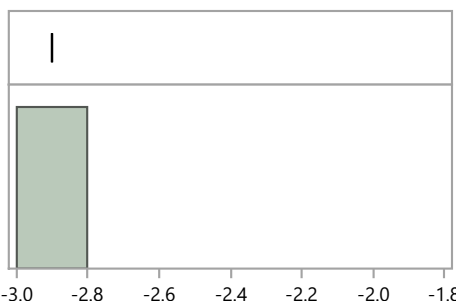
100.0%	maximum	1.0
99.5%		1.0
97.5%		1.0
90.0%		1.0
75.0%	quartile	1.0
50.0%	median	1.0
25.0%	quartile	1.0
10.0%		1.0
2.5%		1.0
0.5%		1.0
0.0%	minimum	1.0

**Summary Statistics**

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

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

**Bias**



**Quantiles**

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

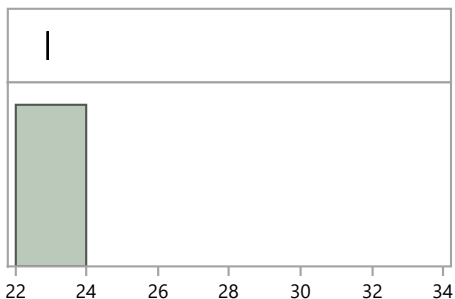
**Summary Statistics**

Mean	-2.9
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

**MaF51 Distribution by Preparation Method**

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

**Bias**



**Quantiles**

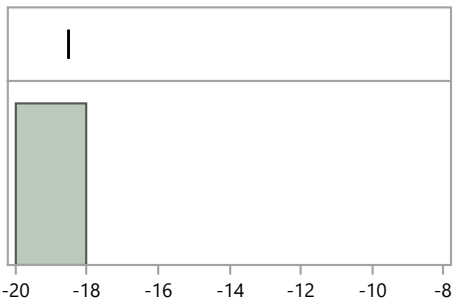
100.0%	maximum	22.9
99.5%		22.9
97.5%		22.9
90.0%		22.9
75.0%	quartile	22.9
50.0%	median	22.9
25.0%	quartile	22.9
10.0%		22.9
2.5%		22.9
0.5%		22.9
0.0%	minimum	22.9

**Summary Statistics**

Mean	22.9
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

**Bias**



**Quantiles**

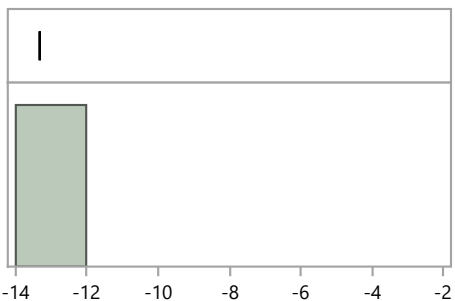
100.0%	maximum	-18.5
99.5%		-18.5
97.5%		-18.5
90.0%		-18.5
75.0%	quartile	-18.5
50.0%	median	-18.5
25.0%	quartile	-18.5
10.0%		-18.5
2.5%		-18.5
0.5%		-18.5
0.0%	minimum	-18.5

**Summary Statistics**

Mean	-18.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

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

**Bias**



**Quantiles**

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

**Summary Statistics**

Mean	-13.3
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0