EPA SAMPLE NO.

MX1007

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51882 MA No. : SDG No.: MX1007

Matrix: SOIL Lab Sample ID: P4917-01

% Solids: 100 Date Received: 11/19/2024

Analytical Method: ICP_AES

Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): mg/kg

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7429-90-5	Aluminum	5500		12/02/2024	1854
7440-36-0	Antimony	47		12/02/2024	1854
7440-38-2	Arsenic	170		12/02/2024	1854
7440-39-3	Barium	340		12/02/2024	1854
7440-41-7	Beryllium	160	D	12/02/2024	1916
7440-43-9	Cadmium	110		12/02/2024	1854
7440-70-2	Calcium	5000		12/02/2024	1854
7440-47-3	Chromium	240		12/02/2024	1854
7440-48-4	Cobalt	170		12/02/2024	1854
7440-50-8	Copper	110		12/02/2024	1854
7439-89-6	Iron	7000		12/02/2024	1854
7439-92-1	Lead	150		12/02/2024	1854
7439-95-4	Magnesium	1600		12/02/2024	1854
7439-96-5	Manganese	390		12/02/2024	1854
7440-02-0	Nickel	110		12/02/2024	1854
7440-09-7	Potassium	1000		12/02/2024	1854
7782-49-2	Selenium	79		12/02/2024	1854
7440-22-4	Silver	43		12/02/2024	1854
7440-23-5	Sodium	460		12/02/2024	1854
7440-28-0	Thallium	180		12/02/2024	1854
7440-62-2	Vanadium	110		12/02/2024	1854
7440-66-6	Zinc	310		12/02/2024	1854

NOTE: Hardness (total) is reported in mg/L

Comments:

EPA SAMPLE NO.

MX1009

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Alliance Technical Group, LLC Contract: 68HERH20D0011

Lab Code: ACE Case No.: 51882 MA No. : SDG No.: MX1007

Matrix: Water Lab Sample ID: P4917-03

% Solids: Date Received: 11/19/2024

Analytical Method: ICP_AES

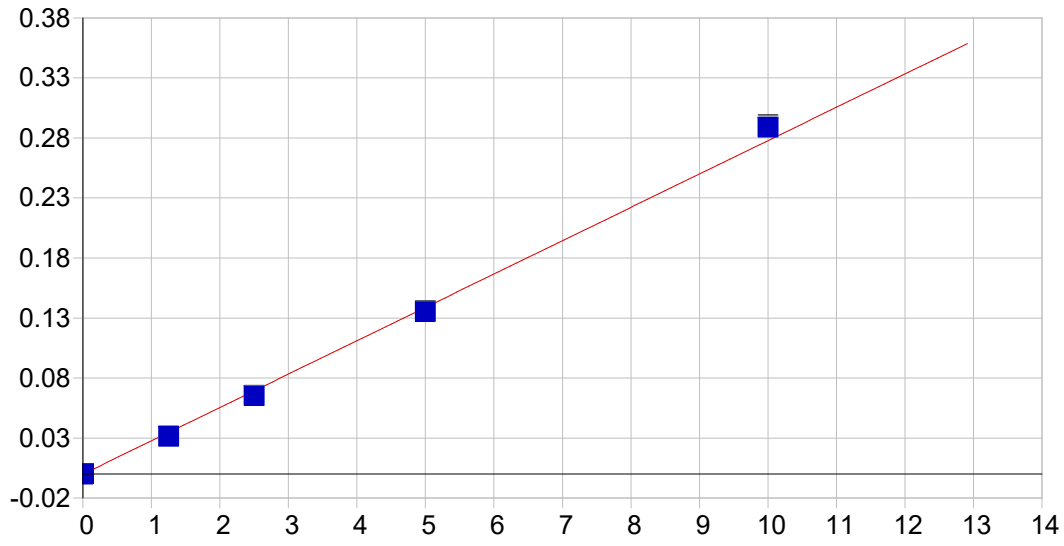
Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7429-90-5	Aluminum	2400		12/02/2024	1850
7440-36-0	Antimony	220		12/02/2024	1850
7440-38-2	Arsenic	620		12/02/2024	1850
7440-39-3	Barium	850		12/02/2024	1850
7440-41-7	Beryllium	420		12/02/2024	1850
7440-43-9	Cadmium	250		12/02/2024	1850
7440-70-2	Calcium	5000	U	12/02/2024	1850
7440-47-3	Chromium	370		12/02/2024	1850
7440-48-4	Cobalt	120		12/02/2024	1850
7440-50-8	Copper	160		12/02/2024	1850
7439-89-6	Iron	790		12/02/2024	1850
7439-92-1	Lead	560		12/02/2024	1850
7439-95-4	Magnesium	5000	U	12/02/2024	1850
7439-96-5	Manganese	420		12/02/2024	1850
7440-02-0	Nickel	1500		12/02/2024	1850
7440-09-7	Potassium	5000	U	12/02/2024	1850
7782-49-2	Selenium	310		12/02/2024	1850
7440-22-4	Silver	610		12/02/2024	1850
7440-23-5	Sodium	5000	U	12/02/2024	1850
7440-28-0	Thallium	630		12/02/2024	1850
7440-62-2	Vanadium	410		12/02/2024	1850
7440-66-6	Zinc	340		12/02/2024	1850
Hardness	Hardness (total)	33	U	12/02/2024	1850

NOTE: Hardness (total) is reported in mg/L

Comments:

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



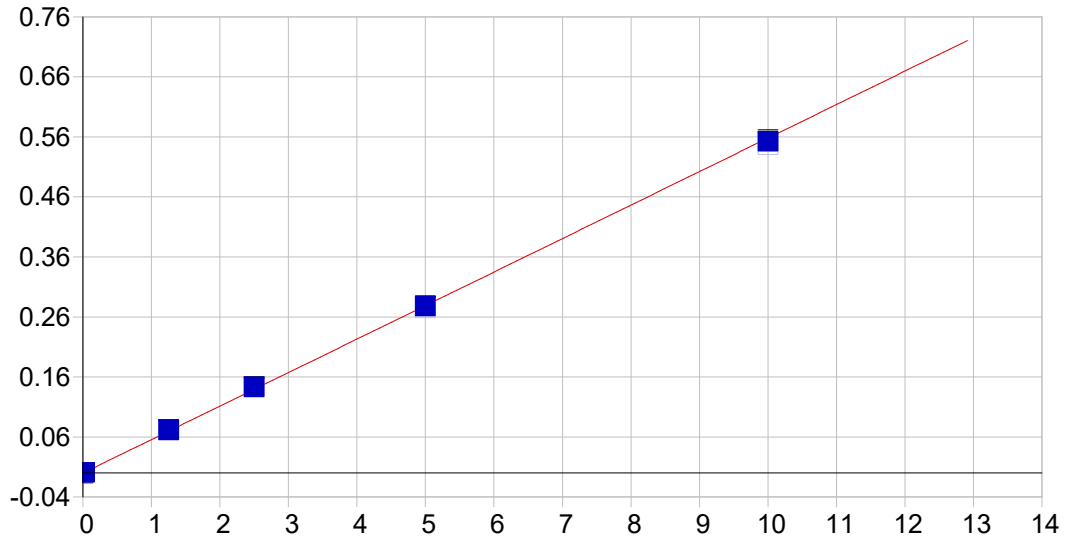
As 189.042 {479}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000161	Re-Slope:	1.000000
A1 (Gain):	0.027796	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.998969	Status:	OK.
Std Error of Est:	0.000021		
Predicted MDL:	0.006988		
Predicted MQL:	0.023295		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00016	.000	1
S1	.01000	.01152	.002	15.2	.00016	.000	1
S2	1.2500	1.1325	-.118	-9.40	.03146	.000	1
S3	2.5000	2.3500	-.150	-6.00	.06545	.000	1
S4	5.0000	4.8721	-.128	-2.56	.13585	.000	1
S5	10.000	10.394	.394	3.94	.28991	.001	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



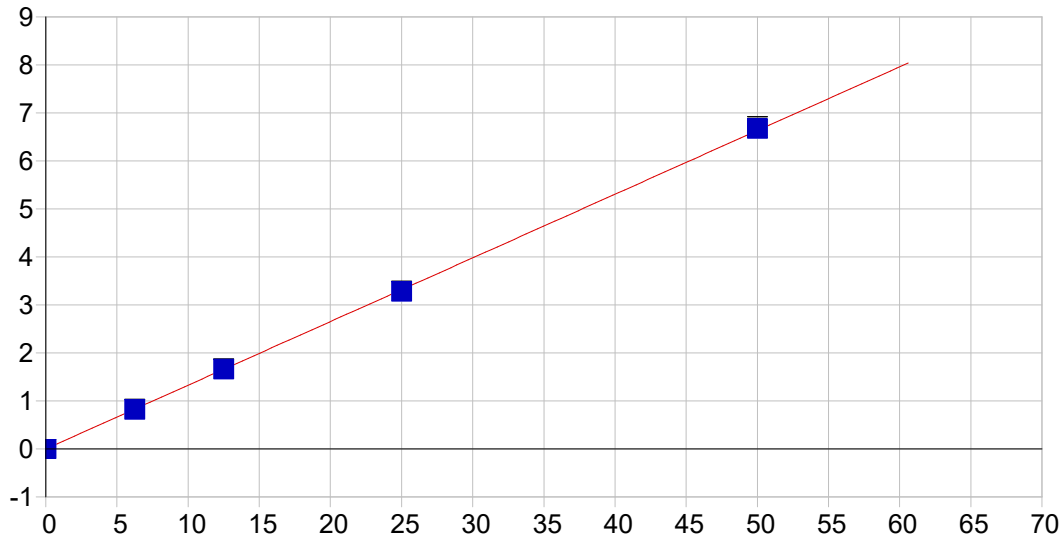
Tl 190.856 {477}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000374	Re-Slope:	1.000000
A1 (Gain):	0.055843	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999854	Status:	OK.
Std Error of Est:	0.000025		
Predicted MDL:	0.003872		
Predicted MQL:	0.012908		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	-.00037	.000	1
S1	.02500	.02969	.005	18.8	.00125	.000	1
S2	1.2500	1.2907	.041	3.26	.07095	.000	1
S3	2.5000	2.5726	.073	2.90	.14178	.000	1
S4	5.0000	4.9805	-.020	-.390	.27474	.000	1
S5	10.000	9.9016	-.098	-.984	.54653	.002	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



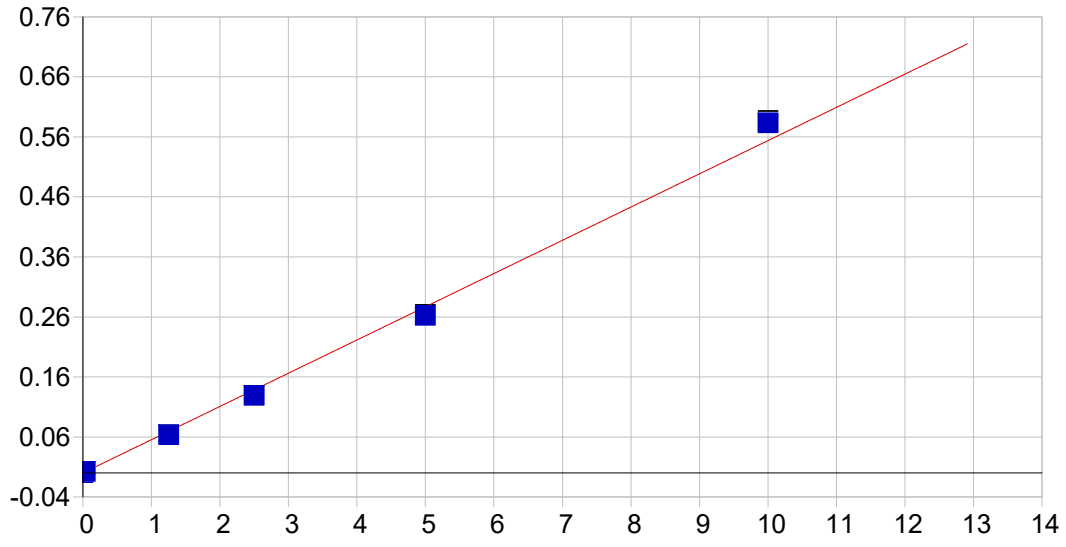
Pb 220.353 {453}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000205	Re-Slope:	1.000000
A1 (Gain):	0.132662	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999970	Status:	OK.
Std Error of Est:	0.000039		
Predicted MDL:	0.003468		
Predicted MQL:	0.011559		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00020	.000	1
S1	.01000	.00809	-.002	-19.1	.00087	.001	1
S2	6.2500	6.1953	-.055	-.875	.82147	.002	1
S3	12.500	12.529	.029	.233	1.6615	.004	1
S4	25.000	24.728	-.272	-1.09	3.2794	.008	1
S5	50.000	50.299	.299	.598	6.6709	.042	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



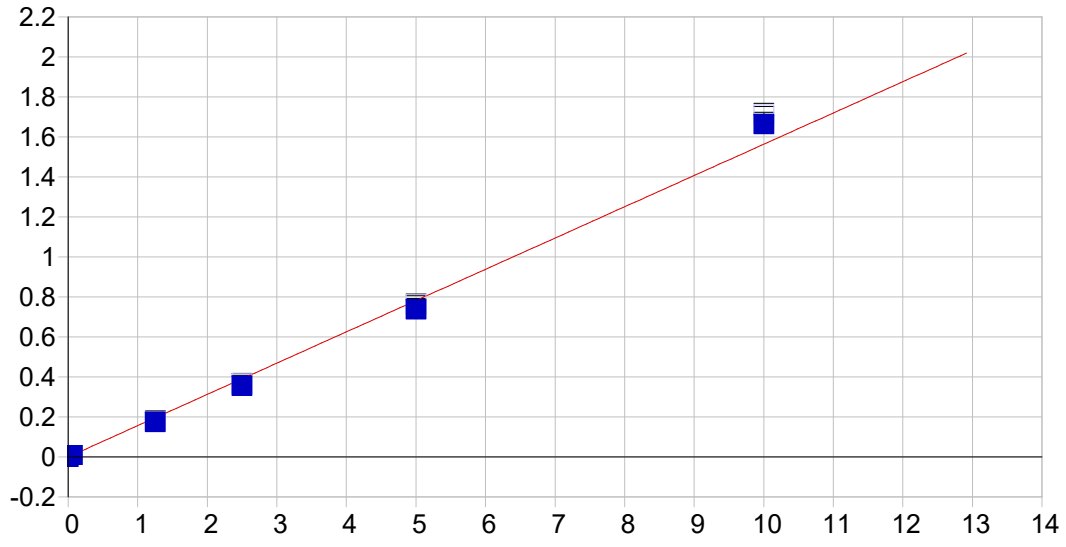
Se 196.090 {472}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000014	Re-Slope:	1.000000
A1 (Gain):	0.055397	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.998329	Status:	OK.
Std Error of Est:	0.000100		
Predicted MDL:	0.006982		
Predicted MQL:	0.023275		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00001	.000	1
S1	.03500	.03747	.002	7.07	.00206	.000	1
S2	1.2500	1.1478	-.102	-8.18	.06344	.000	1
S3	2.5000	2.3287	-.171	-6.85	.12873	.000	1
S4	5.0000	4.7365	-.263	-5.27	.26185	.001	1
S5	10.000	10.534	.534	5.34	.58251	.004	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



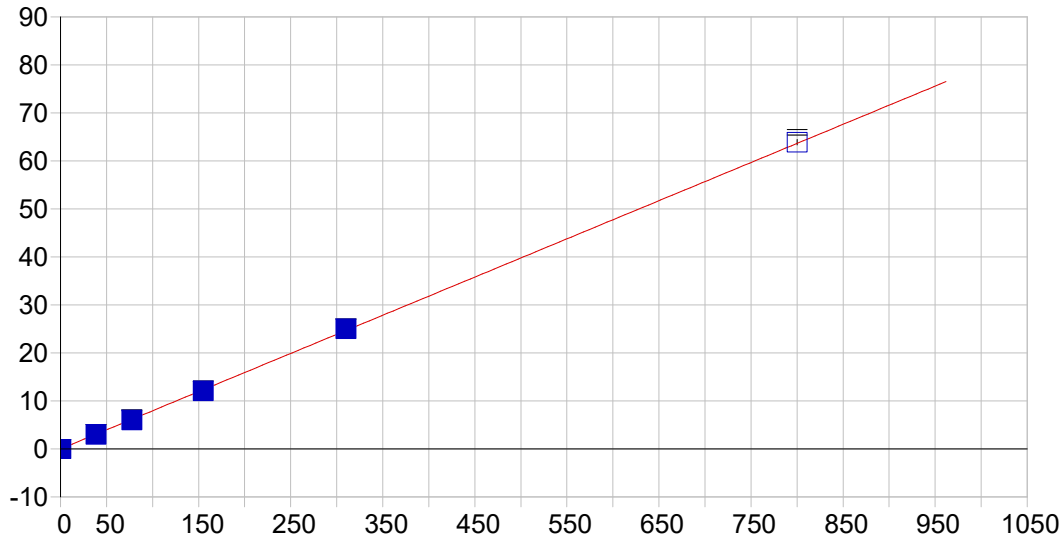
Sb 206.833 {463}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000028	Re-Slope:	1.000000
A1 (Gain):	0.156333	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.997678	Status:	OK.
Std Error of Est:	0.000452		
Predicted MDL:	0.002909		
Predicted MQL:	0.009698		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	-.00003	.000	1
S1	.06000	.05748	-.003	-4.20	.00896	.000	1
S2	1.2500	1.1126	-.137	-11.0	.17967	.000	1
S3	2.5000	2.2741	-.226	-9.04	.36703	.000	1
S4	5.0000	4.7206	-.279	-5.59	.76102	.004	1
S5	10.000	10.645	.645	6.45	1.7103	.009	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



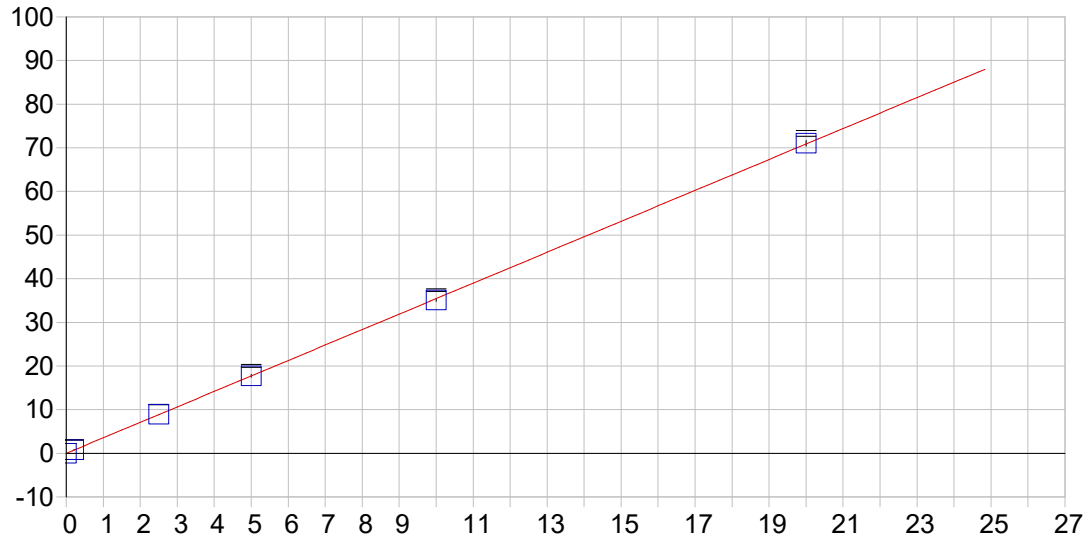
Al 396.152 { 85}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.002282	Re-Slope:	1.000000
A1 (Gain):	0.079563	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999908	Status:	OK.
Std Error of Est:	0.000672		
Predicted MDL:	0.012315		
Predicted MQL:	0.041051		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	-.00228	.000	1
S1	.20000	.20101	.001	.507	.01374	.000	1
S2	38.750	37.524	-1.23	-3.16	2.9870	.005	1
S3	77.500	75.131	-2.37	-3.06	5.9828	.116	1
S4	155.00	151.50	-3.50	-2.26	12.066	.020	1
S5	310.00	314.06	4.06	1.31	25.015	.070	1
S6	800.00	803.04	3.04	.381	63.890	.560	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



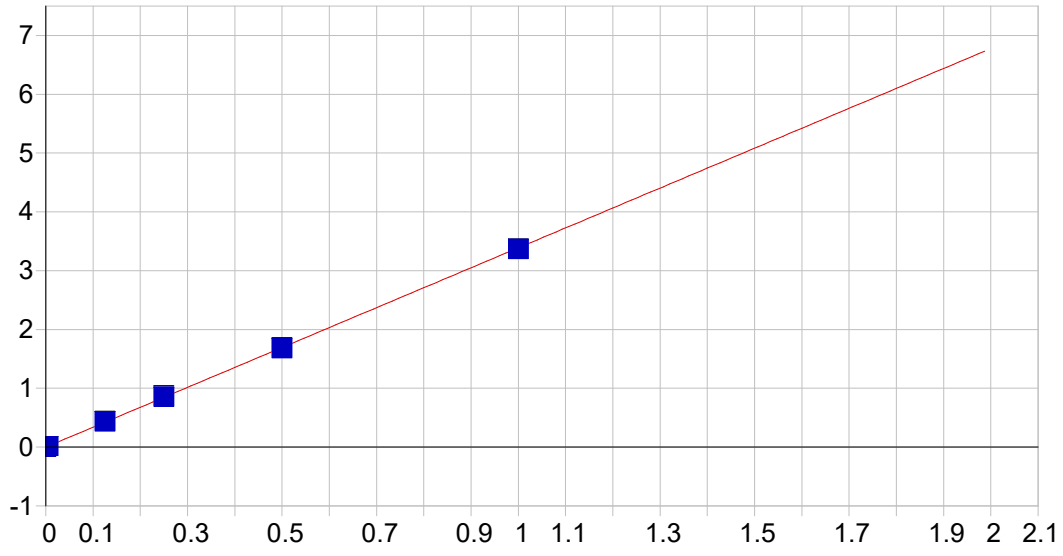
Ba 493.409 { 68}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.002067	Re-Slope:	1.000000
A1 (Gain):	3.543739	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999940	Status:	OK.
Std Error of Est:	0.004133		
Predicted MDL:	0.000645		
Predicted MQL:	0.002149		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00003	-.000	.000	-.00216	.003	1
S1	.20000	.22667	.027	13.3	.80120	.003	1
S2	2.5000	2.5123	.012	.492	8.9009	.024	1
S3	5.0000	5.0069	.007	.138	17.741	.342	1
S4	10.000	9.9100	-.090	-.900	35.116	.279	1
S5	20.000	20.044	.044	.221	71.029	.686	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



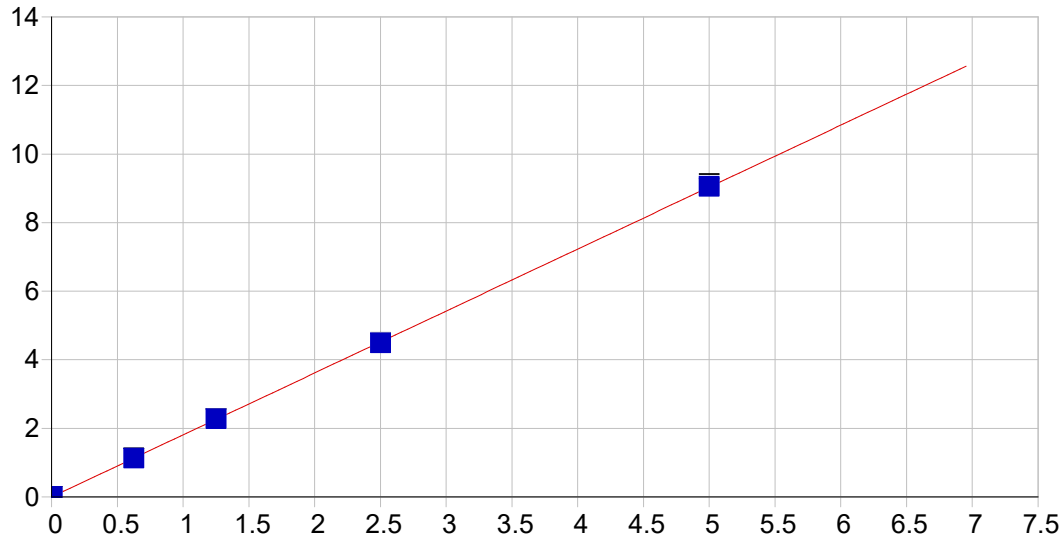
Be 234.861 {144}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000953	Re-Slope:	1.000000
A1 (Gain):	3.389273	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999861	Status:	OK.
Std Error of Est:	0.000211		
Predicted MDL:	0.000119		
Predicted MQL:	0.000396		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00096	.000	1
S1	.00500	.00610	.001	22.1	.01972	.000	1
S2	.12500	.12961	.005	3.69	.43766	.001	1
S3	.25000	.25349	.003	1.39	.85682	.013	1
S4	.50000	.49664	-.003	-.671	1.6796	.007	1
S5	1.0000	.99415	-.006	-.585	3.3630	.003	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



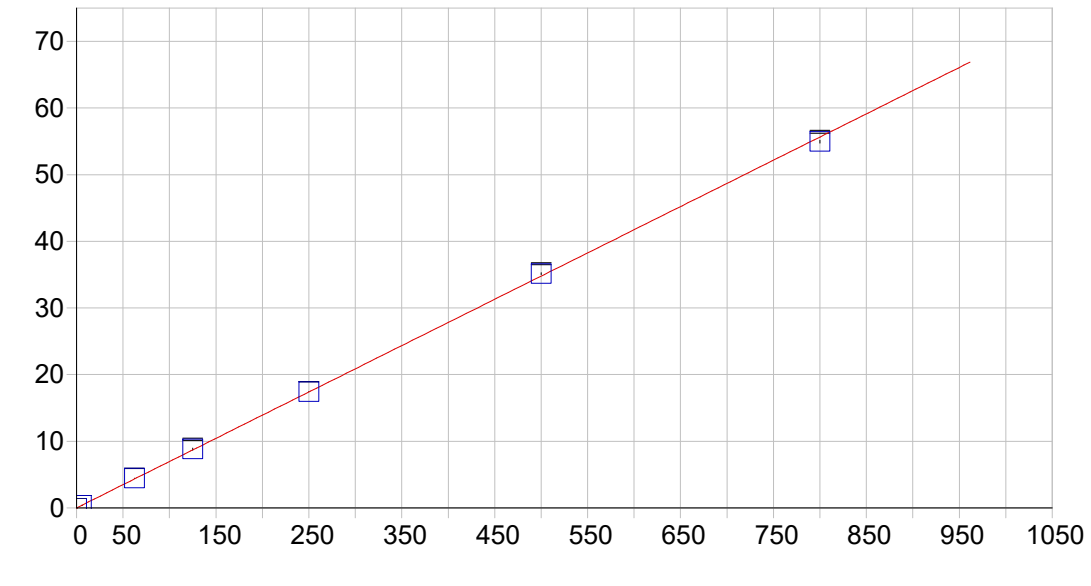
Cd 214.438 {457}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000353	Re-Slope:	1.000000
A1 (Gain):	1.807009	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999986	Status:	OK.
Std Error of Est:	0.000081		
Predicted MDL:	0.000154		
Predicted MQL:	0.000512		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00035	.000	1
S1	.00500	.00556	.001	11.1	.01040	.000	1
S2	.62500	.62390	-.001	-.176	1.1305	.003	1
S3	1.2500	1.2592	.009	.739	2.2812	.004	1
S4	2.5000	2.4825	-.017	-.698	4.4972	.009	1
S5	5.0000	5.0088	.009	.175	9.0729	.064	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



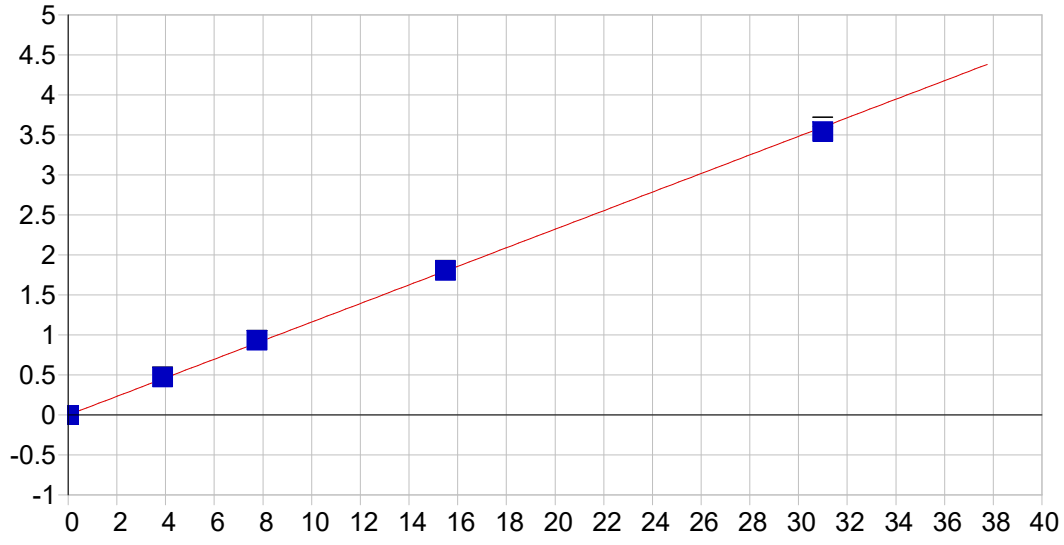
Ca 373.690 { 90}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.004286	Re-Slope:	1.000000
A1 (Gain):	0.069559	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999897	Status:	OK.
Std Error of Est:	0.003490		
Predicted MDL:	0.012468		
Predicted MQL:	0.041559		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00097	-.001	.000	.00422	.000	1
S1	5.0000	5.7804	.780	15.6	.40637	.001	1
S2	62.500	63.920	1.42	2.27	4.4505	.013	1
S3	125.00	126.73	1.73	1.39	8.8199	.167	1
S4	250.00	250.57	.568	.227	17.434	.028	1
S5	500.00	505.39	5.39	1.08	35.159	.141	1
S6	800.00	790.11	-9.89	-1.24	54.964	.229	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



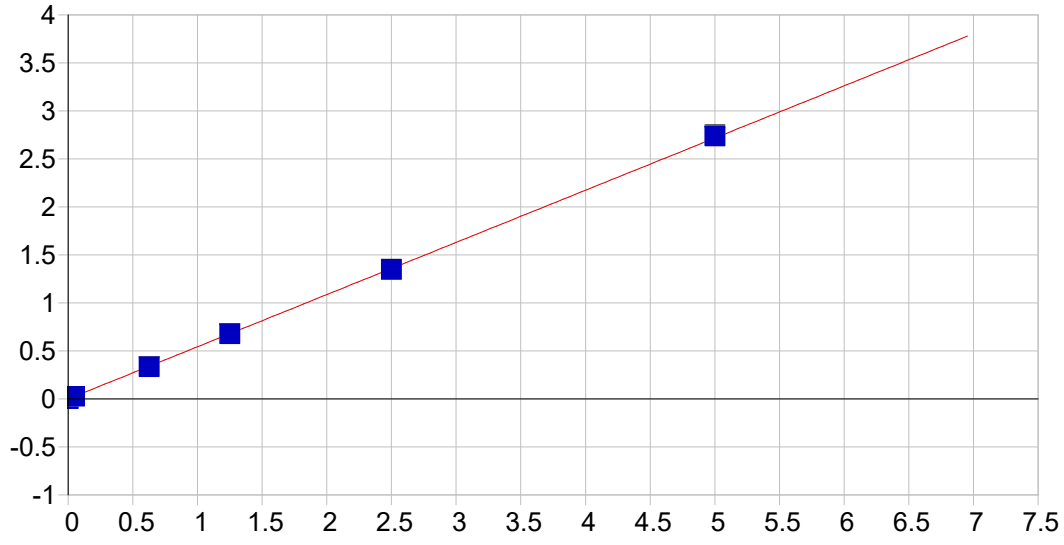
Cr 267.716 {126}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000202	Re-Slope:	1.000000
A1 (Gain):	0.116066	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999752	Status:	OK.
Std Error of Est:	0.000076		
Predicted MDL:	0.001160		
Predicted MQL:	0.003867		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00020	.000	1
S1	.01000	.01256	.003	25.6	.00126	.000	1
S2	3.8750	4.0724	.197	5.10	.47298	.001	1
S3	7.7500	8.0253	.275	3.55	.93227	.001	1
S4	15.500	15.535	.035	.224	1.8049	.002	1
S5	31.000	30.490	-.510	-1.65	3.5427	.058	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



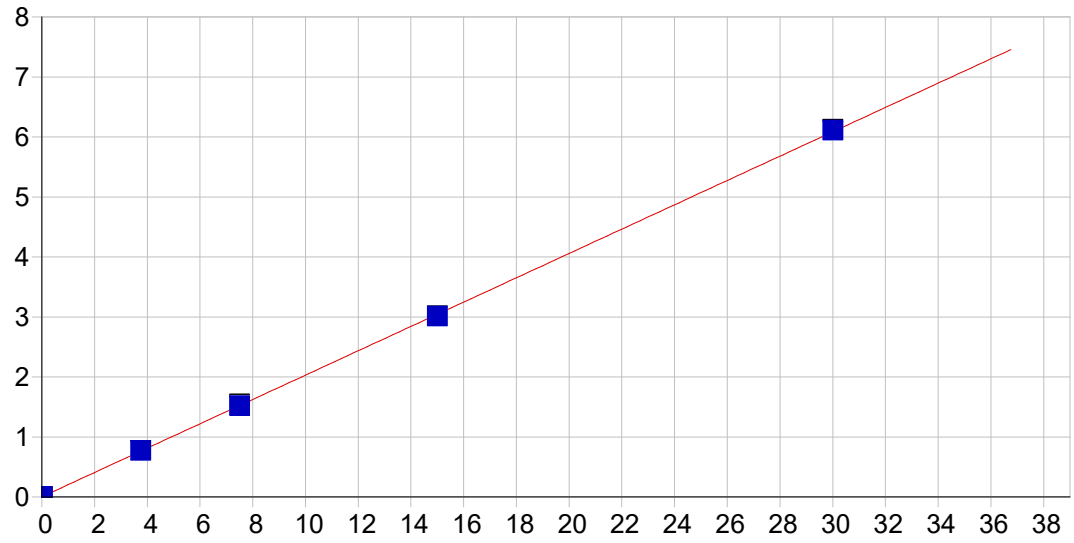
Co 228.616 {448}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000318	Re-Slope:	1.000000
A1 (Gain):	0.543535	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999963	Status:	OK.
Std Error of Est:	0.000125		
Predicted MDL:	0.000588		
Predicted MQL:	0.001961		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00032	.000	1
S1	.05000	.05235	.002	4.70	.02823	.000	1
S2	.62500	.61444	-.011	-1.69	.33407	.001	1
S3	1.2500	1.2469	-.003	-.252	.67822	.001	1
S4	2.5000	2.4782	-.022	-.872	1.3483	.002	1
S5	5.0000	5.0332	.033	.663	2.7387	.013	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



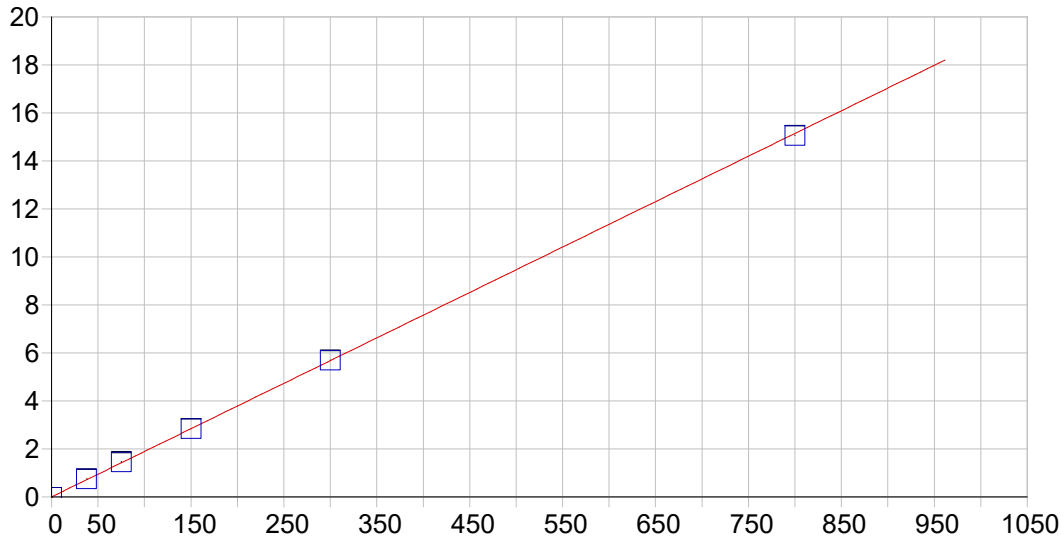
Cu 324.754 {104}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.001848	Re-Slope:	1.000000
A1 (Gain):	0.202778	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999974	Status:	OK.
Std Error of Est:	0.000068		
Predicted MDL:	0.002816		
Predicted MQL:	0.009388		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00185	.000	1
S1	.02500	.02738	.002	9.52	.00740	.000	1
S2	3.7500	3.7957	.046	1.22	.77105	.002	1
S3	7.5000	7.4822	-.018	-.238	1.5181	.027	1
S4	15.000	14.844	-.156	-1.04	3.0100	.001	1
S5	30.000	30.125	.125	.418	6.1067	.018	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



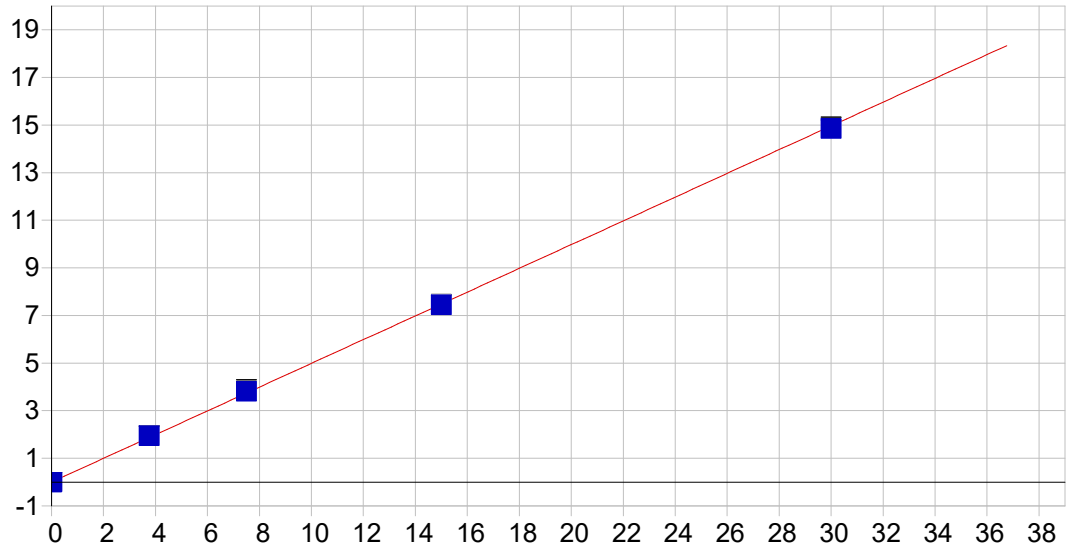
Fe 259.837 {130}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000261	Re-Slope:	1.000000
A1 (Gain):	0.018929	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999948	Status:	OK.
Std Error of Est:	0.000085		
Predicted MDL:	0.013284		
Predicted MQL:	0.044282		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00002	-.000	.000	.00026	.000	1
S1	.10000	.10966	.010	9.66	.00234	.000	1
S2	37.500	39.149	1.65	4.40	.74130	.001	1
S3	75.000	76.780	1.78	2.37	1.4536	.031	1
S4	150.00	150.27	.271	.181	2.8447	.008	1
S5	300.00	300.75	.751	.250	5.6930	.009	1
S6	800.00	795.54	-4.46	-.558	15.059	.009	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



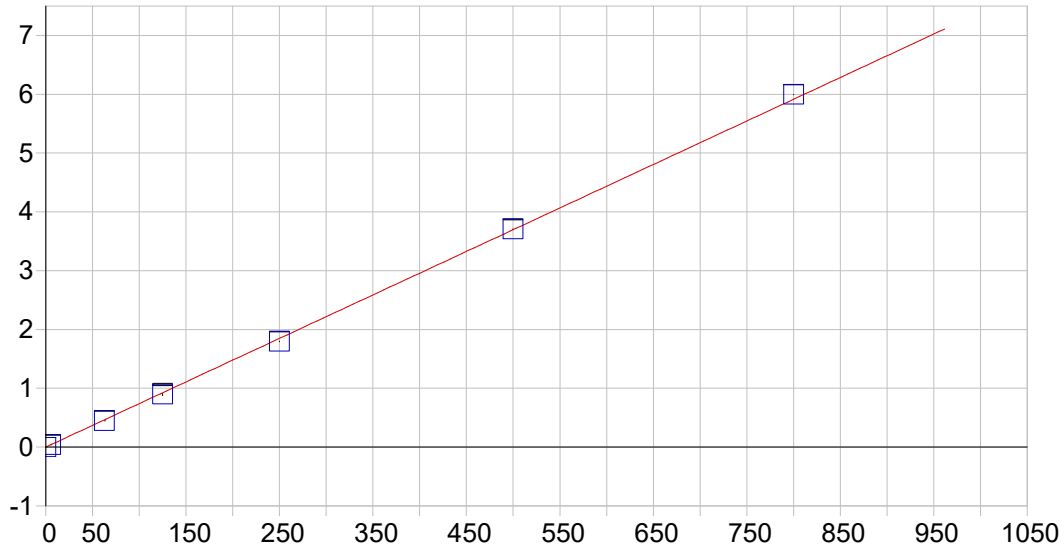
Mn 257.610 {131}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000165	Re-Slope:	1.000000
A1 (Gain):	0.498854	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999905	Status:	OK.
Std Error of Est:	0.000245		
Predicted MDL:	0.000589		
Predicted MQL:	0.001963		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00017	.000	1
S1	.01500	.01901	.004	26.7	.00933	.000	1
S2	3.7500	3.8885	.138	3.69	1.9399	.007	1
S3	7.5000	7.6411	.141	1.88	3.8122	.072	1
S4	15.000	14.933	-.067	-.448	7.4502	.020	1
S5	30.000	29.784	-.216	-.721	14.860	.063	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



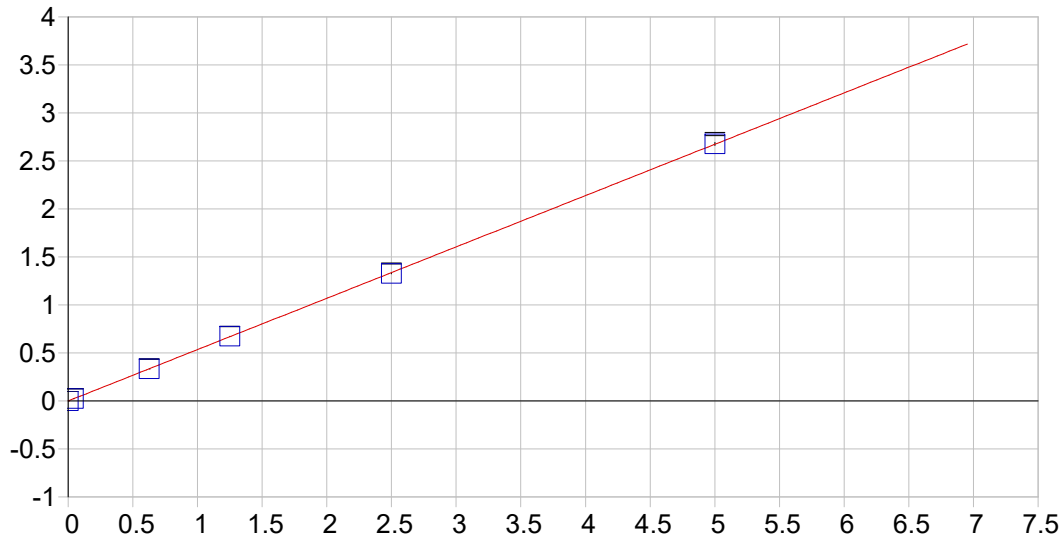
Mg 279.079 {121}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000095	Re-Slope:	1.000000
A1 (Gain):	0.007394	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999839	Status:	OK.
Std Error of Est:	0.000464		
Predicted MDL:	0.040506		
Predicted MQL:	0.135019		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00006	-.000	.000	-.00010	.000	1
S1	5.0000	5.4224	.422	8.45	.04000	.001	1
S2	62.500	60.584	-1.92	-3.07	.44787	.001	1
S3	125.00	121.26	-3.74	-2.99	.89650	.021	1
S4	250.00	242.94	-7.06	-2.82	1.7962	.005	1
S5	500.00	501.21	1.21	.242	3.7059	.008	1
S6	800.00	811.09	11.1	1.39	5.9972	.003	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



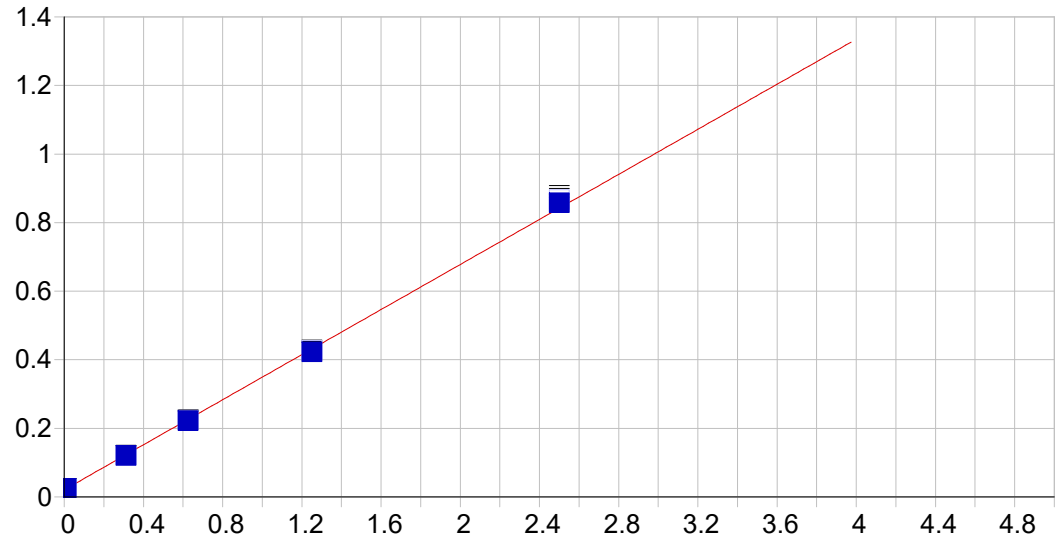
Ni 231.604 {446}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000049	Re-Slope:	1.000000
A1 (Gain):	0.534681	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999952	Status:	OK.
Std Error of Est:	0.000124		
Predicted MDL:	0.000636		
Predicted MQL:	0.002122		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	.00005	.000	1
S1	.04000	.04548	.005	13.7	.02437	.000	1
S2	.62500	.62266	-.002	-.374	.33298	.001	1
S3	1.2500	1.2568	.007	.548	.67206	.000	1
S4	2.5000	2.4842	-.016	-.633	1.3283	.004	1
S5	5.0000	5.0058	.006	.117	2.6766	.016	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



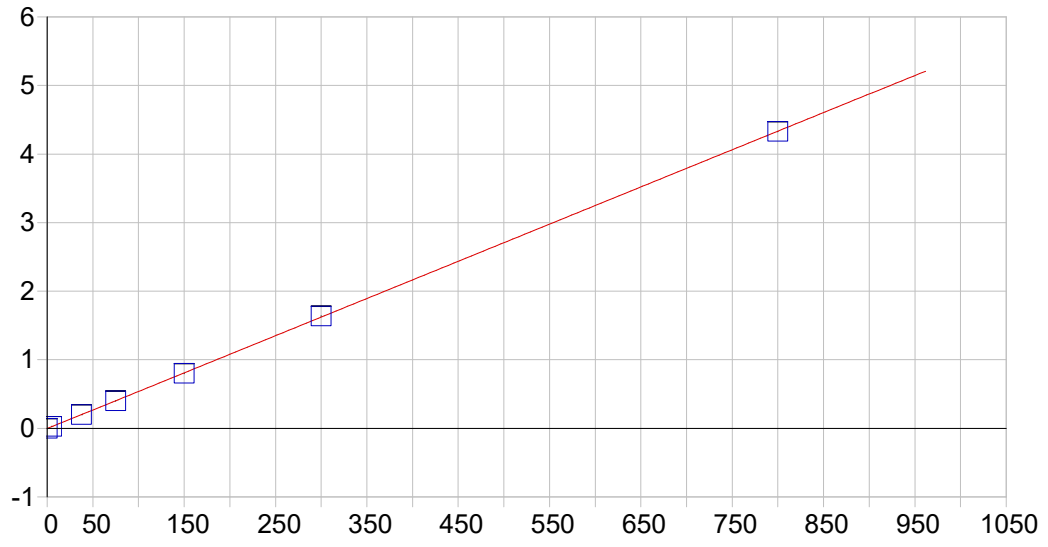
Ag 328.068 {103}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.020745	Re-Slope:	1.000000
A1 (Gain):	0.328605	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999754	Status:	OK.
Std Error of Est:	0.000062		
Predicted MDL:	n/a		
Predicted MQL:	n/a		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.02074	.000	1
S1	.01000	.01176	.002	17.6	.02460	.000	1
S2	.31250	.30310	-.009	-3.01	.12145	.000	1
S3	.62500	.61165	-.013	-2.14	.22395	.001	1
S4	1.2500	1.2233	-.027	-2.14	.42714	.001	1
S5	2.5000	2.5478	.048	1.91	.86680	.013	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



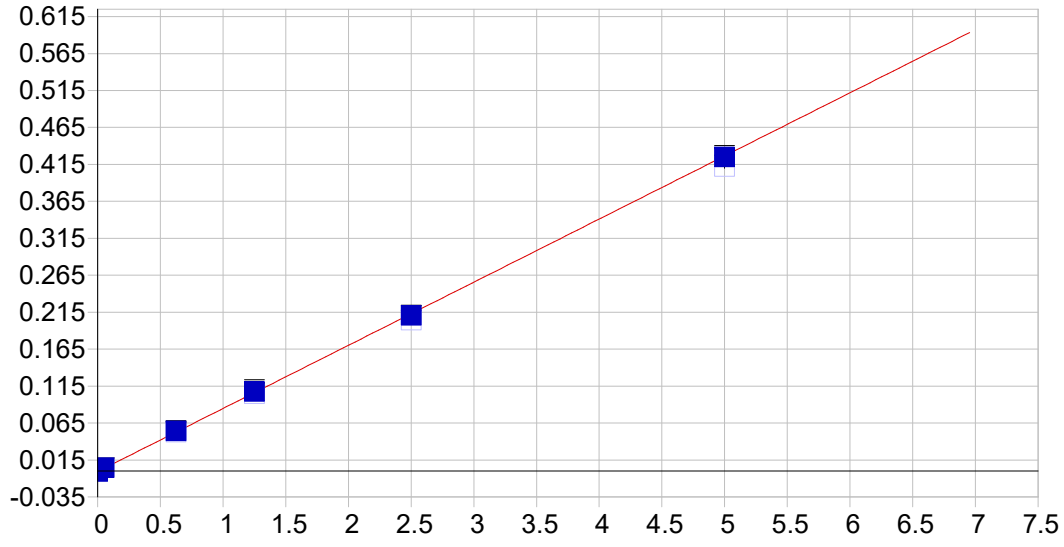
Na 818.326 { 41}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.003534	Re-Slope:	1.000000
A1 (Gain):	0.005421	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999929	Status:	OK.
Std Error of Est:	0.000199		
Predicted MDL:	0.342793		
Predicted MQL:	1.142644		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00081	-.001	.000	-.00354	.001	1
S1	5.0000	5.8608	.861	17.2	.02824	.002	1
S2	37.500	37.567	.067	.178	.20011	.001	1
S3	75.000	74.461	-.539	-.718	.40011	.004	1
S4	150.00	148.27	-1.73	-1.15	.80020	.002	1
S5	300.00	302.42	2.42	.807	1.6358	.005	1
S6	800.00	798.92	-1.08	-.135	4.3273	.002	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



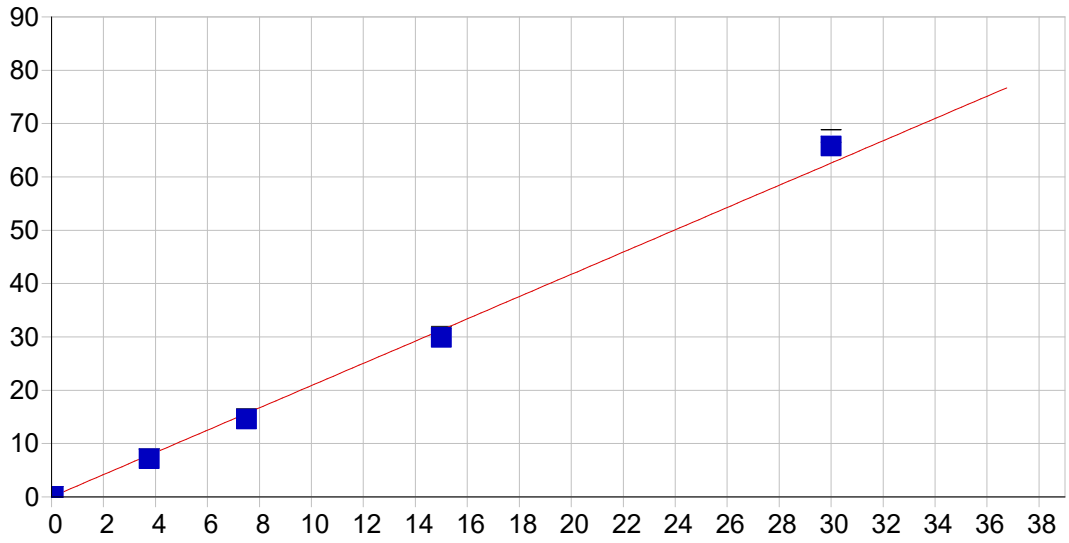
V 292.402 {115}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000726	Re-Slope:	1.000000
A1 (Gain):	0.085442	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999839	Status:	OK.
Std Error of Est:	0.000039		
Predicted MDL:	0.006461		
Predicted MQL:	0.021538		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	-.00073	.000	1
S1	.05000	.05961	.010	19.2	.00436	.000	1
S2	.62500	.64143	.016	2.63	.05244	.001	1
S3	1.2500	1.2672	.017	1.37	.10426	.003	1
S4	2.5000	2.4737	-.026	-1.05	.20407	.000	1
S5	5.0000	4.9828	-.017	-.344	.41188	.002	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



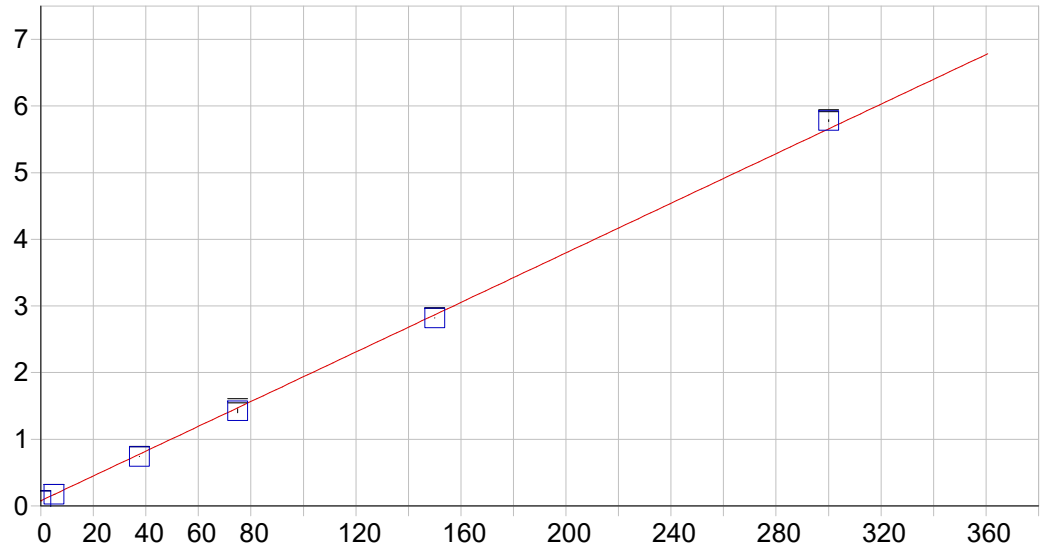
Zn 213.856 {158}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.002237	Re-Slope:	1.000000
A1 (Gain):	2.086653	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.998429	Status:	OK.
Std Error of Est:	0.008341		
Predicted MDL:	0.000541		
Predicted MQL:	0.001804		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00223	.001	1
S1	.06000	.07144	.011	19.1	.15192	.003	1
S2	3.7500	3.4081	-.342	-9.12	7.1233	.006	1
S3	7.5000	6.9792	-.521	-6.94	14.584	.076	1
S4	15.000	14.324	-.676	-4.51	29.929	.170	1
S5	30.000	31.527	1.53	5.09	65.865	1.17	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



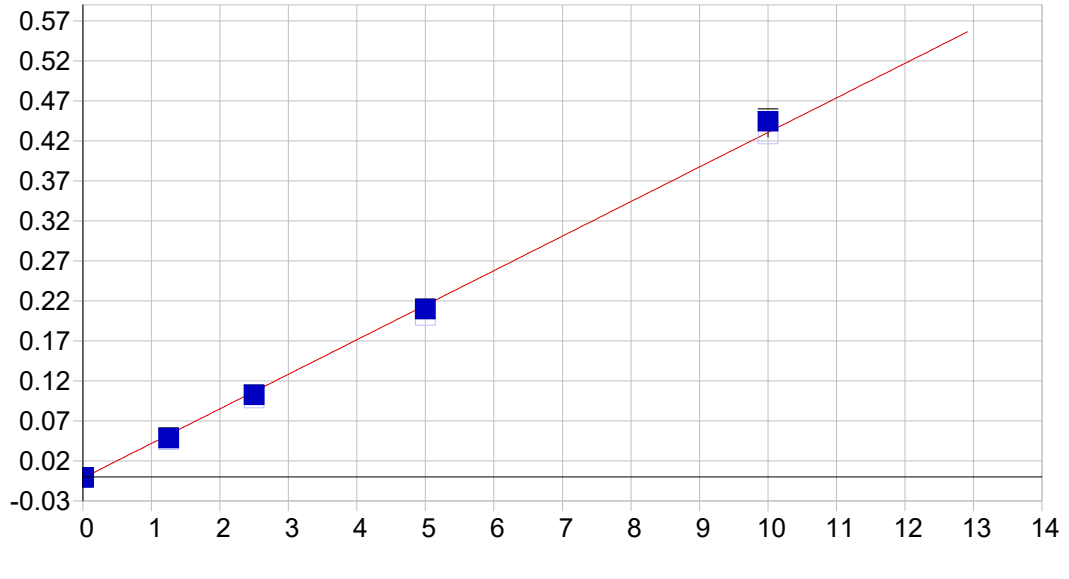
K 769.896 { 44}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.077967	Re-Slope:	1.000000
A1 (Gain):	0.018597	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999688	Status:	OK.
Std Error of Est:	0.000957		
Predicted MDL:	0.125574		
Predicted MQL:	0.418580		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00030	.000	.000	.07797	.002	1
S1	5.0000	5.0753	.075	1.51	.17235	.001	1
S2	37.500	35.696	-1.80	-4.81	.74180	.001	1
S3	75.000	72.597	-2.40	-3.20	1.4280	.031	1
S4	150.00	147.49	-2.51	-1.67	2.8209	.003	1
S5	300.00	306.64	6.64	2.21	5.7804	.013	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



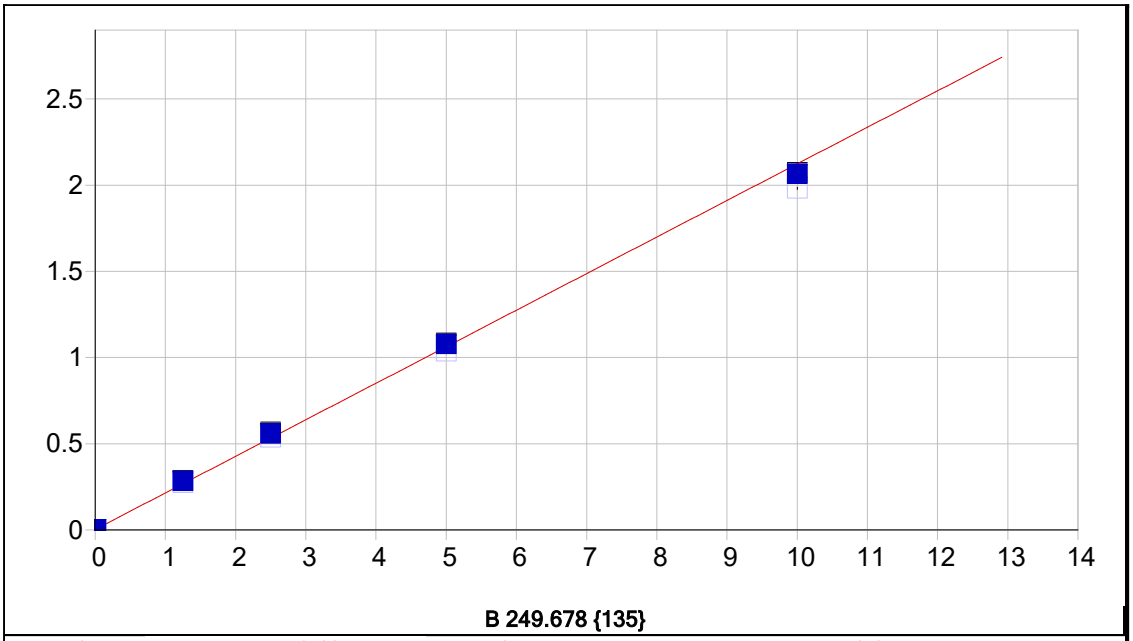
P 177.495 {490}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.001290	Re-Slope:	1.000000
A1 (Gain):	0.043186	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999290	Status:	OK.
Std Error of Est:	0.000026		
Predicted MDL:	0.004392		
Predicted MQL:	0.014641		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00129	.000	1
S1	.01000	.00969	-.000	-3.14	-.00088	.000	1
S2	1.2500	1.1497	-.100	-8.02	.04638	.000	1
S3	2.5000	2.3993	-.101	-4.03	.09836	.000	1
S4	5.0000	4.8850	-.115	-2.30	.20174	.000	1
S5	10.000	10.316	.316	3.16	.42835	.003	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



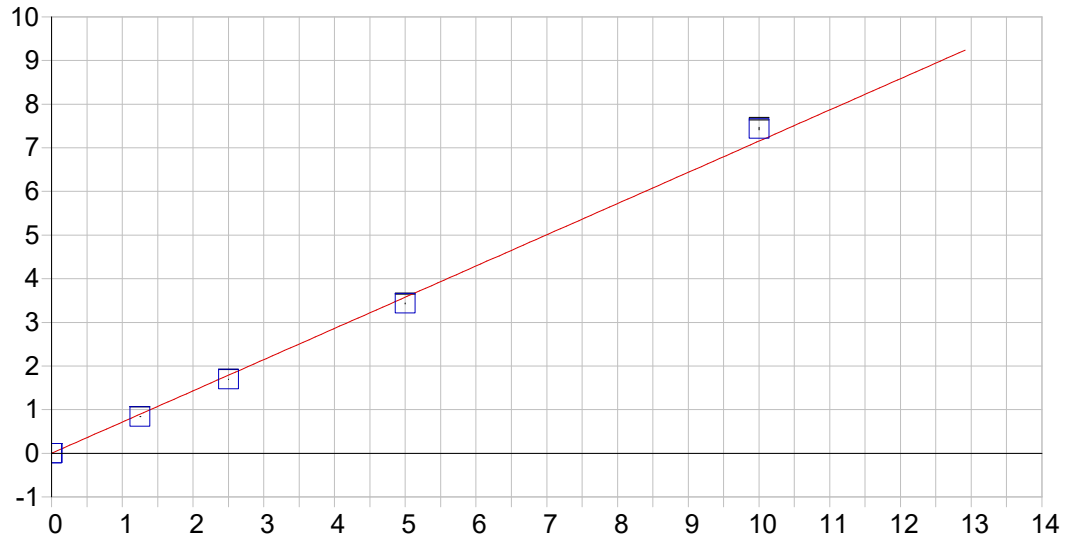
B 249.678 {135}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.002406	Re-Slope:	1.000000
A1 (Gain):	0.212099	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999064	Status:	OK.
Std Error of Est:	0.000148		
Predicted MDL:	0.001949		
Predicted MQL:	0.006498		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00241	.000	1
S1	.01000	-.00150	-.012	-115.	.00207	.000	1
S2	1.2500	1.3286	.079	6.29	.27349	.002	1
S3	2.5000	2.6220	.122	4.88	.53714	.009	1
S4	5.0000	5.0770	.077	1.54	1.0364	.005	1
S5	10.000	9.7342	-.266	-2.66	1.9814	.006	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



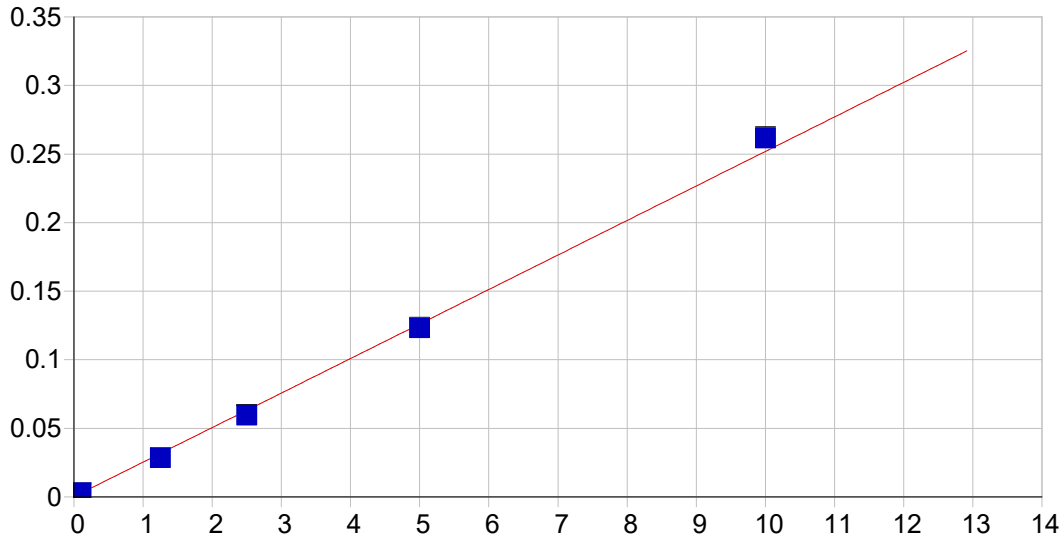
Mo 202.030 {467}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000179	Re-Slope:	1.000000
A1 (Gain):	0.715331	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999065	Status:	OK.
Std Error of Est:	0.000519		
Predicted MDL:	0.000575		
Predicted MQL:	0.001915		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00018	.000	1
S1	.01000	.01068	.001	6.77	.00746	.000	1
S2	1.2500	1.1751	-.075	-5.99	.84039	.002	1
S3	2.5000	2.3718	-.128	-5.13	1.6964	.001	1
S4	5.0000	4.8010	-.199	-3.98	3.4342	.012	1
S5	10.000	10.401	.401	4.01	7.4403	.033	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



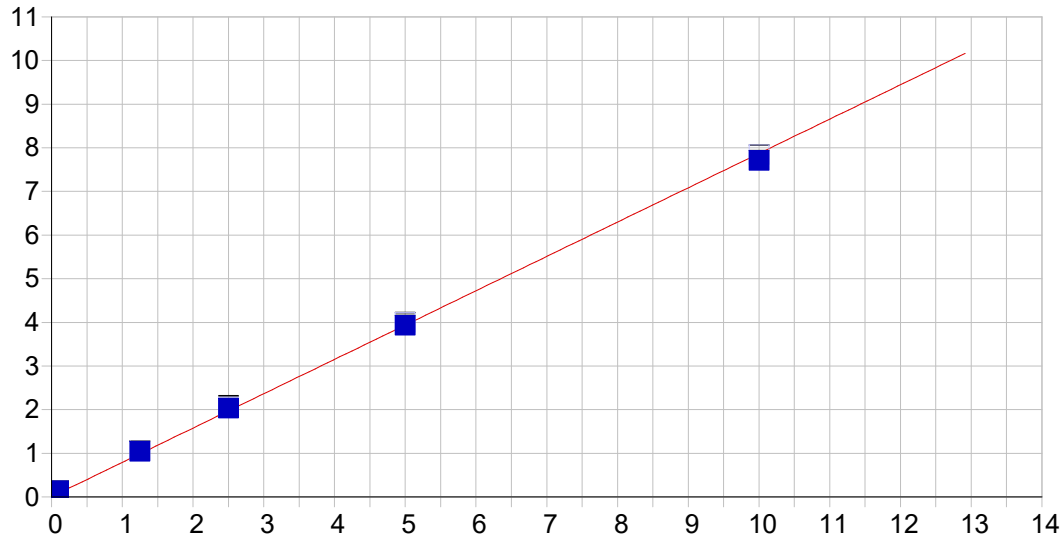
S 182.034 {485}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000222	Re-Slope:	1.000000
A1 (Gain):	0.025168	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.998963	Status:	OK.
Std Error of Est:	0.000061		
Predicted MDL:	0.007247		
Predicted MQL:	0.024157		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00022	.000	1
S1	.10000	.10747	.007	7.47	.00293	.000	1
S2	1.2500	1.1203	-.130	-10.4	.02842	.000	1
S3	2.5000	2.3591	-.141	-5.64	.05960	.000	1
S4	5.0000	4.8829	-.117	-2.34	.12312	.001	1
S5	10.000	10.380	.380	3.80	.26149	.001	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



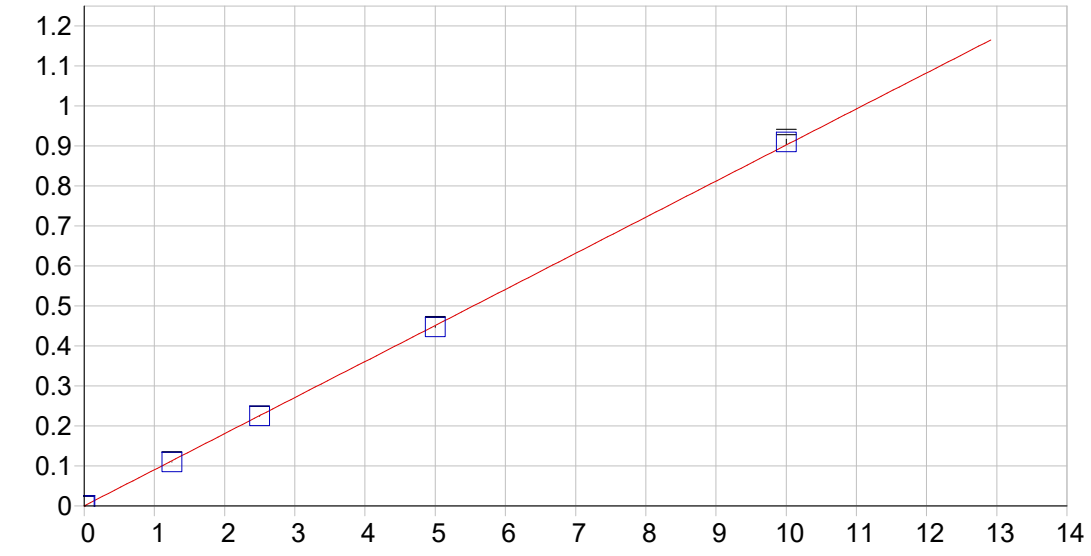
Si 251.611 {134}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.004970	Re-Slope:	1.000000
A1 (Gain):	0.786594	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.998483	Status:	OK.
Std Error of Est:	0.002342		
Predicted MDL:	0.000493		
Predicted MQL:	0.001645		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00008	-.000	.000	.00491	.000	1
S1	.10000	.17007	.070	70.1	.13927	.001	1
S2	1.2500	1.3178	.068	5.42	1.0574	.003	1
S3	2.5000	2.5729	.073	2.92	2.0606	.039	1
S4	5.0000	4.9949	-.005	-.102	3.9975	.007	1
S5	10.000	9.7949	-.205	-2.05	7.8368	.006	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



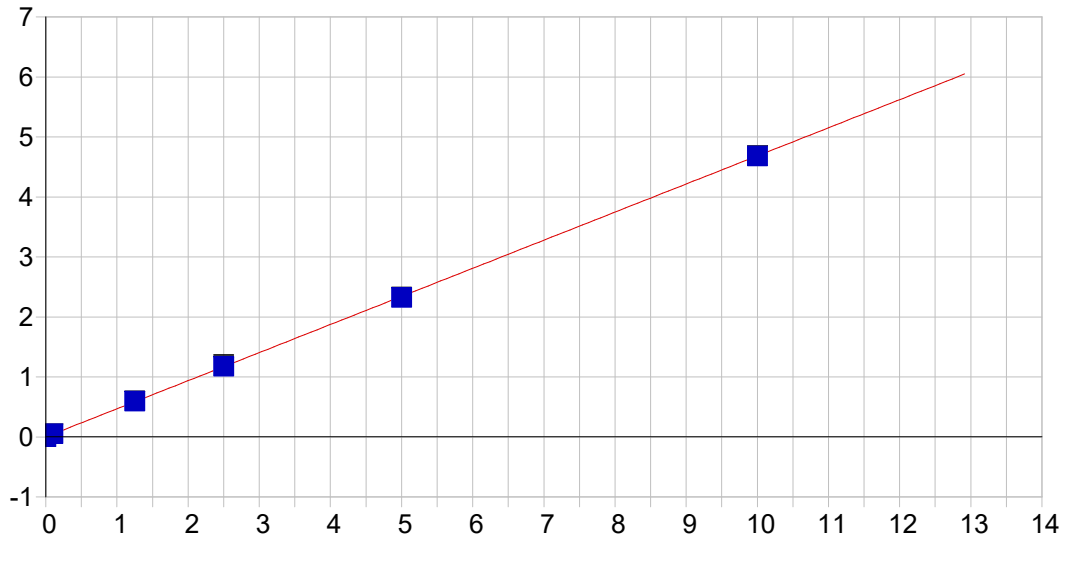
Sn 189.989 {478}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000198	Re-Slope:	1.000000
A1 (Gain):	0.090218	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999936	Status:	OK.
Std Error of Est:	0.000014		
Predicted MDL:	0.002010		
Predicted MQL:	0.006701		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00020	.000	1
S1	.00700	.00858	.002	22.6	.00097	.000	1
S2	1.2500	1.2161	-.034	-2.71	.10991	.000	1
S3	2.5000	2.4867	-.013	-.533	.22454	.001	1
S4	5.0000	4.9606	-.039	-.788	.44773	.001	1
S5	10.000	10.085	.085	.851	.91005	.007	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



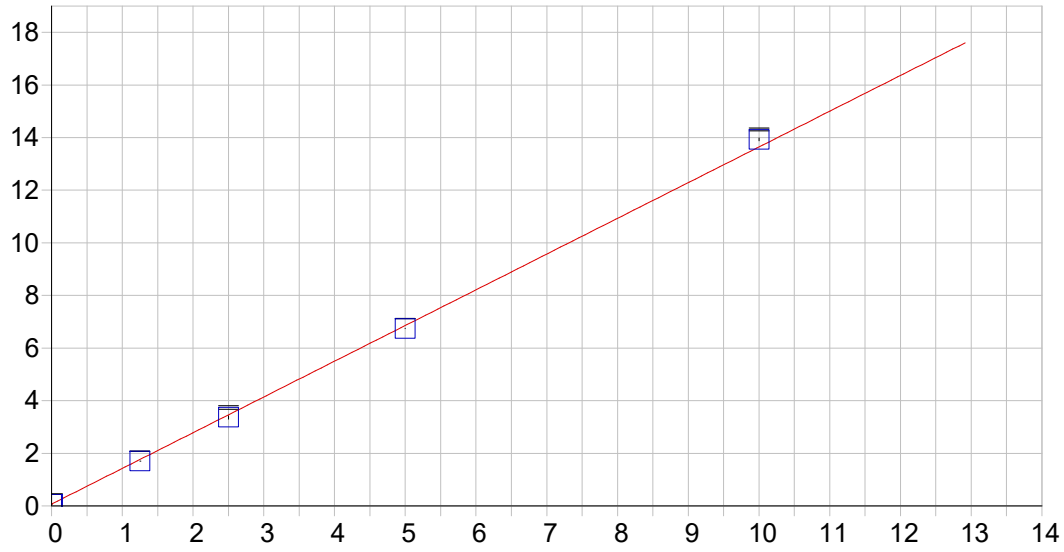
Ti 336.121 {100}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000000	Re-Slope:	1.000000
A1 (Gain):	0.468376	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999947	Status:	OK.
Std Error of Est:	0.000257		
Predicted MDL:	0.001335		
Predicted MQL:	0.004450		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	-.00001	.001	1
S1	.10000	.11109	.011	11.1	.05201	.001	1
S2	1.2500	1.2713	.021	1.70	.59513	.000	1
S3	2.5000	2.5125	.012	.500	1.1762	.024	1
S4	5.0000	4.9581	-.042	-.837	2.3211	.005	1
S5	10.000	9.9970	-.003	-.030	4.6800	.011	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



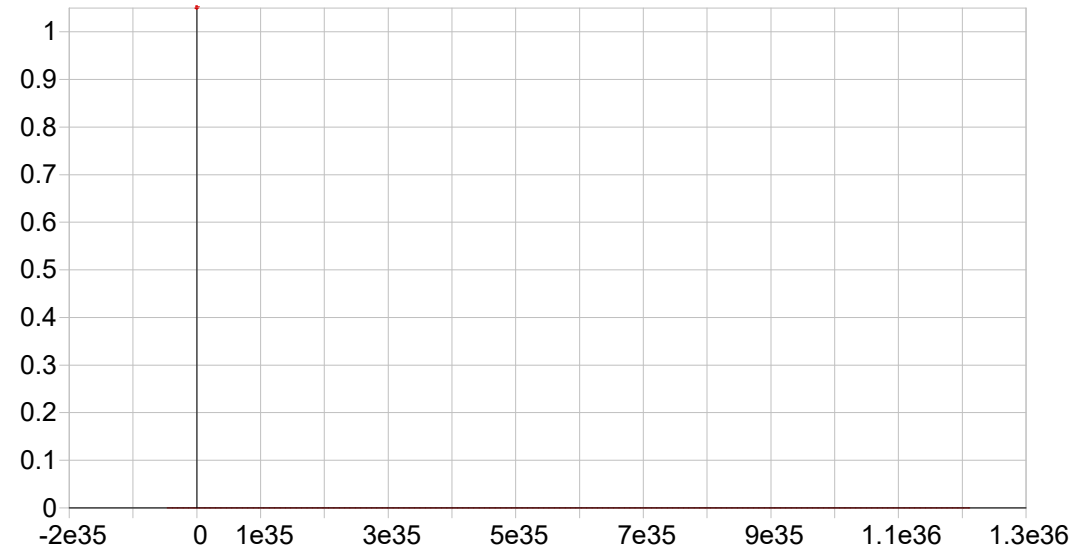
Li 670.784 { 50}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.067757	Re-Slope:	1.000000
A1 (Gain):	1.357791	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999645	Status:	OK.
Std Error of Est:	0.000743		
Predicted MDL:	0.001376		
Predicted MQL:	0.004588		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.06777	.002	1
S5	10.000	10.211	.211	2.11	13.933	.052	1
S4	5.0000	4.9156	-.084	-1.69	6.7421	.008	1
S3	2.5000	2.4273	-.073	-2.91	3.3635	.067	1
S2	1.2500	1.2029	-.047	-3.76	1.7011	.004	1
S1	.01500	.00771	-.007	-48.6	.07823	.002	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

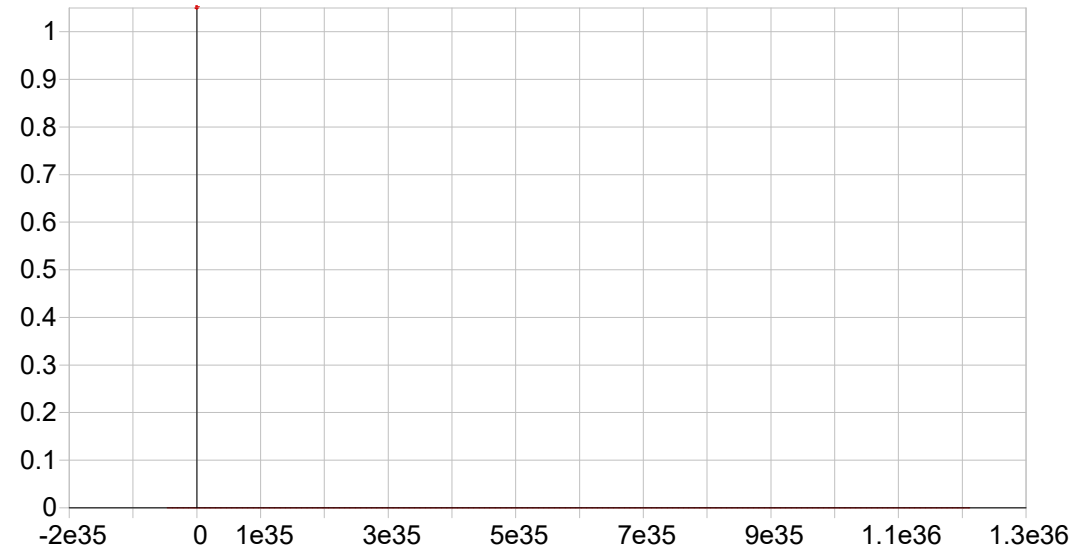


Y 224.306 {450}*

Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000000	Re-Slope:	1.000000
A1 (Gain):	0.000000	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.000000	Status:	Warning Zero Gain
Std Error of Est:	0.000000		
Predicted MDL:	n/a		
Predicted MQL:	n/a		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis



Y 360.073 { 94}*

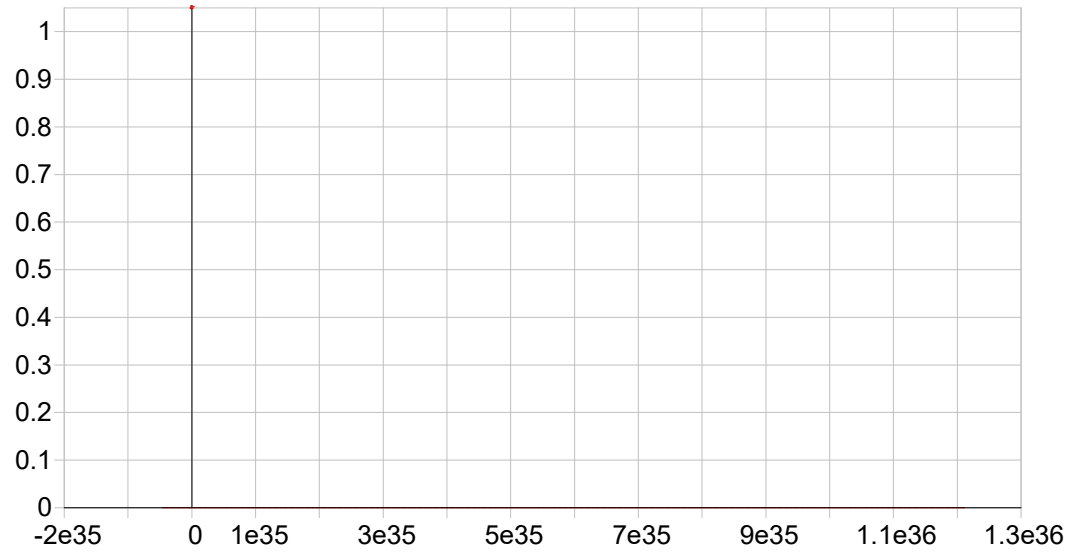
Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000000	Re-Slope:	1.000000
A1 (Gain):	0.000000	Y-int:	0.000000

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

A2 (Curvature):	0.000000				
n (Exponent):	1.000000				
Correlation:	0.000000	Status:	Warning	Zero Gain	
Std Error of Est:	0.000000				
Predicted MDL:	n/a				
Predicted MQL:	n/a				

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis



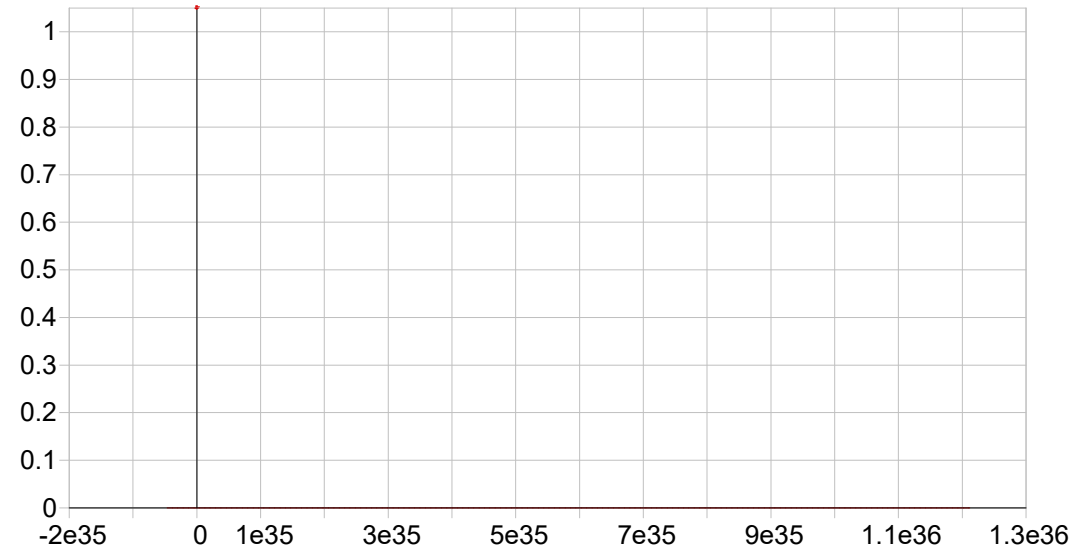
Y 371.030 { 91}*

Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000000	Re-Slope:	1.000000
A1 (Gain):	0.000000	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.000000	Status:	Warning Zero Gain
Std Error of Est:	0.000000		
Predicted MDL:	n/a		
Predicted MQL:	n/a		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis

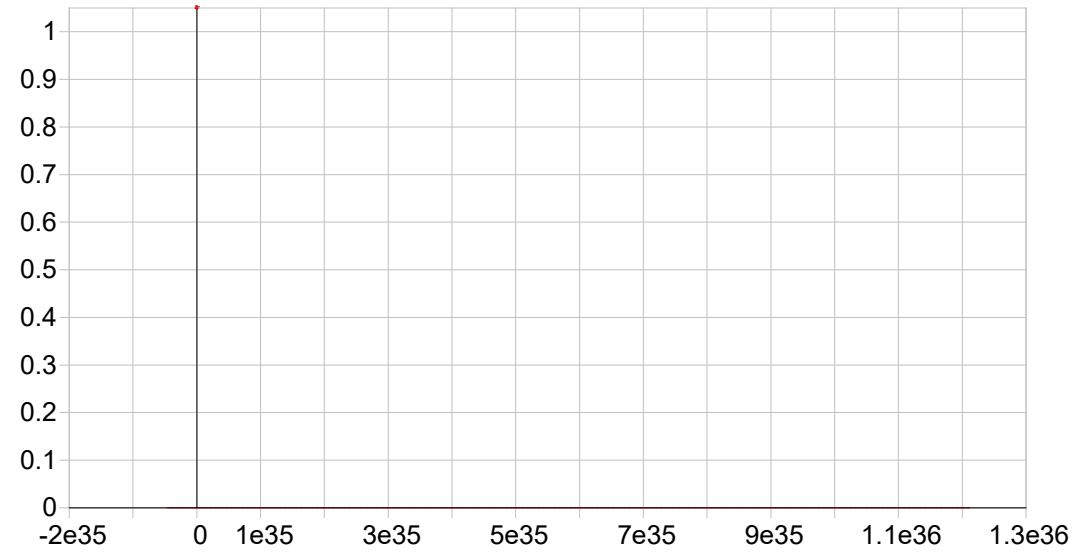
Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5



Y 224.306 {150}*

Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc
A0 (Offset):	0.000000		Re-Slope:	1.000000	
A1 (Gain):	0.000000		Y-int:	0.000000	
A2 (Curvature):	0.000000				
n (Exponent):	1.000000				
Correlation:	0.000000		Status:	Warning	Zero Gain
Std Error of Est:	0.000000				
Predicted MDL:	n/a				
Predicted MQL:	n/a				

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis



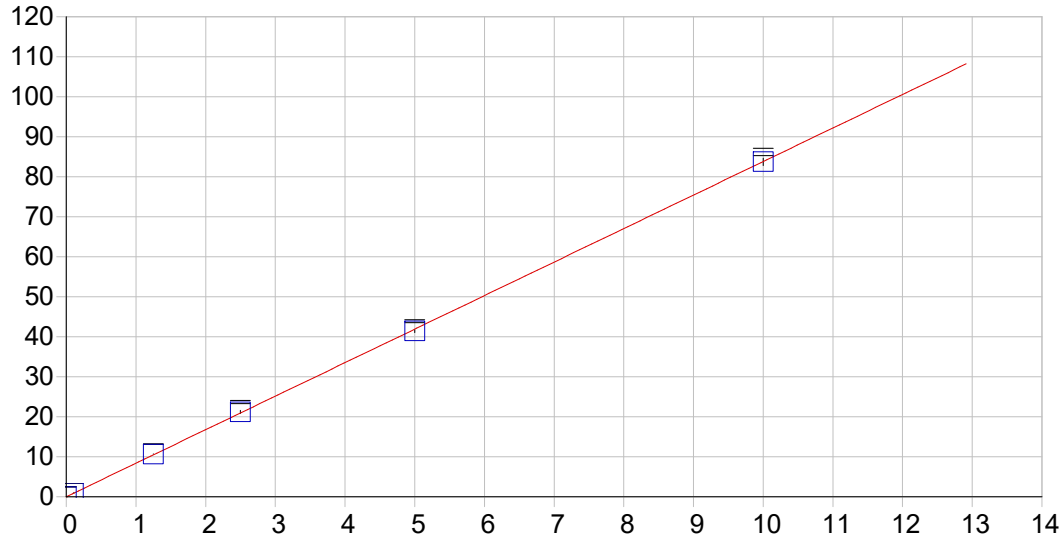
In 230.606 {446}*

Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc
A0 (Offset):	0.000000		Re-Slope:	1.000000	
A1 (Gain):	0.000000		Y-int:	0.000000	

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

A2 (Curvature):	0.000000				
n (Exponent):	1.000000				
Correlation:	0.000000	Status:	Warning	Zero Gain	
Std Error of Est:	0.000000				
Predicted MDL:	n/a				
Predicted MQL:	n/a				

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis



Sr 407.771 { 83}

Date of Fit:	12/02/2024 7:50:46	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000828	Re-Slope:	1.000000
A1 (Gain):	8.380198	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999910	Status:	OK.
Std Error of Est:	0.005990		
Predicted MDL:	0.000107		
Predicted MQL:	0.000356		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00002	-.000	.000	.00070	.000	1
S1	.10000	.11412	.014	14.1	.95718	.002	1
S2	1.2500	1.2727	.023	1.82	10.666	.023	1
S3	2.5000	2.5274	.027	1.10	21.181	.409	1
S4	5.0000	4.9410	-.059	-1.18	41.407	.390	1
S5	10.000	9.9948	-.005	-.052	83.759	.920	1

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: S0 Acquired: 12/02/2024 15:21:38 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S0 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00016	-.00037	-.00020	-.00001	-.00003	-.00228	-.00216	-.00096
Stddev	.00015	.00009	.00033	.00015	.00033	.00008	.00287	.00048
%RSD	93.771	25.132	163.29	1107.4	1278.3	3.3580	132.62	49.995
#1	-.00004	-.00041	.00018	.00015	-.00010	-.00229	-.00168	-.00072
#2	-.00033	-.00027	-.00036	-.00005	.00033	-.00235	-.00524	-.00064
#3	-.00011	-.00045	-.00043	-.00014	-.00031	-.00220	.00043	-.00151

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00035	.00422	-.00020	-.00032	.00185	.00026	-.00017	-.00010
Stddev	.00009	.00035	.00009	.00021	.00015	.00015	.00016	.00013
%RSD	26.833	8.3951	46.871	66.498	8.3473	57.696	95.210	135.96
#1	.00044	.00431	-.00012	-.00037	.00170	.00043	-.00003	-.00011
#2	.00025	.00452	-.00031	-.00050	.00184	.00022	-.00034	.00004
#3	.00036	.00383	-.00017	-.00009	.00201	.00014	-.00013	-.00022

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00005	.02074	-.00354	-.00073	.00223	.07797	-.00129	.00241
Stddev	.00018	.00028	.00102	.00031	.00136	.00248	.00010	.00016
%RSD	385.24	1.3301	28.901	42.691	60.754	3.1764	7.4758	6.6167
#1	-.00005	.02106	-.00280	-.00062	.00092	.08014	-.00136	.00259
#2	.00025	.02061	-.00311	-.00048	.00363	.07850	-.00118	.00236
#3	-.00006	.02056	-.00471	-.00108	.00215	.07527	-.00133	.00228

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707	Sr4077
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00018	.00022	.00491	.00020	-.00001	.06777	.00070
Stddev	.00043	.00008	.00027	.00005	.00087	.00222	.00008
%RSD	241.38	34.570	5.4780	27.173	15732.	3.2780	11.386
#1	-.00045	.00013	.00505	.00021	-.00063	.06834	.00063
#2	-.00041	.00026	.00508	.00024	-.00037	.06965	.00068
#3	.00032	.00027	.00460	.00014	.00098	.06532	.00078

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: S0 Acquired: 12/02/2024 15:21:38 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S0 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1001.8	29499.	5655.6	877.64	1845.6
Stddev	2.1	191.	55.1	4.23	7.7
%RSD	.20499	.64877	.97376	.48188	.41519
#1	1001.7	29280.	5650.3	872.76	1843.0
#2	1003.9	29635.	5603.4	880.29	1854.2
#3	999.75	29581.	5713.2	879.86	1839.5

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: S1 Acquired: 12/02/2024 15:26:14 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00016	.00125	.00087	.00206	.00896	.01374	.80120	.01972
Stddev	.00011	.00014	.00057	.00018	.00026	.00025	.00317	.00035
%RSD	71.840	11.263	65.607	8.9718	2.9308	1.8417	.39580	1.7588
#1	.00003	.00112	.00148	.00192	.00897	.01396	.80171	.02007
#2	.00026	.00123	.00035	.00227	.00921	.01380	.79780	.01938
#3	.00019	.00140	.00078	.00200	.00869	.01346	.80408	.01972

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.01040	.40637	.00126	.02823	.00740	.00234	.00933	.04000
Stddev	.00014	.00105	.00004	.00040	.00031	.00028	.00045	.00067
%RSD	1.3939	.25885	3.0987	1.4232	4.2578	11.820	4.8295	1.6778
#1	.01023	.40730	.00121	.02778	.00709	.00237	.00956	.03922
#2	.01051	.40657	.00129	.02834	.00739	.00260	.00963	.04039
#3	.01045	.40523	.00127	.02857	.00772	.00205	.00882	.04038

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.02437	.02460	.02824	.00436	.15192	.17235	-.00088	.00207
Stddev	.00015	.00017	.00196	.00035	.00264	.00103	.00004	.00042
%RSD	.62873	.69980	6.9478	8.1230	1.7397	.59492	4.2953	20.548
#1	.02454	.02472	.03029	.00452	.15382	.17199	-.00085	.00211
#2	.02426	.02467	.02639	.00460	.14890	.17155	-.00092	.00247
#3	.02429	.02440	.02803	.00395	.15304	.17351	-.00087	.00162

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707	Sr4077
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00746	.00293	.13927	.00097	.05201	.07823	.95718
Stddev	.00032	.00003	.00076	.00013	.00065	.00168	.00212
%RSD	4.3338	.98860	.54779	13.537	1.2564	2.1516	.22168
#1	.00747	.00289	.13854	.00084	.05194	.07792	.95835
#2	.00713	.00294	.14007	.00111	.05270	.08005	.95846
#3	.00778	.00295	.13921	.00097	.05140	.07673	.95473

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: S1 Acquired: 12/02/2024 15:26:14 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S01 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	993.94	29377.	5693.6	871.62	1793.9
Stddev	3.01	97.	15.4	6.69	3.7
%RSD	.30271	.32982	.26978	.76741	.20572
#1	993.18	29297.	5676.0	864.39	1794.3
#2	997.25	29350.	5704.4	877.59	1797.4
#3	991.38	29485.	5700.3	872.88	1790.0

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: S2 Acquired: 12/02/2024 15:30:52 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.03146	.07095	.82147	.06344	.17967	2.9870	8.9009	.43766
Stddev	.00008	.00046	.00224	.00024	.00042	.0049	.0238	.00116
%RSD	.26302	.65451	.27246	.37509	.23494	.16448	.26752	.26397
#1	.03156	.07141	.82007	.06353	.18001	2.9813	8.8852	.43636
#2	.03141	.07096	.82029	.06317	.17981	2.9897	8.9283	.43804
#3	.03142	.07048	.82405	.06362	.17920	2.9900	8.8892	.43857

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.1305	4.4505	.47298	.33407	.77105	.74130	1.9399	.44787
Stddev	.0030	.0131	.00094	.00082	.00186	.00100	.0068	.00084
%RSD	.26559	.29441	.19906	.24429	.24157	.13547	.34861	.18648
#1	1.1284	4.4408	.47256	.33379	.76901	.74016	1.9325	.44733
#2	1.1291	4.4654	.47232	.33342	.77148	.74205	1.9458	.44744
#3	1.1339	4.4454	.47406	.33498	.77266	.74168	1.9414	.44883

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.33298	.12145	.20011	.05244	7.1233	.74180	.04638	.27349
Stddev	.00057	.00022	.00075	.00053	.0063	.00095	.00025	.00174
%RSD	.17000	.17921	.37463	1.0126	.08920	.12756	.54017	.63474
#1	.33262	.12141	.19940	.05198	7.1302	.74074	.04667	.27183
#2	.33267	.12169	.20090	.05231	7.1222	.74207	.04627	.27336
#3	.33363	.12126	.20002	.05302	7.1177	.74258	.04620	.27529

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707	Sr4077
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.84039	.02842	1.0574	.10991	.59513	1.7011	10.666
Stddev	.00232	.00021	.0032	.00023	.00045	.0040	.023
%RSD	.27587	.74621	.30353	.20972	.07482	.23486	.21338
#1	.83925	.02859	1.0552	.10978	.59538	1.6986	10.643
#2	.83886	.02848	1.0561	.11018	.59540	1.7057	10.688
#3	.84306	.02818	1.0611	.10977	.59462	1.6990	10.668

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: S2 Acquired: 12/02/2024 15:30:52 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S02 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	952.61	28593.	5707.2	828.80	1618.3
Stddev	.90	15.	20.2	1.26	2.8
%RSD	.09454	.05177	.35451	.15190	.17260
#1	953.61	28605.	5730.2	829.44	1620.8
#2	952.36	28576.	5699.7	827.35	1618.8
#3	951.87	28597.	5691.9	829.60	1615.3

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: S3 Acquired: 12/02/2024 15:35:16 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S03 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.06545	.14178	1.6615	.12873	.36703	5.9828	17.741	.85682
Stddev	.00018	.00026	.0038	.00030	.00025	.1161	.343	.01311
%RSD	.28162	.18124	.23081	.23505	.06750	1.9413	1.9305	1.5297
#1	.06529	.14195	1.6575	.12887	.36699	6.0172	17.837	.86187
#2	.06565	.14191	1.6618	.12838	.36729	5.8533	17.361	.84193
#3	.06541	.14149	1.6652	.12893	.36680	6.0777	18.026	.86664

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2.2812	8.8199	.93227	.67822	1.5181	1.4536	3.8122	.89650
Stddev	.0039	.1668	.00142	.00128	.0275	.0313	.0717	.02124
%RSD	.17037	1.8917	.15231	.18804	1.8089	2.1529	1.8807	2.3687
#1	2.2803	8.8778	.93069	.67881	1.5250	1.4638	3.8335	.90277
#2	2.2779	8.6318	.93267	.67676	1.4878	1.4185	3.7322	.87283
#3	2.2855	8.9500	.93345	.67910	1.5414	1.4785	3.8708	.91389

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.67206	.22395	.40011	.10426	14.584	1.4280	.09836	.53714
Stddev	.00049	.00052	.00400	.00251	.076	.0307	.00026	.00893
%RSD	.07261	.23304	.99946	2.4107	.51865	2.1497	.26937	1.6629
#1	.67262	.22344	.40117	.10524	14.584	1.4359	.09847	.54040
#2	.67180	.22392	.39568	.10141	14.660	1.3942	.09855	.52703
#3	.67176	.22449	.40346	.10614	14.509	1.4540	.09806	.54398

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707	Sr4077
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.6964	.05960	2.0606	.22454	1.1762	3.3635	21.181
Stddev	.0015	.00028	.0394	.00050	.0237	.0667	.409
%RSD	.08786	.47629	1.9133	.22347	2.0174	1.9827	1.9291
#1	1.6978	.05953	2.0752	.22431	1.1831	3.3788	21.289
#2	1.6948	.05936	2.0160	.22420	1.1498	3.2905	20.729
#3	1.6966	.05991	2.0907	.22512	1.1957	3.4212	21.525

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: S3 Acquired: 12/02/2024 15:35:16 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S03 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	910.56	27836.	5689.1	775.27	1523.0
Stddev	1.40	60.	97.0	4.87	1.1
%RSD	.15376	.21478	1.7049	.62867	.07336
#1	908.97	27886.	5658.5	774.28	1522.8
#2	911.10	27769.	5797.7	770.97	1524.2
#3	911.62	27852.	5611.0	780.56	1522.0

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: S4 Acquired: 12/02/2024 15:39:40 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S04 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.13585	.27474	3.2794	.26185	.76102	12.066	35.116	1.6796
Stddev	.00022	.00042	.0076	.00140	.00428	.020	.279	.0066
%RSD	.15883	.15295	.23158	.53603	.56238	.16820	.79501	.39591
#1	.13584	.27483	3.2736	.26061	.75754	12.044	34.866	1.6825
#2	.13607	.27510	3.2880	.26157	.75974	12.084	35.417	1.6843
#3	.13563	.27428	3.2767	.26337	.76580	12.070	35.066	1.6720

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4.4972	17.434	1.8049	1.3483	3.0100	2.8447	7.4502	1.7962
Stddev	.0086	.028	.0021	.0017	.0007	.0077	.0201	.0052
%RSD	.19007	.15873	.11585	.12752	.02259	.27115	.27005	.28829
#1	4.4911	17.435	1.8047	1.3479	3.0093	2.8363	7.4422	1.7910
#2	4.5069	17.461	1.8071	1.3502	3.0102	2.8515	7.4731	1.8013
#3	4.4935	17.405	1.8029	1.3469	3.0106	2.8463	7.4354	1.7964

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.3283	.42714	.80020	.20407	29.929	2.8209	.20174	1.0364
Stddev	.0037	.00119	.00209	.00043	.170	.0029	.00034	.0052
%RSD	.27757	.27910	.26078	.21116	.56684	.10314	.16952	.50438
#1	1.3246	.42658	.79784	.20443	30.101	2.8175	.20153	1.0415
#2	1.3320	.42851	.80096	.20419	29.762	2.8227	.20213	1.0368
#3	1.3283	.42633	.80180	.20359	29.925	2.8224	.20155	1.0310

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707	Sr4077
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3.4342	.12312	3.9975	.44773	2.3211	6.7421	41.407
Stddev	.0116	.00057	.0070	.00118	.0048	.0077	.390
%RSD	.33807	.46626	.17423	.26251	.20491	.11484	.94092
#1	3.4281	.12262	4.0019	.44656	2.3184	6.7379	41.235
#2	3.4269	.12375	4.0012	.44891	2.3266	6.7510	41.853
#3	3.4475	.12300	3.9895	.44772	2.3183	6.7373	41.133

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: S4 Acquired: 12/02/2024 15:39:40 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S04 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	843.05	26858.	5602.8	694.25	1415.1
Stddev	3.09	32.	22.1	3.57	1.2
%RSD	.36697	.11938	.39403	.51357	.08479
#1	844.88	26881.	5597.6	690.87	1415.0
#2	844.79	26822.	5583.7	697.97	1414.0
#3	839.48	26872.	5627.0	693.90	1416.4

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: S5 Acquired: 12/02/2024 15:44:19 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S05 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.28991	.54653	6.6709	.58251	1.7103	25.015	71.029	3.3630
Stddev	.00109	.00241	.0418	.00377	.0087	.070	.686	.0029
%RSD	.37465	.44038	.62718	.64656	.50745	.28062	.96602	.08754
#1	.28912	.54449	6.6271	.57918	1.7005	25.000	70.296	3.3617
#2	.28947	.54593	6.6751	.58176	1.7169	25.091	71.655	3.3664
#3	.29115	.54919	6.7105	.58660	1.7136	24.953	71.136	3.3610

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	9.0729	35.159	3.5427	2.7387	6.1067	5.6930	14.860	3.7059
Stddev	.0635	.141	.0577	.0129	.0180	.0092	.063	.0078
%RSD	.70000	.40174	1.6292	.46917	.29512	.16206	.42235	.21014
#1	9.0058	35.164	3.5629	2.7254	6.0967	5.6833	14.857	3.7048
#2	9.0810	35.297	3.4776	2.7397	6.1275	5.7017	14.924	3.7142
#3	9.1320	35.015	3.5876	2.7510	6.0959	5.6942	14.798	3.6987

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2.6766	.86680	1.6358	.41188	65.865	5.7804	.42835	1.9814
Stddev	.0159	.01262	.0051	.00199	1.166	.0134	.00339	.0062
%RSD	.59353	1.4554	.31064	.48412	1.7709	.23096	.79221	.31233
#1	2.6591	.86886	1.6353	.41345	66.316	5.7723	.42513	1.9744
#2	2.6805	.85328	1.6412	.41256	64.540	5.7959	.42803	1.9840
#3	2.6901	.87826	1.6311	.40964	66.738	5.7731	.43190	1.9859

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707	Sr4077
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	7.4403	.26149	7.8368	.91005	4.6800	13.933	83.759
Stddev	.0325	.00100	.0056	.00679	.0107	.052	.920
%RSD	.43735	.38083	.07112	.74660	.22931	.36999	1.0984
#1	7.4028	.26035	7.8307	.90318	4.6821	13.920	84.464
#2	7.4611	.26196	7.8415	.91021	4.6896	13.990	84.095
#3	7.4569	.26217	7.8383	.91676	4.6684	13.889	82.718

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: S5 Acquired: 12/02/2024 15:44:19 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S05 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	731.31	25681.	5494.8	560.91	1291.4
Stddev	2.70	321.	24.4	7.53	6.3
%RSD	.36901	1.2497	.44334	1.3427	.48817
#1	734.37	25572.	5497.8	557.69	1298.1
#2	729.29	26042.	5469.0	569.51	1290.4
#3	730.26	25428.	5517.5	555.52	1285.7

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: S6 Acquired: 12/02/2024 15:48:56 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S06 Custom ID2: Custom ID3:
Comment:

Elem	Al3961	Ca3736	Fe2598	Mg2790	Na8183
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	63.890	54.964	15.059	5.9972	4.3273
Stddev	.560	.229	.009	.0028	.0017
%RSD	.87655	.41583	.06163	.04634	.03821
#1	63.249	54.753	15.069	5.9995	4.3277
#2	64.141	55.206	15.053	5.9941	4.3287
#3	64.282	54.932	15.054	5.9980	4.3255

Int. Std.	Y_3710
Units	Cts/S
Avg	5358.7
Stddev	21.0
%RSD	.39280
#1	5378.1
#2	5361.8
#3	5336.3

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: ICV011 Acquired: 12/02/2024 16:20:15 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICV011 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9302695	1.077490	.9994085	.9762459	.9423681	2.395106
Stddev	.0025601	.001033	.0037936	.0015982	.0026759	.019797
%RSD	.2751957	.0958875	.3795861	.1637118	.2839569	.8265414
#1	.9273881	1.076343	1.002739	.9752293	.9453444	2.417314
#2	.9311384	1.078346	.995279	.9780881	.9401610	2.388694
#3	.9322820	1.077782	1.000208	.9754204	.9415988	2.379310

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5290852	.5379932	.5055187	10.33042	.5696593	.5014732
Stddev	.0048960	.0036699	.0011069	.09042	.0008267	.0026168
%RSD	.9253711	.6821427	.2189632	.8753210	.1451214	.5218206
#1	.5344996	.5421364	.5060549	10.39491	.5699674	.5035100
#2	.5277865	.5366919	.5042458	10.22706	.5687229	.4985219
#3	.5249696	.5351513	.5062554	10.36929	.5702878	.5023878

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4994544	10.65218	.5424813	5.511067	.5143140	.2472287
Stddev	.0052329	.06052	.0013977	.129799	.0010810	.0017727
%RSD	1.047716	.5681763	.2576545	2.355236	.2101808	.7170071
#1	.4969227	10.70684	.5439791	5.521749	.5142313	.2488812
#2	.5054717	10.58714	.5412116	5.376257	.5132768	.2453564
#3	.4959689	10.66256	.5422534	5.635194	.5154340	.2474484

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.26040	.5397740	.9637626	9.640514	F .0004175	F -.007729
Stddev	.06868	.0049298	.0049788	.030881	.0031663	.001340
%RSD	.6694021	.9133131	.5165961	.3203226	758.4383	17.33107
#1	10.32202	.5441468	.9580416	9.612325	.0030345	-.008346
#2	10.27283	.5344313	.9671141	9.635696	-.003102	-.008649
#3	10.18635	.5407440	.9661320	9.673520	.001320	-.006192

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: ICV011 Acquired: 12/02/2024 16:20:15 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICV011 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F -.001020	F .0048618	F -.000397	F -.001816	F -.000684	F -.022489
Stddev	.000239	.0034269	.000673	.000998	.001474	.000652
%RSD	23.45924	70.48565	169.6956	54.99106	215.3425	2.901331
#1	-.001296	.0087564	-.000647	-.002967	-.002241	-.022800
#2	-.000885	.0035209	-.000909	-.001288	.000689	-.022927
#3	-.000878	.0023081	.000366	-.001192	-.000501	-.021739

Elem	Sr4077
Units	ppm
Avg	F .0012307
Stddev	.0000389
%RSD	3.162423
#1	.0011898
#2	.0012673
#3	.0012350

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	996.2054	29230.52	5672.246	865.0635	1768.258
Stddev	1.4263	47.13	45.891	2.7598	1.474
%RSD	.1431730	.1612303	.8090445	.3190265	.0833825
#1	994.6983	29176.11	5619.880	865.9822	1767.125
#2	996.3838	29256.82	5691.407	861.9615	1769.925
#3	997.5341	29258.62	5705.451	867.2467	1767.724

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: ICB011 Acquired: 12/02/2024 16:27:30 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICB011 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0055759	-.000679	-.003299	-.000265	.0016441	.1272186
Stddev	.0031555	.003761	.002077	.006979	.0013411	.0064931
%RSD	56.59195	554.2649	62.98253	2633.142	81.56961	5.103911
#1	.0063755	.002585	-.003070	.002679	.0010999	.1274920
#2	.0082547	-.004792	-.001345	-.008234	.0006606	.1335708
#3	.0020975	.000171	-.005481	.004760	.0031717	.1205932

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001254	.0000890	-.000062	-.003432	.0010345	.0001256
Stddev	.000613	.0001450	.000164	.002133	.0007488	.0002297
%RSD	48.84000	162.8600	264.6484	62.13127	72.38804	182.7979
#1	-.001676	.0000207	-.000239	-.001167	.0006321	.0000716
#2	-.001536	.0002555	.000085	-.005401	.0018985	-.000072
#3	-.000552	-.000009	-.000032	-.003728	.0005728	.000378

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0021699	-.014340	.0005434	-.041417	.0001904	-.000634
Stddev	.0020004	.004834	.0003209	.034257	.0002420	.000301
%RSD	92.18770	33.70865	59.05669	82.71190	127.1016	47.50741
#1	.0020049	-.014769	.0007834	-.001885	-.000088	-.000288
#2	.0042477	-.018945	.0006680	-.062379	.000312	-.000842
#3	.0002571	-.009306	.0001789	-.059987	.000348	-.000771

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1787751	.0015458	.0018483	-.308000	.0008048	-.005658
Stddev	.4961219	.0051434	.0001761	.018786	.0009717	.001210
%RSD	277.5117	332.7261	9.524758	6.099362	120.7282	21.38208
#1	.0056868	.0014093	.0016451	-.322127	.0019155	-.004363
#2	-.207615	.0067561	.0019555	-.286680	.0003874	-.005850
#3	.738254	-.003528	.0019443	-.315193	.0001116	-.006760

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: ICB011 Acquired: 12/02/2024 16:27:30 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICB011 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000209	.0030293	-.000504	-.001894	.0014801	F -.017423
Stddev	.000293	.0066123	.000854	.002208	.0016425	.000465
%RSD	140.2775	218.2784	169.2918	116.5243	110.9677	2.671596
#1	-.000546	.0106497	-.000986	.000528	.0027666	-.017290
#2	-.000073	-.000368	-.001009	-.003794	.0020437	-.017039
#3	-.000009	-.001193	.000481	-.002418	-.000370	-.017941

Elem	Sr4077
Units	ppm
Avg	.0000030
Stddev	.0000664
%RSD	2212.207
#1	-.000055
#2	.000075
#3	-.000011

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1000.870	29608.19	5668.537	880.7435	1840.476
Stddev	8.905	48.94	15.757	5.0473	18.654
%RSD	.8896866	.1652985	.2779656	.5730728	1.013520
#1	993.741	29563.10	5653.964	875.4743	1827.431
#2	1010.851	29601.22	5685.257	881.2213	1861.842
#3	998.017	29660.24	5666.389	885.5350	1832.156

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: ICSA011 Acquired: 12/02/2024 16:40:20 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICSA011 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0081323	-.009915	-.003614	-.002237	.0033938	239.4328
Stddev	.0089927	.011501	.006858	.006723	.0026041	.2942
%RSD	110.5792	115.9988	189.7737	300.6082	76.73153	.1228941
#1	.0166047	-.022304	-.010189	.005420	.0062260	239.2216
#2	-.001303	-.007861	-.004147	-.007175	.0028526	239.3080
#3	.009095	.000421	.003495	-.004954	.0011028	239.7689

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0046464	.0001036	.0024688	245.9508	.0501755	.0019943
Stddev	.0002763	.0000805	.0002636	.8808	.0010407	.0010831
%RSD	5.946510	77.75337	10.67735	.3581170	2.074027	54.30956
#1	.0049164	.0000146	.0027456	245.1165	.0495049	.0032270
#2	.0046586	.0001245	.0022207	245.8643	.0496473	.0011948
#3	.0043642	.0001716	.0024401	246.8717	.0513744	.0015612

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001801	100.5962	.0134654	237.3921	.0039712	.0035427
Stddev	.002316	.0354	.0006050	.1044	.0005385	.0007981
%RSD	128.6151	.0351689	4.492676	.0439698	13.56047	22.52759
#1	-.003112	100.5751	.0136734	237.2774	.0045832	.0038652
#2	-.003165	100.5764	.0127839	237.4174	.0035702	.0041291
#3	.000874	100.6370	.0139390	237.4816	.0037601	.0026338

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6440614	-.003624	.0115685	-.848029	-.003646	-.006639
Stddev	.3313827	.003244	.0011573	.053711	.002481	.002630
%RSD	51.45204	89.52944	10.00416	6.333627	68.05724	39.61612
#1	.6958579	-.001574	.0128406	-.820267	-.006369	-.007471
#2	.9464959	-.007364	.0105779	-.813880	-.003053	-.003694
#3	.2898305	-.001934	.0112870	-.909939	-.001514	-.008753

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: ICSA011 Acquired: 12/02/2024 16:40:20 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICSA011 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001955	.0116872	-.001365	-.006814	-.001659	F -.018833
Stddev	.001230	.0031475	.000440	.001042	.000405	.000991
%RSD	62.91286	26.93154	32.28250	15.29189	24.38956	5.262364
#1	-.002243	.0146750	-.001214	-.007518	-.001242	-.018557
#2	-.000607	.0084012	-.001861	-.005617	-.002049	-.019932
#3	-.003016	.0119854	-.001019	-.007308	-.001686	-.018008

Elem	Sr4077
Units	ppm
Avg	F .1020231
Stddev	.0002192
%RSD	.2148269
#1	.1021279
#2	.1017712
#3	.1021702

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	932.7902	27354.34	5619.640	819.7372	1488.299
Stddev	2.0508	222.15	20.393	6.1719	3.430
%RSD	.2198557	.8121375	.3628864	.7529132	.2304504
#1	932.0933	27217.81	5638.587	816.0194	1484.339
#2	935.0987	27234.54	5622.274	816.3306	1490.334
#3	931.1787	27610.68	5598.058	826.8617	1490.224

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: ICSAB011 Acquired: 12/02/2024 16:44:49 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICSAB011 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1106477	.0961374	.0446091	.0428251	.5565713	243.8267
Stddev	.0051468	.0103482	.0019759	.0057489	.0034802	6.7269
%RSD	4.651545	10.76398	4.429328	13.42405	.6252877	2.758902
#1	.1080148	.0869533	.0437382	.0422425	.5525552	245.4954
#2	.1165783	.0941093	.0432183	.0488430	.5584595	236.4225
#3	.1073499	.1073495	.0468708	.0373897	.5586994	249.5622

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5332873	.5263197	1.058453	250.0722	.6108176	.5229085
Stddev	.0148916	.0128599	.002604	6.8146	.0022958	.0013919
%RSD	2.792416	2.443356	.2459767	2.725033	.3758515	.2661872
#1	.5379205	.5294018	1.060781	252.0789	.6114800	.5228196
#2	.5166298	.5121989	1.058937	242.4796	.6082634	.5243428
#3	.5453115	.5373585	1.055642	255.6581	.6127093	.5215633

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4802189	102.3314	.5331132	241.6859	1.046630	.1913993
Stddev	.0105276	2.9510	.0152152	7.4873	.001927	.0008120
%RSD	2.192242	2.883806	2.854024	3.097927	.1841559	.4242602
#1	.4837177	102.9159	.5386283	243.0838	1.045631	.1919691
#2	.4683874	99.1318	.5159096	233.5983	1.048852	.1917593
#3	.4885516	104.9464	.5448018	248.3757	1.045408	.1904695

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7157905	.5348270	.9190002	-.969729	.0024145	-.008626
Stddev	.3189468	.0154976	.0025822	.110113	.0061227	.001656
%RSD	44.55868	2.897691	.2809733	11.35503	253.5779	19.19568
#1	.3705867	.5414253	.9219413	-.981110	.0094843	-.006952
#2	.7772491	.5171222	.9179536	-1.07371	-.001154	-.008663
#3	.9995357	.5459335	.9171056	-.85437	-.001087	-.010263

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: ICSAB011 Acquired: 12/02/2024 16:44:49 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICSAB011 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.002141	.0116675	-.000564	F -.007418	-.003106	F -.020865
Stddev	.000281	.0112687	.000761	.003189	.001200	.001471
%RSD	13.12379	96.58262	134.9399	42.99027	38.62013	7.051671
#1	-.002381	.0232384	-.001429	-.010990	-.002684	-.022539
#2	-.002209	.0007274	-.000264	-.004856	-.002175	-.020283
#3	-.001832	.0110366	.000001	-.006409	-.004460	-.019774

Elem	Sr4077
Units	ppm
Avg	F .1041065
Stddev	.0027938
%RSD	2.683635
#1	.1048780
#2	.1010080
#3	.1064335

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	913.1938	27176.59	5648.939	810.9195	1460.121
Stddev	3.2337	21.68	145.535	3.5448	2.817
%RSD	.3541136	.0797784	2.576323	.4371369	.1929573
#1	914.1136	27153.32	5610.159	809.3064	1458.871
#2	909.5998	27180.25	5809.935	808.4681	1458.144
#3	915.8680	27196.22	5526.722	814.9840	1463.347

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: CCV071 Acquired: 12/02/2024 16:49:09 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV071 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.354240	5.007314	26.29863	5.005511	5.078064	421.0349	10.57685
Stddev	.013204	.012337	.07648	.029543	.026923	.4795	.07260
%RSD	.2466108	.2463830	.2907960	.5902193	.5301820	.1138946	.6864425
#1	5.359434	5.014706	26.36342	5.027076	5.108345	421.5043	10.53317
#2	5.339229	4.993071	26.21427	4.971837	5.056831	420.5458	10.66066
#3	5.364058	5.014164	26.31820	5.017620	5.069015	421.0547	10.53671

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5202912	2.672174	428.9746	16.30034	2.658752	15.70624	431.7915
Stddev	.0024431	.002538	.2367	.03253	.005445	.00486	.8081
%RSD	.4695707	.0949869	.0551818	.1995591	.2047815	.0309276	.1871539
#1	.5192911	2.674895	428.9043	16.33693	2.663005	15.70448	431.6196
#2	.5185068	2.671757	428.7810	16.28938	2.652616	15.71173	431.0832
#3	.5230757	2.669870	429.2385	16.27470	2.660635	15.70250	432.6717

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	15.66322	419.1440	2.631106	1.341973	423.4561	2.617352	15.56337
Stddev	.00305	.6158	.005930	.003759	.6797	.008090	.10091
%RSD	.0195005	.1469219	.2253896	.2801418	.1605087	.3091018	.6484065
#1	15.66567	419.6549	2.631206	1.345552	423.4738	2.626118	15.45086
#2	15.65980	418.4602	2.625127	1.342311	424.1268	2.615766	15.59335
#3	15.66419	419.3169	2.636986	1.338056	422.7677	2.610172	15.64590

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	161.2836	5.193361	4.710887	5.025665	5.357626	4.513891	5.288317
Stddev	.0353	.009733	.019892	.012042	.014493	.023067	.011745
%RSD	.0219119	.1874121	.4222510	.2396131	.2705209	.5110298	.2220840
#1	161.2657	5.204287	4.696055	5.034433	5.342099	4.498846	5.286305
#2	161.2608	5.185618	4.703114	5.011934	5.370797	4.502378	5.277708
#3	161.3243	5.190179	4.733491	5.030626	5.359981	4.540448	5.300937

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: CCV071 Acquired: 12/02/2024 16:49:09 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV071 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	5.217583	5.346988	5.282098
Stddev	.005845	.004813	.017239
%RSD	.1120173	.0900068	.3263726
#1	5.223709	5.352540	5.268496
#2	5.216972	5.344434	5.276312
#3	5.212067	5.343992	5.301486

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	792.6437	25398.02	5451.134	645.1227	1290.447
Stddev	1.3177	57.86	9.813	3.7801	1.260
%RSD	.1662381	.2278073	.1800115	.5859488	.0976259
#1	791.3355	25344.67	5453.410	649.4152	1289.287
#2	793.9707	25389.87	5459.609	642.2912	1291.787
#3	792.6250	25459.52	5440.384	643.6616	1290.265

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: CCB071 Acquired: 12/02/2024 16:53:48 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB071 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0060817	-.002176	-.003386	.0081089	.0008043	.0086501	-.000674
Stddev	.0039151	.004569	.005729	.0049901	.0028007	.0042680	.000288
%RSD	64.37514	209.9511	169.2018	61.53792	348.2174	49.34074	42.76625
#1	.0086243	-.004790	.001625	.0124634	.0038149	.0038499	-.000499
#2	.0080475	-.004838	-.009632	.0026637	-.001724	.0100835	-.001006
#3	.0015732	.003099	-.002151	.0091997	.000322	.0120168	-.000516

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000320	-.000071	.0052776	.0008504	-.000410	.0004825	.0052189
Stddev	.0001331	.000100	.0090250	.0005843	.000559	.0036555	.0136472
%RSD	415.6533	142.1556	171.0052	68.71751	136.2559	757.6872	261.4966
#1	.0001115	-.000037	-.004846	.0010331	.000119	.0044120	.0025858
#2	.0001061	-.000183	.008200	.0001965	-.000994	-.002817	.0199908
#3	-.000122	.000009	.012479	.0013214	-.000355	-.000148	-.006920

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0006036	-.000896	.0000463	.0005813	.2254280	-.004867	-.000065
Stddev	.0004315	.017882	.0001619	.0003188	.1982798	.005215	.000263
%RSD	71.48636	1995.602	349.4828	54.83926	87.95706	107.1458	400.9955
#1	.0001533	-.021522	-.000141	.0004195	.1767684	-.002230	-.000368
#2	.0006441	.010237	.000137	.0009485	.4435078	-.010874	.000095
#3	.0010134	.008598	.000143	.0003759	.0560077	-.001497	.000077

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0785240	.0015817	-.000228	-.000444	.0017591	-.000313	-.002616
Stddev	.0244322	.0032596	.001770	.000468	.0065280	.000212	.000192
%RSD	31.11437	206.0793	777.0349	105.2591	371.1095	67.80582	7.321698
#1	.0832390	.0053159	-.000202	.000062	-.005581	-.000490	-.002835
#2	.0520779	.0001239	.001529	-.000533	.003942	-.000369	-.002478
#3	.1002551	-.000695	-.002011	-.000861	.006916	-.000078	-.002536

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: CCB071 Acquired: 12/02/2024 16:53:48 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB071 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0006305	-.013240	.0000648
Stddev	.0013755	.001070	.0001328
%RSD	218.1616	8.084883	205.0711
#1	.0009651	-.012611	.0001888
#2	.0018077	-.014476	.0000808
#3	-.000881	-.012632	-.000075

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	990.7179	29357.00	5632.036	878.1902	1807.997
Stddev	6.9828	60.56	10.659	2.3288	11.961
%RSD	.7048239	.2062924	.1892534	.2651809	.6615688
#1	992.5577	29356.42	5641.736	878.2199	1814.266
#2	996.5966	29296.73	5633.746	880.5041	1815.521
#3	982.9994	29417.85	5620.625	875.8468	1794.205

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165190BL Acquired: 12/02/2024 16:58:22 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBW190 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0090017	.0012442	-.004629	.0031700	.0011472	-.000231
Stddev	.0036182	.0016634	.002099	.0030735	.0025173	.001181
%RSD	40.19481	133.6942	45.33231	96.95509	219.4293	511.8578
#1	.0131205	.0029169	-.002221	.0066242	.0002446	-.000976
#2	.0075489	.0012252	-.006068	.0007377	.0039914	-.000848
#3	.0063357	-.000410	-.005599	.0021480	-.000794	.001131

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001431	.0000458	-.000193	-.006037	.0003835	.0001500
Stddev	.000206	.0000552	.000144	.009337	.0008531	.0005337
%RSD	14.41128	120.4669	74.55933	154.6529	222.4647	355.8243
#1	-.001578	.0000858	-.000359	.004690	.0011707	.0007589
#2	-.001519	.0000689	-.000109	-.010463	.0005027	-.000072
#3	-.001195	-.000017	-.000111	-.012338	-.000523	-.000237

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0005762	-.009631	-.000275	-.007924	.0002080	.0008239
Stddev	.0013733	.002748	.000375	.047601	.0002508	.0005271
%RSD	238.3432	28.53159	136.2665	600.7126	120.5965	63.97365
#1	.0000341	-.006911	.000155	-.027864	-.000068	.0010986
#2	.0021378	-.012406	-.000446	.046404	.000422	.0002162
#3	-.000443	-.009576	-.000535	-.042313	.000270	.0011569

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1578571	-.000093	-.000048	-.028526	.0007413	-.003319
Stddev	.1097060	.002066	.000473	.024320	.0043298	.000969
%RSD	69.49701	2232.478	986.6039	85.25507	584.0775	29.20223
#1	.2824334	.001138	-.000432	-.014028	.0053946	-.003612
#2	.1154681	-.002477	-.000193	-.056603	-.000002	-.002237
#3	.0756700	.001062	.000481	-.014947	-.003169	-.004108

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165190BL Acquired: 12/02/2024 16:58:22 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBW190 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000384	.0031643	-.000377	-.000622	.0004784	F -.017997
Stddev	.000355	.0016822	.000164	.002938	.0009760	.000826
%RSD	92.43661	53.15983	43.60531	472.7010	203.9940	4.590065
#1	-.000174	.0021209	-.000455	.000458	-.000644	-.018391
#2	-.000795	.0022672	-.000188	-.003947	.000954	-.018552
#3	-.000184	.0051049	-.000488	.001624	.001126	-.017048

Elem	Sr4077
Units	ppm
Avg	-.000029
Stddev	.000104
%RSD	358.6581
#1	.000083
#2	-.000048
#3	-.000123

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	998.6403	29271.82	5648.525	867.2073	1820.210
Stddev	4.7225	96.84	27.523	1.1358	12.988
%RSD	.4728947	.3308412	.4872614	.1309709	.7135637
#1	997.4103	29166.14	5640.836	865.9825	1814.084
#2	1003.856	29356.32	5679.075	868.2257	1835.128
#3	994.655	29292.99	5625.664	867.4137	1811.417

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165190BS Acquired: 12/02/2024 17:02:54 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCSW190 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0194298	.0559269	.0193643	.0686695	.1172624	.4243081
Stddev	.0064840	.0023865	.0015947	.0046810	.0023109	.0132288
%RSD	33.37161	4.267176	8.235265	6.816650	1.970730	3.117733
#1	.0119814	.0539616	.0178230	.0632865	.1185788	.4394081
#2	.0224957	.0552366	.0192624	.0717836	.1145940	.4187563
#3	.0238123	.0585824	.0210076	.0709384	.1186143	.4147598

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4554164	.0113401	.0114192	11.63667	.0246662	.1082348
Stddev	.0006257	.0000736	.0002121	.03658	.0004424	.0008522
%RSD	.1373848	.6487824	1.857361	.3143709	1.793759	.7873436
#1	.4548644	.0113853	.0111927	11.66038	.0251347	.1075868
#2	.4560961	.0113798	.0114517	11.65509	.0246084	.1079174
#3	.4552886	.0112552	.0116132	11.59454	.0242554	.1092001

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0565334	.2195580	.0384482	10.71487	.0937846	.0248819
Stddev	.0018617	.0137223	.0001799	.05334	.0012200	.0004853
%RSD	3.293041	6.249977	.4679356	.4978357	1.300871	1.950537
#1	.0584087	.2322694	.0385624	10.74566	.0934657	.0250746
#2	.0565056	.2050098	.0382408	10.74568	.0927558	.0252412
#3	.0546857	.2213949	.0385414	10.65328	.0951324	.0243298

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.18801	.1204540	.1427037	10.51342	.0231885	F -.003528
Stddev	.32647	.0015717	.0005108	.05325	.0036456	.000636
%RSD	2.918012	1.304788	.3579456	.5064716	15.72180	18.02169
#1	11.34830	.1189637	.1421810	10.56165	.0265955	-.004236
#2	10.81238	.1220961	.1432017	10.45628	.0193437	-.003004
#3	11.40334	.1203023	.1427282	10.52232	.0236263	-.003345

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165190BS Acquired: 12/02/2024 17:02:54 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCSW190 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .0206536	.2061772	F .3291862	.0141562	.2188605	F .0120564
Stddev	.0001104	.0094235	.0011623	.0023178	.0002409	.0017924
%RSD	.5344041	4.570570	.3530933	16.37299	.1100853	14.86697
#1	.0206511	.2104917	.3302712	.0153326	.2191161	.0136875
#2	.0205445	.1953689	.3293277	.0156499	.2188280	.0123440
#3	.0207652	.2126711	.3279595	.0114861	.2186376	.0101375

Elem	Sr4077
Units	ppm
Avg	.2265703
Stddev	.0005901
%RSD	.2604364
#1	.2261280
#2	.2272403
#3	.2263426

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	981.4666	28915.71	5700.247	862.0643	1720.664
Stddev	5.0550	86.50	20.634	6.3306	12.905
%RSD	.5150502	.2991475	.3619821	.7343581	.7500209
#1	982.6109	28891.83	5697.135	864.6414	1725.141
#2	985.8514	28843.65	5681.346	854.8516	1730.735
#3	975.9375	29011.64	5722.260	866.6999	1706.117

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165192BL Acquired: 12/02/2024 17:07:24 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBS192 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0016645	.0012658	-.002981	-.001328	-.001618	.0647226
Stddev	.0010808	.0026875	.002097	.005641	.001496	.0024522
%RSD	64.93052	212.3172	70.32501	424.7770	92.43475	3.788841
#1	.0026491	-.000521	-.000907	-.002420	-.003343	.0675144
#2	.0018363	-.000038	-.005100	-.006342	-.000696	.0637361
#3	.0005081	.004357	-.002937	.004779	-.000814	.0629172

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000803	.0000073	-.000000	-.008608	.0007264	.0001722
Stddev	.000383	.0001032	.000176	.012558	.0008492	.0003379
%RSD	47.72260	1421.078	889037.8	145.8858	116.9128	196.2629
#1	-.000426	-.000012	-.000109	-.011938	-.000049	.0001146
#2	-.000792	-.000085	.000203	-.019167	.001634	.0005351
#3	-.001192	.000119	-.000094	.005279	.000594	-.000133

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0016674	-.002796	.0003694	.0075011	-.000237	.0005596
Stddev	.0029869	.001101	.0010041	.0533804	.000104	.0001391
%RSD	179.1403	39.36014	271.8289	711.6349	43.90406	24.86233
#1	-.000643	-.004027	.0011451	-.028382	-.000308	.0006335
#2	.005040	-.001906	-.000765	.068845	-.000286	.0003991
#3	.000604	-.002456	.000728	-.017959	-.000118	.0006462

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4709581	-.001681	.0003815	-.022858	.0004412	-.005396
Stddev	.1487196	.000418	.0004842	.130234	.0035495	.002454
%RSD	31.57809	24.88939	126.9233	569.7405	804.5336	45.48556
#1	.5043568	-.001963	.0007480	.013854	-.003409	-.008060
#2	.3083790	-.001200	.0005638	-.167508	.003584	-.003226
#3	.6001387	-.001880	-.000167	.085079	.001149	-.004902

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165192BL Acquired: 12/02/2024 17:07:24 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBS192 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002210	.0051443	-.000038	-.000266	.0009636	F -.020974
Stddev	.0003579	.0069393	.000342	.001979	.0006722	.000309
%RSD	161.9701	134.8917	898.7325	744.4633	69.75428	1.471008
#1	.0001154	.0051766	.000122	-.001986	.0016400	-.020633
#2	-.000072	.0120675	.000195	-.000708	.0002957	-.021052
#3	.000620	-.001811	-.000431	.001897	.0009552	-.021236

Elem	Sr4077
Units	ppm
Avg	-.000046
Stddev	.000070
%RSD	152.3761
#1	-.000088
#2	.000035
#3	-.000086

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	997.9179	29300.54	5679.283	868.2943	1815.728
Stddev	2.7677	24.97	76.899	1.0406	6.790
%RSD	.2773490	.0852364	1.354019	.1198421	.3739788
#1	1001.114	29272.00	5675.354	868.6589	1823.496
#2	996.296	29311.27	5758.071	869.1035	1812.762
#3	996.344	29318.37	5604.425	867.1205	1810.924

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165192BS Acquired: 12/02/2024 17:11:55 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCS192 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0180696	.0518834	.0183390	.0704957	.1156455	.4550080
Stddev	.0041410	.0007944	.0029279	.0056290	.0009089	.0097859
%RSD	22.91711	1.531084	15.96548	7.984834	.7859292	2.150714
#1	.0171703	.0524643	.0167770	.0648648	.1148699	.4662203
#2	.0225865	.0522076	.0165232	.0761227	.1154210	.4506177
#3	.0144522	.0509781	.0217166	.0704996	.1166456	.4481861

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4468271	.0113676	.0111013	11.37721	.0241336	.1069328
Stddev	.0102743	.0002969	.0000943	.23476	.0003984	.0003393
%RSD	2.299384	2.612049	.8490430	2.063408	1.650596	.3173465
#1	.4489184	.0115374	.0110663	11.46164	.0236781	.1065678
#2	.4356681	.0110248	.0110296	11.11191	.0244169	.1069920
#3	.4558949	.0115407	.0112081	11.55807	.0243058	.1072387

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0548524	.2083280	.0376077	10.58329	.0922465	.0243493
Stddev	.0043644	.0154070	.0010861	.20373	.0005435	.0004150
%RSD	7.956553	7.395560	2.887862	1.925056	.5892417	1.704510
#1	.0563103	.2260886	.0381726	10.68333	.0928304	.0242595
#2	.0499457	.2003410	.0363556	10.34888	.0921537	.0248018
#3	.0583013	.1985545	.0382949	10.71767	.0917553	.0239864

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.96135	.1166096	.1406085	10.28401	.0220227	F -.003678
Stddev	.39834	.0071792	.0006075	.27932	.0022328	.001467
%RSD	3.634006	6.156631	.4320355	2.716017	10.13852	39.88207
#1	11.04323	.1129220	.1400081	10.39765	.0199221	-.002710
#2	10.52843	.1120235	.1405947	9.96578	.0217786	-.005365
#3	11.31238	.1248832	.1412228	10.48858	.0243676	-.002957

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165192BS Acquired: 12/02/2024 17:11:55 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCS192 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .0207890	.2108266	F .3239245	.0150474	.2154834	F .0089252
Stddev	.0003801	.0077360	.0081252	.0000438	.0045238	.0007174
%RSD	1.828540	3.669358	2.508376	.2909222	2.099359	8.037581
#1	.0205855	.2159933	.3262149	.0150762	.2165343	.0083719
#2	.0205540	.2019326	.3148999	.0149971	.2105267	.0086681
#3	.0212276	.2145541	.3306587	.0150690	.2193892	.0097357

Elem	Sr4077
Units	ppm
Avg	.2228182
Stddev	.0050402
%RSD	2.262036
#1	.2245636
#2	.2171373
#3	.2267538

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	988.0771	28940.50	5733.800	862.4367	1731.901
Stddev	.7844	36.99	106.670	.4796	.804
%RSD	.0793894	.1278303	1.860375	.0556126	.0464094
#1	988.9272	28952.84	5689.353	862.9731	1732.411
#2	987.9230	28898.92	5855.506	862.0492	1730.974
#3	987.3812	28969.75	5656.539	862.2877	1732.317

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165197BL Acquired: 12/02/2024 17:16:25 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBS197 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0023906	-.002672	-.002546	-.002083	-.000125	-.006526
Stddev	.0034252	.004145	.002964	.000953	.002717	.013606
%RSD	143.2781	155.1498	116.4207	45.74168	2172.561	208.4835
#1	.0011683	-.007204	-.005293	-.001410	.001120	.006710
#2	-.000256	.000927	.000596	-.001666	.001747	-.005813
#3	.006259	-.001738	-.002941	-.003173	-.003242	-.020475

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000749	.0000717	-.000170	-.011532	.0003039	-.000405
Stddev	.000080	.0000662	.000153	.011082	.0011253	.000106
%RSD	10.68126	92.28830	90.02695	96.09670	370.2159	26.28820
#1	-.000719	.0000118	-.000318	-.024304	.0012377	-.000385
#2	-.000839	.0001427	-.000179	-.005837	.0006196	-.000520
#3	-.000688	.0000606	-.000013	-.004456	-.000945	-.000310

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0009519	.0012891	-.000033	.0117593	.0004498	.0008537
Stddev	.0013539	.0128891	.000353	.0023371	.0001311	.0003028
%RSD	142.2351	999.8290	1071.161	19.87458	29.13910	35.47496
#1	.0025051	-.000342	-.000371	.0130658	.0005627	.0008744
#2	.0000216	.014916	.000334	.0131511	.0004806	.0011456
#3	.0003289	-.010707	-.000062	.0090611	.0003061	.0005410

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.228249	.0026153	-.000013	-.167517	-.001780	-.006379
Stddev	.127547	.0006313	.000449	.123012	.002339	.001135
%RSD	55.88085	24.13908	3574.449	73.43282	131.4136	17.79279
#1	-.241413	.0019589	-.000467	-.025480	-.000716	-.007680
#2	-.094629	.0032181	.000432	-.237483	-.004463	-.005866
#3	-.348703	.0026689	-.000003	-.239588	-.000162	-.005592

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165197BL Acquired: 12/02/2024 17:16:25 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBS197 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000076	.0042259	-.000292	-.002109	-.000282	F -.023330
Stddev	.000389	.0038713	.000534	.001030	.001638	.002541
%RSD	514.7704	91.60940	182.7817	48.81996	580.0909	10.89237
#1	-.000481	.0016713	-.000867	-.002513	.001342	-.020783
#2	.000295	.0086801	.000187	-.002876	-.000256	-.023341
#3	-.000040	.0023263	-.000195	-.000939	-.001933	-.025866

Elem	Sr4077
Units	ppm
Avg	.0000320
Stddev	.0000790
%RSD	247.2192
#1	.0001081
#2	.0000375
#3	-.000050

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	983.5579	29230.89	5649.792	872.3685	1788.566
Stddev	13.2771	84.65	18.199	4.1910	21.641
%RSD	1.349903	.2896046	.3221255	.4804140	1.209992
#1	988.6772	29305.81	5635.368	871.0056	1793.052
#2	993.5132	29139.05	5643.768	869.0286	1807.612
#3	968.4833	29247.80	5670.239	877.0713	1765.033

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165197BS Acquired: 12/02/2024 17:20:58 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCS197 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0238385	.0492082	.0197568	.0624055	.1113609	.3929549
Stddev	.0080681	.0028627	.0038980	.0057998	.0006888	.0169638
%RSD	33.84496	5.817568	19.72969	9.293681	.6185426	4.316982
#1	.0249712	.0462259	.0215109	.0681159	.1115418	.4082257
#2	.0152639	.0519341	.0152900	.0565203	.1119412	.3959438
#3	.0312804	.0494645	.0224696	.0625801	.1105997	.3746953

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4401961	.0113252	.0109451	11.28251	.0244882	.1039493
Stddev	.0004980	.0000992	.0000301	.02298	.0010803	.0006886
%RSD	.1131218	.8763039	.2753638	.2036989	4.411401	.6624633
#1	.4407043	.0112117	.0109107	11.26954	.0235729	.1046337
#2	.4397091	.0113678	.0109573	11.30904	.0256798	.1039576
#3	.4401747	.0113959	.0109672	11.26894	.0242120	.1032565

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0531357	.2138043	.0365650	10.55550	.0892056	.0247023
Stddev	.0043275	.0059740	.0005221	.06446	.0003484	.0008316
%RSD	8.144262	2.794132	1.427983	.6106399	.3906191	3.366429
#1	.0508206	.2080481	.0360390	10.49625	.0893001	.0251016
#2	.0581283	.2133902	.0365728	10.62414	.0894971	.0252590
#3	.0504582	.2199745	.0370832	10.54612	.0888197	.0237464

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.84292	.1157953	.1383680	10.23829	.0185172	F -.006219
Stddev	.06561	.0023192	.0007453	.08380	.0034704	.000467
%RSD	.6051349	2.002835	.5386500	.8184928	18.74144	7.509301
#1	10.77062	.1177666	.1390291	10.31047	.0189963	-.005978
#2	10.89868	.1163794	.1385146	10.25800	.0148321	-.006757
#3	10.85948	.1132399	.1375603	10.14639	.0217231	-.005921

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165197BS Acquired: 12/02/2024 17:20:58 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCS197 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .0202290	.2071631	F .3255031	.0136002	.2119524	F .0099767
Stddev	.0002816	.0019488	.0010919	.0006079	.0007704	.0005827
%RSD	1.391975	.9407052	.3354592	4.469518	.3634591	5.840854
#1	.0204939	.2055172	.3267592	.0129929	.2117091	.0103050
#2	.0199333	.2093150	.3247798	.0142086	.2128150	.0093039
#3	.0202599	.2066573	.3249704	.0135991	.2113330	.0103213

Elem	Sr4077
Units	ppm
Avg	.2192874
Stddev	.0004209
%RSD	.1919328
#1	.2189558
#2	.2191454
#3	.2197609

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	990.9017	29081.52	5623.234	866.4250	1743.732
Stddev	1.3133	80.67	9.294	3.9640	1.184
%RSD	.1325408	.2773911	.1652763	.4575162	.0679228
#1	990.1551	29085.20	5616.889	861.9771	1744.872
#2	990.1318	28999.07	5618.911	867.7131	1743.817
#3	992.4181	29160.29	5633.902	869.5847	1742.507

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165139BL Acquired: 12/02/2024 17:25:28 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBS139 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0027954	-.003822	-.000376	-.000961	-.001002	-.013711
Stddev	.0034554	.000494	.001104	.003205	.002282	.009864
%RSD	123.6122	12.93550	293.3556	333.5758	227.8147	71.94017
#1	-.000851	-.003634	-.001476	.001456	-.003081	-.003235
#2	.006022	-.004383	.000733	.000258	-.001363	-.022819
#3	.003215	-.003450	-.000386	-.004596	.001439	-.015079

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0003372	-.000014	-.000083	.0010638	.0001712	-.000111
Stddev	.0010876	.000110	.000031	.0082793	.0005556	.000498
%RSD	322.5372	772.3389	36.82783	778.2862	324.5840	448.4159
#1	-.000901	.000080	-.000069	-.003350	-.000097	-.000484
#2	.001137	.000012	-.000062	.010615	.000810	.000454
#3	.000775	-.000135	-.000119	-.004073	-.000199	-.000302

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0025538	-.014005	-.000101	-.001818	.0002391	.0009273
Stddev	.0034512	.005380	.000471	.013000	.0007771	.0001959
%RSD	135.1418	38.41736	466.4985	715.1351	324.9566	21.12767
#1	.0064861	-.012095	-.000463	-.016228	.0002122	.0010351
#2	.0011473	-.009841	.000432	.009027	.0010294	.0007012
#3	.0000279	-.020080	-.000272	.001747	-.000524	.0010457

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3525470	-.003195	-.000195	-.118886	.0026051	-.007035
Stddev	.4116900	.004937	.000074	.051776	.0007756	.002261
%RSD	116.7760	154.4972	38.17865	43.55072	29.77321	32.13637
#1	.4892304	-.002189	-.000278	-.149544	.0020839	-.004561
#2	.6785108	.001161	-.000172	-.059107	.0022349	-.008993
#3	-.110100	-.008558	-.000135	-.148008	.0034965	-.007552

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165139BL Acquired: 12/02/2024 17:25:28 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBS139 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000040	-.000423	-.000349	-.002433	.0005227	F -.021531
Stddev	.000526	.004985	.000162	.001002	.0014779	.001146
%RSD	1323.112	1179.743	46.53510	41.18222	282.7131	5.322102
#1	-.000258	-.005793	-.000512	-.001856	.0003583	-.022153
#2	-.000421	.000466	-.000348	-.003590	-.000866	-.022231
#3	.000560	.004059	-.000187	-.001852	.002076	-.020209

Elem	Sr4077
Units	ppm
Avg	.0000459
Stddev	.0001363
%RSD	296.7404
#1	.0001507
#2	-.000108
#3	.000095

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1004.721	29587.94	5616.494	883.3181	1850.180
Stddev	1.341	51.78	24.940	4.4303	1.263
%RSD	.1334533	.1749952	.4440460	.5015519	.0682895
#1	1004.633	29528.43	5639.050	880.4912	1849.234
#2	1006.104	29612.74	5620.721	888.4240	1851.615
#3	1003.427	29622.65	5589.711	881.0391	1849.691

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165139BS Acquired: 12/02/2024 17:30:01 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCS139 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0217954	.0567151	.0185220	.0687504	.1131483	.4077386
Stddev	.0062617	.0016209	.0026793	.0070973	.0015613	.0111036
%RSD	28.72946	2.857929	14.46543	10.32336	1.379862	2.723219
#1	.0154325	.0553623	.0196026	.0735766	.1124462	.4108784
#2	.0279507	.0585117	.0154711	.0606011	.1149373	.3954032
#3	.0220030	.0562714	.0204922	.0720734	.1120613	.4169343

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4425886	.0116641	.0108942	11.33852	.0239897	.1052647
Stddev	.0004562	.0000229	.0001036	.01793	.0000827	.0007149
%RSD	.1030693	.1965647	.9512063	.1581143	.3448254	.6791239
#1	.4423503	.0116557	.0108427	11.35510	.0239468	.1052191
#2	.4423011	.0116466	.0110134	11.34095	.0239373	.1060012
#3	.4431146	.0116901	.0108263	11.31949	.0240851	.1045736

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0561789	.2216403	.0365663	10.79642	.0904701	.0240495
Stddev	.0019932	.0062471	.0005868	.11997	.0005678	.0001083
%RSD	3.547894	2.818576	1.604811	1.111172	.6276207	.4502489
#1	.0560620	.2286965	.0359608	10.66174	.0905728	.0241730
#2	.0582279	.2194102	.0366057	10.83569	.0909796	.0240051
#3	.0542467	.2168143	.0371324	10.89183	.0898580	.0239705

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.91122	.1200931	.1391187	10.21401	.0194536	F -.004456
Stddev	.47005	.0057215	.0002932	.15217	.0017818	.001144
%RSD	4.307943	4.764189	.2107459	1.489803	9.159274	25.66362
#1	11.01494	.1152727	.1393288	10.04591	.0204939	-.003647
#2	10.39797	.1185907	.1392434	10.34236	.0173962	-.003957
#3	11.32075	.1264159	.1387837	10.25375	.0204707	-.005764

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165139BS Acquired: 12/02/2024 17:30:01 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCS139 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .0205766	.2008947	F .3326834	.0132661	.2170062	F .0091482
Stddev	.0008079	.0078086	.0005128	.0011016	.0017071	.0010311
%RSD	3.926234	3.886926	.1541461	8.303719	.7866416	11.27107
#1	.0207657	.1921665	.3331071	.0135724	.2151310	.0087948
#2	.0212733	.2032993	.3328297	.0120437	.2174177	.0103096
#3	.0196910	.2072182	.3321133	.0141820	.2184699	.0083403

Elem	Sr4077
Units	ppm
Avg	.2227012
Stddev	.0005736
%RSD	.2575893
#1	.2220452
#2	.2231088
#3	.2229495

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	988.3481	29223.10	5642.005	873.5442	1757.736
Stddev	1.5257	18.96	31.392	1.3684	4.938
%RSD	.1543678	.0648878	.5563894	.1566503	.2809344
#1	988.0264	29201.21	5665.004	874.8257	1754.374
#2	987.0089	29234.69	5606.242	872.1029	1755.429
#3	990.0090	29233.39	5654.769	873.7039	1763.406

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165171BL Acquired: 12/02/2024 17:34:31 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBS171 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0054415	.0031272	-.003665	.0024195	.0029007	.0049160
Stddev	.0030562	.0064586	.003915	.0090714	.0012812	.0049216
%RSD	56.16364	206.5306	106.8197	374.9265	44.16766	100.1132
#1	.0087347	-.002611	-.008185	-.007348	.0043535	.0010351
#2	.0048932	.010122	-.001378	.004028	.0019330	.0104517
#3	.0026966	.001871	-.001431	.010579	.0024154	.0032612

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000816	.0000961	-.000108	-.008669	.0004789	.0002330
Stddev	.000232	.0000583	.000089	.003223	.0009982	.0003383
%RSD	28.44045	60.70106	82.37820	37.17697	208.4210	145.2221
#1	-.000812	.0001248	-.000209	-.011552	.0010329	.0000724
#2	-.000586	.0001346	-.000050	-.009266	.0010773	.0006216
#3	-.001049	.0000290	-.000063	-.005190	-.000673	.0000048

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0016689	-.003550	.0001872	-.005357	.0002780	.0006727
Stddev	.0010501	.006398	.0006462	.025546	.0005629	.0004203
%RSD	62.91906	180.2086	345.1247	476.9015	202.5187	62.47612
#1	.0011421	-.009171	-.000133	-.034784	.0002829	.0008994
#2	.0028781	.003411	.000931	.007581	.0008384	.0009310
#3	.0009865	-.004890	-.000236	.011133	-.000287	.0001878

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3248434	-.002231	-.000510	-.273427	-.001093	-.006612
Stddev	.2118105	.001851	.000750	.220327	.008007	.002038
%RSD	65.20387	82.95650	147.2613	80.57987	732.8294	30.81663
#1	.5448988	-.000790	-.001322	-.051171	.007927	-.005711
#2	.3072572	-.004319	-.000365	-.491774	-.007364	-.008945
#3	.1223743	-.001586	.000158	-.277337	-.003841	-.005181

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165171BL Acquired: 12/02/2024 17:34:31 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBS171 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000022	.0033584	-.000469	-.001416	.0018288	F -.024054
Stddev	.000197	.0044150	.000498	.000958	.0006088	.001638
%RSD	914.0132	131.4631	106.2583	67.62060	33.29017	6.810502
#1	-.000154	-.000224	-.000002	-.002378	.0021279	-.022591
#2	.000205	.002008	-.000411	-.001408	.0022301	-.025824
#3	-.000116	.008291	-.000994	-.000463	.0011283	-.023746

Elem	Sr4077
Units	ppm
Avg	.0000040
Stddev	.0001050
%RSD	2607.097
#1	-.000115
#2	.000085
#3	.000042

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	985.1256	29349.16	5644.477	877.0609	1814.617
Stddev	13.3330	134.92	230.751	3.3298	24.126
%RSD	1.353435	.4597088	4.088083	.3796597	1.329534
#1	977.6606	29237.26	5541.457	878.3380	1801.481
#2	1000.519	29311.22	5908.793	873.2815	1842.460
#3	977.197	29498.98	5483.182	879.5631	1799.909

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165171BS Acquired: 12/02/2024 17:39:03 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCS171 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0211864	.0542454	.0192693	.0666004	.1135897	.4466405
Stddev	.0021896	.0027329	.0037498	.0059005	.0028777	.0100191
%RSD	10.33490	5.037952	19.46009	8.859608	2.533406	2.243203
#1	.0235501	.0571293	.0235314	.0598095	.1155816	.4481775
#2	.0207814	.0539130	.0177993	.0704740	.1148969	.4359417
#3	.0192275	.0516940	.0164772	.0695177	.1102904	.4558022

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4392742	.0114972	.0110250	11.20980	.0247792	.1049058
Stddev	.0020036	.0001286	.0000266	.04195	.0011067	.0005505
%RSD	.4561050	1.118307	.2409583	.3742665	4.466405	.5247524
#1	.4370885	.0114189	.0110395	11.16336	.0239690	.1048995
#2	.4410237	.0116456	.0109943	11.24498	.0243284	.1043585
#3	.4397103	.0114272	.0110411	11.22106	.0260402	.1054594

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0548666	.2280424	.0361201	10.85195	.0899464	.0225484
Stddev	.0013506	.0028597	.0005242	.05615	.0008023	.0003692
%RSD	2.461537	1.254041	1.451129	.5173866	.8919759	1.637208
#1	.0560698	.2304328	.0355761	10.91152	.0906271	.0221376
#2	.0551244	.2288201	.0366218	10.84431	.0890618	.0226550
#3	.0534058	.2248742	.0361623	10.80001	.0901504	.0228525

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.97970	.1164797	.1386884	10.16643	.0184624	F -.006357
Stddev	.09972	.0057412	.0009754	.12894	.0020154	.000752
%RSD	.9081787	4.928927	.7032852	1.268319	10.91634	11.83696
#1	10.87626	.1100504	.1395142	10.05812	.0172891	-.005525
#2	10.98761	.1182945	.1376123	10.30906	.0207896	-.006989
#3	11.07522	.1210942	.1389386	10.13210	.0173085	-.006558

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165171BS Acquired: 12/02/2024 17:39:03 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCS171 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .0207135	.1985455	F .3346622	.0146301	.2202205	F .0065621
Stddev	.0004774	.0032070	.0007061	.0007466	.0013467	.0012117
%RSD	2.304665	1.615243	.2109769	5.103102	.6115398	18.46522
#1	.0207618	.2007191	.3338474	.0154915	.2205655	.0058888
#2	.0202137	.1948623	.3350456	.0142286	.2213612	.0058366
#3	.0211648	.2000551	.3350937	.0141701	.2187348	.0079610

Elem	Sr4077
Units	ppm
Avg	.2223722
Stddev	.0008383
%RSD	.3769925
#1	.2216258
#2	.2232792
#3	.2222117

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	989.0927	29445.86	5662.147	883.3980	1757.191
Stddev	5.6596	23.16	24.119	4.2285	11.875
%RSD	.5722024	.0786414	.4259696	.4786590	.6757821
#1	982.6290	29423.36	5680.674	878.5679	1744.647
#2	993.1590	29444.60	5634.875	886.4316	1768.259
#3	991.4902	29469.62	5670.891	885.1944	1758.666

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165167BL Acquired: 12/02/2024 17:43:33 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBS167 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0044237	.0021160	-.001718	.0014755	-.002671	-.009664
Stddev	.0027810	.0020242	.000907	.0054469	.001798	.002116
%RSD	62.86503	95.66358	52.80989	369.1643	67.31363	21.89546
#1	.0013919	.0033724	-.000948	.0075748	-.003991	-.012011
#2	.0068560	-.000219	-.002718	-.002904	-.000623	-.007901
#3	.0050233	.003195	-.001487	-.000245	-.003398	-.009082

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001660	.0000148	-.000147	-.005937	.0000595	.0002363
Stddev	.000278	.0000641	.000041	.005097	.0007591	.0003830
%RSD	16.78174	432.7137	27.83347	85.86015	1274.961	162.0603
#1	-.001960	-.000052	-.000173	-.009521	-.000794	-.000132
#2	-.001607	.000076	-.000167	-.008189	.000657	.000208
#3	-.001411	.000021	-.000100	-.000101	.000316	.000633

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0005556	-.012157	.0005101	-.020937	.0005092	.0003684
Stddev	.0011483	.012942	.0003218	.007116	.0002359	.0002295
%RSD	206.6906	106.4557	63.08405	33.98626	46.33053	62.29674
#1	.0006429	.002577	.0008714	-.013204	.0006703	.0006099
#2	-.000634	-.021684	.0002542	-.027209	.0006189	.0001530
#3	.001658	-.017364	.0004047	-.022397	.0002384	.0003425

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3618545	.0006343	-.000486	-.253192	.0015117	-.006075
Stddev	.2226119	.0042218	.000622	.071512	.0023586	.001534
%RSD	61.51973	665.6391	127.8893	28.24404	156.0198	25.24685
#1	.4439109	.0049228	-.000328	-.282167	.0017970	-.007846
#2	.1098616	-.003517	.000041	-.305669	-.000977	-.005159
#3	.5317910	.000497	-.001172	-.171740	.003715	-.005220

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165167BL Acquired: 12/02/2024 17:43:33 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBS167 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000260	.0066258	.0002346	-.001458	.0012408	F -.025309
Stddev	.000179	.0065934	.0002681	.000285	.0007309	.000530
%RSD	68.89524	99.51071	114.2776	19.51360	58.90824	2.095034
#1	-.000135	.0142128	-.000052	-.001618	.0004035	-.025191
#2	-.000465	.0022836	.000276	-.001130	.0017512	-.024848
#3	-.000180	.0033810	.000480	-.001627	.0015678	-.025889

Elem	Sr4077
Units	ppm
Avg	-.000062
Stddev	.000154
%RSD	248.7795
#1	.000096
#2	-.000212
#3	-.000070

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	998.3797	29565.69	5653.176	880.8740	1831.807
Stddev	4.5234	119.14	11.431	7.3015	3.168
%RSD	.4530709	.4029754	.2022039	.8288912	.1729696
#1	994.7045	29433.22	5644.661	872.9570	1829.711
#2	997.0033	29599.78	5648.700	887.3429	1830.258
#3	1003.431	29664.08	5666.168	882.3221	1835.452

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165167BS Acquired: 12/02/2024 17:48:05 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCS167 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0256142	.0507393	.0187383	.0669316	.1150869	.3972109
Stddev	.0068714	.0028205	.0014656	.0105400	.0012125	.0078688
%RSD	26.82645	5.558847	7.821536	15.74742	1.053581	1.981007
#1	.0278669	.0495759	.0187251	.0644404	.1164818	.3914906
#2	.0178992	.0539555	.0202105	.0578603	.1144938	.3939575
#3	.0310764	.0486866	.0172793	.0784940	.1142851	.4061847

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4476521	.0115618	.0111267	11.48568	.0242909	.1068403
Stddev	.0077241	.0001438	.0002128	.18920	.0008169	.0002042
%RSD	1.725469	1.243658	1.912461	1.647302	3.362812	.1911463
#1	.4490661	.0116099	.0108840	11.54382	.0239234	.1069934
#2	.4393186	.0114002	.0112813	11.27423	.0252269	.1069192
#3	.4545715	.0116755	.0112149	11.63899	.0237222	.1066085

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0575504	.2222316	.0376266	10.91263	.0911214	.0229991
Stddev	.0008170	.0136003	.0008683	.16411	.0004959	.0010452
%RSD	1.419577	6.119876	2.307646	1.503853	.5442602	4.544707
#1	.0575471	.2211342	.0378973	10.97440	.0916926	.0219649
#2	.0567351	.2092133	.0366552	10.72660	.0908010	.0229775
#3	.0583690	.2363474	.0383273	11.03690	.0908704	.0240550

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.40736	.1228034	.1405954	10.36051	.0182698	F -.005974
Stddev	.43264	.0010072	.0009448	.29685	.0028696	.001880
%RSD	3.792654	.8202127	.6719914	2.865236	15.70698	31.46162
#1	11.86696	.1239213	.1396921	10.52970	.0196337	-.005750
#2	11.00799	.1225225	.1415769	10.01774	.0202031	-.007955
#3	11.34712	.1219664	.1405171	10.53409	.0149726	-.004216

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165167BS Acquired: 12/02/2024 17:48:05 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCS167 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .0207674	.2118097	F .3356850	.0127808	.2204205	F .0051323
Stddev	.0005855	.0059556	.0058537	.0021735	.0049408	.0014860
%RSD	2.819425	2.811750	1.743798	17.00639	2.241539	28.95409
#1	.0211276	.2175255	.3370104	.0151803	.2211159	.0034484
#2	.0210829	.2122632	.3292823	.0109438	.2151688	.0056886
#3	.0200918	.2056403	.3407623	.0122182	.2249768	.0062598

Elem	Sr4077
Units	ppm
Avg	.2259732
Stddev	.0037015
%RSD	1.638022
#1	.2266133
#2	.2219935
#3	.2293129

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	994.2871	29427.80	5712.508	880.9428	1758.283
Stddev	2.5555	41.56	71.076	.8493	3.023
%RSD	.2570188	.1412151	1.244215	.0964108	.1719048
#1	991.8963	29474.01	5689.373	881.6235	1754.832
#2	993.9846	29393.50	5792.269	879.9910	1760.458
#3	996.9804	29415.90	5655.882	881.2138	1759.559

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165169BL Acquired: 12/02/2024 17:52:35 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBS169 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0058743	-.002530	-.003280	-.001607	-.001632	.0035061
Stddev	.0024653	.001498	.002465	.006197	.000602	.0121858
%RSD	41.96758	59.21806	75.13471	385.6012	36.87527	347.5576
#1	.0060669	-.001289	-.000493	.004323	-.002142	-.010558
#2	.0033184	-.004195	-.004175	-.008040	-.001787	.010918
#3	.0082377	-.002107	-.005172	-.001105	-.000968	.010159

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000773	.0000845	-.000099	-.009496	-.000699	-.000242
Stddev	.000317	.0000813	.000121	.004258	.000146	.000244
%RSD	41.04567	96.25279	122.3007	44.84068	20.91287	100.7641
#1	-.001014	.0001558	.000026	-.006477	-.000841	-.000012
#2	-.000413	-.000004	-.000107	-.014367	-.000549	-.000498
#3	-.000890	.000102	-.000217	-.007645	-.000708	-.000217

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0018422	-.012077	.0003111	.0067147	.0002069	.0004842
Stddev	.0014066	.015484	.0003406	.0375820	.0003901	.0003856
%RSD	76.35334	128.2033	109.4717	559.7015	188.5127	79.63440
#1	.0033427	.003817	.0002692	.0095439	.0005308	.0000947
#2	.0016303	-.027115	.0006707	.0428020	.0003160	.0008657
#3	.0005536	-.012934	-.000007	-.032202	-.000226	.0004921

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4104366	-.006135	-.000122	-.353905	-.000206	-.008321
Stddev	.1383811	.002327	.000671	.076901	.001393	.002958
%RSD	33.71558	37.92983	550.5333	21.72929	675.0743	35.54638
#1	.2798527	-.003777	-.000142	-.431407	.001029	-.005045
#2	.3959778	-.008430	-.000782	-.277619	-.001715	-.010795
#3	.5554795	-.006197	.000559	-.352689	.000067	-.009123

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165169BL Acquired: 12/02/2024 17:52:35 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBS169 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000016	.0045933	.0000744	-.001554	-.000395	F -.027467
Stddev	.000461	.0043374	.0001986	.002776	.000874	.000813
%RSD	2862.085	94.43032	266.8248	178.5547	221.3844	2.959781
#1	.000474	.0001071	-.000064	-.004646	-.000966	-.026736
#2	-.000081	.0049079	.000302	-.000741	.000611	-.028343
#3	-.000441	.0087648	-.000014	.000724	-.000830	-.027324

Elem	Sr4077
Units	ppm
Avg	.0000837
Stddev	.0000600
%RSD	71.67258
#1	.0000670
#2	.0001503
#3	.0000339

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	997.3002	29556.31	5648.746	878.6168	1821.374
Stddev	4.7903	73.56	23.812	3.7330	11.363
%RSD	.4803250	.2488679	.4215511	.4248719	.6238674
#1	998.2578	29565.49	5622.371	874.6014	1825.931
#2	1001.539	29478.59	5668.664	881.9819	1829.750
#3	992.103	29624.84	5655.204	879.2673	1808.440

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165169BSRE Acquired: 12/02/2024 17:57:06 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCS169 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0211086	.0584183	.0201127	.0729307	.1166110	.4182289
Stddev	.0041474	.0038665	.0027717	.0047802	.0020027	.0183254
%RSD	19.64796	6.618713	13.78072	6.554508	1.717452	4.381668
#1	.0170534	.0539904	.0220703	.0753123	.1188431	.4143527
#2	.0209299	.0601368	.0169412	.0760523	.1160186	.4021516
#3	.0253424	.0611278	.0213265	.0674275	.1149712	.4381823

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4481122	.0115350	.0112846	11.44014	.0240765	.1076290
Stddev	.0078275	.0002505	.0000883	.16989	.0007836	.0009191
%RSD	1.746769	2.171329	.7824100	1.485034	3.254426	.8539696
#1	.4530660	.0117593	.0112397	11.52373	.0238732	.1073627
#2	.4390883	.0112648	.0113863	11.24465	.0234147	.1086518
#3	.4521825	.0115809	.0112277	11.55205	.0249417	.1068724

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0547808	.2192352	.0377897	10.79265	.0921635	.0240816
Stddev	.0017308	.0131813	.0000833	.20397	.0006651	.0006332
%RSD	3.159423	6.012405	.2205182	1.889939	.7216091	2.629272
#1	.0534536	.2134139	.0377863	10.83442	.0929254	.0243419
#2	.0541503	.2099667	.0377081	10.57102	.0916993	.0233597
#3	.0567384	.2343250	.0378747	10.97251	.0918658	.0245431

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.23749	.1182244	F .1704911	10.36178	.0200717	F -.006290
Stddev	.05399	.0012349	.0018799	.33776	.0057906	.000393
%RSD	.4804753	1.044511	1.102620	3.259626	28.84964	6.249230
#1	11.29166	.1168135	.1716284	10.63403	.0158040	-.006726
#2	11.23713	.1187507	.1715236	9.98381	.0177478	-.006182
#3	11.18367	.1191089	.1683212	10.46750	.0266632	-.005963

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165169BSRE Acquired: 12/02/2024 17:57:06 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCS169 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .0212608	.2094811	F .3334768	.0146033	.2196613	F .0042850
Stddev	.0000594	.0091429	.0019818	.0014045	.0038931	.0008957
%RSD	.2794493	4.364547	.5942738	9.617703	1.772331	20.90300
#1	.0212796	.2168119	.3330360	.0130138	.2211456	.0053156
#2	.0213085	.2123949	.3317525	.0151193	.2152444	.0036945
#3	.0211943	.1992364	.3356419	.0156768	.2225939	.0038449

Elem	Sr4077
Units	ppm
Avg	.2241874
Stddev	.0039619
%RSD	1.767209
#1	.2260374
#2	.2196389
#3	.2268859

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	990.6531	29224.00	5713.854	875.4792	1741.788
Stddev	3.1406	39.36	59.493	3.7308	5.949
%RSD	.3170212	.1346681	1.041198	.4261479	.3415425
#1	987.3017	29183.76	5679.366	876.0956	1736.462
#2	991.1293	29225.82	5782.550	871.4785	1740.694
#3	993.5285	29262.41	5679.646	878.8634	1748.208

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4939-10 Acquired: 12/02/2024 18:01:37 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MBHHW8 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1422919	-.012503	3.836556	-.014117	.0010922	70.53333	1.178644
Stddev	.0042168	.001373	.025553	.004493	.0012210	.13854	.002744
%RSD	2.963489	10.97814	.6660358	31.82306	111.7942	.1964184	.2328191
#1	.1445857	-.012967	3.856344	-.010160	.0024408	70.46346	1.177521
#2	.1374254	-.010959	3.845617	-.013190	.0000619	70.69289	1.181771
#3	.1448645	-.013584	3.807708	-.019001	.0007738	70.44364	1.176639

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0053365	.0197185	278.2339	.1349042	.1378730	.4866050	192.8133
Stddev	.0000970	.0001323	.5521	.0008755	.0012681	.0005554	.1305
%RSD	1.816939	.6709624	.1984339	.6490029	.9197751	.1141477	.0676727
#1	.0054471	.0198712	277.7466	.1341308	.1393343	.4861154	192.8042
#2	.0052663	.0196468	278.8335	.1358548	.1370621	.4864910	192.9481
#3	.0052959	.0196376	278.1216	.1347270	.1372224	.4872087	192.6876

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.60659	61.19184	.2493655	-.013322	1.992900	.1862987	1.594932
Stddev	.02723	.18612	.0025000	.000192	.080700	.0030328	.003345
%RSD	.2567134	.3041639	1.002539	1.444918	4.049395	1.627932	.2097179
#1	10.58362	61.22535	.2515420	-.013479	2.072380	.1831972	1.598003
#2	10.63667	61.35893	.2499196	-.013380	1.911032	.1892578	1.595425
#3	10.59947	60.99124	.2466350	-.013108	1.995289	.1864412	1.591368

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.995729	8.778076	.0351553	.0028108	2.956060	5.438023	.3456239
Stddev	.018559	.050727	.0035459	.0002503	.001242	.019672	.0045546
%RSD	.2321115	.5778875	10.08636	8.904200	.0420200	.3617576	1.317799
#1	8.005731	8.805028	.0374917	.0030560	2.955998	5.433112	.3494731
#2	8.007142	8.809638	.0368990	.0025557	2.957333	5.459686	.3468028
#3	7.974315	8.719561	.0310752	.0028207	2.954851	5.421272	.3405957

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4939-10 Acquired: 12/02/2024 18:01:37 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MBHHW8 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	1.277082	.0768879	.3726768
Stddev	.002441	.0003731	.0007623
%RSD	.1911658	.4853032	.2045372
#1	1.275865	.0773184	.3724615
#2	1.279893	.0766864	.3735236
#3	1.275488	.0766588	.3720454

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1112.184	33468.24	6790.095	978.4989	1523.236
Stddev	6.124	60.06	25.740	2.2911	9.707
%RSD	.5506235	.1794644	.3790783	.2341451	.6372318
#1	1107.055	33534.77	6804.361	978.3313	1516.545
#2	1110.533	33418.02	6760.381	976.2961	1518.793
#3	1118.964	33451.92	6805.543	980.8691	1534.368

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4939-11 Acquired: 12/02/2024 18:18:40 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MBHHW8D Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1428243	-.010869	3.825120	-.020292	.0017331	70.59770	1.186672
Stddev	.0129576	.006718	.069442	.001384	.0033977	.10717	.005133
%RSD	9.072424	61.80702	1.815425	6.818931	196.0402	.1518085	.4325615
#1	.1404540	-.005887	3.745270	-.021397	-.000397	70.71413	1.191462
#2	.1568034	-.008211	3.871382	-.018740	.005651	70.50316	1.181254
#3	.1312154	-.018509	3.858710	-.020739	-.000055	70.57582	1.187299

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0053538	.0196413	279.0816	.1349029	.1376909	.4859157	192.0791
Stddev	.0001247	.0006499	1.1691	.0007473	.0023666	.0018262	.1882
%RSD	2.328827	3.308835	.4189131	.5539457	1.718753	.3758191	.0979992
#1	.0054975	.0188932	279.3152	.1354871	.1351060	.4869547	192.2927
#2	.0052897	.0199639	277.8134	.1340608	.1397509	.4838071	191.9376
#3	.0052742	.0200667	280.1164	.1351607	.1382160	.4869852	192.0071

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.65840	60.89189	.2501317	-.012923	2.005563	.1926933	1.584304
Stddev	.04858	.16022	.0044812	.000239	.113005	.0029199	.007768
%RSD	.4558251	.2631302	1.791553	1.853036	5.634581	1.515317	.4902811
#1	10.66117	61.06975	.2449869	-.012728	2.073888	.1931672	1.581121
#2	10.60849	60.84709	.2522253	-.012850	1.875125	.1895655	1.593157
#3	10.70554	60.75884	.2531830	-.013190	2.067675	.1953474	1.578634

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.147773	8.744520	.0378610	.0029439	2.968259	5.379787	.3485247
Stddev	.059064	.163552	.0013875	.0002806	.063199	.025323	.0063843
%RSD	.7249127	1.870336	3.664801	9.532734	2.129149	.4707096	1.831803
#1	8.212836	8.556397	.0364483	.0029970	2.897015	5.364457	.3422216
#2	8.097530	8.852957	.0392219	.0031943	2.990198	5.365889	.3549872
#3	8.132954	8.824205	.0379127	.0026406	3.017565	5.409016	.3483653

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4939-11 Acquired: 12/02/2024 18:18:40 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MBHHW8D Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	1.272213	.0852041	.3732008
Stddev	.004613	.0003271	.0009688
%RSD	.3625789	.3838691	.2595948
#1	1.277395	.0854078	.3742694
#2	1.268555	.0848268	.3723798
#3	1.270688	.0853775	.3729533

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1113.187	33246.10	6800.995	980.4138	1522.539
Stddev	8.595	66.98	27.132	3.2230	22.655
%RSD	.7721000	.2014612	.3989356	.3287370	1.487974
#1	1123.073	33182.48	6814.867	979.6778	1548.577
#2	1109.001	33239.85	6818.385	977.6224	1507.338
#3	1107.487	33315.99	6769.732	983.9411	1511.703

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4939-10LX5 Acquired: 12/02/2024 18:23:03 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MBHHW8L Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0308194	.0018742	.8017881	-.005384	.0015090	16.42751	.2788744
Stddev	.0029609	.0027305	.0018735	.011671	.0012539	.04336	.0009246
%RSD	9.607316	145.6875	.2336636	216.7774	83.09573	.2639529	.3315602
#1	.0342377	-.000398	.8033258	.007989	.0014160	16.46770	.2799011
#2	.0290491	.001118	.7997015	-.013511	.0003042	16.43326	.2786148
#3	.0291715	.004903	.8023372	-.010629	.0028068	16.38155	.2781074

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0013078	.0035093	66.74340	.0323738	.0264185	.1123997	46.53984
Stddev	.0000518	.0001244	.06935	.0005361	.0006469	.0023298	.15712
%RSD	3.957614	3.545545	.1038997	1.656056	2.448602	2.072756	.3375928
#1	.0013060	.0033707	66.82050	.0321665	.0262557	.1097110	46.68290
#2	.0013605	.0036114	66.72358	.0319723	.0271313	.1136669	46.37169
#3	.0012570	.0035457	66.68612	.0329827	.0258687	.1138213	46.56491

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.607237	14.39973	.0517273	-.001290	.6090465	.0503048	.3858296
Stddev	.001558	.08708	.0012262	.000480	.4476351	.0070680	.0035614
%RSD	.0597377	.6047318	2.370519	37.20475	73.49769	14.05034	.9230620
#1	2.608929	14.48979	.0504780	-.000773	1.102534	.0427163	.3894323
#2	2.606917	14.39343	.0529290	-.001722	.229149	.0567005	.3857458
#3	2.605863	14.31597	.0517748	-.001376	.495457	.0514977	.3823108

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.752018	1.741244	.0052284	.0001367	.5912869	1.331744	.0688464
Stddev	.002711	.014479	.0003420	.0005860	.0095567	.002902	.0029785
%RSD	.1547585	.8315429	6.541897	428.6602	1.616259	.2179152	4.326268
#1	1.749225	1.728097	.0049115	-.000215	.5803614	1.330179	.0667804
#2	1.754640	1.756762	.0055910	.000813	.5980932	1.335093	.0722606
#3	1.752188	1.738872	.0051827	-.000189	.5954063	1.329960	.0674982

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4939-10LX5 Acquired: 12/02/2024 18:23:03 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MBHHW8L Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.3019905	.0029708	.0884407
Stddev	.0009376	.0002147	.0002698
%RSD	.3104715	7.227399	.3050210
#1	.3025835	.0027579	.0887466
#2	.3024783	.0029673	.0882369
#3	.3009095	.0031873	.0883386

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1023.277	30254.36	5933.959	895.7901	1684.584
Stddev	5.746	98.90	26.656	7.6014	11.270
%RSD	.5615001	.3269089	.4492194	.8485706	.6690074
#1	1027.509	30142.16	5908.782	887.5350	1693.914
#2	1016.736	30328.88	5931.214	897.3348	1672.062
#3	1025.588	30292.06	5961.882	902.5005	1687.775

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4939-12 Acquired: 12/02/2024 18:27:30 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MBHHW8S Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2233597	.0785530	3.910703	.1396785	.1580005	72.15838	4.651782
Stddev	.0069856	.0013992	.061919	.0019880	.0061101	2.02698	.131922
%RSD	3.127487	1.781204	1.583333	1.423242	3.867141	2.809078	2.835937
#1	.2186997	.0801627	3.839964	.1419280	.1516694	73.24886	4.718648
#2	.2313916	.0778672	3.955071	.1381576	.1638626	73.40669	4.736881
#3	.2199879	.0776289	3.937075	.1389500	.1584695	69.81959	4.499816

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0871852	.1229883	272.2556	.5011211	1.169065	.8727647	188.9566
Stddev	.0017205	.0020562	7.3603	.0019448	.020955	.0276297	4.9263
%RSD	1.973368	1.671828	2.703441	.3880995	1.792482	3.165770	2.607097
#1	.0880329	.1206387	275.8234	.5033011	1.145522	.8847045	191.5479
#2	.0883174	.1244583	277.1520	.4995639	1.185675	.8924167	192.0464
#3	.0852054	.1238681	263.7913	.5004982	1.175998	.8411729	183.2755

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.26077	59.28739	1.286953	.0710137	1.909745	1.070106	2.306292
Stddev	.30657	1.59508	.019630	.0005413	.253583	.022111	.013354
%RSD	2.722443	2.690428	1.525278	.7622268	13.27839	2.066207	.5790277
#1	11.41184	60.20378	1.265733	.0713029	2.018020	1.082597	2.315442
#2	11.46249	60.21283	1.304464	.0703893	2.091217	1.083144	2.312466
#3	10.90799	57.44555	1.290661	.0713491	1.619998	1.044577	2.290968

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.835525	8.859688	.0303806	.0017293	3.027680	5.350905	.3497913
Stddev	.301948	.140257	.0053736	.0005025	.053515	.090990	.0064196
%RSD	3.853580	1.583090	17.68768	29.05986	1.767531	1.700455	1.835268
#1	7.978071	8.701339	.0319080	.0022967	2.969566	5.406866	.3427062
#2	8.039812	8.968294	.0348253	.0015512	3.074929	5.399935	.3552213
#3	7.488692	8.909430	.0244087	.0013402	3.038543	5.245916	.3514465

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4939-12 Acquired: 12/02/2024 18:27:30 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MBHHW8S Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	1.246210	.0779980	.3648605
Stddev	.031877	.0032939	.0102466
%RSD	2.557945	4.223101	2.808357
#1	1.259328	.0794496	.3701763
#2	1.269435	.0803168	.3713567
#3	1.209866	.0742276	.3530484

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1098.002	33203.84	6859.127	971.0600	1493.946
Stddev	10.197	159.91	132.752	8.5038	19.948
%RSD	.9286787	.4815861	1.935407	.8757187	1.335244
#1	1108.415	33031.76	6785.914	968.0128	1515.635
#2	1088.035	33231.93	6779.101	964.4997	1476.386
#3	1097.556	33347.85	7012.365	980.6675	1489.816

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4933-20 Acquired: 12/02/2024 18:31:48 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MBHHX4 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1596951	-.003667	8.229097	-.004280	.0073362	62.10957
Stddev	.0034412	.003469	.074784	.010453	.0024940	.46208
%RSD	2.154841	94.59815	.9087750	244.2241	33.99545	.7439778
#1	.1591294	.000307	8.244396	-.012064	.0075635	62.37434
#2	.1633840	-.005222	8.295049	.007601	.0047364	62.37835
#3	.1565718	-.006086	8.147847	-.008378	.0097088	61.57601

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.192766	.0048372	.0169028	38.24252	.2051198	.1084252
Stddev	.017522	.0002105	.0002737	.24458	.0007481	.0012044
%RSD	.7990858	4.352480	1.619415	.6395541	.3647351	1.110827
#1	2.201420	.0048762	.0165970	38.37570	.2058379	.1094200
#2	2.204277	.0050254	.0171250	38.39162	.2043448	.1087695
#3	2.172600	.0046098	.0169863	37.96025	.2051768	.1070861

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5867728	160.0677	14.10635	14.53730	.2276946	-.008972
Stddev	.0034699	1.2538	.10788	.07606	.0025116	.000230
%RSD	.5913523	.7832790	.7647302	.5232213	1.103068	2.567220
#1	.5871634	160.7762	14.16091	14.55482	.2280201	-.009181
#2	.5900309	160.8067	14.17604	14.60307	.2300276	-.009011
#3	.5831241	158.6200	13.98209	14.45401	.2250360	-.008725

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.517484	.1867080	2.353887	7.490690	F 14.68206	.0258278
Stddev	.028487	.0003021	.015842	.095303	.11798	.0027323
%RSD	1.877227	.1617874	.6730315	1.272289	.8035508	10.57893
#1	1.487446	.1870416	2.371516	7.382916	14.68092	.0281639
#2	1.520894	.1864530	2.349299	7.563848	14.80060	.0264963
#3	1.544112	.1866295	2.340844	7.525306	14.56465	.0228233

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4933-20 Acquired: 12/02/2024 18:31:48 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MBHHX4 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0125623	3.604401	5.874896	.3664152	1.320512	.0451842
Stddev	.0006501	.029211	.020732	.0024357	.010257	.0019075
%RSD	5.174712	.8104239	.3528983	.6647378	.7767374	4.221493
#1	.0118136	3.604280	5.878435	.3656994	1.323459	.0452823
#2	.0129836	3.633673	5.893630	.3691285	1.328973	.0470407
#3	.0128895	3.575251	5.852621	.3644175	1.309104	.0432296

Elem	Sr4077
Units	ppm
Avg	.1613661
Stddev	.0012287
%RSD	.7614497
#1	.1619674
#2	.1621783
#3	.1599525

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1149.022	34351.92	6797.194	1002.869	1667.829
Stddev	6.136	106.22	28.860	8.305	12.343
%RSD	.5340556	.3092226	.4245825	.8281224	.7400685
#1	1146.848	34231.27	6767.754	993.379	1665.274
#2	1144.269	34431.40	6798.392	1006.419	1656.964
#3	1155.950	34393.07	6825.436	1008.809	1681.250

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: CCV072 Acquired: 12/02/2024 18:40:49 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV072 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.428099	4.880174	24.91362	4.785274	4.642085	390.7166
Stddev	.053436	.033449	.15928	.025232	.028990	2.0354
%RSD	.9844321	.6853995	.6393165	.5272897	.6245041	.5209350
#1	5.489714	4.917835	25.09002	4.801609	4.643459	388.4346
#2	5.394459	4.853926	24.78034	4.756213	4.612432	391.3708
#3	5.400123	4.868760	24.87049	4.798001	4.670364	392.3444

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.02008	.4876336	2.639594	401.3631	15.08986	2.503323
Stddev	.10172	.0034860	.018717	2.4605	.54905	.015770
%RSD	1.015195	.7148802	.7090854	.6130368	3.638565	.6299810
#1	10.13040	.4899432	2.658147	404.1811	14.85626	2.516287
#2	9.99986	.4893338	2.620718	400.2674	15.71708	2.485766
#3	9.92999	.4836237	2.639918	399.6407	14.69623	2.507917

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	14.53854	396.7179	14.69380	410.5356	2.484223	1.251352
Stddev	.08574	2.8293	.08042	2.1386	.015094	.048974
%RSD	.5897298	.7131669	.5472972	.5209373	.6075774	3.913701
#1	14.63497	399.9354	14.78620	412.9889	2.498273	1.229135
#2	14.50978	395.5994	14.65560	409.5535	2.468267	1.307497
#3	14.47089	394.6189	14.63960	409.0645	2.486130	1.217424

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	391.9384	2.442577	14.08142	150.3260	4.747622	F 3.958282
Stddev	2.7169	.015155	.62266	.9640	.030032	.028767
%RSD	.6931875	.6204518	4.421848	.6412977	.6325615	.7267627
#1	395.0543	2.458693	13.77317	151.4302	4.778255	3.984359
#2	390.6966	2.428613	14.79807	149.8962	4.718230	3.963065
#3	390.0644	2.440425	13.67301	149.6516	4.746379	3.927423

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: CCV072 Acquired: 12/02/2024 18:40:49 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV072 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.702079	4.939255	F 3.317957	5.012079	4.888440	4.800623
Stddev	.033613	.024726	.015895	.028178	.029870	.024200
%RSD	.7148638	.5006054	.4790466	.5621993	.6110283	.5041011
#1	4.719068	4.961710	3.325812	5.041567	4.921675	4.827770
#2	4.663362	4.912756	3.328396	4.985425	4.879808	4.792787
#3	4.723807	4.943299	3.299665	5.009247	4.863836	4.781313

Elem	Sr4077
Units	ppm
Avg	4.934318
Stddev	.018899
%RSD	.3830070
#1	4.951896
#2	4.936729
#3	4.914330

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	808.9219	25967.47	5414.979	672.9847	1306.044
Stddev	3.5577	845.03	17.725	27.1402	7.617
%RSD	.4398071	3.254184	.3273300	4.032810	.5831996
#1	806.0960	26342.02	5394.516	685.7292	1297.563
#2	812.9171	24999.90	5424.890	641.8178	1312.302
#3	807.7526	26560.48	5425.532	691.4070	1308.265

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: CCB072 Acquired: 12/02/2024 18:45:28 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB072 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0037454	.0021896	-.002656	.0019967	.0029620	.1040408	.0007174
Stddev	.0070212	.0024775	.004856	.0008079	.0016866	.0164480	.0003640
%RSD	187.4633	113.1462	182.8159	40.46083	56.94117	15.80922	50.74314
#1	.0117929	-.000648	-.001668	.0023924	.0044578	.0851914	.0011038
#2	-.001130	.003925	-.007930	.0010673	.0032942	.1114497	.0003809
#3	.000573	.003291	.001629	.0025304	.0011340	.1154812	.0006674

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000091	-.000111	-.003254	-.000238	-.000009	.0022855	-.000111
Stddev	.000058	.000098	.010513	.001059	.000540	.0007945	.013020
%RSD	63.92353	88.86303	323.0267	445.8044	5839.859	34.76179	11767.99
#1	-.000141	-.000128	-.014086	-.000670	.000490	.0028189	-.010309
#2	-.000104	-.000005	-.002583	.000969	-.000582	.0013724	-.004578
#3	-.000027	-.000199	.006907	-.001012	.000064	.0026650	.014555

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0011243	-.007415	.0006571	.0009063	.2811537	-.002165	.0010026
Stddev	.0006585	.000382	.0006855	.0012709	.3832059	.003318	.0002551
%RSD	58.56655	5.150665	104.3210	140.2380	136.2976	153.2925	25.44424
#1	.0013218	-.007273	.0002436	.0012986	-.047380	-.005950	.0008993
#2	.0016615	-.007848	.0002793	-.000515	.188718	.000242	.0008154
#3	.0003897	-.007125	.0014483	.001935	.702123	-.000786	.0012932

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1069722	.0020827	.0024745	-.000121	.0017032	.0004412	-.000791
Stddev	.1524184	.0040691	.0005319	.000692	.0011013	.0004643	.001737
%RSD	142.4841	195.3785	21.49672	574.4482	64.66024	105.2362	219.5619
#1	-.062030	.0059087	.0030791	-.000303	.0025360	-.000082	.001112
#2	.234019	-.002192	.0020786	.000645	.0004545	.000803	-.001195
#3	.148928	.002532	.0022657	-.000703	.0021190	.000604	-.002291

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: CCB072 Acquired: 12/02/2024 18:45:28 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB072 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.000372	-.000660	.0001229
Stddev	.000852	.000835	.0000430
%RSD	228.6558	126.4333	34.96648
#1	-.000676	-.000701	.0001164
#2	.000589	.000194	.0000835
#3	-.001031	-.001474	.0001687

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1002.890	29646.22	5478.954	880.6765	1840.370
Stddev	2.835	519.65	88.840	10.5927	5.256
%RSD	.2827271	1.752837	1.621474	1.202794	.2856058
#1	1003.970	29488.84	5508.507	874.2760	1842.638
#2	1005.028	30226.37	5379.104	892.9035	1844.111
#3	999.674	29223.45	5549.250	874.8501	1834.360

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4917-03 Acquired: 12/02/2024 18:50:00 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MX1009 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6175292	.6292024	.5620538	.3121504	.2218987	2.403097	.8517112
Stddev	.0081004	.0087748	.0028592	.0050339	.0040938	.011753	.0048622
%RSD	1.311744	1.394588	.5087144	1.612661	1.844876	.4890860	.5708705
#1	.6268223	.6381347	.5589071	.3070213	.2198839	2.411833	.8548314
#2	.6119633	.6288785	.5627618	.3123465	.2192029	2.389734	.8461089
#3	.6138020	.6205941	.5644925	.3170834	.2266094	2.407723	.8541933

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4164189	.2537214	-.002901	.3709745	.1164784	.1605269	.7898155
Stddev	.0017269	.0005841	.014722	.0050409	.0004014	.0016407	.0269659
%RSD	.4147032	.2302013	507.5755	1.358836	.3445776	1.022072	3.414201
#1	.4172663	.2541587	.013185	.3745468	.1169057	.1609978	.7591329
#2	.4175584	.2530581	-.015706	.3731683	.1161094	.1587022	.8097494
#3	.4144320	.2539474	-.006181	.3652084	.1164201	.1618807	.8005642

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4236234	-.008786	1.534871	.6131900	.4443254	.4112683	.3435506
Stddev	.0012618	.041542	.002593	.0104627	.1215734	.0023839	.0068304
%RSD	.2978497	472.8367	.1689159	1.706269	27.36135	.5796556	1.988169
#1	.4240616	-.055502	1.536946	.6174757	.4730424	.4129216	.3445634
#2	.4222010	.024005	1.531965	.6208293	.3109644	.4085355	.3498180
#3	.4246076	.005140	1.535704	.6012649	.5489694	.4123476	.3362704

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.627612	-.000356	1.618613	.4723189	.0061240	.0470853	.0001217
Stddev	.099546	.004495	.014175	.0005196	.0030961	.0004806	.0021674
%RSD	15.86102	1262.347	.8757495	.1100097	50.55630	1.020688	1780.924
#1	-.589728	.004542	1.627518	.4724583	.0067497	.0473591	-.001740
#2	-.552570	-.001320	1.626053	.4717438	.0088594	.0473663	-.000397
#3	-.740537	-.004291	1.602267	.4727546	.0027629	.0465303	.002501

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4917-03 Acquired: 12/02/2024 18:50:00 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MX1009 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0006295	-.018866	.3836942
Stddev	.0020117	.000610	.0015912
%RSD	319.5583	3.235812	.4147073
#1	.0029439	-.018825	.3851891
#2	-.000699	-.018277	.3820216
#3	-.000356	-.019496	.3838720

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1015.065	30323.03	5724.379	900.3319	1857.416
Stddev	2.220	390.32	11.293	11.2692	4.544
%RSD	.2187300	1.287193	.1972819	1.251675	.2446663
#1	1013.514	30126.36	5711.958	897.6114	1854.538
#2	1017.608	30070.17	5734.027	890.6719	1862.655
#3	1014.072	30772.56	5727.153	912.7123	1855.055

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4917-01 Acquired: 12/02/2024 18:54:25 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MX1007 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.272203	2.335626	1.974357	1.051109	.6306557	73.67065
Stddev	.021038	.017541	.004729	.006099	.0034288	.05688
%RSD	.9259072	.7510181	.2395010	.5802072	.5436925	.0772047
#1	2.249044	2.337275	1.976024	1.048776	.6305205	73.69013
#2	2.277428	2.317319	1.969020	1.058030	.6341501	73.71523
#3	2.290135	2.352284	1.978026	1.046522	.6272964	73.60659

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.497357	F 1.983624	1.430332	66.33510	3.139273	2.269584
Stddev	.016471	.004856	.003517	.20771	.002364	.004432
%RSD	.3662414	.2448062	.2458757	.3131258	.0752892	.1952594
#1	4.506271	1.981064	1.428538	66.51964	3.141802	2.265581
#2	4.507450	1.980583	1.428074	66.37551	3.137119	2.268826
#3	4.478350	1.989224	1.434384	66.11015	3.138899	2.274346

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.434984	93.53656	5.201417	21.19554	1.492100	.5740294
Stddev	.001737	.17338	.020216	.11313	.003008	.0010559
%RSD	.1210768	.1853637	.3886611	.5337464	.2015634	.1839510
#1	1.435979	93.45092	5.219368	21.21470	1.488894	.5751713
#2	1.432978	93.73610	5.205366	21.29787	1.492545	.5738289
#3	1.435995	93.42266	5.179519	21.07406	1.494860	.5730882

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.170765	1.496944	4.070393	13.45916	2.712170	2.407167
Stddev	.314631	.010753	.016811	.09454	.007327	.003041
%RSD	5.098729	.7182999	.4130029	.7024334	.2701549	.1263418
#1	5.962326	1.497143	4.076061	13.49452	2.708837	2.409342
#2	6.017288	1.486093	4.083638	13.53093	2.707102	2.408468
#3	6.532681	1.507595	4.051481	13.35204	2.720571	2.403692

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4917-01 Acquired: 12/02/2024 18:54:25 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MX1007 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5387031	.7614920	8.157178	1.247967	3.031570	1.350209
Stddev	.0012877	.0203427	.028048	.006637	.002781	.004455
%RSD	.2390301	2.671420	.3438392	.5317908	.0917341	.3299764
#1	.5385352	.7556902	8.137508	1.252955	3.032394	1.352113
#2	.5375076	.7841052	8.144731	1.240435	3.028470	1.353396
#3	.5400664	.7446805	8.189295	1.250511	3.033846	1.345118

Elem	Sr4077
Units	ppm
Avg	2.759011
Stddev	.008094
%RSD	.2933814
#1	2.763727
#2	2.763642
#3	2.749665

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1089.038	32630.94	6416.614	952.2724	1688.163
Stddev	3.414	24.18	13.656	3.5087	4.707
%RSD	.3135185	.0740897	.2128232	.3684594	.2788454
#1	1092.209	32605.05	6415.231	950.2994	1691.853
#2	1089.483	32652.92	6430.908	950.1943	1689.774
#3	1085.424	32634.83	6403.701	956.3235	1682.861

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4917-01DLX2 Acquired: 12/02/2024 19:02:53 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MX1007 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.129291	1.215542	1.006422	.5697760	.3352305	38.92993
Stddev	.007874	.008045	.006629	.0082797	.0039255	.05877
%RSD	.6972810	.6618046	.6586907	1.453145	1.170975	.1509713
#1	1.124323	1.208894	.998911	.5793244	.3307516	38.86676
#2	1.125180	1.213247	1.008898	.5654191	.3368671	38.98299
#3	1.138370	1.224485	1.011457	.5645845	.3380729	38.94004

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.400495	F 1.046801	.7244951	35.45796	1.668734	1.143888
Stddev	.003353	.001210	.0028895	.09860	.045054	.006342
%RSD	.1396607	.1155671	.3988305	.2780824	2.699885	.5544217
#1	2.402204	1.046612	.7213799	35.56838	1.680922	1.136614
#2	2.402649	1.045698	.7250178	35.42680	1.618840	1.146795
#3	2.396633	1.048095	.7270876	35.37870	1.706440	1.148255

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7717054	50.33989	2.786441	11.27113	.7558171	.3003422
Stddev	.0035955	.14412	.006375	.09172	.0027570	.0095616
%RSD	.4659140	.2862993	.2288004	.8137826	.3647751	3.183553
#1	.7758020	50.19179	2.793257	11.16572	.7530533	.3036621
#2	.7690732	50.47967	2.780625	11.33281	.7558307	.2895632
#3	.7702409	50.34820	2.785440	11.31484	.7585673	.3078013

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.291297	.8001739	2.149449	6.827152	1.352504	1.302978
Stddev	.396964	.0024148	.043371	.019450	.002122	.007168
%RSD	12.06102	.3017885	2.017761	.2848956	.1569067	.5500920
#1	3.475708	.8029579	2.158708	6.804715	1.350865	1.297973
#2	2.835671	.7986469	2.102197	6.839236	1.351746	1.299773
#3	3.562513	.7989168	2.187443	6.837505	1.354901	1.311189

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4917-01DLX2 Acquired: 12/02/2024 19:02:53 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MX1007 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2864210	.3727935	4.355040	.6271899	1.628075	.7117451
Stddev	.0009725	.0080341	.003278	.0032425	.002920	.0013296
%RSD	.3395284	2.155097	.0752802	.5169833	.1793300	.1868042
#1	.2857151	.3635975	4.352337	.6309257	1.624901	.7108797
#2	.2860175	.3784507	4.358687	.6255376	1.630646	.7132760
#3	.2875302	.3763323	4.354097	.6251064	1.628679	.7110796

Elem	Sr4077
Units	ppm
Avg	1.468516
Stddev	.000581
%RSD	.0395449
#1	1.468486
#2	1.469111
#3	1.467951

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1043.283	31357.90	6064.336	923.1376	1719.780
Stddev	2.852	703.47	13.446	16.1924	7.192
%RSD	.2734133	2.243351	.2217185	1.754056	.4181795
#1	1044.974	31213.35	6071.756	922.0873	1727.089
#2	1044.886	32122.42	6048.815	939.8296	1719.539
#3	1039.990	30737.94	6072.436	907.4960	1712.712

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4917-01DL2X5 Acquired: 12/02/2024 19:16:26 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MX1007 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4536769	.4988882	.3994547	.2435320	.1358078	16.20456	.9813542
Stddev	.0139113	.0041876	.0033487	.0024949	.0020471	.01215	.0012496
%RSD	3.066335	.8393845	.8383176	1.024451	1.507323	.0750029	.1273381
#1	.4694441	.5014100	.4018298	.2459428	.1342928	16.21827	.9800861
#2	.4431345	.5012004	.3956246	.2409608	.1381367	16.19511	.9825845
#3	.4484522	.4940543	.4009097	.2436923	.1349941	16.20028	.9813919

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4311247	.2901586	14.83639	.7037773	.4587056	.3178790	20.90361
Stddev	.0021166	.0007340	.02384	.0025322	.0013960	.0021664	.03819
%RSD	.4909495	.2529750	.1606909	.3598009	.3043280	.6815204	.1827107
#1	.4313745	.2893111	14.80943	.7018822	.4582397	.3195423	20.93461
#2	.4288943	.2905959	14.84506	.7066532	.4576021	.3186656	20.86095
#3	.4331054	.2905687	14.85468	.7027965	.4602749	.3154292	20.91528

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.184484	4.695275	.3065797	.1257390	1.561127	.3383232	.8947657
Stddev	.002470	.044355	.0007201	.0005035	.332180	.0060891	.0031798
%RSD	.2085047	.9446803	.2348901	.4003932	21.27822	1.799801	.3553820
#1	1.183243	4.657188	.3059343	.1251791	1.819249	.3344801	.8917200
#2	1.187329	4.743973	.3064484	.1258835	1.677776	.3453438	.8945124
#3	1.182882	4.684664	.3073565	.1261544	1.186356	.3351457	.8980646

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.390023	.5380841	.5353943	.1177084	.1381073	1.710085	.2503677
Stddev	.060225	.0034675	.0075752	.0003782	.0009243	.010601	.0005691
%RSD	2.519852	.6444108	1.414888	.3213312	.6692940	.6198946	.2272978
#1	2.434268	.5377202	.5365908	.1178127	.1391105	1.717963	.2498496
#2	2.414364	.5417192	.5272920	.1172889	.1372901	1.698033	.2502769
#3	2.321437	.5348130	.5423001	.1180235	.1379212	1.714261	.2509768

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: P4917-01DL2X5 Acquired: 12/02/2024 19:16:26 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: MX1007 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.6710937	.2812759	.6122179
Stddev	.0020637	.0003544	.0009373
%RSD	.3075169	.1260113	.1530962
#1	.6731114	.2815075	.6129411
#2	.6689868	.2814524	.6111590
#3	.6711829	.2808679	.6125537

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1023.338	30410.35	5873.889	905.8962	1766.573
Stddev	2.276	77.10	10.493	1.8816	1.801
%RSD	.2223911	.2535285	.1786308	.2077021	.1019399
#1	1022.104	30430.74	5863.380	907.6781	1766.239
#2	1025.965	30325.11	5884.365	906.0816	1768.517
#3	1021.947	30475.20	5873.922	903.9287	1764.962

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165240BL Acquired: 12/02/2024 19:25:07 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBW240 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0053087	.0013031	-.004589	-.001241	.0008882	-.008864
Stddev	.0043290	.0057986	.002928	.002339	.0027248	.008132
%RSD	81.54633	444.9694	63.80015	188.4535	306.7618	91.74626
#1	.0061099	.0063052	-.004245	-.003061	.0037320	-.010379
#2	.0091811	-.005052	-.007674	.001397	-.001699	-.000081
#3	.0006350	.002657	-.001848	-.002060	.000632	-.016132

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000994	.0000366	-.000057	-.017415	-.000149	.0003160
Stddev	.000606	.0001688	.000023	.007033	.000629	.0002407
%RSD	60.94873	460.7772	39.78690	40.38446	422.2688	76.18125
#1	-.000362	-.000157	-.000031	-.012738	.000562	.0002244
#2	-.001570	.000150	-.000068	-.025503	-.000373	.0005890
#3	-.001050	.000118	-.000073	-.014004	-.000636	.0001345

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0009900	-.003868	.0000115	-.024718	.0003305	.0000948
Stddev	.0014176	.002643	.0004468	.019830	.0001787	.0001990
%RSD	143.1852	68.34611	3871.209	80.22350	54.06875	210.0351
#1	.0026269	-.003716	-.000485	-.044233	.0005355	-.000087
#2	.0001629	-.001304	.000381	-.004587	.0002479	.000307
#3	.0001803	-.006584	.000139	-.025335	.0002080	.000064

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.087027	-.003111	-.000687	-.547217	-.000215	-.003265
Stddev	.108698	.003269	.000361	.015514	.001506	.001014
%RSD	124.9014	105.0462	52.57211	2.835095	700.7799	31.05794
#1	-.113247	-.002100	-.000686	-.562991	.001007	-.003635
#2	.032383	-.006766	-.000327	-.531976	.000246	-.002118
#3	-.180216	-.000469	-.001050	-.546685	-.001898	-.004042

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165240BL Acquired: 12/02/2024 19:25:07 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBW240 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000940	.0045346	-.000684	.0002537	.0000328	F -.024120
Stddev	.0004842	.0064927	.000151	.0020621	.0006544	.001304
%RSD	514.8820	143.1814	22.06238	812.8899	1992.537	5.406921
#1	-.000370	.0057209	-.000536	.0026168	.0007690	-.022627
#2	.000056	-.002469	-.000679	-.000675	-.000188	-.025039
#3	.000596	.010352	-.000837	-.001181	-.000483	-.024694

Elem	Sr4077
Units	ppm
Avg	-.000028
Stddev	.000096
%RSD	346.6817
#1	.000074
#2	-.000117
#3	-.000040

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1004.974	29771.63	5665.195	889.2543	1841.118
Stddev	1.937	27.47	31.047	2.5449	5.125
%RSD	.1927640	.0922829	.5480237	.2861864	.2783636
#1	1004.295	29762.90	5631.011	886.4089	1836.849
#2	1007.160	29802.41	5691.639	891.3130	1846.802
#3	1003.468	29749.59	5672.936	890.0410	1839.703

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165240BS Acquired: 12/02/2024 19:29:39 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCSW240 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0183126	.0556665	.0180074	.0693346	.1130064	.4017392
Stddev	.0039433	.0050535	.0020081	.0061404	.0028960	.0131851
%RSD	21.53313	9.078147	11.15161	8.856230	2.562688	3.281996
#1	.0144621	.0501954	.0176203	.0712278	.1135663	.3913328
#2	.0223425	.0566447	.0201808	.0743054	.1098714	.4165667
#3	.0181333	.0601593	.0162210	.0624705	.1155816	.3973182

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4402716	.0115325	.0109151	11.31126	.0230348	.1039109
Stddev	.0008609	.0000926	.0000913	.04261	.0007894	.0003657
%RSD	.1955488	.8026600	.8365012	.3767123	3.427123	.3519363
#1	.4412436	.0116391	.0110156	11.34431	.0223462	.1038039
#2	.4399664	.0114731	.0108372	11.32630	.0228619	.1043181
#3	.4396049	.0114852	.0108926	11.26317	.0238964	.1036106

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0532436	.2140007	.0369071	10.64044	.0893833	.0232287
Stddev	.0016348	.0096490	.0002742	.00450	.0006867	.0003541
%RSD	3.070380	4.508846	.7428320	.0422864	.7682398	1.524423
#1	.0513564	.2246059	.0371286	10.64452	.0894931	.0235357
#2	.0542233	.2057400	.0366005	10.64118	.0886483	.0228413
#3	.0541511	.2116562	.0369921	10.63562	.0900085	.0233091

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.74354	.1162938	.1402736	9.912490	.0161917	F -.003679
Stddev	.19959	.0012494	.0016707	.110000	.0025084	.001146
%RSD	1.857807	1.074327	1.191021	1.109707	15.49174	31.13442
#1	10.94238	.1177327	.1408691	9.968098	.0155238	-.003818
#2	10.54320	.1154843	.1415650	9.785789	.0189664	-.004749
#3	10.74505	.1156644	.1383868	9.983584	.0140848	-.002471

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165240BS Acquired: 12/02/2024 19:29:39 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCSW240 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .0203585	.2019134	F .3278068	.0134092	.2162400	F .0064288
Stddev	.0007070	.0101928	.0017941	.0003750	.0013700	.0006827
%RSD	3.473008	5.048122	.5472953	2.796624	.6335649	10.61890
#1	.0195424	.2034064	.3298688	.0137676	.2178051	.0062981
#2	.0207856	.2112774	.3269481	.0134404	.2152577	.0058209
#3	.0207475	.1910564	.3266035	.0130195	.2156572	.0071674

Elem	Sr4077
Units	ppm
Avg	.2208098
Stddev	.0004786
%RSD	.2167337
#1	.2212771
#2	.2208316
#3	.2203207

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1000.834	29445.80	5683.845	877.0897	1766.108
Stddev	1.736	104.45	13.869	2.9707	.288
%RSD	.1734764	.3547116	.2440023	.3387022	.0163056
#1	1002.789	29326.07	5668.870	875.3249	1766.425
#2	999.470	29518.22	5686.419	875.4247	1766.035
#3	1000.244	29493.12	5696.247	880.5195	1765.863

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165239BL Acquired: 12/02/2024 19:34:08 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBS240 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0031245	.0006855	-.002948	-.000893	-.000538	-.010957
Stddev	.0044469	.0016375	.000559	.005431	.003860	.004369
%RSD	142.3250	238.8929	18.95813	608.1219	717.4731	39.87008
#1	.0008854	-.001053	-.003429	.003390	-.004782	-.015899
#2	.0002422	.002199	-.003082	-.007002	.000403	-.009363
#3	.0082460	.000911	-.002335	.000933	.002765	-.007609

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000629	.0000370	-.000098	-.012749	.0001259	-.000244
Stddev	.000895	.0001224	.000147	.002383	.0005066	.000173
%RSD	142.3027	331.0016	150.1503	18.69256	402.5461	70.74009
#1	.000404	-.000067	-.000257	-.015435	-.000208	-.000145
#2	-.001150	.000006	-.000071	-.010891	-.000124	-.000144
#3	-.001140	.000172	.000034	-.011920	.000709	-.000443

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0008385	-.006291	.0001698	-.037296	.0004007	.0005819
Stddev	.0008323	.003373	.0003119	.018653	.0009278	.0003837
%RSD	99.25578	53.61667	183.6794	50.01320	231.5368	65.93672
#1	.0011663	-.009201	-.000154	-.017568	.0009487	.0010235
#2	-.000108	-.002594	.000468	-.054646	-.000671	.0003298
#3	.001457	-.007078	.000195	-.039674	.000924	.0003924

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0052136	.0021078	-.001061	-.593922	-.000153	-.005615
Stddev	.0968514	.0051622	.000924	.072947	.003302	.001528
%RSD	1857.659	244.9106	87.01581	12.28228	2164.569	27.22344
#1	.1090906	.0041100	-.000269	-.623460	-.003683	-.003995
#2	-.010845	-.003756	-.000839	-.647469	.002859	-.007031
#3	-.082605	.005969	-.002076	-.510838	.000366	-.005818

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165239BL Acquired: 12/02/2024 19:34:08 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: PBS240 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000115	.0021165	-.000563	-.001549	.0004277	F -.026494
Stddev	.000509	.0030994	.000541	.001531	.0007722	.001717
%RSD	443.2313	146.4400	96.03107	98.85267	180.5616	6.479873
#1	.000214	-.001096	-.000279	-.002191	-.000443	-.027645
#2	.000143	.002357	-.000224	-.002654	.001029	-.024521
#3	-.000701	.005089	-.001187	.000199	.000698	-.027316

Elem	Sr4077
Units	ppm
Avg	.0000205
Stddev	.0000283
%RSD	137.9715
#1	-.000012
#2	.000036
#3	.000037

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1000.578	29606.59	5662.143	880.8022	1831.086
Stddev	4.540	67.31	6.382	6.5456	10.355
%RSD	.4536907	.2273636	.1127142	.7431446	.5655112
#1	995.390	29573.05	5660.500	875.9219	1819.456
#2	1003.820	29562.63	5656.743	888.2406	1839.308
#3	1002.525	29684.08	5669.186	878.2442	1834.494

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165239BS Acquired: 12/02/2024 19:38:41 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCS240 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0254038	.0526820	.0184004	.0679765	.1182174	.3989846
Stddev	.0026021	.0014078	.0001809	.0031255	.0016085	.0043408
%RSD	10.24300	2.672329	.9829641	4.597979	1.360637	1.087956
#1	.0238892	.0516503	.0185138	.0678590	.1197646	.4039631
#2	.0284084	.0542858	.0181918	.0711591	.1165539	.3969986
#3	.0239139	.0521098	.0184956	.0649114	.1183339	.3959921

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4473832	.0115407	.0112706	11.49918	.0242092	.1069216
Stddev	.0008922	.0000712	.0000941	.03473	.0006934	.0008205
%RSD	.1994185	.6166335	.8351333	.3020206	2.864165	.7673966
#1	.4464671	.0116227	.0113264	11.46794	.0241250	.1074218
#2	.4474331	.0114949	.0111619	11.49303	.0235617	.1059747
#3	.4482493	.0115046	.0113234	11.53658	.0249409	.1073684

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0547073	.2211252	.0380759	10.73808	.0924535	.0245862
Stddev	.0036957	.0089202	.0002716	.01172	.0005732	.0018047
%RSD	6.755379	4.033981	.7134104	.1091365	.6199677	7.340392
#1	.0534456	.2294123	.0377624	10.72646	.0929947	.0227360
#2	.0518077	.2222789	.0382399	10.74990	.0918530	.0263418
#3	.0588686	.2116843	.0382255	10.73787	.0925129	.0246809

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.18817	.1193874	.1414336	10.04182	.0196248	F -.006594
Stddev	.34115	.0065260	.0026888	.09439	.0031996	.000743
%RSD	3.049199	5.466243	1.901081	.9399613	16.30382	11.27504
#1	11.34904	.1262502	.1384015	10.03267	.0228565	-.006259
#2	10.79633	.1186514	.1435277	10.14046	.0195598	-.007446
#3	11.41914	.1132606	.1423716	9.95235	.0164583	-.006077

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165239BS Acquired: 12/02/2024 19:38:41 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCS240 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .0204186	.2036408	F .3326297	.0138267	.2164898	F .0062765
Stddev	.0001216	.0126714	.0023871	.0022497	.0006509	.0002369
%RSD	.5955518	6.222410	.7176504	16.27098	.3006408	3.774825
#1	.0205516	.2084473	.3308427	.0115596	.2158303	.0060448
#2	.0203912	.1892694	.3317057	.0138618	.2171316	.0062662
#3	.0203131	.2132057	.3353407	.0160587	.2165075	.0065183

Elem	Sr4077
Units	ppm
Avg	.2238466
Stddev	.0002466
%RSD	.1101690
#1	.2237009
#2	.2237076
#3	.2241313

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	990.4552	29208.80	5662.656	874.6426	1749.526
Stddev	2.7237	542.82	24.280	12.1320	3.771
%RSD	.2749910	1.858426	.4287726	1.387079	.2155476
#1	991.9311	29755.23	5660.376	887.8244	1751.726
#2	992.1225	28669.65	5687.996	863.9449	1751.681
#3	987.3122	29201.53	5639.597	872.1585	1745.172

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165169BS Acquired: 12/02/2024 19:43:11 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCS169 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0247985	.0557050	.0224028	.0701449	.1165360	.3897736
Stddev	.0017369	.0061309	.0008509	.0065150	.0017604	.0030888
%RSD	7.004216	11.00604	3.798086	9.287948	1.510633	.7924601
#1	.0236731	.0545585	.0227629	.0732790	.1157084	.3864296
#2	.0267989	.0623283	.0214311	.0626551	.1185577	.3903715
#3	.0239235	.0502283	.0230145	.0745005	.1153418	.3925198

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4414468	.0115342	.0111389	11.35282	.0237249	.1052923
Stddev	.0013482	.0002194	.0000581	.00959	.0007540	.0012466
%RSD	.3054086	1.901873	.5216113	.0844596	3.178215	1.183930
#1	.4428847	.0116140	.0110726	11.35599	.0232788	.1041269
#2	.4402112	.0117024	.0111810	11.34205	.0245955	.1051434
#3	.4412444	.0112861	.0111630	11.36042	.0233005	.1066067

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0572574	.2216688	.0373624	10.65130	.0909398	.0239134
Stddev	.0006469	.0069465	.0007227	.10996	.0012712	.0003640
%RSD	1.129829	3.133712	1.934158	1.032340	1.397793	1.522137
#1	.0573340	.2288470	.0370048	10.75853	.0896891	.0237665
#2	.0578625	.2149800	.0368883	10.65657	.0908998	.0243280
#3	.0565755	.2211793	.0381942	10.53881	.0922305	.0236459

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.90226	.1152517	.1386116	9.826325	.0203438	F -.006446
Stddev	.27826	.0066502	.0003859	.104603	.0007689	.000879
%RSD	2.552297	5.770123	.2783989	1.064517	3.779604	13.63242
#1	10.65547	.1222584	.1386004	9.936544	.0211427	-.005467
#2	11.20384	.1144692	.1390030	9.728429	.0196088	-.007167
#3	10.84748	.1090273	.1382314	9.814003	.0202800	-.006703

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: PB165169BS Acquired: 12/02/2024 19:43:11 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LCS169 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .0208648	.2036441	F .3272224	.0128084	.2162818	F .0057390
Stddev	.0007498	.0047315	.0012357	.0010380	.0018412	.0005148
%RSD	3.593443	2.323418	.3776204	8.103987	.8512891	8.969630
#1	.0216698	.1986599	.3286142	.0122941	.2159728	.0052932
#2	.0207382	.2080741	.3262546	.0140031	.2182580	.0056215
#3	.0201864	.2041985	.3267983	.0121280	.2146147	.0063024

Elem	Sr4077
Units	ppm
Avg	.2207978
Stddev	.0009554
%RSD	.4326889
#1	.2218903
#2	.2201190
#3	.2203841

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	994.4444	29371.20	5700.827	881.8103	1757.420
Stddev	5.7252	56.97	28.942	5.0268	11.520
%RSD	.5757171	.1939555	.5076828	.5700508	.6554916
#1	996.1239	29368.22	5667.488	876.3224	1763.945
#2	999.1420	29315.78	5719.511	882.9171	1764.197
#3	988.0673	29429.60	5715.480	886.1914	1744.119

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: CCV073 Acquired: 12/02/2024 19:47:41 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV073 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.408668	4.961160	24.78972	4.853045	4.661065	396.7876
Stddev	.110957	.081048	.47496	.119902	.104092	4.3635
%RSD	2.051457	1.633660	1.915938	2.470657	2.233229	1.099718
#1	5.505114	5.035236	25.21745	4.944312	4.757624	395.4700
#2	5.433487	4.973653	24.87312	4.897573	4.674773	401.6581
#3	5.287405	4.874590	24.27859	4.717249	4.550798	393.2347

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.975039	.4961033	2.622154	402.9302	15.29084	2.492788
Stddev	.180904	.0057322	.051712	4.9008	.12306	.049844
%RSD	1.813571	1.155438	1.972128	1.216300	.8047723	1.999528
#1	10.11815	.4977099	2.668291	403.2279	15.39942	2.534743
#2	10.03526	.5008607	2.631915	407.6754	15.15718	2.505931
#3	9.77170	.4897392	2.566257	397.8873	15.31593	2.437690

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	14.76213	402.6171	14.73170	417.2572	2.471713	1.262406
Stddev	.16529	5.2371	.16522	5.0625	.049670	.009239
%RSD	1.119711	1.300754	1.121557	1.213289	2.009554	.7318194
#1	14.80171	403.6935	14.73941	418.4397	2.517594	1.269577
#2	14.90404	407.2323	14.89293	421.6239	2.478577	1.251981
#3	14.58064	396.9255	14.56275	411.7081	2.418967	1.265659

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	398.7468	2.484295	14.27130	151.9522	4.864060	F 4.117855
Stddev	4.7834	.026703	.13857	1.9901	.103526	.063832
%RSD	1.199596	1.074875	.9709508	1.309710	2.128393	1.550133
#1	400.4214	2.494693	14.40406	152.0789	4.951330	4.096834
#2	402.4678	2.504235	14.12758	153.8759	4.891176	4.189547
#3	393.3513	2.453957	14.28227	149.9017	4.749675	4.067185

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: CCV073 Acquired: 12/02/2024 19:47:41 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV073 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.710976	4.960963	F 3.362017	4.986380	4.977685	4.834135
Stddev	.113329	.088577	.045325	.108495	.064824	.055326
%RSD	2.405630	1.785489	1.348149	2.175827	1.302284	1.144487
#1	4.812092	5.029863	3.360038	5.068961	5.001564	4.849759
#2	4.732356	4.991977	3.408298	5.026678	5.027182	4.879968
#3	4.588481	4.861049	3.317713	4.863502	4.904309	4.772676

Elem	Sr4077
Units	ppm
Avg	4.940190
Stddev	.047779
%RSD	.9671433
#1	4.927617
#2	4.992998
#3	4.899956

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	815.8334	25784.12	5439.880	670.2565	1322.447
Stddev	17.9266	187.78	59.871	5.6086	23.841
%RSD	2.197333	.7282800	1.100599	.8367781	1.802815
#1	799.7731	25664.80	5448.241	665.5277	1301.622
#2	812.5538	26000.57	5376.267	676.4530	1317.267
#3	835.1734	25686.98	5495.131	668.7887	1348.453

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: CCB073 Acquired: 12/02/2024 19:52:18 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB073 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0086687	.0017603	-.001731	.0016634	.0017268	.0453551	-.000733
Stddev	.0036245	.0047812	.000953	.0032519	.0016998	.0054672	.000598
%RSD	41.81187	271.6131	55.06653	195.5044	98.43926	12.05424	81.50740
#1	.0127695	.0012178	-.000802	.0030359	-.000196	.0390920	-.001119
#2	.0073422	-.002727	-.002707	.0040040	.003029	.0491728	-.000045
#3	.0058942	.006790	-.001684	-.002050	.002347	.0478004	-.001036

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000140	-.000084	.0108938	.0011544	-.000039	.0008739	-.002602
Stddev	.0000893	.000093	.0076752	.0006742	.000241	.0015656	.009215
%RSD	638.9103	110.9847	70.45511	58.40224	616.6768	179.1466	354.1905
#1	.0000668	-.000099	.0056283	.0017288	-.000183	.0021529	.004435
#2	.0000643	.000016	.0197003	.0013221	.000239	-.000872	.000793
#3	-.000089	-.000168	.0073528	.0004122	-.000174	.001341	-.013033

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0007139	-.027658	.0003658	.0002117	.2562805	-.002269	.0004193
Stddev	.0003688	.038064	.0003512	.0007449	.2681648	.006002	.0001933
%RSD	51.66436	137.6248	96.01186	351.8276	104.6372	264.4984	46.10163
#1	.0007199	-.056917	-.000018	.0008739	.4722051	-.003210	.0004525
#2	.0003421	-.041433	.000671	-.000595	.3405283	-.007746	.0005938
#3	.0010796	.015376	.000444	.000356	-.043892	.004148	.0002115

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.123167	.0012776	-.000106	-.000085	.0002470	.0005940	.0002105
Stddev	.204086	.0009761	.001101	.000350	.0028151	.0002415	.0009167
%RSD	165.6980	76.40462	1039.740	408.9346	1139.681	40.65933	435.3718
#1	.105787	.0008102	-.001261	.000295	-.003000	.0008727	.0003812
#2	-.285976	.0006231	.000933	-.000393	.002002	.0004649	-.000779
#3	-.189314	.0023996	.000010	-.000158	.001739	.0004445	.001030

Reviewed By:kareem
On:12/5/2024 8:14:16 PM
Inst Id :P5

Sample Name: CCB073 Acquired: 12/02/2024 19:52:18 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL(v757) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB073 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.000184	-.011843	.0000591
Stddev	.001099	.002528	.0000367
%RSD	598.9921	21.34907	62.08007
#1	.000638	-.010777	.0000351
#2	.000244	-.010022	.0000408
#3	-.001432	-.014729	.0001013

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	997.2545	29686.49	5633.063	882.6831	1822.916
Stddev	2.2924	349.48	13.522	5.4305	2.776
%RSD	.2298756	1.177242	.2400462	.6152235	.1523016
#1	998.8159	29452.60	5618.082	880.0817	1824.740
#2	994.6226	30088.23	5636.743	888.9249	1819.721
#3	998.3250	29518.63	5644.364	879.0427	1824.287

284 Sheffield Street, Mountainside, New Jersey 07092, Phone : 908 789 8900, Fax : 908 789 8922

Prep Standard - Chemical Standard Summary

Order ID : P4917

Test : Metals CLP Full

Prepbatch ID : PB165239,PB165240,

Sequence ID/Qc Batch ID: LB133698,

Standard ID :
MP83105,MP83122,MP83134,MP83136,MP83137,MP83138,MP83139,MP83140,MP83141,MP83142,MP83143,MP831
44,MP83145,MP83146,MP83148,MP83149,

Chemical ID :
M121,M5130,M5218,M5223,M5289,M5295,M5296,M5390,M5395,M5429,M5476,M5498,M5513,M5515,M5519,M5658,
M5698,M5751,M5768,M5798,M5799,M5800,M5801,M5802,M5806,M5815,M5816,M5817,M5818,M5819,M5820,M5875
,M5960,M5962,M5970,M5976,M5978,M5982,M5984,M5985,M6021,M6023,M6025,M6028,M6030,M6033,M 6111,M6116
,M6117,M6124,M6125,W3112,

284 Sheffield Street, Mountainside, New Jersey 07092, Phone : 908 789 8900,
Fax : 908 789 8922

Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
170	1:1HCL	MP83105	11/07/2024	12/06/2024	Janvi Patel	None	None	Sarabjit Jaswal 11/07/2024

FROM 1000.00000ml of M6111 + 1000.00000ml of W3112 = Final Quantity: 2000.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
169	1:1HNO3	MP83122	11/07/2024	12/06/2024	Janvi Patel	None	None	Sarabjit Jaswal 11/07/2024

FROM 1000.00000ml of M6116 + 1000.00000ml of W3112 = Final Quantity: 2000.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
902	ICP AES CAL BLK (SO/ICB/CCB)	MP83134	10/30/2024	12/06/2024	Kareem Khairalla	None	None	Mohan Bera 11/08/2024

FROM 125.00000ml of M6111 + 2350.00000ml of W3112 + 25.00000ml of M6117 = Final Quantity: 2500.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
2480	ICP AES STD 6 ISM01.3	MP83136	10/30/2024	12/06/2024	Kareem Khairalla	None	None	Mohan Bera 11/08/2024

FROM 4.00000ml of M5289 + 4.00000ml of M5498 + 4.00000ml of M5515 + 4.00000ml of M5768 + 4.00000ml of M5806 + 30.00000ml of MP83134 = Final Quantity: 50.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1004	ICPAES ISM01.2 (S5)	MP83137	10/30/2024	12/06/2024	Kareem Khairalla	None	None	Mohan Bera 11/08/2024

FROM 0.25000ml of M5798 + 0.50000ml of M5429 + 0.50000ml of M5476 + 0.50000ml of M5815 + 0.50000ml of M5817 + 12.50000ml of M5519 + 12.50000ml of M5698 + 12.50000ml of M5806 + 12.50000ml of M5819 + 13.75000ml of M5751 + 14.50000ml of M5515 + 14.50000ml of M5658 + 14.50000ml of M6033 + 2.00000ml of M5513 + 22.50000ml of M5498 + 22.50000ml of M5768 + 5.00000ml of M5296 + 5.00000ml of M5395 + 5.00000ml of M5802 + 5.00000ml of M5818 + 5.00000ml of M5875 + 303.50000ml of MP83134 = Final Quantity: 500.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1005	ICPAES ISM01.2(S4)	MP83138	10/30/2024	12/06/2024	Kareem Khairalla	None	None	Mohan Bera 11/08/2024

FROM 250.00000ml of MP83134 + 250.00000ml of MP83137 = Final Quantity: 500.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1007	ICPAES ISM01.2(S3)	MP83139	10/30/2024	12/06/2024	Kareem Khairalla	None	None	Mohan Bera 11/08/2024

FROM 25.00000ml of MP83137 + 75.00000ml of MP83134 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1008	ICPAES ISM01.2(S2)	MP83140	10/30/2024	12/06/2024	Kareem Khairalla	None	None	Mohan Bera 11/08/2024

FROM 12.50000ml of MP83137 + 87.50000ml of MP83134 = Final Quantity: 100.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
994	ICPAES ISM01.2 S1 (CONC.)	MP83141	10/30/2024	12/06/2024	Kareem Khairalla	None	None	Mohan Bera 11/08/2024

FROM 0.02000ml of M5815 + 0.03000ml of M5429 + 0.10000ml of M5798 + 0.10000ml of M6028 + 0.14000ml of M5799 + 0.20000ml of M5476 + 0.20000ml of M5515 + 0.20000ml of M5658 + 0.20000ml of M5801 + 0.20000ml of M5817 + 0.20000ml of M5976 + 0.20000ml of M6025 + 0.20000ml of M6030 + 0.30000ml of M5698 + 0.40000ml of M6033 + 0.50000ml of M5751 + 0.50000ml of M6023 + 0.70000ml of M5962 + 0.80000ml of M5960 + 1.00000ml of M5800 + 1.00000ml of M6021 + 1.20000ml of M5802 + 1.20000ml of M5819 + 10.00000ml of M5498 + 10.00000ml of M5519 + 10.00000ml of M5768 + 10.00000ml of M5806 + 10.00000ml of M5818 + 2.00000ml of M5978 + 4.00000ml of M5390 + 34.24000ml of MP83134 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1003	ICPAES ISM01.2 S1	MP83142	10/30/2024	12/06/2024	Kareem Khairalla	None	None	Mohan Bera 11/08/2024

FROM 0.50000ml of MP83141 + 99.50000ml of MP83134 = Final Quantity: 100.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
2054	ICV-ICPAES	MP83143	10/30/2024	12/06/2024	Kareem Khairalla	None	None	Mohan Bera 11/08/2024

FROM 0.50000ml of M5218 + 0.50000ml of M5816 + 0.50000ml of M5820 + 0.50000ml of M5970 + 0.50000ml of M5982 + 10.00000ml of M5295 + 87.50000ml of MP83134 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
904	ICP AES ICSA SOLN	MP83144	10/30/2024	12/06/2024	Kareem Khairalla	None	None	Mohan Bera 11/08/2024

FROM 25.00000ml of M5130 + 200.00000ml of MP83134 = Final Quantity: 250.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
905	ICP AES ICSAB SOLN	MP83145	10/30/2024	12/06/2024	Kareem Khairalla	None	None	Mohan Bera 11/08/2024

FROM 25.00000ml of M5130 + 25.00000ml of M5223 + 200.00000ml of MP83134 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1119	ICPAES ISM01.2(CCV)	MP83146	10/30/2024	12/06/2024	Kareem Khairalla	None	None	Mohan Bera 11/08/2024

FROM 0.75000ml of M5498 + 0.75000ml of M5768 + 1.22500ml of M6033 + 1.25000ml of M5515 + 1.25000ml of M5806 + 19.77500ml of MP83134 + 25.00000ml of MP83137 = Final Quantity: 50.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
919	ICP AES INTERNAL STD	MP83148	10/30/2024	12/06/2024	Kareem Khairalla	None	None	Mohan Bera 11/08/2024

FROM 1.00000ml of M5984 + 10.00000ml of M5985 + 1969.00000ml of W3112 + 20.00000ml of M6117 = Final Quantity: 2000.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
903	ICP AES RINSE SOLN	MP83149	10/30/2024	12/06/2024	Kareem Khairalla	None	None	Mohan Bera 11/08/2024

FROM 200.00000ml of M6117 + 9800.00000ml of W3112 = Final Quantity: 10000.000 ml

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
EPA	PART A / ICSA (ICP) STOCK SOLN	ICSA-1211	11/19/2024	05/20/2024 / jaswal	04/20/2021 / bin	M5130

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CHEM-QC-4 / CHEM-QC-4, Second Source, 1000 ug/ml, B, Mo, Si, Sn, Ti	S2-MEB711674	11/02/2026	07/01/2022 / bin	09/10/2021 / bin	M5218

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
EPA	PART B / ICSAB (ICP) STOCK SOLN	ICSB-0710	11/19/2024	05/20/2024 / jaswal	04/20/2021 / bin	M5223

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58113 / Aluminum (Al) 10,000PPM	070622	07/06/2025	09/02/2022 / jaswal	07/12/2022 / jaswal	M5289

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
EPA	ICV-1 / ICV (ICP/ICPMS) STOCK SOLN	ICV-1014	02/05/2025	08/07/2024 / jaswal	02/20/2020 / bin	M5295

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	Z9651Q / CHEM-CLP-4/.25L	S2-MEB711673	11/02/2026	09/19/2022 / jaswal	08/20/2022 / jaswal	M5296

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57056 / Ba, 1000 PPM, 125 ml	072122	07/21/2025	08/07/2024 / jaswal	09/18/2022 / bin	M5390

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CLPP-CAL-3 / CLP CAL SOLUTION #3, 125mL	T2-MEB714159	01/13/2027	01/30/2024 / bin	09/19/2022 / bin	M5395

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57103 / Li, 10000 PPM, 125 ml	070622	07/06/2025	01/30/2023 / bin	01/26/2023 / bin	M5429

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57138 / Sr, 10000 PPM, 125 ml	082922	08/09/2025	07/29/2024 / jaswal	03/16/2023 / jaswal	M5476

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58120 / Ca, 10000 PPM, 500 ml	031523	03/15/2026	08/15/2023 / jaswal	03/17/2023 / bin	M5498

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57182 / Pb, 10000 PPM, 125 ml	061522	06/15/2025	03/19/2023 / bin	03/17/2023 / bin	M5513

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58126 / Fe, 10000 PPM, 500 ml	092122	09/21/2025	08/01/2024 / Jaswal	03/17/2023 / bin	M5515

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57119 / Potassium (K) 10,000PPM	120822	12/08/2025	01/08/2024 / bin	03/17/2023 / bin	M5519

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58024 / Chromium, Cr, 500 ml, 1000 PPM	060523	06/05/2026	08/28/2023 / jaswal	08/25/2023 / jaswal	M5658

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58025 / Mn, 1000 PPM, 500 ml	102623	10/26/2026	04/18/2024 / jaswal	10/27/2023 / jaswal	M5698

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58029 / Cu, 1000 PPM, 500 ml	071723	07/17/2026	10/01/2024 / Jaswal	08/25/2023 / jaswal	M5751

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58112 / Mg, 10000 PPM, 500 ml	091823	09/18/2026	01/08/2024 / bin	01/03/2024 / bin	M5768

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57004 / Be, 1000 PPM, 125 ml	102523	10/25/2026	02/09/2024 / bin	02/09/2024 / bin	M5798

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57050 / Sn, 1000 PPM, 125 ml	071123	07/11/2026	02/09/2024 / bin	02/09/2024 / bin	M5799

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57027 / CO, 1000 PPM, 125 ml	091923	09/19/2026	05/31/2024 / bin	02/09/2024 / bin	M5800

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57033 / As, 1000 PPM, 125 ml	111323	11/13/2026	02/09/2024 / bin	02/09/2024 / bin	M5801

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57051 / Sb, 1000 PPM, 125 ml	120523	12/05/2026	08/07/2024 / jaswal	01/03/2024 / jaswal	M5802

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58111 / Na, 10000 PPM, 500 ml	122223	12/22/2026	08/01/2024 / Jaswal	01/03/2024 / jaswal	M5806

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57115 / P, 10000 PPM, 125 ml	041723	04/17/2026	05/21/2024 / Jaswal	02/09/2024 / jaswal	M5815

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57016 / S, 1000 PPM, 125 ml	122923	12/29/2026	05/20/2024 / Jaswal	02/09/2024 / jaswal	M5816

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57116 / S, 10000 PPM, 125 ml	071123	07/11/2026	03/01/2024 / jaswal	02/09/2024 / jaswal	M5817

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57014 / Si, 1000 PPM, 125 ml	122023	12/20/2026	03/06/2024 / jaswal	02/09/2024 / jaswal	M5818

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58030 / Zinc, Zn, 500 ml, 1000 PPM	111623	11/16/2026	03/20/2024 / jaswal	02/09/2024 / jaswal	M5819

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57015 / P, 1000 PPM, 125 ml	091123	09/11/2026	05/01/2024 / jaswal	02/09/2024 / jaswal	M5820

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CLPP-CAL-1 / CLP CAL SOLUTION #1, 125mL	T2-MEB714417	01/27/2027	04/19/2024 / jaswal	02/22/2024 / jaswal	M5875

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57028 / Ni, 1000 PPM, 125 ml	041124	04/11/2027	07/03/2024 / kareem	06/11/2024 / kareem	M5960

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57034 / Se, 1000 PPM, 125 ml	060624	06/06/2027	07/02/2024 / Jaswal	06/14/2024 / Jaswal	M5962

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57003 / Li, 1000 PPM, 125 ml	061224	06/21/2027	07/01/2024 / Jaswal	07/01/2024 / Jaswal	M5970

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGMO1-1 / MOLYBDENUM 125mL 1000ug/mL	T2-MO720876	07/17/2027	08/07/2024 / jaswal	02/22/2024 / Jaswal	M5976

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGTI1-1 / TITANIUM 125mL 1000ug/mL	T2-TI719972	06/17/2027	08/07/2024 / jaswal	02/22/2024 / Jaswal	M5978

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57038 / Sr, 1000 PPM, 125 ml	031524	03/15/2027	07/01/2024 / Jaswal	06/11/2024 / Jaswal	M5982

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGY10-1 / YTTRIUM 125mL 10,000ug/mL	V2-Y740548	02/20/2029	08/05/2024 / kareem	06/14/2024 / Jaswal	M5984

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGIN10-5 / INDIUM 1 x 500 ml	U2-IN729349	02/21/2028	10/08/2024 / Jaswal	06/14/2024 / Jaswal	M5985

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57023 / V, 1000 PPM, 125 ml	062424	06/24/2027	09/28/2024 / jaswal	08/05/2024 / Jaswal	M6021

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57081 / Tl, 1000 PPM, 125 ml	0624724	06/27/2027	08/05/2024 / kareem	08/05/2024 / Jaswal	M6023

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57082 / Pb, 1000 PPM, 125 ml	061224	06/12/2027	08/05/2024 / Jaswal	08/05/2024 / Jaswal	M6025

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57048 / Cd, 1000 PPM, 125 ml	070124	07/01/2027	08/05/2024 / kareem	01/25/2019 / Jaswal	M6028

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57047 / Ag, 1000 PPM, 125 ml	122823	12/28/2026	08/05/2024 / kareem	08/05/2024 / Jaswal	M6030

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58113 / Al, 10000 PPM, 500 ml	011623	01/16/2026	08/07/2024 / Jaswal	01/03/2024 / Jaswal	M6033

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9530-33 / Hydrochloric Acid, Instra-Analyzed (cs/6x2.5L)	22F0762009	05/09/2027	11/04/2024 / Eman	09/29/2024 / Janvi	M6111

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9598-34 / Nitric Acid, Instra-Analyzed (cs/4x2.5L)	24B1362001	05/03/2025	11/04/2024 / Janvi	09/29/2024 / Eman	M6116

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9598-34 / Nitric Acid, Instra-Analyzed (cs/4x2.5L)	24B1362001	05/06/2025	11/06/2024 / Janvi	09/29/2024 / Eman	M6117

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9598-34 / Nitric Acid, Instra-Analyzed (cs/4x2.5L)	24D1062002	05/22/2025	11/22/2024 / Janvi	10/22/2024 / Janvi	M6124

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
PCI Scientific Supply, Inc.	1403 / Hydrogen Peroxide, 30% 1 gal	820803	05/25/2025	11/26/2024 / Eman	11/22/2024 / Eman	M6125

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	DIW / DI Water	Daily Lab-Certified	07/03/2029	07/03/2024 / Iwona	07/03/2024 / Iwona	W3112

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Certified Reference Material CRM

R 8/5/24

M6028

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

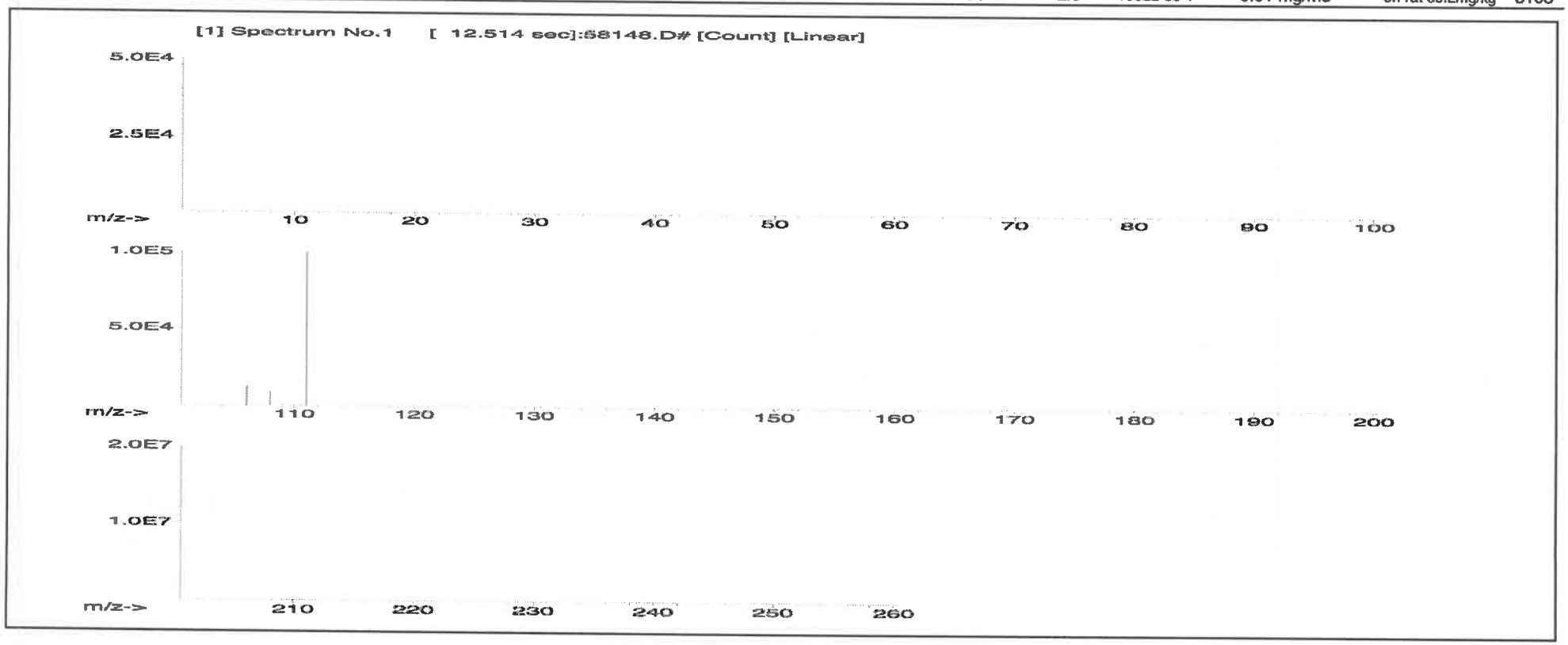
CERTIFIED WEIGHT REPORT:

Part Number:	**57048**		**Lot #**		
Lot Number:	**070124**	**Solvent:**	24002546	Nitric Acid	
Description:	**Cadmium (Cd)**	2%	40.0 (mL)	Nitric Acid	
Expiration Date:	070127				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	2000.07	0.100	Flask Uncertainty		

Aleah O'Brady

Formulated By:	Aleah O'Brady	070124
Reviewed By:	Pedro L. Rentas	070124

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Cadmium nitrate tetrahydrate (Cd)	IN024	CDM092021A1	1000	99.999	0.10	36.5	5.4797	5.4804	**1000.1**	**2.0**	10022-68-1	0.01 mg/m3	orl-rat 60.2mg/kg	3108



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	T	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

M5296 OP: 09/19/2022 BH

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Certificate of Analysis

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1.0 ACCREDITATION / REGISTRATION

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ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	CHEM-CLP-4
Lot Number:	S2-MEB711673
Matrix:	3% (v/v) HNO3 3% (v/v) HF
Value / Analyte(s):	1 000 µg/mL ea: Boron, Molybdenum, Silicon, Tin, Titanium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Boron, B	**1 000 ± 6 µg/mL**	**Molybdenum, Mo**	**1 000 ± 6 µg/mL**
Silicon, Si	**1 000 ± 7 µg/mL**	**Tin, Sn**	**1 000 ± 6 µg/mL**
Titanium, Ti	**1 000 ± 7 µg/mL**		

Density: 1.030 g/mL (measured at 20 ± 4 ºC)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
B	ICP Assay	3107	110830
Mo	ICP Assay	3134	130418
Si	ICP Assay	3150	130912
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	3162a	130925

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

HF Note: This standard should not be prepared or stored in glass.

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

November 02, 2021

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **November 02, 2026**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Director, Quality Control

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

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ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	CLPP-CAL-1
Lot Number:	T2-MEB714417
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	5 000 µg/mL ea: Calcium, Potassium, Magnesium, Sodium, 2 000 µg/mL ea: Aluminum, Barium, 1 000 µg/mL ea: Iron, 500 µg/mL ea: Nickel, Vanadium, Zinc, Cobalt, Manganese, 250 µg/mL ea: Silver, Copper, 200 µg/mL ea: Chromium, 50 µg/mL ea: Beryllium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	**2 000 ± 7 µg/mL**	**Barium, Ba**	**2 000 ± 9 µg/mL**
Beryllium, Be	**50.00 ± 0.26 µg/mL**	**Calcium, Ca**	**5 000 ± 22 µg/mL**
Chromium, Cr	**200.0 ± 1.0 µg/mL**	**Cobalt, Co**	**500.0 ± 2.4 µg/mL**
Copper, Cu	**250.0 ± 1.0 µg/mL**	**Iron, Fe**	**1 000 ± 4 µg/mL**
Magnesium, Mg	**5 000 ± 20 µg/mL**	**Manganese, Mn**	**500.0 ± 2.0 µg/mL**
Nickel, Ni	**500.0 ± 2.2 µg/mL**	**Potassium, K**	**5 000 ± 19 µg/mL**
Silver, Ag	**250.0 ± 1.1 µg/mL**	**Sodium, Na**	**5 000 ± 18 µg/mL**
Vanadium, V	**499.7 ± 2.2 µg/mL**	**Zinc, Zn**	**500.0 ± 2.2 µg/mL**

Density: 1.118 g/mL (measured at 20 ± 4 ºC)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	160729
Ag	Volhard	999c	999c
Al	ICP Assay	3101a	140903
Al	EDTA	928	928
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Be	Calculated		See Sec. 4.2
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cr	Calculated		See Sec. 4.2
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
K	ICP Assay	3141a	140813
K	Gravimetric		See Sec. 4.2
Mg	ICP Assay	3131a	140110
Mg	EDTA	928	928
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Na	ICP Assay	3152a	120715
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
V	IC Assay	3165	160906
V	EDTA	928	928
Zn	ICP Assay	3168a	120629
Zn	EDTA	928	928

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Note: This solution contains Silver (Ag), please refer to our Sample Preparation Guide for more information.

https://www.inorganicventures.com/sample-preparation-guide/samples-containing-silver

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 27, 2022

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **January 27, 2027**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

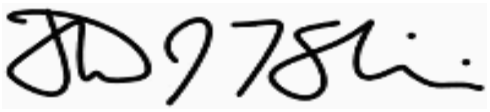
- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

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ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	CLPP-CAL-3
Lot Number:	T2-MEB714159
Matrix:	7% (v/v) HNO3
Value / Analyte(s):	1 000 µg/mL ea: Arsenic, Lead, Selenium, Thallium, 500 µg/mL ea: Cadmium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Arsenic, As	**1 000 ± 8 µg/mL**	**Cadmium, Cd**	**500.0 ± 2.1 µg/mL**
Lead, Pb	**1 000 ± 5 µg/mL**	**Selenium, Se**	**1 000 ± 8 µg/mL**
Thallium, Tl	**1 000 ± 7 µg/mL**		

Density: 1.043 g/mL (measured at 20 ± 4 ºC)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
As	ICP Assay	3103a	100818
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Tl	ICP Assay	3158	151215

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

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u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

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- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

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- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 13, 2022

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **January 13, 2027**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

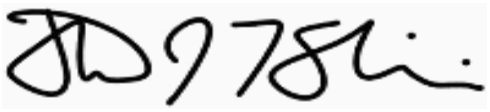
- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Certified Reference Material CRM

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

R: 8/5/24

CERTIFIED WEIGHT REPORT:

Part Number: 57182
Lot Number: 110923
Description: Lead (Pb)

Expiration Date: 110926
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB

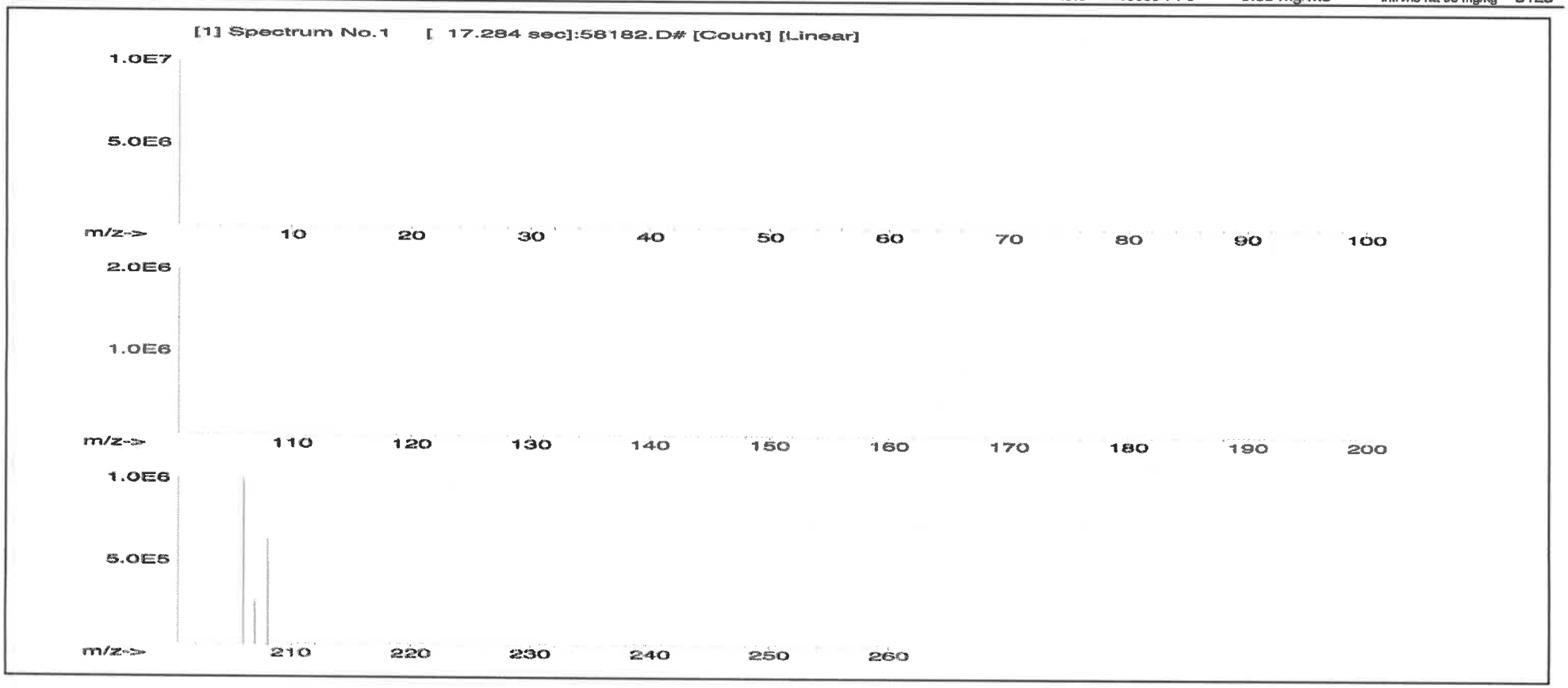
Weight shown below was diluted to (mL): 2000.02 0.058 Flask Uncertainty

		Lot #	
Solvent:	24002546		Nitric Acid
	2%	40.0 (mL)	Nitric Acid

5E-05 Balance Uncertainty

Formulated By:	Lawence Barry	110923
Reviewed By:	Pedro L. Rentas	110923

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Lead(II) nitrate (Pb)	IN029	PBD122016A1	10000	99.999	0.10	62.5	32.0006	32.0040	**10001.1**	**20.0**	10099-74-8	0.05 mg/m3	intrvns-rat 93 mg/kg	3128



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	T	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
"An ISO 9001:2015 Certified Program"

Instructions for QATS Reference Material: *ICP-AES ICS*

QATS LABORATORY INORGANIC REFERENCE MATERIAL INTERFERENCE CHECK SAMPLE SET FOR ICP-AES (ICSA WITH ICSB)

NOTE: These instructions are for advisory purposes only. If any apparent conflict exists between these instructions and the analytical protocol or your contract, disregard these instructions.

APPLICATION: For use with the CLP SFAM01.0 SOW and revisions.

CAUTION: Read instructions carefully before opening bottle(s) and proceeding with the analyses.

Contains Heavy Metals
HAZARDOUS MATERIAL

Safety Data Sheets
Available Upon Request

(A) *SAMPLE DESCRIPTION*

Enclosed is a set of one (1) or more bottles of Aqueous Reference Material, each composed of metals at various concentrations and prepared with nitrate salts and oxy-acids of the respective elements in a 5% nitric acid matrix. **For the reference material source in reporting ICSA and ICSAB mixture use "USEPA". For the reference material lot number for the ICSA use "ICSA-1211" and for the ICSAB mixture use "ICSA-1211+ICSB-0710".**

CAUTION: The bottle(s) should be protected from light during storage to ensure the stability of silver which is contained in the ICSB solution. The bottle(s) should be stored at room temperature. **Do not allow the solution(s) to freeze.**

(B) *BREAKAGE OR MISSING ITEMS*

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) *ANALYSIS OF SAMPLES*

The interference check sample set is to be used to verify inter-element and background correction factors of inductively-coupled plasma (ICP) spectrometers. This reference material set consists of two (2) concentrated solutions. The ICSA solution contains the four (4) interferent elements: Al, Ca, Fe, and Mg. The ICSB solution contains the analytes: Ag, As, Sb, Ba, Be,

The Quality Assurance Technical Support (QATS) contract is operated by APTIM Federal Services, LLC.

Cd, Co, Cr, Cu, Mn, Ni, Pb, Tl, Se, V, and Zn. This instruction sheet provides the nominal values for ICP-AES Part A and Part B target analytes when diluted as directed.

Using Class "A" glassware, preparation and analysis must be performed according to the following instructions:

ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO_3. Analyze this ICSA solution by ICP-AES.

ICSB-0710, Analytes, mixed with ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution and 10 mL of the ICSB solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO_3. Analyze this ICSAB solution by ICP-AES.

(D) *"CERTIFIED VALUE" CONCENTRATIONS OF QATS ICP-AES ICS SOLUTION(S)*

The "Certified Value" concentrations of the elements, listed in Table 1 below, were derived from statistically pooled analysis results from the following sources, if available: QATS Laboratory, CLP laboratories, Quarterly Blind (QB)/Proficiency Testing (PT) events, CLP pre-award events, and external referee laboratories.

Table 1. "CERTIFIED VALUES" FOR INTERFERENCE CHECK SAMPLE ICP-AES ICSA-1211, AND ICSA-1211 MIXED WITH ICSB-0710

Element	CRQL	Part A (µg/L)	Low Limit (µg/L)	High Limit (µg/L)	Part A +Part B (µg/L)	Low Limit (µg/L)	High Limit (µg/L)
Al	200	255000	216000	294000	247000	209000	285000
Sb	60	(0.0)	-60.0	60.0	618	525	711
As	10	(0.0)	-10.0	10.0	104	88.4	120
Ba	200	(6.0)	-194	206	(537)	337	737
Be	5.0	(0.0)	-5.0	5.0	495	420	570
Cd	5.0	(1.0)	-4.0	6.0	972	826	1120
Ca	5000	245000	208000	282000	235000	199000	271000
Cr	10	(52.0)	42.0	62.0	542	460	624
Co	50	(0.0)	-50.0	50.0	476	404	548
Cu	25	(2.0)	-23.0	27.0	511	434	588
Fe	100	101000	85600	116500	99300	84400	114500
Pb	10	(0.0)	-10.0	10.0	(49.0)	39.0	59.0
Mg	5000	255000	216000	294000	248000	210000	286000
Mn	15	(7.0)	-8.0	22.0	507	430	584
Ni	40	(2.0)	-38.0	42.0	954	810	1100
Se	35	(0.0)	-35.0	35.0	(46.0)	11.0	81.0
Ag	10	(0.0)	-10.0	10.0	201	170	232
Tl	25	(0.0)	-25.0	25.0	(108)	83.0	133
V	50	(0.0)	-50.0	50.0	491	417	565
Zn	60	(0.0)	-60.0	60.0	952	809	1095

ICSA M5126 M5127 M5128 M5129 M5130

ICSB M5219 M5220 M5221 M5222 M5223

The acceptance ranges for all analytes in parentheses in the above table were determined using the listed certified value ± 1 times the associated CLP SOW CRQL. The acceptance ranges for all other analytes were determined using the certified value ± 15 percent of the listed certified value.

INORGANIC VENTURES™
Refine your results. Redefine your industry.

Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

P: 800-669-6799/540-585-3030
F: 540-585-3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	CHEM-QC-4
Lot Number:	S2-MEB711674
Matrix:	3% (v/v) HNO3 3% (v/v) HF
Value / Analyte(s):	1 000 µg/mL ea: Boron, Molybdenum, Silicon, Tin, Titanium

Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Boron, B	**1 000 ± 7 µg/mL**	**Molybdenum, Mo**	**1 000 ± 5 µg/mL**
Silicon, Si	**1 000 ± 7 µg/mL**	**Tin, Sn**	**1 000 ± 5 µg/mL**
Titanium, Ti	**1 001 ± 6 µg/mL**		

Density: 1.032 g/mL (measured at 20 ± 4 ºC)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
B	ICP Assay	3107	110830
Mo	ICP Assay	3134	130418
Si	ICP Assay	3150	130912
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	3162a	130925

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

HF Note: This standard should not be prepared or stored in glass.

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

November 02, 2021

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **November 02, 2026**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Director, Quality Control

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
"An ISO 9001:2015 Certified Program"

Instructions for QATS Reference Material: *ICP-AES ICS*

QATS LABORATORY INORGANIC REFERENCE MATERIAL INTERFERENCE CHECK SAMPLE SET FOR ICP-AES (ICSA WITH ICSB)

NOTE: These instructions are for advisory purposes only. If any apparent conflict exists between these instructions and the analytical protocol or your contract, disregard these instructions.

APPLICATION: For use with the CLP SFAM01.0 SOW and revisions.

CAUTION: Read instructions carefully before opening bottle(s) and proceeding with the analyses.

Contains Heavy Metals
HAZARDOUS MATERIAL

Safety Data Sheets
Available Upon Request

(A) *SAMPLE DESCRIPTION*

Enclosed is a set of one (1) or more bottles of Aqueous Reference Material, each composed of metals at various concentrations and prepared with nitrate salts and oxy-acids of the respective elements in a 5% nitric acid matrix. **For the reference material source in reporting ICSA and ICSAB mixture use "USEPA". For the reference material lot number for the ICSA use "ICSA-1211" and for the ICSAB mixture use "ICSA-1211+ICSB-0710".**

CAUTION: The bottle(s) should be protected from light during storage to ensure the stability of silver which is contained in the ICSB solution. The bottle(s) should be stored at room temperature. **Do not allow the solution(s) to freeze.**

(B) *BREAKAGE OR MISSING ITEMS*

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) *ANALYSIS OF SAMPLES*

The interference check sample set is to be used to verify inter-element and background correction factors of inductively-coupled plasma (ICP) spectrometers. This reference material set consists of two (2) concentrated solutions. The ICSA solution contains the four (4) interferent elements: Al, Ca, Fe, and Mg. The ICSB solution contains the analytes: Ag, As, Sb, Ba, Be,

The Quality Assurance Technical Support (QATS) contract is operated by APTIM Federal Services, LLC.

Cd, Co, Cr, Cu, Mn, Ni, Pb, Tl, Se, V, and Zn. This instruction sheet provides the nominal values for ICP-AES Part A and Part B target analytes when diluted as directed.

Using Class "A" glassware, preparation and analysis must be performed according to the following instructions:

ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO_3. Analyze this ICSA solution by ICP-AES.

ICSB-0710, Analytes, mixed with ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution and 10 mL of the ICSB solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO_3. Analyze this ICSAB solution by ICP-AES.

(D) *"CERTIFIED VALUE" CONCENTRATIONS OF QATS ICP-AES ICS SOLUTION(S)*

The "Certified Value" concentrations of the elements, listed in Table 1 below, were derived from statistically pooled analysis results from the following sources, if available: QATS Laboratory, CLP laboratories, Quarterly Blind (QB)/Proficiency Testing (PT) events, CLP pre-award events, and external referee laboratories.

Table 1. "CERTIFIED VALUES" FOR INTERFERENCE CHECK SAMPLE ICP-AES ICSA-1211, AND ICSA-1211 MIXED WITH ICSB-0710

Element	CRQL	Part A (µg/L)	Low Limit (µg/L)	High Limit (µg/L)	Part A +Part B (µg/L)	Low Limit (µg/L)	High Limit (µg/L)
Al	200	255000	216000	294000	247000	209000	285000
Sb	60	(0.0)	-60.0	60.0	618	525	711
As	10	(0.0)	-10.0	10.0	104	88.4	120
Ba	200	(6.0)	-194	206	(537)	337	737
Be	5.0	(0.0)	-5.0	5.0	495	420	570
Cd	5.0	(1.0)	-4.0	6.0	972	826	1120
Ca	5000	245000	208000	282000	235000	199000	271000
Cr	10	(52.0)	42.0	62.0	542	460	624
Co	50	(0.0)	-50.0	50.0	476	404	548
Cu	25	(2.0)	-23.0	27.0	511	434	588
Fe	100	101000	85600	116500	99300	84400	114500
Pb	10	(0.0)	-10.0	10.0	(49.0)	39.0	59.0
Mg	5000	255000	216000	294000	248000	210000	286000
Mn	15	(7.0)	-8.0	22.0	507	430	584
Ni	40	(2.0)	-38.0	42.0	954	810	1100
Se	35	(0.0)	-35.0	35.0	(46.0)	11.0	81.0
Ag	10	(0.0)	-10.0	10.0	201	170	232
Tl	25	(0.0)	-25.0	25.0	(108)	83.0	133
V	50	(0.0)	-50.0	50.0	491	417	565
Zn	60	(0.0)	-60.0	60.0	952	809	1095

ICSA M5126 M5127 M5128 M5129 M5130

ICSB M5219 M5220 M5221 M5222 M5223

The acceptance ranges for all analytes in parentheses in the above table were determined using the listed certified value ± 1 times the associated CLP SOW CRQL. The acceptance ranges for all other analytes were determined using the certified value ± 15 percent of the listed certified value.

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

M5289 R: 07/12/22 (BH)

Certified Reference Material CRM

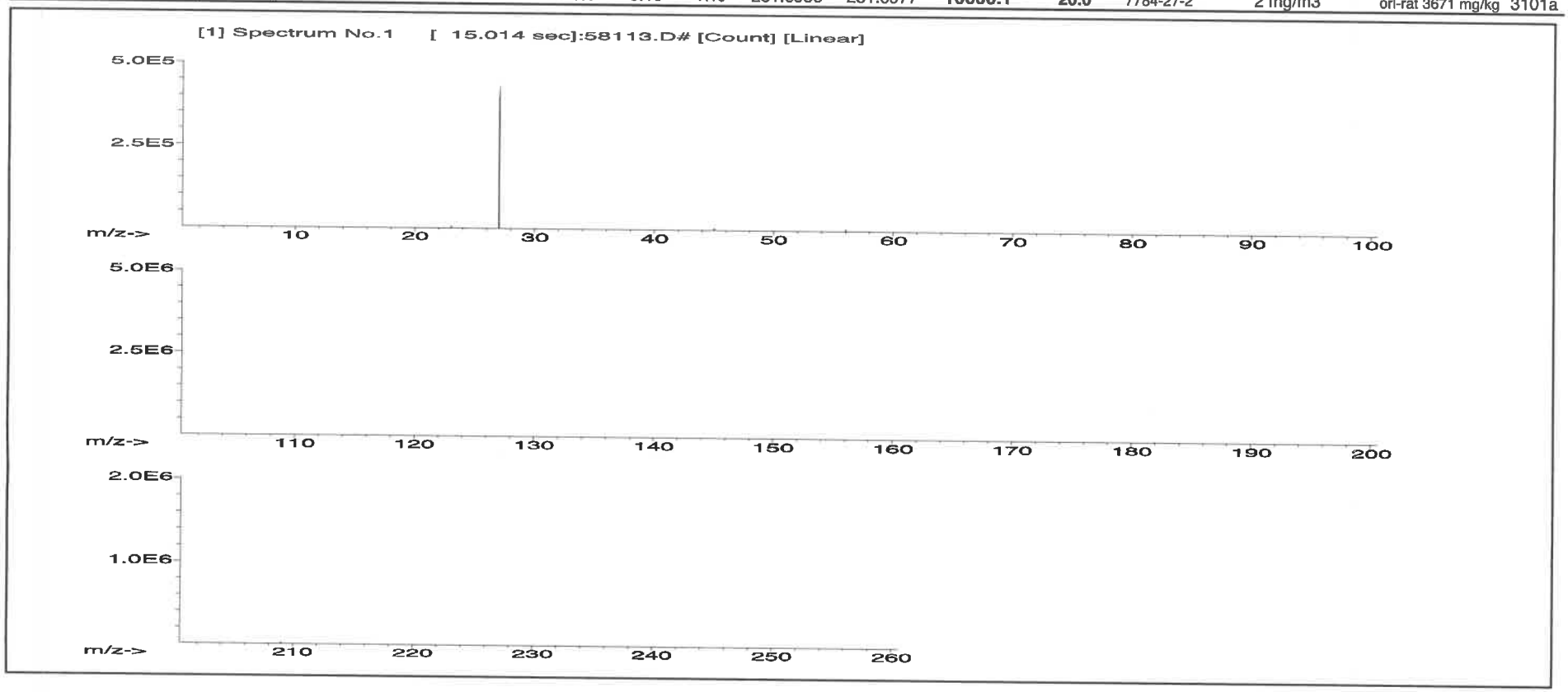
ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

CERTIFIED WEIGHT REPORT:

Part Number:	**58113**			**Lot #**	
Lot Number:	**070622**		**Solvent:**	20370011	Nitric Acid
Description:	**Aluminum (Al)**				
			2%	40.0 (mL)	Nitric Acid
Expiration Date:	070625				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**10000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty		

Formulated By:	Lawrence Barry	070622
Reviewed By:	Pedro L. Rentas	070622

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	**Actual Conc. (µg/mL)**	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Aluminum nitrate nonahydrate (Al)	IN022	ALD012021A1	10000	99.999	0.10	7.10	281.6956	281.6977	**10000.1**	**20.0**	7784-27-2	2 mg/m3	orl-rat 3671 mg/kg	3101a



Instrumental Analysis by Inductively Coupled Plasma Mass Spectroscopy (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	T	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

QATS LABORATORY INORGANIC REFERENCE MATERIAL INITIAL CALIBRATION VERIFICATION SOLUTIONS (ICV1, ICV5, AND ICV6)

NOTE: These instructions are for advisory purposes only. If any apparent conflict exists between these instructions and the analytical protocol or your contract, disregard these instructions.

APPLICATION: For use with the CLP SFAM01.0 SOW and revisions.

CAUTION: Read instructions carefully before opening bottle(s) and proceeding with the analyses.

Contains Metals in Dilute Acidic or Cyanide in Basic Aqueous Solutions
HAZARDOUS MATERIAL

Safety Data Sheets Available Upon Request

M5291
M5292
M5293
M5294
M5295

(A) *SAMPLE DESCRIPTION*

Enclosed is a set of one (1) or more Aqueous Inorganic Reference Materials containing various analyte concentrations. ICV1 and ICV5 are in a matrix of dilute nitric acid. ICV6 is in a matrix of dilute basic solution. **For the reference material source in reporting ICVs use "USEPA". For the reference material lot number for the ICV1, ICV5, and ICV6 solutions use "ICV1-1014", "ICV5-0415", and "ICV6-0400", respectively.**

(B) *BREAKAGE OR MISSING ITEMS*

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) *ANALYSIS OF SAMPLES*

The Initial Calibration Verification Solutions (ICVs) are to be used to evaluate the accuracy of the initial calibrations of ICP, AA, and Cyanide colorimetric instruments, and are to be used with the CLP SOWs and revisions. The values for each element in the ICVs are listed below in µg/L (ppb) for the resulting solution(s) after the dilution of the concentrate(s) according to the following instructions. Use Class 'A' glassware to prepare the solution(s).

ICV1-1014 For ICP-AES analysis, use a 10-fold dilution by pipetting 10 mL of the ICV1 concentrate into a 100 mL volumetric flask and dilute to volume with 2% (v/v) nitric acid.

The Quality Assurance Technical Support (QATS) contract is operated by APTIM Federal Services, LLC.

ICV1-1014 For ICP-MS analysis, use a 50-fold dilution by pipetting 2 mL of the ICV1 concentrate into a 100 mL volumetric flask and dilute to volume with 1% (v/v) nitric acid.

ICV5-0415 For the cold vapor analysis of mercury by AA, use a 100-fold dilution by pipetting 1 mL of the ICV5 concentrate into a 100 mL volumetric flask and dilute to volume with 2% (v/v) nitric acid. The ICV5 concentrate is prepared in 0.05% (w/v) $K_2Cr_2O_7$ and 5% (v/v) nitric acid.

ICV6-0400 For the analysis of cyanide, use a 100-fold dilution by pipetting 1 mL of the ICV6 concentrate into a 100 mL volumetric flask and dilute to volume with Type II water. Distill this solution along with the samples before analysis. The cyanide concentrate is prepared from $K_3Fe(CN)_6$, Type II water, and 0.1 % sodium hydroxide, and will decompose rapidly if exposed to light.

NOTE: USE TYPE II WATER AND HIGH-PURITY ACIDS FOR ALL DILUTIONS.

(D) *CERTIFIED CONCENTRATIONS OF QATS ICV1, ICV5, AND ICV6 SOLUTIONS*

ICV1-1014		
Element	**Concentration (µg/L) (after 10-fold dilution)**	**Concentration (µg/L) (after 50-fold dilution)**
Al	2500	500
Sb	1000	200
As	1000	200
Ba	520	100
Be	510	100
Cd	510	100
Ca	10000	2000
Cr	520	100
Co	520	100
Cu	510	100
Fe	10000	2000
Pb	1000	200
Mg	6000	1200
Mn	520	100
Ni	530	110
K	9900	2000
Se	1000	200
Ag	250	50
Na	10000	2000
Tl	1000	210
V	500	100
Zn	1000	200

ICV5-0415		ICV6-0400	
Element	**Concentration (µg/L) (after 100-fold dilution)**	**Analyte**	**Concentration (µg/L) (after 100-fold dilution)**
Hg	4.0	**CN^-**	99

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R: 09/08/22 (BH)

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M5387 . M5389 . M5390 . M5391 . M5392

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AR-1539 Certificate Number
https://Absolutestandards.com

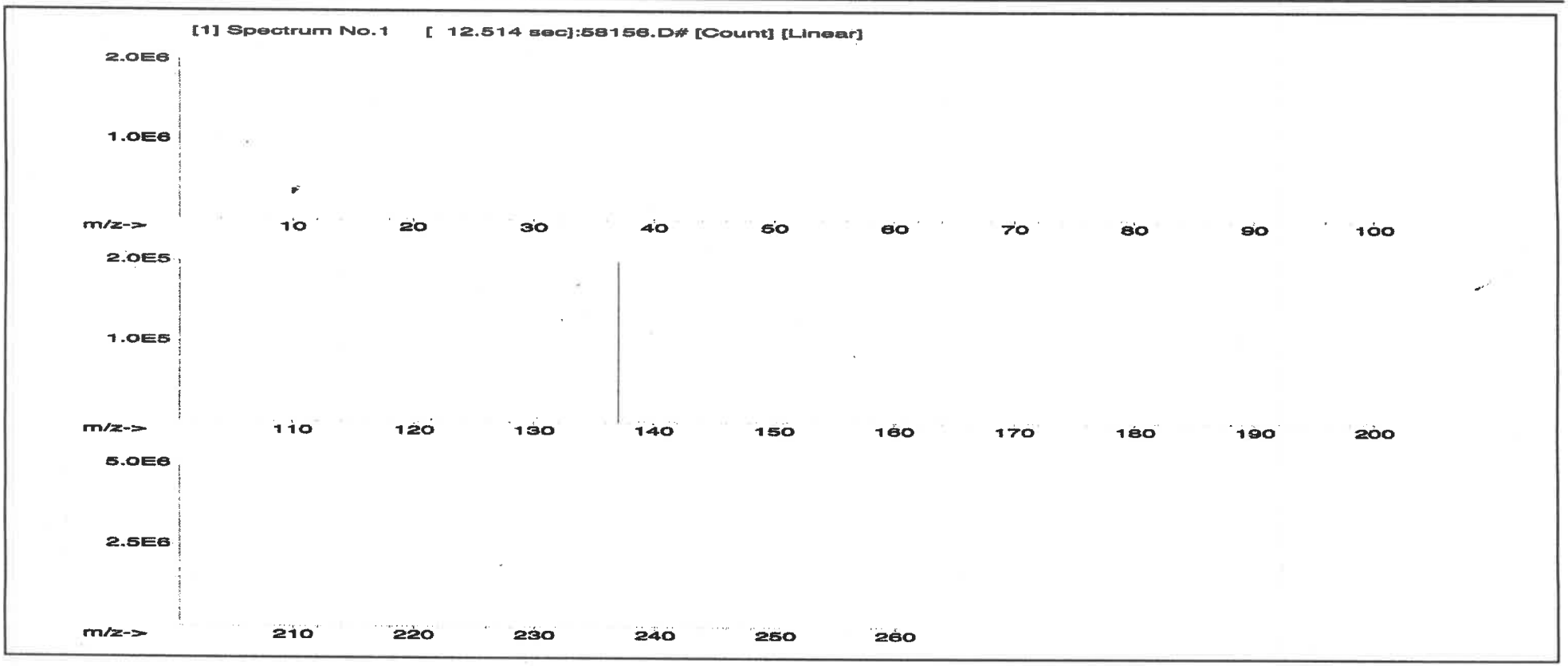
CERTIFIED WEIGHT REPORT:

		Lot #		
Part Number:	**57056**	**Solvent:**	20510011	Nitric Acid
Lot Number:	**072122**			
Description:	**Barium (Ba)**	2%	40.0 (mL)	Nitric Acid
Expiration Date:	072125			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Weight shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty	

Giovanni Esposito

Formulated By:	Giovanni Esposito	072122
Reviewed By:	Pedro L. Rentas	072122

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Barium nitrate (Ba)	IN023	BAD022019A1	1000	99.999	0.10	52.3	3.82417	3.82426	**1000.0**	**2.0**	10022-31-8	0.5 mg/m3	orl-rat 355 mg/kg	3104a



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	T	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
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* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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Certified Reference Material CRM

M5429 R1 01/26/23 BH

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CERTIFIED WEIGHT REPORT:

Part Number: 57103
Lot Number: 070622
Description: Lithium (Li)

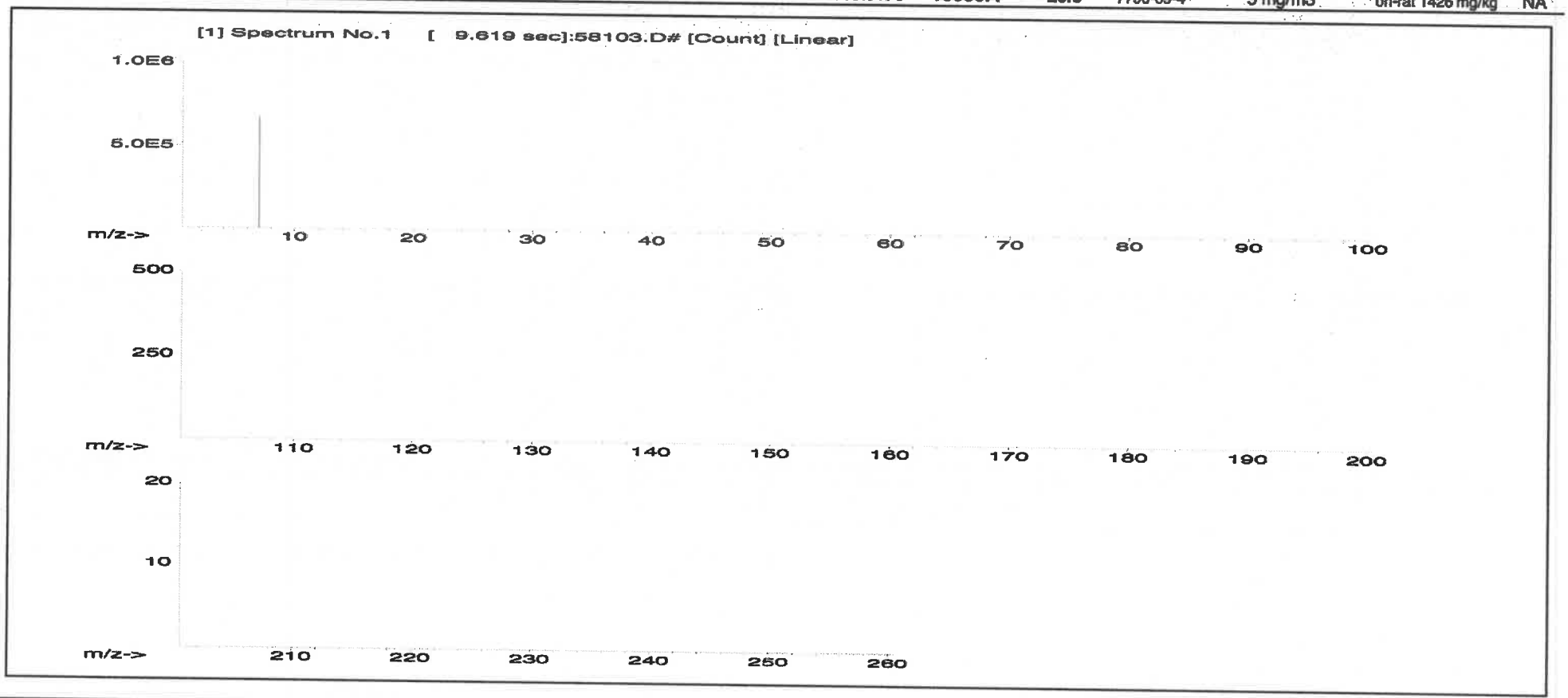
Expiration Date: 070625
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 1000.12

	Lot #		
Solvent:	20510011	Nitric Acid	
2%	20.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Formulated By:	Lawrence Barry	070622
Reviewed By:	Pedro L. Rentas	070622

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Lithium nitrate (Li)	IN019	LIZ042018A1	10000	99.999	0.10	10.0	100.0134	100.0173	**10000.4**	**20.0**	7790-69-4	5 mg/m3	orl-rat 1426 mg/kg	NA



Instrumental Analysis by Inductively Coupled Plasma Mass Spectroscopy (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	T	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
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* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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IN5497 - IN5498 R: 03/17/23 BH

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CERTIFIED WEIGHT REPORT:

Part Number: 58120
Lot Number: 031523
Description: Calcium (Ca)

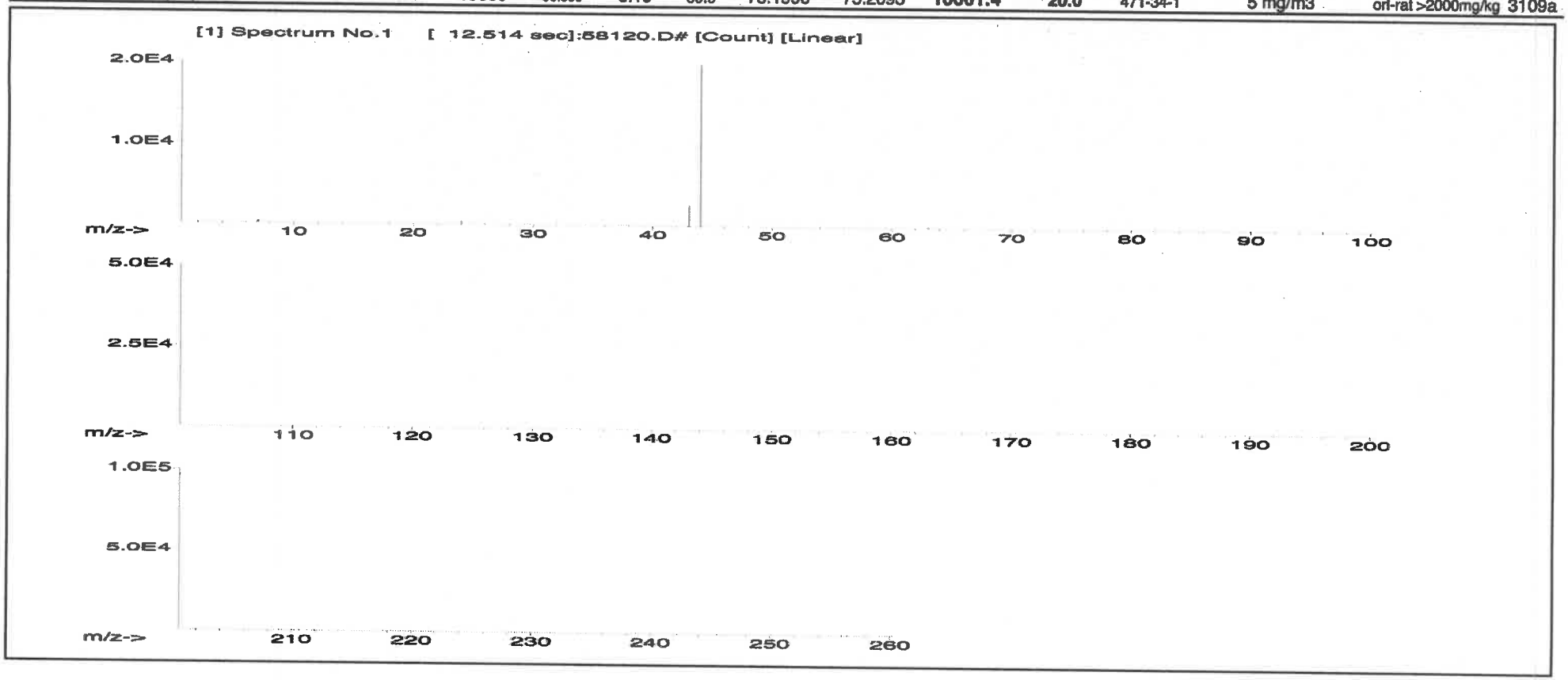
Expiration Date: 031526
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 3000.41 ± 0.058 Flask Uncertainty

		Lot #	
Solvent:	21110221	Nitric Acid	
2%	60.0 (mL)	Nitric Acid	
	5E-05	Balance Uncertainty	

Giovanni Esposito

Formulated By:	Giovanni Esposito	031523
Reviewed By:	Pedro L. Rentas	031523

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Calcium carbonate (Ca)	IN014	CAD072022A1	10000	99.999	0.10	39.9	75.1990	75.2093	**10001.4**	**20.0**	471-34-1	5 mg/m3	orl-rat >2000mg/kg	3109a



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	T	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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Certified Reference Material CRM

MS513 R:03/17/23 BE

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CERTIFIED WEIGHT REPORT:

Part Number: 57182
Lot Number: 061522
Description: Lead (Pb)

Expiration Date: 061525
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 2000.02

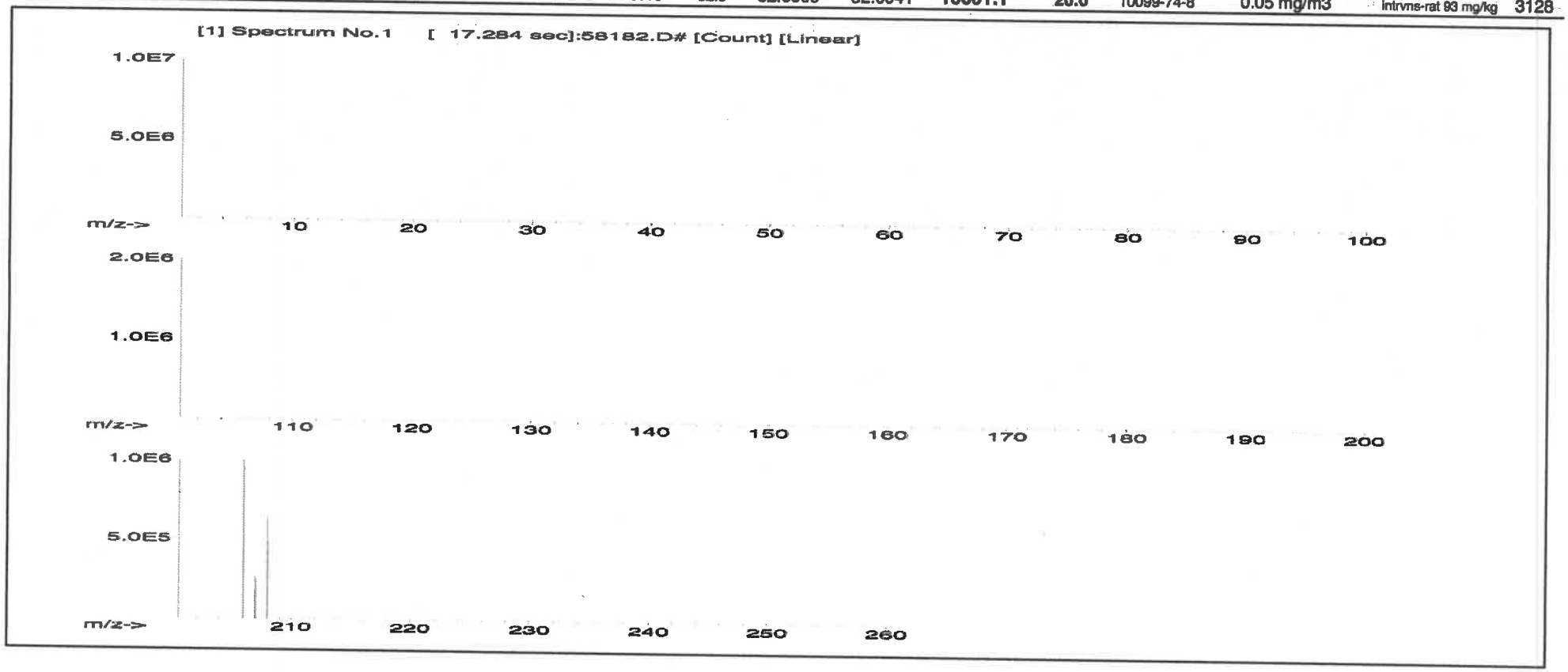
	Lot #		
Solvent:	20510011	Nitric Acid	
2%	40.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Giovanni Esposito

Formulated By:	Giovanni Esposito	061522
Reviewed By:	Pedro L. Rentas	061522

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Lead(II) nitrate (Pb)	IN029	PBD122016A1	10000	99.999	0.10	62.5	32.0006	32.0041	**10001.1**	**20.0**	10099-74-8	0.05 mg/m3	Intrvns-rat 93 mg/kg	3128



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	T	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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Certified Reference Material CRM

M5514 - M5515 R: 03/17/22

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AR-1539 Certificate Number
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CERTIFIED WEIGHT REPORT:

Part Number: 58126
Lot Number: 092122
Description: Iron (Fe)

Expiration Date: 092125
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 5000.1 ± 0.12 Flask Uncertainty

	Lot #		
Solvent:	20510011	Nitric Acid	
7.0%	350.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty

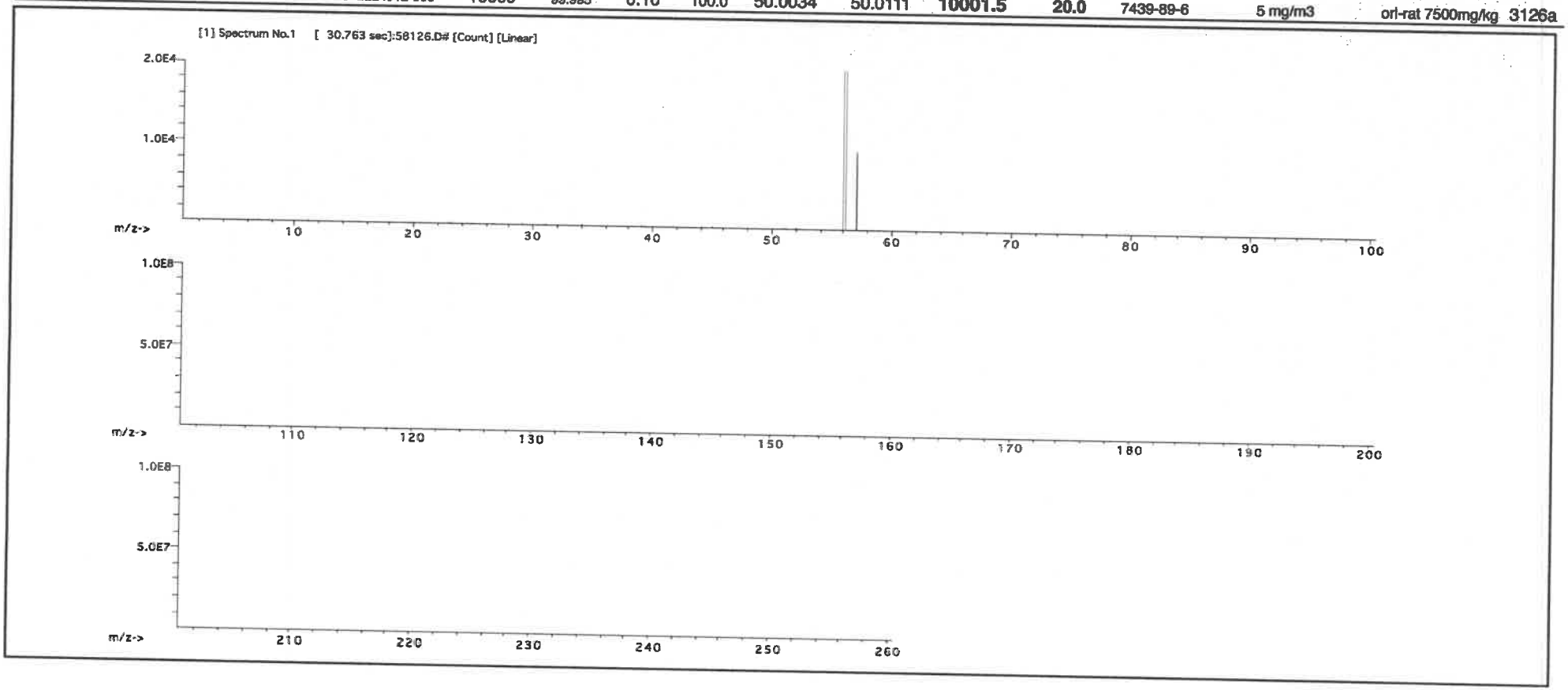
Giovanni Esposito

Formulated By: Giovanni Esposito 092122

Pedro Rentas

Reviewed By: Pedro L. Rentas 092122

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Iron (Fe)	IN346	2224912-500	10000	99.995	0.10	100.0	50.0034	50.0111	**10001.5**	**20.0**	7439-89-6	5 mg/m3	orl-rat 7500mg/kg	3126a



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.10	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.10	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.05	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.10	Ge	<0.10	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.05
B	<0.02	Cu	<0.10	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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M519. M520 (BH) R:03/17/23

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CERTIFIED WEIGHT REPORT:

Part Number: 58119
Lot Number: 120822
Description: Potassium (K)

Expiration Date: 120825
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 3000.4

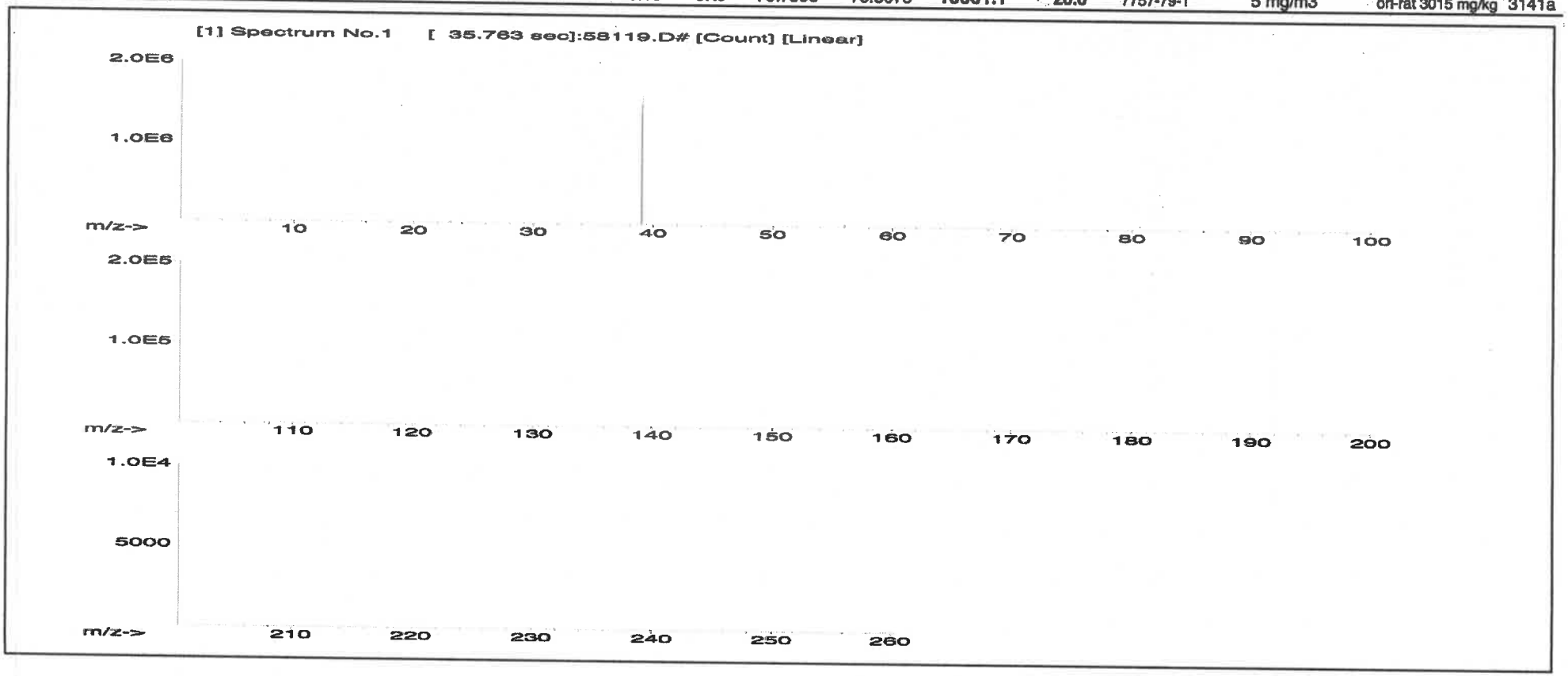
Lot #		
Solvent: 20510011		Nitric Acid
2%	60.0 (mL)	Nitric Acid

5E-05 Balance Uncertainty
0.06 Flask Uncertainty

Giovanni Esposito

Formulated By:	Giovanni Esposito	120822
Reviewed By:	Pedro L. Rentas	120822

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Potassium nitrate (K)	IN034	KD022021A1	10000	99.999	0.10	37.6	79.7990	79.8075	**10001.1**	**20.0**	7757-79-1	5 mg/m3	orl-rat 3015 mg/kg	3141a



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	T	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
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M5658 R ! 8/25/23

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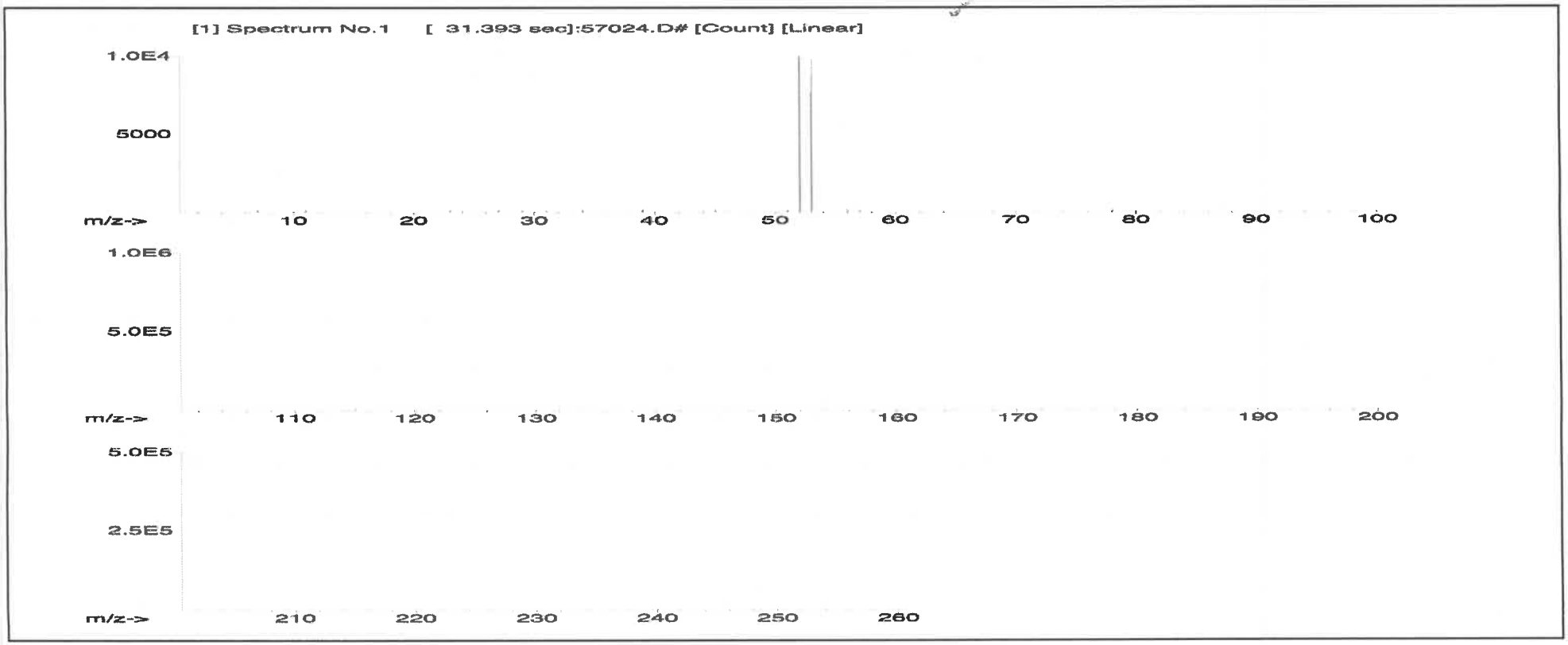
CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**58024**	21110221	Nitric Acid	
Lot Number:	**060523**			
Description:	**Chromium (Cr)**			
		2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	060526			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty	

Formulated By:	Lawrence Barry	060523
Reviewed By:	Pedro L. Rentas	060523

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Chromium(III) nitrate nonahydrate (Cr)	58124	071122	0.1000	200.0	0.084	1000	10000.1	**1000.0**	**2.2**	7789-02-8	0.5 mg(Cr)/m3	orl-rat 3250 mg/kg	3112a



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	T	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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M5648 R: 10/27/23

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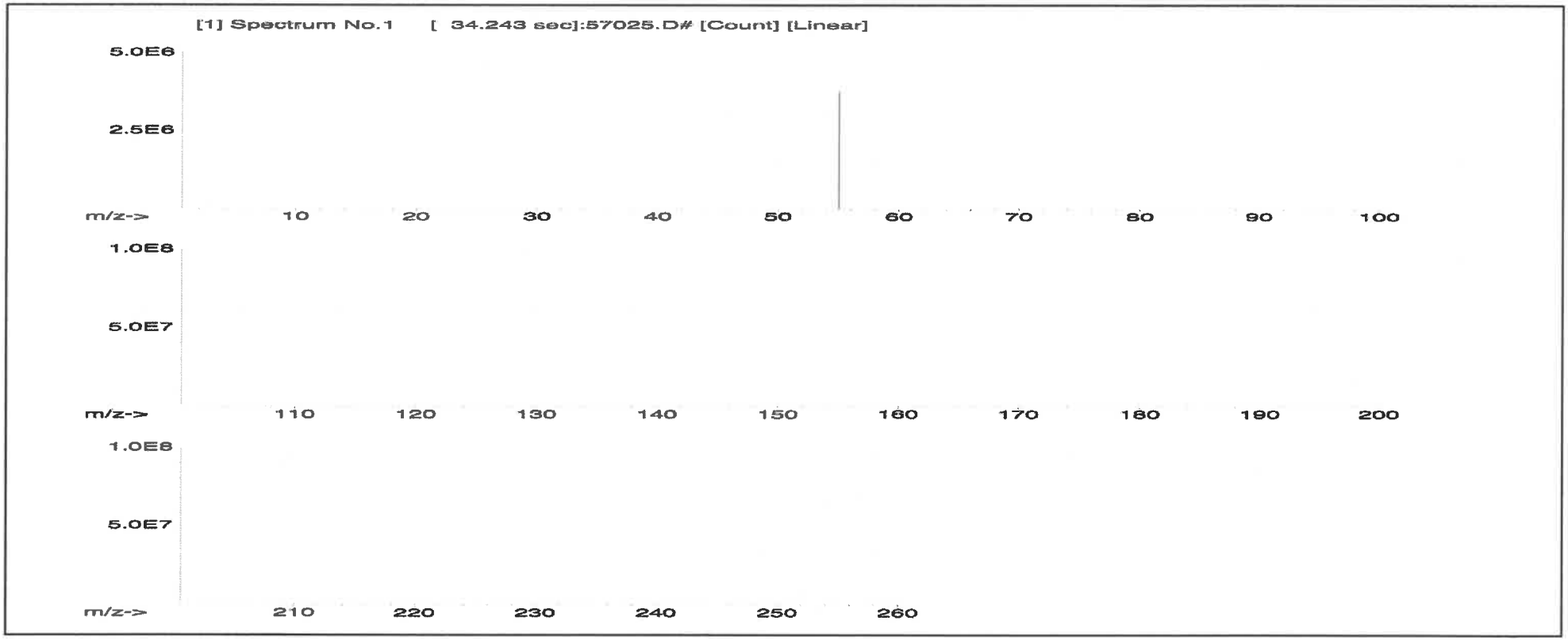
CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**58025**	24002546	Nitric Acid	
Lot Number:	**102623**			
Description:	**Manganese (Mn)**			
		2.0%	60.0 (mL)	Nitric Acid
Expiration Date:	102626			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	3000.41	0.058	Flask Uncertainty	

Formulated By:	Benson Chan	102623
Reviewed By:	Pedro L. Rentas	102623

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Manganese(II) nitrate tetrahydrate (Mn)	58125	071123	0.1000	300.0	0.084	1000	10000.1	**1000.0**	**2.1**	20694-39-7	5 mg/m3	orl-rat >300mg/kg	3132



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	T	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

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R: 8/25/23 M5751

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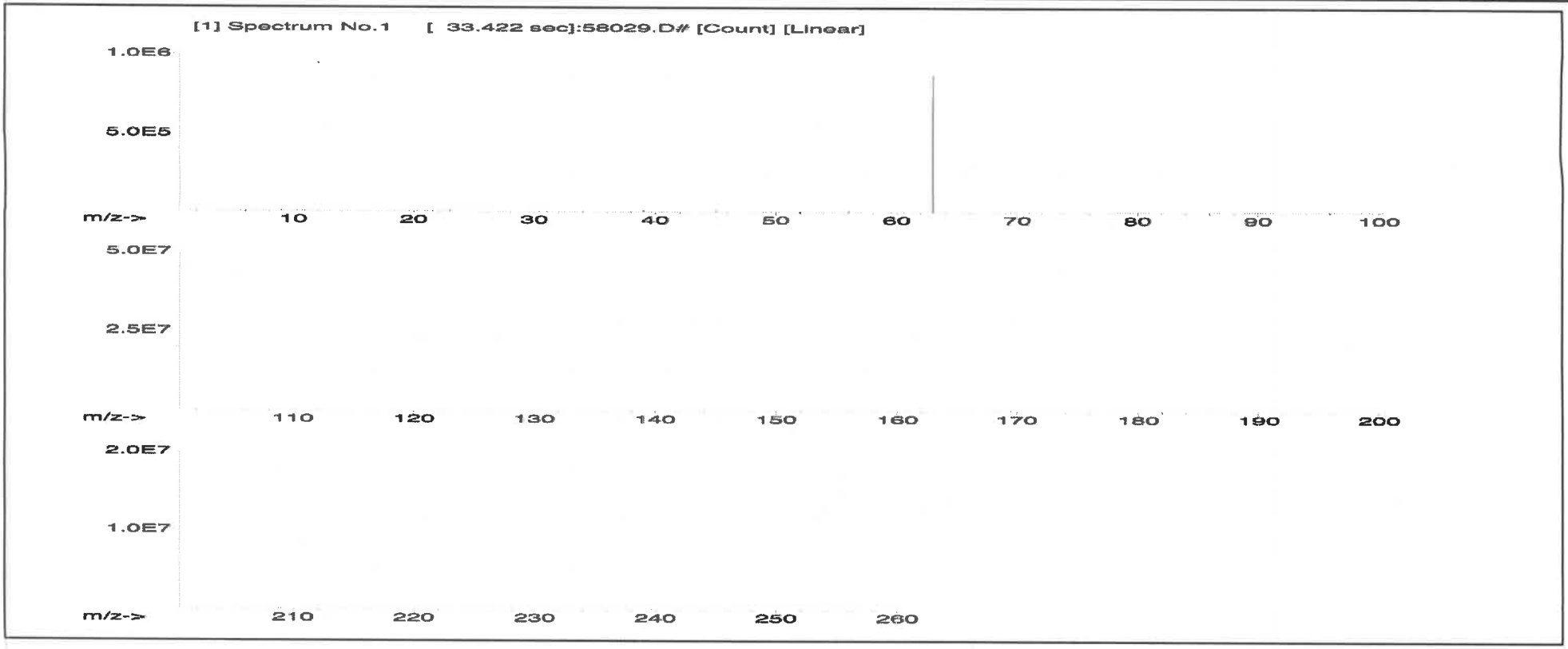
CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**58029**	21110221	Nitric Acid	
Lot Number:	**071723**			
Description:	**Copper (Cu)**			
		2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	071726			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty	

Formulated By:	Benson Chan	071723
Reviewed By:	Pedro L. Rentas	071723

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Copper(II) nitrate trihydrate (Cu)	58129	022723	0.1000	200.0	0.084	1000	10000.5	**1000.0**	**2.2**	10031-43-3	1 mg/m3	orl-rat 794 mg/kg	3114



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	T	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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M5768 M5769 (BP) R:1/3/24

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CERTIFIED WEIGHT REPORT:

Part Number: 58112
Lot Number: 091823
Description: Magnesium (Mg)

Expiration Date: 091826
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB

M5768, M5769 (BP) R: 1/3/24

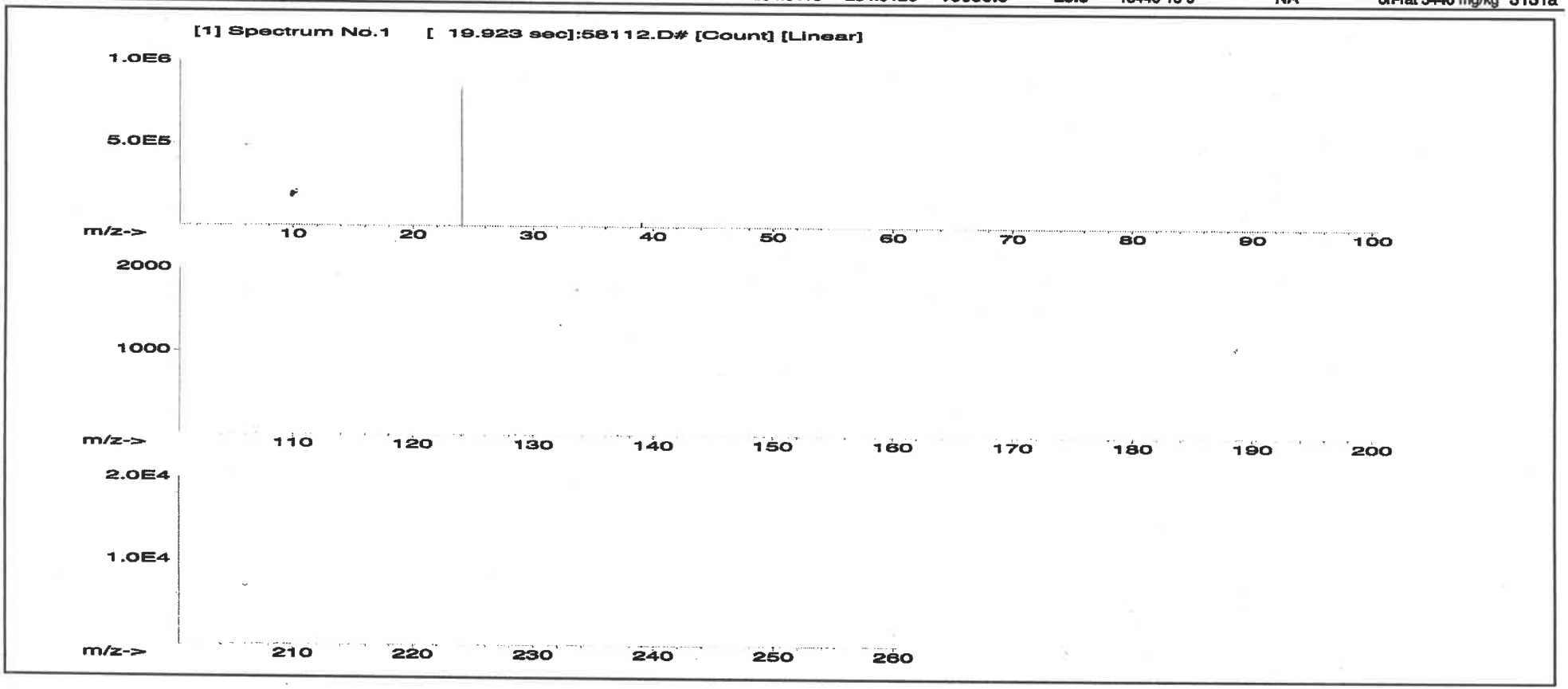
Weight shown below was diluted to (mL): 2000.02 0.058 Flask Uncertainty

	Lot #		
Solvent:	24002546	Nitric Acid	
	2%	40.0 (mL)	Nitric Acid
		5E-05	Balance Uncertainty

Formulated By: Lawrence Barry 091823

Reviewed By: Pedro L. Rentas 091823

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Magnesium nitrate hexahydrate (Mg)	IN030	MGD052023A1	10000	99.999	0.10	8.51	234.9118	234.9126	**10000.0**	**20.0**	13446-18-9	NA	ori-rat 5440 mg/kg	3131a



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	T	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

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R: 02/09/24 M5798

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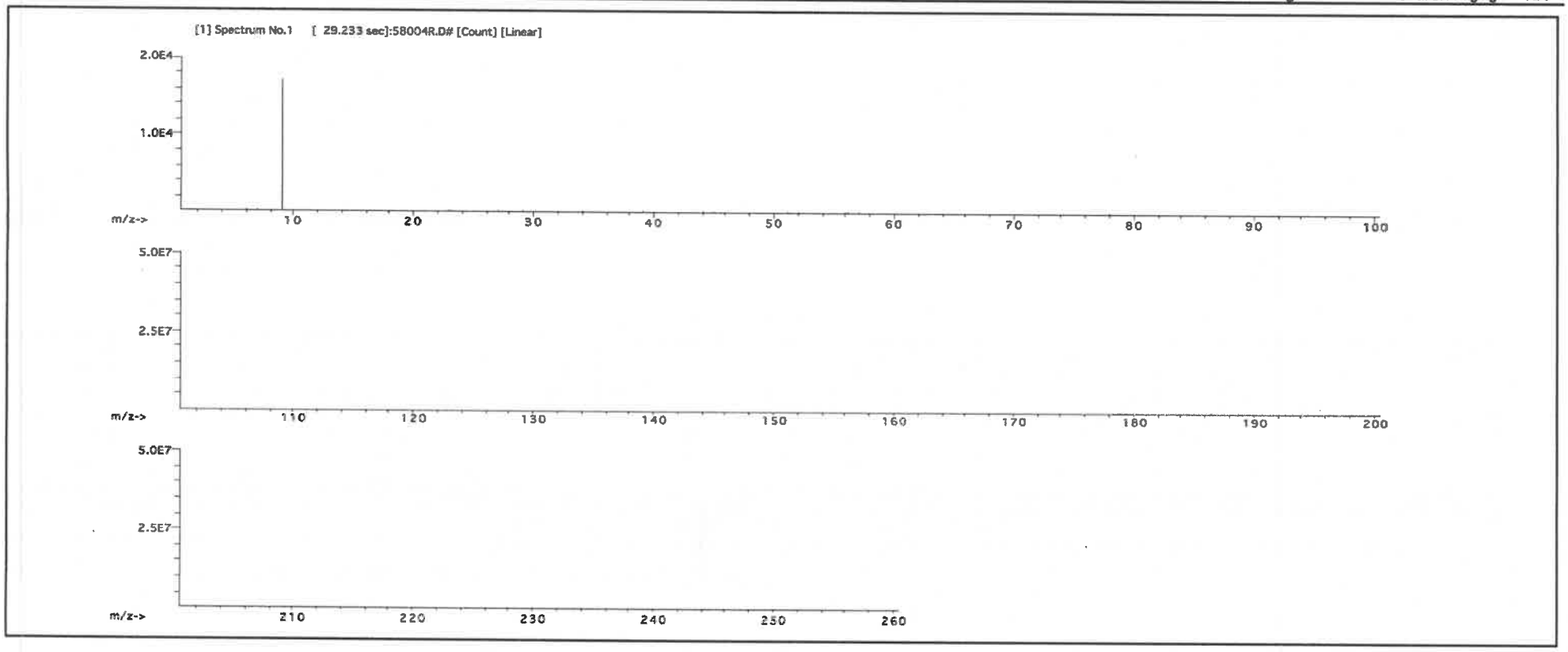
CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**57004**	24002546	Nitric Acid	
Lot Number:	**102523**			
Description:	**Beryllium (Be)**	2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	102526			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty	

Formulated By:	Benson Chan	102523
Reviewed By:	Pedro L. Rentas	102523

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Beryllium nitrate (Be)	58104	091423	0.1000	200.0	0.084	1000	10001.5	**1000.0**	**2.2**	13597-99-4	0.2ug/m3	intrvns-rat 3.16mg/kg	NA



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	T	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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R? 02/09/24 IV15799

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CERTIFIED WEIGHT REPORT:

Part Number: 57050
Lot Number: 071123
Description: Tin (Sn)

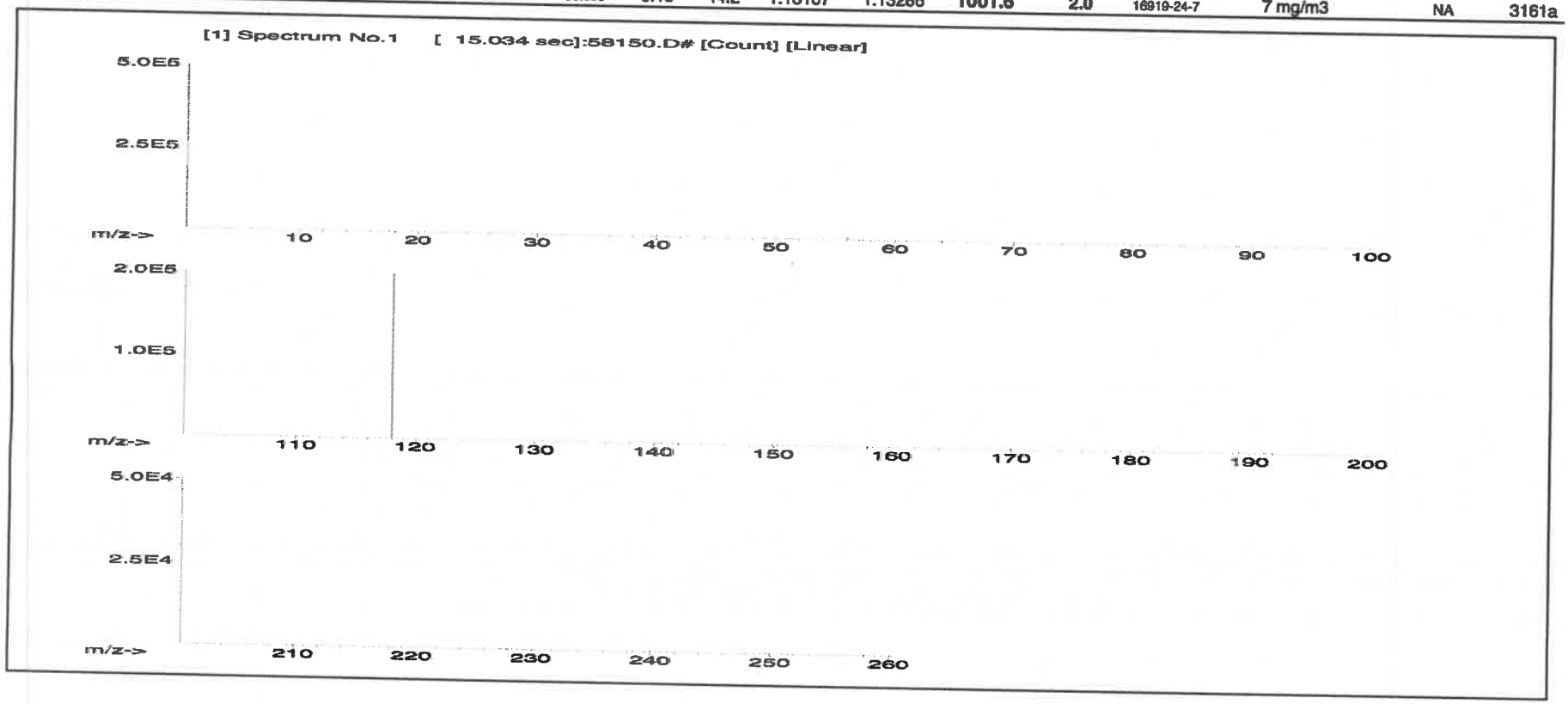
Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 499.93

	Lot #	
Solvents:	21110221	Nitric Acid
	22D0562008	Hydrochloric acid
2%	10.0	Nitric Acid
6%	30.0	Hydrochloric acid
	(mL)	

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Formulated By:	Benson Chan	071123
Reviewed By:	Pedro L. Rentas	071123

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Ammonium hexafluorostannate(IV) (Sn)	IN010	SND042023A1	1000	99.999	0.10	44.2	1.13107	1.13286	**1001.6**	**2.0**	16919-24-7	7 mg/m3	NA	3161a



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<500	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	T	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
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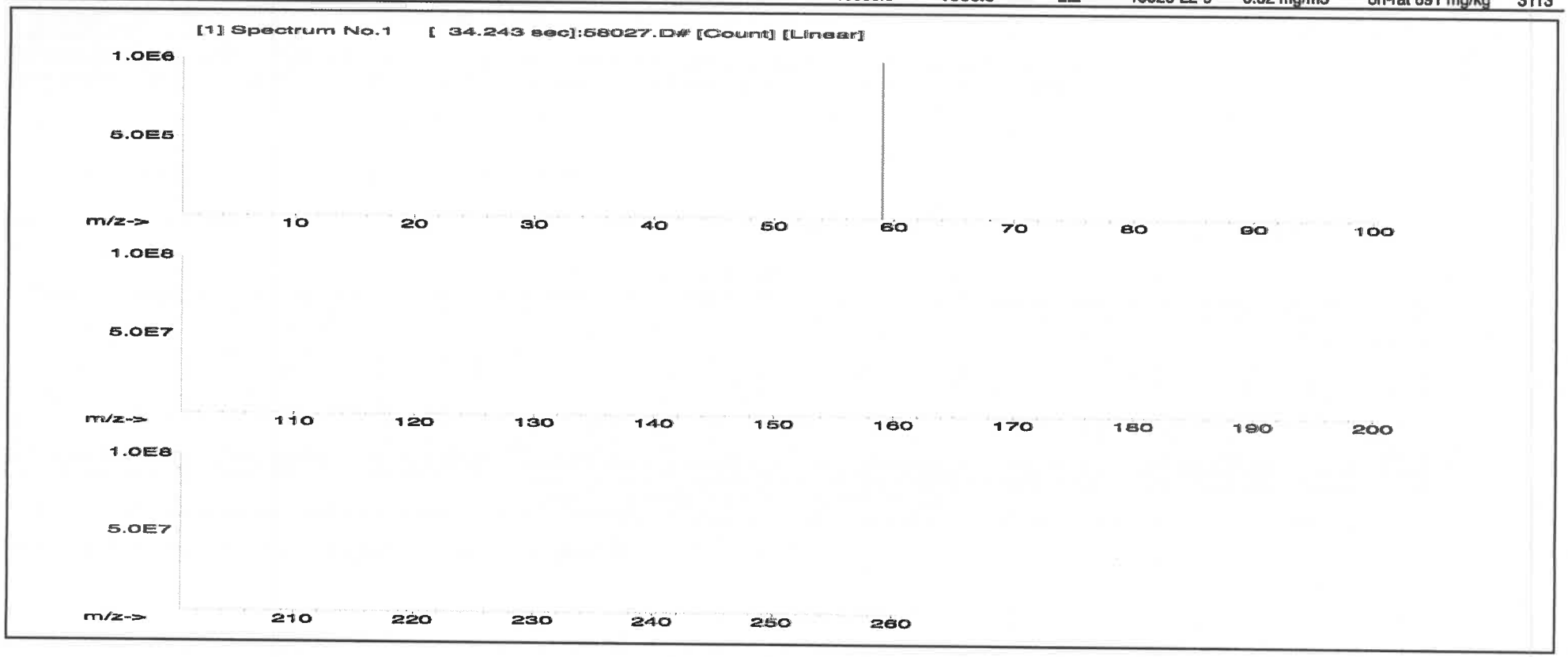
CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:		
Part Number:	**57027**	24002546	Nitric Acid		
Lot Number:	**091923**				
Description:	**Cobalt (Co)**	2.0%	40.0 (mL)	Nitric Acid	
Expiration Date:	091926				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Volume shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty		

Formulated By:	Lawrence Barry	091923
Reviewed By:	Pedro L. Rentas	091923

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Cobalt(II) nitrate hexahydrate (Co)	58127	050923	0.1000	200.0	0.084	1000	10000.0	**1000.0**	**2.2**	10026-22-9	0.02 mg/m3	orl-rat 691 mg/kg	3113



Instrumental Analysis by Inductively Coupled Plasma Mass Spectroscopy (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	T	Gé	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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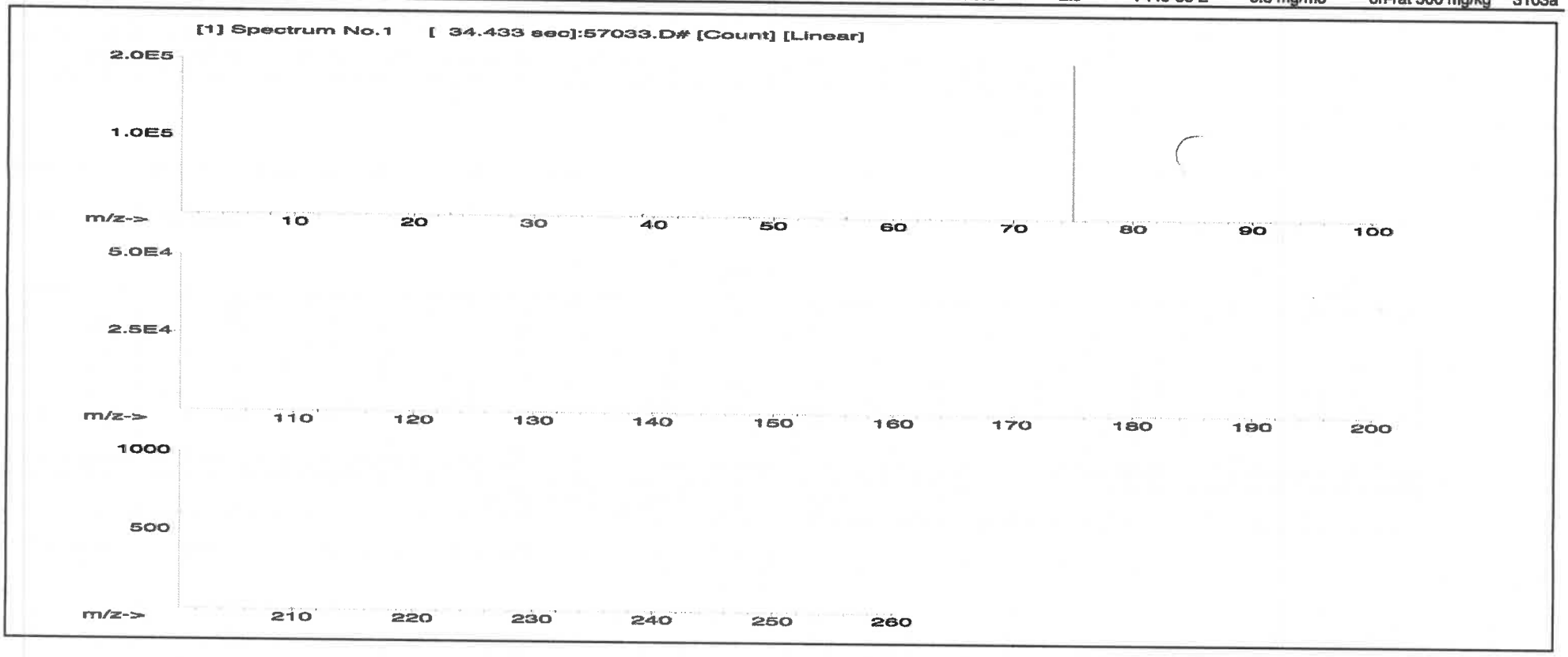
CERTIFIED **WEIGHT** REPORT:

		Lot #	Solvent:		
Part Number:	**57033**	24002546	Nitric Acid		
Lot Number:	**111323**				
Description:	**Arsenic (As)**	2.0%	80.0 (mL)	Nitric Acid	
Expiration Date:	111326				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Volume shown below was diluted to (mL):	4000.0	0.06	Flask Uncertainty		

Formulated By:	Lawrence Barry	111323
Reviewed By:	Pedro L. Rentas	111323

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Arsenic (As)	58133	020522	0.1000	400.0	0.084	1000	10001.0	**1000.0**	**2.0**	7440-38-2	0.5 mg/m3	orl-rat 500 mg/kg	3103a



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	T	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge*	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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R1 02/09/24. M58165

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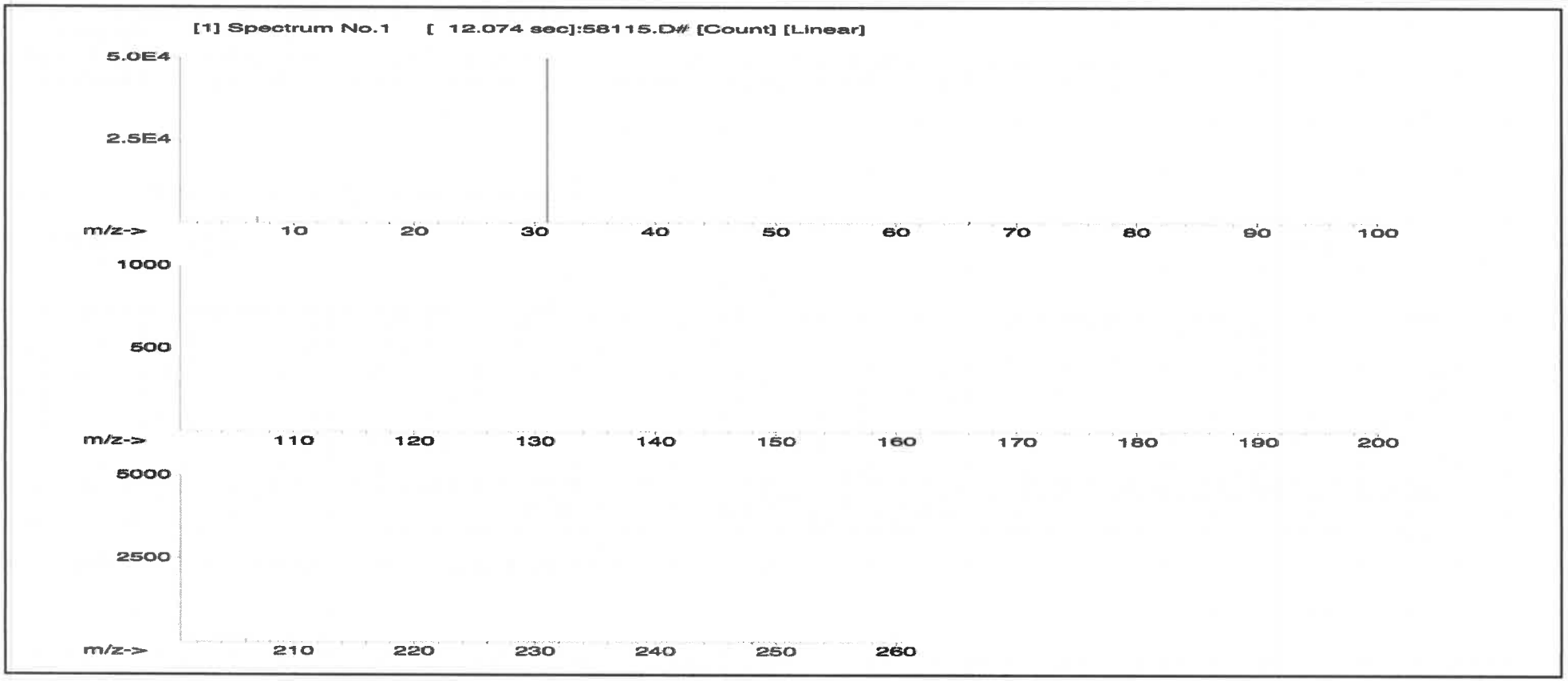
CERTIFIED WEIGHT REPORT:

			Lot #	
Part Number:	**57115**	**Solvent:**	21110221	Nitric Acid
Lot Number:	**041723**			
Description:	**Phosphorous (P)**	2%	40.0 (mL)	Nitric Acid
Expiration Date:	041726			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**10000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Weight shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty	

Formulated By:	Lawrence Barry	041723
Reviewed By:	Pedro L. Rentas	041723

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Ammonium dihydrogen phosphate (P)	IN008	PV082019A1	10000	99.999	0.10	27.5	72.7287	72.7289	**10000.0**	**20.0**	7722-76-1	5 mg/m3	orl-rat >2000mg/kg	3186



Instrumental Analysis by Inductively Coupled Plasma Mass Spectroscopy (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	T	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

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R: 02/09/24 M5816

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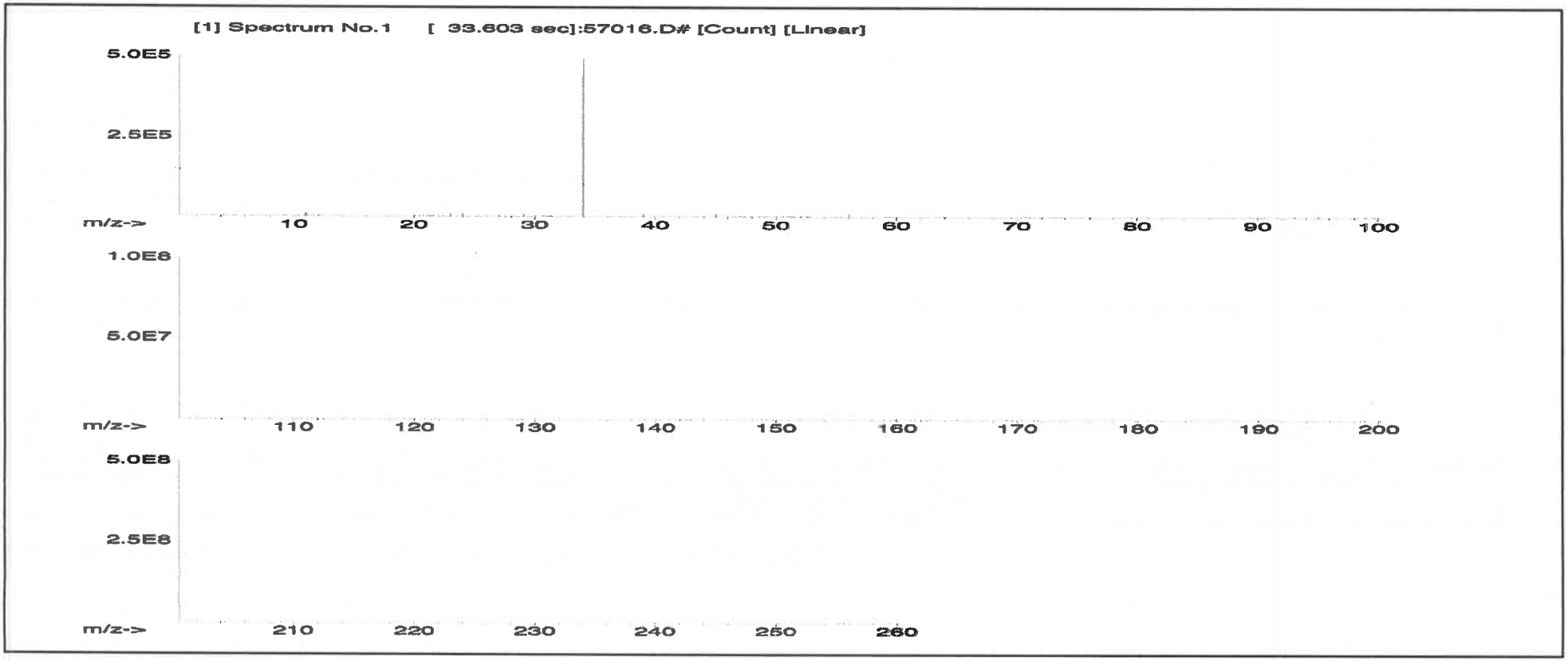
CERTIFIED WEIGHT REPORT:

Part Number:	**57016**	**Solvent:**	**Lot #** 122923	ASTM Type 1 Water
Lot Number:	**122923**			
Description:	**Sulfur (S)**			
Expiration Date:	122926			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Weight shown below was diluted to (mL):	4000.0	0.06	Flask Uncertainty	

Formulated By:	Benson Chan	122923
Reviewed By:	Pedro L. Rentas	122923

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Ammonium sulfate (S)	IN117	SLBR7225V	1000	99.9	0.10	24.3	16.4979	16.4980	**1000.0**	**2.0**	7783-20-2	NA	orl-rat 4250mg/kg	3181



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	T	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

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* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
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* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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R: 02/09/24 M5817

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CERTIFIED WEIGHT REPORT:

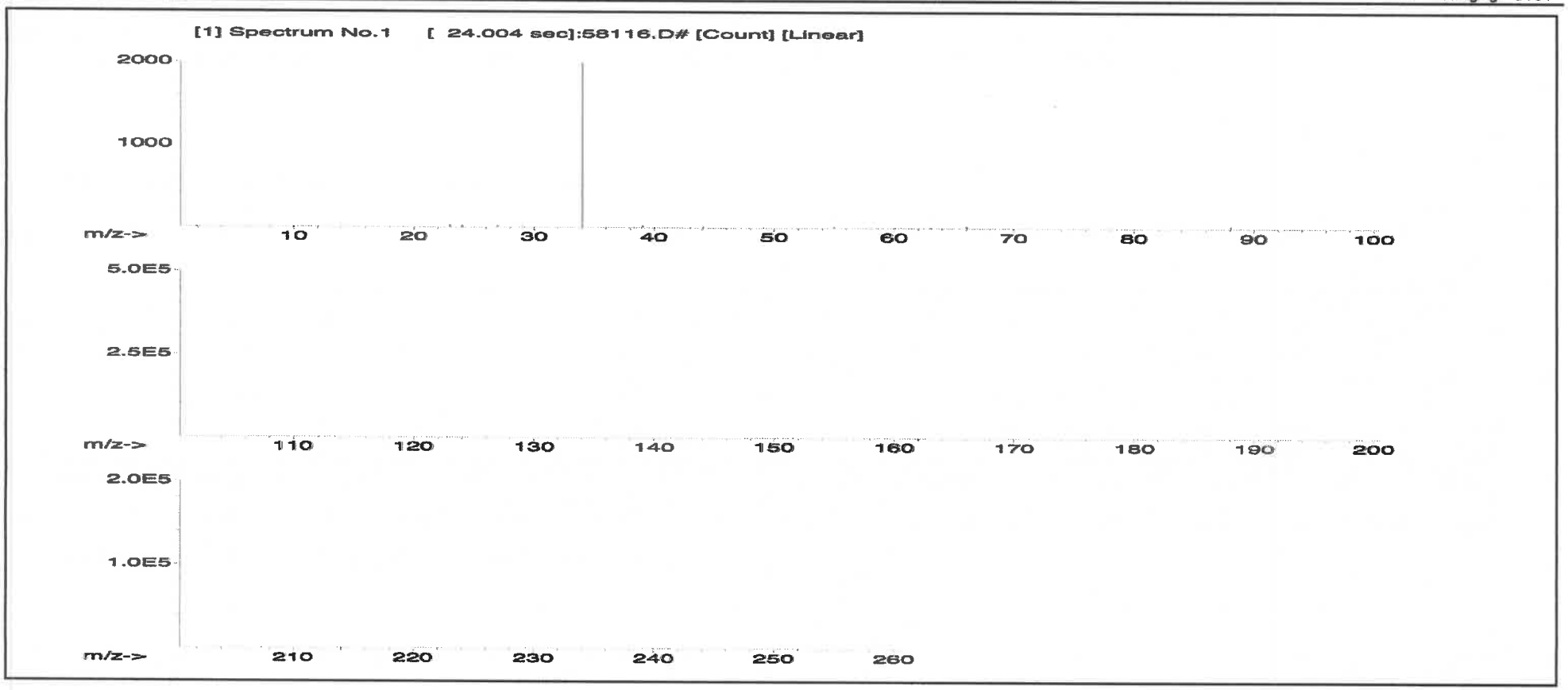
Part Number: 57116
Lot Number: 071123
Description: Sulfur (S)

Lot #
Solvent: 071123 ASTM Type 1 Water

Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB 5E-05 Balance Uncertainty
Weight shown below was diluted to (mL): 1999.48 0.058 Flask Uncertainty

Formulated By:	Lawrence Barry	071123
Reviewed By:	Pedro L. Rentas	071123

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Ammonium sulfate (S)	IN117	SLBR7225V	10000	99.9	0.10	24.3	82.4675	82.4682	**10000.1**	**20.0**	7783-20-2	NA	orl-rat 4250mg/kg	3181



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	T	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

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R: 02/09/24 M.5818

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CERTIFIED WEIGHT REPORT:

Part Number: 57014
Lot Number: 122023
Description: Silicon (Si)

Expiration Date: 122026
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 1999.48 ± 0.058 Flask Uncertainty

Solvent: 24002546 Nitric Acid

2% 40.0 (mL) Nitric Acid

5E-05 Balance Uncertainty

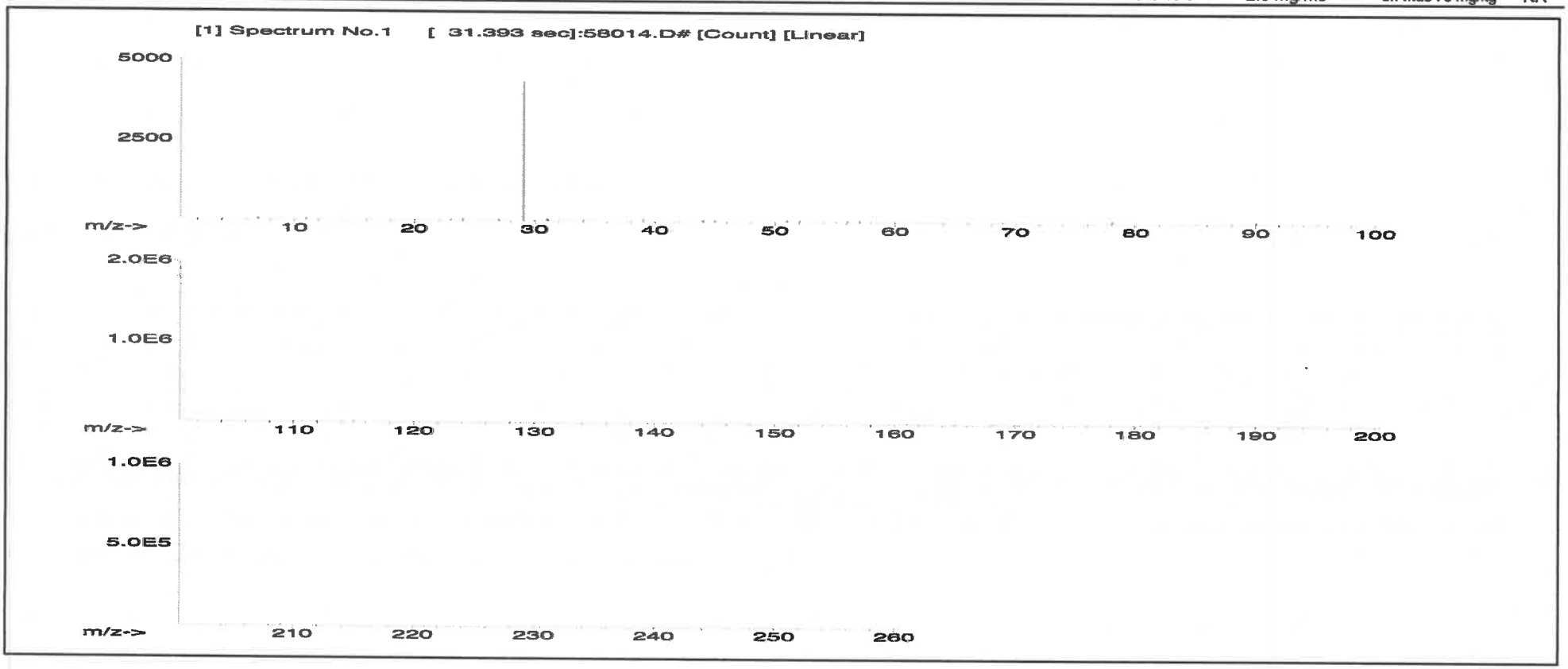
Aleah O'Brady

Formulated By: Aleah O'Brady 122023

Pedro Rentas

Reviewed By: Pedro L. Rentas 122023

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Ammonium hexafluorosilicate (Si)	IN009	SID082022A1	1000	99.999	0.10	14.4	13.8854	13.8855	**1000.0**	**2.0**	16919-19-0	2.5 mg/m3	orl-mus 70 mg/kg	NA



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	T	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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R: 02/09/24 M5819

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CERTIFIED WEIGHT REPORT:

Part Number: 58030
Lot Number: 111623
Description: Zinc (Zn)

Expiration Date: 111626
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

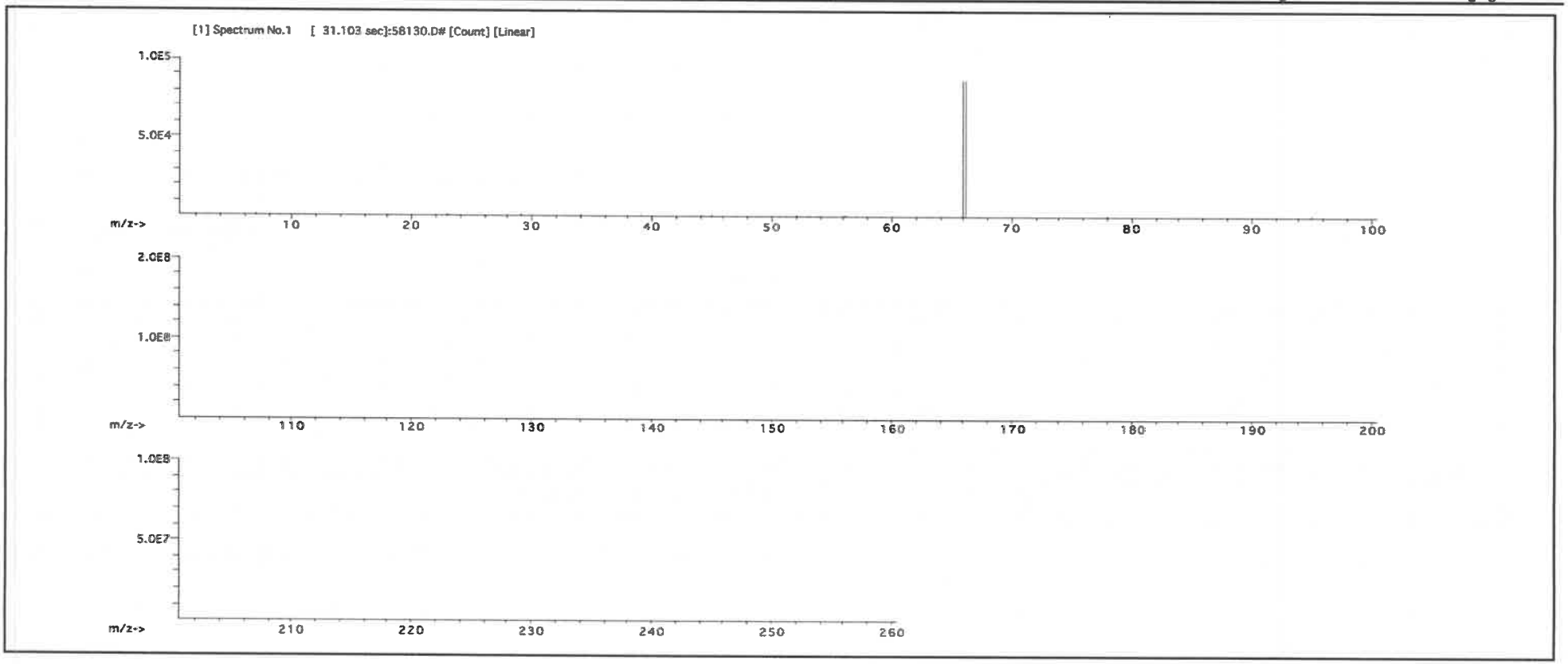
Weight shown below was diluted to (mL): 3000.4 0.06 Flask Uncertainty

		Lot #		
Solvent:	24002546	Nitric Acid		
	2%	60.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty

Formulated By:	Benson Chan	111623
Reviewed By:	Pedro L. Rentas	111623

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Zinc nitrate hexahydrate (Zn)	IN016	ZNE032021A1	1000	99.999	0.10	24.3	12.3475	12.3502	**1000.2**	**2.0**	10196-18-6	1 mg/m3	orl-rat 1190mg/kg	3168



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	T
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

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R: 02/09/24 M5820

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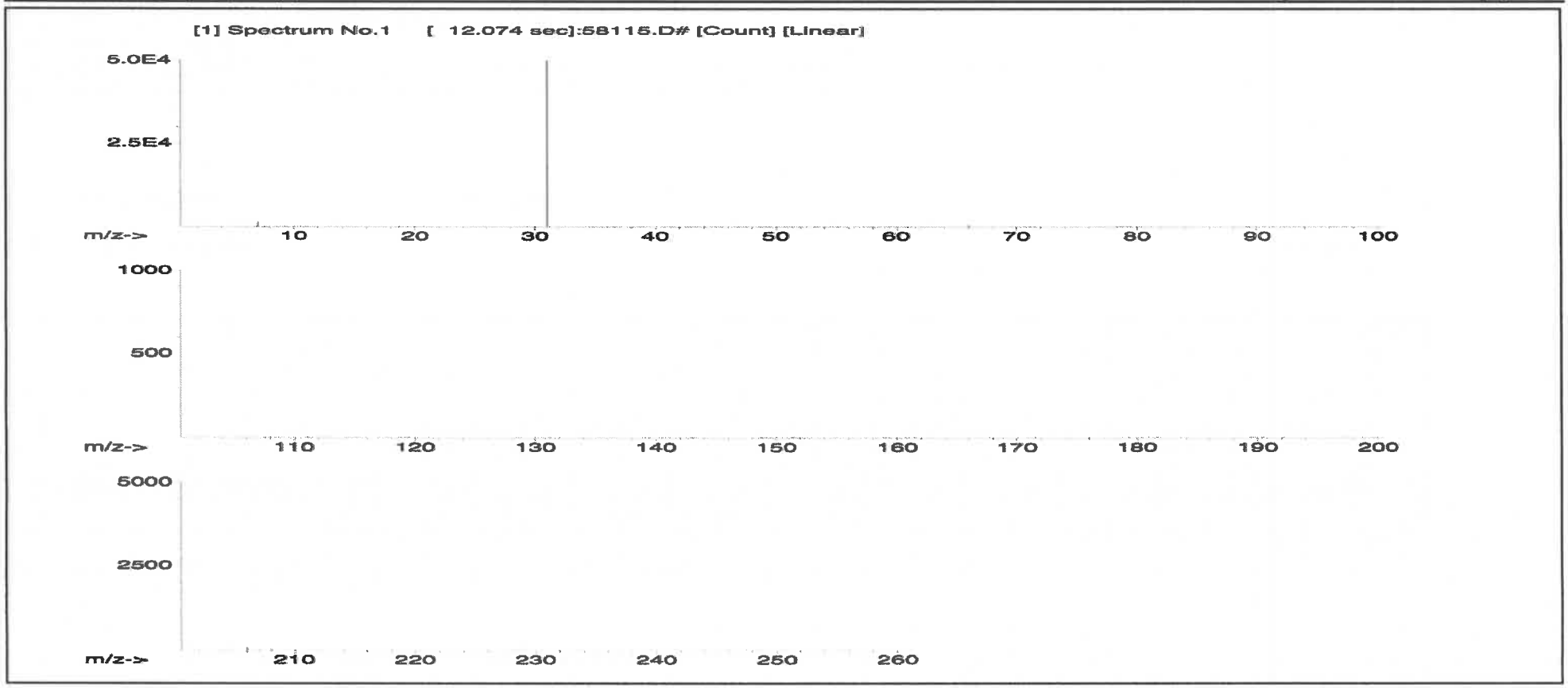
CERTIFIED WEIGHT REPORT:

Part Number:	**57015**		**Lot #**		
Lot Number:	**091123**	**Solvent:**	24002546	Nitric Acid	
Description:	**Phosphorous (P)**				
		2%	40.0 (mL)	Nitric Acid	
Expiration Date:	091126				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty		

Formulated By:	Lawrence Barry	091123
Reviewed By:	Pedro L. Rentas	091123

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Ammonium dihydrogen phosphate (P)	IN008	PV082019A1	1000	99.999	0.10	27.5	7.2729	7.2730	**1000.0**	**2.0**	7722-76-1	5 mg/m3	orl-rat >2000mg/k	3186



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	T	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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M5962 R! 06/14/24.

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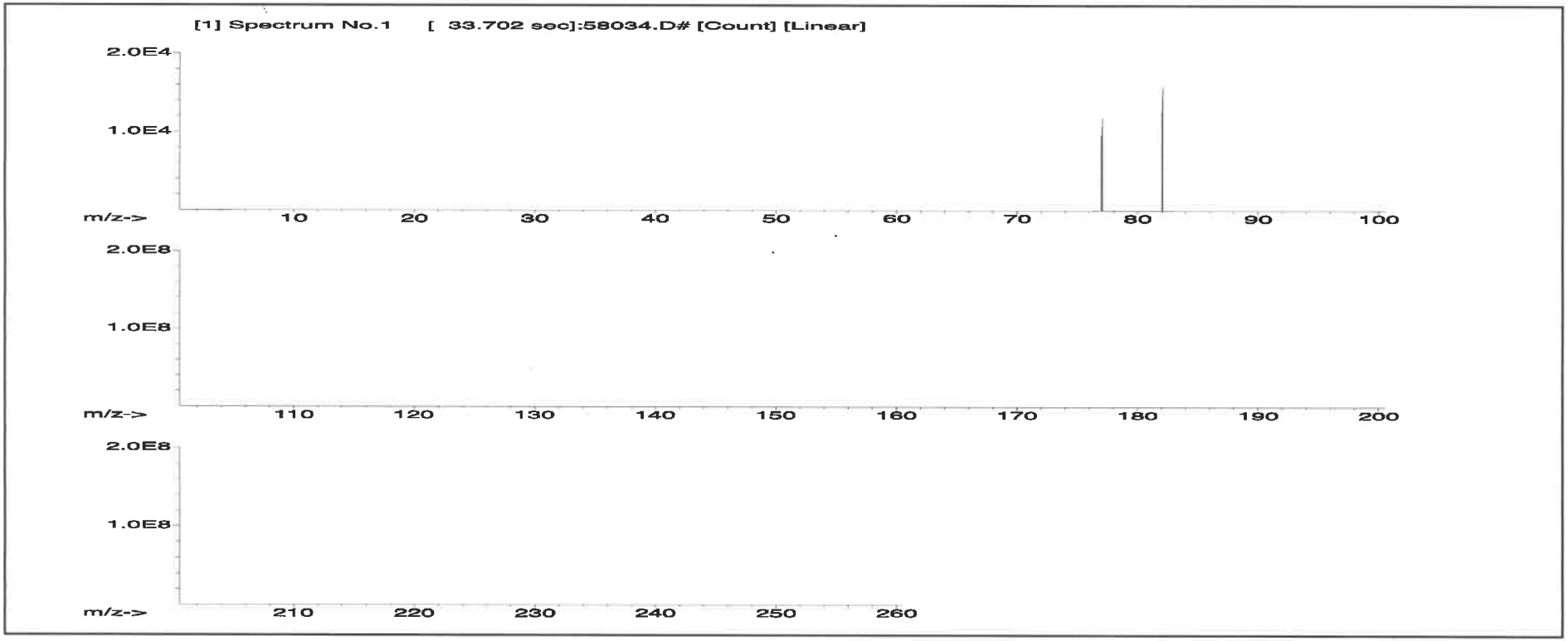
CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**57034**	24002546	Nitric Acid	
Lot Number:	**060624**			
Description:	**Selenium (Se)**			
		2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	060627			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	2000.07	0.100	Flask Uncertainty	

Formulated By:	Benson Chan	060624
Reviewed By:	Pedro L. Rentas	060624

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Selenium (Se)	58134	071223	0.1000	200.0	0.084	1000	10002.5	**1000.0**	**2.2**	7782-49-2	0.2 mg/m3	orl-rat 6700 mg/kg	3149



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																		
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	T	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

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M5970, M5971 R: 7/01/24

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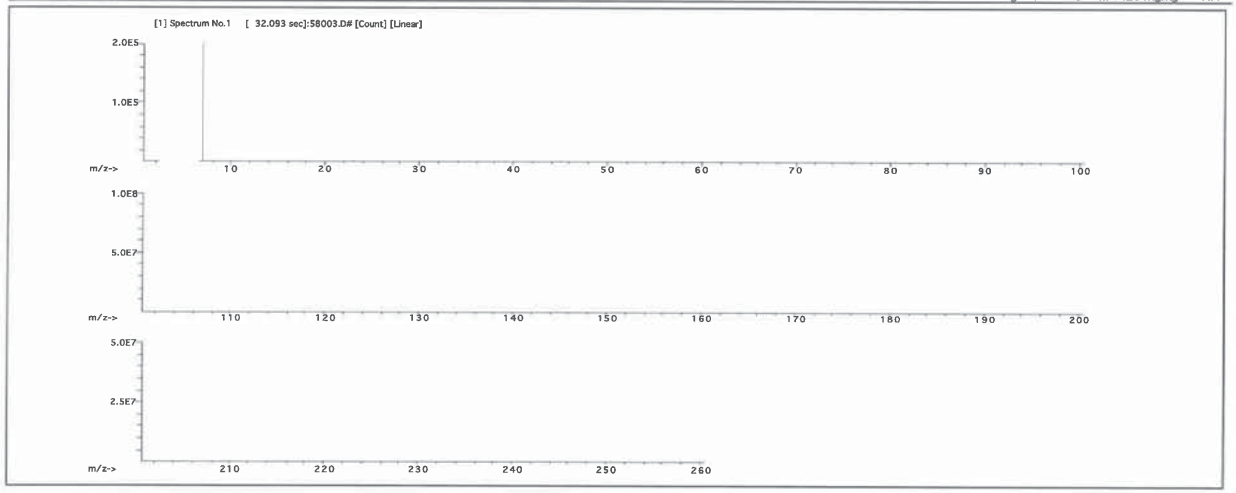
CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:
Part Number:	**57003**	24002546	Nitric Acid
Lot Number:	**062124**		
Description:	**Lithium (Li)**		
		2.0%	5.0 (mL) Nitric Acid
Expiration Date:	062127		
Recommended Storage:	Ambient (20 °C)		
Nominal Concentration (µg/mL):	**1000**		
NIST Test Number:	6UTB	5E-05 Balance Uncertainty	
Volume shown below was diluted to (mL):	250.11	0.016 Flask Uncertainty	

Giovanni Esposito
Formulated By: Giovanni Esposito 062124

Pedro Rentas
Reviewed By: Pedro L. Rentas 062124

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Lithium nitrate (Li)	58103	070622	0.1000	25.0	0.004	1000	10000.4	**1000.0**	**2.0**	7790-69-4	5 mg/m3	orl-rat 1426 mg/kg	NA



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	T	Ni	<0.02	Pr	<0.02	Sc	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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Certificate of Analysis

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGMO1
Lot Number:	T2-MO720876
Matrix:	H2O tr. NH4OH
Value / Analyte(s):	1 000 µg/mL ea: Molybdenum
Starting Material:	Ammonium Molybdate
Starting Material Lot#:	2361
Starting Material Purity:	99.9893%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 998 ± 7 µg/mL

Density: 1.000 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **998 ± 4 µg/mL**
ICP Assay NIST SRM 3134 Lot Number: 130418

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance.

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000590	M	Eu	<	0.000300	M	Na		0.000879	M	Se	<	0.008000	M	Zn		0.000598
M	Al		0.000563	M	Fe	<	0.006500	M	Nb	<	0.029000	i	Si	<		M	Zr	<	0.001800
M	As	<	0.002100	M	Ga	<	0.000300	i	Nd	<		M	Sm	<	0.000300				
M	Au	<	0.000300	M	Gd	<	0.000300	M	Ni	<	0.008000	M	Sn	<	0.008900				
M	B	<	0.003300	M	Ge	<	0.000300	M	Os	<	0.000590	M	Sr		0.000175				
M	Ba		0.001689	M	Hf	<	0.001800	i	P	<		M	Ta	<	0.004200				
M	Be	<	0.000890	M	Hg	<	0.003300	M	Pb	<	0.000300	M	Tb	<	0.000300				
M	Bi	<	0.000890	M	Ho	<	0.000300	M	Pd	<	0.001800	M	Te	<	0.021000				
O	Ca		0.006334	M	In	<	0.032000	M	Pr	<	0.013000	M	Th	<	0.000300				
O	Cd	<	0.026000	M	Ir	<	0.000300	M	Pt	<	0.000300	O	Tl	<	0.032000				
M	Ce	<	0.008300	M	K		0.130213	M	Rb		0.004575	M	Tl		0.001266				
M	Co		0.000598	M	La	<	0.000300	M	Re	<	0.000300	M	Tm	<	0.000300				
M	Cr		0.000527	O	Li		0.000059	M	Rh	<	0.000300	M	U	<	0.005300				
M	Cs		0.000527	M	Lu	<	0.000300	M	Ru	<	0.079000	M	V	<	0.000890				
M	Cu		0.002252	M	Mg		0.000563	i	S	<		M	W		0.087982				
M	Dy	<	0.000300	M	Mn	<	0.005900	M	Sb		0.001513	M	Y	<	0.000300				
M	Er	<	0.000300	s	Mo	<		M	Sc	<	0.001200	M	Yb	<	0.000300				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 95.94 +6 6,7,8,9 [MoO4]-2(chemical form as received)

Chemical Compatibility -Mo is received in a NH4OH matrix giving the operator the option of using HCl or HF to stabilize acidic solutions. The [MoO4]-2 is soluble in concentrated HCl [MoOCl5]-2, dilute HF / HNO3 [MoOF5]-2 and basic media [MoO4]-2. Stable at ppm levels with some metals provided it is fluorinated. Do not mix with Alkaline or Rare Earths when HF is present. Stable with most inorganic anions provided it is in the [MoO4]-2 chemical form.

Stability - 2-100 ppb levels stable (alone or mixed with all other metals that are at comparable levels) as the [MoOF5]-2 for months in 1% HNO3 / LDPE container. 1-10,000 ppm single element solutions as the [MoO4]-2 chemically stable for years in 1% NH4OH in a LDPE container.

Mo Containing Samples (Preparation and Solution) -Metal (Soluble in HF / HNO3 or hot dilute HCl); Oxide (soluble in HF or NH4OH) ; Organic Matrices (Dry ash at 450EC in Pt0 and dissolve oxide with HF or HCl).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 95 amu	3 ppt	n/a	40Ar39K16O,79Br1 6O,190Os2+,190Pt 2+
ICP-OES 202.030 nm	0.008 / 0.0002 µg/mL	1	Os, Hf
ICP-OES 203.844 nm	0.012 / 0.002 µg/mL	1	
ICP-OES 204.598 nm	0.012 / 0.001 µg/mL	1	Ir, Ta

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

July 17, 2022

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- July 17, 2027

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Supervisor, Product Documentation

Certificate Approved By:

Michael Booth
Director, Technical

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

M5978, M5979

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01 ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGTI1
Lot Number:	T2-TI719972
Matrix:	2% (v/v) HNO_3 tr. HF
Value / Analyte(s):	1 000 µg/mL ea: Titanium
Starting Material:	Ti Metal
Starting Material Lot#:	2094
Starting Material Purity:	99.9975%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1002 ± 5 µg/mL

Density: 1.012 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **1002 ± 4 µg/mL**
ICP Assay NIST SRM 3162a Lot Number: 130925

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance

$w_i = (1/u_{char\ i}^2) / (\Sigma(1/u_{char\ i}^2))$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\ (u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma(w_i)^2\ (u_{char\ i})^2]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\ (u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000536	M	Eu	<	0.000268	O	Na	<	0.032670	M	Se		0.001204	O	Zn	<	0.003267
O	Al		0.000872	O	Fe		0.003225	O	Nb	<	0.043560	O	Si		0.004735	O	Zr	<	0.043560
M	As	<	0.008586	M	Ga	<	0.000268	M	Nd	<	0.000268	M	Sm	<	0.000268				
M	Au	<	0.004577	M	Gd	<	0.000268	O	Ni	<	0.010890	M	Sn		0.000096				
O	B	<	0.008929	M	Ge	<	0.002146	M	Os	<	0.000269	O	Sr		0.000096				
M	Ba	<	0.002683	M	Hf		0.002161	O	P	<	0.054450	M	Ta		0.010560				
M	Be	<	0.005366	M	Hg	<	0.003231	M	Pb	<	0.001073	M	Tb	<	0.000268				
M	Bi	<	0.001609	M	Ho	<	0.000268	M	Pd	<	0.000268	M	Te	<	0.001341				
O	Ca		0.000676	M	In	<	0.002683	M	Pr	<	0.000268	M	Th	<	0.053663				
M	Cd	<	0.000268	M	Ir	<	0.000269	M	Pt	<	0.000536	s	Ti	<					
M	Ce	<	0.000268	M	K		0.001172	M	Rb	<	0.000268	M	Tl	<	0.000268				
M	Co	<	0.004293	M	La	<	0.000268	M	Re	<	0.000268	M	Tm	<	0.000268				
M	Cr		0.000752	O	Li	<	0.027225	M	Rh	<	0.000268	M	U	<	0.000268				
M	Cs	<	0.000268	M	Lu	<	0.000268	M	Ru	<	0.000269	M	V	<	0.019855				
O	Cu	<	0.010890	O	Mg	<	0.005445	i	S	<		M	W		0.000473				
M	Dy	<	0.000268	O	Mn	<	0.003267	M	Sb	<	0.006976	M	Y	<	0.002146				
M	Er	<	0.000268	M	Mo		0.000774	O	Sc	<	0.004900	M	Yb	<	0.000536				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 47.87 +4 6 Ti(F)6-2

Chemical Compatibility - Soluble in concentrated HCl, HF, H3PO4 H2SO4 and HNO3. Avoid neutral to basic media. Unstable at ppm levels with metals that would pull F- away (i.e. Do not mix with Alkaline or Rare Earths or high levels of transition elements unless they are fluorinated). Stable with most inorganic anions with a tendency to hydrolyze forming the hydrated oxide in all dilute acids except HF.

Stability - 2-100 ppb levels stable (Alone or mixed with all other metals) as the Ti(F)6-2 for months in 1% HNO3 / LDPE container. 1-10,000 ppm single element solutions as the Ti(F)6-2 chemically stable for years in 2-5% HNO3 / trace HF in an LDPE container.

Ti Containing Samples (Preparation and Solution) - Metal (Soluble in H2O / HF caution -powder reacts violently); Oxide - low temperature history anatase or rutile (Dissolved by heating in 1:1:1 H2O / HF / H2SO4); Oxide - high temperature history (~800EC) brookite (fuse in Pt0 with K2S2O7); Ores (fuse in Pt0 with KF + K2S2O7 - no KF if silica not present); Organic Matrices (Dry ash at 450EC in Pt0 and dissolve by heating with 1:1:1 H2O / HF / H2SO4 or fuse ash with pyrosulfate if oxide is as plastic pigment and likely in brookite crystalline form).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 48 amu	14 ppt	N/A	32S16O, 32S14N, 14N16O18O, 14N17N2, 36Ar12C, 48Ca, [96X=2 (where X = Zr, Mo, Ru)]
ICP-OES 323.452 nm	0.0054 / 0.00092 µg/mL	1	Ce, Ar, Ni
ICP-OES 334.941 nm	0.0038 / 0.000028 µg/mL	1	Nb, Ta, Cr, U
ICP-OES 336.121 nm	0.0053 / 0.000034 µg/mL	1	W, Mo, Co

HF Note: This standard should not be prepared or stored in glass.

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

June 17, 2022

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- June 17, 2027

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Certified Reference Material CRM

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

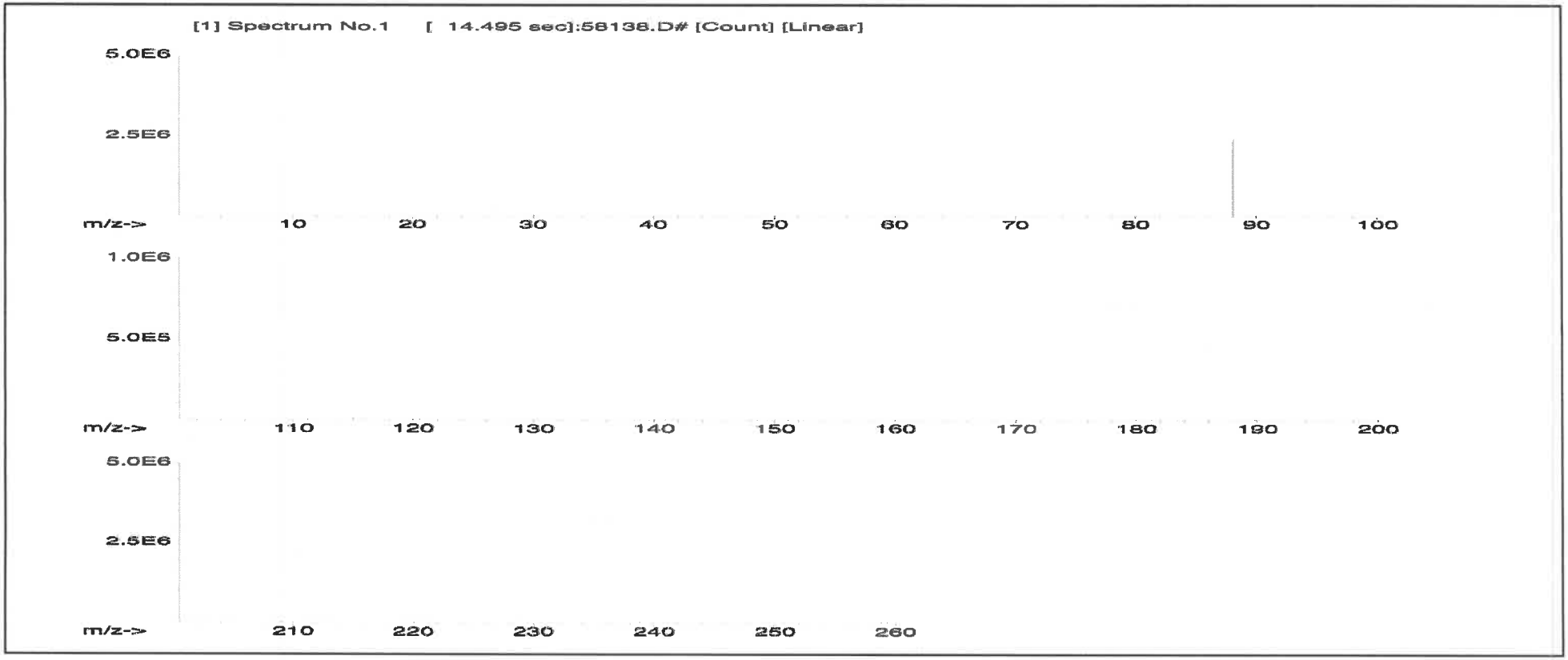
45982 R: 6/11/24

CERTIFIED WEIGHT REPORT:

Part Number:	**57038**		**Lot #**		
Lot Number:	**031524**	**Solvent:**	24002546	Nitric Acid	
Description:	**Strontium (Sr)**				
		2%	40.0 (mL)	Nitric Acid	
Expiration Date:	031527				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	2000.07	0.100	Flask Uncertainty		

Formulated By:	Benson Chan	031524
Reviewed By:	Pedro L. Rentas	031524

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Strontium nitrate (Sr)	IN017	SRZ022018A1	1000	99.997	0.10	41.2	4.85470	4.85502	**1000.1**	**2.0**	10042-76-9	NA	orl-rat >2000mg/kg	3153a



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	T	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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Certificate of Analysis

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGY10
Lot Number:	V2-Y740548
Matrix:	2% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Yttrium
Starting Material:	Yttrium Oxide
Starting Material Lot#:	2661 and 06230520YL
Starting Material Purity:	99.9984%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10000 ± 30 µg/mL

Density: 1.032 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	**10011 ± 25 µg/mL** EDTA NIST SRM 928 Lot Number: 928
Assay Method #2	**9997 ± 50 µg/mL** ICP Assay NIST SRM 3167a Lot Number: 190730
Assay Method #3	**9984 ± 31 µg/mL** Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\ (u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\ (u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.004600	M	Eu		0.009037	M	Na		0.086360	M	Se	<	0.005200	M	Zn		0.030125
M	Al		0.014862	O	Fe		0.002410	M	Nb	<	0.000570	O	Si		0.024100	O	Zr	<	0.002600
M	As	<	0.003500	M	Ga	<	0.000570	M	Nd		0.000923	M	Sm		0.000461				
M	Au	<	0.001700	M	Gd	<	0.003500	M	Ni	<	0.005700	M	Sn	<	0.002300				
O	B		0.002209	M	Ge	<	0.005200	M	Os	<	0.001200	M	Sr	<	0.004600				
O	Ba	<	0.002500	M	Hf	<	0.000570	n	P	<		M	Ta	<	0.000570				
O	Be	<	0.001400	M	Hg	<	0.000570	M	Pb		0.005020	M	Tb		0.001044				
M	Bi	<	0.003500	M	Ho		0.009037	M	Pd	<	0.005100	M	Te	<	0.002300				
O	Ca		0.009841	M	In	<	0.002300	M	Pr	<	0.002300	M	Th	<	0.000570				
M	Cd	<	0.000570	M	Ir	<	0.000570	M	Pt	<	0.000570	M	Ti	<	0.003500				
M	Ce	<	0.002300	O	K		0.018677	M	Rb	<	0.000570	M	Tl	<	0.000570				
M	Co	<	0.000570	M	La		0.000461	M	Re	<	0.000570	M	Tm	<	0.003500				
M	Cr	<	0.004000	O	Li	<	0.009300	M	Rh	<	0.008000	M	U	<	0.000570				
M	Cs	<	0.000570	M	Lu		0.000582	M	Ru	<	0.000570	M	V		0.001265				
M	Cu		0.002610	O	Mg		0.001486	n	S	<		M	W	<	0.002300				
M	Dy		0.003815	M	Mn		0.000582	M	Sb		0.005422	s	Y	<					
M	Er		0.003615	M	Mo	<	0.005700	M	Sc	<	0.001200	M	Yb		0.001827				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, https://www.inorganicventures.com/terms-and-conditions-sale. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 88.91 +3 6 Y(OH)(H2O)x+2

Chemical Compatibility -Soluble in HCl, H2SO4 and HNO3. Avoid HF, H3PO4 and neutral to basic media. Stable with most metals and inorganic anions forming an insoluble carbonate, oxide, oxalate, and fluoride. Avoid mixing with elements / solutions containing moderate amounts of fluoride.

Stability - 2-100 ppb levels stable for months in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 2-5% HNO3 / LDPE container.

Y Containing Samples (Preparation and Solution) - Metal (Soluble in acids); Oxide (Dissolve by heating in H2O/ HNO3); Ores (Carbonate fusion in Pt0 followed by HCl dissolution); Organic Matrices (Dry ash and dissolve in 1:1 H2O / HCl or HNO3).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 89 amu	0.8 ppt	N/A	73Ge16O, 178Hf+2
ICP-OES 360.073 nm	0.005 / 0.000036 µg/mL	1	Ce, Th
ICP-OES 371.030 nm	0.004 / 0.00007 µg/mL	1	Ce
ICP-OES 377.433 nm	0.005 / 0.0009 µg/mL	1	Ta, Th

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

February 20, 2024

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- February 20, 2029

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Custom Processing Supervisor

Certificate Approved By:

Muzzammil Khan
Stock Laboratory Supervisor

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 863.01
ACCREDITED Reference Material Producer Certificate 863.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGIN10
Lot Number:	U2-IN729349
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Indium
Starting Material:	Indium Metal
Starting Material Lot#:	2511
Starting Material Purity:	99.9995%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10022 ± 30 µg/mL

Density: 1.044 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	**10021 ± 56 µg/mL** ICP Assay NIST SRM 3124a Lot Number: 110516
Assay Method #2	**10035 ± 25 µg/mL** EDTA NIST SRM 928 Lot Number: 928
Assay Method #3	**10001 ± 33 µg/mL** Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\ (u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\ (u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000760	M	Eu	<	0.000760	O	Na		0.012771	M	Se	<	0.023000	M	Zn	<	0.006100
M	Al		0.003385	O	Fe		0.004462	M	Nb	<	0.000760	O	Si		0.024619	M	Zr	<	0.000760
M	As	<	0.004600	M	Ga	<	0.000760	M	Nd	<	0.000760	M	Sm	<	0.000760				
M	Au	<	0.002300	M	Gd	<	0.000760	O	Ni	<	0.005100	M	Sn	<	0.000760				
O	B		0.003692	M	Ge	<	0.001600	M	Os	<	0.000760	O	Sr	<	0.000610				
M	Ba	<	0.001600	M	Hf	<	0.000760	n	P	<		M	Ta	<	0.000760				
O	Be	<	0.000130	M	Hg	<	0.003100	M	Pb		0.001400	M	Tb	<	0.000760				
M	Bi	<	0.000760	M	Ho	<	0.000760	M	Pd	<	0.001600	M	Te	<	0.000760				
O	Ca		0.004616	s	In	<		M	Pr	<	0.000760	M	Th	<	0.000760				
M	Cd	<	0.000760	M	Ir	<	0.000760	M	Pt	<	0.000760	O	Ti	<	0.001100				
M	Ce	<	0.000760	O	K		0.007078	M	Rb	<	0.000760	M	Tl	<	0.000760				
M	Co	<	0.000760	M	La	<	0.000760	M	Re	<	0.000760	M	Tm	<	0.000760				
O	Cr	<	0.001300	O	Li	<	0.000130	M	Rh	<	0.000760	M	U	<	0.000760				
M	Cs	<	0.000760	M	Lu	<	0.000760	M	Ru	<	0.000760	M	V	<	0.001600				
M	Cu	<	0.003800	O	Mg		0.000707	n	S	<		M	W	<	0.001600				
M	Dy	<	0.000760	O	Mn		0.000149	M	Sb	<	0.000760	M	Y	<	0.000760				
M	Er	<	0.000760	M	Mo	<	0.002300	M	Sc	<	0.000760	M	Yb	<	0.000760				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, https://www.inorganicventures.com/terms-and-conditions-sale. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 114.82 +3 6 In(H2O)6+3

Chemical Compatibility -Soluble in HCl, HNO3, and H2SO4. Avoid neutral and basic media. Stable with most metals and inorganic anions. The oxalate, sulfide, carbonate, hydroxide and phosphate are insoluble in water.

Stability - 2-100 ppb levels stable for months in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 2-5% HNO3 / LDPE container.

In Containing Samples (Preparation and Solution) -Metal (Best dissolved in HCl / HNO3); Oxide (Soluble in mineral acids); Ores (Carbonate fusion in Pt0 followed by HCl dissolution); Organic Matrices (Sulfuric/peroxide digestion or dry ash and dissolution in dilute HCl).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 115 amu	1 ppt	n/a	115Sn, 99Ru16O
ICP-OES 158.583 nm	0.05 / 0.002 µg/mL	1	
ICP-OES 230.606 nm	0.1 / 0.03 µg/mL	1	Ni, Os
ICP-OES 325.609 nm	0.2 / 0.05 µg/mL	1	Mn, Mo, Th

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

February 21, 2023

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- February 21, 2028

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

Absolute Standards, Inc.
800-368-1131
www.absolutestandards.com

Certified Reference Material CRM

R: 01/03/24 M6033

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

CERTIFIED WEIGHT REPORT:

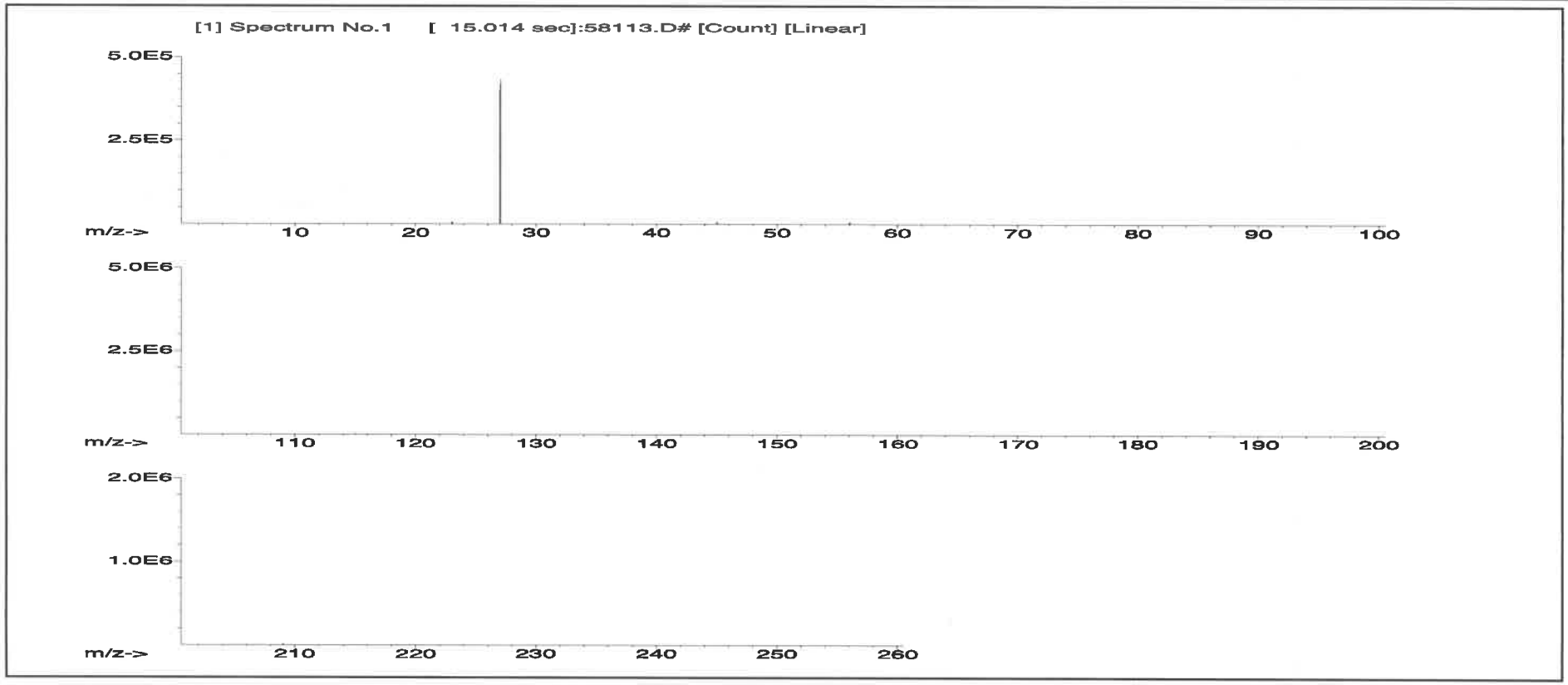
Part Number:	**58113**		**Solvent:**	20510011	Nitric Acid
Lot Number:	**011623**				
Description:	**Aluminum (Al)**				
			2%	40.0 (mL)	Nitric Acid
Expiration Date:	011626				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**10000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty		

Lot #

Giovanni Esposito

Formulated By:	Giovanni Esposito	011623
Reviewed By:	Pedro L. Rentas	011623

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Aluminum nitrate nonahydrate (Al)	IN022	ALM112021A1	10000	99.999	0.10	7.30	273.9779	274.0078	**10001.1**	**20.0**	7784-27-2	2 mg/m3	orl-rat 3671 mg/kg	3101a



Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis

M6109
M6110
M6111

Received date 9/29/24 Met dig.

avantor™ | J.T.Baker®

Material No.: 9530-33
Batch No.: 22F0762009
Manufactured Date: 2022-05-10
Retest Date: 2027-05-09
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
ACS – Assay (as HCl) (by acid-base titrn)	36.5 – 38.0 %	37.6 %
ACS – Color (APHA)	≤ 10	5
ACS – Residue after Ignition	≤ 3 ppm	< 1 ppm
ACS – Specific Gravity at 60°/60°F	1.185 – 1.192	1.190
ACS – Bromide (Br)	≤ 0.005 %	< 0.005 %
ACS – Extractable Organic Substances	≤ 5 ppm	< 1 ppm
ACS – Free Chlorine (as Cl_2)	≤ 0.5 ppm	< 0.5 ppm
Phosphate (PO_4)	≤ 0.05 ppm	< 0.03 ppm
Sulfate (SO_4)	≤ 0.5 ppm	< 0.3 ppm
Sulfite (SO_3)	≤ 0.8 ppm	0.3 ppm
Ammonium (NH_4)	≤ 3 ppm	< 1 ppm
Trace Impurities – Arsenic (As)	≤ 0.010 ppm	< 0.003 ppm
Trace Impurities – Aluminum (Al)	≤ 10.0 ppb	0.8 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 3.0 ppb
Trace Impurities – Barium (Ba)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Beryllium (Be)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Bismuth (Bi)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Boron (B)	≤ 20.0 ppb	< 5.0 ppb
Trace Impurities – Cadmium (Cd)	≤ 1.0 ppb	< 0.3 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	14.9 ppb
Trace Impurities – Chromium (Cr)	≤ 1.0 ppb	< 0.4 ppb
Trace Impurities – Cobalt (Co)	≤ 1.0 ppb	< 0.3 ppb
Trace Impurities – Copper (Cu)	≤ 1.0 ppb	< 0.1 ppb
Trace Impurities – Gallium (Ga)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities – Germanium (Ge)	≤ 3.0 ppb	< 2.0 ppb
Trace Impurities – Gold (Au)	≤ 4.0 ppb	0.2 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities – Iron (Fe)	≤ 15 ppb	6 ppb

>>> Continued on page 2 >>>

Hydrochloric Acid, 36.5-38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis

avantor™ | J.T.Baker®

Material No.: 9530-33
Batch No.: 22F0762009

Test	Specification	Result
Trace Impurities - Lead (Pb)	≤ 1.0 ppb	< 0.5 ppb
Trace Impurities - Lithium (Li)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities - Magnesium (Mg)	≤ 10.0 ppb	0.8 ppb
Trace Impurities - Manganese (Mn)	≤ 1.0 ppb	< 0.4 ppb
Trace Impurities - Mercury (Hg)	≤ 0.5 ppb	0.1 ppb
Trace Impurities - Molybdenum (Mo)	≤ 10.0 ppb	< 3.0 ppb
Trace Impurities - Nickel (Ni)	≤ 4.0 ppb	< 0.3 ppb
Trace Impurities - Niobium (Nb)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities - Potassium (K)	≤ 9.0 ppb	< 2.0 ppb
Trace Impurities - Selenium (Se), For Information Only		< 1.0 ppb
Trace Impurities - Silicon (Si)	≤ 100.0 ppb	1.0 ppb
Trace Impurities - Silver (Ag)	≤ 1.0 ppb	< 0.3 ppb
Trace Impurities - Sodium (Na)	≤ 100.0 ppb	0.7 ppb
Trace Impurities - Strontium (Sr)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities - Tantalum (Ta)	≤ 1.0 ppb	< 0.9 ppb
Trace Impurities - Thallium (Tl)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities - Tin (Sn)	≤ 5.0 ppb	< 0.8 ppb
Trace Impurities - Titanium (Ti)	≤ 1.0 ppb	0.2 ppb
Trace Impurities - Vanadium (V)	≤ 1.0 ppb	< 0.2 ppb
Trace Impurities - Zinc (Zn)	≤ 5.0 ppb	0.8 ppb
Trace Impurities - Zirconium (Zr)	≤ 1.0 ppb	< 0.1 ppb

>>> Continued on page 3 >>>

Hydrochloric Acid, 36.5–38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis

avantor™ | J.T.Baker®

Material No.: 9530-33
Batch No.: 22F0762009

Test	Specification	Result

For Laboratory,Research,or Manufacturing Use
Product Information (not specifications):
Appearance (clear, fuming liquid)
Meets ACS Specifications
Storage Condition: Store below 25 °C.

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

James T Ethier

Jamie Ethier
Vice President Global Quality

Nitric Acid 69%
CMOS

M6112
M6113
M6114
M6115
M6116
M6117

Receive:
9/29/24
Met dig

avantor™ | J.T.Baker®

Material No.: 9606-03
Batch No.: 24B1362001
Manufactured Date: 2024-01-25
Retest Date: 2029-01-23
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay (HNO_3)	69.0 - 70.0 %	69.6 %
Appearance	Passes Test	Passes Test
Color (APHA)	≤ 10	5
Residue after Ignition	≤ 2 ppm	< 1 ppm
Chloride (Cl)	≤ 0.08 ppm	< 0.03 ppm
Phosphate (PO_4)	≤ 0.10 ppm	< 0.03 ppm
Sulfate (SO_4)	≤ 0.2 ppm	< 0.2 ppm
Trace Impurities - Aluminum (Al)	≤ 40.0 ppb	< 1.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities - Barium (Ba)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Beryllium (Be)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Bismuth (Bi)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Boron (B)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities - Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities - Calcium (Ca)	≤ 50.0 ppb	< 0.2 ppb
Trace Impurities - Chromium (Cr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities - Cobalt (Co)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Copper (Cu)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Gallium (Ga)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Germanium (Ge)	≤ 20 ppb	< 10 ppb
Trace Impurities - Gold (Au)	≤ 20 ppb	< 5 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities - Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities - Lead (Pb)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Lithium (Li)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Magnesium (Mg)	≤ 20 ppb	< 1 ppb
Trace Impurities - Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Nickel (Ni)	≤ 20.0 ppb	< 5.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

Material No.: 9606-03
Batch No.: 24B1362001

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	< 10 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	< 10 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 5.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.5 µm and greater	≤ 60 par/ml	3 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	1 par/ml

>>> Continued on page 3 >>>

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

Material No.: 9606-03
Batch No.: 24B1362001

Test	Specification	Result

For Microelectronic Use

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

Ken Koehnlein
Sr. Manager, Quality Assurance

Nitric Acid 69%
CMOS

M6112
M6113
M6114
M6115
M6116
M6117

Receive:
9/29/24
Met dig

avantor™ | J.T.Baker®

Material No.: 9606-03
Batch No.: 24B1362001
Manufactured Date: 2024-01-25
Retest Date: 2029-01-23
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay (HNO_3)	69.0 - 70.0 %	69.6 %
Appearance	Passes Test	Passes Test
Color (APHA)	≤ 10	5
Residue after Ignition	≤ 2 ppm	< 1 ppm
Chloride (Cl)	≤ 0.08 ppm	< 0.03 ppm
Phosphate (PO_4)	≤ 0.10 ppm	< 0.03 ppm
Sulfate (SO_4)	≤ 0.2 ppm	< 0.2 ppm
Trace Impurities - Aluminum (Al)	≤ 40.0 ppb	< 1.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities - Barium (Ba)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Beryllium (Be)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Bismuth (Bi)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Boron (B)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities - Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities - Calcium (Ca)	≤ 50.0 ppb	< 0.2 ppb
Trace Impurities - Chromium (Cr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities - Cobalt (Co)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Copper (Cu)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Gallium (Ga)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Germanium (Ge)	≤ 20 ppb	< 10 ppb
Trace Impurities - Gold (Au)	≤ 20 ppb	< 5 ppb
Heavy Metals (as Pb)	≤ 100 ppb	< 50 ppb
Trace Impurities - Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities - Lead (Pb)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Lithium (Li)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Magnesium (Mg)	≤ 20 ppb	< 1 ppb
Trace Impurities - Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Nickel (Ni)	≤ 20.0 ppb	< 5.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

Material No.: 9606-03
Batch No.: 24B1362001

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	< 10 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	< 10 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 5.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.5 µm and greater	≤ 60 par/ml	3 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	1 par/ml

>>> Continued on page 3 >>>

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

Material No.: 9606-03
Batch No.: 24B1362001

Test	Specification	Result

For Microelectronic Use

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

Ken Koehnlein
Sr. Manager, Quality Assurance

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

R:- 10|22|24

MG124

Material No.: 9606-03
Batch No.: 24D1062002
Manufactured Date: 2024-03-26
Retest Date: 2029-03-25
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay (HNO_3)	69.0 - 70.0 %	69.7 %
Appearance	Passes Test	Passes Test
Color (APHA)	≤ 10	5
Residue after Ignition	≤ 2 ppm	1 ppm
Chloride (Cl)	≤ 0.08 ppm	< 0.03 ppm
Phosphate (PO_4)	≤ 0.10 ppm	< 0.03 ppm
Sulfate (SO_4)	≤ 0.2 ppm	< 0.2 ppm
Trace Impurities - Aluminum (Al)	≤ 40.0 ppb	< 1.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities - Barium (Ba)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Beryllium (Be)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Bismuth (Bi)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Boron (B)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities - Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities - Calcium (Ca)	≤ 50.0 ppb	2.3 ppb
Trace Impurities - Chromium (Cr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities - Cobalt (Co)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Copper (Cu)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Gallium (Ga)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Germanium (Ge)	≤ 20 ppb	< 10 ppb
Trace Impurities - Gold (Au)	≤ 20 ppb	< 5 ppb
Heavy Metals (as Pb)	≤ 100 ppb	100 ppb
Trace Impurities - Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities - Lead (Pb)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Lithium (Li)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Magnesium (Mg)	≤ 20 ppb	< 1 ppb
Trace Impurities - Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Nickel (Ni)	≤ 20.0 ppb	< 5.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
Trace Impurities - Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities - Potassium (K)	≤ 50 ppb	16 ppb
Trace Impurities - Silicon (Si)	≤ 50 ppb	< 10 ppb
Trace Impurities - Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities - Sodium (Na)	≤ 150.0 ppb	< 5.0 ppb
Trace Impurities - Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities - Tantalum (Ta)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities - Thallium (Tl)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities - Tin (Sn)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities - Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities - Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities - Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count - 0.5 µm and greater	≤ 60 par/ml	10 par/ml
Particle Count - 1.0 µm and greater	≤ 10 par/ml	3 par/ml

>>> Continued on page 3 >>>

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result

For Microelectronic Use

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

Jamie Croak
Director Quality Operations, Bioscience Production

M6125 Receive -> 11/22/24

CORCO CHEMICAL CORPORATION

Manufacturers of ACS Reagents and Semiconductor Grade Chemicals

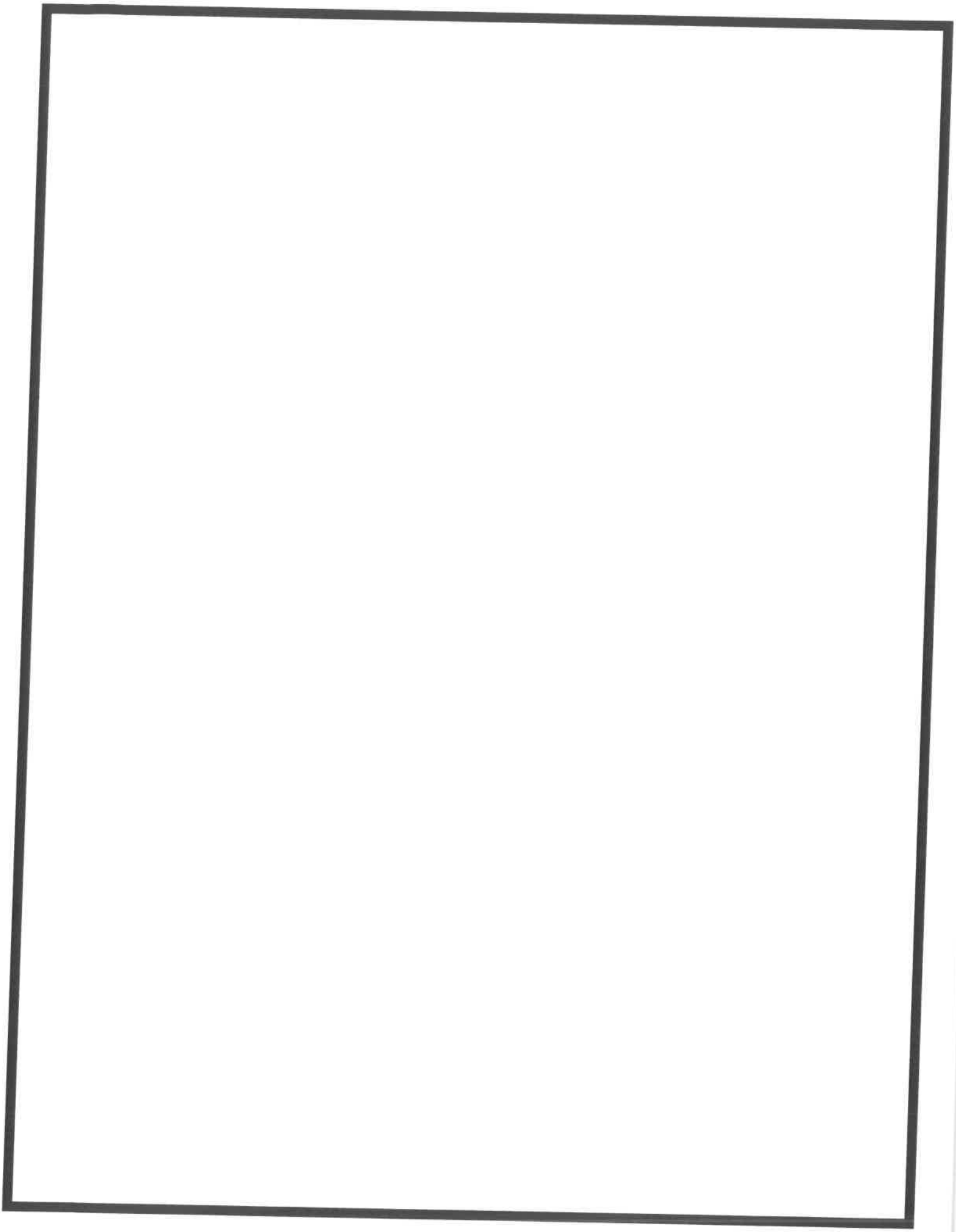
Office and Plant
299 Cedar Lane
Fairless Hills, PA 19030

Phone: 215-295-5006
Fax: 215-295-0781

Hydrogen Peroxide 30%, ACS

Reagent Grade

SPECIFICATION	MAXIMUM LIMITS
Appearance	Colorless and free from suspended matter or sediment
Assay	29-32%
Color (APHA)	10
Residue after Evaporation	0.002%
Titratable Acid	0.0006 meq/g
Chloride (Cl)	3 ppm
Nitrate (NO_3)	2 ppm
Phosphate	2 ppm
Sulfate (SO_4)	5 ppm
Ammonium (NH_4)	5 ppm
Heavy Metals (as Pb)	1 ppm
Iron (Fe)	0.5 ppm



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Certified Reference Material CRM

R: 01/03/24 M5806, M5807

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

CERTIFIED WEIGHT REPORT:

Part Number: 58111
Lot Number: 122223
Description: Sodium (Na)

Expiration Date: 122226
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB

Weight shown below was diluted to (mL): 3000.4 0.06 Flask Uncertainty

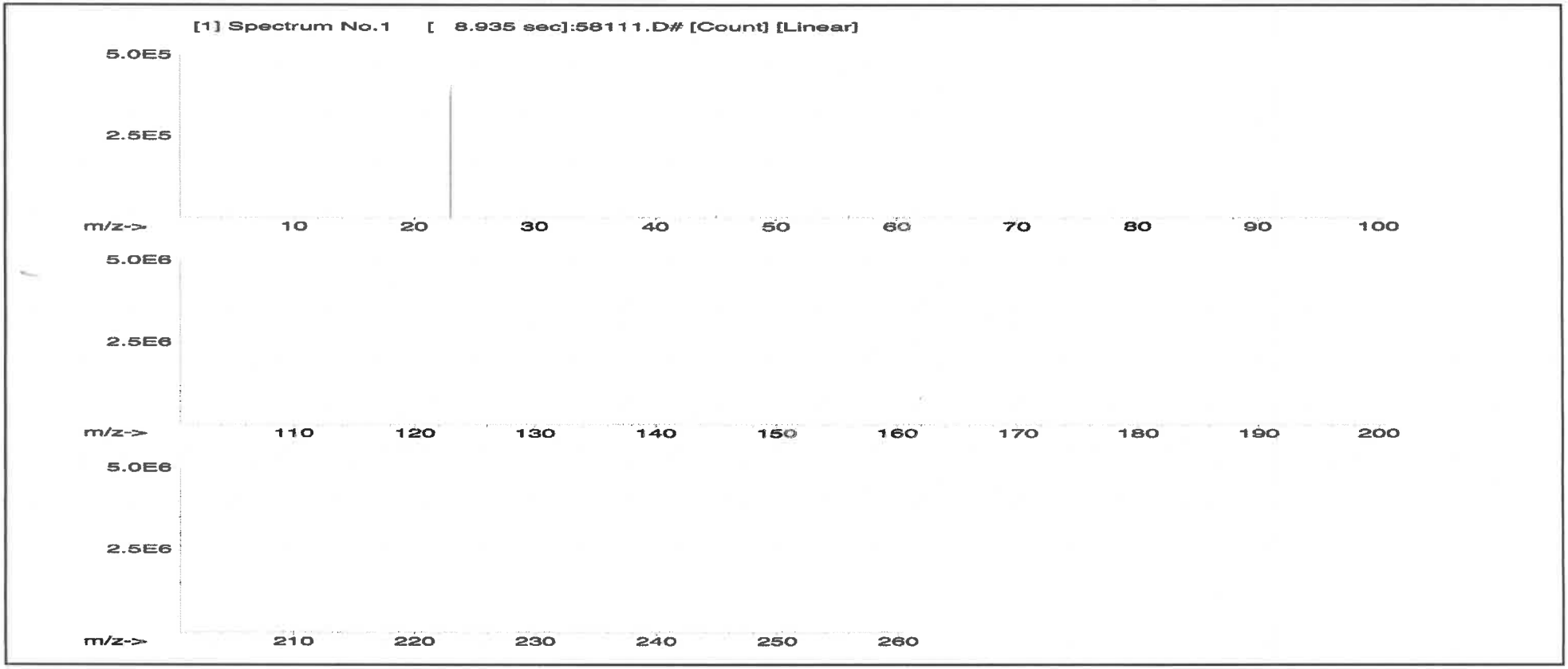
	Lot #		
Solvent:	24002546	Nitric Acid	
2%	60.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty

Aleah O'Brady

Formulated By:	Aleah O'Brady	122223
Reviewed By:	Pedro L. Rentas	122223

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Sodium nitrate (Na)	IN036	NAV012015I1	10000	99.999	0.10	26.9	111.5406	111.5479	**10000.7**	**20.0**	7631-99-4	5 mg/m3	orl-rat 3430 mg/kg	3152a



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	T	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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Certified Reference Material CRM

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

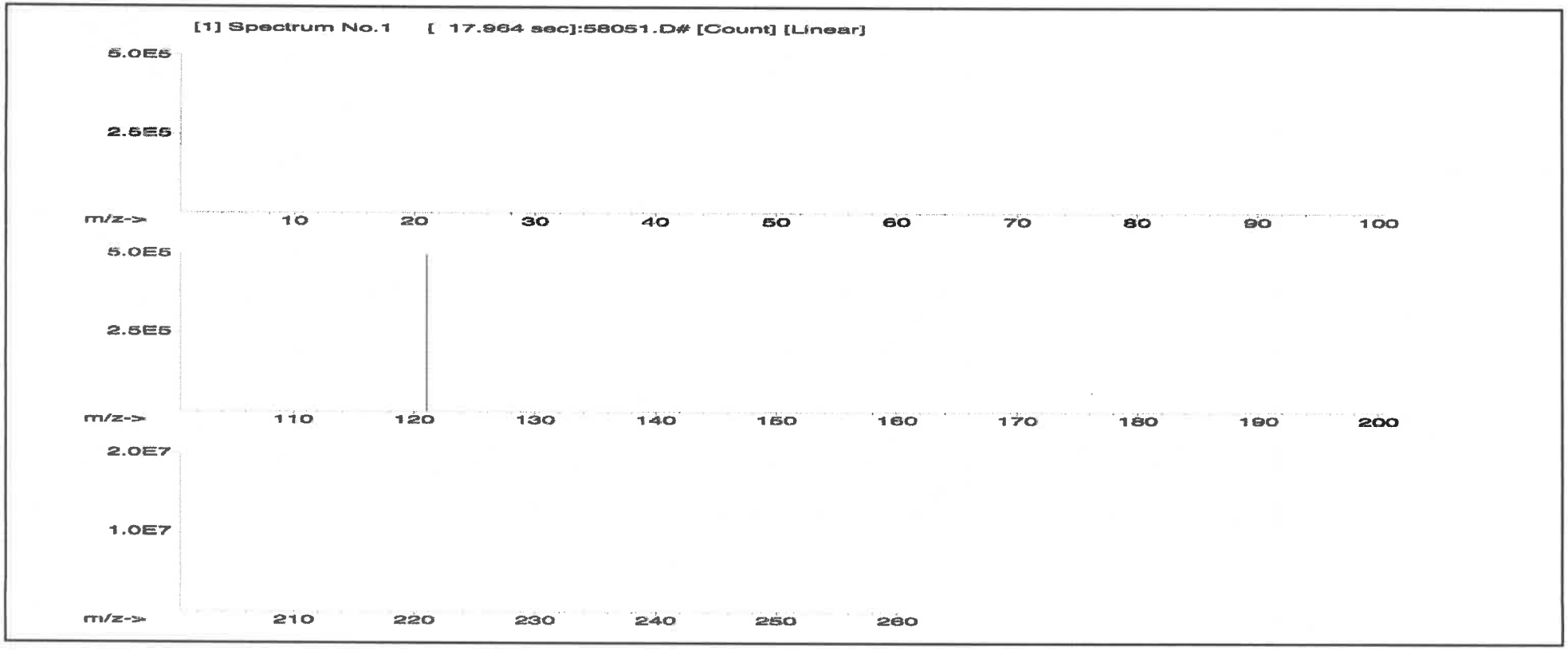
R: 01/03/24 M5802, M5803

CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**57051**	24002546	Nitric Acid	
Lot Number:	**120523**			
Description:	**Antimony (Sb)**			
		2.0%	60.0 (mL)	Nitric Acid
Expiration Date:	120526			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	3000.41	0.058	Flask Uncertainty	

Formulated By:	Lawrence Barry	120523
Reviewed By:	Pedro L. Rentas	120523

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Antimony (Sb)	58151	100923	0.1000	300.0	0.084	1000	10001.4	**1000.0**	2.1	7440-36-0	0.5 mg/m3	orl-rat 7000 mg/kg	3102a



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	T	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

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M6030

R: 8/5/24

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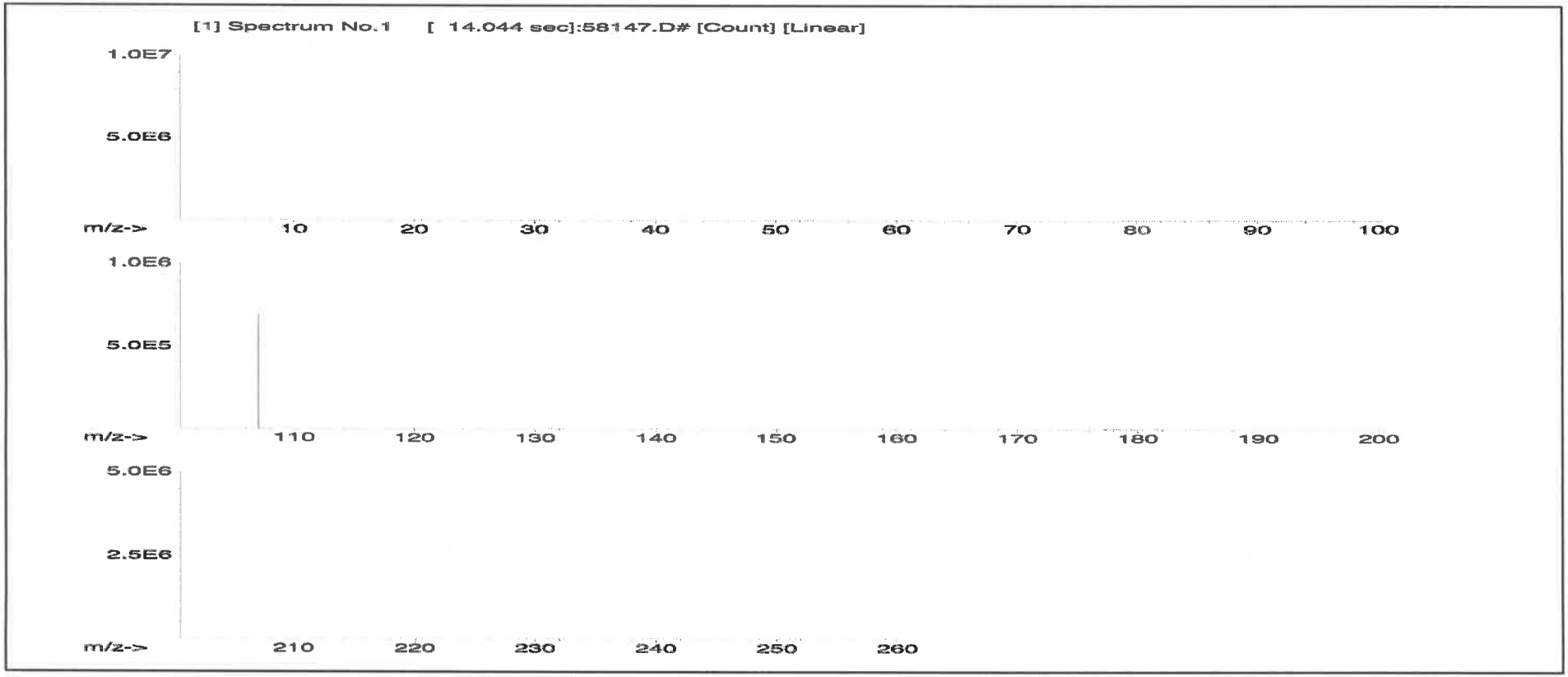
CERTIFIED WEIGHT REPORT:

Part Number:	**57047**		**Lot #**		
Lot Number:	**122823**	**Solvent:**	24002546	Nitric Acid	
Description:	**Silver (Ag)**	2%	80.0 (mL)	Nitric Acid	
Expiration Date:	122826				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	4000.30	0.058	Flask Uncertainty		

Formulated By:	Benson Chan	122823
Reviewed By:	Pedro L. Rentas	122823

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Silver nitrate (Ag)	IN035	J0612AGA1	1000.0	99.9999	0.10	63.7	6.27992	6.27998	**1000.0**	**2.0**	7761-88-8	10 ug/m3	NA	3151



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	T	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

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* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
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R: 03/16/23 M5473, M5474, M5475, M5476

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CERTIFIED WEIGHT REPORT:

Part Number: 56138
Lot Number: 082922
Description: Strontium (Sr)

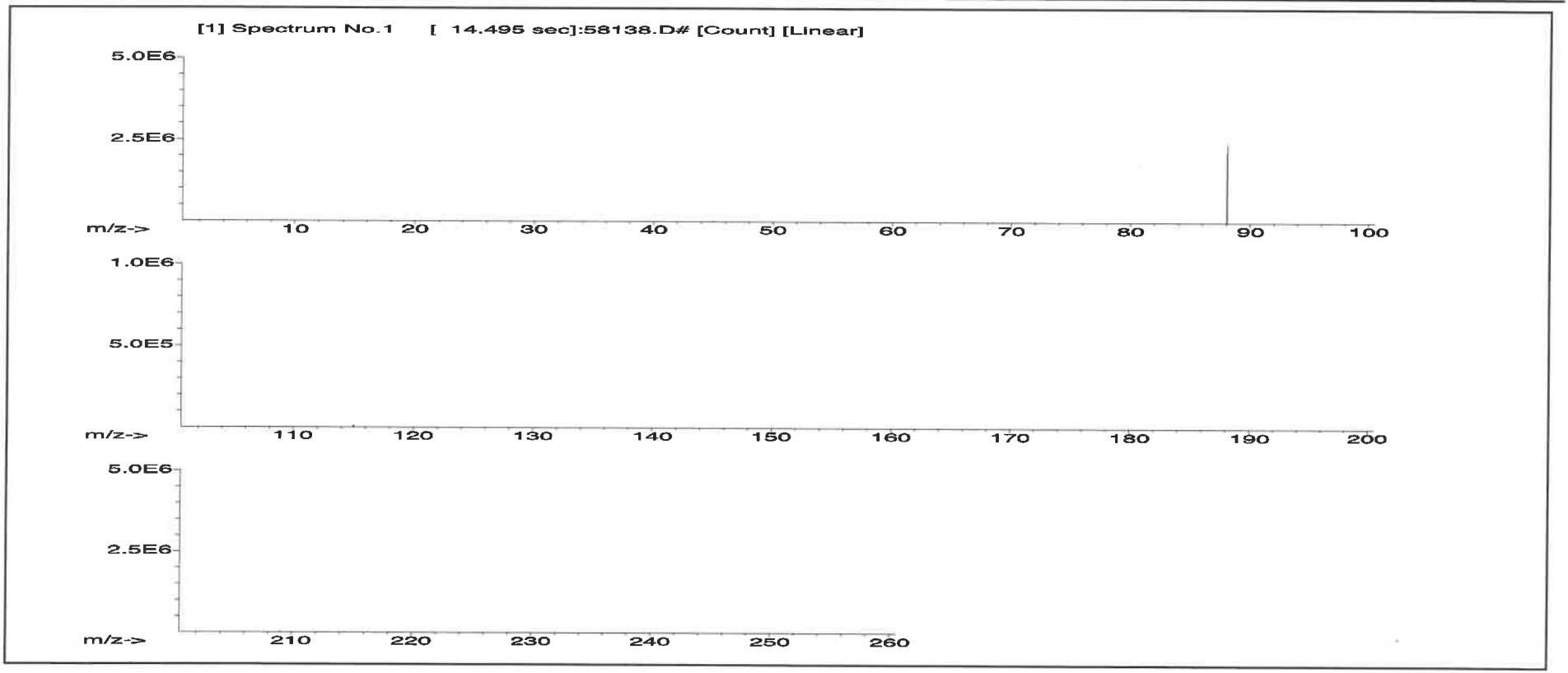
Expiration Date: 082925
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 1000.12

	Lot #		
Solvent:	20510011	Nitric Acid	
2%	20.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Formulated By:	Lawrence Barry	082922
Reviewed By:	Pedro L. Rentas	082922

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Strontium nitrate (Sr)	IN017	SRZ022018A1	10000	99.997	0.10	41.2	24.2756	24.2758	**10000.1**	**20.0**	10042-76-9	NA	orl-rat >2000mg/kg	3153a



Instrumental Analysis by Inductively Coupled Plasma Mass Spectroscopy (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	T	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

Certified by:

Homogeneity: No heterogeneity was observed in the preparation of this standard.

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R ! 8/5/24

M6023

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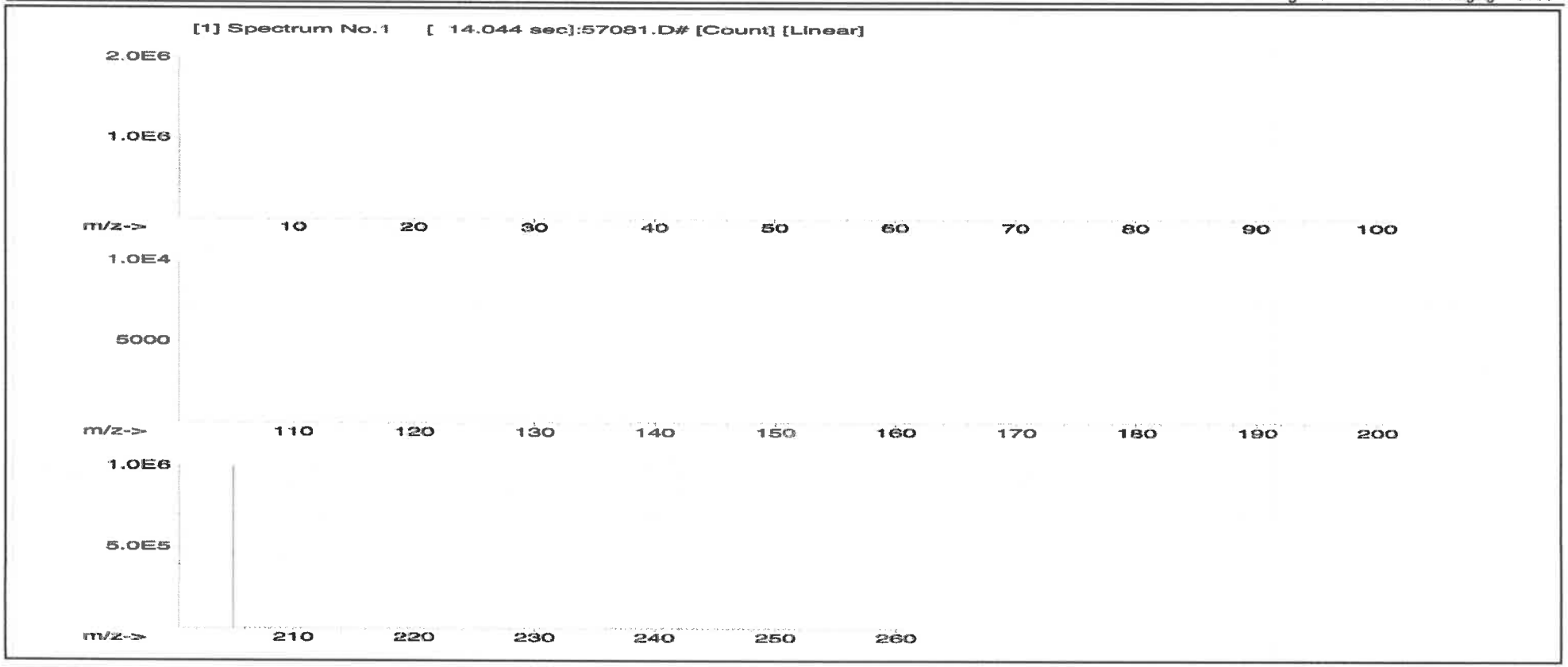
CERTIFIED WEIGHT REPORT:

Part Number:	**57081**		**Lot #**		
Lot Number:	**062724**	**Solvent:**	24002546	Nitric Acid	
Description:	**Thallium (Tl)**				
		2%	40.0 (mL)	Nitric Acid	
Expiration Date:	062727				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Weight shown below was diluted to (mL):	2000.1	0.10	Flask Uncertainty		

Aleah O'Brady

Formulated By:	Aleah O'Brady	062724
Reviewed By:	Pedro L. Rentas	062724

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Thallium nitrate (Tl)	IN037	BCCF4399	1000	99.999	0.10	77.0	2.5975	2.5977	**1000.1**	**2.0**	10102-45-1	0.1 mg/m3	orl-mus 15mg/kg	3158



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	T	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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Certified by:

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Bc. 8/5/24

CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**57023**			
Lot Number:	**062424**	24002546	Nitric Acid	
Description:	**Vanadium (V)**			
		2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	062427			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	2000.3	0.06	Flask Uncertainty	

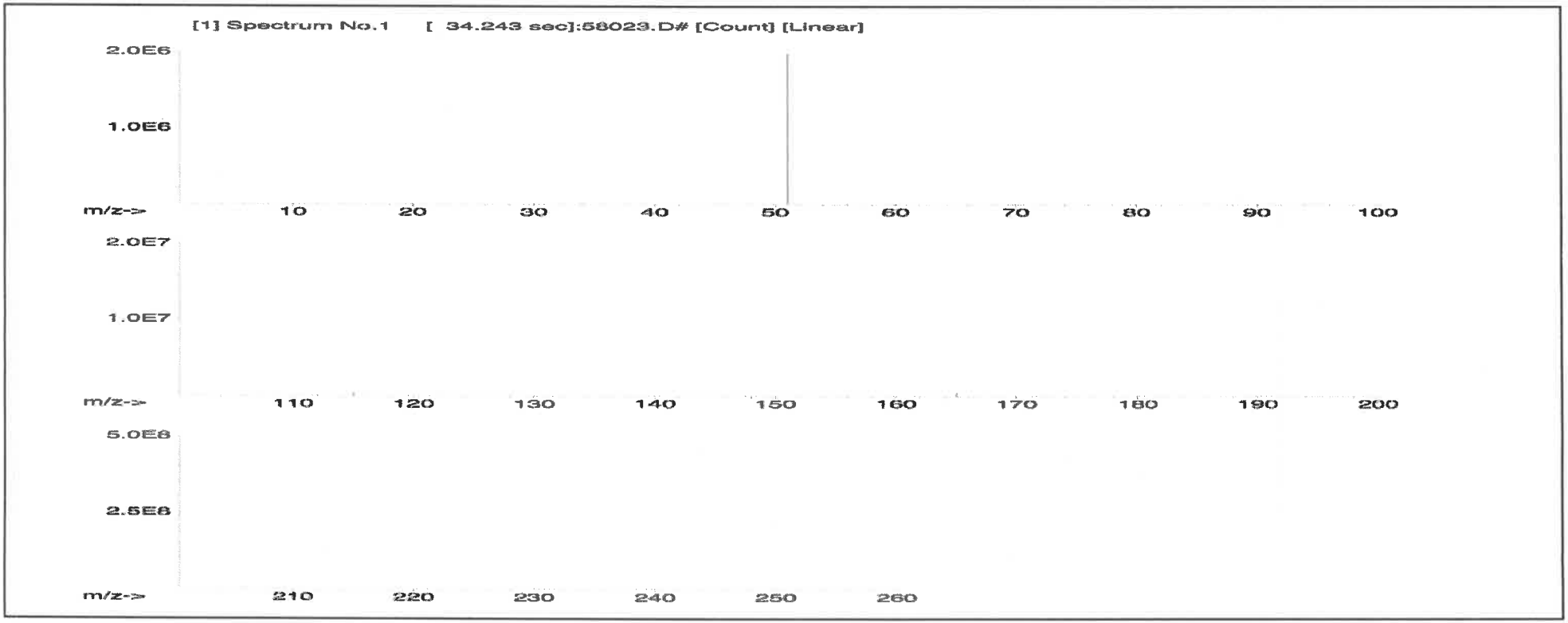
Aleah O'Brady

Formulated By:	Aleah O'Brady	062424

Pedro Rentas

Reviewed By:	Pedro L. Rentas	062424

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Ammonium metavanadate (V)	58123	021224	0.1000	200.0	0.084	1000	10000.3	**1000.0**	**2.2**	7803-55-6	0.05 mg/m3	orl-rat 58.1mg/kg	3165



Instrumental Analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS):

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	T
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

Certified by:

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Alliance TECHNICAL GROUP

Soil/Sludge Metals Preparation Sheet

PB165239

SOP ID : M3050B-Digestion-20, MSFAM01.1-Trace Metals-2

SDG No : MX1007

Matrix : SOIL

Pippete ID: ICP A

Balance ID : M SC-2

Filter paper ID : N/A

pH Strip ID : N/A

Hood ID : #3

Block ID: 1. HOT BLOCK #2 2. N/A

Start Digest Date: 11/27/2024 **Time :** 10:50 **Temp :** 96 °C

End Digest Date: 11/27/2024 **Time :** 12:55 **Temp :** 96 °C

Digestion tube ID: M6054

Block thermometer ID: MET-DIG. #2

Dig Technician Signature:

Supervisor Signature:

Temp : 1. 96°C 2. N/A

Standared Name	MLS USED	STD REF. # FROM LOG
LCSS	1.00	MP83141
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Chemical Used	ML/SAMPLE USED	Lot Number
1:1 HNO3	10.00	MP83122
Conc. HNO3	5.00	M6124
30% H2O2	3.00	M6125
Conc. HCL	10.00	M6121
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Extraction Conformance/Non-Conformance Comments:

HOT BLOCK #2 CELL#34 : 96

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
11/27/24 13:10		
	Preparation Group	Analysis Group

Alliance TECHNICAL GROUP

Soil/Sludge Metals Preparation Sheet

PB165239

Lab Sample ID	Client Sample ID	pH	Initial Weight (g)	Final Vol (ml)	Color Before	Color After	Texture	Artifact	Comment	Prep Pos
P4917-01	MX1007	N/A	1.33	100	Brown	Yellow	Medium	N/A	N/A	31
PB165239BL	PBS239	N/A	1.00	100	Colorless	Colorless	Fine	N/A	N/A	32
PB165239BS	LCS239	N/A	1.00	100	Colorless	Colorless	Fine	N/A	MP83141	33

Alliance TECHNICAL GROUP

Water Metals Preparation Sheet

PB165240

SOP ID : M200.7-Trace Elements-22, MSFAM01.1-Trace Metals-2

SDG No : MX1007

Matrix : WATER

Pippete ID: ICP A

Balance ID : N/A

Filter paper ID : N/A

pH Strip ID : M6069

Hood ID : #3

Block ID: 1. HOT BLOCK #1 2. N/A

Start Digest Date: 11/27/2024 **Time :** 10:45 **Temp :** 96 °C

End Digest Date: 11/27/2024 **Time :** 12:50 **Temp :** 96 °C

Digestion tube ID: M5595

Block thermometer ID: MET-DIG. #1

Dig Technician Signature: JPP

Supervisor Signature:

Temp : 1. 96°C 2. N/A

Standared Name	MLS USED	STD REF. # FROM LOG
LCSW	1.00	MP83141
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Chemical Used	ML/SAMPLE USED	Lot Number
1:1 HNO3	1.00	MP83122
1:1 HCL	0.50	MP83105
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Extraction Conformance/Non-Conformance Comments:

HOT BLOCK #1 CELL #55 :96

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
11/27/24 13:10	JPP MET-DIG	[illegible]
	Preparation Group	Analysis Group

Alliance TECHNICAL GROUP

Water Metals Preparation Sheet

PB165240

Lab Sample ID	Client Sample ID	pH	Initial Vol (ml)	Final Vol (ml)	Color Before	Color After	Clarity Before	Clarity After	Comment	Prep Pos
P4917-03	MX1009	<2	50	50	Colorless	Colorless	Clear	Clear	N/A	19
PB165240BL	PBW240	<2	50	50	Colorless	Colorless	Clear	Clear	N/A	20
PB165240BS	LCS240	<2	50	50	Colorless	Colorless	Clear	Clear	MP83141	21

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Fax : 908 789 8922

Instrument ID: P5

Daily Analysis Runlog For Sequence/QCBatch ID # LB133698

Review By	Sarabjit Jaswal	Review On	12/3/2024 10:24:06 PM
Supervise By	Kareem Khairalla	Supervise On	12/5/2024 8:14:16 PM

STD. NAME	STD REF.#
ICAL Standard	MP83134,MP83142,MP83140,MP83139,MP83138,MP83137,MP83136
ICV Standard	MP83143
CCV Standard	MP83146
ICSA Standard	MP83144,MP83145
CRI Standard	
LCS Standard	MP83141
Chk Standard	MP83148,MP83149

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	12/02/24 15:21		Kareem	OK
2	S1	S01	CAL2	12/02/24 15:26		Kareem	OK
3	S2	S02	CAL3	12/02/24 15:30		Kareem	OK
4	S3	S03	CAL4	12/02/24 15:35		Kareem	OK
5	S4	S04	CAL5	12/02/24 15:39		Kareem	OK
6	S5	S05	CAL6	12/02/24 15:44		Kareem	OK
7	S6	S06	CAL7	12/02/24 15:48		Kareem	OK
8	ICV011	ICV011	ICV	12/02/24 16:20	Inst. paused for calibration review	Kareem	OK
9	ICB011	ICB011	ICB	12/02/24 16:27	Inst. paused for review	Kareem	OK
10	ICSA011	ICSA011	ICSA	12/02/24 16:40	Inst. paused for review	Kareem	OK
11	ICSAB011	ICSAB011	ICSAB	12/02/24 16:44		Kareem	OK
12	CCV071	CCV071	CCV	12/02/24 16:49		Kareem	OK
13	CCB071	CCB071	CCB	12/02/24 16:53		Kareem	OK
14	PB165190BL	PBW190	MB	12/02/24 16:58		Kareem	OK
15	PB165190BS	LCS190	LCS	12/02/24 17:02		Kareem	OK
16	PB165192BL	PBS192	MB	12/02/24 17:07		Kareem	OK
17	PB165192BS	LCS192	LCS	12/02/24 17:11		Kareem	OK
18	PB165197BL	PBS197	MB	12/02/24 17:16		Kareem	OK

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CCV Standard	MP83146
ICSA Standard	MP83144,MP83145
CRI Standard	
LCS Standard	MP83141
Chk Standard	MP83148,MP83149

19	PB165197BS	LCS197	LCS	12/02/24 17:20		Kareem	OK
20	PB165139BL	PBS139	MB	12/02/24 17:25		Kareem	OK
21	PB165139BS	LCS139	LCS	12/02/24 17:30		Kareem	OK
22	PB165171BL	PBS171	MB	12/02/24 17:34		Kareem	OK
23	PB165171BS	LCS171	LCS	12/02/24 17:39		Kareem	OK
24	PB165167BL	PBS167	MB	12/02/24 17:43		Kareem	OK
25	PB165167BS	LCS167	LCS	12/02/24 17:48		Kareem	OK
26	PB165169BL	PBS169	MB	12/02/24 17:52		Kareem	OK
27	PB165169BSRE	LCS169	LCS	12/02/24 17:57	Not use	Kareem	Not Ok
28	P4939-10	MBHHW8	SAM	12/02/24 18:01		Kareem	OK
29	P4939-11	MBHHW8D	DUP	12/02/24 18:18		Kareem	OK
30	P4939-10L	MBHHW8L	SD	12/02/24 18:23		Kareem	OK
31	P4939-12	MBHHW8S	MS	12/02/24 18:27	MS fail for Se(Below RL)	Kareem	OK
32	P4933-20	MBHHX4	SAM	12/02/24 18:31	MS fail for all parameters	Kareem	Not Ok
33	CCV072	CCV072	CCV	12/02/24 18:40		Kareem	OK
34	CCB072	CCB072	CCB	12/02/24 18:45		Kareem	OK
35	P4917-03	MX1009	SAM	12/02/24 18:50		Kareem	OK
36	P4917-01	MX1007	SAM	12/02/24 18:54	Be high	Kareem	Dilution
37	P4917-01DL	MX1007	SAM	12/02/24 19:02	2X for Be,Still high	Kareem	Dilution
38	P4917-01DL2	MX1007	SAM	12/02/24 19:16	5X for Be	Kareem	Confirms

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CCV Standard	MP83146
ICSA Standard	MP83144,MP83145
CRI Standard	
LCS Standard	MP83141
Chk Standard	MP83148,MP83149

39	PB165240BL	PBW240	MB	12/02/24 19:25		Kareem	OK
40	PB165240BS	LCS240	LCS	12/02/24 19:29		Kareem	OK
41	PB165239BL	PBS239	MB	12/02/24 19:34		Kareem	OK
42	PB165239BS	LCS239	LCS	12/02/24 19:38		Kareem	OK
43	PB165169BS	LCS169	LCS	12/02/24 19:43		Kareem	OK
44	CCV073	CCV073	CCV	12/02/24 19:47		Kareem	OK
45	CCB073	CCB073	CCB	12/02/24 19:52		Kareem	OK
46	P4933-21	MBHHX4D	DUP	12/02/24 19:56	MS fail for all parameters	Kareem	Not Ok
47	P4933-20L	MBHHX4L	SD	12/02/24 20:01	MS fail for all parameters	Kareem	Not Ok
48	P4933-22	MBHHX4S	MS	12/02/24 20:05	MS fail for all parameters	Kareem	Not Ok
49	P4912-04	MBHHJ4	SAM	12/02/24 20:10		Kareem	OK
50	P4912-05	MBHHJ4D	DUP	12/02/24 20:14		Kareem	OK
51	P4912-04L	MBHHJ4L	SD	12/02/24 20:18		Kareem	OK
52	P4912-06	MBHHJ4S	MS	12/02/24 20:23	MS fail for Cu(617.0452ppb), Se(Below RL), Zn(3393.068ppb)	Kareem	OK
53	P4932-03	MBHHQ2D	DUP	12/02/24 20:31		Kareem	OK
54	P4932-02	MBHHQ2	SAM	12/02/24 20:36		Kareem	OK
55	P4932-02L	MBHHQ2L	SD	12/02/24 20:40		Kareem	OK
56	P4932-04	MBHHQ2S	MS	12/02/24 20:45	MS fail for Zn(2524.072ppb)	Kareem	OK

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CCV Standard	MP83146
ICSA Standard	MP83144,MP83145
CRI Standard	
LCS Standard	MP83141
Chk Standard	MP83148,MP83149

57	P4914-11	MBHHK4	SAM	12/02/24 20:49		Kareem	OK
58	P4914-12	MBHHK4D	DUP	12/02/24 20:53		Kareem	OK
59	P4914-11L	MBHHK4L	SD	12/02/24 20:58		Kareem	OK
60	P4914-13	MBHHK4S	MS	12/02/24 21:02	MS fail for Cu(497.7801ppb)	Kareem	OK
61	P4915-08	MBHHM8	SAM	12/02/24 21:06		Kareem	OK
62	P4915-09	MBHHM8D	DUP	12/02/24 21:11		Kareem	OK
63	P4915-08L	MBHHM8L	SD	12/02/24 21:15		Kareem	OK
64	P4915-10	MBHHM8S	MS	12/02/24 21:20	MS fail for Se(Below RL)	Kareem	OK
65	P4915-06	MBHHM6	SAM	12/02/24 21:24		Kareem	OK
66	CCV074	CCV074	CCV	12/02/24 21:29		Kareem	OK
67	CCB074	CCB074	CCB	12/02/24 21:33		Kareem	OK
68	P4933-14	MBHHS4	SAM	12/02/24 21:38		Kareem	OK
69	P4939-01	MBHHS5	SAM	12/02/24 21:42		Kareem	OK
70	P4939-02	MBHHS6	SAM	12/02/24 21:47		Kareem	OK
71	P4939-03	MBHHT6	SAM	12/02/24 21:51		Kareem	OK
72	P4939-04	MBHHT7	SAM	12/02/24 21:55		Kareem	OK
73	P4939-05	MBHHT8	SAM	12/02/24 22:00		Kareem	OK
74	P4939-06	MBHHT9	SAM	12/02/24 22:04		Kareem	OK
75	P4939-07	MBHHW0	SAM	12/02/24 22:08		Kareem	OK

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CCV Standard	MP83146
ICSA Standard	MP83144,MP83145
CRI Standard	
LCS Standard	MP83141
Chk Standard	MP83148,MP83149

76	P4939-08	MBHHW6	SAM	12/02/24 22:13		Kareem	OK
77	P4939-09	MBHHW7	SAM	12/02/24 22:17		Kareem	OK
78	P4939-13	MBHHX5	SAM	12/02/24 22:22		Kareem	OK
79	P4939-14	MBHHX6	SAM	12/02/24 22:26		Kareem	OK
80	P4939-15	MBHHY5	SAM	12/02/24 22:30		Kareem	OK
81	P4939-16	MBHHY6	SAM	12/02/24 22:35		Kareem	OK
82	P4939-17	MBHHY7	SAM	12/02/24 22:39		Kareem	OK
83	P4939-18	MBHHY8	SAM	12/02/24 22:43		Kareem	OK
84	P4939-19	MBHHY9	SAM	12/02/24 22:48		Kareem	OK
85	P4939-20	MBHHZ0	SAM	12/02/24 22:53		Kareem	OK
86	P4939-21	MBHHZ1	SAM	12/02/24 22:57		Kareem	OK
87	P4939-22	MBHHZ2	SAM	12/02/24 23:02	Cu high	Kareem	Dilution
88	CCV075	CCV075	CCV	12/02/24 23:06		Kareem	OK
89	CCB075	CCB075	CCB	12/02/24 23:10		Kareem	OK
90	P4933-01	MBHHR1	SAM	12/02/24 23:15		Kareem	OK
91	P4933-02	MBHHR2	SAM	12/02/24 23:19		Kareem	OK
92	P4933-03	MBHHR3	SAM	12/02/24 23:24		Kareem	OK
93	P4933-04	MBHHR4	SAM	12/02/24 23:28		Kareem	OK
94	P4933-05	MBHHR5	SAM	12/02/24 23:32	Mn high	Kareem	Dilution
95	P4933-06	MBHHR6	SAM	12/02/24 23:37		Kareem	OK

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ICV Standard	MP83143
CCV Standard	MP83146
ICSA Standard	MP83144,MP83145
CRI Standard	
LCS Standard	MP83141
Chk Standard	MP83148,MP83149

96	P4933-07	MBHHR7	SAM	12/02/24 23:41		Kareem	OK
97	P4933-08	MBHHR8	SAM	12/02/24 23:45		Kareem	OK
98	P4933-09	MBHHR9	SAM	12/02/24 23:50		Kareem	OK
99	P4933-10	MBHHS0	SAM	12/02/24 23:55		Kareem	OK
100	P4933-11	MBHHS1	SAM	12/02/24 23:59		Kareem	OK
101	P4933-12	MBHHS2	SAM	12/03/24 00:03		Kareem	OK
102	P4933-13	MBHHS3	SAM	12/03/24 00:08		Kareem	OK
103	P4933-15	MBHHW9	SAM	12/03/24 00:12		Kareem	OK
104	P4933-16	MBHHX0	SAM	12/03/24 00:16		Kareem	OK
105	P4933-17	MBHHX1	SAM	12/03/24 00:21		Kareem	OK
106	P4933-18	MBHHX2	SAM	12/03/24 00:25	Not use	Kareem	Not Ok
107	P4933-19	MBHHX3	SAM	12/03/24 00:30		Kareem	OK
108	P4912-01	MBHHJ1	SAM	12/03/24 00:34		Kareem	OK
109	P4912-02	MBHHJ2	SAM	12/03/24 00:38		Kareem	OK
110	CCV076	CCV076	CCV	12/03/24 00:43		Kareem	OK
111	CCB076	CCB076	CCB	12/03/24 00:47		Kareem	OK
112	P4912-03	MBHHJ3	SAM	12/03/24 00:52	Not use	Kareem	Not Ok
113	P4912-07	MBHHJ5	SAM	12/03/24 00:56	Not use	Kareem	Not Ok
114	P4912-08	MBHHJ6	SAM	12/03/24 01:01	Not use	Kareem	Not Ok
115	P4912-09	MBHHJ7	SAM	12/03/24 01:05	Not use	Kareem	Not Ok

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ICV Standard	MP83143
CCV Standard	MP83146
ICSA Standard	MP83144,MP83145
CRI Standard	
LCS Standard	MP83141
Chk Standard	MP83148,MP83149

116	P4912-10	MBHHJ8	SAM	12/03/24 01:09	Not use	Kareem	Not Ok
117	P4912-11	MBHHJ9	SAM	12/03/24 01:14	Not use	Kareem	Not Ok
118	P4912-12	MBHHK0	SAM	12/03/24 01:18	Not use	Kareem	Not Ok
119	P4912-13	MBHHK1	SAM	12/03/24 01:22	Not use	Kareem	Not Ok
120	P4912-14	MBHHK2	SAM	12/03/24 01:27	Not use	Kareem	Not Ok
121	P4912-15	MBHHK3	SAM	12/03/24 01:31	Not use	Kareem	Not Ok
122	P4912-16	MBHHL8	SAM	12/03/24 01:36	Not use	Kareem	Not Ok
123	P4912-17	MBHHL9	SAM	12/03/24 01:40	Not use	Kareem	Not Ok
124	P4912-18	MBHHM0	SAM	12/03/24 01:44	Not use	Kareem	Not Ok
125	P4912-19	MBHHM1	SAM	12/03/24 01:49	Not use	Kareem	Not Ok
126	P4912-20	MBHHM2	SAM	12/03/24 01:53	Not use	Kareem	Not Ok
127	P4912-21	MBHHM3	SAM	12/03/24 01:57	Not use	Kareem	Not Ok
128	P4912-22	MBHHM4	SAM	12/03/24 02:02	Not use	Kareem	Not Ok
129	P4932-01	MBHHQ1	SAM	12/03/24 02:06	Not use	Kareem	Not Ok
130	P4932-05	MBHHQ3	SAM	12/03/24 02:11	Not use	Kareem	Not Ok
131	P4932-06	MBHHQ4	SAM	12/03/24 02:15	Not use	Kareem	Not Ok
132	CCV077	CCV077	CCV	12/03/24 02:19	%RSD fail for Ag, Zn	Kareem	OK
133	CCB077	CCB077	CCB	12/03/24 02:24		Kareem	OK
134	P4932-07	MBHHQ5	SAM	12/03/24 02:28	Not use	Kareem	Not Ok
135	P4932-08	MBHHQ6	SAM	12/03/24 02:33	Not use	Kareem	Not Ok

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CCV Standard	MP83146
ICSA Standard	MP83144,MP83145
CRI Standard	
LCS Standard	MP83141
Chk Standard	MP83148,MP83149

136	P4932-09	MBHHQ7	SAM	12/03/24 02:37	Not use	Kareem	Not Ok
137	P4932-10	MBHHQ8	SAM	12/03/24 02:41	Not use	Kareem	Not Ok
138	P4932-11	MBHHQ9	SAM	12/03/24 02:46	Not use	Kareem	Not Ok
139	P4932-12	MBHHP1	SAM	12/03/24 02:50	Not use	Kareem	Not Ok
140	P4932-13	MBHHP2	SAM	12/03/24 02:55	Not use	Kareem	Not Ok
141	P4932-14	MBHHP3	SAM	12/03/24 02:59	Not use	Kareem	Not Ok
142	P4932-15	MBHHP4	SAM	12/03/24 03:03	Not use	Kareem	Not Ok
143	P4932-16	MBHHP5	SAM	12/03/24 03:08	Not use	Kareem	Not Ok
144	P4932-17	MBHHP6	SAM	12/03/24 03:12	Not use	Kareem	Not Ok
145	P4932-18	MBHHP7	SAM	12/03/24 03:17	Not use	Kareem	Not Ok
146	P4932-19	MBHHP8	SAM	12/03/24 03:21	Not use	Kareem	Not Ok
147	P4932-20	MBHHP9	SAM	12/03/24 03:25	Not use	Kareem	Not Ok
148	P4932-21	MBHHQ0	SAM	12/03/24 03:30	Not use	Kareem	Not Ok
149	P4932-22	MBHHR0	SAM	12/03/24 03:34	Not use	Kareem	Not Ok
150	P4914-01	MBHHF2	SAM	12/03/24 03:38	Not use	Kareem	Not Ok
151	P4914-02	MBHHF3	SAM	12/03/24 03:43	Not use	Kareem	Not Ok
152	P4914-03	MBHHF4	SAM	12/03/24 03:47	Not use	Kareem	Not Ok
153	P4914-04	MBHHF5	SAM	12/03/24 03:52	Not use	Kareem	Not Ok
154	CCV078	CCV078	CCV	12/03/24 03:56	%RSD fail for Cr, Ag, Zn	Kareem	OK
155	CCB078	CCB078	CCB	12/03/24 04:00		Kareem	OK

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ICSA Standard	MP83144,MP83145
CRI Standard	
LCS Standard	MP83141
Chk Standard	MP83148,MP83149

156	P4914-05	MBHHF6	SAM	12/03/24 04:05	Not use	Kareem	Not Ok
157	P4914-06	MBHHF7	SAM	12/03/24 04:09	Not use	Kareem	Not Ok
158	P4914-07	MBHHF8	SAM	12/03/24 04:14	Not use	Kareem	Not Ok
159	P4914-08	MBHHF9	SAM	12/03/24 04:18	Not use	Kareem	Not Ok
160	P4914-09	MBHHG0	SAM	12/03/24 04:22	Not use	Kareem	Not Ok
161	P4914-10	MBHHG1	SAM	12/03/24 04:27	Not use	Kareem	Not Ok
162	P4914-14	MBHHK5	SAM	12/03/24 04:31	Not use	Kareem	Not Ok
163	P4914-15	MBHHK6	SAM	12/03/24 04:36	Not use	Kareem	Not Ok
164	P4914-16	MBHHK7	SAM	12/03/24 04:40	Not use	Kareem	Not Ok
165	P4914-17	MBHHK8	SAM	12/03/24 04:44	Not use	Kareem	Not Ok
166	P4914-18	MBHHK9	SAM	12/03/24 04:49	Not use	Kareem	Not Ok
167	P4914-19	MBHHL0	SAM	12/03/24 04:53	Not use	Kareem	Not Ok
168	P4914-20	MBHHL1	SAM	12/03/24 04:57	Not use	Kareem	Not Ok
169	P4914-21	MBHHL2	SAM	12/03/24 05:02	Not use	Kareem	Not Ok
170	P4914-22	MBHHL3	SAM	12/03/24 05:06	Not use	Kareem	Not Ok
171	P4915-01	MBHHL4	SAM	12/03/24 05:11	Not use	Kareem	Not Ok
172	P4915-02	MBHHL5	SAM	12/03/24 05:15	Not use	Kareem	Not Ok
173	P4915-03	MBHHL6	SAM	12/03/24 05:19	Not use	Kareem	Not Ok
174	P4915-04	MBHHL7	SAM	12/03/24 05:24	Not use	Kareem	Not Ok
175	P4915-05	MBHHM5	SAM	12/03/24 05:28	Not use	Kareem	Not Ok

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Instrument ID: P5

Daily Analysis Runlog For Sequence/QCBatch ID # LB133698

Review By	Sarabjit Jaswal	Review On	12/3/2024 10:24:06 PM
Supervise By	Kareem Khairalla	Supervise On	12/5/2024 8:14:16 PM

STD. NAME	STD REF.#
ICAL Standard	MP83134,MP83142,MP83140,MP83139,MP83138,MP83137,MP83136
ICV Standard	MP83143
CCV Standard	MP83146
ICSA Standard	MP83144,MP83145
CRI Standard	
LCS Standard	MP83141
Chk Standard	MP83148,MP83149

176	CCV079	CCV079	CCV	12/03/24 05:33		Kareem	OK
177	CCB079	CCB079	CCB	12/03/24 05:37		Kareem	OK
178	P4915-07	MBHHM7	SAM	12/03/24 05:42		Kareem	OK
179	P4915-11	MBHHM9	SAM	12/03/24 05:46		Kareem	OK
180	P4915-12	MBHHN0	SAM	12/03/24 05:50		Kareem	OK
181	P4915-13	MBHHN1	SAM	12/03/24 05:55		Kareem	OK
182	P4915-14	MBHHN2	SAM	12/03/24 05:59		Kareem	OK
183	P4915-15	MBHHN3	SAM	12/03/24 06:03		Kareem	OK
184	P4915-16	MBHHN4	SAM	12/03/24 06:08		Kareem	OK
185	P4915-17	MBHHN5	SAM	12/03/24 06:12		Kareem	OK
186	P4915-18	MBHHN6	SAM	12/03/24 06:17		Kareem	OK
187	P4915-19	MBHHN7	SAM	12/03/24 06:21		Kareem	OK
188	P4915-20	MBHHN8	SAM	12/03/24 06:25		Kareem	OK
189	P4915-21	MBHHN9	SAM	12/03/24 06:30		Kareem	OK
190	P4915-22	MBHHP0	SAM	12/03/24 06:34		Kareem	OK
191	CCV080	CCV080	CCV	12/03/24 06:39		Kareem	OK
192	CCB080	CCB080	CCB	12/03/24 06:43		Kareem	OK
193	P4907-04DL	MBHHE4	SAM	12/03/24 06:48	2X for Ca	Kareem	Confirms
194	P4907-05DL	MBHHE5	SAM	12/03/24 06:52	2X for Ca	Kareem	Confirms
195	P4906-18DL	MBHHA3	SAM	12/03/24 06:57	2X for Ca	Kareem	Confirms

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LCS Standard	MP83141
Chk Standard	MP83148,MP83149

196	P4906-19DL	MBHHA4	SAM	12/03/24 07:01	2X for Ca	Kareem	Confirms
197	P4902-01	E29Y8	SAM	12/03/24 07:06	Ca high	Kareem	Dilution
198	P4902-02	E2A12	SAM	12/03/24 07:10		Kareem	OK
199	P4902-03	E2A12D	DUP	12/03/24 07:15		Kareem	OK
200	P4902-02L	E2A12L	SD	12/03/24 07:20		Kareem	OK
201	P4902-04	E2A12S	MS	12/03/24 07:24		Kareem	OK
202	PB165215BL	PBS215	MB	12/03/24 07:29		Kareem	OK
203	PB165215BS	LCS215	LCS	12/03/24 07:33		Kareem	OK
204	CCV081	CCV081	CCV	12/03/24 07:38		Kareem	OK
205	CCB081	CCB081	CCB	12/03/24 07:42		Kareem	OK

ERA

A Waters Company

Instructions for Catalog # 540QR

Metals in Soil

Revision 111122

Description:

- This standard is packaged in a 2-ounce glass jar containing approximately 30 grams of soil.
- This standard is not preserved.
- The standard can be stored at room temperature.
- The standard will contain all the analytes listed in the ranges specified on the data reporting form.

Before you Begin:

- The Mercury in this standard should be determined using the digestion and analytical procedures in the current version of EPA method 7471, or equivalent.
- The other metals in this standard should be determined using EPA digestion methods 3050 or 3051 followed by your normal analysis procedures.
- This standard should not be analyzed for Hexavalent Chromium. A separate standard, ERA catalog number 921QR, is available for Hexavalent Chromium.
- Although all ERA soil standards have been thoroughly blended prior to shipping, the standards should be homogenized prior to taking an aliquot for analysis due to settling which may occur during shipping.
- The percent moisture of this standard should be determined, and your analytical results adjusted accordingly and reported on a dry weight basis.

Instructions:

1. Open the Metals in Soil standard in a fume hood to avoid inhalation of dust.
2. Mix the sample well prior to removing aliquots for analysis.
3. Digest and analyze the standard using your normal procedures.
4. Determine the percent moisture of an aliquot of the Metals in Soil standard.
5. Report your results as mg/kg on a dry weight basis.

Safety:

ERA products may be hazardous and are intended for use by professional laboratory personnel trained in the competent handling of such materials. Responsibility for the safe use of these products rests entirely with the buyer and/or user. Safety Data Sheets (SDS) for all ERA products are available through our website www.eraqc.com.

ERA

A Waters Company

Instructions for Catalog # 500QR
WatR™Pollution Trace Metals

Revision 030512

Description:

- This standard is packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate.
- This concentrate is preserved with approximately 2% (v/v) nitric acid.
- The concentrate can be stored at room temperature.
- The diluted standard will contain all the analytes listed in the ranges specified on the data reporting form.

Before you begin:

- The sample resulting from the dilution described below will have a nitric acid concentration of approximately 0.02% before any acid is added. You may add a volume of acid different from the 2 to 5 mL of HNO_3 suggested in order to matrix match your calibration standards or meet any other method criteria.
- If analyzing this standard using colorimetric techniques, it may be necessary to pH adjust the sample prior to analysis. If using colorimetric techniques, it is acceptable to omit the addition of the 2-5 mL nitric acid suggested.
- While it is technically not necessary to digest this standard prior to analysis, digestion should be performed if this is your normal procedure.
- This standard should be analyzed as soon as possible after the concentrate is diluted.

Instructions:

1. Add 100-200 mL of deionized water and approximately 2 to 5 mL of nitric acid to a clean 500 mL class A volumetric flask.
2. Shake the Trace Metals vial prior to opening.
3. Using a clean, dry, class A pipet, volumetrically pipet 5.0 mL of the concentrate into the 500 mL volumetric flask.
4. Dilute the flask to final volume with deionized water.
5. Cap the flask and mix well.
6. Immediately analyze the diluted sample by your normal procedures.
7. Report your results as µg/L for the diluted sample.

Safety:

ERA products may be hazardous and are intended for use by professional laboratory personnel trained in the competent handling of such materials. Responsibility for the safe use of these products rests entirely with the buyer and/or user. Material Safety Data Sheets (MSDS) for all ERA products are available by calling 1-800-372-0122.

ERA

A Waters Company

Instructions for Catalog # 541QR
Cyanide in Soil
Revision 030512

Description:
- This standard is packaged in a 2-ounce glass jar containing approximately 40 grams of soil.
- This standard is not preserved.
- The standard can be stored at room temperature.
- The standard will contain Reactive and Total Cyanide in the range specified on the data reporting form.

Before you Begin:
- This standard is designed to be distilled using the procedures in the most recent revisions of EPA methods 9010, 9012 or equivalent.
- Although all ERA soil standards have been thoroughly blended prior to shipping, the standards should be homogenized prior to taking an aliquot for analysis due to settling which may occur during shipping.
- The percent moisture of this standard should be determined and your analytical results adjusted accordingly and reported on a dry weight basis.

Instructions:
1. Open the Cyanide in Soil standard in a fume hood to avoid inhalation of dust.
2. Mix the sample well prior to removing aliquots for analysis.
3. Distill and analyze the standard using your normal procedures.
4. Determine the percent moisture of an aliquot of the Cyanide in Soil standard.
5. Report your results as mg/kg on a dry weight basis.

Safety:
ERA products may be hazardous and are intended for use by professional laboratory personnel trained in the competent handling of such materials. Responsibility for the safe use of these products rests entirely with the buyer and/or user. Material Safety Data Sheets (MSDS) for all ERA products are available by calling 1-800-372-0122.

ERA

A Waters Company

Instructions for Catalog #666QR
WatR™Supply Mercury

Revision 030512

Description:

- This standard is packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate.
- This concentrate is preserved with approximately 1% (v/v) nitric acid and 0.04% (w/v) potassium dichromate.
- The concentrate can be stored at room temperature.
- The diluted standard will contain Mercury in the range specified on the data reporting form.

Before you begin:

- This standard has been prepared as a concentrate and must be diluted prior to analysis.
- The USEPA *Criteria Document* requires that Mercury be present as a mixture of organic and inorganic forms and must, therefore, be analyzed as Total Mercury.
- This standard should be analyzed as soon as possible after the concentrate is diluted.

Instructions:

1. Add 100-200 mL of deionized water and approximately 2 to 5 mL of nitric acid to a clean 500 mL class A volumetric flask.
2. Shake the Mercury vial prior to opening.
3. Using a clean, dry, class A pipet, volumetrically pipet 5.0 mL of the concentrate into the 500 mL volumetric flask.
4. Dilute the flask to final volume with deionized water.
5. Cap the flask and mix well.
6. Immediately analyze the diluted sample by your normal procedures.
7. Report your results as µg/L for the diluted sample.

Safety:

ERA products may be hazardous and are intended for use by professional laboratory personnel trained in the competent handling of such materials. Responsibility for the safe use of these products rests entirely with the buyer and/or user. Material Safety Data Sheets (MSDS) for all ERA products are available by calling 1-800-372-0122.

ERA

A Waters Company

Instructions for Catalog # 697QR

WatR™Supply Metals

Revision 030512

Description:

- This standard is packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate.
- This concentrate is preserved with approximately 2% (v/v) nitric acid.
- The concentrate can be stored at room temperature.
- The diluted standard will contain all the analytes listed in the ranges specified on the data reporting form.

Before you begin:

- This standard has been prepared as a concentrate and must be diluted prior to analysis.
- The sample resulting from the dilution described below will have a nitric acid concentration of approximately 0.01% before any acid is added. You may add a volume of acid different from the 2 to 5 mL of nitric acid suggested in order to match the matrix of your calibration standards or to meet any other method requirements.
- If analyzing this standard using colorimetric techniques, it may be necessary to pH adjust the sample prior to analysis. If using colorimetric techniques, it is acceptable to omit the addition of the 2-5 mL nitric acid suggested.
- While it is technically not necessary to digest this standard prior to analysis, digestion should be performed if this is your normal procedure.
- This standard should be analyzed as soon as possible after the concentrate is diluted.

Instructions:

1. Add 100-200 mL of deionized water and approximately 2 to 5 mL of nitric acid to a clean 1000 mL class A volumetric flask.
2. Shake the Metals vial prior to opening.
3. Using a clean, dry, class A pipet, volumetrically pipet 5.0 mL of the concentrate into the 1000 mL volumetric flask.
4. Dilute the flask to final volume with deionized water.
5. Cap the flask and mix well.
6. Immediately analyze the diluted sample by your normal procedures.
7. Report your results as µg/L for the diluted sample.

Safety:

ERA products may be hazardous and are intended for use by professional laboratory personnel trained in the competent handling of such materials. Responsibility for the safe use of these products rests entirely with the buyer and/or user. Material Safety Data Sheets (MSDS) for all ERA products are available by calling 1-800-372-0122.

ERA

A Waters Company

Instructions for Catalog # 983QR

WatR™Supply Cyanide

Revision 030512

Description:

- This standard is packaged in a 15 mL screw-top vial containing approximately 14 mL of standard concentrate.
- This concentrate is preserved with approximately 0.25%(w/v) sodium hydroxide.
- The concentrate can be stored at room temperature.
- The diluted standard will contain Total Cyanide in the range specified on the data reporting form.

Before you begin:

- This standard has been prepared as a concentrate and must be diluted prior to analysis.
- This standard does not require distillation prior to analysis.
- This standard should be analyzed as soon as possible after the concentrate is diluted.

Instructions:

1. Add 100-200 mL of deionized water and approximately 1 to 2 mL of 50% sodium hydroxide to a clean 1000 mL class A volumetric flask.
2. Shake the Cyanide vial prior to opening.
3. Using a clean, dry, class A pipet, volumetrically pipet 5.0 mL of the concentrate into the 1000 mL volumetric flask.
4. Dilute the flask to final volume with deionized water.
5. Cap the flask and mix well.
6. Immediately analyze the diluted sample by your normal procedures.
7. Report your results as mg/L for the diluted sample.

Safety:

ERA products may be hazardous and are intended for use by professional laboratory personnel trained in the competent handling of such materials. Responsibility for the safe use of these products rests entirely with the buyer and/or user. Material Safety Data Sheets (MSDS) for all ERA products are available by calling 1-800-372-0122.