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Fax : 908 789 8922

Cover Page

Order ID : P5093

Project ID : MC054.36 23-8-1 LM - Landing Lane New Brunswick

Client : R3M Engineering, Inc.

Lab Sample Number	Client Sample Number
P5093-01	LL-001
P5093-02	LL-001-FB-12-4-24
P5093-03	TB-12-4-24

I certify that the data package is in compliance with the terms and conditions of the contract,both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.

Signature : _____

Date: 12/13/2024

NYDOH CERTIFICATION NO - 11376

NJDEP CERTIFICATION NO - 20012

Alliance TECHNICAL GROUP

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Tel. 908-789-8900 Fax: 908-789-8922

DATA REPORTING QUALIFIERS- INORGANIC

For reporting results, the following " Results Qualifiers" are used:

J	Indicates the reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL), but greater than or equal to the Instrument Detection Limit (IDL).
U	Indicates the analyte was analyzed for, but not detected.
ND	Indicates the analyte was analyzed for, but not detected
E	Indicates the reported value is estimated because of the presence of interference
M	Indicates Duplicate injection precision not met.
N	Indicates the spiked sample recovery is not within control limits.
S	Indicates the reported value was determined by the Method of Standard Addition (MSA).
*	Indicates that the duplicate analysis is not within control limits.
+	Indicates the correlation coefficient for the MSA is less than 0.995.
D	Indicates the reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.
M	Method qualifiers **"P"** for ICP instrument **"PM"** for ICP when Microwave Digestion is used **"CV"** for Manual Cold Vapor AA **"AV"** for automated Cold Vapor AA **"CA"** for MIDI-Distillation Spectrophotometric **"AS"** for Semi –Automated Spectrophotometric **"C"** for Manual Spectrophotometric **"T"** for Titrimetric **"NR"** for analyte not required to be analyzed
OR	Indicates the analyte's concentration exceeds the calibrated range of the instrument for that specific analysis.
Q	Indicates the LCS did not meet the control limits requirements
H	Sample Analysis Out Of Hold Time

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APPENDIX A

QA REVIEW GENERAL DOCUMENTATION

Project #: **P5093**

	Completed
For thorough review, the report must have the following:	
GENERAL:	
Are all original paperwork present (chain of custody, record of communication,airbill, sample management lab chronicle, login page)	✓
Check chain-of-custody for proper relinquish/return of samples	✓
Is the chain of custody signed and complete	✓
Check internal chain-of-custody for proper relinquish/return of samples /sample extracts	✓
Collect information for each project id from server. Were all requirements followed	✓
COVER PAGE:	
Do numbers of samples correspond to the number of samples in the Chain of Custody on login page	✓
Do lab numbers and client Ids on cover page agree with the Chain of Custody	✓
CHAIN OF CUSTODY:	
Do requested analyses on Chain of Custody agree with form I results	✓
Do requested analyses on Chain of Custody agree with the log-in page	✓
Were the correct method log-in for analysis according to the Analytical Request and Chain of Castody	✓
Were the samples received within hold time	✓
Were any problems found with the samples at arrival recorded in the Sample Management Laboratory Chronicle	✓
ANALYTICAL:	
Was method requirement followed?	✓
Was client requirement followed?	✓
Does the case narrative summarize all QC failure?	✓
All runlogs and manual integration are reviewed for requirements	✓
All manual calculations and /or hand notations verified	✓

QA Review Signature: **PRADIP PRAJAPATI** **Date:** **12/13/2024**

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LAB CHRONICLE

OrderID:	P5093	**OrderDate:**	12/4/2024 12:24:38 PM
Client:	R3M Engineering, Inc.	**Project:**	MC054.36 23-8-1 LM - Landing Lane New Brunswick
Contact:	Stacey L. Felts-Bock	**Location:**	L41,VOA Ref. #3 Water

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
P5093-01	**LL-001**	**Water**			**12/04/24**			**12/04/24**
			Mercury	7470A		12/06/24	12/06/24	
			Metals ICP-TAL	6010D		12/09/24	12/10/24	
P5093-02	**LL-001-FB-12-4-24**	**Water**			**12/04/24**			**12/04/24**
			Mercury	7470A		12/06/24	12/06/24	
			Metals ICP-TAL	6010D		12/09/24	12/10/24	

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Hit Summary Sheet
SW-846

SDG No.: P5093 **Order ID:** P5093

Client: R3M Engineering, Inc. **Project ID:** MC054.36 23-8-1 LM - Landing Lane New

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	RDL	Units
Client ID : LL-001								
P5093-01	LL-001	Water	Aluminum	4760		28.3	50.0	ug/L
P5093-01	LL-001	Water	Barium	198		6.28	50.0	ug/L
P5093-01	LL-001	Water	Beryllium	0.22	J	0.13	3.00	ug/L
P5093-01	LL-001	Water	Cadmium	0.26	J	0.094	3.00	ug/L
P5093-01	LL-001	Water	Calcium	24100		33.0	1000	ug/L
P5093-01	LL-001	Water	Chromium	5.63		0.66	5.00	ug/L
P5093-01	LL-001	Water	Cobalt	1.84	J	0.50	15.0	ug/L
P5093-01	LL-001	Water	Copper	8.11	J	7.07	10.0	ug/L
P5093-01	LL-001	Water	Iron	3300		18.5	50.0	ug/L
P5093-01	LL-001	Water	Lead	9.28		3.51	6.00	ug/L
P5093-01	LL-001	Water	Magnesium	8590		39.4	1000	ug/L
P5093-01	LL-001	Water	Manganese	204		1.46	10.0	ug/L
P5093-01	LL-001	Water	Nickel	5.63	J	0.85	20.0	ug/L
P5093-01	LL-001	Water	Potassium	4060		685	1000	ug/L
P5093-01	LL-001	Water	Sodium	19500		237	1000	ug/L
P5093-01	LL-001	Water	Vanadium	8.40	J	3.06	20.0	ug/L
P5093-01	LL-001	Water	Zinc	22.7		1.75	20.0	ug/L
Client ID : LL-001-FB-12-4-24								
P5093-02	LL-001-FB-12-4-24	Water	Manganese	1.80	J	1.46	10.0	ug/L

SAMPLE DATA

Alliance TECHNICAL GROUP
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Report of Analysis

Client:	R3M Engineering, Inc.	Date Collected:	12/04/24
Project:	MC054.36 23-8-1 LM - Landing Lane New Brunswick	Date Received:	12/04/24
Client Sample ID:	LL-001	SDG No.:	P5093
Lab Sample ID:	P5093-01	Matrix:	Water
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.	Prep Met.
7429-90-5	Aluminum	4760		1	28.3	50.0	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7440-36-0	Antimony	2.06	U	1	2.06	25.0	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7440-38-2	Arsenic	3.48	U	1	3.48	10.0	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7440-39-3	Barium	198		1	6.28	50.0	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7440-41-7	Beryllium	0.22	J	1	0.13	3.00	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7440-43-9	Cadmium	0.26	J	1	0.094	3.00	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7440-70-2	Calcium	24100		1	33.0	1000	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7440-47-3	Chromium	5.63		1	0.66	5.00	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7440-48-4	Cobalt	1.84	J	1	0.50	15.0	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7440-50-8	Copper	8.11	J	1	7.07	10.0	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7439-89-6	Iron	3300		1	18.5	50.0	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7439-92-1	Lead	9.28		1	3.51	6.00	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7439-95-4	Magnesium	8590		1	39.4	1000	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7439-96-5	Manganese	204		1	1.46	10.0	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7439-97-6	Mercury	0.081	UN	1	0.081	0.20	ug/L	12/06/24 09:25	12/06/24 12:47	SW7470A	
7440-02-0	Nickel	5.63	J	1	0.85	20.0	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7440-09-7	Potassium	4060		1	685	1000	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7782-49-2	Selenium	5.88	U	1	5.88	10.0	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7440-22-4	Silver	0.58	U	1	0.58	5.00	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7440-23-5	Sodium	19500		1	237	1000	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7440-28-0	Thallium	2.32	U	1	2.32	20.0	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7440-62-2	Vanadium	8.40	J	1	3.06	20.0	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010
7440-66-6	Zinc	22.7		1	1.75	20.0	ug/L	12/09/24 09:10	12/10/24 12:18	SW6010	SW3010

Color Before:	Colorless	Clarity Before:	Clear	Texture:	
Color After:	Colorless	Clarity After:	Clear	Artifacts:	
Comments:	TCL+30/TAL				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution
Q = indicates LCS control criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
* = indicates the duplicate analysis is not within control limits.
E = Indicates the reported value is estimated because of the presence of interference.
OR = Over Range
N =Spiked sample recovery not within control limits

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Report of Analysis

Client:	R3M Engineering, Inc.	Date Collected:	12/04/24
Project:	MC054.36 23-8-1 LM - Landing Lane New Brunswick	Date Received:	12/04/24
Client Sample ID:	LL-001-FB-12-4-24	SDG No.:	P5093
Lab Sample ID:	P5093-02	Matrix:	Water
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.	Prep Met.
7429-90-5	Aluminum	28.3	U	1	28.3	50.0	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7440-36-0	Antimony	2.06	U	1	2.06	25.0	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7440-38-2	Arsenic	3.48	U	1	3.48	10.0	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7440-39-3	Barium	6.28	U	1	6.28	50.0	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7440-41-7	Beryllium	0.13	U	1	0.13	3.00	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7440-43-9	Cadmium	0.094	U	1	0.094	3.00	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7440-70-2	Calcium	33.0	U	1	33.0	1000	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7440-47-3	Chromium	0.66	U	1	0.66	5.00	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7440-48-4	Cobalt	0.50	U	1	0.50	15.0	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7440-50-8	Copper	7.07	U	1	7.07	10.0	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7439-89-6	Iron	18.5	U	1	18.5	50.0	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7439-92-1	Lead	3.51	U	1	3.51	6.00	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7439-95-4	Magnesium	39.4	U	1	39.4	1000	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7439-96-5	Manganese	1.80	J	1	1.46	10.0	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7439-97-6	Mercury	0.081	UN	1	0.081	0.20	ug/L	12/06/24 09:25	12/06/24 12:50	SW7470A	
7440-02-0	Nickel	0.85	U	1	0.85	20.0	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7440-09-7	Potassium	685	U	1	685	1000	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7782-49-2	Selenium	5.88	U	1	5.88	10.0	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7440-22-4	Silver	0.58	U	1	0.58	5.00	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7440-23-5	Sodium	237	U	1	237	1000	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7440-28-0	Thallium	2.32	U	1	2.32	20.0	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7440-62-2	Vanadium	3.06	U	1	3.06	20.0	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010
7440-66-6	Zinc	1.75	U	1	1.75	20.0	ug/L	12/09/24 09:10	12/10/24 12:22	SW6010	SW3010

Color Before:	Colorless	Clarity Before:	Clear	Texture:	
Color After:	Colorless	Clarity After:	Clear	Artifacts:	
Comments:	TCL+30/TAL				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution
Q = indicates LCS control criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
* = indicates the duplicate analysis is not within control limits.
E = Indicates the reported value is estimated because of the presence of interference.
OR = Over Range
N =Spiked sample recovery not within control limits

METAL CALIBRATION DATA

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Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Initial Calibration Source: EPA

Continuing Calibration Source: PLASMA-PURE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV11	Mercury	3.84	4.0	96	90 - 110	CV	12/06/2024	11:38	LB133780

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Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Initial Calibration Source: EPA

Continuing Calibration Source: PLASMA-PURE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV95	Mercury	5.00	5.0	100	90 - 110	CV	12/06/2024	11:42	LB133780
CCV96	Mercury	5.40	5.0	108	90 - 110	CV	12/06/2024	12:36	LB133780
CCV97	Mercury	4.54	5.0	91	90 - 110	CV	12/06/2024	12:59	LB133780

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Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV01	Aluminum	2680	2500	107	90 - 110	P	12/10/2024	11:04	LB133866
	Antimony	1030	1000	103	90 - 110	P	12/10/2024	11:04	LB133866
	Arsenic	1040	1000	104	90 - 110	P	12/10/2024	11:04	LB133866
	Barium	535	520	103	90 - 110	P	12/10/2024	11:04	LB133866
	Beryllium	530	510	104	90 - 110	P	12/10/2024	11:04	LB133866
	Cadmium	520	510	102	90 - 110	P	12/10/2024	11:04	LB133866
	Calcium	10600	10000	106	90 - 110	P	12/10/2024	11:04	LB133866
	Chromium	551	520	106	90 - 110	P	12/10/2024	11:04	LB133866
	Cobalt	529	520	102	90 - 110	P	12/10/2024	11:04	LB133866
	Copper	546	510	107	90 - 110	P	12/10/2024	11:04	LB133866
	Iron	10300	10000	103	90 - 110	P	12/10/2024	11:04	LB133866
	Lead	1030	1000	103	90 - 110	P	12/10/2024	11:04	LB133866
	Magnesium	6190	6000	103	90 - 110	P	12/10/2024	11:04	LB133866
	Manganese	539	520	104	90 - 110	P	12/10/2024	11:04	LB133866
	Nickel	531	530	100	90 - 110	P	12/10/2024	11:04	LB133866
	Potassium	10200	9900	103	90 - 110	P	12/10/2024	11:04	LB133866
	Selenium	1070	1000	107	90 - 110	P	12/10/2024	11:04	LB133866
	Silver	264	250	106	90 - 110	P	12/10/2024	11:04	LB133866
	Sodium	9810	10000	98	90 - 110	P	12/10/2024	11:04	LB133866
	Thallium	1100	1000	110	90 - 110	P	12/10/2024	11:04	LB133866
	Vanadium	524	500	105	90 - 110	P	12/10/2024	11:04	LB133866
	Zinc	1090	1000	108	90 - 110	P	12/10/2024	11:04	LB133866

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Metals

- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLICV01	Aluminum	106	100	106	80 - 120	P	12/10/2024	11:08	LB133866
	Antimony	50.0	50.0	100	80 - 120	P	12/10/2024	11:08	LB133866
	Arsenic	21.8	20.0	109	80 - 120	P	12/10/2024	11:08	LB133866
	Barium	101	100	101	80 - 120	P	12/10/2024	11:08	LB133866
	Beryllium	6.27	6.0	104	80 - 120	P	12/10/2024	11:08	LB133866
	Cadmium	5.98	6.0	100	80 - 120	P	12/10/2024	11:08	LB133866
	Calcium	2140	2000	107	80 - 120	P	12/10/2024	11:08	LB133866
	Chromium	9.98	10.0	100	80 - 120	P	12/10/2024	11:08	LB133866
	Cobalt	29.9	30.0	100	80 - 120	P	12/10/2024	11:08	LB133866
	Copper	22.8	20.0	114	80 - 120	P	12/10/2024	11:08	LB133866
	Iron	98.9	100	99	80 - 120	P	12/10/2024	11:08	LB133866
	Lead	12.4	12.0	103	80 - 120	P	12/10/2024	11:08	LB133866
	Magnesium	2230	2000	111	80 - 120	P	12/10/2024	11:08	LB133866
	Manganese	21.4	20.0	107	80 - 120	P	12/10/2024	11:08	LB133866
	Nickel	39.8	40.0	99	80 - 120	P	12/10/2024	11:08	LB133866
	Potassium	1990	2000	100	80 - 120	P	12/10/2024	11:08	LB133866
	Selenium	20.4	20.0	102	80 - 120	P	12/10/2024	11:08	LB133866
	Silver	10.6	10.0	106	80 - 120	P	12/10/2024	11:08	LB133866
	Sodium	1850	2000	92	80 - 120	P	12/10/2024	11:08	LB133866
	Thallium	42.6	40.0	106	80 - 120	P	12/10/2024	11:08	LB133866
	Vanadium	42.5	40.0	106	80 - 120	P	12/10/2024	11:08	LB133866
	Zinc	45.5	40.0	114	80 - 120	P	12/10/2024	11:08	LB133866

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Fax : 908 789 8922

Metals

- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV01	Aluminum	9940	10000	99	90 - 110	P	12/10/2024	11:44	LB133866
	Antimony	4960	5000	99	90 - 110	P	12/10/2024	11:44	LB133866
	Arsenic	4920	5000	98	90 - 110	P	12/10/2024	11:44	LB133866
	Barium	9610	10000	96	90 - 110	P	12/10/2024	11:44	LB133866
	Beryllium	243	250	97	90 - 110	P	12/10/2024	11:44	LB133866
	Cadmium	2430	2500	97	90 - 110	P	12/10/2024	11:44	LB133866
	Calcium	24000	25000	96	90 - 110	P	12/10/2024	11:44	LB133866
	Chromium	1000	1000	100	90 - 110	P	12/10/2024	11:44	LB133866
	Cobalt	2430	2500	97	90 - 110	P	12/10/2024	11:44	LB133866
	Copper	1240	1250	100	90 - 110	P	12/10/2024	11:44	LB133866
	Iron	4810	5000	96	90 - 110	P	12/10/2024	11:44	LB133866
	Lead	4880	5000	98	90 - 110	P	12/10/2024	11:44	LB133866
	Magnesium	24200	25000	97	90 - 110	P	12/10/2024	11:44	LB133866
	Manganese	2350	2500	94	90 - 110	P	12/10/2024	11:44	LB133866
	Nickel	2430	2500	97	90 - 110	P	12/10/2024	11:44	LB133866
	Potassium	24600	25000	98	90 - 110	P	12/10/2024	11:44	LB133866
	Selenium	4990	5000	100	90 - 110	P	12/10/2024	11:44	LB133866
	Silver	1240	1250	99	90 - 110	P	12/10/2024	11:44	LB133866
	Sodium	24000	25000	96	90 - 110	P	12/10/2024	11:44	LB133866
	Thallium	5020	5000	100	90 - 110	P	12/10/2024	11:44	LB133866
	Vanadium	2450	2500	98	90 - 110	P	12/10/2024	11:44	LB133866
	Zinc	2520	2500	101	90 - 110	P	12/10/2024	11:44	LB133866
CCV02	Aluminum	9780	10000	98	90 - 110	P	12/10/2024	12:35	LB133866
	Antimony	4900	5000	98	90 - 110	P	12/10/2024	12:35	LB133866
	Arsenic	4840	5000	97	90 - 110	P	12/10/2024	12:35	LB133866
	Barium	9620	10000	96	90 - 110	P	12/10/2024	12:35	LB133866
	Beryllium	234	250	94	90 - 110	P	12/10/2024	12:35	LB133866
	Cadmium	2360	2500	95	90 - 110	P	12/10/2024	12:35	LB133866
	Calcium	23400	25000	94	90 - 110	P	12/10/2024	12:35	LB133866
	Chromium	969	1000	97	90 - 110	P	12/10/2024	12:35	LB133866
	Cobalt	2370	2500	95	90 - 110	P	12/10/2024	12:35	LB133866
	Copper	1230	1250	98	90 - 110	P	12/10/2024	12:35	LB133866
	Iron	4760	5000	95	90 - 110	P	12/10/2024	12:35	LB133866
	Lead	4760	5000	95	90 - 110	P	12/10/2024	12:35	LB133866

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Metals

- 2a -
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV02	Magnesium	23500	25000	94	90 - 110	P	12/10/2024	12:35	LB133866
	Manganese	2320	2500	93	90 - 110	P	12/10/2024	12:35	LB133866
	Nickel	2370	2500	95	90 - 110	P	12/10/2024	12:35	LB133866
	Potassium	24700	25000	99	90 - 110	P	12/10/2024	12:35	LB133866
	Selenium	4920	5000	98	90 - 110	P	12/10/2024	12:35	LB133866
	Silver	1210	1250	97	90 - 110	P	12/10/2024	12:35	LB133866
	Sodium	24700	25000	99	90 - 110	P	12/10/2024	12:35	LB133866
	Thallium	4940	5000	99	90 - 110	P	12/10/2024	12:35	LB133866
	Vanadium	2400	2500	96	90 - 110	P	12/10/2024	12:35	LB133866
	Zinc	2480	2500	99	90 - 110	P	12/10/2024	12:35	LB133866
CCV03	Aluminum	9960	10000	100	90 - 110	P	12/10/2024	13:26	LB133866
	Antimony	4980	5000	100	90 - 110	P	12/10/2024	13:26	LB133866
	Arsenic	4920	5000	98	90 - 110	P	12/10/2024	13:26	LB133866
	Barium	9640	10000	96	90 - 110	P	12/10/2024	13:26	LB133866
	Beryllium	238	250	95	90 - 110	P	12/10/2024	13:26	LB133866
	Cadmium	2410	2500	96	90 - 110	P	12/10/2024	13:26	LB133866
	Calcium	23800	25000	95	90 - 110	P	12/10/2024	13:26	LB133866
	Chromium	996	1000	100	90 - 110	P	12/10/2024	13:26	LB133866
	Cobalt	2420	2500	97	90 - 110	P	12/10/2024	13:26	LB133866
	Copper	1250	1250	100	90 - 110	P	12/10/2024	13:26	LB133866
	Iron	4810	5000	96	90 - 110	P	12/10/2024	13:26	LB133866
	Lead	4850	5000	97	90 - 110	P	12/10/2024	13:26	LB133866
	Magnesium	24000	25000	96	90 - 110	P	12/10/2024	13:26	LB133866
	Manganese	2320	2500	93	90 - 110	P	12/10/2024	13:26	LB133866
	Nickel	2420	2500	97	90 - 110	P	12/10/2024	13:26	LB133866
	Potassium	25000	25000	100	90 - 110	P	12/10/2024	13:26	LB133866
	Selenium	5000	5000	100	90 - 110	P	12/10/2024	13:26	LB133866
	Silver	1240	1250	99	90 - 110	P	12/10/2024	13:26	LB133866
	Sodium	24000	25000	96	90 - 110	P	12/10/2024	13:26	LB133866
	Thallium	4910	5000	98	90 - 110	P	12/10/2024	13:26	LB133866
	Vanadium	2430	2500	97	90 - 110	P	12/10/2024	13:26	LB133866
	Zinc	2520	2500	101	90 - 110	P	12/10/2024	13:26	LB133866
CCV04	Aluminum	9890	10000	99	90 - 110	P	12/10/2024	14:19	LB133866
	Antimony	5000	5000	100	90 - 110	P	12/10/2024	14:19	LB133866

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Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV04	Arsenic	4920	5000	98	90 - 110	P	12/10/2024	14:19	LB133866
	Barium	9760	10000	98	90 - 110	P	12/10/2024	14:19	LB133866
	Beryllium	242	250	97	90 - 110	P	12/10/2024	14:19	LB133866
	Cadmium	2410	2500	96	90 - 110	P	12/10/2024	14:19	LB133866
	Calcium	24000	25000	96	90 - 110	P	12/10/2024	14:19	LB133866
	Chromium	991	1000	99	90 - 110	P	12/10/2024	14:19	LB133866
	Cobalt	2420	2500	97	90 - 110	P	12/10/2024	14:19	LB133866
	Copper	1250	1250	100	90 - 110	P	12/10/2024	14:19	LB133866
	Iron	4800	5000	96	90 - 110	P	12/10/2024	14:19	LB133866
	Lead	4850	5000	97	90 - 110	P	12/10/2024	14:19	LB133866
	Magnesium	24000	25000	96	90 - 110	P	12/10/2024	14:19	LB133866
	Manganese	2360	2500	94	90 - 110	P	12/10/2024	14:19	LB133866
	Nickel	2420	2500	97	90 - 110	P	12/10/2024	14:19	LB133866
	Potassium	24900	25000	99	90 - 110	P	12/10/2024	14:19	LB133866
	Selenium	4980	5000	100	90 - 110	P	12/10/2024	14:19	LB133866
	Silver	1230	1250	99	90 - 110	P	12/10/2024	14:19	LB133866
	Sodium	24600	25000	98	90 - 110	P	12/10/2024	14:19	LB133866
	Thallium	4830	5000	97	90 - 110	P	12/10/2024	14:19	LB133866
	Vanadium	2450	2500	98	90 - 110	P	12/10/2024	14:19	LB133866
	Zinc	2510	2500	100	90 - 110	P	12/10/2024	14:19	LB133866

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Metals

- 2b -
CRDL STANDARD FOR AA & ICP

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Initial Calibration Source:

Continuing Calibration Source:

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CRA	Mercury	0.19	0.2	95	40 - 160	CV	12/06/2024	11:47	LB133780
CRI01	Aluminum	102	100	102	40 - 160	P	12/10/2024	11:24	LB133866
	Antimony	50.3	50.0	101	40 - 160	P	12/10/2024	11:24	LB133866
	Arsenic	20.7	20.0	103	40 - 160	P	12/10/2024	11:24	LB133866
	Barium	96.1	100	96	40 - 160	P	12/10/2024	11:24	LB133866
	Beryllium	6.08	6.0	101	40 - 160	P	12/10/2024	11:24	LB133866
	Cadmium	5.80	6.0	97	40 - 160	P	12/10/2024	11:24	LB133866
	Calcium	2050	2000	103	40 - 160	P	12/10/2024	11:24	LB133866
	Chromium	9.86	10.0	99	40 - 160	P	12/10/2024	11:24	LB133866
	Cobalt	29.2	30.0	97	40 - 160	P	12/10/2024	11:24	LB133866
	Copper	22.5	20.0	113	40 - 160	P	12/10/2024	11:24	LB133866
	Iron	95.2	100	95	40 - 160	P	12/10/2024	11:24	LB133866
	Lead	11.2	12.0	94	40 - 160	P	12/10/2024	11:24	LB133866
	Magnesium	2170	2000	108	40 - 160	P	12/10/2024	11:24	LB133866
	Manganese	20.6	20.0	103	40 - 160	P	12/10/2024	11:24	LB133866
	Nickel	39.3	40.0	98	40 - 160	P	12/10/2024	11:24	LB133866
	Potassium	1940	2000	97	40 - 160	P	12/10/2024	11:24	LB133866
	Selenium	21.1	20.0	105	40 - 160	P	12/10/2024	11:24	LB133866
	Silver	10.7	10.0	107	40 - 160	P	12/10/2024	11:24	LB133866
	Sodium	1790	2000	89	40 - 160	P	12/10/2024	11:24	LB133866
	Thallium	40.7	40.0	102	40 - 160	P	12/10/2024	11:24	LB133866
	Vanadium	41.8	40.0	105	40 - 160	P	12/10/2024	11:24	LB133866
	Zinc	43.8	40.0	110	40 - 160	P	12/10/2024	11:24	LB133866

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Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB11	Mercury	0.20	+/-0.20	U	0.20	CV	12/06/2024	11:40	LB133780

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Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB95	Mercury	0.20	+/-0.20	U	0.20	CV	12/06/2024	11:45	LB133780
CCB96	Mercury	0.20	+/-0.20	U	0.20	CV	12/06/2024	12:41	LB133780
CCB97	Mercury	0.20	+/-0.20	U	0.20	CV	12/06/2024	13:01	LB133780

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Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB01	Aluminum	100	+/-100	U	100	P	12/10/2024	11:20	LB133866
	Antimony	50.0	+/-50.0	U	50.0	P	12/10/2024	11:20	LB133866
	Arsenic	20.0	+/-20.0	U	20.0	P	12/10/2024	11:20	LB133866
	Barium	100	+/-100	U	100	P	12/10/2024	11:20	LB133866
	Beryllium	6.00	+/-6.00	U	6.00	P	12/10/2024	11:20	LB133866
	Cadmium	6.00	+/-6.00	U	6.00	P	12/10/2024	11:20	LB133866
	Calcium	2000	+/-2000	U	2000	P	12/10/2024	11:20	LB133866
	Chromium	10.0	+/-10.0	U	10.0	P	12/10/2024	11:20	LB133866
	Cobalt	30.0	+/-30.0	U	30.0	P	12/10/2024	11:20	LB133866
	Copper	20.0	+/-20.0	U	20.0	P	12/10/2024	11:20	LB133866
	Iron	100	+/-100	U	100	P	12/10/2024	11:20	LB133866
	Lead	12.0	+/-12.0	U	12.0	P	12/10/2024	11:20	LB133866
	Magnesium	2000	+/-2000	U	2000	P	12/10/2024	11:20	LB133866
	Manganese	20.0	+/-20.0	U	20.0	P	12/10/2024	11:20	LB133866
	Nickel	40.0	+/-40.0	U	40.0	P	12/10/2024	11:20	LB133866
	Potassium	2000	+/-2000	U	2000	P	12/10/2024	11:20	LB133866
	Selenium	20.0	+/-20.0	U	20.0	P	12/10/2024	11:20	LB133866
	Silver	10.0	+/-10.0	U	10.0	P	12/10/2024	11:20	LB133866
	Sodium	2000	+/-2000	U	2000	P	12/10/2024	11:20	LB133866
	Thallium	40.0	+/-40.0	U	40.0	P	12/10/2024	11:20	LB133866
	Vanadium	40.0	+/-40.0	U	40.0	P	12/10/2024	11:20	LB133866
	Zinc	40.0	+/-40.0	U	40.0	P	12/10/2024	11:20	LB133866

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Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB01	Aluminum	100	+/-100	U	100	P	12/10/2024	11:48	LB133866
	Antimony	50.0	+/-50.0	U	50.0	P	12/10/2024	11:48	LB133866
	Arsenic	20.0	+/-20.0	U	20.0	P	12/10/2024	11:48	LB133866
	Barium	100	+/-100	U	100	P	12/10/2024	11:48	LB133866
	Beryllium	6.00	+/-6.00	U	6.00	P	12/10/2024	11:48	LB133866
	Cadmium	6.00	+/-6.00	U	6.00	P	12/10/2024	11:48	LB133866
	Calcium	2000	+/-2000	U	2000	P	12/10/2024	11:48	LB133866
	Chromium	10.0	+/-10.0	U	10.0	P	12/10/2024	11:48	LB133866
	Cobalt	30.0	+/-30.0	U	30.0	P	12/10/2024	11:48	LB133866
	Copper	20.0	+/-20.0	U	20.0	P	12/10/2024	11:48	LB133866
	Iron	100	+/-100	U	100	P	12/10/2024	11:48	LB133866
	Lead	12.0	+/-12.0	U	12.0	P	12/10/2024	11:48	LB133866
	Magnesium	2000	+/-2000	U	2000	P	12/10/2024	11:48	LB133866
	Manganese	20.0	+/-20.0	U	20.0	P	12/10/2024	11:48	LB133866
	Nickel	40.0	+/-40.0	U	40.0	P	12/10/2024	11:48	LB133866
	Potassium	2000	+/-2000	U	2000	P	12/10/2024	11:48	LB133866
	Selenium	20.0	+/-20.0	U	20.0	P	12/10/2024	11:48	LB133866
	Silver	10.0	+/-10.0	U	10.0	P	12/10/2024	11:48	LB133866
	Sodium	2000	+/-2000	U	2000	P	12/10/2024	11:48	LB133866
	Thallium	40.0	+/-40.0	U	40.0	P	12/10/2024	11:48	LB133866
	Vanadium	40.0	+/-40.0	U	40.0	P	12/10/2024	11:48	LB133866
	Zinc	40.0	+/-40.0	U	40.0	P	12/10/2024	11:48	LB133866
CCB02	Aluminum	100	+/-100	U	100	P	12/10/2024	12:39	LB133866
	Antimony	50.0	+/-50.0	U	50.0	P	12/10/2024	12:39	LB133866
	Arsenic	20.0	+/-20.0	U	20.0	P	12/10/2024	12:39	LB133866
	Barium	100	+/-100	U	100	P	12/10/2024	12:39	LB133866
	Beryllium	6.00	+/-6.00	U	6.00	P	12/10/2024	12:39	LB133866
	Cadmium	6.00	+/-6.00	U	6.00	P	12/10/2024	12:39	LB133866
	Calcium	2000	+/-2000	U	2000	P	12/10/2024	12:39	LB133866
	Chromium	10.0	+/-10.0	U	10.0	P	12/10/2024	12:39	LB133866
	Cobalt	30.0	+/-30.0	U	30.0	P	12/10/2024	12:39	LB133866
	Copper	20.0	+/-20.0	U	20.0	P	12/10/2024	12:39	LB133866
	Iron	100	+/-100	U	100	P	12/10/2024	12:39	LB133866
	Lead	12.0	+/-12.0	U	12.0	P	12/10/2024	12:39	LB133866
	Magnesium	2000	+/-2000	U	2000	P	12/10/2024	12:39	LB133866
	Manganese	20.0	+/-20.0	U	20.0	P	12/10/2024	12:39	LB133866
	Nickel	40.0	+/-40.0	U	40.0	P	12/10/2024	12:39	LB133866
	Potassium	2000	+/-2000	U	2000	P	12/10/2024	12:39	LB133866
	Selenium	20.0	+/-20.0	U	20.0	P	12/10/2024	12:39	LB133866

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Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB02	Silver	10.0	+/-10.0	U	10.0	P	12/10/2024	12:39	LB133866
	Sodium	2000	+/-2000	U	2000	P	12/10/2024	12:39	LB133866
	Thallium	40.0	+/-40.0	U	40.0	P	12/10/2024	12:39	LB133866
	Vanadium	40.0	+/-40.0	U	40.0	P	12/10/2024	12:39	LB133866
	Zinc	40.0	+/-40.0	U	40.0	P	12/10/2024	12:39	LB133866
CCB03	Aluminum	100	+/-100	U	100	P	12/10/2024	13:30	LB133866
	Antimony	50.0	+/-50.0	U	50.0	P	12/10/2024	13:30	LB133866
	Arsenic	20.0	+/-20.0	U	20.0	P	12/10/2024	13:30	LB133866
	Barium	100	+/-100	U	100	P	12/10/2024	13:30	LB133866
	Beryllium	6.00	+/-6.00	U	6.00	P	12/10/2024	13:30	LB133866
	Cadmium	6.00	+/-6.00	U	6.00	P	12/10/2024	13:30	LB133866
	Calcium	2000	+/-2000	U	2000	P	12/10/2024	13:30	LB133866
	Chromium	10.0	+/-10.0	U	10.0	P	12/10/2024	13:30	LB133866
	Cobalt	30.0	+/-30.0	U	30.0	P	12/10/2024	13:30	LB133866
	Copper	20.0	+/-20.0	U	20.0	P	12/10/2024	13:30	LB133866
	Iron	100	+/-100	U	100	P	12/10/2024	13:30	LB133866
	Lead	12.0	+/-12.0	U	12.0	P	12/10/2024	13:30	LB133866
	Magnesium	2000	+/-2000	U	2000	P	12/10/2024	13:30	LB133866
	Manganese	20.0	+/-20.0	U	20.0	P	12/10/2024	13:30	LB133866
	Nickel	40.0	+/-40.0	U	40.0	P	12/10/2024	13:30	LB133866
	Potassium	2000	+/-2000	U	2000	P	12/10/2024	13:30	LB133866
	Selenium	20.0	+/-20.0	U	20.0	P	12/10/2024	13:30	LB133866
	Silver	10.0	+/-10.0	U	10.0	P	12/10/2024	13:30	LB133866
	Sodium	2000	+/-2000	U	2000	P	12/10/2024	13:30	LB133866
	Thallium	40.0	+/-40.0	U	40.0	P	12/10/2024	13:30	LB133866
	Vanadium	40.0	+/-40.0	U	40.0	P	12/10/2024	13:30	LB133866
	Zinc	40.0	+/-40.0	U	40.0	P	12/10/2024	13:30	LB133866
CCB04	Aluminum	100	+/-100	U	100	P	12/10/2024	14:24	LB133866
	Antimony	50.0	+/-50.0	U	50.0	P	12/10/2024	14:24	LB133866
	Arsenic	20.0	+/-20.0	U	20.0	P	12/10/2024	14:24	LB133866
	Barium	100	+/-100	U	100	P	12/10/2024	14:24	LB133866
	Beryllium	6.00	+/-6.00	U	6.00	P	12/10/2024	14:24	LB133866
	Cadmium	6.00	+/-6.00	U	6.00	P	12/10/2024	14:24	LB133866
	Calcium	2000	+/-2000	U	2000	P	12/10/2024	14:24	LB133866
	Chromium	10.0	+/-10.0	U	10.0	P	12/10/2024	14:24	LB133866
	Cobalt	30.0	+/-30.0	U	30.0	P	12/10/2024	14:24	LB133866
	Copper	20.0	+/-20.0	U	20.0	P	12/10/2024	14:24	LB133866
	Iron	100	+/-100	U	100	P	12/10/2024	14:24	LB133866
	Lead	12.0	+/-12.0	U	12.0	P	12/10/2024	14:24	LB133866

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Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB04	Magnesium	2000	+/-2000	U	2000	P	12/10/2024	14:24	LB133866
	Manganese	20.0	+/-20.0	U	20.0	P	12/10/2024	14:24	LB133866
	Nickel	40.0	+/-40.0	U	40.0	P	12/10/2024	14:24	LB133866
	Potassium	2000	+/-2000	U	2000	P	12/10/2024	14:24	LB133866
	Selenium	20.0	+/-20.0	U	20.0	P	12/10/2024	14:24	LB133866
	Silver	10.0	+/-10.0	U	10.0	P	12/10/2024	14:24	LB133866
	Sodium	2000	+/-2000	U	2000	P	12/10/2024	14:24	LB133866
	Thallium	40.0	+/-40.0	U	40.0	P	12/10/2024	14:24	LB133866
	Vanadium	40.0	+/-40.0	U	40.0	P	12/10/2024	14:24	LB133866
	Zinc	40.0	+/-40.0	U	40.0	P	12/10/2024	14:24	LB133866

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Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: R3M Engineering, Inc. **SDG No.:** P5093

Instrument: CV1

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB165437BL		**WATER**		**Batch Number:**	**PB165437**		**Prep Date:**	**12/06/2024**	
	Mercury	0.20	<0.20	U	0.20	CV	12/06/2024	11:56	LB133780

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Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: R3M Engineering, Inc. **SDG No.:** P5093

Instrument: P4

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB165464BL		**WATER**		**Batch Number:**	**PB165464**		**Prep Date:**	**12/09/2024**	
	Aluminum	50.0	<50.0	U	50.0	P	12/10/2024	12:01	LB133866
	Antimony	25.0	<25.0	U	25.0	P	12/10/2024	12:01	LB133866
	Arsenic	10.0	<10.0	U	10.0	P	12/10/2024	12:01	LB133866
	Barium	50.0	<50.0	U	50.0	P	12/10/2024	12:01	LB133866
	Beryllium	3.00	<3.00	U	3.00	P	12/10/2024	12:01	LB133866
	Cadmium	3.00	<3.00	U	3.00	P	12/10/2024	12:01	LB133866
	Calcium	1000	<1000	U	1000	P	12/10/2024	12:01	LB133866
	Chromium	5.00	<5.00	U	5.00	P	12/10/2024	12:01	LB133866
	Cobalt	15.0	<15.0	U	15.0	P	12/10/2024	12:01	LB133866
	Copper	10.0	<10.0	U	10.0	P	12/10/2024	12:01	LB133866
	Iron	50.0	<50.0	U	50.0	P	12/10/2024	12:01	LB133866
	Lead	6.00	<6.00	U	6.00	P	12/10/2024	12:01	LB133866
	Magnesium	1000	<1000	U	1000	P	12/10/2024	12:01	LB133866
	Manganese	10.0	<10.0	U	10.0	P	12/10/2024	12:01	LB133866
	Nickel	20.0	<20.0	U	20.0	P	12/10/2024	12:01	LB133866
	Potassium	1000	<1000	U	1000	P	12/10/2024	12:01	LB133866
	Selenium	10.0	<10.0	U	10.0	P	12/10/2024	12:01	LB133866
	Silver	5.00	<5.00	U	5.00	P	12/10/2024	12:01	LB133866
	Sodium	1000	<1000	U	1000	P	12/10/2024	12:01	LB133866
	Thallium	20.0	<20.0	U	20.0	P	12/10/2024	12:01	LB133866
	Vanadium	20.0	<20.0	U	20.0	P	12/10/2024	12:01	LB133866
	Zinc	20.0	<20.0	U	20.0	P	12/10/2024	12:01	LB133866

Alliance TECHNICAL GROUP
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Metals
- 4 -
INTERFERENCE CHECK SAMPLE

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

ICS Source: EPA **Instrument ID:** P4

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Low Limit (ug/L)	High Limit (ug/L)	Analysis Date	Analysis Time	Run Number
ICSA01	Aluminum	264000	255000	104	216000	294000	12/10/2024	11:36	LB133866
	Antimony	-1.71			-50	50	12/10/2024	11:36	LB133866
	Arsenic	6.70			-20	20	12/10/2024	11:36	LB133866
	Barium	1.49	6.0	25	-94	106	12/10/2024	11:36	LB133866
	Beryllium	1.30			-6	6	12/10/2024	11:36	LB133866
	Cadmium	3.45	1.0	345	-5	7	12/10/2024	11:36	LB133866
	Calcium	244000	245000	100	208000	282000	12/10/2024	11:36	LB133866
	Chromium	56.5	52.0	109	42	62	12/10/2024	11:36	LB133866
	Cobalt	2.38			-30	30	12/10/2024	11:36	LB133866
	Copper	5.99	2.0	300	-18	22	12/10/2024	11:36	LB133866
	Iron	98600	101000	98	85600	116500	12/10/2024	11:36	LB133866
	Lead	10.4			-12	12	12/10/2024	11:36	LB133866
	Magnesium	270000	255000	106	216000	294000	12/10/2024	11:36	LB133866
	Manganese	4.28	7.0	61	-13	27	12/10/2024	11:36	LB133866
	Nickel	31.3	2.0	1565	-38	42	12/10/2024	11:36	LB133866
	Potassium	20.5			0	0	12/10/2024	11:36	LB133866
	Selenium	-15.0			-20	20	12/10/2024	11:36	LB133866
	Silver	-2.00			-10	10	12/10/2024	11:36	LB133866
	Sodium	51.5			0	0	12/10/2024	11:36	LB133866
	Thallium	12.5			-40	40	12/10/2024	11:36	LB133866
	Vanadium	7.63			-40	40	12/10/2024	11:36	LB133866
	Zinc	-6.01			-40	40	12/10/2024	11:36	LB133866
ICSAB01	Aluminum	250000	247000	101	209000	285000	12/10/2024	11:40	LB133866
	Antimony	594	618	96	525	711	12/10/2024	11:40	LB133866
	Arsenic	105	104	101	88.4	120	12/10/2024	11:40	LB133866
	Barium	483	537	90	437	637	12/10/2024	11:40	LB133866
	Beryllium	477	495	96	420	570	12/10/2024	11:40	LB133866
	Cadmium	952	972	98	826	1120	12/10/2024	11:40	LB133866
	Calcium	228000	235000	97	199000	271000	12/10/2024	11:40	LB133866
	Chromium	539	542	99	460	624	12/10/2024	11:40	LB133866
	Cobalt	482	476	101	404	548	12/10/2024	11:40	LB133866
	Copper	470	511	92	434	588	12/10/2024	11:40	LB133866
	Iron	93600	99300	94	84400	114500	12/10/2024	11:40	LB133866
	Lead	59.2	49.0	121	37	61	12/10/2024	11:40	LB133866
	Magnesium	252000	248000	102	210000	286000	12/10/2024	11:40	LB133866
	Manganese	465	507	92	430	584	12/10/2024	11:40	LB133866
	Nickel	974	954	102	810	1100	12/10/2024	11:40	LB133866
	Potassium	-26.9			0	0	12/10/2024	11:40	LB133866
	Selenium	35.4	46.0	77	26	66	12/10/2024	11:40	LB133866
	Silver	190	201	94	170	232	12/10/2024	11:40	LB133866
	Sodium	6.26			0	0	12/10/2024	11:40	LB133866
	Thallium	97.1	108	90	68	148	12/10/2024	11:40	LB133866

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Metals
- 4 -
INTERFERENCE CHECK SAMPLE

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

ICS Source: EPA **Instrument ID:** P4

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Low Limit (ug/L)	High Limit (ug/L)	Analysis Date	Analysis Time	Run Number
ICSAB01	Vanadium	478	491	97	417	565	12/10/2024	11:40	LB133866
	Zinc	911	952	96	809	1095	12/10/2024	11:40	LB133866

METAL
QC
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metals
- 5a -
MATRIX SPIKE SUMMARY

client: R3M Engineering, Inc. **level:** low **sdg no.:** P5093

contract: RTHR01 **lab code:** CHEM **case no.:** P5093 **sas no.:** P5093

matrix: Water **sample id:** P5074-02 **client id:** COMPMS

Percent Solids for Sample: NA **Spiked ID:** P5074-02MS **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	ug/L	82 - 119	3.01		0.30		4.0	68	N	CV

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metals
- 5a -
MATRIX SPIKE DUPLICATE SUMMARY

client: R3M Engineering, Inc. **level:** low **sdg no.:** P5093

contract: RTHR01 **lab code:** CHEM **case no.:** P5093 **sas no.:** P5093

matrix: Water **sample id:** P5074-02 **client id:** COMPMSD

Percent Solids for Sample: NA **Spiked ID:** P5074-02MSD **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	ug/L	82 - 119	3.00		0.30		4.0	68	N	CV

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metals
- 5a -
MATRIX SPIKE SUMMARY

client: R3M Engineering, Inc. **level:** low **sdg no.:** P5093

contract: RTHR01 **lab code:** CHEM **case no.:** P5093 **sas no.:** P5093

matrix: Water **sample id:** P5093-02 **client id:** LL-001-FB-12-4-24MS

Percent Solids for Sample: NA **Spiked ID:** P5093-02MS **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Aluminum	ug/L	75 - 125	905		50.0	U	1000	90		P
Antimony	ug/L	75 - 125	352		25.0	U	400	88		P
Arsenic	ug/L	75 - 125	331		10.0	U	400	83		P
Barium	ug/L	75 - 125	85.8		50.0	U	100	86		P
Beryllium	ug/L	75 - 125	82.4		3.00	U	100	82		P
Cadmium	ug/L	75 - 125	78.8		3.00	U	100	79		P
Calcium	ug/L	75 - 125	464	J	1000	U	500	93		P
Chromium	ug/L	75 - 125	180		5.00	U	200	90		P
Cobalt	ug/L	75 - 125	83.0		15.0	U	100	83		P
Copper	ug/L	75 - 125	134		10.0	U	150	89		P
Iron	ug/L	75 - 125	1290		50.0	U	1500	86		P
Lead	ug/L	75 - 125	392		6.00	U	500	78		P
Magnesium	ug/L	75 - 125	847	J	1000	U	1000	85		P
Manganese	ug/L	75 - 125	88.4		1.80	J	100	87		P
Nickel	ug/L	75 - 125	207		20.0	U	250	83		P
Potassium	ug/L	75 - 125	4270		1000	U	5000	85		P
Selenium	ug/L	75 - 125	808		10.0	U	1000	81		P
Silver	ug/L	75 - 125	31.6		5.00	U	37.5	84		P
Sodium	ug/L	75 - 125	1190		1000	U	1500	79		P
Thallium	ug/L	75 - 125	813		20.0	U	1000	81		P
Vanadium	ug/L	75 - 125	134		20.0	U	150	89		P
Zinc	ug/L	75 - 125	91.4		20.0	U	100	91		P

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metals
- 5a -
MATRIX SPIKE DUPLICATE SUMMARY

client: R3M Engineering, Inc. **level:** low **sdg no.:** P5093

contract: RTHR01 **lab code:** CHEM **case no.:** P5093 **sas no.:** P5093

matrix: Water **sample id:** P5093-02 **client id:** LL-001-FB-12-4-24MSD

Percent Solids for Sample: NA **Spiked ID:** P5093-02MSD **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Aluminum	ug/L	75 - 125	890		50.0	U	1000	89		P
Antimony	ug/L	75 - 125	346		25.0	U	400	86		P
Arsenic	ug/L	75 - 125	325		10.0	U	400	81		P
Barium	ug/L	75 - 125	85.1		50.0	U	100	85		P
Beryllium	ug/L	75 - 125	83.0		3.00	U	100	83		P
Cadmium	ug/L	75 - 125	78.4		3.00	U	100	78		P
Calcium	ug/L	75 - 125	459	J	1000	U	500	92		P
Chromium	ug/L	75 - 125	180		5.00	U	200	90		P
Cobalt	ug/L	75 - 125	82.5		15.0	U	100	82		P
Copper	ug/L	75 - 125	133		10.0	U	150	89		P
Iron	ug/L	75 - 125	1270		50.0	U	1500	85		P
Lead	ug/L	75 - 125	391		6.00	U	500	78		P
Magnesium	ug/L	75 - 125	851	J	1000	U	1000	85		P
Manganese	ug/L	75 - 125	87.5		1.80	J	100	86		P
Nickel	ug/L	75 - 125	205		20.0	U	250	82		P
Potassium	ug/L	75 - 125	4150		1000	U	5000	83		P
Selenium	ug/L	75 - 125	793		10.0	U	1000	79		P
Silver	ug/L	75 - 125	31.5		5.00	U	37.5	84		P
Sodium	ug/L	75 - 125	1160		1000	U	1500	77		P
Thallium	ug/L	75 - 125	809		20.0	U	1000	81		P
Vanadium	ug/L	75 - 125	134		20.0	U	150	89		P
Zinc	ug/L	75 - 125	90.3		20.0	U	100	90		P

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Metals
- 5b -
POST DIGEST SPIKE SUMMARY

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Matrix: Water **Level:** LOW **Client ID:** COMPA

Sample ID: P5074-02 **Spiked ID:** P5074-02A

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	ug/L	82 - 119	3.42		0.30		4.00	78		CV

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Metals

- 6 -

DUPLICATE SAMPLE SUMMARY

Client: R3M Engineering, Inc. **Level:** LOW **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Matrix: Water **Sample ID:** P5074-02 **Client ID:** COMPDUP

Percent Solids for Sample: NA **Duplicate ID** P5074-02DUP **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	ug/L	20	0.30		0.28		6		CV

"A control limit of ±20% RPD for each matrix applies for sample values greater than 10 times Detection Limit"

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Metals

- 6 -

DUPLICATE SAMPLE SUMMARY

Client: R3M Engineering, Inc. **Level:** LOW **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Matrix: Water **Sample ID:** P5074-02MS **Client ID:** COMPMSD

Percent Solids for Sample: NA **Duplicate ID** P5074-02MSD **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	ug/L	20	3.01		3.00		0		CV

"A control limit of ±20% RPD for each matrix applies for sample values greater than 10 times Detection Limit"

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Metals

- 6 -

DUPLICATE SAMPLE SUMMARY

Client: R3M Engineering, Inc. **Level:** LOW **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Matrix: Water **Sample ID:** P5093-02 **Client ID:** LL-001-FB-12-4-24DUP

Percent Solids for Sample: NA **Duplicate ID** P5093-02DUP **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Aluminum	ug/L	20	50.0	U	50.0	U			P
Antimony	ug/L	20	25.0	U	25.0	U			P
Arsenic	ug/L	20	10.0	U	10.0	U			P
Barium	ug/L	20	50.0	U	50.0	U			P
Beryllium	ug/L	20	3.00	U	3.00	U			P
Cadmium	ug/L	20	3.00	U	3.00	U			P
Calcium	ug/L	20	1000	U	1000	U			P
Chromium	ug/L	20	5.00	U	5.00	U			P
Cobalt	ug/L	20	15.0	U	15.0	U			P
Copper	ug/L	20	10.0	U	10.0	U			P
Iron	ug/L	20	50.0	U	50.0	U			P
Lead	ug/L	20	6.00	U	6.00	U			P
Magnesium	ug/L	20	1000	U	1000	U			P
Manganese	ug/L	20	1.80	J	1.54	J	16		P
Nickel	ug/L	20	20.0	U	20.0	U			P
Potassium	ug/L	20	1000	U	1000	U			P
Selenium	ug/L	20	10.0	U	10.0	U			P
Silver	ug/L	20	5.00	U	5.00	U			P
Sodium	ug/L	20	1000	U	1000	U			P
Thallium	ug/L	20	20.0	U	20.0	U			P
Vanadium	ug/L	20	20.0	U	20.0	U			P
Zinc	ug/L	20	20.0	U	20.0	U			P

"A control limit of ±20% RPD for each matrix applies for sample values greater than 10 times Detection Limit"

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Metals

- 6 -

DUPLICATE SAMPLE SUMMARY

Client: R3M Engineering, Inc. **Level:** LOW **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Matrix: Water **Sample ID:** P5093-02MS **Client ID:** LL-001-FB-12-4-24MSD

Percent Solids for Sample: NA **Duplicate ID** P5093-02MSD **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Aluminum	ug/L	20	905		890		2		P
Antimony	ug/L	20	352		346		2		P
Arsenic	ug/L	20	331		325		2		P
Barium	ug/L	20	85.8		85.1		1		P
Beryllium	ug/L	20	82.4		83.0		1		P
Cadmium	ug/L	20	78.8		78.4		1		P
Calcium	ug/L	20	464	J	459	J	1		P
Chromium	ug/L	20	180		180		0		P
Cobalt	ug/L	20	83.0		82.5		1		P
Copper	ug/L	20	134		133		1		P
Iron	ug/L	20	1290		1270		2		P
Lead	ug/L	20	392		391		0		P
Magnesium	ug/L	20	847	J	851	J	0		P
Manganese	ug/L	20	88.4		87.5		1		P
Nickel	ug/L	20	207		205		1		P
Potassium	ug/L	20	4270		4150		3		P
Selenium	ug/L	20	808		793		2		P
Silver	ug/L	20	31.6		31.5		0		P
Sodium	ug/L	20	1190		1160		3		P
Thallium	ug/L	20	813		809		0		P
Vanadium	ug/L	20	134		134		0		P
Zinc	ug/L	20	91.4		90.3		1		P

"A control limit of ±20% RPD for each matrix applies for sample values greater than 10 times Detection Limit"

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Metals

LABORATORY CONTROL SAMPLE SUMMARY

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB165437BS							
Mercury	ug/L	4.0	4.77		119	82 - 119	CV

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LABORATORY CONTROL SAMPLE SUMMARY

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB165464BS							
Aluminum	ug/L	1000	1010		101	80 - 120	P
Antimony	ug/L	400	390		98	80 - 120	P
Arsenic	ug/L	400	384		96	80 - 120	P
Barium	ug/L	100	96.7		97	80 - 120	P
Beryllium	ug/L	100	102		102	80 - 120	P
Cadmium	ug/L	100	95.5		96	80 - 120	P
Calcium	ug/L	500	517	J	103	80 - 120	P
Chromium	ug/L	200	205		102	80 - 120	P
Cobalt	ug/L	100	97.3		97	80 - 120	P
Copper	ug/L	150	156		104	80 - 120	P
Iron	ug/L	1500	1450		97	80 - 120	P
Lead	ug/L	500	480		96	80 - 120	P
Magnesium	ug/L	1000	989	J	99	80 - 120	P
Manganese	ug/L	100	99.7		100	80 - 120	P
Nickel	ug/L	250	245		98	80 - 120	P
Potassium	ug/L	5000	4770		95	80 - 120	P
Selenium	ug/L	1000	986		99	80 - 120	P
Silver	ug/L	37.5	37.7		100	80 - 120	P
Sodium	ug/L	1500	1330		89	80 - 120	P
Thallium	ug/L	1000	1030		103	80 - 120	P
Vanadium	ug/L	150	154		103	80 - 120	P
Zinc	ug/L	100	106		106	80 - 120	P

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Metals

-9 -

ICP SERIAL DILUTIONS

SAMPLE NO.

COMPL

Lab Name: Chemtech Consulting Group **Contract:** RTHR01

Lab Code: CHEM **Lb No.:** lb133780 **Lab Sample ID :** P5074-02L **SDG No.:** P5093

Matrix (soil/water): Water **Level (low/med):** LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Mercury	0.30		1.00	U	100.0		CV

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Metals

-9 -

ICP SERIAL DILUTIONS

SAMPLE NO.

LL-001-FB-12-4-24L

Lab Name: Chemtech Consulting Group **Contract:** RTHR01

Lab Code: CHEM **Lb No.:** lb133866 **Lab Sample ID :** P5093-02L **SDG No.:** P5093

Matrix (soil/water): Water **Level (low/med):** LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	50.0	U	250	U			P
Antimony	25.0	U	125	U			P
Arsenic	10.0	U	50.0	U			P
Barium	50.0	U	250	U			P
Beryllium	3.00	U	15.0	U			P
Cadmium	3.00	U	15.0	U			P
Calcium	1000	U	5000	U			P
Chromium	5.00	U	4.66	J	100.0		P
Cobalt	15.0	U	75.0	U			P
Copper	10.0	U	50.0	U			P
Iron	50.0	U	250	U			P
Lead	6.00	U	30.0	U			P
Magnesium	1000	U	5000	U			P
Manganese	1.80	J	50.0	U	100.0		P
Nickel	20.0	U	100	U			P
Potassium	1000	U	5000	U			P
Selenium	10.0	U	50.0	U			P
Silver	5.00	U	25.0	U			P
Sodium	1000	U	5000	U			P
Thallium	20.0	U	100	U			P
Vanadium	20.0	U	100	U			P
Zinc	20.0	U	100	U			P

METAL PREPARATION & INSTRUMENT DATA

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Metals
- 11 -
ICP INTERELEMENT CORRECTION FACTORS

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Instrument ID: **Date:**

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Al	Ca	Fe	Mg	Ag
Aluminum	396.100	0.0000000	-0.0002060	0.0000000	0.0000000	0.0000000
Antimony	206.833	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	193.759	0.0000000	0.0000000	-0.0000440	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000930	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	-0.0075970	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	0.0000000	0.0007850	0.0000000	0.0000000
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	-0.0000920	0.0000000	0.0000380	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	-0.0001440	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	-0.0001490	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0001050	0.0000000	0.0000000

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Metals
- 11 -
ICP INTERELEMENT CORRECTION FACTORS

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Instrument ID: **Date:**

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: As	Ba	Be	Cd	Co
Aluminum	396.100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.833	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0002870
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	0.0000000	0.0000000	0.0000000	0.0009530
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	-0.0039600
Lead	220.353	0.0000000	0.0003170	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0000000	-0.0003570
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0054900
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

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Metals
- 11 -
ICP INTERELEMENT CORRECTION FACTORS

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Instrument ID: **Date:**

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Cr	Cu	K	Mn	Mo
Aluminum	396.100	0.0000000	0.0000000	0.0000590	0.0000000	0.0396900
Antimony	206.833	0.0122000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	193.759	-0.0029000	0.0000000	0.0000000	0.0000000	0.0004900
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	-0.0000710	-0.0003400
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000070	0.0002200	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	-0.0007860
Copper	224.700	0.0000000	0.0000000	0.0000000	0.0006510	0.0020500
Iron	240.488	0.0000000	0.0000000	0.0000730	0.0000000	-0.0015250
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0001400	-0.0008600
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0007460	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	-0.0000120
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0017400	-0.0100400
Vanadium	292.402	-0.0025100	0.0000000	0.0000000	0.0000000	-0.0072000
Zinc	213.800	0.0000000	0.0009010	0.0000000	0.0000000	0.0000000

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Metals
- 11 -
ICP INTERELEMENT CORRECTION FACTORS

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Instrument ID: **Date:**

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Na	Ni	Pb	Sb	Se
Aluminum	396.100	0.0000000	0.0000000	0.0012800	0.0000000	0.0000000
Antimony	206.833	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	-0.0047000	0.0036100	0.0000000	0.0000000
Iron	240.488	0.0000000	-0.0017000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	0.0006580	0.0000000	0.0000000	0.0001290
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0003330	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0067600	0.0000000	0.0000000	0.0000000

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Metals
- 11 -
ICP INTERELEMENT CORRECTION FACTORS

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Case No.:** P5093 **SAS No.:** P5093

Instrument ID: **Date:**

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave-Length (nm)	ICP Interelement Correction Factors For: Sn	Ti	Tl	V	Zn
Aluminum	396.100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.833	-0.0035600	-0.0007970	0.0000000	-0.0018900	0.0000000
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000630	0.0001280	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0001110	0.0000000
Cobalt	228.616	0.0000000	0.0018800	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	0.0003840	0.0000000	0.0000000	0.0000000
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	-0.0003610	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	-0.0007420	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	-0.0039700	0.0000000	-0.0115600	0.0000000
Vanadium	292.402	0.0000000	0.0005320	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

METAL PREPARATION & ANALYICAL SUMMARY

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Metals
- 13 -
SAMPLE PREPARATION SUMMARY

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Method:**

Case No.: P5093 **SAS No.:** P5093

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(mL)	Final Sample Volume (mL)	Percent Solids
Batch Number:	**PB165437**						
P5074-02DUP	COMPDUP	DUP	WATER	12/06/2024	30.0	30.0	
P5074-02MS	COMPMS	MS	WATER	12/06/2024	30.0	30.0	
P5074-02MSD	COMPMSD	MSD	WATER	12/06/2024	30.0	30.0	
P5093-01	LL-001	SAM	WATER	12/06/2024	30.0	30.0	
P5093-02	LL-001-FB-12-4-24	SAM	WATER	12/06/2024	30.0	30.0	
PB165437BL	PB165437BL	MB	WATER	12/06/2024	30.0	30.0	
PB165437BS	PB165437BS	LCS	WATER	12/06/2024	30.0	30.0	

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Metals
- 13 -
SAMPLE PREPARATION SUMMARY

Client: R3M Engineering, Inc. **SDG No.:** P5093

Contract: RTHR01 **Lab Code:** CHEM **Method:**

Case No.: P5093 **SAS No.:** P5093

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(mL)	Final Sample Volume (mL)	Percent Solids
Batch Number:	**PB165464**						
P5093-01	LL-001	SAM	WATER	12/09/2024	50.0	25.0	
P5093-02	LL-001-FB-12-4-24	SAM	WATER	12/09/2024	50.0	25.0	
P5093-02DUP	LL-001-FB-12-4-24DUP	DUP	WATER	12/09/2024	50.0	25.0	
P5093-02MS	LL-001-FB-12-4-24MS	MS	WATER	12/09/2024	50.0	25.0	
P5093-02MSD	LL-001-FB-12-4-24MSD	MSD	WATER	12/09/2024	50.0	25.0	
PB165464BL	PB165464BL	MB	WATER	12/09/2024	50.0	25.0	
PB165464BS	PB165464BS	LCS	WATER	12/09/2024	50.0	25.0	

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metals
- 14 -
ANALYSIS RUN LOG

Client: R3M Engineering, Inc. **Contract:** RTHR01

Lab code: CHEM **Case no.:** P5093 **Sas no.:** P5093 **Sdg no.:** P5093

Instrument id number: **Method:** **Run number:** LB133780

Start date: 12/06/2024 **End date:** 12/06/2024

Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1118	HG
S0.2	S0.2	1	1120	HG
S2.5	S2.5	1	1123	HG
S5	S5	1	1125	HG
S7.5	S7.5	1	1130	HG
S10	S10	1	1135	HG
ICV11	ICV11	1	1138	HG
ICB11	ICB11	1	1140	HG
CCV95	CCV95	1	1142	HG
CCB95	CCB95	1	1145	HG
CRA	CRA	1	1147	HG
PB165437BL	PB165437BL	1	1156	HG
PB165437BS	PB165437BS	1	1159	HG
P5074-02DUP	COMPDUP	1	1226	HG
CCV96	CCV96	1	1236	HG
CCB96	CCB96	1	1241	HG
P5074-02MS	COMPMS	1	1243	HG
P5074-02MSD	COMPMSD	1	1245	HG
P5093-01	LL-001	1	1247	HG
P5093-02	LL-001-FB-12-4-24	1	1250	HG
P5074-02L	COMPL	5	1254	HG
P5074-02A	COMPA	1	1257	HG
CCV97	CCV97	1	1259	HG
CCB97	CCB97	1	1301	HG

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metals
- 14 -
ANALYSIS RUN LOG

Client: R3M Engineering, Inc. **Contract:** RTHR01

Lab code: CHEM **Case no.:** P5093 **Sas no.:** P5093 **Sdg no.:** P5093

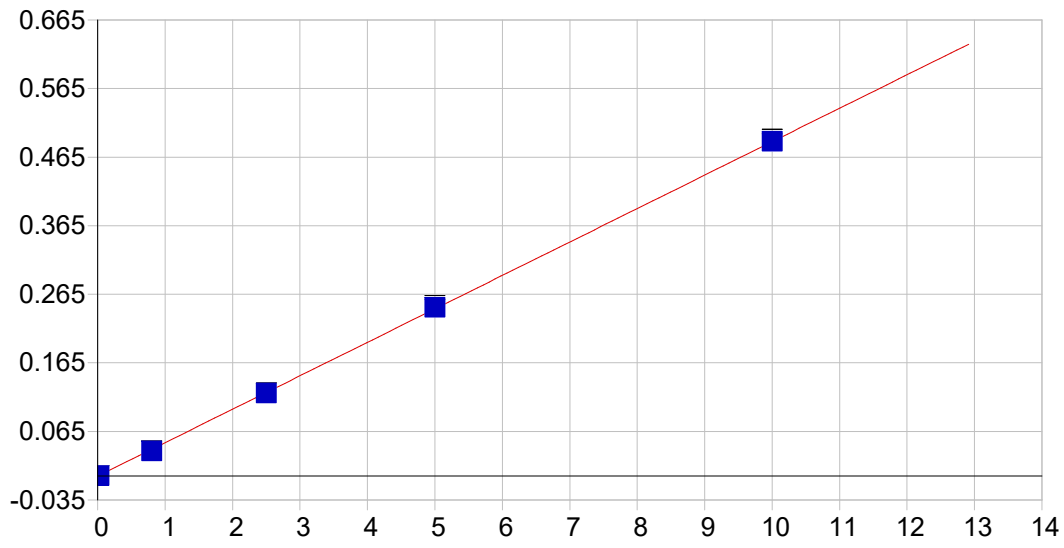
Instrument id number: **Method:** **Run number:** LB133866

Start date: 12/10/2024 **End date:** 12/10/2024

Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1038	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S1	S1	1	1043	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S2	S2	1	1047	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S3	S3	1	1051	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S4	S4	1	1056	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S5	S5	1	1100	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICV01	ICV01	1	1104	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
LLICV01	LLICV01	1	1108	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICB01	ICB01	1	1120	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CRI01	CRI01	1	1124	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICSA01	ICSA01	1	1136	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICSAB01	ICSAB01	1	1140	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV01	CCV01	1	1144	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB01	CCB01	1	1148	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
PB165464BL	PB165464BL	1	1201	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
PB165464BS	PB165464BS	1	1206	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
P5093-01	LL-001	1	1218	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
P5093-02	LL-001-FB-12-4-24	1	1222	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
P5093-02DUP	LL-001-FB-12-4-24DUP	1	1227	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
P5093-02L	LL-001-FB-12-4-24L	5	1231	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV02	CCV02	1	1235	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB02	CCB02	1	1239	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
P5093-02MS	LL-001-FB-12-4-24MS	1	1244	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
P5093-02MSD	LL-001-FB-12-4-24MSD	1	1248	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV03	CCV03	1	1326	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB03	CCB03	1	1330	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV04	CCV04	1	1419	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB04	CCB04	1	1424	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn

METAL
RAW DATA

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



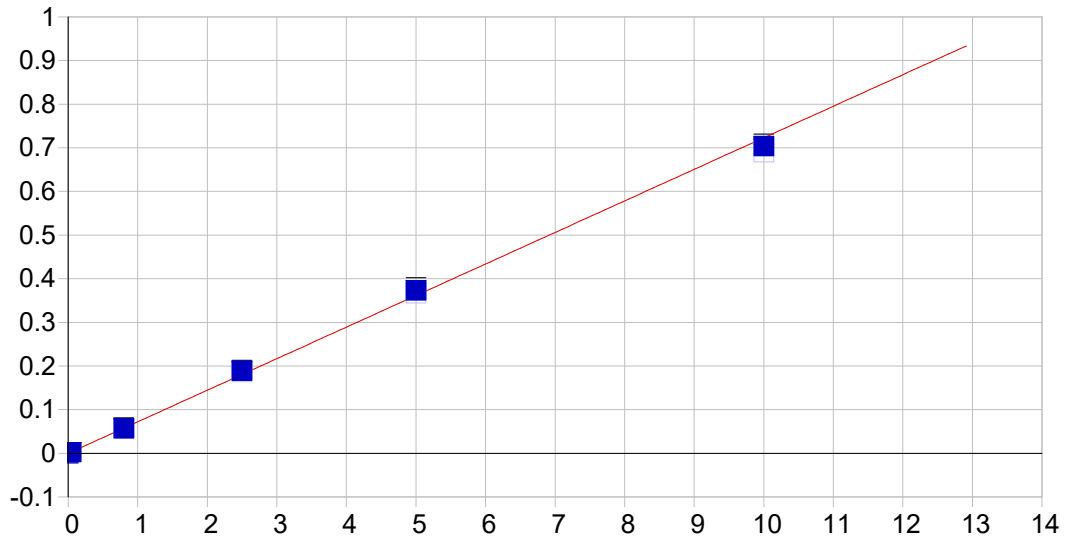
As 189.042 {479}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000225	Re-Slope:	1.000000
A1 (Gain):	0.048777	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999911	Status:	OK.
Std Error of Est:	0.000015		
Predicted MDL:	0.002692		
Predicted MQL:	0.008973		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00022	.000	1
S1	.02000	.01873	-.001	-6.35	.00068	.000	1
S3	2.5000	2.4862	-.014	-.553	.12091	.000	1
S4	5.0000	5.0475	.048	.950	.24571	.003	1
S5	10.000	10.013	.013	.133	.48767	.003	1
S2	.80000	.75426	-.046	-5.72	.03652	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



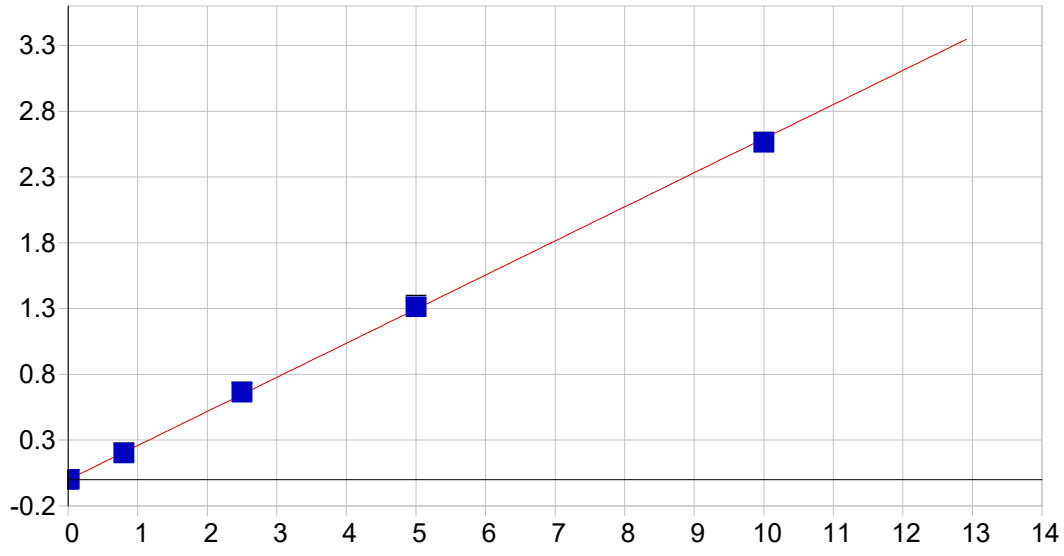
Tl 190.856 {477}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000128	Re-Slope:	1.000000
A1 (Gain):	0.072307	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999488	Status:	OK.
Std Error of Est:	0.000075		
Predicted MDL:	0.001601		
Predicted MQL:	0.005337		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00013	.000	1
S1	.04000	.03791	-.002	-5.23	.00243	.000	1
S3	2.5000	2.6183	.118	4.73	.18586	.002	1
S4	5.0000	5.1594	.159	3.19	.36628	.007	1
S5	10.000	9.7303	-.270	-2.70	.69012	.005	1
S2	.80000	.79399	-.006	-.752	.05622	.001	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



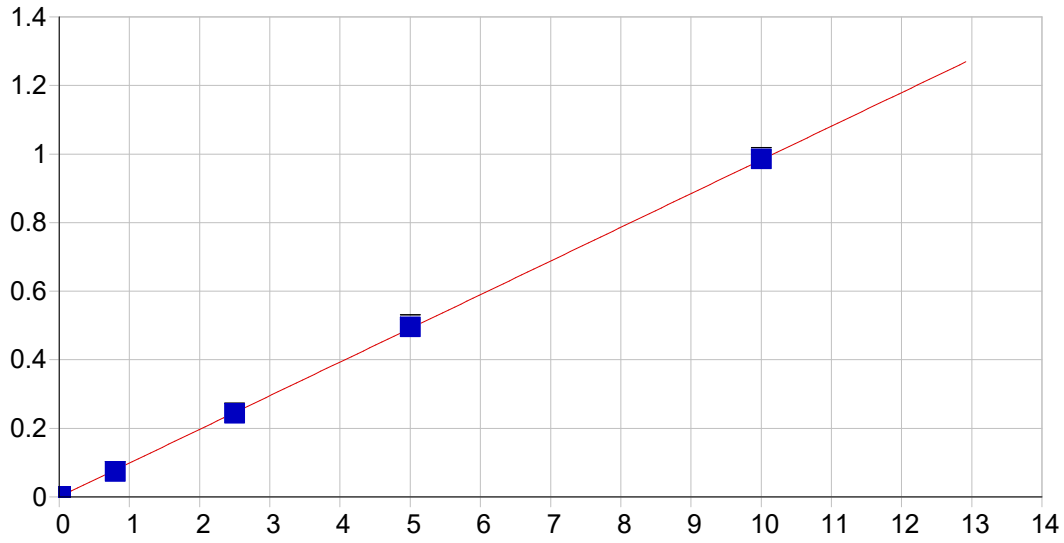
Pb 220.353 {453}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000295	Re-Slope:	1.000000
A1 (Gain):	0.259243	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999890	Status:	OK.
Std Error of Est:	0.000070		
Predicted MDL:	0.000936		
Predicted MQL:	0.003121		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00029	.000	1
S1	.01200	.01161	-.000	-3.27	.00265	.000	1
S3	2.5000	2.5629	.063	2.52	.66341	.001	1
S4	5.0000	5.0635	.064	1.27	1.3110	.013	1
S5	10.000	9.8931	-.107	-1.07	2.5616	.002	1
S2	.80000	.78082	-.019	-2.40	.20190	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



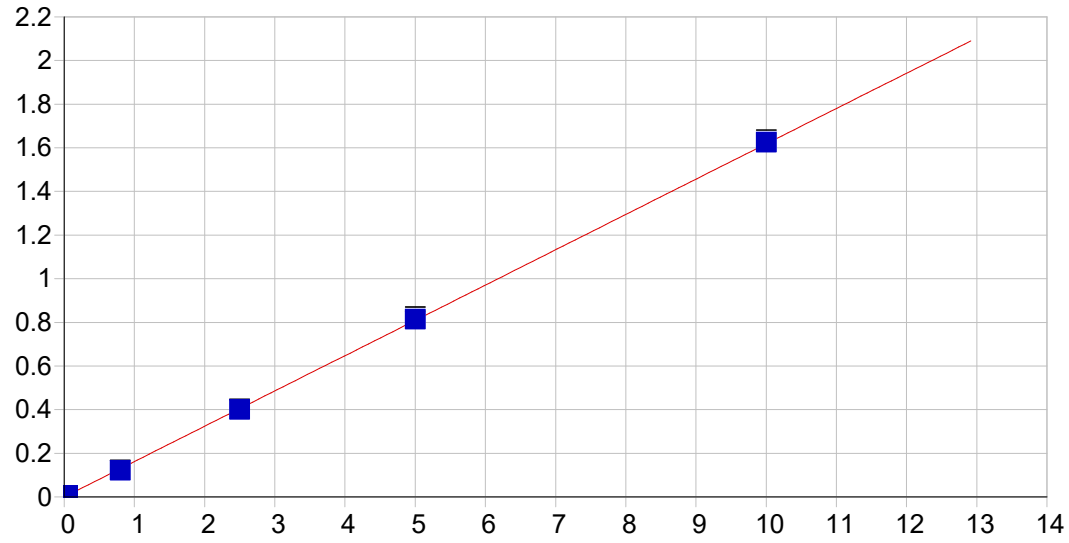
Se 196.090 {472}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000297	Re-Slope:	1.000000
A1 (Gain):	0.098242	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999879	Status:	OK.
Std Error of Est:	0.000036		
Predicted MDL:	0.001886		
Predicted MQL:	0.006287		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00030	.000	1
S1	.02000	.01901	-.001	-4.94	.00217	.000	1
S3	2.5000	2.4803	-.020	-.789	.24390	.001	1
S4	5.0000	5.0460	.046	.921	.49590	.006	1
S5	10.000	10.029	.029	.293	.98533	.004	1
S2	.80000	.74538	-.055	-6.83	.07350	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



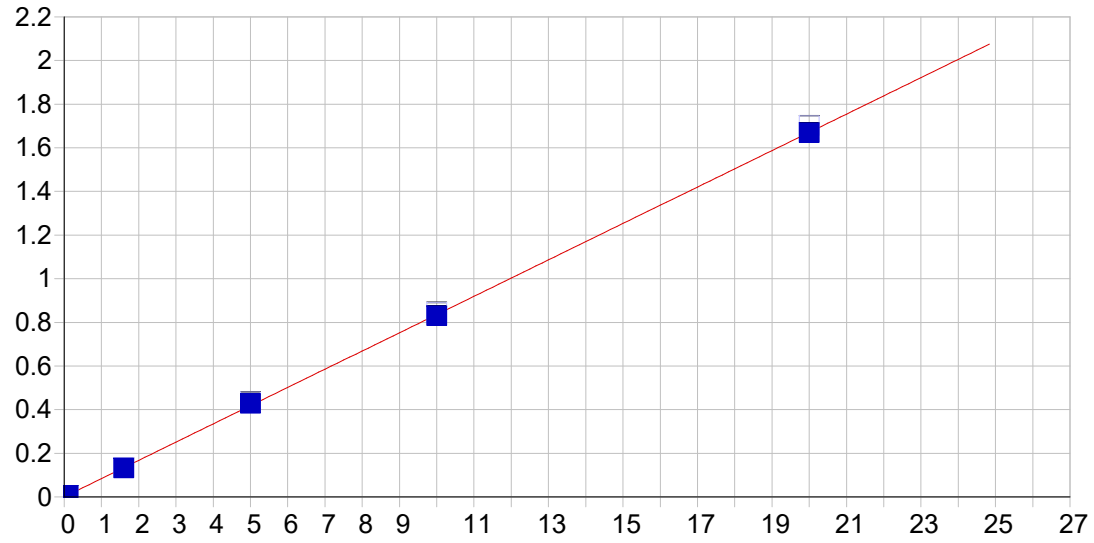
Sb 206.833 {463}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000137	Re-Slope:	1.000000
A1 (Gain):	0.161801	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999885	Status:	OK.
Std Error of Est:	0.000091		
Predicted MDL:	0.001284		
Predicted MQL:	0.004280		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00014	.000	1
S1	.05000	.04377	-.006	-12.5	.00724	.000	1
S3	2.5000	2.4765	-.023	-.939	.40194	.002	1
S4	5.0000	5.0326	.033	.652	.81661	.009	1
S5	10.000	10.045	.045	.447	1.6298	.006	1
S2	.80000	.75242	-.048	-5.95	.12223	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



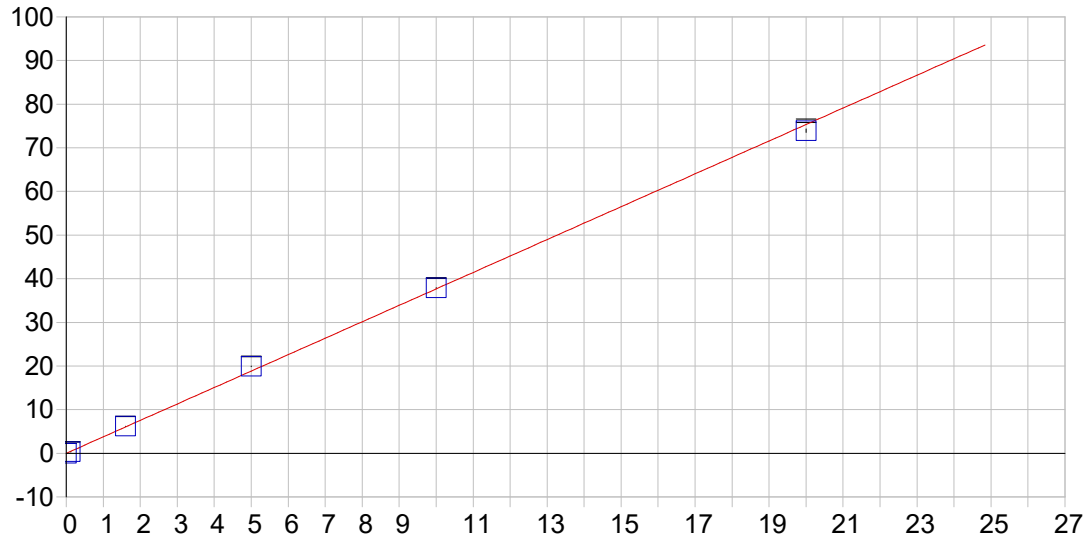
Al 396.152 { 85}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000639	Re-Slope:	1.000000
A1 (Gain):	0.083515	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999945	Status:	OK.
Std Error of Est:	0.000066		
Predicted MDL:	0.004950		
Predicted MQL:	0.016501		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00064	.000	1
S1	.10000	.09249	-.008	-7.51	.00901	.000	1
S3	5.0000	5.1183	.118	2.37	.43619	.001	1
S4	10.000	9.9292	-.071	-.708	.84608	.002	1
S5	20.000	19.983	-.017	-.083	1.7020	.001	1
S2	1.6000	1.5770	-.023	-1.44	.13493	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



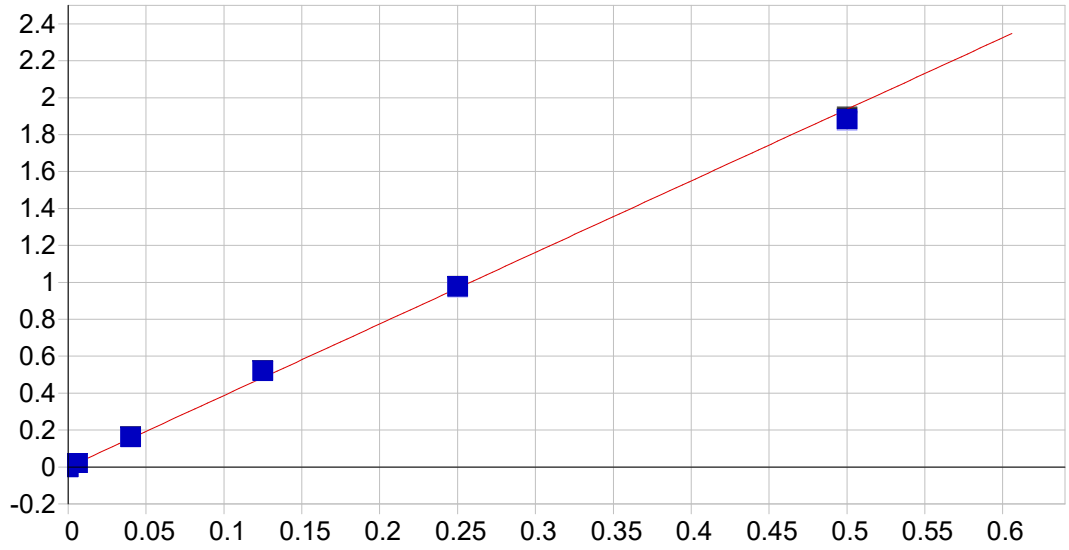
Ba 493.409 { 68}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.002360	Re-Slope:	1.000000
A1 (Gain):	3.767140	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999663	Status:	OK.
Std Error of Est:	0.007255		
Predicted MDL:	0.000394		
Predicted MQL:	0.001315		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00237	.002	1
S1	.10000	.09667	-.003	-3.33	.36183	.001	1
S3	5.0000	5.2827	.283	5.65	19.898	.064	1
S4	10.000	10.059	.059	.594	37.893	.085	1
S5	20.000	19.620	-.380	-1.90	73.908	.415	1
S2	1.6000	1.6415	.042	2.60	6.1816	.026	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



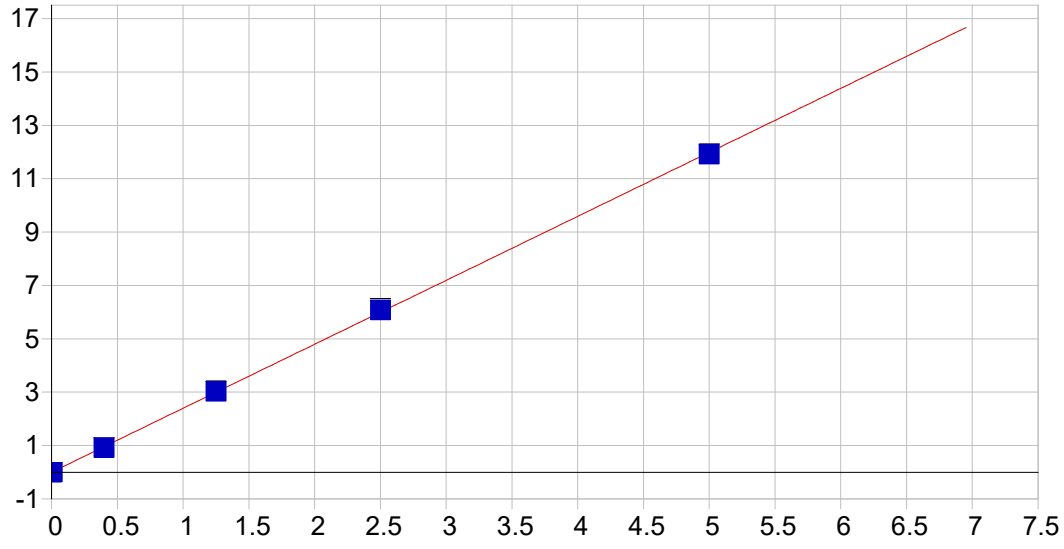
Be 234.861 {144}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000567	Re-Slope:	1.000000
A1 (Gain):	3.875051	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999309	Status:	OK.
Std Error of Est:	0.000413		
Predicted MDL:	0.000054		
Predicted MQL:	0.000179		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00057	.000	1
S1	.00600	.00588	-.000	-2.07	.02203	.000	1
S3	.12500	.13469	.010	7.75	.51920	.000	1
S4	.25000	.25208	.002	.831	.97190	.003	1
S5	.50000	.48623	-.014	-2.75	1.8749	.011	1
S2	.04000	.04212	.002	5.31	.16197	.001	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



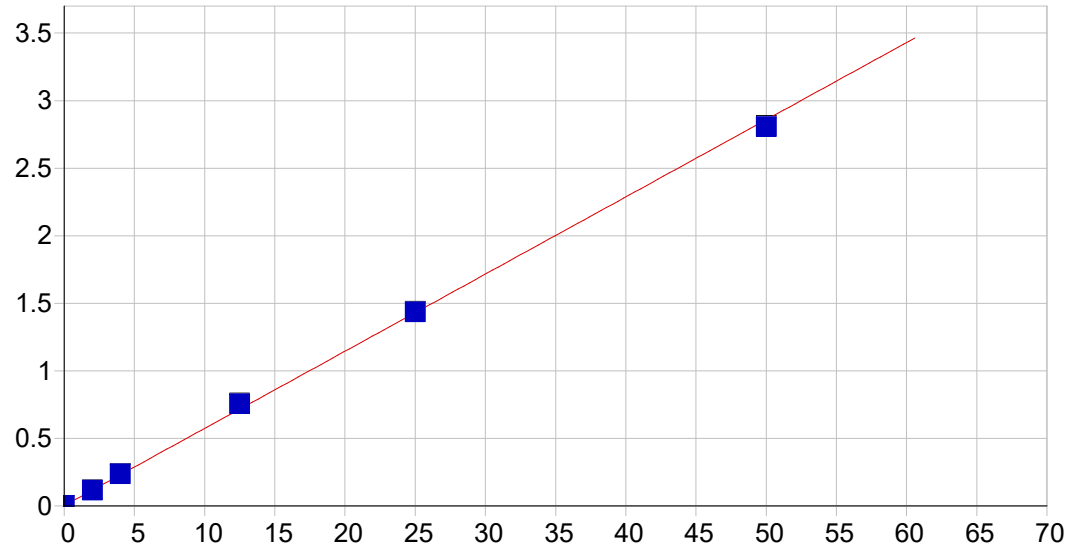
Cd 226.502 {449}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000104	Re-Slope:	1.000000
A1 (Gain):	2.397767	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999907	Status:	OK.
Std Error of Est:	0.000297		
Predicted MDL:	0.000078		
Predicted MQL:	0.000259		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00010	.000	1
S1	.00600	.00557	-.000	-7.21	.01331	.000	1
S3	1.2500	1.2647	.015	1.18	3.0348	.005	1
S4	2.5000	2.5347	.035	1.39	6.0824	.059	1
S5	5.0000	4.9693	-.031	-.614	11.925	.018	1
S2	.40000	.38176	-.018	-4.56	.91605	.001	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



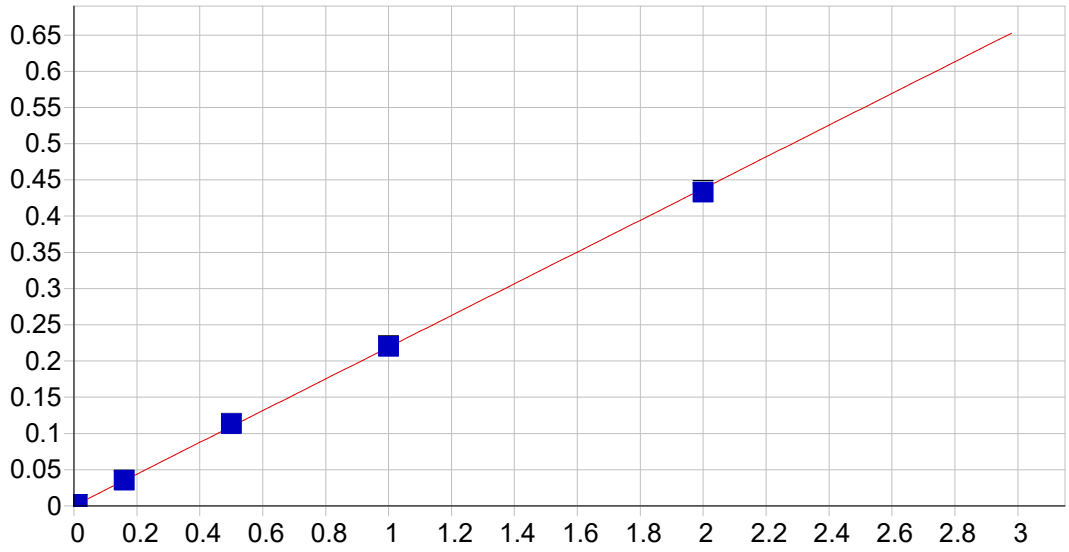
Ca 373.690 { 90}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.002308	Re-Slope:	1.000000
A1 (Gain):	0.057124	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999688	Status:	OK.
Std Error of Est:	0.000755		
Predicted MDL:	0.006948		
Predicted MQL:	0.023161		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00012	-.000	.000	.00230	.000	1
S2	4.0000	4.1197	.120	2.99	.23764	.000	1
S3	12.500	13.190	.690	5.52	.75577	.004	1
S4	25.000	25.106	.106	.425	1.4365	.004	1
S5	50.000	49.103	-.897	-1.79	2.8073	.006	1
S1	2.0000	1.9816	-.018	-.918	.11551	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



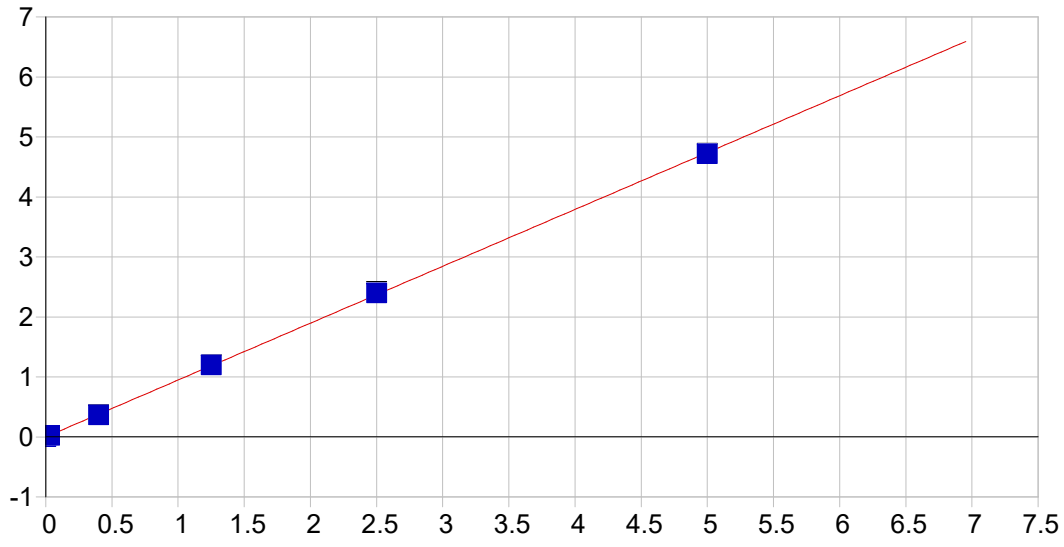
Cr 267.716 {126}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000127	Re-Slope:	1.000000
A1 (Gain):	0.218952	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999856	Status:	OK.
Std Error of Est:	0.000028		
Predicted MDL:	0.000328		
Predicted MQL:	0.001092		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00013	.000	1
S1	.01000	.00898	-.001	-10.2	.00209	.000	1
S3	.50000	.51816	.018	3.63	.11361	.000	1
S4	1.0000	1.0051	.005	.508	.22026	.001	1
S5	2.0000	1.9771	-.023	-1.15	.43314	.002	1
S2	.16000	.16069	.001	.431	.03532	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



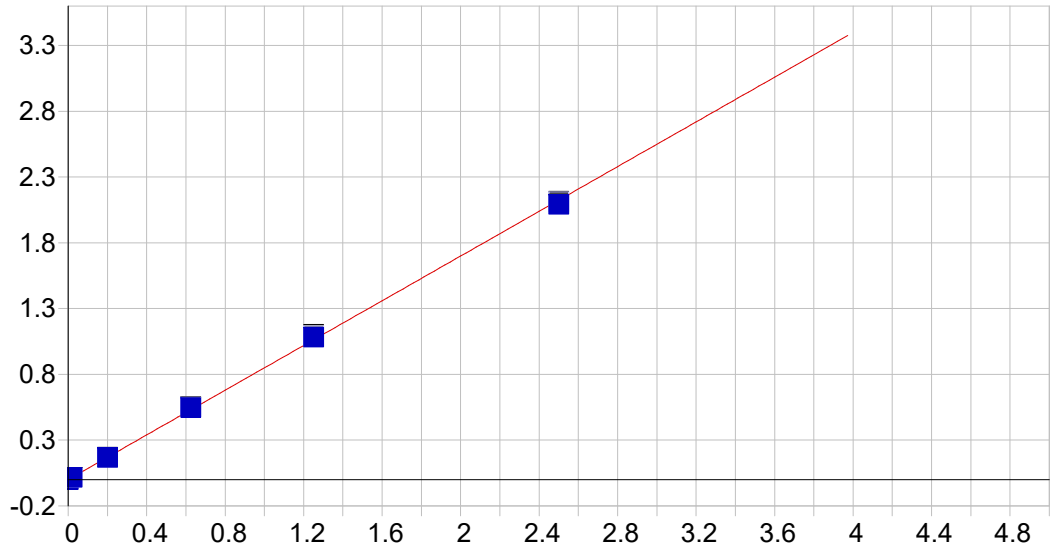
Co 228.616 {448}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000060	Re-Slope:	1.000000
A1 (Gain):	0.947798	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999914	Status:	OK.
Std Error of Est:	0.000253		
Predicted MDL:	0.000175		
Predicted MQL:	0.000583		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00006	.000	1
S1	.03000	.02747	-.003	-8.42	.02598	.000	1
S3	1.2500	1.2647	.015	1.18	1.2008	.001	1
S4	2.5000	2.5298	.030	1.19	2.4018	.023	1
S5	5.0000	4.9750	-.025	-.499	4.7234	.003	1
S2	.40000	.38298	-.017	-4.26	.36369	.001	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



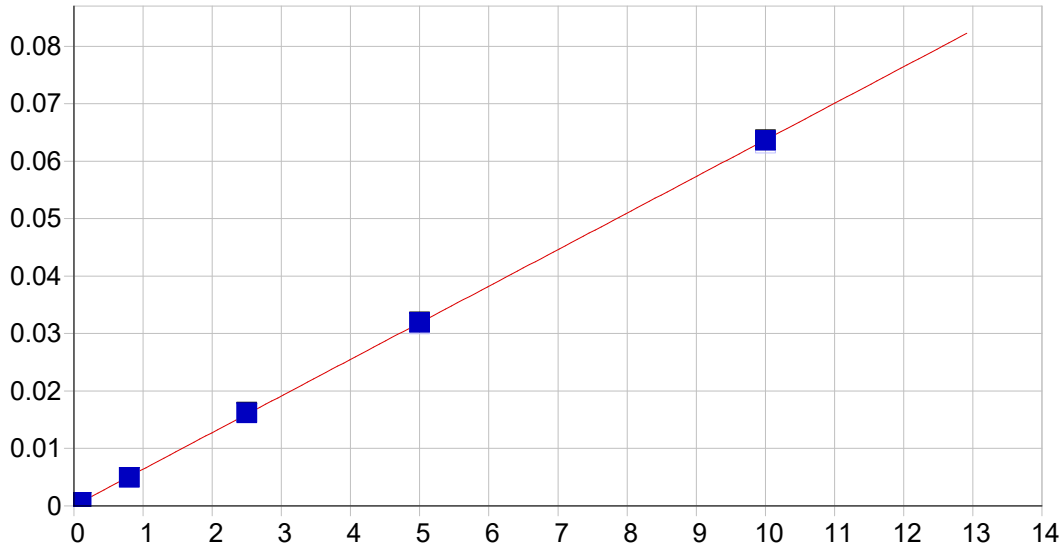
Cu 224.700 {450}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000075	Re-Slope:	1.000000
A1 (Gain):	0.849823	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999816	Status:	OK.
Std Error of Est:	0.000193		
Predicted MDL:	0.000343		
Predicted MQL:	0.001145		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00008	.000	1
S1	.02000	.02021	.000	1.03	.01731	.000	1
S3	.62500	.64428	.019	3.09	.55251	.001	1
S4	1.2500	1.2735	.023	1.88	1.0923	.011	1
S5	2.5000	2.4603	-.040	-1.59	2.1110	.006	1
S2	.20000	.19676	-.003	-1.62	.16876	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



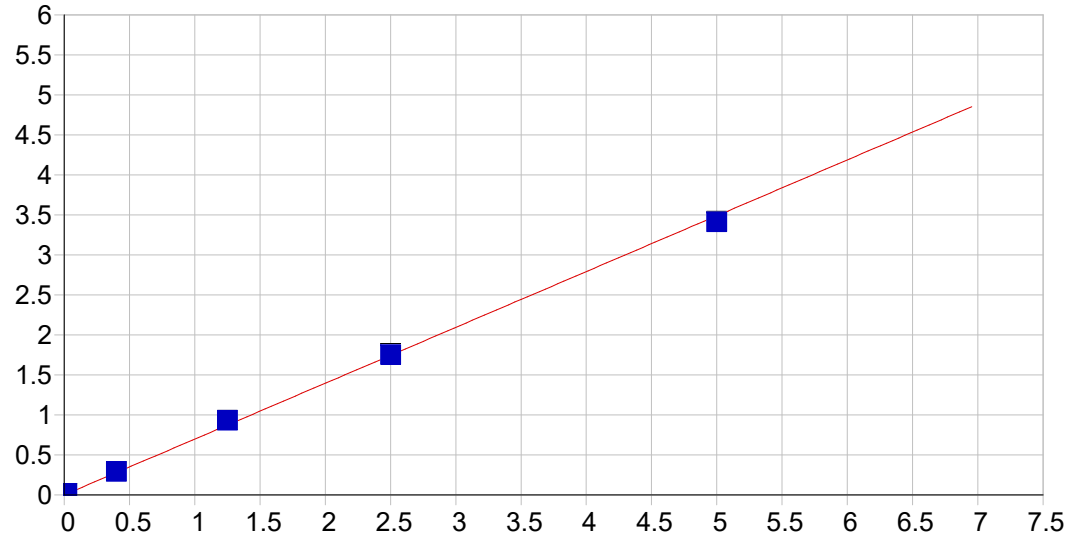
Fe 240.488 {140}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000035	Re-Slope:	1.000000
A1 (Gain):	0.006367	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999915	Status:	OK.
Std Error of Est:	0.000004		
Predicted MDL:	0.003565		
Predicted MQL:	0.011883		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00003	.000	1
S1	.10000	.08825	-.012	-11.7	.00059	.000	1
S3	2.5000	2.5446	.045	1.78	.01610	.000	1
S4	5.0000	5.0057	.006	.115	.03163	.000	1
S5	10.000	9.9878	-.012	-.122	.06308	.000	1
S2	.80000	.77354	-.026	-3.31	.00492	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



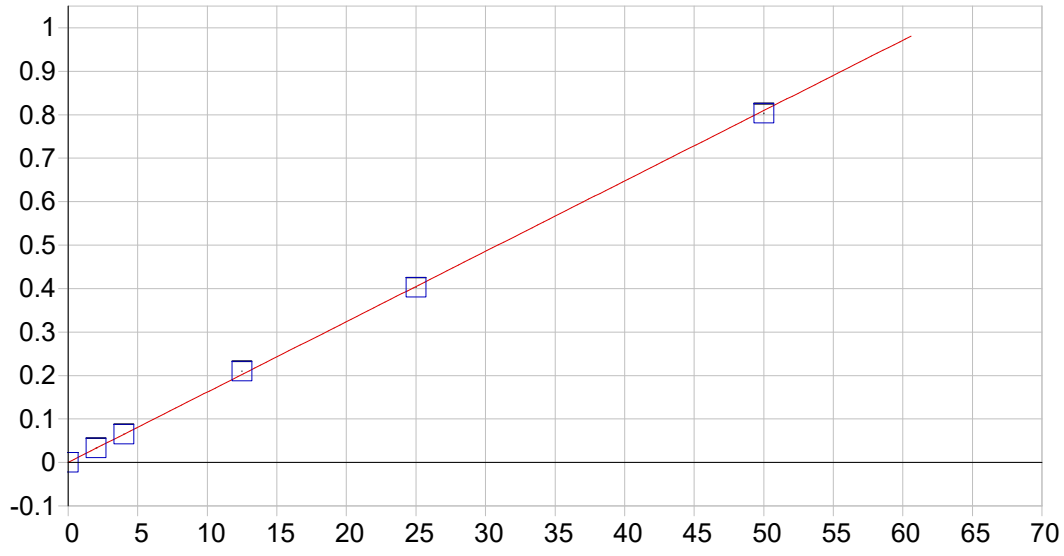
Mn 257.610 {131}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000295	Re-Slope:	1.000000
A1 (Gain):	0.697828	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999512	Status:	OK.
Std Error of Est:	0.000361		
Predicted MDL:	0.000240		
Predicted MQL:	0.000802		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00029	.000	1
S1	.02000	.02038	.000	1.88	.01452	.000	1
S3	1.2500	1.3331	.083	6.65	.93073	.003	1
S4	2.5000	2.5128	.013	.514	1.7542	.013	1
S5	5.0000	4.8862	-.114	-2.28	3.4107	.010	1
S2	.40000	.41750	.017	4.37	.29169	.001	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



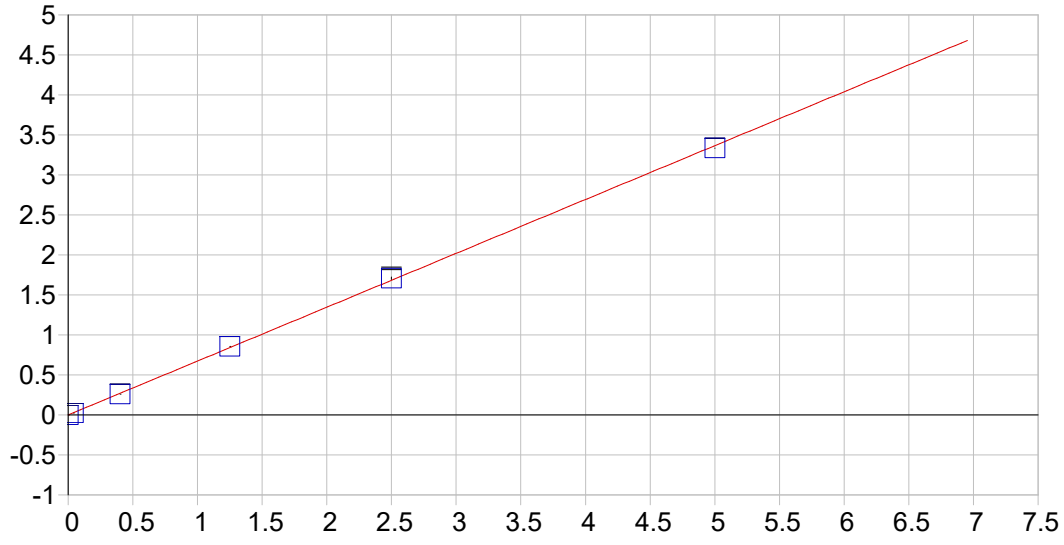
Mg 279.079 {121}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000088	Re-Slope:	1.000000
A1 (Gain):	0.016188	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999879	Status:	OK.
Std Error of Est:	0.000133		
Predicted MDL:	0.010893		
Predicted MQL:	0.036309		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00011	-.000	.000	.00009	.000	1
S2	4.0000	4.0157	.016	.392	.06509	.000	1
S3	12.500	12.962	.462	3.70	.20992	.001	1
S4	25.000	24.861	-.139	-.556	.40254	.000	1
S5	50.000	49.606	-.394	-.787	.80312	.001	1
S1	2.0000	2.0549	.055	2.75	.03335	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



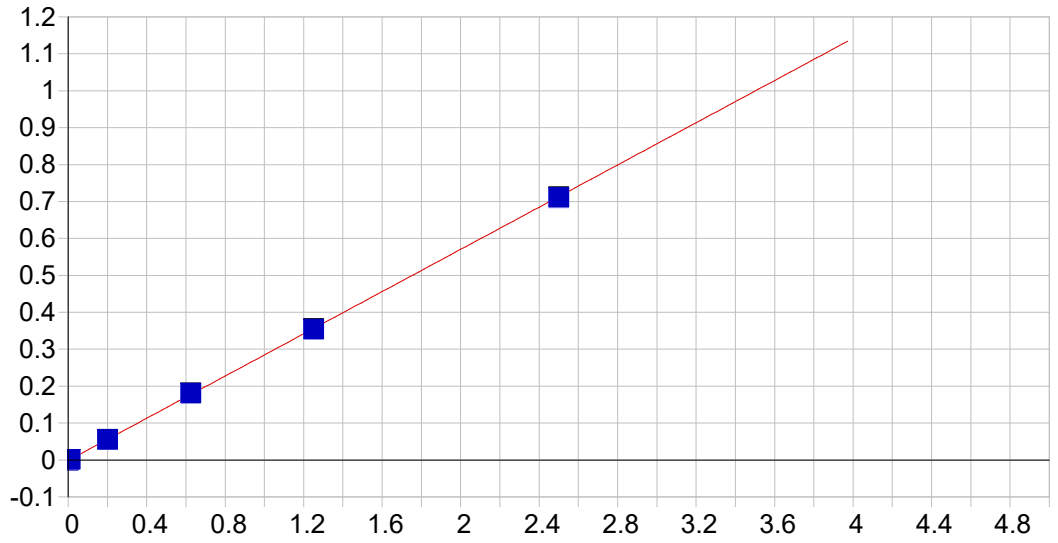
Ni 231.604 {446}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000067	Re-Slope:	1.000000
A1 (Gain):	0.673160	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999890	Status:	OK.
Std Error of Est:	0.000235		
Predicted MDL:	0.000276		
Predicted MQL:	0.000921		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00006	.000	1
S1	.04000	.03664	-.003	-8.39	.02460	.000	1
S3	1.2500	1.2733	.023	1.86	.85704	.001	1
S4	2.5000	2.5368	.037	1.47	1.7076	.017	1
S5	5.0000	4.9555	-.044	-.889	3.3358	.002	1
S2	.40000	.38773	-.012	-3.07	.26094	.001	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



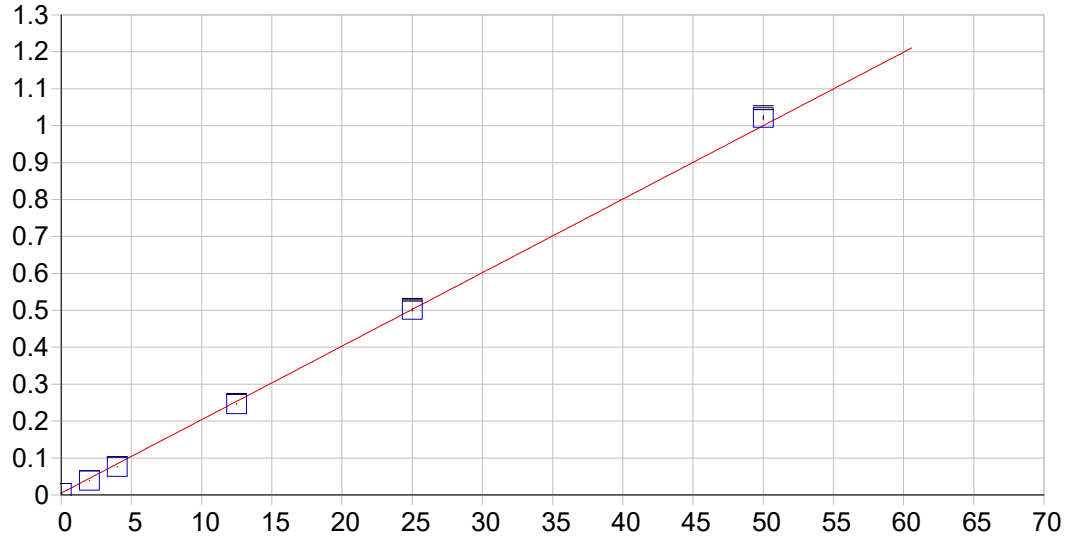
Ag 328.068 {103}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.001343	Re-Slope:	1.000000
A1 (Gain):	0.285859	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999962	Status:	OK.
Std Error of Est:	0.000020		
Predicted MDL:	0.000329		
Predicted MQL:	0.001097		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00134	.000	1
S1	.01000	.00959	-.000	-4.10	.00138	.000	1
S3	.62500	.63821	.013	2.11	.18039	.000	1
S4	1.2500	1.2441	-.006	-.476	.35286	.001	1
S5	2.5000	2.4941	-.006	-.237	.70877	.001	1
S2	.20000	.19907	-.001	-.466	.05534	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



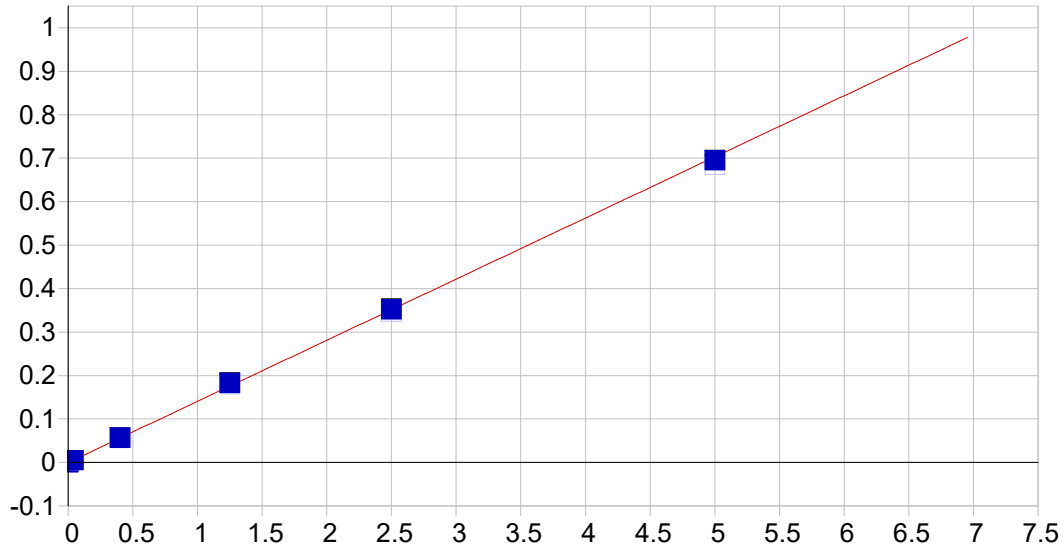
Na 589.592 { 57}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.004789	Re-Slope:	1.000000
A1 (Gain):	0.019905	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999354	Status:	OK.
Std Error of Est:	0.000379		
Predicted MDL:	0.007544		
Predicted MQL:	0.025147		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00052	.001	.000	.00480	.000	1
S2	4.0000	3.5910	-.409	-10.2	.07627	.000	1
S3	12.500	12.144	-.356	-2.85	.24651	.001	1
S4	25.000	24.970	-.030	-.120	.50181	.003	1
S5	50.000	51.095	1.09	2.19	1.0218	.006	1
S1	2.0000	1.7006	-.299	-15.0	.03864	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



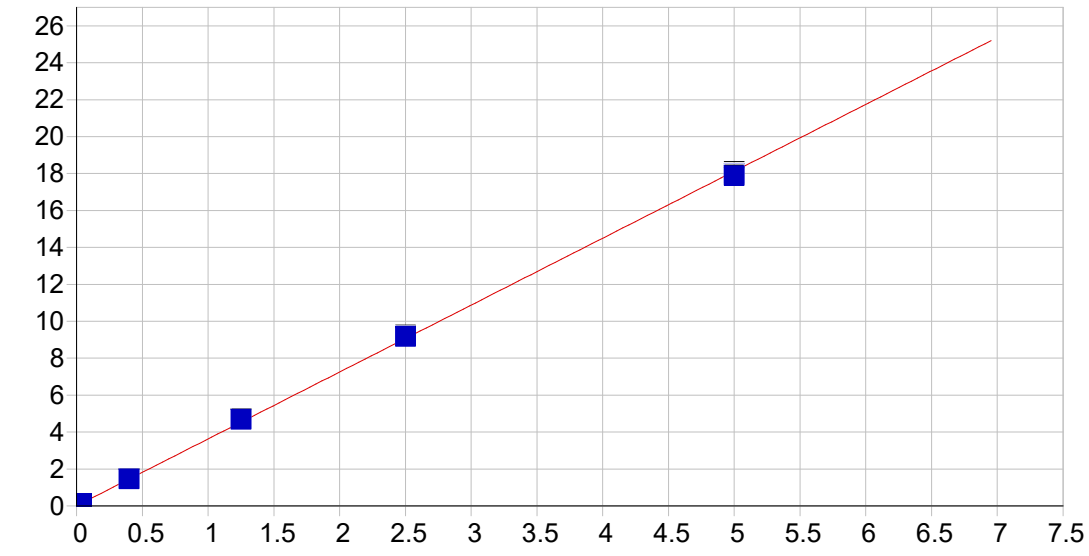
V 292.402 {115}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000116	Re-Slope:	1.000000
A1 (Gain):	0.140620	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999856	Status:	OK.
Std Error of Est:	0.000055		
Predicted MDL:	0.001297		
Predicted MQL:	0.004323		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00012	.000	1
S1	.04000	.03952	-.000	-1.19	.00523	.000	1
S3	1.2500	1.2986	.049	3.89	.17993	.001	1
S4	2.5000	2.5058	.006	.231	.34712	.001	1
S5	5.0000	4.9431	-.057	-1.14	.68473	.000	1
S2	.40000	.40296	.003	.740	.05573	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



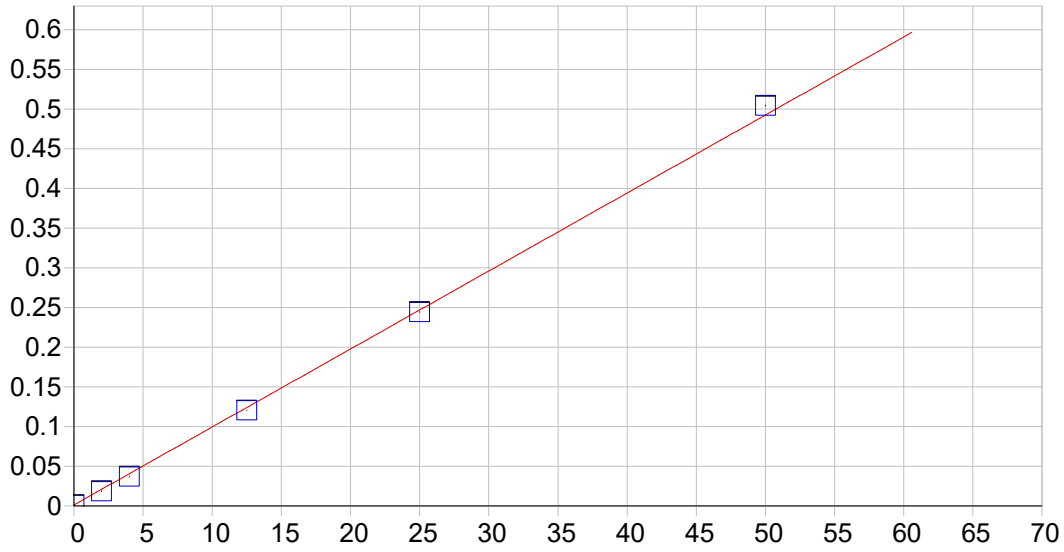
Zn 213.856 {158}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.004453	Re-Slope:	1.000000
A1 (Gain):	3.623490	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999862	Status:	OK.
Std Error of Est:	0.001421		
Predicted MDL:	0.000218		
Predicted MQL:	0.000727		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00445	.001	1
S1	.04000	.03925	-.001	-1.88	.14768	.001	1
S3	1.2500	1.2910	.041	3.28	4.7138	.007	1
S4	2.5000	2.5268	.027	1.07	9.2233	.037	1
S5	5.0000	4.9322	-.068	-1.36	18.002	.104	1
S2	.40000	.40078	.001	.196	1.4668	.006	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



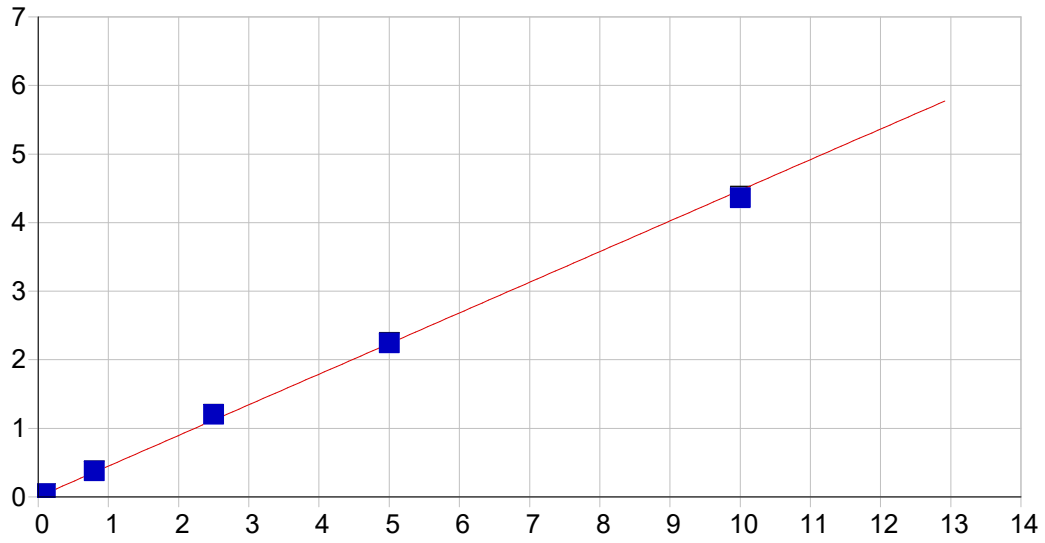
K 766.490 { 44}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.001228	Re-Slope:	1.000000
A1 (Gain):	0.009829	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999439	Status:	OK.
Std Error of Est:	0.000174		
Predicted MDL:	0.018035		
Predicted MQL:	0.060116		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00045	.000	.000	.00123	.000	1
S2	4.0000	3.6406	-.359	-8.99	.03701	.000	1
S3	12.500	12.141	-.359	-2.87	.12057	.000	1
S4	25.000	24.741	-.259	-1.04	.24441	.000	1
S5	50.000	51.221	1.22	2.44	.50470	.000	1
S1	2.0000	1.7561	-.244	-12.2	.01849	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



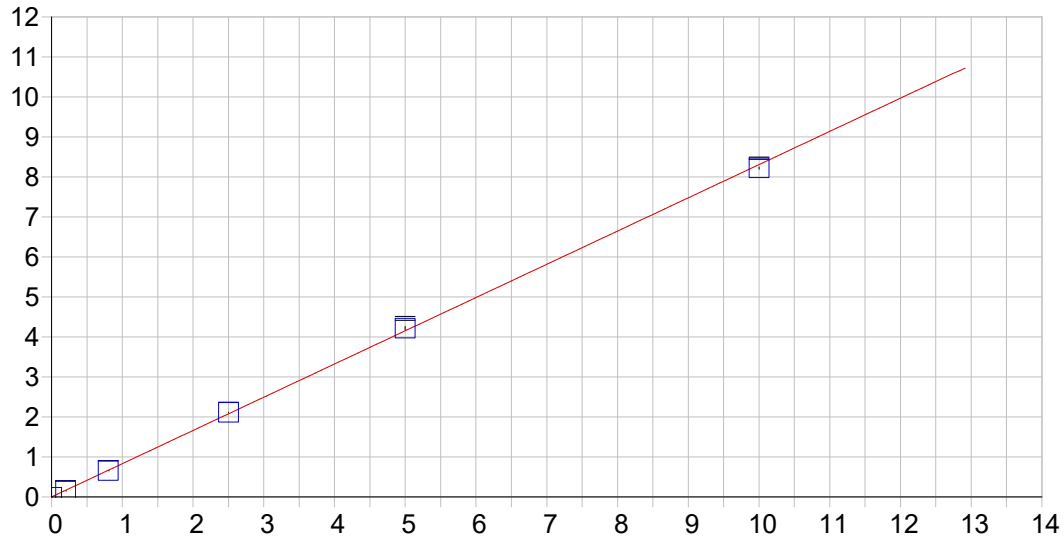
B 249.678 {135}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.002454	Re-Slope:	1.000000
A1 (Gain):	0.446843	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999416	Status:	OK.
Std Error of Est:	0.000801		
Predicted MDL:	0.000574		
Predicted MQL:	0.001912		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	.00245	.000	1
S1	.10000	.10015	.000	.153	.04702	.000	1
S3	2.5000	2.6864	.186	7.46	1.2007	.002	1
S4	5.0000	5.0157	.016	.313	2.2393	.009	1
S5	10.000	9.7604	-.240	-2.40	4.3551	.021	1
S2	.80000	.83733	.037	4.67	.37591	.001	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



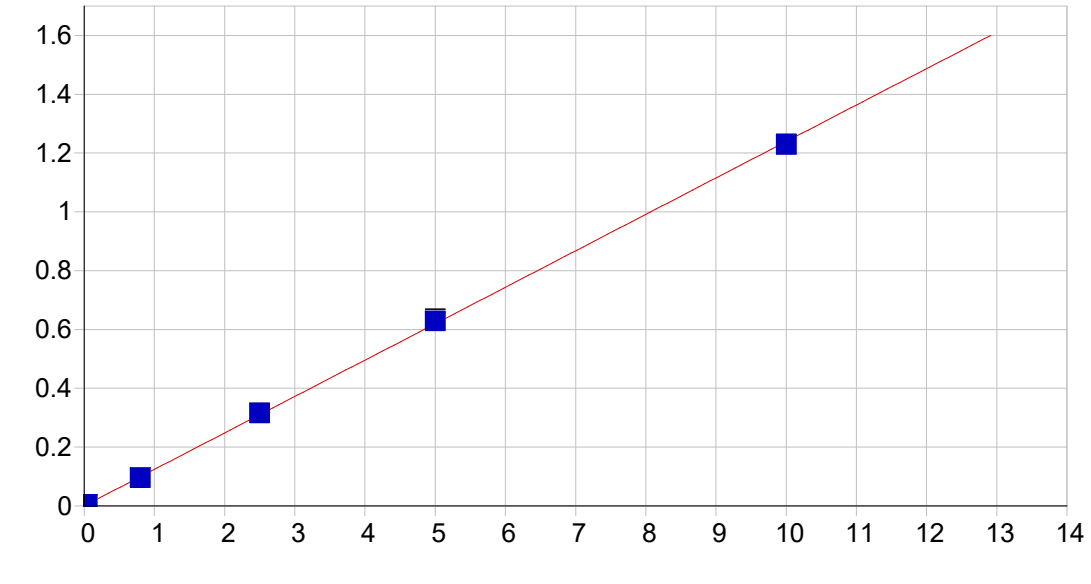
Mo 202.030 {467}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000332	Re-Slope:	1.000000
A1 (Gain):	0.830430	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999883	Status:	OK.
Std Error of Est:	0.000945		
Predicted MDL:	0.000230		
Predicted MQL:	0.000766		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00034	.000	1
S1	.20000	.18575	-.014	-7.13	.15458	.000	1
S3	2.5000	2.5469	.047	1.87	2.1153	.006	1
S4	5.0000	5.0788	.079	1.58	4.2179	.049	1
S5	10.000	9.9025	-.097	-.975	8.2237	.028	1
S2	.80000	.78611	-.014	-1.74	.65314	.001	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



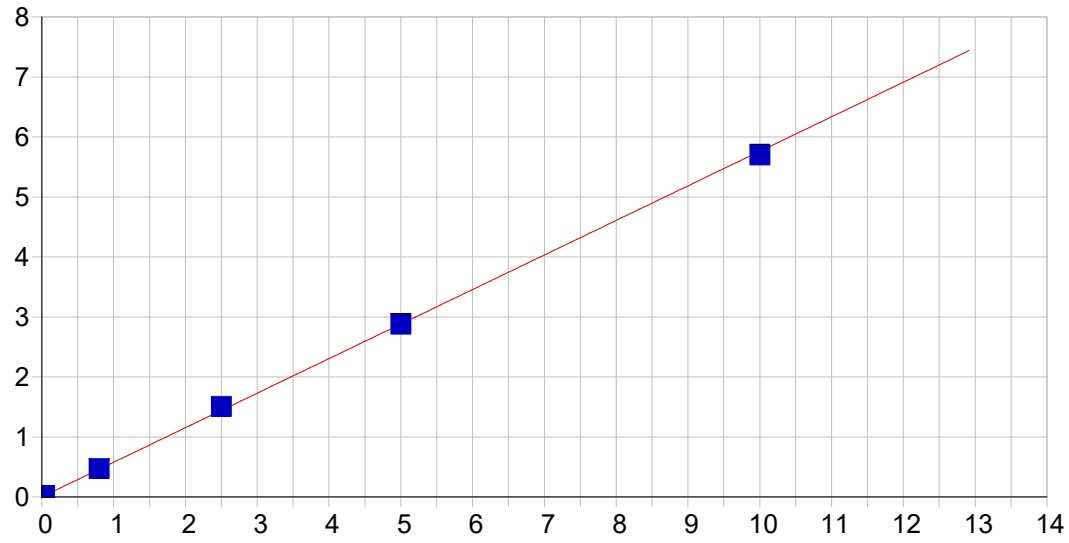
Sn 189.989 {478}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000272	Re-Slope:	1.000000
A1 (Gain):	0.123909	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999887	Status:	OK.
Std Error of Est:	0.000062		
Predicted MDL:	0.000703		
Predicted MQL:	0.002345		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00027	.000	1
S1	.04000	.03650	-.003	-8.75	.00479	.000	1
S3	2.5000	2.5438	.044	1.75	.31516	.001	1
S4	5.0000	5.0743	.074	1.49	.62840	.007	1
S5	10.000	9.9172	-.083	-.828	1.2278	.002	1
S2	.80000	.76811	-.032	-3.99	.09535	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



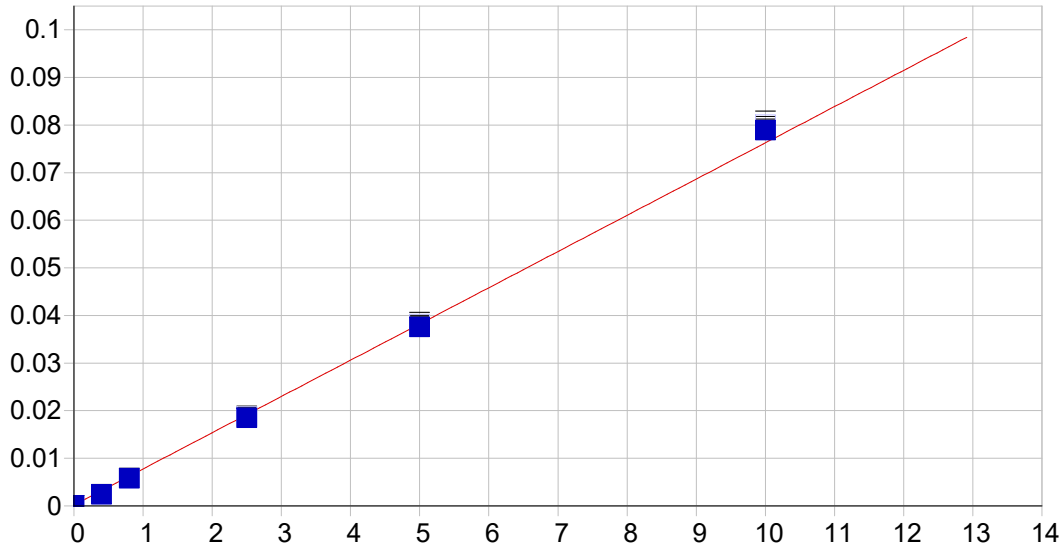
Ti 336.121 {100}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.001744	Re-Slope:	1.000000
A1 (Gain):	0.575826	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999818	Status:	OK.
Std Error of Est:	0.000364		
Predicted MDL:	0.000470		
Predicted MQL:	0.001568		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00174	.000	1
S1	.04000	.03773	-.002	-5.67	.02345	.000	1
S3	2.5000	2.6117	.112	4.47	1.5051	.002	1
S4	5.0000	4.9885	-.012	-.231	2.8732	.015	1
S5	10.000	9.8876	-.112	-1.12	5.6932	.016	1
S2	.80000	.81454	.015	1.82	.47061	.002	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



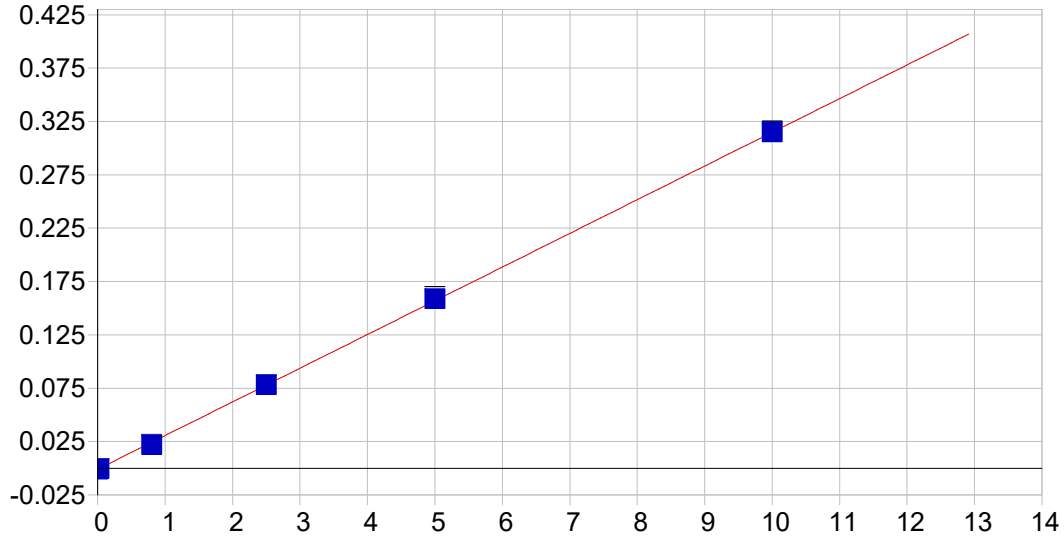
Si 288.158 {117}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000161	Re-Slope:	1.000000
A1 (Gain):	0.007611	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.998697	Status:	OK.
Std Error of Est:	0.000042		
Predicted MDL:	0.005101		
Predicted MQL:	0.017002		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00015	.000	.000	.00016	.000	1
S1	.40000	.29430	-.106	-26.4	.00241	.000	1
S3	2.5000	2.4056	-.094	-3.78	.01876	.000	1
S4	5.0000	4.9190	-.081	-1.62	.03817	.000	1
S5	10.000	10.346	.346	3.46	.08004	.001	1
S2	.80000	.73408	-.066	-8.24	.00584	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



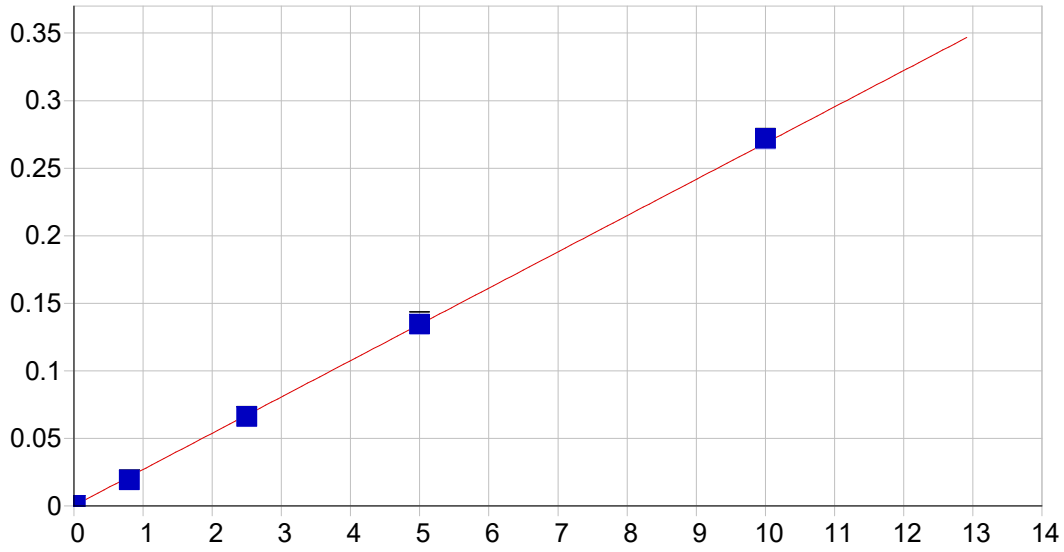
P 177.495 {490}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000992	Re-Slope:	1.000000
A1 (Gain):	0.031584	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999791	Status:	OK.
Std Error of Est:	0.000015		
Predicted MDL:	0.002525		
Predicted MQL:	0.008416		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	-.00099	.000	1
S1	.02000	.01600	-.004	-20.0	-.00049	.000	1
S3	2.5000	2.5088	.009	.352	.07823	.000	1
S4	5.0000	5.0601	.060	1.20	.15880	.002	1
S5	10.000	10.005	.005	.051	.31495	.001	1
S2	.80000	.73004	-.070	-8.74	.02206	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



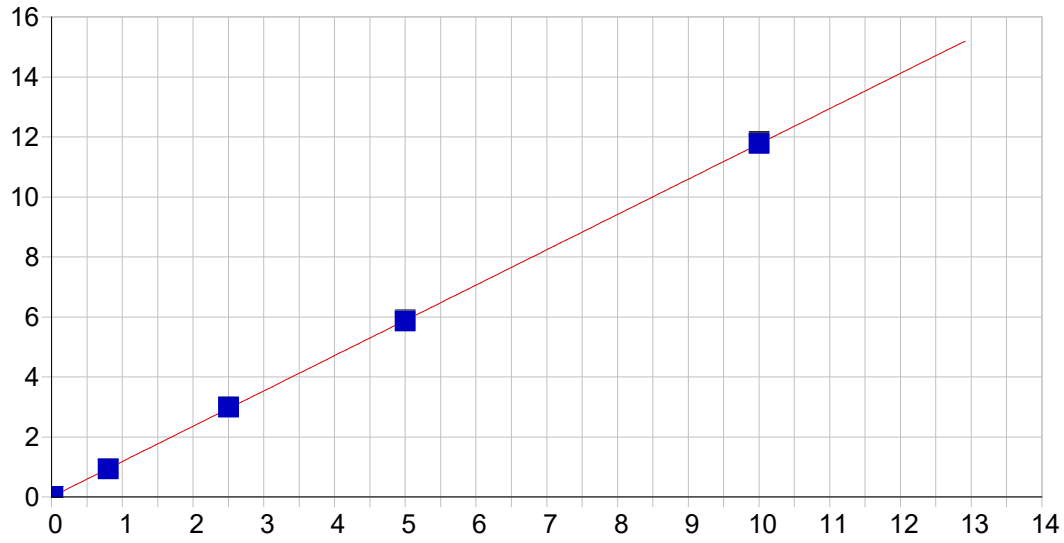
S 182.034 {485}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000143	Re-Slope:	1.000000
A1 (Gain):	0.026841	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999676	Status:	OK.
Std Error of Est:	0.000016		
Predicted MDL:	0.003015		
Predicted MQL:	0.010048		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00014	.000	1
S1	.02000	.01798	-.002	-10.1	.00060	.000	1
S3	2.5000	2.4556	-.044	-1.78	.06588	.000	1
S4	5.0000	5.0085	.009	.171	.13423	.002	1
S5	10.000	10.124	.124	1.24	.27118	.000	1
S2	.80000	.71387	-.086	-10.8	.01925	.000	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



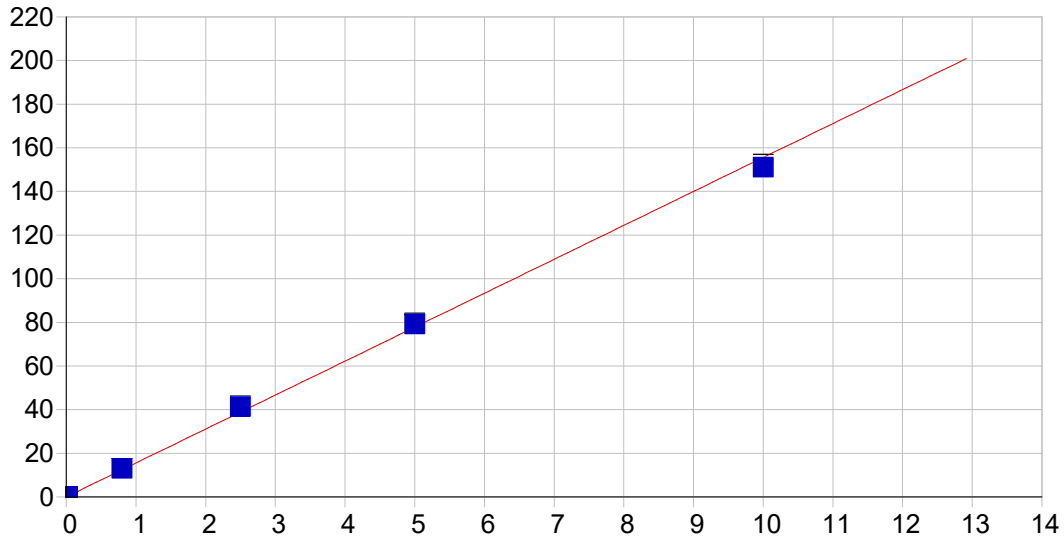
Li 670.784 { 50}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.003706	Re-Slope:	1.000000
A1 (Gain):	1.176302	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999968	Status:	OK.
Std Error of Est:	0.000219		
Predicted MDL:	0.000654		
Predicted MQL:	0.002179		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00371	.001	1
S5	10.000	10.012	.012	.121	11.792	.045	1
S4	5.0000	4.9754	-.025	-.492	5.8616	.036	1
S3	2.5000	2.5320	.032	1.28	2.9848	.008	1
S1	.02000	.01780	-.002	-11.0	.02506	.000	1
S2	.80000	.78275	-.017	-2.16	.92530	.004	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



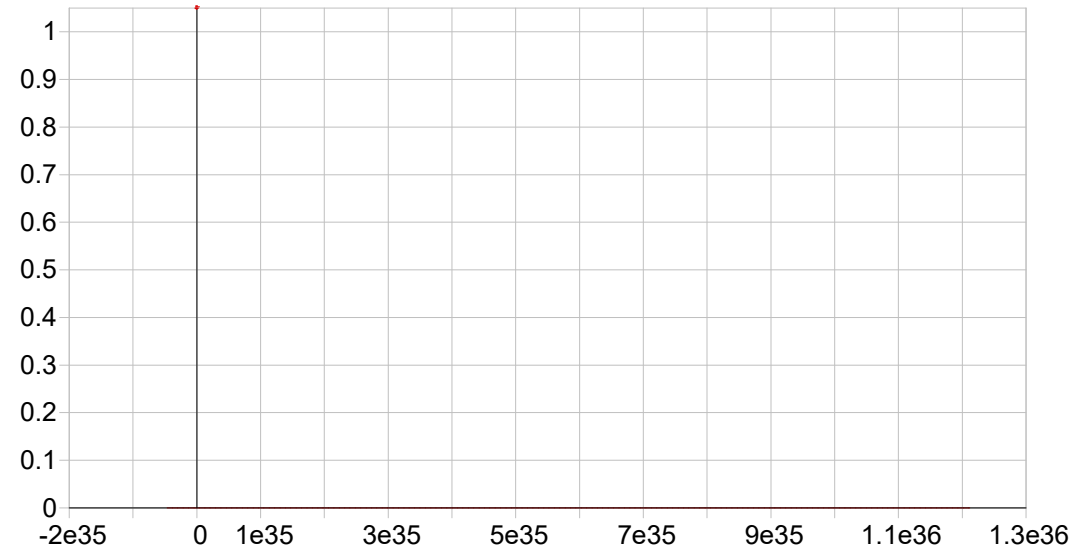
Sr 407.771 { 83}

Date of Fit:	12/11/2024 11:43:31	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.001820	Re-Slope:	1.000000
A1 (Gain):	15.556410	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999391	Status:	OK.
Std Error of Est:	0.012742		
Predicted MDL:	0.000030		
Predicted MQL:	0.000099		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00179	.000	1
S1	.02000	.01997	-.000	-.168	.31398	.001	1
S3	2.5000	2.6629	.163	6.52	41.466	.181	1
S4	5.0000	5.0903	.090	1.81	79.267	.392	1
S5	10.000	9.7098	-.290	-2.90	151.21	1.34	1
S2	.80000	.83704	.037	4.63	13.036	.042	1

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

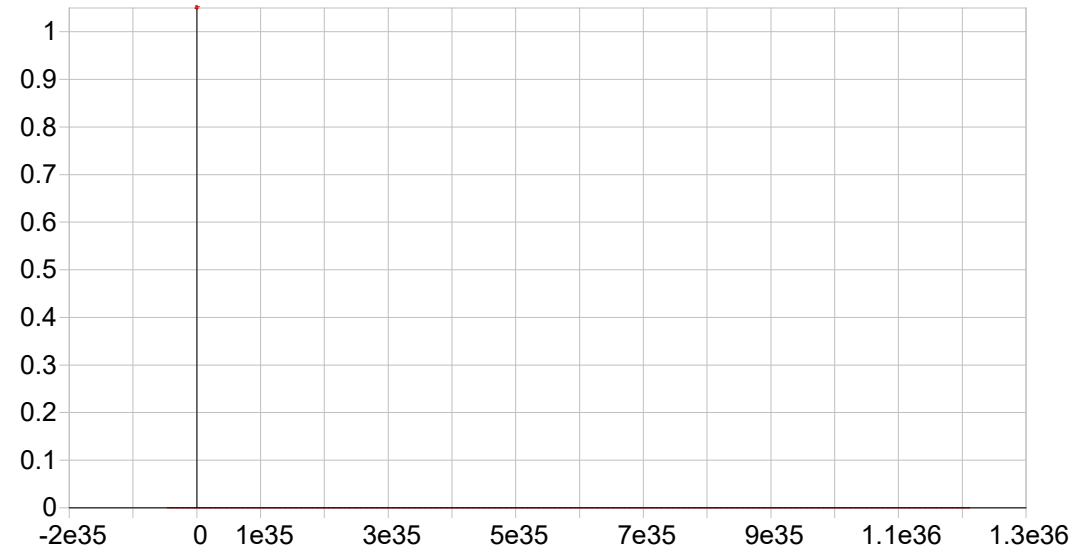


Y 224.306 {450}*

Date of Fit:	12/11/2024 11:43:31	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}*

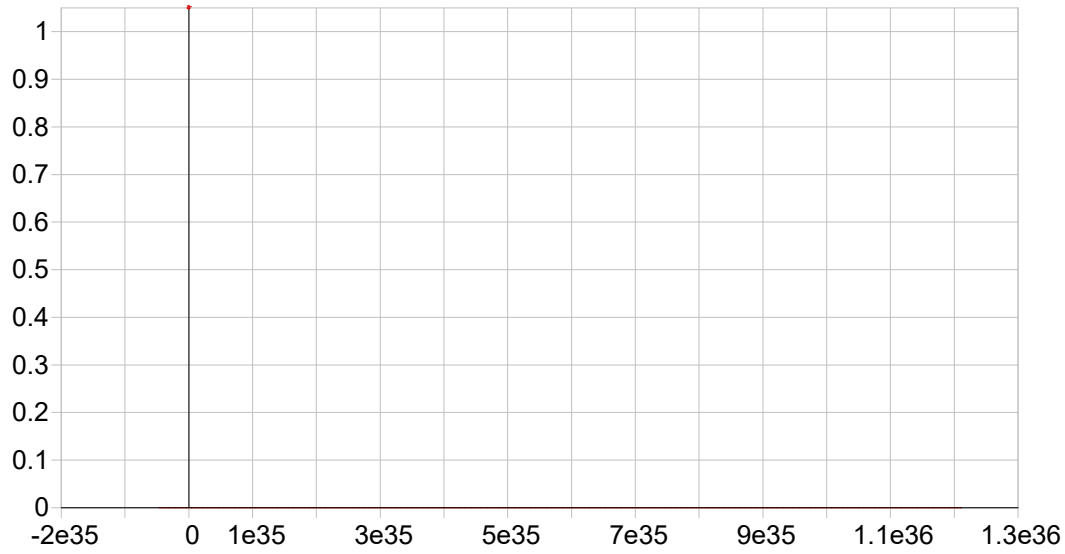
Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc

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

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

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



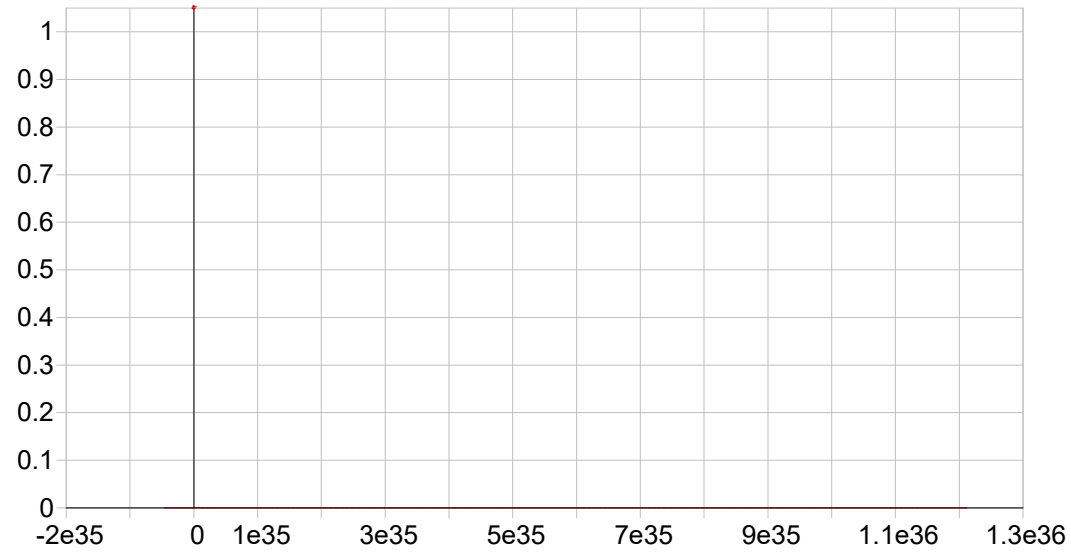
Y 371.030 { 91}*

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

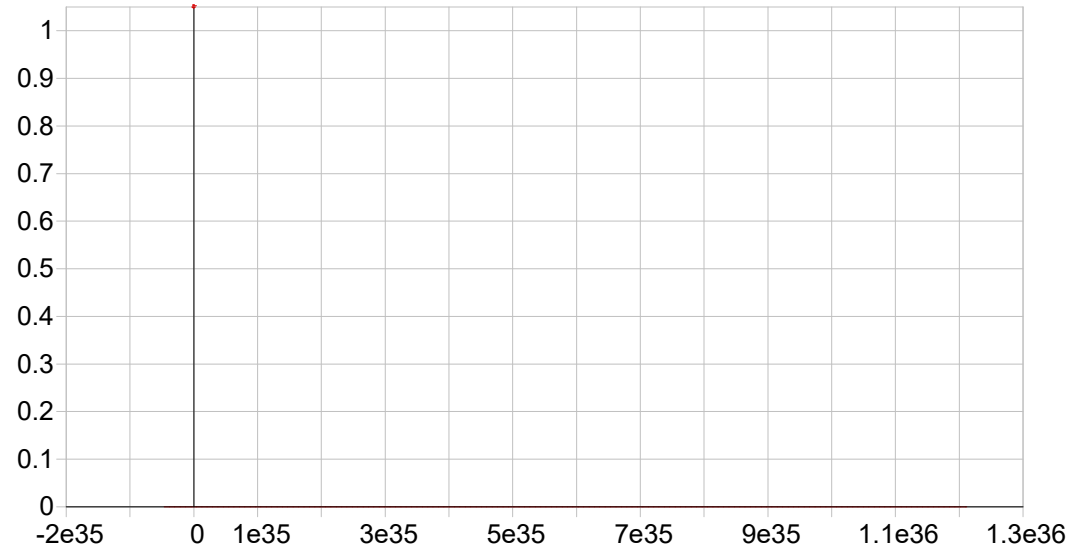
Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866



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:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

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:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: S0 Acquired: 12/10/2024 10:38:38 Type: Cal
Method: NON EPA-6010-200.7(v2514) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	**-.00022**	**-.00013**	**-.00029**	**.00030**	**.00014**	**.00064**	**-.00237**	**-.00057**
Stddev	.00005	.00004	.00019	.00007	.00010	.00024	.00171	.00015
%RSD	21.390	31.645	63.050	24.292	70.994	37.388	72.238	27.122
#1	-.00026	-.00008	-.00013	.00036	.00009	.00052	-.00360	-.00040
#2	-.00025	-.00015	-.00050	.00031	.00025	.00091	-.00042	-.00062
#3	-.00017	-.00015	-.00026	.00022	.00008	.00049	-.00310	-.00069

Elem	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**-.00010**	**.00230**	**.00013**	**.00006**	**-.00008**	**.00003**	**.00029**	**.00009**
Stddev	.00009	.00015	.00006	.00007	.00009	.00001	.00005	.00015
%RSD	85.977	6.6727	48.853	106.47	112.21	29.233	18.302	169.65
#1	-.00019	.00248	.00009	.00010	-.00001	.00002	.00024	.00025
#2	-.00001	.00220	.00009	.00010	-.00005	.00004	.00035	.00005
#3	-.00011	.00223	.00020	-.00001	-.00017	.00004	.00029	-.00004

Elem	Ni2316	Ag3280	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**-.00006**	**-.00134**	**.00480**	**-.00012**	**.00445**	**.00123**	**.00245**	**.00034**
Stddev	.00013	.00006	.00025	.00013	.00067	.00018	.00021	.00001
%RSD	199.90	4.8138	5.1213	111.04	15.116	14.548	8.3867	4.1509
#1	-.00014	-.00137	.00461	-.00025	.00513	.00107	.00247	.00035
#2	-.00014	-.00139	.00471	-.00009	.00379	.00120	.00224	.00033
#3	.00008	-.00127	.00508	.00000	.00443	.00142	.00265	.00035

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707	Sr4077
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**.00027**	**.00174**	**.00016**	**-.00099**	**.00014**	**.00371**	**.00179**
Stddev	.00002	.00018	.00002	.00005	.00005	.00079	.00036
%RSD	7.3766	10.548	13.020	4.6963	31.469	21.353	19.859
#1	.00028	.00161	.00014	-.00096	.00018	.00424	.00169
#2	.00025	.00195	.00018	-.00105	.00016	.00280	.00149
#3	.00029	.00167	.00016	-.00096	.00009	.00409	.00218

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: S0 Acquired: 12/10/2024 10:38:38 Type: Cal
Method: NON EPA-6010-200.7(v2514) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	2781.3	64114.	13118.	2037.2	4613.1
Stddev	7.4	129.	5.	2.0	6.7
%RSD	.26699	.20163	.03889	.09815	.14586
#1	2783.3	63982.	13124.	2034.9	4616.6
#2	2787.4	64121.	13117.	2038.1	4617.3
#3	2773.0	64240.	13114.	2038.5	4605.3

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: S1 Acquired: 12/10/2024 10:43:05 Type: Cal
Method: NON EPA-6010-200.7(v2514) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	**.00068**	**.00243**	**.00265**	**.00217**	**.00724**	**.00901**	**.36183**	**.02203**
Stddev	.00007	.00005	.00014	.00006	.00004	.00022	.00148	.00021
%RSD	10.059	2.0701	5.3524	2.9108	.56608	2.4853	.40781	.96232
#1	.00076	.00244	.00249	.00209	.00728	.00875	.36287	.02221
#2	.00062	.00247	.00272	.00219	.00720	.00916	.36014	.02180
#3	.00068	.00237	.00275	.00221	.00722	.00912	.36246	.02208

Elem	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**.01331**	**.11551**	**.00209**	**.02598**	**.01731**	**.00059**	**.01452**	**.03335**
Stddev	.00013	.00049	.00006	.00018	.00010	.00001	.00006	.00008
%RSD	1.0116	.42369	2.6700	.70001	.58911	2.1925	.40899	.22587
#1	.01324	.11523	.00205	.02607	.01740	.00059	.01452	.03327
#2	.01347	.11522	.00208	.02610	.01720	.00060	.01446	.03337
#3	.01322	.11607	.00216	.02577	.01734	.00057	.01458	.03342

Elem	Ni2316	Ag3280	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**.02460**	**.00138**	**.03864**	**.00523**	**.14768**	**.01849**	**.04702**	**.15458**
Stddev	.00014	.00003	.00015	.00013	.00142	.00030	.00012	.00026
%RSD	.56059	2.0620	.40050	2.4707	.96368	1.5997	.25044	.16776
#1	.02464	.00141	.03851	.00523	.14901	.01815	.04711	.15480
#2	.02472	.00135	.03860	.00510	.14618	.01867	.04705	.15466
#3	.02445	.00138	.03881	.00536	.14784	.01866	.04689	.15429

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707	Sr4077
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**.00479**	**.02345**	**.00241**	**-.00049**	**.00060**	**.02506**	**.31398**
Stddev	.00001	.00030	.00003	.00006	.00005	.00036	.00088
%RSD	.29929	1.2934	1.1876	12.575	7.9050	1.4246	.28090
#1	.00478	.02379	.00237	-.00056	.00056	.02506	.31375
#2	.00478	.02336	.00242	-.00046	.00065	.02470	.31324
#3	.00481	.02321	.00243	-.00044	.00059	.02542	.31496

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: S1 Acquired: 12/10/2024 10:43:05 Type: Cal
Method: NON EPA-6010-200.7(v2514) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	2761.7	63421.	13167.	1985.7	4481.5
Stddev	7.1	29.	55.	9.7	7.2
%RSD	.25728	.04526	.42119	.48943	.15971
#1	2753.5	63410.	13112.	1974.5	4473.5
#2	2766.2	63399.	13223.	1991.7	4483.8
#3	2765.3	63453.	13166.	1990.9	4487.3

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: S2 Acquired: 12/10/2024 10:47:30 Type: Cal
Method: NON EPA-6010-200.7(v2514) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	**.03652**	**.05622**	**.20190**	**.07350**	**.12223**	**.13493**	**6.1816**	**.16197**
Stddev	.00012	.00087	.00049	.00021	.00028	.00041	.0256	.00115
%RSD	.33152	1.5469	.24307	.28937	.23249	.30328	.41433	.70826
#1	.03644	.05720	.20216	.07356	.12250	.13470	6.1949	.16137
#2	.03647	.05589	.20220	.07327	.12194	.13541	6.1977	.16329
#3	.03666	.05556	.20133	.07368	.12225	.13470	6.1520	.16124

Elem	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**.91605**	**.23764**	**.03532**	**.36369**	**.16876**	**.00492**	**.29169**	**.06509**
Stddev	.00120	.00034	.00018	.00073	.00040	.00002	.00074	.00032
%RSD	.13067	.14267	.52168	.20119	.23769	.31961	.25359	.49531
#1	.91730	.23758	.03539	.36433	.16847	.00490	.29144	.06474
#2	.91591	.23801	.03546	.36289	.16858	.00493	.29253	.06517
#3	.91492	.23734	.03511	.36383	.16921	.00491	.29111	.06537

Elem	Ni2316	Ag3280	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**.26094**	**.05534**	**.07627**	**.05573**	**1.4668**	**.03701**	**.37591**	**.65314**
Stddev	.00072	.00014	.00045	.00014	.0063	.00034	.00054	.00078
%RSD	.27750	.25770	.58769	.25867	.43020	.90871	.14249	.11878
#1	.26149	.05531	.07649	.05558	1.4712	.03684	.37535	.65328
#2	.26012	.05549	.07656	.05587	1.4696	.03740	.37641	.65231
#3	.26120	.05521	.07575	.05573	1.4595	.03680	.37597	.65384

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707	Sr4077
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**.09535**	**.47061**	**.00584**	**.02206**	**.01925**	**.92530**	**13.036**
Stddev	.00006	.00218	.00003	.00026	.00013	.00427	.042
%RSD	.06751	.46254	.45324	1.1966	.67991	.46110	.31962
#1	.09538	.47076	.00587	.02236	.01938	.92710	13.059
#2	.09539	.47271	.00582	.02186	.01925	.92838	13.060
#3	.09527	.46836	.00582	.02197	.01912	.92043	12.987

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: S2 Acquired: 12/10/2024 10:47:30 Type: Cal
Method: NON EPA-6010-200.7(v2514) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	2582.1	58867.	12306.	1860.6	4138.3
Stddev	5.4	150.	13.	8.5	2.0
%RSD	.21098	.25517	.10399	.45657	.04923
#1	2584.6	58736.	12295.	1850.8	4136.1
#2	2585.9	58835.	12304.	1864.4	4140.2
#3	2575.9	59031.	12320.	1866.4	4138.5

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: S3 Acquired: 12/10/2024 10:51:39 Type: Cal
Method: NON EPA-6010-200.7(v2514) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	**.12091**	**.18586**	**.66341**	**.24390**	**.40194**	**.43619**	**19.898**	**.51920**
Stddev	.00032	.00151	.00118	.00065	.00175	.00124	.064	.00033
%RSD	.26648	.81225	.17746	.26582	.43557	.28412	.32312	.06414
#1	.12060	.18453	.66410	.24315	.39998	.43507	19.889	.51931
#2	.12124	.18556	.66205	.24428	.40249	.43599	19.839	.51946
#3	.12089	.18750	.66408	.24427	.40335	.43752	19.967	.51882

Elem	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**3.0348**	**.75577**	**.11361**	**1.2008**	**.55251**	**.01610**	**.93073**	**.20992**
Stddev	.0051	.00373	.00019	.0011	.00088	.00006	.00273	.00080
%RSD	.16849	.49309	.17106	.08872	.15972	.38185	.29318	.38131
#1	3.0405	.75478	.11380	1.2015	.55187	.01603	.93039	.20909
#2	3.0305	.75263	.11362	1.1996	.55216	.01615	.92819	.20998
#3	3.0333	.75989	.11341	1.2013	.55352	.01612	.93362	.21069

Elem	Ni2316	Ag3280	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**.85704**	**.18039**	**.24651**	**.17993**	**4.7138**	**.12057**	**1.2007**	**2.1153**
Stddev	.00074	.00042	.00144	.00107	.0066	.00019	.0021	.0058
%RSD	.08603	.23280	.58354	.59272	.14096	.16056	.17140	.27599
#1	.85725	.18047	.24771	.17938	4.7091	.12044	1.2009	2.1095
#2	.85765	.18075	.24691	.17925	4.7109	.12079	1.1985	2.1154
#3	.85622	.17993	.24491	.18116	4.7214	.12048	1.2026	2.1211

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707	Sr4077
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**.31516**	**1.5051**	**.01876**	**.07823**	**.06588**	**2.9848**	**41.466**
Stddev	.00061	.0019	.00010	.00034	.00016	.0081	.181
%RSD	.19251	.12565	.54328	.43031	.23936	.27295	.43557
#1	.31533	1.5055	.01867	.07784	.06580	2.9907	41.411
#2	.31448	1.5030	.01887	.07844	.06578	2.9881	41.320
#3	.31566	1.5067	.01873	.07842	.06606	2.9755	41.668

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: S3 Acquired: 12/10/2024 10:51:39 Type: Cal
Method: NON EPA-6010-200.7(v2514) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	**2462.5**	**56854.**	**12180.**	**1790.3**	**3840.4**
Stddev	6.8	51.	19.	9.5	5.5
%RSD	.27805	.09034	.15824	.53187	.14268
#1	2469.7	56912.	12175.	1798.3	3844.6
#2	2461.7	56833.	12202.	1792.7	3842.3
#3	2456.1	56816.	12164.	1779.8	3834.2

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: S4 Acquired: 12/10/2024 10:56:00 Type: Cal
Method: NON EPA-6010-200.7(v2514) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	**.24571**	**.36628**	**1.3110**	**.49590**	**.81661**	**.84608**	**37.893**	**.97190**
Stddev	.00295	.00657	.0133	.00645	.00931	.00157	.085	.00288
%RSD	1.1998	1.7927	1.0104	1.3013	1.1400	.18595	.22540	.29669
#1	.24296	.35962	1.3017	.48996	.80926	.84656	37.820	.97271
#2	.24883	.37275	1.3261	.50277	.82708	.84432	37.987	.97430
#3	.24535	.36646	1.3050	.49498	.81349	.84736	37.872	.96871

Elem	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**6.0824**	**1.4365**	**.22026**	**2.4018**	**1.0923**	**.03163**	**1.7542**	**.40254**
Stddev	.0593	.0036	.00088	.0234	.0106	.00013	.0129	.00025
%RSD	.97525	.24682	.39896	.97471	.96552	.41622	.73371	.06134
#1	6.0398	1.4363	.21924	2.3856	1.0838	.03148	1.7603	.40229
#2	6.1501	1.4401	.22069	2.4286	1.1041	.03174	1.7628	.40278
#3	6.0572	1.4330	.22083	2.3912	1.0890	.03168	1.7394	.40254

Elem	Ni2316	Ag3280	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**1.7076**	**.35286**	**.50181**	**.34712**	**9.2233**	**.24441**	**2.2393**	**4.2179**
Stddev	.0169	.00147	.00332	.00146	.0368	.00041	.0086	.0493
%RSD	.99055	.41667	.66222	.42130	.39899	.16842	.38453	1.1699
#1	1.6971	.35123	.50317	.34788	9.1892	.24394	2.2467	4.1764
#2	1.7271	.35328	.50424	.34805	9.2184	.24471	2.2414	4.2725
#3	1.6986	.35408	.49802	.34544	9.2623	.24458	2.2298	4.2048

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707	Sr4077
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**.62840**	**2.8732**	**.03817**	**.15880**	**.13423**	**5.8616**	**79.267**
Stddev	.00694	.0153	.00039	.00208	.00186	.0364	.392
%RSD	1.1049	.53264	1.0153	1.3127	1.3890	.62151	.49437
#1	.62269	2.8826	.03774	.15703	.13277	5.8820	79.097
#2	.63613	2.8815	.03829	.16110	.13633	5.8831	79.715
#3	.62638	2.8555	.03849	.15827	.13357	5.8195	78.988

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: S4 Acquired: 12/10/2024 10:56:00 Type: Cal
Method: NON EPA-6010-200.7(v2514) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	2363.7	56080.	12583.	1709.8	3653.5
Stddev	22.1	218.	50.	11.0	32.5
%RSD	.93449	.38910	.40041	.64127	.89084
#1	2381.1	56325.	12554.	1720.3	3677.5
#2	2338.8	56006.	12554.	1710.7	3616.4
#3	2371.0	55908.	12641.	1698.4	3666.4

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: S5 Acquired: 12/10/2024 11:00:13 Type: Cal
Method: NON EPA-6010-200.7(v2514) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	**.48767**	**.69012**	**2.5616**	**.98533**	**1.6298**	**1.7020**	**73.908**	**1.8749**
Stddev	.00308	.00531	.0021	.00446	.0064	.0007	.415	.0113
%RSD	.63103	.77011	.08335	.45255	.39400	.04217	.56137	.60452
#1	.48551	.69293	2.5636	.98185	1.6235	1.7028	74.373	1.8859
#2	.48630	.68399	2.5593	.98379	1.6295	1.7014	73.575	1.8632
#3	.49119	.69345	2.5618	.99036	1.6363	1.7017	73.775	1.8757

Elem	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**11.925**	**2.8073**	**.43314**	**4.7234**	**2.1110**	**.06308**	**3.4107**	**.80312**
Stddev	.018	.0065	.00225	.0029	.0059	.00012	.0100	.00109
%RSD	.15457	.23137	.51958	.06061	.27705	.18647	.29270	.13576
#1	11.946	2.8121	.43323	4.7266	2.1059	.06298	3.4222	.80290
#2	11.914	2.7999	.43085	4.7212	2.1096	.06306	3.4041	.80216
#3	11.915	2.8098	.43535	4.7225	2.1174	.06321	3.4059	.80431

Elem	Ni2316	Ag3280	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**3.3358**	**.70877**	**1.0218**	**.68473**	**18.002**	**.50470**	**4.3551**	**8.2237**
Stddev	.0022	.00108	.0055	.00016	.104	.00044	.0209	.0283
%RSD	.06458	.15275	.54187	.02408	.57877	.08713	.47952	.34386
#1	3.3383	.70900	1.0279	.68464	17.985	.50429	4.3781	8.2005
#2	3.3345	.70760	1.0204	.68492	17.908	.50516	4.3373	8.2153
#3	3.3346	.70972	1.0171	.68463	18.114	.50464	4.3498	8.2552

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707	Sr4077
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**1.2278**	**5.6932**	**.08004**	**.31495**	**.27118**	**11.792**	**151.21**
Stddev	.0015	.0161	.00083	.00107	.00040	.045	1.34
%RSD	.12394	.28234	1.0320	.33966	.14608	.38222	.88749
#1	1.2296	5.7116	.07922	.31617	.27093	11.840	151.88
#2	1.2270	5.6858	.08003	.31418	.27097	11.784	149.66
#3	1.2270	5.6821	.08087	.31451	.27163	11.750	152.08

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: S5 Acquired: 12/10/2024 11:00:13 Type: Cal
Method: NON EPA-6010-200.7(v2514) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: 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	2271.4	53990.	12463.	1601.4	3466.4
Stddev	11.2	177.	46.	16.2	6.0
%RSD	.49101	.32838	.36508	1.0145	.17438
#1	2283.1	54096.	12416.	1614.9	3473.0
#2	2270.1	54089.	12507.	1605.8	3465.3
#3	2260.9	53786.	12466.	1583.4	3461.0

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: ICV01 Acquired: 12/10/2024 11:04:30 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICV01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**1.035871**	**1.098974**	**1.031509**	**1.072607**	**1.033457**	**2.677568**
Stddev	.001218	.012177	.001922	.003392	.005095	.017313
%RSD	.1175798	1.108074	.1863000	.3162775	.4930411	.6466063
#1	1.034736	1.090483	1.029474	1.070726	1.030097	2.657646
#2	1.037157	1.093514	1.031762	1.070573	1.030955	2.686086
#3	1.035720	1.112926	1.033292	1.076524	1.039320	2.688972

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.5349682**	**.5303365**	**.5201560**	**10.55906**	**.5511451**	**.5293066**
Stddev	.0053844	.0021187	.0006341	.04455	.0024267	.0008396
%RSD	1.006487	.3994971	.1219152	.4219079	.4403089	.1586196
#1	.5289277	.5281684	.5203579	10.51447	.5505561	.5300530
#2	.5392634	.5304391	.5194455	10.55914	.5490670	.5283976
#3	.5367136	.5324020	.5206646	10.60357	.5538121	.5294691

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.5455219**	**10.31369**	**.5385556**	**6.185061**	**.5313787**	**.2644329**
Stddev	.0011995	.03199	.0029916	.020245	.0005919	.0014130
%RSD	.2198731	.3101576	.5554919	.3273237	.1113941	.5343690
#1	.5443010	10.30525	.5351040	6.163496	.5313809	.2647927
#2	.5455661	10.28676	.5404028	6.188027	.5307856	.2628747
#3	.5466987	10.34905	.5401600	6.203659	.5319695	.2656312

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**9.808717**	**.5239339**	**1.085423**	**10.21083**	**2.508814**	**2.621645**
Stddev	.033256	.0033172	.000812	.04521	.005848	.010553
%RSD	.3390416	.6331393	.0748085	.4428001	.2331068	.4025510
#1	9.780237	.5205754	1.085973	10.15954	2.502897	2.611628
#2	9.845264	.5272083	1.084490	10.24489	2.508954	2.620643
#3	9.800652	.5240182	1.085805	10.22807	2.514590	2.632664

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: ICV01 Acquired: 12/10/2024 11:04:30 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICV01 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.509814	2.560284	F 1.974956	F .0045414	F -.004977	F -.002921
Stddev	.003669	.017460	.015743	.0010347	.002799	.000045
%RSD	.1461713	.6819454	.7971067	22.78274	56.23026	1.545151
#1	2.506398	2.540201	1.966099	.0036281	-.008098	-.002912
#2	2.509352	2.571858	1.965637	.0056651	-.002690	-.002881
#3	2.513692	2.568794	1.993132	.0043310	-.004144	-.002970

Elem	Sr4077
Units	ppm
Avg	F -.008994
Stddev	.000029
%RSD	.3251681
#1	-.008991
#2	-.008966
#3	-.009025

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2402.032	56554.95	12658.32	1677.189	3885.119
Stddev	6.998	93.69	36.51	4.907	8.027
%RSD	.2913257	.1656689	.2884328	.2925909	.2065982
#1	2406.311	56550.11	12700.33	1672.043	3884.263
#2	2405.828	56650.97	12640.36	1681.817	3893.539
#3	2393.956	56463.77	12634.27	1677.707	3877.555

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: LLICV01 Acquired: 12/10/2024 11:08:48 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LLICV01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0217542**	**.0426181**	**.0123670**	**.0203626**	**.0500455**	**.1058972**	**.1011951**
Stddev	.0001073	.0006004	.0008649	.0005064	.0002389	.0060263	.0007842
%RSD	.4934392	1.408886	6.993623	2.486962	.4772977	5.690668	.7749127
#1	.0216372	.0431714	.0119337	.0198289	.0497705	.0994656	.1004650
#2	.0217772	.0427032	.0133629	.0204225	.0502008	.1114134	.1010962
#3	.0218481	.0419796	.0118043	.0208364	.0501653	.1068126	.1020240

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0062654**	**.0059815**	**2.138774**	**.0099804**	**.0299290**	**.0228196**	**.0988957**
Stddev	.0000498	.0000981	.008395	.0000406	.0000423	.0002780	.0009782
%RSD	.7939833	1.640026	.3925373	.4069232	.1414155	1.218434	.9890885
#1	.0062603	.0058833	2.129563	.0099472	.0299071	.0226125	.0977663
#2	.0062184	.0059817	2.140760	.0099682	.0299021	.0231356	.0994512
#3	.0063174	.0060795	2.145998	.0100256	.0299778	.0227106	.0994697

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0214300**	**2.225099**	**.0397781**	**.0106342**	**1.846591**	**.0424798**	**.0454574**
Stddev	.0004305	.020087	.0001897	.0003003	.011613	.0006733	.0001571
%RSD	2.008676	.9027361	.4769128	2.823402	.6288825	1.584972	.3454981
#1	.0211943	2.201909	.0396029	.0103555	1.833337	.0419464	.0452947
#2	.0211688	2.237073	.0397519	.0105948	1.854979	.0422565	.0456081
#3	.0219268	2.236314	.0399796	.0109521	1.851459	.0432363	.0454693

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**1.990635**	**.1198218**	**.2105571**	**.0405508**	**.0415418**	**.3408953**	**.0195026**
Stddev	.003811	.0006355	.0004727	.0009502	.0003655	.0032508	.0002577
%RSD	.1914238	.5304008	.2244932	2.343268	.8798033	.9536060	1.321568
#1	1.989263	.1195188	.2105036	.0394678	.0413969	.3428863	.0192135
#2	1.987701	.1193944	.2110543	.0409396	.0419575	.3371440	.0195860
#3	1.994942	.1205521	.2101135	.0412450	.0412710	.3426557	.0197083

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: LLICV01 Acquired: 12/10/2024 11:08:48 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: LLICV01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0210479	.0190923	.0215753
Stddev	.0012616	.0003280	.0000605
%RSD	5.993889	1.718201	.2803529
#1	.0219179	.0187943	.0216100
#2	.0196010	.0194438	.0215054
#3	.0216248	.0190387	.0216103

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2464.263	57253.67	12435.26	1719.777	4089.466
Stddev	6.332	114.26	27.81	4.284	1.732
%RSD	.2569485	.1995695	.2236065	.2490888	.0423621
#1	2457.540	57339.09	12462.82	1723.738	4087.472
#2	2465.137	57123.88	12435.74	1715.231	4090.330
#3	2470.113	57298.02	12407.21	1720.362	4090.597

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: ICB01 Acquired: 12/10/2024 11:20:18 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICB01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.001520**	**.0000975**	**.0006256**	**.0003650**	**-.000117**	**-.012075**	**-.004007**
Stddev	.001911	.0007156	.0004089	.0004138	.000811	.001095	.000630
%RSD	125.7615	733.7720	65.36468	113.3712	692.4129	9.069286	15.71926
#1	-.000430	.0008881	.0009172	-.000078	.000551	-.010810	-.003331
#2	-.003726	-.000090	.0008013	.000741	-.001020	-.012681	-.004578
#3	-.000403	-.000506	.0001582	.000432	.000118	-.012732	-.004112

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0000075**	**-.000014**	**-.009548**	**-.000698**	**-.000136**	**-.000481**	**-.007362**
Stddev	.0000415	.000051	.004933	.000084	.000064	.000062	.002934
%RSD	555.1675	374.9072	51.67106	11.99876	46.93160	12.86694	39.85990
#1	.0000280	-.000014	-.007870	-.000606	-.000093	-.000414	-.010605
#2	.0000347	-.000065	-.005672	-.000770	-.000105	-.000492	-.006590
#3	-.000040	.000038	-.015101	-.000717	-.000209	-.000537	-.004891

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.000234**	**-.012526**	**.0000799**	**.0007141**	**-.084332**	**.0011895**	**-.000071**
Stddev	.000277	.008423	.0001420	.0003614	.009816	.0008166	.000090
%RSD	118.3374	67.24237	177.6986	50.60713	11.63965	68.64797	127.5909
#1	-.000364	-.022244	.0001613	.0004219	-.095227	.0003966	-.000135
#2	.000084	-.007316	.0001624	.0006022	-.076177	.0020278	-.000109
#3	-.000423	-.008019	-.000084	.0011183	-.081592	.0011442	.000032

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.059430**	**.0008049**	**.0000583**	**.0037186**	**.0000108**	**.0040757**	**-.004438**
Stddev	.024383	.0005307	.0000045	.0006393	.0003678	.0038667	.001085
%RSD	41.02758	65.93340	7.731711	17.19151	3401.052	94.87026	24.45746
#1	-.082507	.0008671	.0000567	.0029813	.0001621	.0062678	-.005673
#2	-.061858	.0002459	.0000634	.0041180	.0002789	-.000389	-.004005
#3	-.033924	.0013018	.0000548	.0040565	-.000409	.006348	-.003636

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: ICB01 Acquired: 12/10/2024 11:20:18 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICB01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0013227	-.001956	-.000125
Stddev	.0006754	.000186	.000016
%RSD	51.05830	9.503531	12.84014
#1	.0007882	-.001871	-.000107
#2	.0020817	-.002170	-.000137
#3	.0010983	-.001829	-.000130

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2435.197	57448.95	12606.83	1674.662	4170.491
Stddev	5.501	68.00	67.60	4.071	5.738
%RSD	.2259141	.1183674	.5362123	.2431079	.1375845
#1	2428.939	57524.49	12529.00	1671.297	4163.952
#2	2437.379	57392.61	12650.85	1673.501	4172.840
#3	2439.272	57429.74	12640.64	1679.188	4174.682

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CRI01 Acquired: 12/10/2024 11:24:41 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CRI01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0206858	.0407210	.0112430	.0210765	.0502788	.1022429	.0961335
Stddev	.0005213	.0006237	.0003046	.0006318	.0007938	.0032332	.0001753
%RSD	2.520216	1.531749	2.709054	2.997901	1.578742	3.162313	.1823329
#1	.0212778	.0400068	.0108932	.0204029	.0508877	.0985288	.0963112
#2	.0204842	.0409970	.0113860	.0216561	.0493810	.1037719	.0961285
#3	.0202953	.0411591	.0114497	.0211704	.0505676	.1044281	.0959607

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0060764	.0057981	2.054046	.0098640	.0291745	.0225285	.0952215
Stddev	.0000314	.0000189	.010895	.0002285	.0002719	.0002795	.0021394
%RSD	.5166520	.3258231	.5304290	2.316258	.9319372	1.240656	2.246756
#1	.0060672	.0058188	2.050052	.0097435	.0290966	.0224865	.0935083
#2	.0061113	.0057818	2.066374	.0097210	.0289500	.0222723	.0976194
#3	.0060506	.0057938	2.045711	.0101275	.0294768	.0228266	.0945367

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0206082	2.167497	.0392997	.0106854	1.785633	.0418399	.0438292
Stddev	.0003189	.008096	.0001048	.0003251	.002701	.0011217	.0002901
%RSD	1.547422	.3734980	.2667749	3.042465	.1512560	2.681024	.6619854
#1	.0202655	2.158327	.0393842	.0103380	1.787623	.0424810	.0441641
#2	.0208962	2.170511	.0391824	.0107358	1.782558	.0424941	.0436548
#3	.0206629	2.173653	.0393325	.0109823	1.786716	.0405447	.0436687

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.940051	.1032546	.2094022	.0391696	.0402696	.3336700	.0161763
Stddev	.017199	.0004114	.0001631	.0001940	.0003652	.0083454	.0022564
%RSD	.8865194	.3984561	.0779048	.4953431	.9068589	2.501098	13.94877
#1	1.925808	.1029949	.2092316	.0392214	.0398590	.3253573	.0172172
#2	1.959158	.1037290	.2094183	.0389550	.0405580	.3420477	.0135874
#3	1.935188	.1030399	.2095566	.0393325	.0403919	.3336050	.0177244

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CRI01 Acquired: 12/10/2024 11:24:41 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CRI01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0185376	.0184147	.0208178
Stddev	.0023115	.0001602	.0000496
%RSD	12.46925	.8698150	.2381431
#1	.0165333	.0182309	.0208719
#2	.0210662	.0185242	.0208070
#3	.0180132	.0184890	.0207745

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2439.310	57227.83	12680.08	1669.836	4091.388
Stddev	2.453	66.04	18.12	3.796	4.873
%RSD	.1005439	.1153966	.1429189	.2273288	.1191064
#1	2440.541	57182.30	12659.24	1665.689	4095.416
#2	2440.903	57197.61	12688.91	1673.140	4092.776
#3	2436.486	57303.57	12692.10	1670.678	4085.971

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: ICSA01 Acquired: 12/10/2024 11:36:21 Type: Unk
Method: NON EPA-6010-200.7(v2515) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICSA01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0066987**	**.0124560**	**.0104330**	**-.014952**	**-.001713**	**263.6660**
Stddev	.0042479	.0041373	.0022614	.002586	.002340	.8876
%RSD	63.41421	33.21544	21.67556	17.29337	136.5944	.3366387
#1	.0025311	.0138124	.0085658	-.012722	.000066	262.7079
#2	.0065423	.0078108	.0097857	-.017787	-.004364	264.4602
#3	.0110226	.0157450	.0129474	-.014348	-.000841	263.8299

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0014911**	**.0013018**	**.0034487**	**243.7788**	**.0565204**	**.0023792**
Stddev	.0001805	.0001025	.0001354	.7015	.0004860	.0004074
%RSD	12.10732	7.872930	3.925306	.2877590	.8599294	17.12313
#1	.0015050	.0013284	.0036039	243.0761	.0562215	.0021645
#2	.0013040	.0011886	.0033546	244.4791	.0562585	.0028491
#3	.0016642	.0013884	.0033877	243.7813	.0570812	.0021241

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0059901**	**98.60958**	**.0042813**	**269.6132**	**.0312910**	**-.002004**
Stddev	.0007255	.38088	.0001273	.7122	.0004248	.000179
%RSD	12.11209	.3862502	2.972349	.2641573	1.357553	8.932086
#1	.0067983	98.17796	.0044244	268.9709	.0311462	-.002178
#2	.0053950	98.75228	.0041808	270.3791	.0309576	-.001820
#3	.0057770	98.89851	.0042386	269.4894	.0317693	-.002015

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0514720**	**.0076322**	**-.006010**	**.0204806**	**.0342990**	**-.001086**
Stddev	.0172146	.0006016	.000395	.0100673	.0008788	.000546
%RSD	33.44454	7.882297	6.573883	49.15542	2.562067	50.27847
#1	.0316182	.0074143	-.005565	.0104114	.0332845	-.000469
#2	.0605543	.0083124	-.006143	.0305460	.0348246	-.001507
#3	.0622434	.0071699	-.006321	.0204844	.0347877	-.001281

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: ICSA01 Acquired: 12/10/2024 11:36:21 Type: Unk
Method: NON EPA-6010-200.7(v2515) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICSA01 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0017652	-.000975	.0204073	.0067864	-.008471	F -.042312
Stddev	.0005734	.000407	.0039085	.0042184	.001926	.000138
%RSD	32.48225	41.75648	19.15240	62.15987	22.73917	.3272951
#1	.0023190	-.000505	.0231603	.0097776	-.006625	-.042360
#2	.0011741	-.001203	.0221279	.0086202	-.010469	-.042419
#3	.0018025	-.001218	.0159337	.0019615	-.008321	-.042155

Elem	Sr4077
Units	ppm
Avg	.0065198
Stddev	.0002086
%RSD	3.199126
#1	.0067349
#2	.0065060
#3	.0063184

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2129.735	50122.02	11959.97	1478.906	3195.392
Stddev	3.308	78.72	18.14	11.471	.906
%RSD	.1553147	.1570483	.1516370	.7756080	.0283589
#1	2131.168	50161.03	11965.25	1482.611	3196.338
#2	2125.953	50173.61	11939.78	1488.067	3194.531
#3	2132.085	50031.42	11974.89	1466.041	3195.306

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: ICSAB01 Acquired: 12/10/2024 11:40:32 Type: Unk
Method: NON EPA-6010-200.7(v2516) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICSAB01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.1047410**	**.0971409**	**.0591917**	**.0353758**	**.5939354**	**249.7779**
Stddev	.0031357	.0009171	.0023072	.0014692	.0023945	.8730
%RSD	2.993808	.9440617	3.897869	4.153189	.4031549	.3495171
#1	.1064595	.0967050	.0618086	.0368371	.5948790	249.4173
#2	.1066418	.0981946	.0574506	.0353914	.5957144	250.7734
#3	.1011216	.0965230	.0583160	.0338988	.5912129	249.1429

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.4825321**	**.4769859**	**.9519180**	**227.8305**	**.5391928**	**.4818409**
Stddev	.0045712	.0016938	.0010777	.4697	.0035789	.0006359
%RSD	.9473367	.3551002	.1132179	.2061537	.6637474	.1319806
#1	.4875052	.4778873	.9531449	227.3434	.5379787	.4823274
#2	.4785135	.4750321	.9514854	228.2806	.5363788	.4820739
#3	.4815776	.4780384	.9511239	227.8675	.5432207	.4811213

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.4703581**	**93.55734**	**.4648301**	**252.2045**	**.9742014**	**.1901408**
Stddev	.0005513	.29397	.0015892	.9669	.0015492	.0002771
%RSD	.1172081	.3142165	.3418959	.3833785	.1590226	.1457397
#1	.4706554	93.26087	.4666363	251.1952	.9753359	.1898223
#2	.4697220	93.56241	.4636460	253.1226	.9724363	.1903264
#3	.4706970	93.84875	.4642080	252.2956	.9748319	.1902738

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0062584**	**.4778623**	**.9113705**	**-.026921**	**.9137329**	**.9867419**
Stddev	.0100690	.0008682	.0010821	.016066	.0028075	.0009515
%RSD	160.8865	.1816917	.1187380	59.67809	.3072601	.0964308
#1	-.002802	.4768768	.9117816	-.040649	.9168829	.9878398
#2	.004478	.4785142	.9101431	-.030864	.9114944	.9861576
#3	.017099	.4781960	.9121869	-.009251	.9128214	.9862282

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: ICSAB01 Acquired: 12/10/2024 11:40:32 Type: Unk
Method: NON EPA-6010-200.7(v2516) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: ICSAB01 Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9528606	.9425903	F .8165012	F .0188426	F -.009233	F -.039753
Stddev	.0035381	.0043164	.0116772	.0020623	.000470	.000565
%RSD	.3713188	.4579327	1.430150	10.94474	5.085148	1.420123
#1	.9568474	.9463651	.8081684	.0209375	-.009322	-.039144
#2	.9516404	.9378842	.8114872	.0187757	-.008726	-.039856
#3	.9500941	.9435215	.8298480	.0168146	-.009652	-.040259

Elem	Sr4077
Units	ppm
Avg	F .0045873
Stddev	.0009242
%RSD	20.14722
#1	.0056505
#2	.0039757
#3	.0041358

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2142.513	50877.80	12444.47	1468.354	3251.979
Stddev	2.142	123.24	18.02	7.036	1.678
%RSD	.0999812	.2422291	.1448382	.4791502	.0516146
#1	2144.737	50981.40	12427.69	1476.396	3250.642
#2	2142.338	50910.49	12442.20	1463.337	3253.862
#3	2140.463	50741.51	12463.52	1465.330	3251.431

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CCV01 Acquired: 12/10/2024 11:44:43 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**4.920127**	**5.024007**	**4.880850**	**4.985800**	**4.960048**	**9.943680**	**9.613154**
Stddev	.005639	.037102	.004345	.017266	.009816	.001161	.069607
%RSD	.1146174	.7384905	.0890176	.3463107	.1979062	.0116735	.7240854
#1	4.923229	4.982166	4.879666	4.982352	4.962485	9.942857	9.611126
#2	4.923534	5.052898	4.877220	5.004531	4.968416	9.943176	9.544583
#3	4.913617	5.036957	4.885664	4.970518	4.949243	9.945008	9.683754

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.2427203**	**2.428251**	**24.02011**	**1.001991**	**2.425968**	**1.244015**	**4.813305**
Stddev	.0004625	.003920	.03077	.001622	.003199	.002015	.019878
%RSD	.1905572	.1614327	.1281009	.1619077	.1318734	.1620115	.4129805
#1	.2429758	2.427282	23.98460	1.001311	2.426091	1.246306	4.795244
#2	.2429987	2.424906	24.03682	1.000820	2.422709	1.243220	4.810068
#3	.2421864	2.432565	24.03891	1.003843	2.429104	1.242518	4.834602

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**2.349073**	**24.22926**	**2.429942**	**1.239404**	**24.02830**	**2.445502**	**2.519627**
Stddev	.002909	.00788	.003133	.001325	.11731	.002074	.007117
%RSD	.1238200	.0325252	.1289283	.1068799	.4882348	.0848114	.2824466
#1	2.345861	24.23586	2.430336	1.239015	24.08354	2.443224	2.512208
#2	2.349827	24.23140	2.426631	1.238318	23.89356	2.447282	2.526397
#3	2.351530	24.22054	2.432859	1.240880	24.10779	2.445999	2.520274

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**24.61230**	**4.843106**	**5.023157**	**4.907503**	**4.823764**	**5.002193**	**4.930742**
Stddev	.07543	.010522	.002591	.010573	.003456	.036984	.028325
%RSD	.3064635	.2172588	.0515832	.2154379	.0716449	.7393600	.5744487
#1	24.57896	4.851362	5.021759	4.904782	4.826812	4.973335	4.898504
#2	24.55929	4.846697	5.026147	4.898557	4.820009	4.989359	4.951636
#3	24.69865	4.831258	5.021565	4.919170	4.824471	5.043884	4.942087

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CCV01 Acquired: 12/10/2024 11:44:43 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	**4.810641**	**4.866434**	**4.902860**
Stddev	.010362	.016728	.015189
%RSD	.2154033	.3437485	.3097961
#1	4.803594	4.882911	4.905502
#2	4.805789	4.849465	4.916554
#3	4.822539	4.866928	4.886523

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**2337.757**	**54963.73**	**12693.02**	**1606.868**	**3682.699**
Stddev	6.385	80.79	37.63	2.672	3.058
%RSD	.2731361	.1469952	.2964861	.1662950	.0830379
#1	2334.608	54995.78	12660.42	1609.284	3679.889
#2	2333.558	55023.58	12684.44	1607.322	3682.250
#3	2345.105	54871.83	12734.20	1603.998	3685.956

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CCB01 Acquired: 12/10/2024 11:48:56 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.000843**	**-.000104**	**-.000748**	**.0033456**	**.0000762**	**-.004604**	**-.003198**
Stddev	.000519	.001676	.000358	.0004413	.0005139	.005541	.000759
%RSD	61.50265	1612.487	47.85344	13.19061	674.1840	120.3628	23.73530
#1	-.000296	-.001172	-.001109	.0036221	-.000448	-.008527	-.003824
#2	-.001327	-.000967	-.000393	.0035782	.000098	.001735	-.002354
#3	-.000907	.001828	-.000742	.0028367	.000579	-.007020	-.003418

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0000143**	**.0000240**	**-.011400**	**-.000707**	**.0000461**	**-.000340**	**-.005677**
Stddev	.0000101	.0000168	.000639	.000318	.0000177	.000152	.001359
%RSD	71.13980	69.74897	5.605348	44.97175	38.30072	44.65245	23.94584
#1	.0000079	.0000429	-.011530	-.001041	.0000484	-.000373	-.005154
#2	.0000090	.0000107	-.011964	-.000672	.0000274	-.000474	-.007221
#3	.0000259	.0000186	-.010706	-.000408	.0000626	-.000175	-.004657

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.000279**	**-.011495**	**.0000025**	**.0004200**	**-.071860**	**.0000373**	**-.000122**
Stddev	.000149	.005687	.0001506	.0002788	.010635	.0005165	.000241
%RSD	53.54954	49.47079	6045.330	66.36711	14.80025	1384.233	197.6572
#1	-.000397	-.014065	-.000056	.0006179	-.077508	-.000557	-.000180
#2	-.000328	-.004977	.000174	.0001012	-.078479	.000294	-.000329
#3	-.000111	-.015444	-.000110	.0005409	-.059592	.000375	.000143

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.075283**	**.0053461**	**.0003982**	**.0044694**	**.0002910**	**.0089670**	**-.001446**
Stddev	.013715	.0004288	.0003067	.0009121	.0000749	.0019511	.001518
%RSD	18.21783	8.020629	77.01899	20.40713	25.72805	21.75846	105.0023
#1	-.087936	.0058379	.0005955	.0055005	.0002871	.0099742	.000241
#2	-.077206	.0051494	.0005542	.0041392	.0002181	.0102086	-.002703
#3	-.060709	.0050510	.0000449	.0037683	.0003677	.0067181	-.001875

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CCB01 Acquired: 12/10/2024 11:48:56 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB01 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0004580	-.002287	-.000117
Stddev	.0014207	.000338	.000025
%RSD	310.2042	14.77785	21.14197
#1	.0020639	-.002676	-.000111
#2	-.000635	-.002125	-.000145
#3	-.000055	-.002061	-.000097

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2464.424	57789.20	12690.80	1688.694	4186.131
Stddev	8.948	44.28	30.01	3.047	2.721
%RSD	.3630694	.0766166	.2364733	.1804443	.0650021
#1	2456.708	57757.30	12697.28	1685.269	4184.815
#2	2462.331	57839.75	12658.07	1689.711	4184.317
#3	2474.232	57770.55	12717.03	1691.103	4189.259

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: PB165463BL Acquired: 12/10/2024 11:53:19 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0002021**	**-.001556**	**.0006997**	**.0028070**	**-.001186**	**-.005389**	**-.002951**
Stddev	.0036965	.000292	.0006081	.0013423	.000314	.002710	.000153
%RSD	1829.361	18.80099	86.90980	47.81975	26.48489	50.28261	5.195620
#1	.0034156	-.001613	.0012620	.0035444	-.000826	-.003442	-.003119
#2	.0010281	-.001815	.0000543	.0012576	-.001332	-.008483	-.002915
#3	-.003838	-.001239	.0007829	.0036190	-.001401	-.004241	-.002819

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0000424**	**.0000697**	**-.007182**	**-.000438**	**-.000038**	**-.000236**	**-.005368**
Stddev	.0000155	.0000367	.002481	.000067	.000075	.000273	.003334
%RSD	36.64206	52.66019	34.54360	15.20461	198.7284	115.8474	62.11844
#1	.0000277	.0000747	-.010021	-.000387	-.000077	-.000455	-.008330
#2	.0000407	.0001038	-.006090	-.000513	-.000085	.000070	-.001757
#3	.0000587	.0000308	-.005434	-.000413	.000049	-.000324	-.006016

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.000119**	**-.006742**	**-.000006**	**.0003811**	**-.071807**	**.0007721**	**.0000627**
Stddev	.000091	.003833	.000047	.0002526	.010765	.0007565	.0002069
%RSD	77.00153	56.84787	849.3870	66.27844	14.99183	97.98810	329.8901
#1	-.000019	-.010577	-.000038	.0002292	-.083695	.0013108	.0000235
#2	-.000199	-.002911	-.000026	.0002413	-.062717	-.000093	.0002864
#3	-.000137	-.006738	.000048	.0006726	-.069009	.001098	-.000122

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.079825**	**.0010274**	**-.000021**	**.0040906**	**.0003578**	**.0088082**	**-.001727**
Stddev	.011272	.0004357	.000110	.0002395	.0003271	.0018602	.000785
%RSD	14.12021	42.41154	514.9345	5.855207	91.41071	21.11870	45.45387
#1	-.088836	.0009535	.000078	.0039178	.0001140	.0108705	-.000861
#2	-.083454	.0006333	-.000003	.0043640	.0002300	.0072571	-.001930
#3	-.067187	.0014954	-.000139	.0039901	.0007295	.0082971	-.002391

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: PB165463BL Acquired: 12/10/2024 11:53:19 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0010533	-.001763	-.000079
Stddev	.0021495	.000118	.000023
%RSD	204.0650	6.702744	29.22131
#1	-.000870	-.001804	-.000097
#2	.003374	-.001630	-.000088
#3	.000656	-.001856	-.000053

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2476.579	58228.20	12760.76	1714.897	4234.176
Stddev	4.841	23.89	38.11	7.545	.774
%RSD	.1954683	.0410198	.2986380	.4399799	.0182718
#1	2478.289	58201.58	12718.14	1706.736	4234.304
#2	2480.334	58235.26	12791.54	1716.338	4234.878
#3	2471.116	58247.76	12772.61	1721.619	4233.346

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: PB165463BS Acquired: 12/10/2024 11:57:39 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7601417	2.026929	.9475501	1.952240	.7752230	2.032901
Stddev	.0012157	.022084	.0012587	.005415	.0037665	.009882
%RSD	.1599255	1.089547	.1328339	.2773618	.4858578	.4860957
#1	.7589368	2.050111	.9466398	1.953821	.7791659	2.041313
#2	.7601204	2.006136	.9470241	1.946211	.7716621	2.022018
#3	.7613678	2.024541	.9489865	1.956689	.7748409	2.035373

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1972859	.2051202	.1881864	1.036084	.4048127	.1919124
Stddev	.0010603	.0009218	.0003242	.003815	.0031659	.0005615
%RSD	.5374203	.4493878	.1722828	.3682289	.7820775	.2925969
#1	.1984770	.2061761	.1878835	1.039117	.4072450	.1913145
#2	.1964452	.2047080	.1881473	1.031800	.4059601	.1919943
#3	.1969356	.2044764	.1885284	1.037334	.4012330	.1924286

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3083219	2.925251	.2033393	1.982502	.4821545	.0745909
Stddev	.0011665	.021257	.0014772	.011748	.0009440	.0005568
%RSD	.3783356	.7266854	.7264478	.5925666	.1957807	.7465247
#1	.3076590	2.945955	.2049832	1.992609	.4813126	.0748734
#2	.3076380	2.926315	.2021235	1.969613	.4831750	.0749498
#3	.3096688	2.903481	.2029110	1.985284	.4819758	.0739494

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.702202	.3065564	.2106089	9.555051	.2970547	.4034748
Stddev	.030689	.0020836	.0012128	.072839	.0025790	.0002429
%RSD	1.135692	.6796671	.5758769	.7623136	.8681829	.0601975
#1	2.721487	.3062095	.2116421	9.596636	.3000247	.4032166
#2	2.718307	.3046680	.2109110	9.597572	.2957584	.4035089
#3	2.666814	.3087916	.2092735	9.470945	.2953810	.4036988

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: PB165463BS Acquired: 12/10/2024 11:57:39 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6674750	.2003732	F .6979256	5.536004	F -.010759	.2100663
Stddev	.0026685	.0018324	.0079204	.016695	.001406	.0006117
%RSD	.3997833	.9144971	1.134850	.3015652	13.06887	.2911842
#1	.6659777	.2024097	.7027023	5.555263	-.011521	.2107489
#2	.6658914	.1998521	.7022916	5.527099	-.009136	.2098822
#3	.6705558	.1988578	.6887830	5.525650	-.011619	.2095679

Elem	Sr4077
Units	ppm
Avg	.2092412
Stddev	.0010279
%RSD	.4912379
#1	.2104281
#2	.2086525
#3	.2086431

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2452.113	57613.10	12515.93	1675.658	4080.261
Stddev	1.311	471.99	77.31	14.958	4.225
%RSD	.0534637	.8192463	.6176771	.8926787	.1035442
#1	2453.057	57213.36	12426.76	1659.087	4082.851
#2	2450.616	57492.15	12564.12	1679.723	4075.385
#3	2452.665	58133.80	12556.91	1688.163	4082.546

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: PB165464BL Acquired: 12/10/2024 12:01:39 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.001163**	**-.002270**	**.0003941**	**.0014346**	**-.001290**	**-.006856**	**-.005114**
Stddev	.001221	.001284	.0003126	.0011824	.001046	.003695	.000253
%RSD	104.9679	56.57948	79.32201	82.42181	81.03428	53.88995	4.953309
#1	.000184	-.001826	.0007115	.0003348	-.001975	-.006125	-.004833
#2	-.002197	-.001266	.0000865	.0012838	-.000087	-.010862	-.005326
#3	-.001475	-.003717	.0003844	.0026851	-.001809	-.003582	-.005181

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0000202**	**.0000001**	**-.011316**	**-.000407**	**-.000028**	**-.000116**	**-.005346**
Stddev	.0000436	.0000445	.004871	.000057	.000170	.000355	.002391
%RSD	215.6528	31379.11	43.04705	13.88799	607.5455	307.1813	44.72851
#1	.0000180	-.000031	-.009050	-.000397	-.000148	-.000307	-.005108
#2	.0000650	-.000020	-.007991	-.000356	.000166	-.000334	-.003082
#3	-.000022	.000051	-.016908	-.000468	-.000102	.000294	-.007846

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.000421**	**-.006153**	**-.000073**	**.0008522**	**-.087718**	**.0011241**	**-.000023**
Stddev	.000072	.002423	.000181	.0001022	.004017	.0005993	.000114
%RSD	17.00790	39.37993	249.2897	11.99516	4.579264	53.31633	505.4524
#1	-.000463	-.008712	.000086	.0009307	-.088456	.0011180	-.000052
#2	-.000338	-.005852	-.000270	.0007366	-.091315	.0005278	.000103
#3	-.000462	-.003894	-.000033	.0008891	-.083384	.0017264	-.000119

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.109717**	**.0000059**	**.0000424**	**.0035905**	**.0005734**	**-.001582**	**-.001561**
Stddev	.009775	.0001463	.0001557	.0005034	.0002678	.000715	.000954
%RSD	8.909083	2489.646	367.1461	14.02104	46.70888	45.17547	61.11768
#1	-.108039	-.000154	.0002191	.0041702	.0006810	-.001534	-.000884
#2	-.120222	.000039	-.000017	.0032630	.0002685	-.002319	-.001148
#3	-.100889	.000132	-.000075	.0033384	.0007707	-.000892	-.002653

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: PB165464BL Acquired: 12/10/2024 12:01:39 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.001060	-.002094	-.000133
Stddev	.002043	.000554	.000018
%RSD	192.7814	26.47842	13.24988
#1	-.001086	-.001536	-.000112
#2	-.003090	-.002100	-.000144
#3	.000996	-.002645	-.000142

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2390.740	56779.62	12688.77	1625.560	4108.894
Stddev	10.070	24.23	44.08	5.672	11.999
%RSD	.4211912	.0426804	.3473871	.3488996	.2920370
#1	2380.172	56764.47	12650.67	1621.077	4097.894
#2	2391.825	56807.57	12678.58	1631.936	4107.096
#3	2400.223	56766.82	12737.05	1623.666	4121.690

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: PB165464BS Acquired: 12/10/2024 12:06:00 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.7680630**	**2.068966**	**.9600379**	**1.972153**	**.7797316**	**2.021917**
Stddev	.0008223	.019122	.0005472	.004072	.0035818	.002518
%RSD	.1070610	.9242237	.0569987	.2064884	.4593673	.1245248
#1	.7671188	2.076118	.9596889	1.974018	.7783779	2.021155
#2	.7686220	2.083482	.9606686	1.974959	.7837929	2.019867
#3	.7684482	2.047300	.9597562	1.967482	.7770238	2.024727

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.1934643**	**.2046067**	**.1909186**	**1.033275**	**.4101218**	**.1946369**
Stddev	.0006591	.0006280	.0003613	.004557	.0005882	.0003019
%RSD	.3406661	.3069438	.1892717	.4410183	.1434130	.1551258
#1	.1942249	.2039334	.1906788	1.034492	.4095980	.1947607
#2	.1931057	.2047101	.1907429	1.028233	.4100092	.1942927
#3	.1930622	.2051766	.1913342	1.037100	.4107580	.1948572

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.3113884**	**2.895290**	**.1994704**	**1.978975**	**.4890093**	**.0753638**
Stddev	.0006935	.015509	.0001695	.003691	.0007144	.0001745
%RSD	.2226997	.5356679	.0849509	.1865103	.1460831	.2315114
#1	.3113268	2.905226	.1994530	1.979519	.4881996	.0754728
#2	.3121106	2.877419	.1996479	1.975043	.4892778	.0754561
#3	.3107277	2.903226	.1993103	1.982364	.4895505	.0751626

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**2.651015**	**.3070835**	**.2110883**	**9.532842**	**.2962436**	**.4080639**
Stddev	.012220	.0008638	.0020335	.013929	.0008188	.0013385
%RSD	.4609585	.2812973	.9633490	.1461189	.2763804	.3280036
#1	2.663848	.3074146	.2095963	9.547653	.2958638	.4076638
#2	2.639517	.3077329	.2134046	9.530868	.2956837	.4095568
#3	2.649682	.3061031	.2102641	9.520005	.2971833	.4069711

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: PB165464BS Acquired: 12/10/2024 12:06:00 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6745179	.1978120	F .7040572	5.640499	F -.007814	.2065893
Stddev	.0006302	.0003809	.0043523	.009542	.000802	.0006080
%RSD	.0934341	.1925316	.6181722	.1691684	10.26858	.2942994
#1	.6751041	.1982204	.6999827	5.630509	-.008590	.2072617
#2	.6745982	.1977489	.7086422	5.649518	-.006987	.2060783
#3	.6738514	.1974666	.7035468	5.641471	-.007866	.2064279

Elem	Sr4077
Units	ppm
Avg	.2058877
Stddev	.0006292
%RSD	.3055918
#1	.2065181
#2	.2052598
#3	.2058851

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2408.568	56579.34	12419.03	1650.150	4003.672
Stddev	6.495	72.51	22.97	13.183	7.255
%RSD	.2696567	.1281602	.1849667	.7988720	.1812102
#1	2408.744	56497.08	12392.58	1646.216	4000.132
#2	2401.987	56633.99	12430.58	1639.382	3998.868
#3	2414.973	56606.96	12433.94	1664.852	4012.018

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5145-01 Acquired: 12/10/2024 12:10:00 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0142464**	**-.010445**	**.3359517**	**-.010284**	**.0000640**	**80.42423**
Stddev	.0033069	.001768	.0004593	.002632	.0014716	.24855
%RSD	23.21256	16.93121	.1367168	25.59815	2298.274	.3090475
#1	.0116319	-.009479	.3357229	-.008288	.0017047	80.13769
#2	.0131434	-.009369	.3356517	-.013267	-.000373	80.58163
#3	.0179639	-.012486	.3364804	-.009296	-.001139	80.55336

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.4851910**	**.0035686**	**.0021702**	**56.64920**	**.1046538**	**.0313925**
Stddev	.0003994	.0000070	.0000657	.11704	.0006161	.0002910
%RSD	.0823181	.1955604	3.029730	.2066102	.5887069	.9269527
#1	.4851746	.0035625	.0021140	56.71260	.1047700	.0314409
#2	.4855984	.0035672	.0022425	56.72087	.1052035	.0310804
#3	.4848001	.0035762	.0021542	56.51414	.1039879	.0316563

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.2643541**	**60.35857**	**.6218483**	**12.38217**	**.0740600**	**-.000087**
Stddev	.0007169	.16462	.0018176	.01920	.0000969	.000094
%RSD	.2712009	.2727297	.2922865	.1550380	.1307958	108.9614
#1	.2635597	60.54087	.6223568	12.40039	.0739483	.000019
#2	.2645493	60.31402	.6233574	12.38399	.0741205	-.000118
#3	.2649531	60.22081	.6198306	12.36212	.0741113	-.000161

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**29.88653**	**.1043924**	**.4886256**	**7.599943**	**.2937159**	**.0045329**
Stddev	.15174	.0004933	.0014939	.053416	.0001636	.0003751
%RSD	.5077221	.4725839	.3057431	.7028433	.0556959	8.274478
#1	29.72840	.1048816	.4875302	7.544995	.2936983	.0045483
#2	29.90024	.1044005	.4903274	7.603151	.2938876	.0041504
#3	30.03095	.1038950	.4880192	7.651682	.2935619	.0049001

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5145-01 Acquired: 12/10/2024 12:10:00 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0022850	1.219837	F 62.66695	2.173393	9.384453	.0190557
Stddev	.0009697	.003342	.12948	.009323	.015447	.0001606
%RSD	42.43488	.2739712	.2066126	.4289453	.1646009	.8425988
#1	.0011655	1.222687	62.53218	2.178355	9.384859	.0188773
#2	.0028286	1.220665	62.67830	2.162639	9.368807	.0191888
#3	.0028610	1.216159	62.79038	2.179186	9.399693	.0191009

Elem	Sr4077
Units	ppm
Avg	.2222918
Stddev	.0005812
%RSD	.2614599
#1	.2217876
#2	.2229275
#3	.2221602

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2280.323	56003.34	13607.37	1566.311	3566.250
Stddev	5.035	37.96	20.17	7.832	5.559
%RSD	.2208016	.0677838	.1482499	.5000410	.1558747
#1	2274.855	55993.68	13603.28	1575.295	3561.155
#2	2281.345	56045.19	13589.55	1562.719	3572.179
#3	2284.768	55971.13	13629.27	1560.918	3565.418

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5074-02 Acquired: 12/10/2024 12:14:10 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.013333**	**-.005747**	**.0887682**	**.0012903**	**.0371613**	**3.506746**
Stddev	.002798	.001858	.0005051	.0015455	.0013580	.018383
%RSD	20.98526	32.32207	.5689959	119.7820	3.654288	.5242241
#1	-.010306	-.004635	.0884437	-.000492	.0374606	3.492961
#2	-.013868	-.004714	.0885108	.002104	.0356786	3.527618
#3	-.015824	-.007891	.0893501	.002259	.0383446	3.499661

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.2890356**	**.0004664**	**.0028072**	**31.75684**	**.0695186**	**.0080507**
Stddev	.0016451	.0000391	.0001299	.21406	.0003334	.0001611
%RSD	.5691808	8.382115	4.627001	.6740646	.4796376	2.001046
#1	.2883056	.0004561	.0027576	31.56832	.0691686	.0079418
#2	.2909195	.0005097	.0027095	31.98955	.0695546	.0079744
#3	.2878819	.0004336	.0029547	31.71266	.0698325	.0082357

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.3388054**	**33.54742**	**.3507022**	**6.546554**	**.0578940**	**.0023419**
Stddev	.0027868	.23953	.0015988	.042133	.0002775	.0001687
%RSD	.8225469	.7140111	.4558775	.6435846	.4793212	7.201458
#1	.3358718	33.34548	.3499680	6.527532	.0575742	.0025059
#2	.3391268	33.48472	.3525362	6.594844	.0580711	.0021689
#3	.3414176	33.81207	.3496023	6.517286	.0580367	.0023509

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**401.3788**	**.0110239**	**1.270437**	**22.32340**	**.1483323**	**.0212269**
Stddev	.7856	.0004437	.001825	.11879	.0007817	.0000957
%RSD	.1957142	4.024470	.1436808	.5321331	.5270023	.4510342
#1	401.7375	.0110320	1.269704	22.25727	.1491455	.0211488
#2	400.4780	.0105763	1.269092	22.25240	.1482651	.0211983
#3	401.9210	.0114635	1.272514	22.46054	.1475864	.0213337

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5074-02 Acquired: 12/10/2024 12:14:10 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0199753	.1064912	F 22.20214	7.843454	F 21.83723	.0093662
Stddev	.0006018	.0007964	.13683	.042254	.12105	.0004280
%RSD	3.012715	.7478545	.6163090	.5387127	.5543504	4.570088
#1	.0205930	.1059882	22.08985	7.796162	21.70299	.0089227
#2	.0193907	.1074094	22.16201	7.877491	21.87057	.0097769
#3	.0199423	.1060761	22.35455	7.856708	21.93811	.0093990

Elem	Sr4077
Units	ppm
Avg	.1765428
Stddev	.0012057
%RSD	.6829538
#1	.1758860
#2	.1779343
#3	.1758081

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2083.884	51125.78	12384.67	1459.107	3295.116
Stddev	15.768	162.64	77.62	5.929	21.448
%RSD	.7566575	.3181251	.6267263	.4063187	.6509128
#1	2097.521	51248.43	12410.86	1463.847	3317.402
#2	2087.513	51187.64	12297.34	1461.016	3293.330
#3	2066.618	50941.29	12445.80	1452.460	3274.617

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5093-01 Acquired: 12/10/2024 12:18:28 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.005045**	**-.010660**	**.0185671**	**.0021926**	**.0011012**	**9.529582**
Stddev	.001546	.001135	.0014000	.0009184	.0004989	.015363
%RSD	30.64479	10.64313	7.540239	41.88738	45.31118	.1612123
#1	-.006809	-.011468	.0170946	.0011570	.0007690	9.527854
#2	-.003920	-.011150	.0198812	.0025126	.0016749	9.515157
#3	-.004407	-.009363	.0187254	.0029081	.0008596	9.545736

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.3950686**	**.0004303**	**.0005269**	**48.15071**	**.0112549**	**.0036835**
Stddev	.0006984	.0000696	.0000314	.25485	.0001959	.0000147
%RSD	.1767912	16.17295	5.968882	.5292708	1.740231	.3996289
#1	.3955994	.0003995	.0005168	47.97266	.0111240	.0036895
#2	.3942773	.0003813	.0005018	48.03681	.0111606	.0036667
#3	.3953289	.0005099	.0005622	48.44264	.0114801	.0036943

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0162140**	**6.598169**	**.4081501**	**17.18778**	**.0112642**	**.0005670**
Stddev	.0004397	.036454	.0012429	.13066	.0001962	.0001417
%RSD	2.711670	.5524875	.3045197	.7601895	1.741471	24.99828
#1	.0157063	6.577286	.4074051	17.08925	.0110377	.0005478
#2	.0164716	6.576959	.4074602	17.13810	.0113776	.0007173
#3	.0164641	6.640262	.4095849	17.33600	.0113773	.0004358

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**38.97375**	**.0167950**	**.0454207**	**8.116699**	**.0662908**	**.0026404**
Stddev	.04533	.0013822	.0002929	.026365	.0003486	.0001093
%RSD	.1163103	8.229859	.6447994	.3248221	.5258931	4.137528
#1	38.95099	.0183741	.0457078	8.088900	.0664214	.0026282
#2	38.94430	.0162066	.0451224	8.119851	.0658958	.0027552
#3	39.02595	.0158044	.0454317	8.141347	.0665553	.0025378

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5093-01 Acquired: 12/10/2024 12:18:28 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001866	.1469495	F 17.99855	.6770917	8.075668	.0152214
Stddev	.000377	.0027182	.04013	.0022101	.021370	.0002567
%RSD	20.23189	1.849750	.2229352	.3264093	.2646163	1.686456
#1	-.002297	.1459475	17.98906	.6796437	8.051055	.0151182
#2	-.001705	.1448744	17.96402	.6758219	8.086457	.0150324
#3	-.001595	.1500264	18.04257	.6758096	8.089492	.0155137

Elem	Sr4077
Units	ppm
Avg	.1992058
Stddev	.0002571
%RSD	.1290609
#1	.1991010
#2	.1990178
#3	.1994988

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2319.525	56328.58	13425.26	1584.284	3812.518
Stddev	9.032	87.08	25.57	3.177	7.527
%RSD	.3893931	.1545901	.1904591	.2005460	.1974406
#1	2309.116	56248.78	13403.12	1581.661	3804.300
#2	2324.170	56421.45	13453.25	1583.373	3814.176
#3	2325.290	56315.50	13419.43	1587.817	3819.079

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5093-02 Acquired: 12/10/2024 12:22:41 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.008184**	**-.006699**	**.0006291**	**.0030657**	**.0000750**	**.0184540**	**-.005224**
Stddev	.000416	.000876	.0008421	.0019746	.0012545	.0020944	.000278
%RSD	5.079211	13.06994	133.8685	64.40812	1673.616	11.34918	5.317038
#1	-.008635	-.006530	.0002427	.0028761	.0013812	.0185710	-.004922
#2	-.007817	-.007647	.0015950	.0011928	-.001120	.0204875	-.005281
#3	-.008100	-.005921	.0000494	.0051283	-.000036	.0163036	-.005468

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.000216**	**-.000194**	**.0364682**	**.0008026**	**-.000326**	**.0002013**	**.0303974**
Stddev	.000072	.000036	.0027400	.0003080	.000087	.0000371	.0005472
%RSD	33.47084	18.53452	7.513509	38.38271	26.58973	18.41285	1.800177
#1	-.000299	-.000211	.0334336	.0010705	-.000259	.0002234	.0310122
#2	-.000179	-.000153	.0372102	.0008712	-.000424	.0001585	.0302164
#3	-.000170	-.000218	.0387609	.0004660	-.000296	.0002219	.0299636

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0036027**	**.0023286**	**.0006288**	**.0006016**	**-.155584**	**.0007986**	**.0025493**
Stddev	.0000375	.0062980	.0003055	.0000393	.008248	.0008772	.0001669
%RSD	1.041753	270.4628	48.58364	6.536664	5.301149	109.8381	6.545106
#1	.0036234	-.000664	.0009499	.0006436	-.148647	.0005301	.0025347
#2	.0036253	.009565	.0003417	.0005955	-.153401	.0000871	.0027230
#3	.0035594	-.001915	.0005948	.0005657	-.164703	.0017787	.0023903

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.115870**	**-.002887**	**.0002775**	**-.000660**	**.0008363**	**.0241365**	**.0064235**
Stddev	.018827	.000100	.0001640	.000404	.0001068	.0049261	.0009741
%RSD	16.24802	3.448960	59.07704	61.16777	12.77372	20.40910	15.16442
#1	-.124517	-.002916	.0004473	-.000841	.0009410	.0275167	.0058643
#2	-.094273	-.002969	.0001200	-.000197	.0007274	.0264084	.0058580
#3	-.128819	-.002776	.0002653	-.000941	.0008405	.0184845	.0075483

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5093-02 Acquired: 12/10/2024 12:22:41 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0293635	-.004088	-.000079
Stddev	.0010765	.000137	.000017
%RSD	3.665925	3.347895	21.42124
#1	.0305932	-.003940	-.000098
#2	.0285914	-.004115	-.000076
#3	.0289061	-.004210	-.000064

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2451.731	60592.91	13731.96	1671.694	4339.976
Stddev	3.913	138.85	32.92	1.577	1.671
%RSD	.1595866	.2291543	.2397231	.0943596	.0385101
#1	2449.171	60443.05	13700.62	1670.290	4338.899
#2	2449.787	60618.50	13729.00	1671.392	4341.902
#3	2456.235	60717.20	13766.26	1673.401	4339.128

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5093-02DUP Acquired: 12/10/2024 12:27:01 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.006685**	**-.007502**	**.0005848**	**.0037699**	**.0001363**	**.0153198**	**-.003978**
Stddev	.002114	.000925	.0004140	.0017501	.0005521	.0011400	.000293
%RSD	31.61665	12.32798	70.78733	46.42310	405.2127	7.441270	7.366473
#1	-.008864	-.006997	.0008264	.0057521	.0005238	.0164356	-.003995
#2	-.006549	-.006941	.0001068	.0024381	.0003809	.0141571	-.004263
#3	-.004643	-.008570	.0008211	.0031195	-.000496	.0153667	-.003678

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.000191**	**-.000142**	**.0195318**	**.0004966**	**-.000316**	**.0004245**	**.0290138**
Stddev	.000033	.000067	.0011805	.0001738	.000041	.0001844	.0022825
%RSD	17.24390	47.28564	6.043754	34.99655	13.11916	43.42860	7.867049
#1	-.000153	-.000218	.0186623	.0004130	-.000333	.0002150	.0275699
#2	-.000206	-.000118	.0208756	.0006964	-.000346	.0004965	.0316453
#3	-.000213	-.000090	.0190574	.0003804	-.000269	.0005620	.0278262

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0030720**	**-.001611**	**.0008359**	**.0005931**	**-.164333**	**.0014692**	**.0015703**
Stddev	.0001038	.006133	.0003008	.0001615	.001764	.0006043	.0000469
%RSD	3.379636	380.6121	35.98152	27.22346	1.073396	41.13117	2.989065
#1	.0031295	.002726	.0006224	.0004586	-.165613	.0012247	.0016020
#2	.0029522	-.008628	.0011799	.0007722	-.165066	.0010254	.0015926
#3	.0031345	.001068	.0007055	.0005486	-.162321	.0021574	.0015164

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.147444**	**-.003229**	**.0004044**	**-.000693**	**.0004937**	**.0210704**	**.0083139**
Stddev	.016801	.000069	.0001099	.000510	.0004508	.0041811	.0004796
%RSD	11.39461	2.127487	27.16081	73.62896	91.30936	19.84338	5.768540
#1	-.134049	-.003233	.0004945	-.000195	.0004190	.0204267	.0080540
#2	-.141990	-.003295	.0004368	-.000669	.0009772	.0255360	.0080205
#3	-.166295	-.003158	.0002821	-.001214	.0000849	.0172485	.0088674

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5093-02DUP Acquired: 12/10/2024 12:27:01 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0268881	-.003683	-.000096
Stddev	.0048006	.000112	.000006
%RSD	17.85397	3.048156	5.925776
#1	.0311067	-.003805	-.000100
#2	.0216646	-.003584	-.000090
#3	.0278931	-.003659	-.000099

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2463.681	60252.96	13429.68	1689.716	4308.356
Stddev	4.185	117.81	41.29	4.261	2.891
%RSD	.1698588	.1955184	.3074886	.2521770	.0671071
#1	2458.865	60118.22	13391.29	1685.079	4305.393
#2	2465.750	60304.17	13424.39	1690.611	4308.505
#3	2466.429	60336.50	13473.37	1693.459	4311.170

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5093-02LX5 Acquired: 12/10/2024 12:31:23 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.002182**	**-.001466**	**-.000109**	**.0011296**	**-.000064**	**-.000941**	**-.003716**
Stddev	.001155	.000884	.000329	.0010388	.001375	.003907	.000143
%RSD	52.92124	60.28022	301.4443	91.96575	2137.982	415.0329	3.858570
#1	-.000860	-.002109	-.000372	.0012763	-.001546	.000552	-.003807
#2	-.002697	-.001832	.000260	.0020872	.001170	.001999	-.003791
#3	-.002991	-.000458	-.000215	.0000252	.000183	-.005375	-.003551

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.000010**	**-.000095**	**-.002729**	**.0018638**	**-.000098**	**-.000270**	**.0079955**
Stddev	.000031	.000086	.002799	.0003178	.000089	.000051	.0008824
%RSD	306.0583	90.20965	102.5396	17.05111	90.58663	18.92294	11.03630
#1	-.000019	-.000000	-.000404	.0022194	.000000	-.000276	.0084564
#2	-.000035	-.000118	-.005836	.0016075	-.000172	-.000217	.0085520
#3	.000024	-.000168	-.001948	.0017646	-.000123	-.000318	.0069781

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0003297**	**-.010485**	**.0002679**	**.0003038**	**-.091426**	**.0009566**	**.0005088**
Stddev	.0000370	.009314	.0000606	.0003590	.013613	.0001818	.0002068
%RSD	11.22869	88.83797	22.62322	118.1819	14.89019	18.99982	40.64194
#1	.0003282	-.021179	.0002212	-.000008	-.105512	.0011664	.0002757
#2	.0002935	-.006126	.0003364	.000223	-.090425	.0008512	.0005805
#3	.0003675	-.004149	.0002461	.000696	-.078340	.0008521	.0006703

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.074406**	**-.003270**	**-.000140**	**.0030183**	**.0002351**	**.0095578**	**.0018366**
Stddev	.021855	.000105	.000188	.0006603	.0001523	.0019382	.0020170
%RSD	29.37251	3.198435	134.4111	21.87799	64.78382	20.27890	109.8247
#1	-.070741	-.003264	.000071	.0029616	.0003029	.0112751	.0007335
#2	-.054615	-.003377	-.000291	.0037051	.0000607	.0099419	.0006116
#3	-.097862	-.003168	-.000200	.0023881	.0003417	.0074563	.0041645

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5093-02LX5 Acquired: 12/10/2024 12:31:23 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0087732	-.001876	-.000142
Stddev	.0041087	.000284	.000009
%RSD	46.83234	15.12182	6.125038
#1	.0083636	-.002062	-.000139
#2	.0130713	-.001550	-.000152
#3	.0048846	-.002017	-.000136

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2484.912	59589.78	13131.11	1718.738	4208.676
Stddev	4.500	88.87	21.42	3.140	5.182
%RSD	.1811016	.1491348	.1631553	.1827106	.1231164
#1	2482.979	59487.51	13123.83	1715.181	4203.166
#2	2481.700	59633.58	13155.22	1721.125	4209.409
#3	2490.055	59648.24	13114.27	1719.908	4213.451

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CCV02 Acquired: 12/10/2024 12:35:43 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**4.843507**	**4.941749**	**4.763238**	**4.923433**	**4.903165**	**9.776393**	**9.623230**
Stddev	.007969	.070074	.009890	.010942	.010800	.035975	.052084
%RSD	.1645335	1.417997	.2076362	.2222333	.2202611	.3679749	.5412337
#1	4.848317	4.916653	4.752832	4.925590	4.913897	9.734865	9.619076
#2	4.847896	4.887678	4.764367	4.911574	4.892299	9.798014	9.573347
#3	4.834308	5.020915	4.772516	4.933136	4.903299	9.796300	9.677267

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.2340355**	**2.363836**	**23.39493**	**.9690589**	**2.368788**	**1.226323**	**4.755058**
Stddev	.0006101	.004256	.07651	.0027390	.002142	.001769	.017714
%RSD	.2606727	.1800592	.3270494	.2826405	.0904148	.1442153	.3725304
#1	.2333803	2.359307	23.30663	.9688460	2.366420	1.228341	4.739866
#2	.2341392	2.364447	23.43656	.9664326	2.369353	1.225043	4.774515
#3	.2345871	2.367754	23.44161	.9718981	2.370590	1.225586	4.750792

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**2.320005**	**23.49345**	**2.371663**	**1.213646**	**24.67535**	**2.397108**	**2.475743**
Stddev	.009645	.15066	.003309	.000517	.05803	.005108	.007613
%RSD	.4157161	.6412898	.1395171	.0426131	.2351656	.2130973	.3074881
#1	2.310693	23.32599	2.368015	1.213497	24.73713	2.391567	2.468139
#2	2.329951	23.61800	2.372504	1.214222	24.66690	2.401629	2.483365
#3	2.319371	23.53636	2.374471	1.213221	24.62200	2.398129	2.475724

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**24.73554**	**4.703090**	**4.947202**	**4.780467**	**4.766902**	**4.866901**	**4.848190**
Stddev	.05532	.014406	.005867	.015674	.015017	.017709	.012117
%RSD	.2236503	.3063072	.1185936	.3278763	.3150205	.3638695	.2499277
#1	24.67291	4.690461	4.948935	4.766502	4.751280	4.852082	4.843169
#2	24.75598	4.718781	4.940664	4.777477	4.781229	4.862108	4.839391
#3	24.77774	4.700029	4.952007	4.797420	4.768196	4.886514	4.862010

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CCV02 Acquired: 12/10/2024 12:35:43 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV02 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	**4.707124**	**4.892756**	**4.863999**
Stddev	.022141	.012615	.037288
%RSD	.4703812	.2578325	.7666154
#1	4.692651	4.880093	4.828199
#2	4.696109	4.905322	4.902615
#3	4.732613	4.892853	4.861183

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**2339.920**	**55581.97**	**12918.25**	**1613.309**	**3705.591**
Stddev	6.000	32.40	35.29	6.601	1.621
%RSD	.2564132	.0582866	.2731618	.4091675	.0437406
#1	2333.602	55605.25	12945.54	1618.023	3703.957
#2	2340.616	55544.97	12878.40	1605.765	3707.199
#3	2345.541	55595.69	12930.81	1616.139	3705.616

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CCB02 Acquired: 12/10/2024 12:39:54 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0000383**	**.0000376**	**-.000166**	**.0023250**	**.0003790**	**-.005451**	**-.004399**
Stddev	.0024416	.0003875	.000410	.0018862	.0003047	.001983	.000227
%RSD	6376.540	1030.230	247.6001	81.12541	80.40943	36.37972	5.168140
#1	.0007066	-.000408	-.000639	.0001474	.0007063	-.005546	-.004175
#2	.0020762	.000229	.000076	.0034470	.0001034	-.003422	-.004392
#3	-.002668	.000293	.000066	.0033806	.0003273	-.007384	-.004630

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0000509**	**.0000105**	**-.011928**	**-.000682**	**.0001431**	**-.000452**	**-.005568**
Stddev	.0000260	.0000668	.004029	.000401	.0000765	.000074	.000299
%RSD	51.06191	635.4100	33.77870	58.80175	53.42176	16.47040	5.369673
#1	.0000209	-.000062	-.016269	-.000383	.0000706	-.000528	-.005241
#2	.0000657	.000069	-.011209	-.000525	.0002230	-.000447	-.005636
#3	.0000660	.000025	-.008307	-.001137	.0001357	-.000379	-.005827

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.000319**	**-.020026**	**-.000023**	**.0008146**	**-.083740**	**.0003609**	**-.000054**
Stddev	.000095	.006044	.000412	.0002267	.011226	.0011109	.000032
%RSD	29.73241	30.17976	1767.369	27.82458	13.40519	307.8359	58.68261
#1	-.000294	-.021057	-.000177	.0009117	-.096209	.0003131	-.000059
#2	-.000239	-.025488	.000444	.0005556	-.080574	-.000725	-.000020
#3	-.000423	-.013533	-.000337	.0009765	-.074438	.001495	-.000084

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.065037**	**.0034154**	**.0003800**	**.0033626**	**.0005698**	**.0058306**	**-.001872**
Stddev	.015589	.0005359	.0001608	.0002702	.0001377	.0050443	.001778
%RSD	23.96962	15.69187	42.32471	8.034794	24.16366	86.51436	94.97435
#1	-.082977	.0040006	.0003940	.0035069	.0004727	.0116405	-.001931
#2	-.057354	.0029485	.0002126	.0030509	.0005094	.0025679	-.003619
#3	-.054782	.0032970	.0005333	.0035300	.0007274	.0032833	-.000065

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CCB02 Acquired: 12/10/2024 12:39:54 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB02 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	**-.000698**	**-.001792**	**-.000089**
Stddev	.002636	.000430	.000010
%RSD	377.6462	23.98844	10.80682
#1	-.002196	-.002160	-.000079
#2	.002345	-.001895	-.000097
#3	-.002243	-.001320	-.000092

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**2478.930**	**59386.29**	**13182.42**	**1714.087**	**4274.074**
Stddev	2.966	57.59	13.35	7.776	6.975
%RSD	.1196536	.0969730	.1012787	.4536456	.1631922
#1	2482.347	59452.72	13169.78	1715.899	4282.127
#2	2477.434	59355.64	13181.10	1720.798	4270.105
#3	2477.010	59350.51	13196.38	1705.565	4269.989

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5093-02MS Acquired: 12/10/2024 12:44:57 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6612266	1.626136	.7840913	1.615529	.7039294	1.810765	.1716293
Stddev	.0033061	.008929	.0030778	.002919	.0010505	.001780	.0006080
%RSD	.4999972	.5490723	.3925305	.1806898	.1492310	.0982787	.3542306
#1	.6576500	1.615891	.7807849	1.612258	.7047542	1.809580	.1716342
#2	.6618589	1.630258	.7846161	1.616461	.7027468	1.812811	.1722348
#3	.6641708	1.632260	.7868730	1.617868	.7042873	1.809904	.1710190

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1647495	.1575026	.9276269	.3599608	.1659362	.2689462	2.587372
Stddev	.0001687	.0004865	.0060786	.0008977	.0005730	.0003987	.002954
%RSD	.1023981	.3088772	.6552821	.2493853	.3453281	.1482293	.1141742
#1	.1649443	.1570411	.9287599	.3608465	.1652867	.2693528	2.589327
#2	.1646519	.1574560	.9330593	.3590516	.1661517	.2689298	2.583973
#3	.1646523	.1580107	.9210616	.3599841	.1663702	.2685560	2.588815

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1768643	1.693002	.4133783	.0632412	2.381763	.2686009	.1827034
Stddev	.0005804	.013431	.0017988	.0003804	.010806	.0010777	.0011262
%RSD	.3281399	.7933175	.4351478	.6014733	.4536792	.4012213	.6163984
#1	.1774168	1.702324	.4116334	.0628157	2.375795	.2674679	.1835258
#2	.1762596	1.699076	.4132750	.0635482	2.394236	.2687218	.1831647
#3	.1769167	1.677607	.4152265	.0633598	2.375258	.2696131	.1814198

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.542431	.2244211	.3888072	.5733756	.1800282	.6682875	4.506723
Stddev	.033558	.0006812	.0001696	.0033095	.0001476	.0021336	.016746
%RSD	.3928339	.3035412	.0436102	.5772007	.0819840	.3192659	.3715797
#1	8.520382	.2251326	.3889403	.5709527	.1801236	.6663232	4.488283
#2	8.581050	.2243559	.3888649	.5720278	.1801028	.6679820	4.510899
#3	8.525860	.2237749	.3886163	.5771464	.1798582	.6705574	4.520985

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5093-02MS Acquired: 12/10/2024 12:44:57 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0089602	.1827029	.1828463
Stddev	.0028614	.0002948	.0003857
%RSD	31.93419	.1613331	.2109399
#1	.0114703	.1830430	.1832712
#2	.0095659	.1825203	.1827495
#3	.0058445	.1825455	.1825182

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2441.618	59731.14	13332.88	1666.194	4188.559
Stddev	4.200	25.61	39.33	8.378	2.641
%RSD	.1720025	.0428751	.2950205	.5028012	.0630527
#1	2437.133	59701.65	13290.63	1658.036	4187.327
#2	2442.263	59744.03	13368.43	1665.770	4186.760
#3	2445.458	59747.75	13339.59	1674.775	4191.591

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5093-02MSD Acquired: 12/10/2024 12:48:58 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.6502445**	**1.617803**	**.7810544**	**1.586171**	**.6918335**	**1.780545**	**.1702888**
Stddev	.0037170	.022605	.0022769	.008085	.0016747	.006061	.0007430
%RSD	.5716292	1.397239	.2915111	.5096912	.2420667	.3403941	.4363130
#1	.6482925	1.611759	.7788188	1.584107	.6921506	1.775184	.1711465
#2	.6479102	1.598835	.7809741	1.579318	.6900229	1.779331	.1698780
#3	.6545308	1.642815	.7833704	1.595087	.6933270	1.787122	.1698419

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.1659711**	**.1567949**	**.9171603**	**.3598218**	**.1649015**	**.2657991**	**2.547238**
Stddev	.0002501	.0003953	.0055476	.0005241	.0004533	.0008291	.019831
%RSD	.1507065	.2520843	.6048617	.1456557	.2749238	.3119472	.7785441
#1	.1657224	.1563506	.9234349	.3600154	.1648107	.2666660	2.562184
#2	.1662226	.1571075	.9129064	.3592284	.1645004	.2650138	2.554791
#3	.1659684	.1569267	.9151394	.3602215	.1653934	.2657173	2.524740

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.1750915**	**1.701579**	**.4108896**	**.0629630**	**2.319728**	**.2678291**	**.1805534**
Stddev	.0012482	.025631	.0006485	.0004361	.012417	.0023041	.0012433
%RSD	.7128693	1.506301	.1578392	.6926444	.5352870	.8602964	.6886148
#1	.1764533	1.730911	.4105338	.0625229	2.325483	.2701655	.1814604
#2	.1748191	1.690334	.4104969	.0633950	2.305478	.2677631	.1791361
#3	.1740019	1.683494	.4116382	.0629710	2.328224	.2655587	.1810636

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**8.300045**	**.2245993**	**.3852344**	**.5732471**	**.1788033**	**.6482522**	**4.578555**
Stddev	.025577	.0014459	.0011336	.0017979	.0002095	.0041976	.023841
%RSD	.3081555	.6437585	.2942515	.3136422	.1171516	.6475224	.5207202
#1	8.329419	.2250796	.3857564	.5712228	.1789586	.6476864	4.574154
#2	8.282699	.2257440	.3839339	.5738601	.1788862	.6443662	4.557220
#3	8.288019	.2229744	.3860130	.5746583	.1785651	.6527040	4.604290

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5093-02MSD Acquired: 12/10/2024 12:48:58 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0029674	.1795319	.1803512
Stddev	.0023507	.0007037	.0003646
%RSD	79.21619	.3919581	.2021516
#1	.0007797	.1801335	.1806268
#2	.0026697	.1787581	.1804891
#3	.0054527	.1797042	.1799378

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2503.087	60542.70	13406.64	1717.661	4278.141
Stddev	8.126	140.38	37.40	16.600	9.202
%RSD	.3246589	.2318764	.2789817	.9664555	.2150886
#1	2497.781	60381.03	13368.97	1699.766	4274.207
#2	2512.443	60613.27	13407.19	1732.558	4288.656
#3	2499.037	60633.79	13443.77	1720.661	4271.560

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5093-02A Acquired: 12/10/2024 12:53:01 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.6572112**	**1.644630**	**.7908776**	**1.596730**	**.6999857**	**1.779179**	**.1743029**
Stddev	.0008227	.017514	.0018899	.004979	.0005884	.006078	.0007908
%RSD	.1251867	1.064939	.2389591	.3118066	.0840609	.3415992	.4536835
#1	.6565805	1.634137	.7909827	1.591172	.6997662	1.775438	.1736957
#2	.6581418	1.634903	.7889373	1.598239	.6995386	1.775907	.1740159
#3	.6569112	1.664848	.7927127	1.600780	.7006524	1.786192	.1751971

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.1668959**	**.1583437**	**.9139703**	**.3568490**	**.1665896**	**.2682735**	**2.567520**
Stddev	.0005812	.0000843	.0022475	.0002769	.0000850	.0007782	.010189
%RSD	.3482116	.0532549	.2459090	.0776110	.0510455	.2900664	.3968352
#1	.1672863	.1583947	.9161755	.3570757	.1666073	.2674017	2.559578
#2	.1671735	.1582464	.9116827	.3565403	.1666644	.2688978	2.563974
#3	.1662281	.1583900	.9140525	.3569309	.1664971	.2685209	2.579008

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.1776187**	**1.712615**	**.4151855**	**.0629821**	**2.350322**	**.2689853**	**.1811283**
Stddev	.0005080	.009113	.0005745	.0002298	.037157	.0003999	.0011695
%RSD	.2860271	.5321230	.1383621	.3647963	1.580947	.1486778	.6456771
#1	.1775525	1.705846	.4154736	.0627218	2.315210	.2688947	.1798742
#2	.1771470	1.709022	.4145240	.0631566	2.346524	.2686384	.1813218
#3	.1781565	1.722977	.4155589	.0630678	2.389233	.2694227	.1821890

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**8.300624**	**.2261268**	**.3878449**	**.5779932**	**.1801353**	**.6551647**	**4.630581**
Stddev	.114682	.0009635	.0014104	.0009253	.0006343	.0110206	.016219
%RSD	1.381602	.4261126	.3636508	.1600937	.3521345	1.682114	.3502481
#1	8.194844	.2270083	.3872826	.5769314	.1802655	.6476802	4.618775
#2	8.284524	.2262740	.3868024	.5784213	.1794459	.6499941	4.623893
#3	8.422505	.2250981	.3894497	.5786271	.1806944	.6678199	4.649074

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5093-02A Acquired: 12/10/2024 12:53:01 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0020286	.1815361	.1822934
Stddev	.0018797	.0012365	.0009364
%RSD	92.65698	.6811179	.5136634
#1	.0023017	.1801353	.1815462
#2	.0037568	.1819976	.1819901
#3	.0000274	.1824754	.1833438

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2494.900	60837.23	13327.26	1740.193	4252.434
Stddev	3.110	296.89	31.04	13.538	1.907
%RSD	.1246463	.4880103	.2328948	.7779408	.0448389
#1	2498.378	61033.62	13293.07	1753.879	4252.355
#2	2493.935	60982.39	13353.67	1739.891	4254.379
#3	2492.387	60495.69	13335.05	1726.808	4250.568

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5141-01 Acquired: 12/10/2024 12:57:02 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.008057**	**-.012701**	**.0003623**	**.0056362**	**-.002883**	**37.20664**
Stddev	.002580	.000692	.0001598	.0002572	.001185	.06507
%RSD	32.02410	5.452082	44.11189	4.563866	41.08988	.1748990
#1	-.009783	-.012903	.0001801	.0053459	-.004059	37.13964
#2	-.009298	-.013269	.0004790	.0058358	-.001690	37.21067
#3	-.005091	-.011930	.0004276	.0057268	-.002902	37.26960

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.001116**	**-.000135**	**-.000196**	**15.20800**	**.7189474**	**.0017409**
Stddev	.000238	.000078	.000046	.02873	.0020349	.0000858
%RSD	21.36766	57.35242	23.33221	.1889153	.2830328	4.927920
#1	-.000843	-.000149	-.000194	15.20019	.7166433	.0016488
#2	-.001284	-.000052	-.000151	15.23982	.7197010	.0018185
#3	-.001221	-.000205	-.000242	15.18397	.7204980	.0017554

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0204911**	**1.749773**	**.0194320**	**3.079565**	**.1116791**	**.0002273**
Stddev	.0003915	.011612	.0002767	.038544	.0002939	.0002921
%RSD	1.910476	.6636418	1.423742	1.251617	.2631623	128.4989
#1	.0207614	1.763167	.0192437	3.040380	.1119860	-.000083
#2	.0200422	1.743613	.0197496	3.117434	.1116512	.000269
#3	.0206697	1.742538	.0193026	3.080882	.1114002	.000496

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**1784.242**	**.0008381**	**1.146207**	**231.8815**	**5.452368**	**.0193612**
Stddev	22.707	.0001206	.004501	.9479	.011373	.0002908
%RSD	1.272659	14.38559	.3926445	.4087861	.2085936	1.501743
#1	1810.281	.0008688	1.149540	232.5314	5.442950	.0196957
#2	1773.891	.0007051	1.147993	230.7938	5.465003	.0191690
#3	1768.555	.0009403	1.141088	232.3192	5.449149	.0192189

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5141-01 Acquired: 12/10/2024 12:57:02 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0384407**	**-.000038**	**.8612972**	**3.422589**	F **860.7584**	**.0006289**
Stddev	.0006192	.000028	.0026463	.024100	4.6845	.0005720
%RSD	1.610821	73.93279	.3072425	.7041545	.5442236	90.96015
#1	.0380961	-.000010	.8597771	3.449288	865.2196	.0012595
#2	.0391555	-.000037	.8597617	3.416037	861.1769	.0004836
#3	.0380704	-.000066	.8643529	3.402442	855.8788	.0001435

Elem	Sr4077
Units	ppm
Avg	**.0772382**
Stddev	.0001622
%RSD	.2100581
#1	.0772082
#2	.0770930
#3	.0774133

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**1838.667**	**44312.05**	**11956.03**	**1270.136**	**2713.604**
Stddev	9.565	136.19	29.35	13.773	11.745
%RSD	.5202098	.3073322	.2455029	1.084410	.4328039
#1	1839.927	44158.24	11937.31	1255.538	2712.048
#2	1847.539	44360.62	11940.91	1271.969	2726.050
#3	1828.534	44417.30	11989.86	1282.901	2702.716

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5174-01 Acquired: 12/10/2024 13:01:25 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.1688141**	**.0034992**	**8.547799**	**-.064000**	**.0080308**	**130.7107**
Stddev	.0028549	.0043262	.008760	.000902	.0015263	.4416
%RSD	1.691177	123.6345	.1024774	1.408903	19.00610	.3378080
#1	.1655210	.0000016	8.557896	-.062970	.0095981	130.3010
#2	.1705923	.0021591	8.542229	-.064385	.0079452	130.6526
#3	.1703290	.0083369	8.543273	-.064645	.0065490	131.1784

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**4.159083**	**.0140566**	**.0541829**	**53.66693**	**.3436042**	**.1829871**
Stddev	.019578	.0001240	.0003337	.06008	.0010442	.0002606
%RSD	.4707224	.8821533	.6158878	.1119560	.3038897	.1424035
#1	4.159743	.0141981	.0545249	53.71258	.3424498	.1829307
#2	4.178323	.0140046	.0538581	53.59886	.3444829	.1832713
#3	4.139184	.0139671	.0541658	53.68935	.3438798	.1827594

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**1.778559**	**321.3143**	**6.336742**	**55.80971**	**.5310449**	**-.001339**
Stddev	.001308	1.7997	.011379	.03356	.0009149	.000298
%RSD	.0735285	.5601090	.1795752	.0601407	.1722917	22.25544
#1	1.779289	319.2883	6.349682	55.77346	.5319966	-.001610
#2	1.777049	321.9266	6.328297	55.83972	.5309664	-.001386
#3	1.779339	322.7279	6.332248	55.81593	.5301718	-.001020

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**2.128636**	**.4329488**	**5.528243**	**20.95545**	**.1462427**	**.0119749**
Stddev	.003953	.0009814	.009451	.05021	.0015822	.0001257
%RSD	.1857223	.2266769	.1709515	.2396048	1.081869	1.049326
#1	2.129899	.4340820	5.520224	20.90856	.1444844	.0118788
#2	2.124206	.4323743	5.538662	20.94937	.1466925	.0119287
#3	2.131804	.4323902	5.525842	21.00843	.1475513	.0121171

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5174-01 Acquired: 12/10/2024 13:01:25 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2119521	3.554780	2.535497	F 15.47183	5.219589	.2598558
Stddev	.0020335	.007431	.013101	.09246	.014440	.0011317
%RSD	.9594303	.2090438	.5167009	.5976253	.2766474	.4354961
#1	.2123160	3.557440	2.520685	15.51967	5.232661	.2587543
#2	.2137791	3.546386	2.540243	15.53057	5.222017	.2597978
#3	.2097612	3.560516	2.545564	15.36525	5.204089	.2610154

Elem	Sr4077
Units	ppm
Avg	.1755431
Stddev	.0023175
%RSD	1.320170
#1	.1780827
#2	.1735430
#3	.1750037

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2694.929	66407.92	15933.01	1875.473	3379.126
Stddev	12.122	135.80	10.63	8.791	9.250
%RSD	.4498105	.2044931	.0666903	.4687486	.2737352
#1	2702.843	66564.71	15945.26	1885.603	3384.481
#2	2700.970	66327.55	15926.22	1870.974	3384.452
#3	2680.973	66331.50	15927.55	1869.841	3368.445

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5175-01 Acquired: 12/10/2024 13:05:46 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0130758**	**-.024211**	**.1192576**	**-.047914**	**-.006083**	**99.42772**
Stddev	.0050265	.004165	.0008343	.001306	.001605	.05943
%RSD	38.44123	17.20108	.6995524	2.725515	26.38444	.0597717
#1	.0074671	-.019516	.1188939	-.047954	-.004233	99.49535
#2	.0145868	-.027460	.1186669	-.046588	-.006922	99.38385
#3	.0171735	-.025657	.1202119	-.049199	-.007095	99.40396

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.5875250**	**.0059750**	**.0224395**	**48.55641**	**.2443468**	**.1680336**
Stddev	.0014831	.0000614	.0000476	.12577	.0003831	.0002181
%RSD	.2524293	1.028092	.2121020	.2590200	.1567942	.1298048
#1	.5885324	.0059059	.0224928	48.67733	.2442559	.1678365
#2	.5882207	.0059958	.0224012	48.42629	.2447673	.1679964
#3	.5858220	.0060233	.0224246	48.56560	.2440174	.1682679

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.6242242**	**232.6914**	**2.726087**	**58.53862**	**.2823512**	**-.004779**
Stddev	.0012908	.5692	.002567	.17563	.0005742	.000041
%RSD	.2067775	.2446223	.0941731	.3000307	.2033738	.8577509
#1	.6227582	233.1275	2.727723	58.69124	.2817080	-.004805
#2	.6247244	232.0475	2.727411	58.34665	.2825332	-.004800
#3	.6251900	232.8993	2.723128	58.57799	.2828124	-.004732

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**3.595546**	**.3788105**	**.4280399**	**32.20607**	**.0952081**	**.0250702**
Stddev	.006269	.0021395	.0020794	.11077	.0012728	.0003626
%RSD	.1743417	.5647990	.4858060	.3439345	1.336813	1.446142
#1	3.590434	.3811955	.4296869	32.33057	.0966731	.0247498
#2	3.602540	.3770600	.4257032	32.16921	.0945772	.0249971
#3	3.593664	.3781760	.4287295	32.11844	.0943742	.0254638

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5175-01 Acquired: 12/10/2024 13:05:46 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.000094**	**8.596776**	**2.211959**	F **13.84401**	F **18.00261**	**.1496305**
Stddev	.000951	.014950	.007731	.03466	.05253	.0003900
%RSD	1015.678	.1739080	.3494947	.2503401	.2917902	.2606200
#1	.000358	8.612041	2.214897	13.80829	17.94901	.1499289
#2	.000547	8.596127	2.217789	13.87750	18.05400	.1491893
#3	-.001186	8.582161	2.203190	13.84624	18.00483	.1497734

Elem	Sr4077
Units	ppm
Avg	**-.149867**
Stddev	.000639
%RSD	.4264033
#1	-.150177
#2	-.149132
#3	-.150292

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**2827.403**	**69449.91**	**16695.60**	**1942.541**	**3324.025**
Stddev	3.885	188.77	31.15	15.758	3.826
%RSD	.1374075	.2718058	.1865601	.8112211	.1150883
#1	2823.099	69244.62	16661.04	1926.121	3319.614
#2	2830.650	69616.00	16721.50	1957.541	3326.445
#3	2828.461	69489.11	16704.25	1943.962	3326.015

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5176-01 Acquired: 12/10/2024 13:09:52 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0288721	-.010987	.3200120	-.043039	-.005488	107.4674	.4583057
Stddev	.0043077	.001710	.0004279	.001943	.000874	.1080	.0007163
%RSD	14.91987	15.56269	.1337046	4.514336	15.92136	.1004648	.1562916
#1	.0285596	-.009856	.3197107	-.040980	-.005310	107.3434	.4574909
#2	.0247292	-.012954	.3205017	-.044840	-.006436	107.5177	.4588361
#3	.0333276	-.010152	.3198236	-.043297	-.004716	107.5409	.4585901

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0068994	.0150507	33.99237	.1778697	.1176202	.2598155	205.6056
Stddev	.0000436	.0001630	.12020	.0015929	.0007124	.0010339	.9218
%RSD	.6313605	1.083186	.3536197	.8955454	.6056425	.3979488	.4483464
#1	.0068978	.0152079	33.91942	.1762956	.1168123	.2609904	204.8206
#2	.0069438	.0150618	34.13111	.1778328	.1178906	.2594119	205.3754
#3	.0068567	.0148824	33.92659	.1794807	.1181578	.2590443	206.6207

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.388721	31.33081	.1989906	-.003435	8.734927	.3405024	.4387767
Stddev	.013865	.12699	.0002394	.000141	.038956	.0015618	.0027366
%RSD	.3159212	.4053338	.1203290	4.109287	.4459777	.4586789	.6236831
#1	4.375689	31.19719	.1992584	-.003273	8.743609	.3405529	.4395087
#2	4.403290	31.44994	.1989162	-.003502	8.692362	.3420384	.4357485
#3	4.387183	31.34532	.1987971	-.003530	8.768809	.3389160	.4410728

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.078817	.1224084	.0044026	.0122364	4.201998	4.036702	6.653702
Stddev	.056756	.0007397	.0000198	.0006867	.010059	.031410	.054378
%RSD	.8017792	.6043153	.4507322	5.612001	.2393808	.7780999	.8172595
#1	7.079443	.1226198	.0044225	.0128907	4.196459	4.019323	6.592743
#2	7.021751	.1215860	.0044027	.0115213	4.213608	4.017823	6.671146
#3	7.135259	.1230194	.0043828	.0122971	4.195926	4.072960	6.697218

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5176-01 Acquired: 12/10/2024 13:09:52 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	**2.614017**	**.0807381**	**-.068141**
Stddev	.014330	.0003866	.000706
%RSD	.5481990	.4788829	1.036411
#1	2.597472	.0810080	-.067687
#2	2.622121	.0802951	-.067780
#3	2.622459	.0809110	-.068954

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**2731.049**	**66169.77**	**15734.29**	**1870.971**	**3443.937**
Stddev	9.263	186.55	61.38	12.804	6.533
%RSD	.3391749	.2819239	.3901057	.6843254	.1897066
#1	2720.431	66206.84	15731.82	1857.733	3436.622
#2	2737.472	66335.00	15674.19	1883.290	3449.192
#3	2735.244	65967.47	15796.87	1871.892	3445.997

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5176-03 Acquired: 12/10/2024 13:13:58 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0432034	-.013377	.3817704	-.049014	-.007134	127.8610	.7657682
Stddev	.0020579	.002383	.0016252	.001883	.000231	.3808	.0021562
%RSD	4.763403	17.81305	.4257111	3.842301	3.232043	.2978025	.2815686
#1	.0448492	-.015952	.3799118	-.049172	-.007073	127.5352	.7638429
#2	.0408960	-.012927	.3824747	-.050813	-.007388	127.7681	.7680980
#3	.0438650	-.011251	.3829247	-.047057	-.006939	128.2796	.7653639

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0084820	.0177640	95.83052	.2552785	.1355538	.3632128	239.4685
Stddev	.0001605	.0003305	.23430	.0010144	.0005240	.0020444	.7508
%RSD	1.892566	1.860746	.2444898	.3973579	.3865376	.5628651	.3135359
#1	.0085238	.0177956	95.64998	.2546110	.1353420	.3648081	239.4098
#2	.0083047	.0174187	96.09528	.2564458	.1351688	.3609082	240.2470
#3	.0086175	.0180775	95.74628	.2547786	.1361505	.3639220	238.7488

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.143191	47.63105	.2384606	-.004434	21.52168	.4587965	.7996504
Stddev	.019012	.02285	.0006226	.000181	.09038	.0011363	.0004560
%RSD	.3094887	.0479830	.2610881	4.089981	.4199535	.2476625	.0570239
#1	6.130890	47.61867	.2386831	-.004389	21.55998	.4584112	.7999340
#2	6.165089	47.65743	.2377574	-.004279	21.58660	.4579030	.7998929
#3	6.133594	47.61706	.2389414	-.004634	21.41845	.4600753	.7991244

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	13.43118	.1636323	.0081500	.2877831	4.957615	3.843246	8.443122
Stddev	.03034	.0020474	.0003874	.0007114	.012738	.016103	.055257
%RSD	.2258593	1.251225	4.753810	.2471834	.2569385	.4189862	.6544623
#1	13.39618	.1644784	.0082039	.2873843	4.945194	3.833030	8.506703
#2	13.45008	.1651211	.0085077	.2873606	4.970648	3.834900	8.415962
#3	13.44726	.1612975	.0077384	.2886044	4.957003	3.861808	8.406701

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5176-03 Acquired: 12/10/2024 13:13:58 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	5.582967	.1065499	.1462352
Stddev	.019041	.0008901	.0009990
%RSD	.3410486	.8353804	.6831332
#1	5.599709	.1055329	.1451208
#2	5.562254	.1069297	.1465341
#3	5.586937	.1071871	.1470506

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2503.429	60875.19	14586.34	1740.192	3265.069
Stddev	5.783	87.39	6.43	1.247	7.207
%RSD	.2310079	.1435589	.0440864	.0716507	.2207432
#1	2503.695	60778.85	14584.96	1740.585	3263.026
#2	2509.075	60897.34	14580.72	1741.195	3273.078
#3	2497.517	60949.38	14593.35	1738.796	3259.104

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5196-01 Acquired: 12/10/2024 13:18:01 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0855611	-.000534	.1347902	-.032148	-.002086	59.03452	1.009260
Stddev	.0009592	.000798	.0005312	.002424	.001008	.06661	.002426
%RSD	1.121045	149.3680	.3940794	7.539431	48.34617	.1128346	.2404148
#1	.0866636	-.001385	.1353691	-.031598	-.002986	59.08934	1.008107
#2	.0851011	.000197	.1346761	-.034799	-.000996	59.05383	1.012048
#3	.0849185	-.000414	.1343253	-.030046	-.002275	58.96038	1.007625

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0071780	.0102839	17.68865	.1593969	.0925274	.2511541	178.0014
Stddev	.0000767	.0001129	.11356	.0004893	.0004841	.0011585	.3623
%RSD	1.068787	1.097884	.6419738	.3069683	.5232248	.4612869	.2035643
#1	.0072505	.0102669	17.69111	.1593932	.0920697	.2514465	177.6704
#2	.0071858	.0101805	17.80095	.1589095	.0924784	.2498774	178.3885
#3	.0070977	.0104043	17.57388	.1598881	.0930342	.2521384	177.9451

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.769702	28.05563	.2253650	-.002237	.9834753	.2820607	.5249934
Stddev	.032790	.18277	.0005774	.000287	.0075806	.0008196	.0005402
%RSD	.5683165	.6514536	.2562145	12.84158	.7707986	.2905583	.1028988
#1	5.771413	28.09363	.2246994	-.002459	.9769512	.2826815	.5254077
#2	5.801603	28.21641	.2257309	-.001913	.9816835	.2823688	.5243824
#3	5.736090	27.85684	.2256648	-.002341	.9917913	.2811317	.5251902

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.25564	.0832609	.0030341	.0080420	1.818036	3.860051	5.626735
Stddev	.02506	.0000953	.0001645	.0006609	.005277	.003026	.008587
%RSD	.2443084	.1144712	5.421782	8.217730	.2902647	.0783887	.1526095
#1	10.23993	.0832782	.0028714	.0081952	1.816177	3.862339	5.629827
#2	10.24245	.0831581	.0032003	.0073180	1.823991	3.861192	5.617030
#3	10.28453	.0833464	.0030306	.0086128	1.813940	3.856620	5.633347

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5196-01 Acquired: 12/10/2024 13:18:01 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	1.479945	.1395483	-.089962
Stddev	.005791	.0004838	.000281
%RSD	.3912702	.3466586	.3128152
#1	1.473351	.1394152	-.089640
#2	1.482278	.1391451	-.090158
#3	1.484205	.1400847	-.090089

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2712.791	65166.42	15144.92	1864.290	3646.590
Stddev	6.897	48.13	85.93	3.474	8.241
%RSD	.2542572	.0738528	.5673987	.1863673	.2259996
#1	2713.789	65127.05	15102.19	1860.334	3646.471
#2	2719.135	65152.13	15088.72	1865.691	3654.890
#3	2705.449	65220.07	15243.84	1866.845	3638.409

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5196-01DUP Acquired: 12/10/2024 13:22:08 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0864213	.0010493	.1357761	-.032550	-.002058	59.75755	1.027051
Stddev	.0047977	.0040241	.0016089	.001326	.001149	.16125	.004135
%RSD	5.551501	383.4884	1.184944	4.074958	55.84925	.2698474	.4026232
#1	.0914787	.0006382	.1374929	-.032144	-.003306	59.64634	1.024207
#2	.0819344	-.002753	.1355324	-.034032	-.001043	59.94248	1.031794
#3	.0858507	.005263	.1343030	-.031474	-.001825	59.68381	1.025151

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0071210	.0098969	17.98016	.1601729	.0932391	.2497152	181.2063
Stddev	.0000893	.0001151	.04914	.0007193	.0002853	.0009083	.7381
%RSD	1.254297	1.162570	.2733208	.4490705	.3060055	.3637375	.4073084
#1	.0071989	.0099030	17.97760	.1607697	.0933181	.2507134	180.5869
#2	.0070235	.0100088	17.93234	.1593743	.0934765	.2494951	181.0091
#3	.0071405	.0097789	18.03053	.1603746	.0929225	.2489372	182.0230

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.861784	28.26697	.2269481	-.001955	.9986636	.2843436	.5312579
Stddev	.003531	.03967	.0007928	.000363	.0157292	.0017115	.0009904
%RSD	.0602427	.1403475	.3493340	18.54293	1.575024	.6019143	.1864172
#1	5.858987	28.29857	.2278078	-.002341	.9805071	.2833992	.5301474
#2	5.865752	28.22245	.2262458	-.001621	1.008148	.2863193	.5320496
#3	5.860613	28.27989	.2267909	-.001904	1.007336	.2833124	.5315768

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.44419	.0847890	.0030427	.0084070	1.850188	4.024900	5.614946
Stddev	.07420	.0009872	.0004305	.0006578	.002494	.010980	.020467
%RSD	.7104330	1.164256	14.14776	7.824026	.1347760	.2728078	.3645017
#1	10.35882	.0838648	.0035206	.0076530	1.851447	4.012562	5.593440
#2	10.48056	.0846734	.0026854	.0088630	1.851802	4.028540	5.617215
#3	10.49318	.0858289	.0029220	.0087049	1.847316	4.033598	5.634184

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5196-01DUP Acquired: 12/10/2024 13:22:08 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	1.476136	.1424375	-.091704
Stddev	.007839	.0010900	.000887
%RSD	.5310316	.7652645	.9668910
#1	1.483773	.1413659	-.091388
#2	1.476525	.1435450	-.091019
#3	1.468110	.1424015	-.092705

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2688.682	64611.45	15039.35	1849.953	3613.383
Stddev	6.629	59.41	52.54	3.650	3.082
%RSD	.2465349	.0919456	.3493221	.1973259	.0853009
#1	2692.764	64634.82	14981.18	1850.513	3609.906
#2	2692.248	64655.62	15053.52	1853.291	3615.780
#3	2681.034	64543.91	15083.34	1846.055	3614.461

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CCV03 Acquired: 12/10/2024 13:26:15 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV03 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**4.917775**	**4.914472**	**4.849173**	**4.995577**	**4.981866**	**9.964274**	**9.640386**
Stddev	.028217	.087664	.005544	.024528	.012913	.025333	.082431
%RSD	.5737789	1.783790	.1143240	.4909908	.2591908	.2542383	.8550600
#1	4.949673	4.992488	4.853215	5.022167	4.996753	9.935396	9.548407
#2	4.896074	4.931321	4.851450	4.990726	4.973706	9.974678	9.665167
#3	4.907577	4.819606	4.842853	4.973837	4.975139	9.982749	9.707583

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.2376687**	**2.410831**	**23.75368**	**.9961431**	**2.416773**	**1.249880**	**4.813050**
Stddev	.0008924	.003029	.04380	.0019705	.001584	.002531	.006727
%RSD	.3754723	.1256439	.1843961	.1978167	.0655395	.2025398	.1397731
#1	.2370400	2.410959	23.70780	.9959319	2.417535	1.252614	4.815461
#2	.2386901	2.413794	23.75820	.9982107	2.417832	1.247618	4.818239
#3	.2372760	2.407740	23.79505	.9942866	2.414952	1.249409	4.805449

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**2.317536**	**23.97406**	**2.421671**	**1.237864**	**23.99866**	**2.434473**	**2.524090**
Stddev	.002411	.11154	.002882	.001751	.23630	.003413	.000928
%RSD	.1040303	.4652429	.1189887	.1414471	.9846187	.1401758	.0367634
#1	2.314753	23.87842	2.421949	1.236082	24.20835	2.432877	2.523179
#2	2.318982	23.94717	2.424404	1.239582	24.04500	2.438391	2.525034
#3	2.318873	24.09658	2.418661	1.237927	23.74262	2.432151	2.524056

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**24.95714**	**4.765709**	**5.035680**	**4.864459**	**4.790292**	**4.998862**	**4.911632**
Stddev	.08816	.003520	.016076	.013588	.002378	.009279	.031517
%RSD	.3532596	.0738652	.3192478	.2793255	.0496387	.1856198	.6416783
#1	25.02962	4.761767	5.053329	4.876913	4.788244	4.993518	4.893892
#2	24.98280	4.766820	5.031841	4.866495	4.792899	4.993492	4.948021
#3	24.85899	4.768539	5.021871	4.849968	4.789731	5.009577	4.892984

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CCV03 Acquired: 12/10/2024 13:26:15 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV03 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	**4.770672**	**4.890922**	**4.881850**
Stddev	.018634	.012189	.039742
%RSD	.3905858	.2492123	.8140844
#1	4.779903	4.896254	4.851205
#2	4.782888	4.899536	4.867590
#3	4.749225	4.876976	4.926755

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**2272.149**	**53775.14**	**12596.11**	**1546.639**	**3596.384**
Stddev	7.935	90.81	13.01	8.755	5.064
%RSD	.3492407	.1688733	.1033190	.5660899	.1408018
#1	2263.211	53670.49	12584.33	1539.333	3590.576
#2	2278.363	53833.30	12610.08	1556.344	3599.873
#3	2274.873	53821.62	12593.92	1544.240	3598.703

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CCB03 Acquired: 12/10/2024 13:30:26 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB03 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001101	-.000821	-.000218	.0012741	-.000352	-.007311	-.003715
Stddev	.0019952	.000897	.000603	.0003263	.000612	.006070	.000400
%RSD	1812.342	109.3399	276.6669	25.60982	173.8842	83.03046	10.76464
#1	-.002129	-.001686	.000380	.0012169	-.000877	-.007844	-.003470
#2	.001701	-.000882	-.000208	.0009801	.000320	-.013097	-.004177
#3	.000758	.000106	-.000825	.0016251	-.000498	-.000992	-.003499

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000253	-.000010	-.005567	-.000644	-.000040	-.000356	-.002380
Stddev	.0000441	.000060	.002724	.000119	.000035	.000151	.004464
%RSD	174.0266	582.6440	48.92997	18.51468	86.78698	42.39599	187.5469
#1	-.000016	.000058	-.006488	-.000647	-.000078	-.000187	-.000460
#2	.000072	-.000055	-.007711	-.000524	-.000009	-.000477	.000802
#3	.000020	-.000034	-.002502	-.000762	-.000034	-.000405	-.007483

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000324	-.011749	-.000069	.0003670	.0006168	-.000573	-.000005
Stddev	.000161	.005985	.000185	.0002135	.0099460	.001084	.000284
%RSD	49.62439	50.94580	268.9684	58.18300	1612.555	189.1432	6095.692
#1	-.000510	-.005272	.000058	.0002107	-.009824	-.001560	-.000326
#2	-.000237	-.012898	.000017	.0002801	.001694	.000588	.000211
#3	-.000226	-.017076	-.000281	.0006103	.009980	-.000747	.000102

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0286133	.0039548	.0004531	.0032799	.0005350	.0069628	.0010494
Stddev	.0293032	.0005858	.0003195	.0003047	.0001721	.0030844	.0003008
%RSD	102.4111	14.81325	70.51009	9.289053	32.17356	44.29834	28.66500
#1	-.005132	.0034633	.0006346	.0031277	.0006230	.0037116	.0011392
#2	.047631	.0046030	.0006406	.0030812	.0006453	.0098477	.0012951
#3	.043341	.0037980	.0000842	.0036307	.0003367	.0073292	.0007139

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CCB03 Acquired: 12/10/2024 13:30:26 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB03 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0066334	-.001201	-.000111
Stddev	.0029140	.000122	.000025
%RSD	43.92992	10.18003	22.61601
#1	.0095906	-.001285	-.000134
#2	.0065449	-.001257	-.000084
#3	.0037646	-.001060	-.000113

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2412.906	57150.99	12597.70	1654.021	4123.861
Stddev	2.482	148.90	34.96	11.069	5.617
%RSD	.1028776	.2605305	.2775446	.6691967	.1362042
#1	2412.681	57021.05	12583.44	1645.736	4117.780
#2	2410.544	57118.47	12637.54	1649.736	4128.855
#3	2415.494	57313.46	12572.12	1666.592	4124.948

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5196-01LX5 Acquired: 12/10/2024 13:34:47 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0169867	.0005885	.0286861	-.005437	-.002071	13.55848	.2314465
Stddev	.0030563	.0018626	.0007212	.001365	.001491	.06332	.0021057
%RSD	17.99219	316.4918	2.514229	25.09630	72.00185	.4670459	.9098008
#1	.0200732	.0006233	.0293792	-.006516	-.001846	13.50069	.2297414
#2	.0169253	.0024334	.0279397	-.003903	-.003661	13.54857	.2307978
#3	.0139616	-.001291	.0287394	-.005891	-.000705	13.62617	.2338002

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0018064	.0007214	4.190441	.0369034	.0186154	.0615384	41.47691
Stddev	.0000242	.0000249	.026204	.0003995	.0000513	.0004644	.14796
%RSD	1.340180	3.449196	.6253197	1.082618	.2757370	.7546830	.3567199
#1	.0018302	.0007445	4.161792	.0365362	.0186288	.0615845	41.32721
#2	.0018073	.0007245	4.196337	.0368450	.0185586	.0610526	41.48045
#3	.0017818	.0006951	4.213195	.0373289	.0186586	.0619780	41.62306

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.387530	6.544235	.0458778	-.000712	.2096121	.0666783	.1221684
Stddev	.012532	.037435	.0002259	.000322	.0193688	.0006519	.0002542
%RSD	.9031587	.5720285	.4923747	45.15456	9.240311	.9776413	.2080728
#1	1.375221	6.505796	.0460098	-.000589	.1922372	.0665028	.1219222
#2	1.387097	6.546334	.0460067	-.001077	.2061040	.0674000	.1221530
#3	1.400272	6.580577	.0456170	-.000470	.2304953	.0661321	.1224299

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.268999	.0195999	.0005712	.0042981	.4302622	.9164719	1.141725
Stddev	.022227	.0006575	.0000925	.0007753	.0036572	.0114727	.006636
%RSD	.9795921	3.354385	16.19946	18.03830	.8499892	1.251837	.5812598
#1	2.264364	.0203370	.0004743	.0049416	.4263547	.9050280	1.146316
#2	2.293178	.0190740	.0005807	.0045154	.4308290	.9164145	1.144742
#3	2.249455	.0193888	.0006586	.0034373	.4336028	.9279733	1.134115

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5196-01LX5 Acquired: 12/10/2024 13:34:47 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.2987918	.0309897	-.020784
Stddev	.0010758	.0005203	.000015
%RSD	.3600630	1.678800	.0736918
#1	.3000258	.0309809	-.020766
#2	.2980507	.0304739	-.020790
#3	.2982991	.0315143	-.020795

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2529.812	59628.27	13288.01	1758.533	3991.476
Stddev	3.397	114.11	36.25	7.747	5.038
%RSD	.1342966	.1913734	.2728022	.4405301	.1262177
#1	2529.522	59522.12	13319.07	1752.887	3988.799
#2	2533.344	59613.73	13296.78	1755.347	3997.287
#3	2526.568	59748.95	13248.18	1767.365	3988.341

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5196-01MS Acquired: 12/10/2024 13:39:03 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.7099818**	**1.747713**	**1.040164**	**1.459209**	**.3832580**	**70.23877**
Stddev	.0020541	.015495	.001022	.012270	.0018450	.10423
%RSD	.2893125	.8865652	.0982367	.8408960	.4814020	.1483988
#1	.7094329	1.739207	1.041260	1.446295	.3814628	70.25657
#2	.7122545	1.738334	1.039238	1.460619	.3851491	70.12679
#3	.7082579	1.765597	1.039993	1.470714	.3831621	70.33296

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.9061723**	**.1650316**	**.1915922**	**21.44941**	**.4904239**	**.2827586**
Stddev	.0028950	.0007746	.0001257	.10841	.0008404	.0002711
%RSD	.3194731	.4693468	.0656226	.5054218	.1713655	.0958640
#1	.9093539	.1652715	.1914794	21.40001	.4913892	.2824467
#2	.9036932	.1641654	.1917278	21.37450	.4900282	.2829368
#3	.9054699	.1656577	.1915695	21.57372	.4898545	.2828923

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.4178282**	**179.0666**	**2.415629**	**34.42769**	**.6456622**	**.0583986**
Stddev	.0007817	.5435	.012443	.27866	.0010013	.0001095
%RSD	.1870848	.3035344	.5151129	.8094084	.1550759	.1875319
#1	.4178043	178.4989	2.414153	34.24070	.6447150	.0583458
#2	.4170587	179.1186	2.403989	34.29440	.6455618	.0583254
#3	.4186215	179.5823	2.428744	34.74796	.6467099	.0585245

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**3.696706**	**.5324575**	**.7066944**	**20.83637**	**.2910203**	**.3347245**
Stddev	.018395	.0030847	.0027578	.08976	.0013714	.0007671
%RSD	.4975926	.5793331	.3902365	.4308089	.4712493	.2291697
#1	3.717322	.5302431	.7041450	20.93952	.2894542	.3342204
#2	3.690823	.5311486	.7096216	20.79368	.2916004	.3343459
#3	3.681973	.5359808	.7063167	20.77593	.2920064	.3356073

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5196-01MS Acquired: 12/10/2024 13:39:03 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6370816	2.450872	5.021866	F 11.18411	1.582752	.3424608
Stddev	.0005312	.006062	.027651	.03445	.005397	.0023522
%RSD	.0833800	.2473204	.5506113	.3080436	.3409999	.6868457
#1	.6373937	2.447218	4.997436	11.21299	1.576520	.3451240
#2	.6373828	2.447529	5.051885	11.14598	1.585834	.3406676
#3	.6364682	2.457869	5.016279	11.19335	1.585901	.3415907

Elem	Sr4077
Units	ppm
Avg	.0920736
Stddev	.0011639
%RSD	1.264087
#1	.0933660
#2	.0911082
#3	.0917467

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2613.753	63023.26	14411.56	1804.272	3545.078
Stddev	4.436	19.86	58.78	2.021	5.995
%RSD	.1697105	.0315060	.4078849	.1119881	.1691059
#1	2614.640	63027.25	14411.71	1804.478	3538.379
#2	2617.678	63001.72	14470.27	1806.182	3549.938
#3	2608.940	63040.83	14352.70	1802.156	3546.917

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5196-01MSD Acquired: 12/10/2024 13:43:02 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7110135	1.736636	1.029966	1.465015	.3865075	69.98836
Stddev	.0016335	.010111	.003437	.001004	.0007121	.03489
%RSD	.2297460	.5822406	.3336857	.0685321	.1842381	.0498527
#1	.7116467	1.739792	1.026109	1.466021	.3868997	69.95311
#2	.7091581	1.744793	1.031083	1.464014	.3856855	69.98910
#3	.7122355	1.725323	1.032705	1.465009	.3869372	70.02288

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.8964329	.1633502	.1898206	21.38247	.4852305	.2806791
Stddev	.0028896	.0007514	.0001476	.10001	.0016931	.0004708
%RSD	.3223423	.4599652	.0777565	.4677162	.3489237	.1677227
#1	.8951684	.1625347	.1896669	21.28852	.4850419	.2801773
#2	.8997392	.1640145	.1898336	21.48760	.4836396	.2807488
#3	.8943911	.1635014	.1899613	21.37128	.4870100	.2811111

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4132266	177.8836	2.389667	34.16218	.6398612	.0587146
Stddev	.0002418	.5171	.016107	.21839	.0014824	.0001687
%RSD	.0585059	.2906873	.6740425	.6392655	.2316684	.2872994
#1	.4131037	177.2887	2.373560	33.92168	.6389984	.0588058
#2	.4130710	178.1374	2.405775	34.34811	.6390124	.0585199
#3	.4135052	178.2248	2.389668	34.21674	.6415729	.0588180

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.650998	.5284419	.6983470	20.76235	.2837353	.3346472
Stddev	.016417	.0025833	.0000844	.07145	.0018331	.0003624
%RSD	.4496571	.4888483	.0120861	.3441553	.6460674	.1082899
#1	3.660691	.5258706	.6984443	20.77196	.2818011	.3345762
#2	3.632043	.5310370	.6983038	20.68658	.2854470	.3350398
#3	3.660260	.5284181	.6982930	20.82852	.2839578	.3343256

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5196-01MSD Acquired: 12/10/2024 13:43:02 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6324418	2.427551	4.965758	F 10.96019	1.561981	.3389495
Stddev	.0021512	.008164	.014861	.03664	.002373	.0001007
%RSD	.3401347	.3363204	.2992669	.3343143	.1519526	.0297064
#1	.6312369	2.421896	4.958067	10.99632	1.564385	.3389450
#2	.6349253	2.436911	4.956320	10.96120	1.561920	.3390524
#3	.6311631	2.423846	4.982889	10.92306	1.559639	.3388512

Elem	Sr4077
Units	ppm
Avg	.0908999
Stddev	.0005868
%RSD	.6456012
#1	.0909584
#2	.0914553
#3	.0902860

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2607.029	63095.97	14494.55	1801.295	3561.728
Stddev	3.898	128.47	45.35	12.786	5.443
%RSD	.1495313	.2036055	.3128645	.7098411	.1528133
#1	2610.012	62947.79	14510.64	1786.561	3564.558
#2	2608.456	63176.13	14443.35	1809.479	3565.174
#3	2602.618	63163.98	14529.66	1807.845	3555.454

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5196-01A Acquired: 12/10/2024 13:47:01 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.7165648**	**1.818995**	**1.038965**	**1.474769**	**.3850526**	**70.56299**
Stddev	.0017689	.014689	.002589	.002057	.0020026	.12823
%RSD	.2468537	.8075440	.2492100	.1394838	.5200796	.1817290
#1	.7179598	1.819755	1.041587	1.472736	.3841187	70.64459
#2	.7145753	1.803941	1.036410	1.474722	.3836876	70.41518
#3	.7171593	1.833290	1.038898	1.476849	.3873516	70.62919

Elem	Ba4934	Be2348	Cd2265	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.8953577**	**.1655750**	**.1919835**	**21.17579**	**.4924444**	**.2824104**
Stddev	.0007450	.0006337	.0006521	.04715	.0005815	.0007402
%RSD	.0832080	.3827455	.3396772	.2226586	.1180795	.2620890
#1	.8956508	.1650970	.1919568	21.17794	.4924010	.2820866
#2	.8959115	.1653340	.1913451	21.22182	.4930464	.2818873
#3	.8945107	.1662938	.1926485	21.12760	.4918858	.2832573

Elem	Cu2247	Fe2404	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.4207734**	**176.2864**	**2.372947**	**34.35263**	**.6430817**	**.0575973**
Stddev	.0011012	.5699	.005970	.09226	.0012703	.0003949
%RSD	.2617018	.3232642	.2515951	.2685592	.1975332	.6856891
#1	.4208171	175.9597	2.366590	34.25100	.6426448	.0576725
#2	.4196511	176.9444	2.378435	34.37579	.6420875	.0579493
#3	.4218521	175.9550	2.373817	34.43110	.6445128	.0571702

Elem	Na5895	V_2924	Zn2138	K_7664	B_2496	Mo2020
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**3.621600**	**.5304698**	**.7044098**	**20.78559**	**.2870459**	**.3369991**
Stddev	.012932	.0016648	.0035875	.02797	.0012733	.0008269
%RSD	.3570868	.3138327	.5092961	.1345578	.4435753	.2453797
#1	3.626763	.5309477	.7060686	20.80810	.2858756	.3372638
#2	3.631152	.5318433	.7068678	20.79440	.2868604	.3360722
#3	3.606883	.5286183	.7002930	20.75428	.2884018	.3376613

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: P5196-01A Acquired: 12/10/2024 13:47:01 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Sn1899	Ti3361	Si2881	P_1774	S_1820	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6385536	2.454824	5.509793	F 10.99970	1.573493	.3400576
Stddev	.0037445	.001713	.019268	.04280	.001832	.0009443
%RSD	.5864098	.0697620	.3497125	.3891014	.1164312	.2776836
#1	.6351023	2.454195	5.492425	11.03272	1.571480	.3411250
#2	.6380234	2.453516	5.506433	10.95135	1.573934	.3393312
#3	.6425349	2.456762	5.530520	11.01504	1.575064	.3397166

Elem	Sr4077
Units	ppm
Avg	.0920629
Stddev	.0005475
%RSD	.5946602
#1	.0926102
#2	.0915152
#3	.0920633

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2607.119	62665.45	14369.43	1782.026	3549.605
Stddev	7.566	194.13	33.03	14.334	7.068
%RSD	.2902192	.3097854	.2298396	.8043796	.1991077
#1	2601.260	62489.58	14331.68	1769.300	3542.632
#2	2604.435	62633.02	14392.95	1779.224	3549.420
#3	2615.661	62873.75	14383.68	1797.554	3556.764

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: LR1 Acquired: 12/10/2024 13:52:57 Type: Unk
Method: NON EPA-6010-200.7(v2517) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0303679	.1054883	-.000587	-.286200	-.026261	1911.822	.0112680
Stddev	.0142869	.0051608	.005734	.010606	.005065	6.766	.0001921
%RSD	47.04598	4.892298	977.4212	3.705834	19.28724	.3539132	1.705042
#1	.0440815	.1094956	-.001241	-.282180	-.020786	1918.971	.0112068
#2	.0155696	.1073043	-.005966	-.278191	-.027218	1905.519	.0114833
#3	.0314526	.0996649	.005447	-.298228	-.030780	1910.976	.0111139

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0099028	.1146877	1673.479	-.001678	.0470106	.1157653	1002.265
Stddev	.0001400	.0012323	8.566	.000793	.0010465	.0026139	1.457
%RSD	1.414185	1.074454	.5118813	47.22783	2.225988	2.257925	.1453398
#1	.0098140	.1144259	1674.929	-.001067	.0480063	.1136204	1003.234
#2	.0100642	.1160298	1681.228	-.001394	.0471057	.1186768	1000.590
#3	.0098302	.1136073	1664.280	-.002574	.0459199	.1149988	1002.971

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.124805	1701.378	.0177537	-.068949	2077.950	.0822706	.3385260
Stddev	.000334	14.407	.0011424	.000942	8.069	.0019607	.0035456
%RSD	.2679518	.8468017	6.434534	1.365916	.3883122	2.383227	1.047364
#1	-.124783	1711.404	.0189963	-.068976	2085.968	.0809071	.3377158
#2	-.124482	1707.863	.0175158	-.069877	2069.832	.0845176	.3424066
#3	-.125150	1684.868	.0167491	-.067994	2078.049	.0813871	.3354557

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1358.069	.3477018	-.016767	.0204327	-.036921	.1788766	.0976980
Stddev	1.839	.0030110	.000415	.0022055	.000740	.0034262	.0018227
%RSD	.1354366	.8659638	2.474848	10.79386	2.005358	1.915402	1.865669
#1	1358.107	.3504490	-.016314	.0215982	-.036262	.1788420	.0958597
#2	1359.889	.3481737	-.017129	.0178890	-.037723	.1823200	.0995048
#3	1356.211	.3444828	-.016857	.0218109	-.036779	.1754679	.0977296

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: LR1 Acquired: 12/10/2024 13:52:57 Type: Unk
Method: NON EPA-6010-200.7(v2517) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.238581	-.269526	-.990556
Stddev	.006438	.002351	.001479
%RSD	2.698432	.8723520	.1492608
#1	-.239331	-.269308	-.991626
#2	-.231801	-.271979	-.988869
#3	-.244611	-.267292	-.991174

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1328.041	33506.99	9246.405	918.8214	1870.792
Stddev	4.099	78.76	14.409	9.6589	5.628
%RSD	.3086582	.2350665	.1558322	1.051232	.3008416
#1	1330.546	33532.44	9262.550	924.1002	1873.379
#2	1323.310	33418.64	9234.850	907.6735	1864.335
#3	1330.266	33569.87	9241.816	924.6907	1874.661

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: LR2 Acquired: 12/10/2024 13:57:54 Type: Unk
Method: NON EPA-6010-200.7(v2517) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0123903	-.030508	256.2228	.0096221	.0021457	.0567828	^F *****
Stddev	.0026024	.002635	.6829	.0013969	.0031097	.0046140	-----
%RSD	21.00370	8.637763	.2665342	14.51784	144.9287	8.125688	-----
#1	.0153951	-.027764	257.0088	.0111711	.0057342	.0586782	^ -----
#2	.0108599	-.030739	255.7750	.0092372	.0002396	.0601472	^ -----
#3	.0109158	-.033019	255.8845	.0084580	.0004634	.0515229	^ -----

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.002699	-.005291	-.073512	.0123323	-.018696	234.0294	.0093517
Stddev	.000016	.000141	.010399	.0006691	.000456	1.6388	.0021396
%RSD	.5832679	2.661356	14.14572	5.425874	2.440189	.7002674	22.87919
#1	-.002710	-.005360	-.061584	.0115963	-.018180	235.6160	.0118222
#2	-.002681	-.005129	-.078280	.0129039	-.018860	234.1294	.0081226
#3	-.002706	-.005384	-.080672	.0124967	-.019047	232.3429	.0081102

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	41.24258	-.035584	51.74518	.0061949	.5743366	-.016239	38.44382
Stddev	.29610	.012605	.08842	.0001085	.0094988	.000302	.39886
%RSD	.7179511	35.42342	.1708748	1.751648	1.653869	1.860317	1.037508
#1	40.97598	-.023773	51.80397	.0062531	.5676822	-.016273	38.22250
#2	41.19049	-.034123	51.64350	.0062618	.5852147	-.016524	38.90427
#3	41.56127	-.048856	51.78807	.0060697	.5701129	-.015922	38.20470

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5162457	-.001801	-.002847	-.003669	-.043457	-.003597	2.773912
Stddev	.0199470	.000401	.000269	.000947	.000551	.004493	.028530
%RSD	3.863858	22.24341	9.462820	25.82334	1.267699	124.9159	1.028498
#1	.5285286	-.001373	-.003112	-.003577	-.042984	-.008503	2.805797
#2	.5269782	-.002167	-.002574	-.002771	-.044062	-.002601	2.765141
#3	.4932303	-.001862	-.002856	-.004659	-.043326	.000315	2.750797

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: LR2 Acquired: 12/10/2024 13:57:54 Type: Unk
Method: NON EPA-6010-200.7(v2517) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	-.015479	.0005102	.0020879
Stddev	.004631	.0006224	.0000376
%RSD	29.92010	121.9774	1.800559
#1	-.010295	.0009385	.0020725
#2	-.019208	.0007958	.0021307
#3	-.016934	-.000204	.0020603

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1975.332	55213.65	12679.28	1499.338	3726.646
Stddev	1.975	94.67	77.30	5.175	3.098
%RSD	.0999704	.1714575	.6096743	.3451800	.0831281
#1	1976.056	55205.73	12742.93	1501.169	3729.937
#2	1973.097	55312.04	12701.66	1503.349	3723.787
#3	1976.842	55123.20	12593.26	1493.496	3726.213

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CCV04 Acquired: 12/10/2024 14:19:58 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV04 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**4.916683**	**4.833436**	**4.846965**	**4.980599**	**5.002758**	**9.887202**	**9.756563**
Stddev	.020836	.061487	.010023	.026133	.013320	.015214	.066575
%RSD	.4237762	1.272113	.2067934	.5247018	.2662626	.1538797	.6823645
#1	4.924409	4.799016	4.843614	4.974651	5.009111	9.871009	9.758643
#2	4.893088	4.796869	4.839047	4.957952	4.987450	9.901200	9.688972
#3	4.932553	4.904424	4.858235	5.009193	5.011712	9.889396	9.822074

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.2418729**	**2.411023**	**23.97163**	**.9912288**	**2.418415**	**1.252961**	**4.802636**
Stddev	.0002981	.004930	.12402	.0015446	.004969	.004896	.014958
%RSD	.1232303	.2044591	.5173702	.1558294	.2054617	.3907254	.3114532
#1	.2416735	2.410270	23.84600	.9930124	2.417737	1.252585	4.785438
#2	.2417296	2.406513	23.97489	.9903362	2.413820	1.248265	4.809852
#3	.2422155	2.416286	24.09398	.9903378	2.423688	1.258034	4.812617

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**2.363190**	**24.03408**	**2.422640**	**1.232932**	**24.62330**	**2.454606**	**2.506264**
Stddev	.010712	.19177	.005035	.002557	.28708	.007193	.012742
%RSD	.4532794	.7979002	.2078196	.2073685	1.165897	.2930609	.5084244
#1	2.355492	23.82209	2.421722	1.230420	24.93890	2.447920	2.499983
#2	2.358655	24.08468	2.418127	1.235531	24.55336	2.453680	2.520928
#3	2.375424	24.19547	2.428071	1.232844	24.37766	2.462217	2.497882

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**24.85720**	**4.847499**	**5.019672**	**4.850965**	**4.839470**	**4.916787**	**5.011077**
Stddev	.12671	.012671	.018476	.014474	.005533	.028839	.032762
%RSD	.5097480	.2613979	.3680694	.2983692	.1143372	.5865515	.6537907
#1	25.00190	4.833025	5.010372	4.845235	4.840723	4.888291	5.000765
#2	24.80360	4.852882	5.007694	4.840234	4.833417	4.916113	4.984712
#3	24.76610	4.856590	5.040950	4.867427	4.844269	4.945958	5.047754

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CCV04 Acquired: 12/10/2024 14:19:58 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCV04 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	**4.783829**	**4.939892**	**4.960055**
Stddev	.018675	.039063	.010114
%RSD	.3903792	.7907741	.2039074
#1	4.777877	4.981906	4.971694
#2	4.768855	4.933098	4.953402
#3	4.804755	4.904671	4.955069

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	**2279.811**	**54271.40**	**12469.59**	**1569.599**	**3609.823**
Stddev	5.626	77.67	28.53	1.103	8.937
%RSD	.2467578	.1431076	.2287940	.0702809	.2475657
#1	2276.924	54284.86	12485.21	1569.617	3602.805
#2	2286.294	54341.46	12486.90	1568.487	3619.883
#3	2276.216	54187.89	12436.66	1570.693	3606.780

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CCB04 Acquired: 12/10/2024 14:24:08 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB04 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.000845**	**.0000463**	**-.000213**	**.0027421**	**.0002738**	**-.007698**	**-.005553**
Stddev	.001560	.0003471	.000302	.0016374	.0019280	.001952	.000411
%RSD	184.6888	749.6793	142.1686	59.71467	704.1415	25.35114	7.403593
#1	-.000140	.0004285	-.000410	.0013877	.0003497	-.007865	-.006019
#2	.000238	-.000249	-.000364	.0022768	-.001691	-.005668	-.005244
#3	-.002633	-.000041	.000135	.0045619	.002163	-.009561	-.005395

Elem	Be2348	Cd2265	Ca3736	Cr2677	Co2286	Cu2247	Fe2404
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.0000077**	**.0000602**	**-.006661**	**-.000450**	**.0000488**	**.0000372**	**-.002039**
Stddev	.0000372	.0000282	.002117	.000298	.0000952	.0000325	.003331
%RSD	481.4610	46.81536	31.78901	66.29167	195.3046	87.22633	163.3638
#1	.0000477	.0000920	-.006932	-.000514	.0000888	.0000728	-.001868
#2	.0000013	.0000384	-.008629	-.000125	.0001174	.0000092	-.005451
#3	-.000026	.0000503	-.004421	-.000711	-.000060	.0000297	.001203

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na5895	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**-.000263**	**-.011725**	**-.000175**	**.0008117**	**.1794810**	**.0012061**	**-.000242**
Stddev	.000171	.010956	.000040	.0002147	.0229279	.0003584	.000177
%RSD	65.12212	93.44353	23.01330	26.44671	12.77456	29.71152	72.92587
#1	-.000066	-.003948	-.000137	.0010190	.1581443	.0015047	-.000075
#2	-.000374	-.024255	-.000171	.0005903	.1765754	.0013049	-.000426
#3	-.000349	-.006971	-.000218	.0008258	.2037232	.0008087	-.000225

Elem	K_7664	B_2496	Mo2020	Sn1899	Ti3361	Si2881	P_1774
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	**.1299972**	**.0013724**	**.0003968**	**.0025984**	**.0004516**	**.0093719**	**-.001478**
Stddev	.0371806	.0001391	.0001425	.0004305	.0005147	.0044202	.001446
%RSD	28.60108	10.13297	35.91488	16.56664	113.9748	47.16366	97.87293
#1	.0878521	.0015272	.0005613	.0028402	.0001679	.0109746	-.001269
#2	.1439817	.0013318	.0003186	.0021014	.0001412	.0127672	-.003017
#3	.1581577	.0012581	.0003105	.0028536	.0010457	.0043740	-.000147

Reviewed By:jaswal
On:12/13/2024 3:25:04 AM
Inst Id :P4
LB :LB133866

Sample Name: CCB04 Acquired: 12/10/2024 14:24:08 Type: Unk
Method: NON EPA-6010-200.7(v2514) Mode: CONC Corr. Factor: 1.000000
User: Kareem Custom ID1: CCB04 Custom ID2: Custom ID3:
Comment:

Elem	S_1820	Li6707	Sr4077
Units	ppm	ppm	ppm
Avg	.0040434	.0006566	-.000104
Stddev	.0034765	.0004548	.000004
%RSD	85.97811	69.26305	4.039795
#1	.0034388	.0001334	-.000102
#2	.0009089	.0008797	-.000101
#3	.0077826	.0009568	-.000109

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2394.542	57065.97	12526.97	1632.919	4101.546
Stddev	7.339	63.94	21.66	10.976	8.430
%RSD	.3064982	.1120421	.1728939	.6721633	.2055415
#1	2389.579	57032.16	12531.78	1620.263	4093.763
#2	2391.074	57139.71	12545.83	1639.831	4100.375
#3	2402.973	57026.03	12503.32	1638.662	4110.501

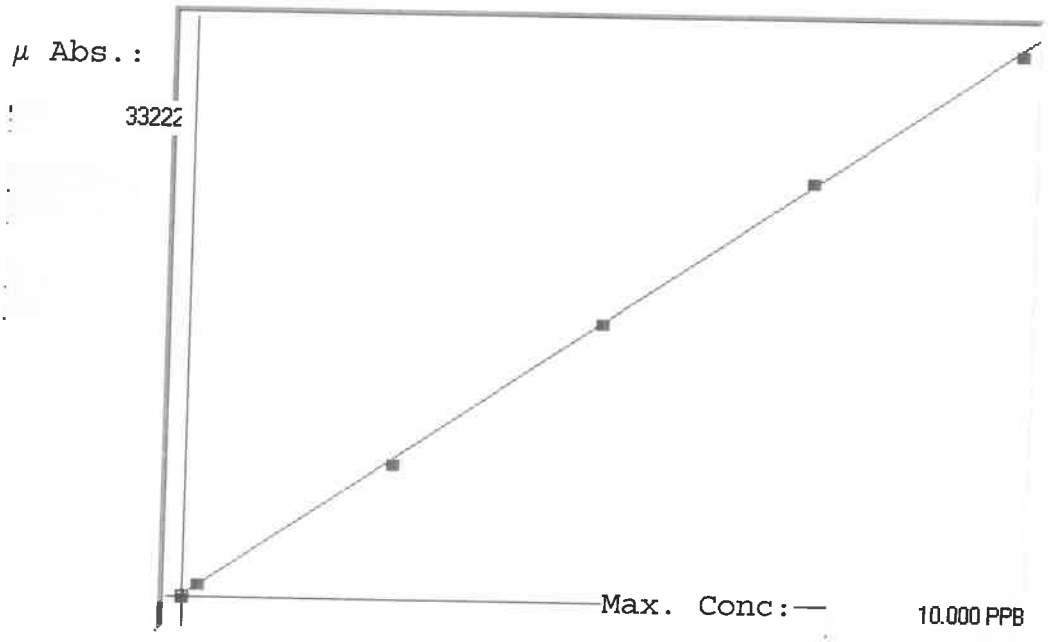
Reviewed By:mohan
On:12/6/2024 9:24:55 PM
Inst Id :CV1
LB :LB133780

LB133780

7470A

INSTRUMENT ID: CV1

Linear



A= 0.0000e+000

B= 2.9970e-004

C= -2.8409e-002

Rho= 0.9998680

Accept=Accepted

Std ID	Conc.	Calc.	Dev.	Mean	SD or %RSD	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	%D
0.0	0.000	-0.011	-0.011	59	0.000	59	0				—
0.2	0.200	0.230	0.030	861	0.0 %	861					15
2.5	2.500	2.430	-0.070	8203	0.0 %	8203					-3
5.0	5.000	5.022	0.022	16853	0.0 %	16853					0
7.5	7.500	7.600	0.100	25454	0.0 %	25454					1
10.0	10.000	9.928	-0.072	33222	0.0 %	33222					-1

Reviewed By:mohan
On:12/6/2024 9:24:55 PM
Inst Id :CV1
LB :LB133780

LB133780 INSTRUMENT ID : CV1

Method: 7470A Operator: Admin Date of Analysis: 06 Dec 2024 11:06:52

Sample ID	Extended ID	µ Abs	Conc	Stnd Conc	Method	Units	Date	Type	Type
0.0 - 1	50	59	-	0.00000	7470A	PPB	06 Dec 2024 11:18:38	S	Std
0.2 - 1	50.2	861	-	0.20000	7470A	PPB	06 Dec 2024 11:20:55	S	Std
2.5 - 1	52.5	8203	-	2.50000	7470A	PPB	06 Dec 2024 11:23:12	S	Std
5.0 - 1	55	16853	-	5.00000	7470A	PPB	06 Dec 2024 11:25:29	S	Std
7.5 - 1	57.5	25454	-	7.50000	7470A	PPB	06 Dec 2024 11:30:25	S	Std
10.0 - 1	510	33222	-	10.00000	7470A	PPB	06 Dec 2024 11:35:22	S	Std
ICV11 - 1	ICV11	12914	3.8420		-7470A	PPB	06 Dec 2024 11:38:18	U	SMPL
ICB11 - 1	ICB11	-204	-0.0895		-7470A	PPB	06 Dec 2024 11:40:33	U	SMPL
CCV95 - 1	CCV95	16787	5.0027		-7470A	PPB	06 Dec 2024 11:42:49	U	SMPL
CCB95 - 1	CCB95	-177	-0.0815		-7470A	PPB	06 Dec 2024 11:45:04	U	SMPL
CRA - 1	CRA	731	0.1907		-7470A	PPB	06 Dec 2024 11:47:21	U	SMPL
HighStd - 1	HighStd	33332	9.9613		-7470A	PPB	06 Dec 2024 11:49:36	U	SMPL
ChkStd - 1	ChkStd	22782	6.7994		-7470A	PPB	06 Dec 2024 11:51:52	U	SMPL
PB165437BL - 1	PBW	-36	-0.0392		-7470A	PPB	06 Dec 2024 11:56:55	U	SMPL
PB165437BS - 1	LCSW	16026	4.7746		-7470A	PPB	06 Dec 2024 11:59:10	U	SMPL
P4368-07 - 1	LOD-MDL-WATER-01-QT4-2024	302	0.0621		-7470A	PPB	06 Dec 2024 12:12:11	U	SMPL
P4368-08 - 1	LOQ-WATER-02-QT4-2024	878	0.2347		-7470A	PPB	06 Dec 2024 12:14:27	U	SMPL
P4813-07 - 1	419	1177	0.3243		-7470A	PPB	06 Dec 2024 12:16:45	U	SMPL
P5074-02 - 1	COMP	1095	0.2998		-7470A	PPB	06 Dec 2024 12:23:56	U	SMPL
P5074-02DUP - 1	COMPDUP	1040	0.2833		-7470A	PPB	06 Dec 2024 12:26:11	U	SMPL
CCV96 - 1	CCV96	18126	5.4040		-7470A	PPB	06 Dec 2024 12:36:13	U	SMPL
CCB96 - 1	CCB96	-60	-0.0464		-7470A	PPB	06 Dec 2024 12:41:03	U	SMPL
P5074-02MS - 1	COMPMS	10140	3.0106		-7470A	PPB	06 Dec 2024 12:43:18	U	SMPL
P5074-02MSD - 1	COMPMSD	10105	3.0001		-7470A	PPB	06 Dec 2024 12:45:33	U	SMPL
P5093-01 - 1	LL-001	-368	-0.1387		-7470A	PPB	06 Dec 2024 12:47:51	U	SMPL
P5093-02 - 1	LL-001-FB-12-4-24	-68	-0.0488		-7470A	PPB	06 Dec 2024 12:50:10	U	SMPL
P5145-01 - 1	286085	843	0.2242		-7470A	PPB	06 Dec 2024 12:52:26	U	SMPL
P5074-02LX5 - 1		-164	-0.0776		-7470A	PPB	06 Dec 2024 12:54:42	U	SMPL
P5074-02A - 1		11492	3.4158		-7470A	PPB	06 Dec 2024 12:57:01	U	SMPL
CCV97 - 1	CCV97	15238	4.5385		-7470A	PPB	06 Dec 2024 12:59:17	U	SMPL
CCB97 - 1	CCB97	-127	-0.0665		-7470A	PPB	06 Dec 2024 13:01:36	U	SMPL

Alliance TECHNICAL GROUP

Water Metals Preparation Sheet

PB165464

SOP ID : M3010A-Digestion-17

SDG No : N/A

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: 12/09/2024 **Time :** 09:10 **Temp :** 96 °C

End Digest Date: 12/09/2024 **Time :** 12:20 **Temp :** 96 °C

Digestion tube ID: M5595

Block thermometer ID: MET-DIG. #1

Dig Technician Signature:

Supervisor Signature:

Temp : 1. 96°C 2. N/A

Standared Name	MLS USED	STD REF. # FROM LOG
LFS-1	0.25	M6000
LFS-2	0.25	M6009
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
Conc. HNO3	3.00	M6126
1:1 HCL	5.00	MP83499
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 #50 Temp: 96 C

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
12/09/24 12:50	met Digestion	
	Preparation Group	Analysis Group

Alliance TECHNICAL GROUP

Water Metals Preparation Sheet

PB165464

Lab Sample ID	Client Sample ID	pH	Initial Vol (ml)	Final Vol (ml)	Color Before	Color After	Clarity Before	Clarity After	Comment	Prep Pos
P5074-02	COMP	N/A	50	25	Colorless	Colorless	Clear	Clear	N/A	1
P5093-01	LL-001	N/A	50	25	Colorless	Colorless	Clear	Clear	N/A	2
P5093-02	LL-001-FB-12-4-24	N/A	50	25	Colorless	Colorless	Clear	Clear	N/A	3
P5093-02MS	LL-001-FB-12-4-24MS	N/A	50	25	Colorless	Colorless	Clear	Clear	M6000,M6009	5
P5093-02MSD	LL-001-FB-12-4-24MSD	N/A	50	25	Colorless	Colorless	Clear	Clear	M6000,M6009	6
P5093-02DUP	LL-001-FB-12-4-24DUP	N/A	50	25	Colorless	Colorless	Clear	Clear	N/A	4
P5141-01	WATER TREATMENT DISCHARGE	N/A	50	25	Colorless	Colorless	Clear	Clear	N/A	7
P5145-01	286085	N/A	50	25	Colorless	Colorless	Clear	Clear	N/A	8
PB165464BL	PBW464	N/A	50	25	Colorless	Colorless	Clear	Clear	N/A	9
PB165464BS	LCS464	N/A	50	25	Colorless	Colorless	Clear	Clear	M6000,M6009	10

WORKLIST(Hardcopy Internal Chain)

WorkList Name : PB165464 **WorkList ID :** 186114 **Department :** Digestion **Date :** 12-09-2024 08:26:18

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
P5074-02	COMP	Water	Metals ICP-Group1	1:1 HNO3 to pH < 2	ARAM01	M11	12/04/2024	6010D
P5093-01	LL-001	Water	Metals ICP-TAL	1:1 HNO3 to pH < 2	RTHR01	L41	12/04/2024	6010D
P5093-02	LL-001-FB-12-4-24	Water	Metals ICP-TAL	1:1 HNO3 to pH < 2	RTHR01	L41	12/04/2024	6010D
P5141-01	WATER TREATMENT DISCHAI	Water	Metals Group5	1:1 HNO3 to pH < 2	VERI01	M11	12/05/2024	6010D
P5145-01	286085	Water	Metals PSEG Group2	1:1 HNO3 to pH < 2	PSEG03	L51	12/05/2024	6010D

Date/Time 12/09/24 8:50
Raw Sample Received by:
Raw Sample Relinquished by:

Date/Time 12/09/24 9:50
Raw Sample Received by:
Raw Sample Relinquished by:

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

Instrument ID: CV1

Daily Analysis Runlog For Sequence/QCBatch ID # LB133780

Review By	jaswal	Review On	12/6/2024 9:22:30 PM
Supervise By	mohan	Supervise On	12/6/2024 9:24:55 PM

STD. NAME	STD REF.#
ICAL Standard	MP83482,MP83484,MP83485,MP83486,MP83487,MP83488
ICV Standard	MP83489
CCV Standard	MP83491
ICSA Standard	
CRI Standard	MP83493
LCS Standard	
Chk Standard	MP83490,MP83492,MP83494,MP83496

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	12/06/24 11:18		Mohan	OK
2	S0.2	S0.2	CAL2	12/06/24 11:20		Mohan	OK
3	S2.5	S2.5	CAL3	12/06/24 11:23		Mohan	OK
4	S5	S5	CAL4	12/06/24 11:25		Mohan	OK
5	S7.5	S7.5	CAL5	12/06/24 11:30		Mohan	OK
6	S10	S10	CAL6	12/06/24 11:35		Mohan	OK
7	ICV11	ICV11	ICV	12/06/24 11:38		Mohan	OK
8	ICB11	ICB11	ICB	12/06/24 11:40		Mohan	OK
9	CCV95	CCV95	CCV	12/06/24 11:42		Mohan	OK
10	CCB95	CCB95	CCB	12/06/24 11:45		Mohan	OK
11	CRA	CRA	CRDL	12/06/24 11:47		Mohan	OK
12	HighStd	HighStd	HIGH STD	12/06/24 11:49		Mohan	OK
13	ChkStd	ChkStd	SAM	12/06/24 11:51		Mohan	OK
14	PB165437BL	PB165437BL	MB	12/06/24 11:56		Mohan	OK
15	PB165437BS	PB165437BS	LCS	12/06/24 11:59	for Non DOD Pass- 119 recovery	Mohan	OK
16	P4368-07	LOD-MDL-WATER-01	SAM	12/06/24 12:12		Mohan	OK
17	P4368-08	LOQ-WATER-02-QT4	LOQ	12/06/24 12:14	true Value = 0.2	Mohan	OK
18	P4813-07	419	SAM	12/06/24 12:16		Mohan	OK

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

Instrument ID: CV1

Daily Analysis Runlog For Sequence/QCBatch ID # LB133780

Review By	jaswal	Review On	12/6/2024 9:22:30 PM
Supervise By	mohan	Supervise On	12/6/2024 9:24:55 PM

STD. NAME	STD REF.#
ICAL Standard	MP83482,MP83484,MP83485,MP83486,MP83487,MP83488
ICV Standard	MP83489
CCV Standard	MP83491
ICSA Standard	
CRI Standard	MP83493
LCS Standard	
Chk Standard	MP83490,MP83492,MP83494,MP83496

19	P5074-02	COMP	SAM	12/06/24 12:23		Mohan	OK
20	P5074-02DUP	COMPDUP	DUP	12/06/24 12:26		Mohan	OK
21	CCV96	CCV96	CCV	12/06/24 12:36		Mohan	OK
22	CCB96	CCB96	CCB	12/06/24 12:41		Mohan	OK
23	P5074-02MS	COMPMS	MS	12/06/24 12:43		Mohan	OK
24	P5074-02MSD	COMPMSD	MSD	12/06/24 12:45		Mohan	OK
25	P5093-01	LL-001	SAM	12/06/24 12:47		Mohan	OK
26	P5093-02	LL-001-FB-12-4-24	SAM	12/06/24 12:50		Mohan	OK
27	P5145-01	286085	SAM	12/06/24 12:52		Mohan	OK
28	P5074-02L	COMPL	SD	12/06/24 12:54		Mohan	OK
29	P5074-02A	COMPA	PS	12/06/24 12:57		Mohan	OK
30	CCV97	CCV97	CCV	12/06/24 12:59		Mohan	OK
31	CCB97	CCB97	CCB	12/06/24 13:01		Mohan	OK

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Instrument ID: P4

Daily Analysis Runlog For Sequence/QCBatch ID # LB133866

Review By	mohan	Review On	12/13/2024 3:24:42 AM
Supervise By	jaswal	Supervise On	12/13/2024 3:25:04 AM

STD. NAME	STD REF.#
ICAL Standard	MP83552,MP83553,MP83554,MP83555,MP83556,MP83558
ICV Standard	MP83559
CCV Standard	MP83562
ICSA Standard	MP83560,MP83561
CRI Standard	MP83558
LCS Standard	
Chk Standard	MP83565,MP83566

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	12/10/24 10:38		Kareem	OK
2	S1	S1	CAL2	12/10/24 10:43		Kareem	OK
3	S2	S2	CAL3	12/10/24 10:47		Kareem	OK
4	S3	S3	CAL4	12/10/24 10:51		Kareem	OK
5	S4	S4	CAL5	12/10/24 10:56		Kareem	OK
6	S5	S5	CAL6	12/10/24 11:00		Kareem	OK
7	ICV01	ICV01	ICV	12/10/24 11:04		Kareem	OK
8	LLICV01	LLICV01	LLICV	12/10/24 11:08		Kareem	OK
9	ICB01	ICB01	ICB	12/10/24 11:20		Kareem	OK
10	CRI01	CRI01	CRDL	12/10/24 11:24		Kareem	OK
11	ICSA01	ICSA01	ICSA	12/10/24 11:36		Kareem	OK
12	ICSAB01	ICSAB01	ICSAB	12/10/24 11:40		Kareem	OK
13	CCV01	CCV01	CCV	12/10/24 11:44		Kareem	OK
14	CCB01	CCB01	CCB	12/10/24 11:48		Kareem	OK
15	PB165463BL	PB165463BL	MB	12/10/24 11:53		Kareem	OK
16	PB165463BS	PB165463BS	LCS	12/10/24 11:57	0.1ml of m6001 and m6010 were added to 10ml of the sample	Kareem	OK
17	PB165464BL	PB165464BL	MB	12/10/24 12:01		Kareem	OK

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Instrument ID: P4

Daily Analysis Runlog For Sequence/QCBatch ID # LB133866

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Supervise By	jaswal	Supervise On	12/13/2024 3:25:04 AM

STD. NAME	STD REF.#
ICAL Standard	MP83552,MP83553,MP83554,MP83555,MP83556,MP83558
ICV Standard	MP83559
CCV Standard	MP83562
ICSA Standard	MP83560,MP83561
CRI Standard	MP83558
LCS Standard	
Chk Standard	MP83565,MP83566

18	PB165464BS	PB165464BS	LCS	12/10/24 12:06	0.1ml of m6001 and m6010 were added to 10ml of the sample	Kareem	OK
19	P5145-01	286085	SAM	12/10/24 12:10		Kareem	OK
20	P5074-02	COMP	SAM	12/10/24 12:14		Kareem	OK
21	P5093-01	LL-001	SAM	12/10/24 12:18		Kareem	OK
22	P5093-02	LL-001-FB-12-4-24	SAM	12/10/24 12:22		Kareem	OK
23	P5093-02DUP	LL-001-FB-12-4-24DU	DUP	12/10/24 12:27		Kareem	OK
24	P5093-02L	LL-001-FB-12-4-24L	SD	12/10/24 12:31		Kareem	OK
25	CCV02	CCV02	CCV	12/10/24 12:35		Kareem	OK
26	CCB02	CCB02	CCB	12/10/24 12:39		Kareem	OK
27	P5093-02MS	LL-001-FB-12-4-24MS	MS	12/10/24 12:44	0.1ml of m6001 and m6010 were added to 10ml of the sample	Kareem	OK
28	P5093-02MSD	LL-001-FB-12-4-24MS	MSD	12/10/24 12:48	0.1ml of m6001 and m6010 were added to 10ml of the sample	Kareem	OK
29	P5093-02A	LL-001-FB-12-4-24A	PS	12/10/24 12:53	0.1ml of m6001 and m6010 were added to 10ml of the sample	Kareem	OK
30	P5141-01	WATER TREATMENT	SAM	12/10/24 12:57		Kareem	OK
31	P5174-01	ROLL-OFF-COMP	SAM	12/10/24 13:01		Kareem	OK
32	P5175-01	OK-01-12062024	SAM	12/10/24 13:05		Kareem	OK
33	P5176-01	EO-02-12062024	SAM	12/10/24 13:09		Kareem	OK
34	P5176-03	EO-03-12062024	SAM	12/10/24 13:13		Kareem	OK

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Instrument ID: P4

Daily Analysis Runlog For Sequence/QCBatch ID # LB133866

Review By	mohan	Review On	12/13/2024 3:24:42 AM
Supervise By	jaswal	Supervise On	12/13/2024 3:25:04 AM

STD. NAME	STD REF.#
ICAL Standard	MP83552,MP83553,MP83554,MP83555,MP83556,MP83558
ICV Standard	MP83559
CCV Standard	MP83562
ICSA Standard	MP83560,MP83561
CRI Standard	MP83558
LCS Standard	
Chk Standard	MP83565,MP83566

35	P5196-01	MH-761	SAM	12/10/24 13:18		Kareem	OK
36	P5196-01DUP	MH-761DUP	DUP	12/10/24 13:22		Kareem	OK
37	CCV03	CCV03	CCV	12/10/24 13:26		Kareem	OK
38	CCB03	CCB03	CCB	12/10/24 13:30		Kareem	OK
39	P5196-01L	MH-761L	SD	12/10/24 13:34		Kareem	OK
40	P5196-01MS	MH-761MS	MS	12/10/24 13:39	0.1ml of m6001 and m6010 were added to 10ml of the sample	Kareem	OK
41	P5196-01MSD	MH-761MSD	MSD	12/10/24 13:43	0.1ml of m6001 and m6010 were added to 10ml of the sample	Kareem	OK
42	P5196-01A	MH-761A	PS	12/10/24 13:47	0.1ml of m6001 and m6010 were added to 10ml of the sample	Kareem	OK
43	LR1	LR1	HIGH STD	12/10/24 13:52		Kareem	OK
44	LR2	LR2	HIGH STD	12/10/24 13:57		Kareem	OK
45	CCV04	CCV04	CCV	12/10/24 14:19		Kareem	OK
46	CCB04	CCB04	CCB	12/10/24 14:24		Kareem	OK

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Prep Standard - Chemical Standard Summary

Order ID : P5093

Test : Mercury,Metals ICP-TAL

Prepbatch ID : PB165437,PB165464,

Sequence ID/Qc Batch ID: LB133780,LB133866,LB133866,LB133866,LB133866,

Standard ID :
MP83481,MP83482,MP83484,MP83485,MP83486,MP83487,MP83488,MP83489,MP83490,MP83491,MP83492,MP834
93,MP83494,MP83496,MP83499,MP83500,MP83552,MP83553,MP83554,MP83555,MP83556,MP83557,MP83558,MP
83559,MP83560,MP83561,MP83562,MP83565,MP83566,

Chemical ID :
M5062,M5130,M5192,M5218,M5223,M5288,M5295,M5296,M5390,M5393,M5429,M5466,M5467,M5497,M5515,M5658
,M5697,M5698,M5747,M5748,M5768,M5798,M5799,M5800,M5801,M5802,M5806,M5814,M5815,M5816,M5817,M581
8,M5819,M5820,M5875,M5882,M5953,M5959,M5962,M5970,M5978,M5982,M5985,M6000,M6009,M6021,M6023,M60
28,M6030,M6033,M6121,M6126,W3112,

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
871	MERCURY INTERMEDIATE B 250PPB WORKING STD.	MP83481	12/06/2024	12/07/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/09/2024

FROM 1.00000ml of M6126 + 2.50000ml of M5062 + 96.50000ml of W3112 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1340	Hg 0.00 PPB STD	MP83482	12/06/2024	12/07/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/09/2024

FROM 2.50000ml of M6126 + 247.50000ml of W3112 = 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
1341	Hg 0.2 PPB STD	MP83484	12/06/2024	12/07/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/09/2024

FROM 2.50000ml of M6126 + 247.30000ml of W3112 + 0.20000ml of MP83481 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1342	Hg 2.5 PPB STD	MP83485	12/06/2024	12/07/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/09/2024

FROM 2.50000ml of M6126 + 245.00000ml of W3112 + 2.50000ml of MP83481 = 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
1343	Hg 5.0 PPB STD	MP83486	12/06/2024	12/07/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/09/2024

FROM 2.50000ml of M6126 + 242.50000ml of W3112 + 5.00000ml of MP83481 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1344	Hg 7.5 PPB STD	MP83487	12/06/2024	12/07/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/09/2024

FROM 2.50000ml of M6126 + 240.00000ml of W3112 + 7.50000ml of MP83481 = 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
1345	Hg 10.0 PPB STD	MP83488	12/06/2024	12/07/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/09/2024

FROM 2.50000ml of M6126 + 237.50000ml of W3112 + 10.00000ml of MP83481 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1346	Hg ICV SOLUTION	MP83489	12/06/2024	12/07/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/09/2024

FROM 2.50000ml of M5953 + 2.50000ml of M6126 + 245.00000ml of W3112 = 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
1351	ICB (Hg 0.00 PPB SOLUTION)	MP83490	12/06/2024	12/07/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/09/2024

FROM 2.50000ml of M6126 + 247.50000ml of W3112 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1358	CCV (Hg 5.0 PPB SOLUTION)	MP83491	12/06/2024	12/07/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/09/2024

FROM 485.00000ml of W3112 + 5.00000ml of M6126 + 10.00000ml of MP83481 = 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
1352	CCB (Hg 0.00 PPB SOLUTION)	MP83492	12/06/2024	12/07/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/09/2024

FROM 495.00000ml of W3112 + 5.00000ml of M6126 = Final Quantity: 500.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1349	CRA/CRI (Hg 0.2 PPB SOLUTION)	MP83493	12/06/2024	12/07/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 12/09/2024

FROM 2.50000ml of M6126 + 247.30000ml of W3112 + 0.20000ml of MP83481 = 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
1350	CHK STD (Hg 7.0 PPB SOLUTION)	MP83494	12/06/2024	12/07/2024	Mohan Bera	None	METALS_PIPETTE_5 (HG A)	Sarabjit Jaswal 12/09/2024

FROM 2.50000ml of M6126 + 240.50000ml of W3112 + 7.00000ml of MP83481 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
68	STANNOUS CHLORIDE SOLUTION	MP83496	12/06/2024	12/07/2024	Mohan Bera	METALS_SCALE_3 (M SC-3)	None	Sarabjit Jaswal 12/09/2024

FROM 450.00000ml of W3112 + 50.00000gram of M5882 + 50.00000ml of M6121 = 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
170	1:1HCL	MP83499	12/09/2024	12/28/2024	Eman Mughal	None	None	Sarabjit Jaswal 12/09/2024

FROM 1250.00000ml of M6121 + 1250.00000ml of W3112 = Final Quantity: 2500.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
902	ICP AES CAL BLK (SO/ICB/CCB)	MP83500	12/06/2024	01/06/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 12/09/2024

FROM 125.00000ml of M6121 + 2350.00000ml of W3112 + 25.00000ml of M6126 = Final Quantity: 2500.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
514	CAL BLK (S0/ICB/CCB)	MP83552	12/06/2024	01/06/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 12/11/2024

FROM 125.00000ml of M6121 + 2350.00000ml of W3112 + 25.00000ml of M6126 = Final Quantity: 2500.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
907	ICP AES STD S (S5)	MP83553	12/06/2024	01/06/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 12/11/2024

FROM 5.00000ml of M5296 + 5.00000ml of M5393 + 5.00000ml of M5467 + 5.00000ml of M5802 + 5.00000ml of M5816 + 5.00000ml of M5820 + 5.00000ml of M5875 + 5.00000ml of M5970 + 5.00000ml of M5982 + 455.00000ml of MP83500 = 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
910	ICP AES STD S4	MP83554	12/06/2024	01/06/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 12/11/2024

FROM 50.00000ml of MP83500 + 50.00000ml of MP83553 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
909	ICP AES STD S3	MP83555	12/06/2024	01/06/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 12/11/2024

FROM 25.00000ml of MP83553 + 75.00000ml of MP83500 = 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
3913	ICP AES STD S2	MP83556	12/06/2024	01/06/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 12/11/2024

FROM 16.00000ml of MP83553 + 184.00000ml of MP83500 = Final Quantity: 200.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
2950	ICP AES S1/CRI STOCK STD	MP83557	12/06/2024	01/06/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 12/11/2024

FROM 0.00600ml of M5816 + 0.03000ml of M5798 + 0.03000ml of M6028 + 0.05000ml of M5515 + 0.05000ml of M5658 + 0.05000ml of M6030 + 0.05000ml of M6033 + 0.06000ml of M5747 + 0.10000ml of M5697 + 0.10000ml of M5698 + 0.10000ml of M5801 + 0.10000ml of M5820 + 0.10000ml of M5962 + 0.10000ml of M5970 + 0.10000ml of M5982 + 0.15000ml of M5800 + 0.20000ml of M5748 + 0.20000ml of M5799 + 0.20000ml of M5819 + 0.20000ml of M5978 + 0.20000ml of M6021 + 0.20000ml of M6023 + 0.25000ml of M5467 + 0.25000ml of M5802 + 0.50000ml of M5390 + 0.50000ml of M5814 + 1.00000ml of M5192 + 1.00000ml of M5288 + 1.00000ml of M5497 + 1.00000ml of M5768 + 1.00000ml of M5806 + 2.00000ml of M5818 + 77.68000ml of MP83500 = 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
2951	ICP AES S1/CRI WORK STD	MP83558	12/06/2024	01/06/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 12/11/2024

FROM 2.00000ml of MP83557 + 98.00000ml of MP83500 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
912	ICP AES ICV SOLN	MP83559	12/06/2024	01/06/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 12/11/2024

FROM 0.02500ml of M5429 + 0.02500ml of M5815 + 0.02500ml of M5817 + 0.10000ml of M5466 + 0.25000ml of M5218 + 0.25000ml of M5982 + 10.00000ml of M5295 + 89.77500ml of MP83500 = 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
904	ICP AES ICSA SOLN	MP83560	12/06/2024	12/28/2024	Kareem Khairalla	None	None	Sarabjit Jaswal 12/11/2024

FROM 25.00000ml of M5130 + 225.00000ml of MP83500 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
3494	ICP AES ICSAB SOLN-1	MP83561	12/06/2024	12/28/2024	Kareem Khairalla	None	None	Sarabjit Jaswal 12/11/2024

FROM 0.01000ml of M5815 + 0.01000ml of M5817 + 0.10000ml of M5296 + 0.10000ml of M5970 + 0.10000ml of M5982 + 10.00000ml of M5130 + 10.00000ml of M5223 + 79.50000ml of MP83500 = 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
911	ICP AES CCV SOLN	MP83562	12/06/2024	01/06/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 12/11/2024

FROM 50.00000ml of MP83500 + 50.00000ml of MP83553 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
919	ICP AES INTERNAL STD	MP83565	12/06/2024	01/06/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 12/11/2024

FROM 1.00000ml of M5959 + 10.00000ml of M5985 + 1969.00000ml of W3112 + 20.00000ml of M6126 = Final Quantity: 2000.000 ml

284 Sheffield Street, Mountainside, New Jersey 07092, Phone : 908 789 8900,
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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
903	ICP AES RINSE SOLN	MP83566	12/06/2024	01/06/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 12/11/2024

FROM 200.00000ml of M6126 + 9800.00000ml of W3112 = Final Quantity: 10000.000 ml

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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	MSHG-10PPM / MERCURY HCl 125mL 10ug/mL	S2-HG709270	09/22/2026	05/28/2022 / mohan	01/27/2022 / mohan	M5062

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	12/28/2024	05/20/2024 /	04/20/2021 / bin	M5130

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57042 / Mo, 1000 PPM, 125 ml	051722	05/17/2025	07/01/2022 / bin	06/17/2022 / jaswal	M5192

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	12/28/2024	05/20/2024 /	04/20/2021 / bin	M5223

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58119 / K, 10000 PPM, 500 ml	071122	07/11/2025	09/01/2022 / jaswal	07/21/2022 / jaswal	M5288

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CHEMICAL RECEIPT LOG BOOK

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

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	10/12/2022 / bin	09/19/2022 / bin	M5393

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.	57058 / Cerium, 1000PPM, 100ML	061322	06/13/2025	03/06/2023 / bin	03/01/2023 / bin	M5466

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57058 / Cerium, 1000PPM, 100ML	020623	02/06/2026	03/06/2023 / bin	03/01/2023 / bin	M5467

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	03/18/2023 / bin	03/17/2023 / bin	M5497

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.	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.	58029 / Cu, 1000 PPM, 500 ml	102523	10/25/2026	04/03/2024 / jaswal	10/27/2023 / jaswal	M5697

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

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	/ Lead (Pb) 1000PPM	100923	10/09/2026	05/20/2024 / Jaswal	12/20/2023 / jaswal	M5747

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	/ Nickel (Ni) 1000PPM	091223	09/12/2026	01/02/2024 / bin	12/20/2023 / jaswal	M5748

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

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

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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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57005 / B, 1000 PPM, 125 ml	071123	07/11/2026	03/26/2024 / Sohil	01/03/2024 / jaswal	M5814

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

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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

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 #
Seidler Chemical	BA-3980-01 / Stannous Chloride (cs/4x500g)	232820	08/31/2028	04/30/2024 / mohan	04/25/2024 / mohan	M5882

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
EPA	ICV-5 / ICV (HG) STOCK SOLN	ICV5-0415	01/01/2025	07/01/2024 / mohan	03/30/2023 / mohan	M5953

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	07/01/2024 / Jaswal	06/14/2024 / Jaswal	M5959

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	CGTI1-1 / TITANIUM 125mL 1000ug/mL	T2-TI719972	06/17/2027	08/07/2024 / jaswal	02/22/2024 / Jaswal	M5978

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

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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 #
Inorganic Ventures	WW-LFS-1 / Laboratory Fortified Stock Solution 1, 125 ml	T2-MEB723367	08/30/2026	08/13/2024 / Jaswal	05/14/2024 / Jaswal	M6000

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	WW-LFS-2 / Laboratory Fortified Stock Solution 2, 125 ml	U2-MEB731108	03/17/2028	08/13/2024 / Jaswal	05/14/2024 / Jaswal	M6009

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.	57048 / Cd, 1000 PPM, 125 ml	070124	07/01/2027	08/05/2024 / kareem	01/25/2019 / Jaswal	M6028

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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.	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)	0000275677	05/13/2025	11/13/2024 / Eman	10/13/2024 / Eman	M6121

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	06/03/2025	12/03/2024 / Janvi	11/12/2024 / Janvi	M6126

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

Certificate of Analysis

ThermoFisher SCIENTIFIC

M5882 M3

Certificate of Analysis

1 Reagent Lane
Fair Lawn, NJ 07410
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Thermo Fisher Scientific's Quality System has been found to conform to Quality Management System Standard ISO9001:2015 by SAI Global Certificate Number CERT – 0120633

This is to certify that units of the lot number below were tested and found to comply with the specifications of the grade listed. Certain data have been supplied by third parties. Thermo Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Products are for research use or further manufacturing. Not for direct administration to humans or animals. It is the responsibility of the final formulator and end user to determine suitability based upon the intended use of the end product. Products are tested to meet the analytical requirements of the noted grade. The following information is the actual analytical results obtained.

Catalog Number	T142	Quality Test / Release Date	08/17/2023
Lot Number	232820		
Description	STANNOUS CHLORIDE, DIHYDRATE CERTIFIED ACS (Suitable for Mercury Determination)		
Country of Origin	United States	Suggested Retest Date	Aug/2028
Chemical Origin	Inorganic-non animal		
BSE/TSE Comment	No animal products are used as starting raw material ingredients, or used in processing, including lubricants, processing aids, or any other material that might migrate to the finished product.		

N/A			
Result Name	Units	Specifications	Test Value
APPEARANCE		REPORT	Clear crystals
ASSAY	%	Inclusive Between 98 - 103	100.65
CALCIUM	%	<= 0.005	0.0017
IDENTIFICATION	PASS/FAIL	= PASS TEST	PASS TEST
IRON (Fe)	%	<= 0.003	0.0011
LEAD (Pb)	%	<= 0.01	0.0006
MERCURY (Hg)	ppm	<= 0.05	<0.05
POTASSIUM (K)	%	<= 0.005	0.0001
SODIUM (Na)	%	<= 0.01	<0.01
SOLUBILITY IN HCL	PASS/FAIL	= PASS TEST	PASS TEST
SULFATE (SO4)	PASS/FAIL	= P.T. (ABOUT 0.003%)	P.T. (ABOUT 0.003%)

Harout Sahagian - Quality Control Supervisor - Fair Lawn

Note: The data listed is valid for all package sizes of this lot of this product, expressed as an extension of this catalog number listed above.
If there are any questions with this certificate, please call at (800) 227-6701.
*Based on suggested storage condition.

Absolute Standards, Inc.
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Certified Reference Material CRM

R 8/5/24

M6028

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

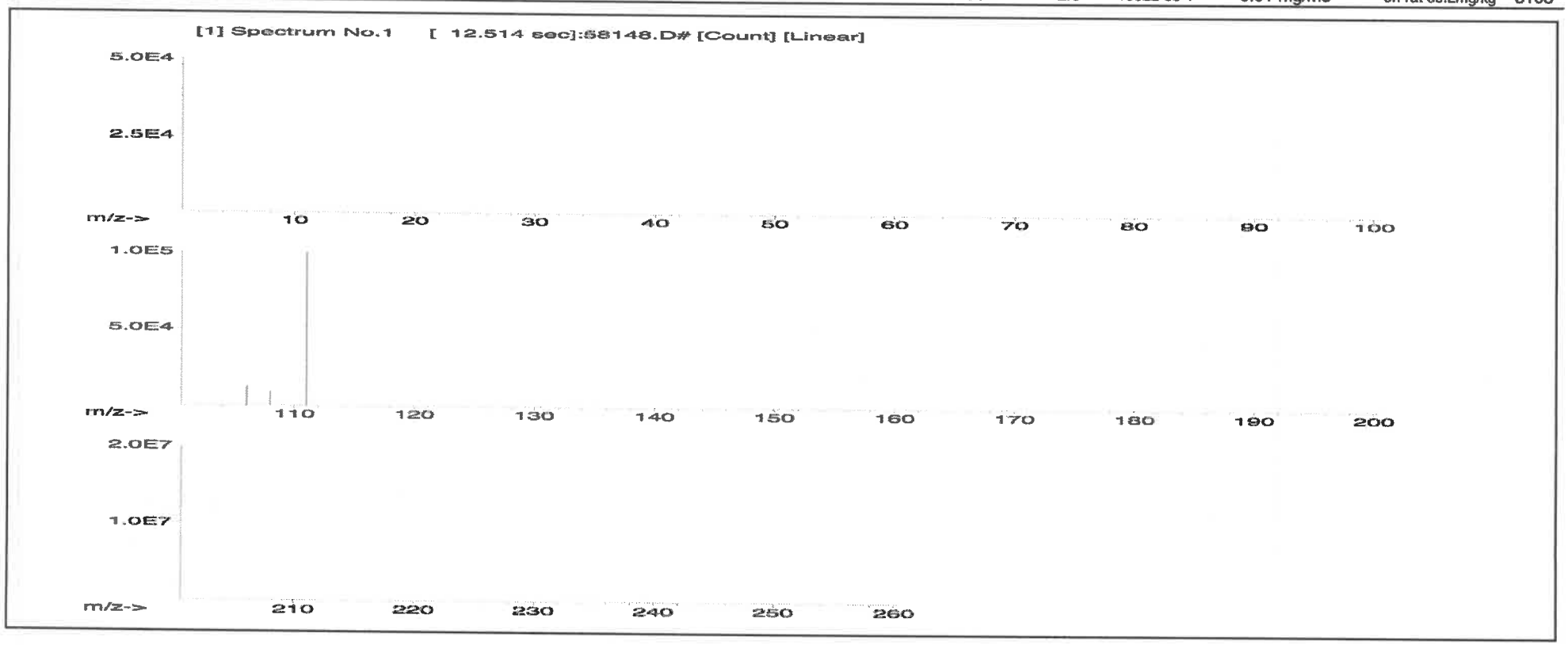
CERTIFIED WEIGHT REPORT:

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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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-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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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:	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"

- 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

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

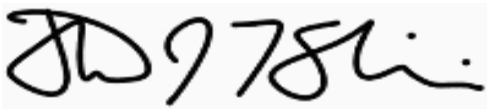
- Sealed TCT Bag Open Date: _____

- 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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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:	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

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**

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 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

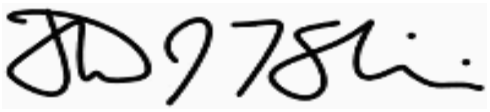
- Sealed TCT Bag Open Date: _____

- 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

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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:	WW-LFS-1
Lot Number:	T2-MEB723367
Matrix:	5% (v/v) HNO3

Value / Analyte(s):	1 000 µg/mL ea: Potassium,	
	600 µg/mL ea: Phosphorus,	
	300 µg/mL ea: Sodium,	Iron,
	200 µg/mL ea: Magnesium, Cerium, Thallium,	Aluminum, Selenium,
	100 µg/mL ea: Lead,	Calcium,
	80 µg/mL ea: Arsenic,	
	70 µg/mL ea: Mercury,	
	50 µg/mL ea: Nickel,	
	40 µg/mL ea: Chromium,	
	30 µg/mL ea: Copper, Vanadium,	Boron,
	20 µg/mL ea: Zinc, Barium, Cadmium, Manganese,	Strontium, Beryllium, Cobalt, Lithium,
	7.5 µg/mL ea: Silver	

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	200.0 ± 0.7 µg/mL	Arsenic, As	80.0 ± 0.7 µg/mL
Barium, Ba	20.00 ± 0.09 µg/mL	Beryllium, Be	20.00 ± 0.13 µg/mL
Boron, B	30.00 ± 0.18 µg/mL	Cadmium, Cd	20.00 ± 0.09 µg/mL
Calcium, Ca	100.0 ± 0.4 µg/mL	Cerium, Ce	200.0 ± 0.8 µg/mL
Chromium, Cr	40.00 ± 0.30 µg/mL	Cobalt, Co	20.00 ± 0.10 µg/mL
Copper, Cu	30.00 ± 0.13 µg/mL	Iron, Fe	300.0 ± 1.3 µg/mL
Lead, Pb	100.0 ± 0.4 µg/mL	Lithium, Li	20.00 ± 0.08 µg/mL
Magnesium, Mg	200.0 ± 0.8 µg/mL	Manganese, Mn	20.00 ± 0.08 µg/mL
Mercury, Hg	70.0 ± 0.3 µg/mL	Nickel, Ni	50.00 ± 0.22 µg/mL
Phosphorus, P	600.0 ± 2.7 µg/mL	Potassium, K	1 000 ± 4 µg/mL
Selenium, Se	200.0 ± 1.3 µg/mL	Silver, Ag	7.50 ± 0.03 µg/mL
Sodium, Na	300.0 ± 1.4 µg/mL	Strontium, Sr	20.01 ± 0.08 µg/mL
Thallium, Tl	200.0 ± 1.4 µg/mL	Vanadium, V	30.00 ± 0.13 µg/mL
Zinc, Zn	20.00 ± 0.09 µg/mL		

Density: 1.034 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	160729
Ag	Volhard	999c	999c
Ag	Calculated		See Sec. 4.2
Al	ICP Assay	3101a	140903
Al	EDTA	928	928
As	ICP Assay	3103a	100818
B	ICP Assay	3107	190605
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Ce	ICP Assay	3110	090504
Ce	EDTA	928	928
Co	ICP Assay	3113	190630
Co	EDTA	928	928
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
Hg	ICP Assay	3133	160921
Hg	EDTA	928	928
K	ICP Assay	3141a	140813
K	Gravimetric		See Sec. 4.2
Li	ICP Assay	3129a	100714
Li	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	Traceable to 3152A	S2-NA700842
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
P	ICP Assay	3139a	060717
P	Acidimetric	84L	84L
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Sr	EDTA	928	928
Sr	ICP Assay	Traceable to 3153a	K2-SR650985
Tl	ICP Assay	3158	151215
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**

Low Silver Note: This solution contains "LOW" levels of Silver. Please store this entire bottle inside a sealed glass jar.

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

August 30, 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

- **August 30, 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:

Thomas Kozikowski
Manager, Quality Control

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

INORGANIC VENTURES

Refine your results. Redefine your industry.

Certificate of Analysis

RD:05/14/2024

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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:	Multi Analyte Custom Grade Solution
Catalog Number:	WW-LFS-2
Lot Number:	U2-MEB731108
Matrix:	5% (v/v) HNO3 tr. HF
Value / Analyte(s):	200 µg/mL ea: Silica, 80 µg/mL ea: Antimony, 70 µg/mL ea: Tin, 40 µg/mL ea: Molybdenum, 20 µg/mL ea: Titanium

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	80.1 ± 0.6 µg/mL	Molybdenum, Mo	40.03 ± 0.18 µg/mL
Silica, SiO2	200.2 ± 1.3 µg/mL	Tin, Sn	70.0 ± 0.4 µg/mL
Titanium, Ti	20.01 ± 0.13 µg/mL		

Density: 1.025 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Mo	ICP Assay	3134	130418
Mo	Calculated		See Sec. 4.2
Sb	ICP Assay	3102a	140911
SiO2	ICP Assay	3150	130912
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	3162a	130925
Ti	Calculated		See Sec. 4.2

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

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**

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

March 17, 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

- March 17, 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

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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 Mass Spec Solution
Catalog Number:	MSHG-10PPM
Lot Number:	S2-HG709270
Matrix:	10% (v/v) HCl
Value / Analyte(s):	10 µg/mL ea: Mercury
Starting Material:	Hg metal
Starting Material Lot#:	1959
Starting Material Purity:	99.9994%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10.001 ± 0.053 µg/mL

Density: 1.020 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Hg	ICP Assay	3133	160921
Hg	EDTA	928	928
Hg	Calculated		See Sec. 4.2

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 (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{1/2}$ 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 (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

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.

O	Ag		0.000011	M	Eu	<	0.000201	O	Na		0.000004	M	Se	<	0.015915	O	Zn	<	0.001510
O	Al		0.000001	O	Fe		0.000001	M	Nb	<	0.000201	O	Si		0.000005	M	Zr	<	0.000201
M	As	<	0.000402	M	Ga	<	0.000201	M	Nd	<	0.000201	M	Sm	<	0.000201				
M	Au	<	0.003631	M	Gd	<	0.000201	M	Ni	<	0.000402	M	Sn	<	0.001007				
M	B	<	0.001208	M	Ge	<	0.000201	M	Os	<	0.000605	M	Sr	<	0.000201				
M	Ba	<	0.000201	M	Hf	<	0.000201	O	P	<	0.032370	M	Ta	<	0.000201				
M	Be	<	0.000201	s	Hg	<		M	Pb	<	0.000201	M	Tb	<	0.000201				
M	Bi	<	0.000201	M	Ho	<	0.000201	M	Pd	<	0.000403	M	Te	<	0.002216				
O	Ca		0.000007	M	In	<	0.000201	M	Pr	<	0.000201	M	Th	<	0.000201				
M	Cd	<	0.000201	M	Ir	<	0.000201	M	Pt	<	0.000402	M	Ti	<	0.000402				
M	Ce	<	0.000201	O	K		0.000020	M	Rb	<	0.000201	O	Tl	<	0.016508				
M	Co	<	0.000201	M	La	<	0.000201	M	Re	<	0.000201	M	Tm	<	0.000201				
O	Cr	<	0.003021	O	Li	<	0.000107	M	Rh	<	0.000201	M	U	<	0.008058				
M	Cs	<	0.001208	M	Lu	<	0.000201	M	Ru	<	0.000201	M	V	<	0.000201				
M	Cu	<	0.000402	O	Mg		0.000001	O	S	<	0.053950	M	W	<	0.000604				
M	Dy	<	0.000201	M	Mn	<	0.000604	M	Sb	<	0.001208	M	Y	<	0.000201				
M	Er	<	0.000201	M	Mo		0.000009	M	Sc	<	0.000201	M	Yb	<	0.000201				

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 - 200.59 +2 4 Hg(OH)(aq) 1+

Chemical Compatibility - Stable in HNO_3. Avoid basic media forming insoluble carbonate. The sulfide, basic carbonate, oxalate, phosphate, arsenite, arsenate and iodide are insoluble in water.

Stability - 2-100 ppb levels not stable in 1% HNO_3 / LDPE container, stable in 10% HNO_3 packaged in borosilicate glass. 1-100 ppm levels stable in 7% HNO_3 packaged in borosilicate glass. 1000-10,000 ppm solutions are chemically stable for years in 5-10% HNO_3 / LDPE container.

Hg Containing Samples (Preparation and Solution) - Metal (soluble in HNO_3); Oxide (Soluble in HNO_3); Ores and Organic based (The literature has more references to the preparation of Hg containing samples than any other element. Please consult the literature for your specific sample type, since such preparations are prone to error. Or e-mail our technical staff and we will contact you to discuss your particular sample preparation questions in further detail.).

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 202 amu	9 ppt	n/a	186W16O
ICP-OES 184.950 nm	0.03 / 0.005 µg/mL	1	
ICP-OES 194.227 nm	0.03 / 0.005 µg/mL	1	V
ICP-OES 253.652 nm	0.1 / 0.03 µg/mL	1	Ta, Co, Th ,Rh , Fe, U

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

September 22, 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

- September 22, 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 Prepared By:

Uyen Truong
Supervisor, Product Documentation

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

Certified Reference Material CRM

M5192 R: 06/17/22

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

CERTIFIED WEIGHT REPORT:

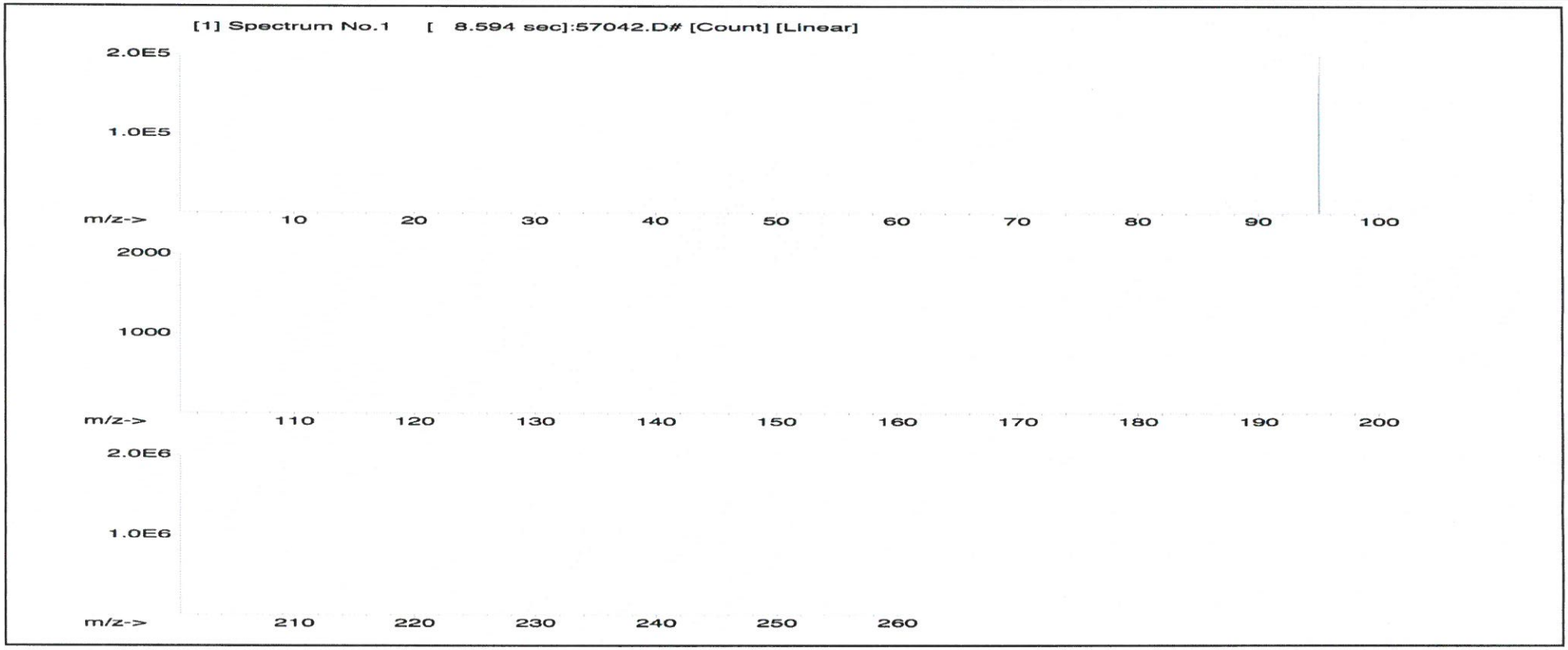
Part Number: 57042
Lot Number: 051722
Description: Molybdenum (Mo)

	Lot #	Solvent:	
	MKBQ8597V	Ammonium hydroxide	
	0.5%	15.0 (mL)	Ammonium hydroxide

Expiration Date: 051725
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	051722
Reviewed By:	Pedro L. Rentas	051722

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 molybdate (Mo)	58142	022222	0.1000	300.0	0.084	1000	10001.0	**1000.0**	**2.1**	13106-76-8	5 mg(Mo)/m3	orl-rat 333 mg/kg	3134



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	<0.02	Ge	<0.02	La	<0.02	Mo	T	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).

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.

V15200 R: 04/24/22 (BP)

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

Certified Reference Material CRM

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

CERTIFIED WEIGHT REPORT:

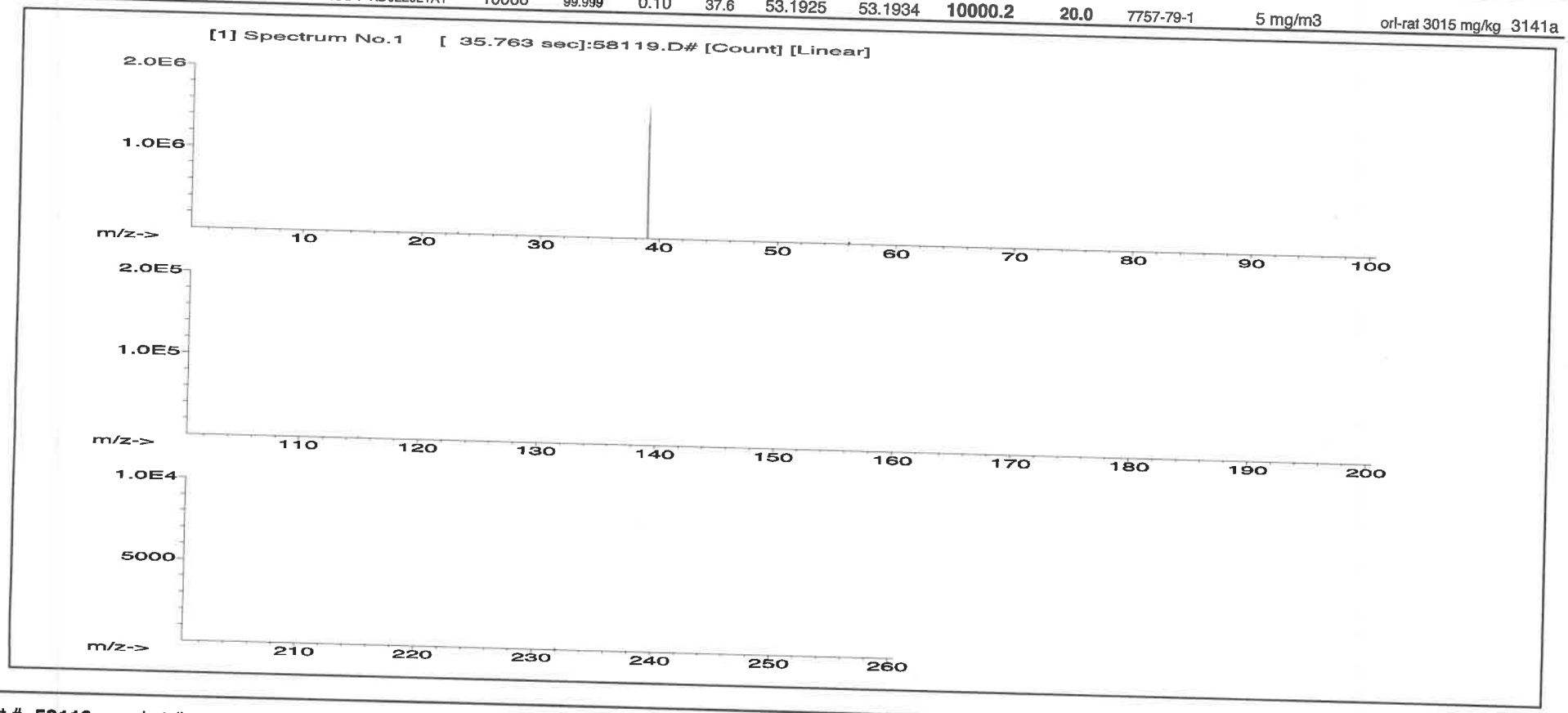
Part Number: 58119
Lot Number: 071122
Description: Potassium (K)

Expiration Date: 071125
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	

Formulated By:	Lawrence Barry	071122
Reviewed By:	Pedro L. Rentas	071122

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	53.1925	53.1934	**10000.2**	**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:

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).

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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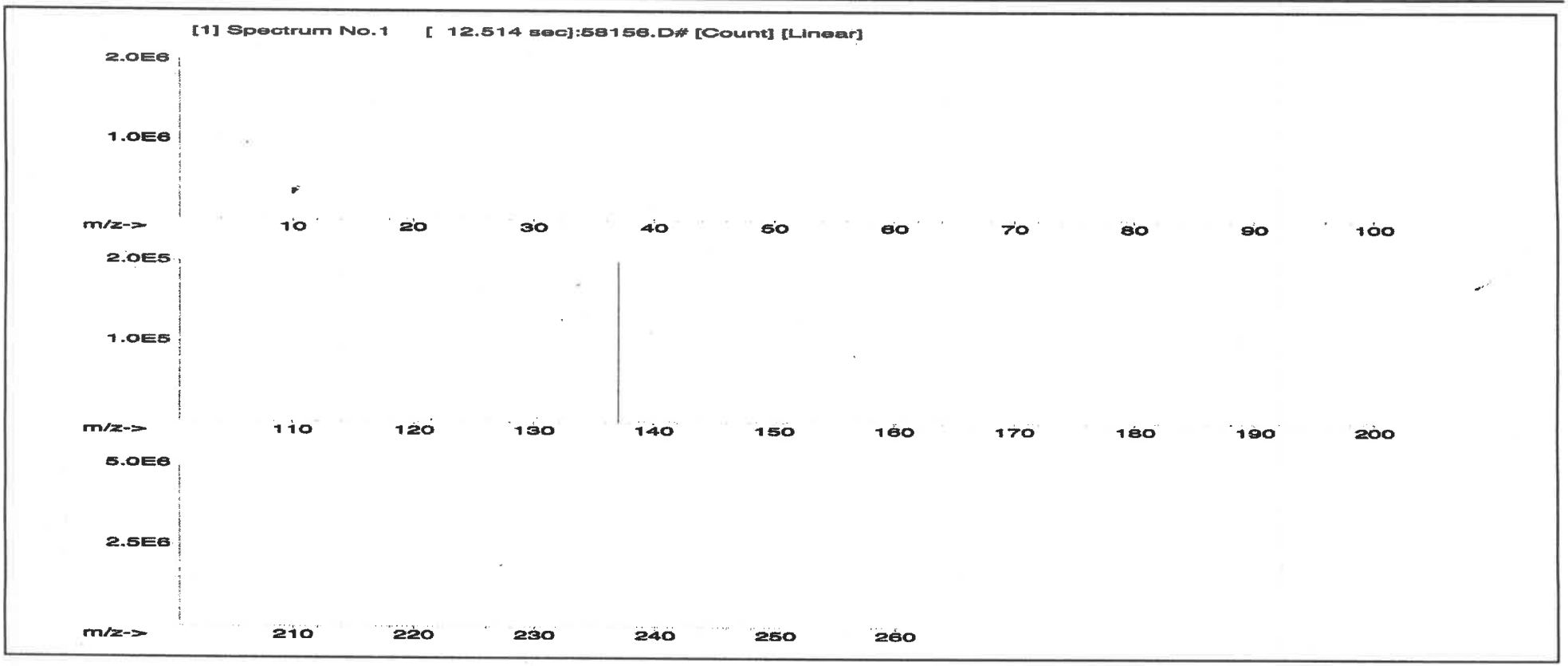
CERTIFIED WEIGHT REPORT:

		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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* 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

M5429 R1 01/26/23 BH

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CERTIFIED WEIGHT REPORT:

Part Number: 57103
Lot Number: 070622
Description: Lithium (Li)

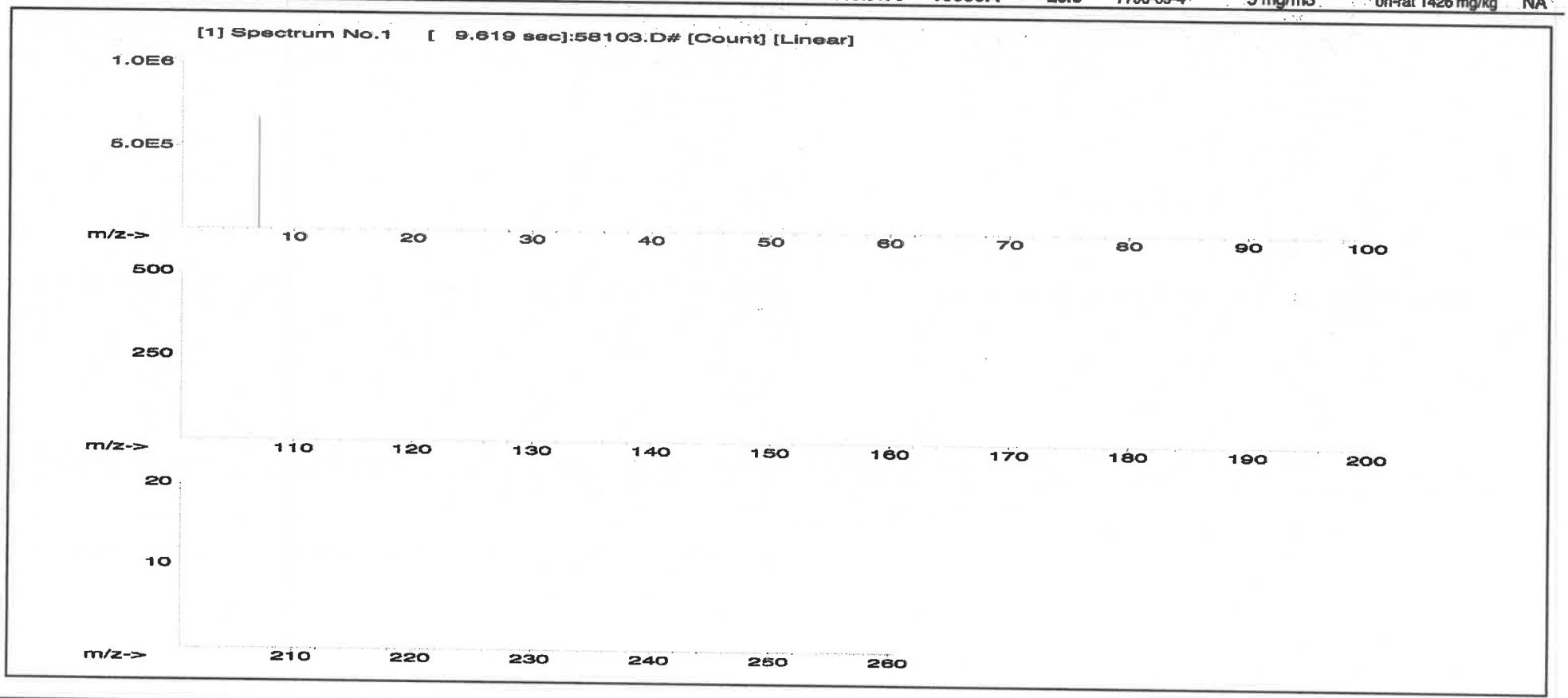
Expiration Date: 070625
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 1000.12

	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.

* 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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IN 5466
R: 03/01/23 BH

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CERTIFIED WEIGHT REPORT:

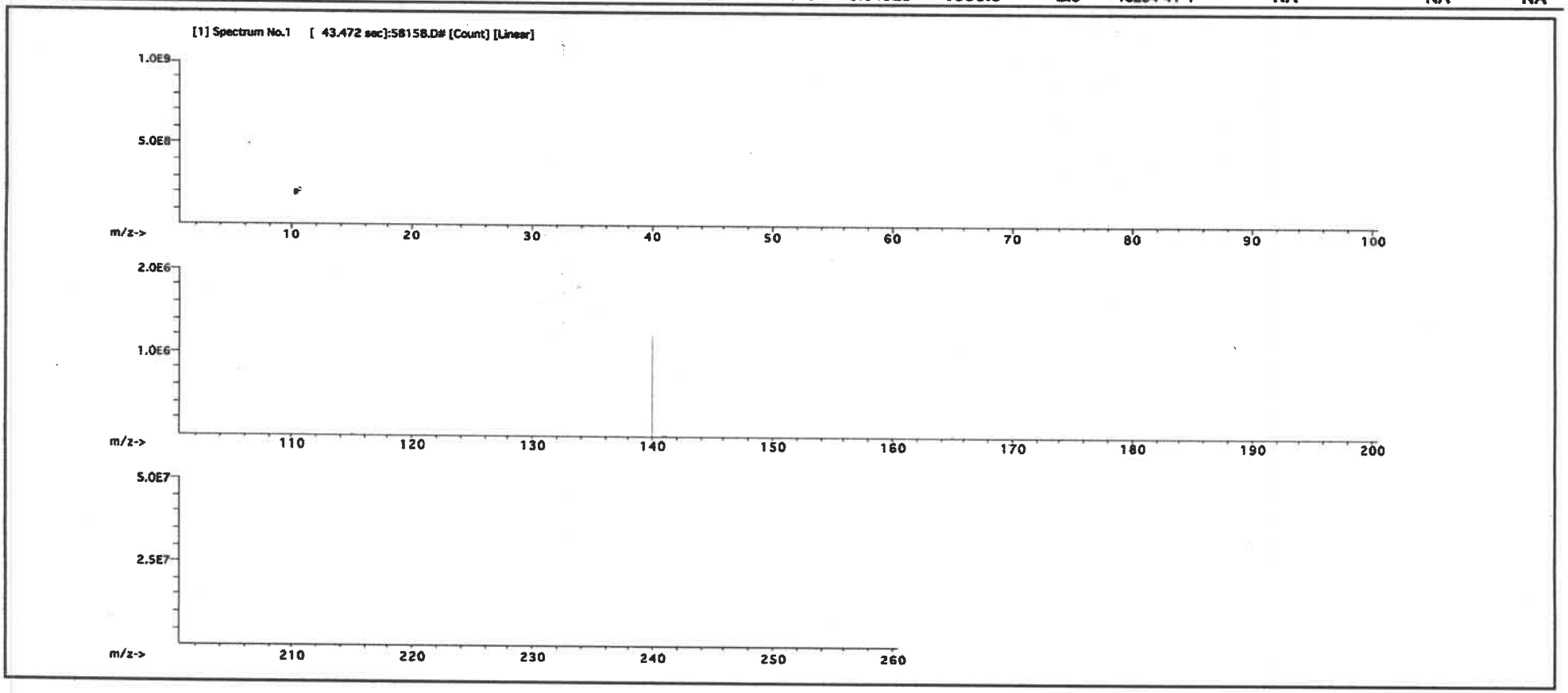
Part Number: 57058
Lot Number: 061322
Description: Cerium (Ce)

Expiration Date: 061325
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 1000.12 5E-05 Balance Uncertainty 0.058 Flask Uncertainty

	Lot #	
Solvent:	20510011	Nitric Acid
2%	20.0 (mL)	Nitric Acid

Formulated By:	Lawrence Barry	061322
Reviewed By:	Pedro L. Rentas	061322

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. Cerium nitrate hexahydrate (Ce)	IN146	Z512CEB1	1000	99.999	0.10	32.8	3.04919	3.04923	1000.0	2.0	10294-41-4	NA	NA	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	<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	T	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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* 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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M5467 R: 03/01/23 (LA)

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CERTIFIED WEIGHT REPORT:

Part Number: 57058
Lot Number: 020623
Description: Cerium (Ce)

Expiration Date: 020626
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

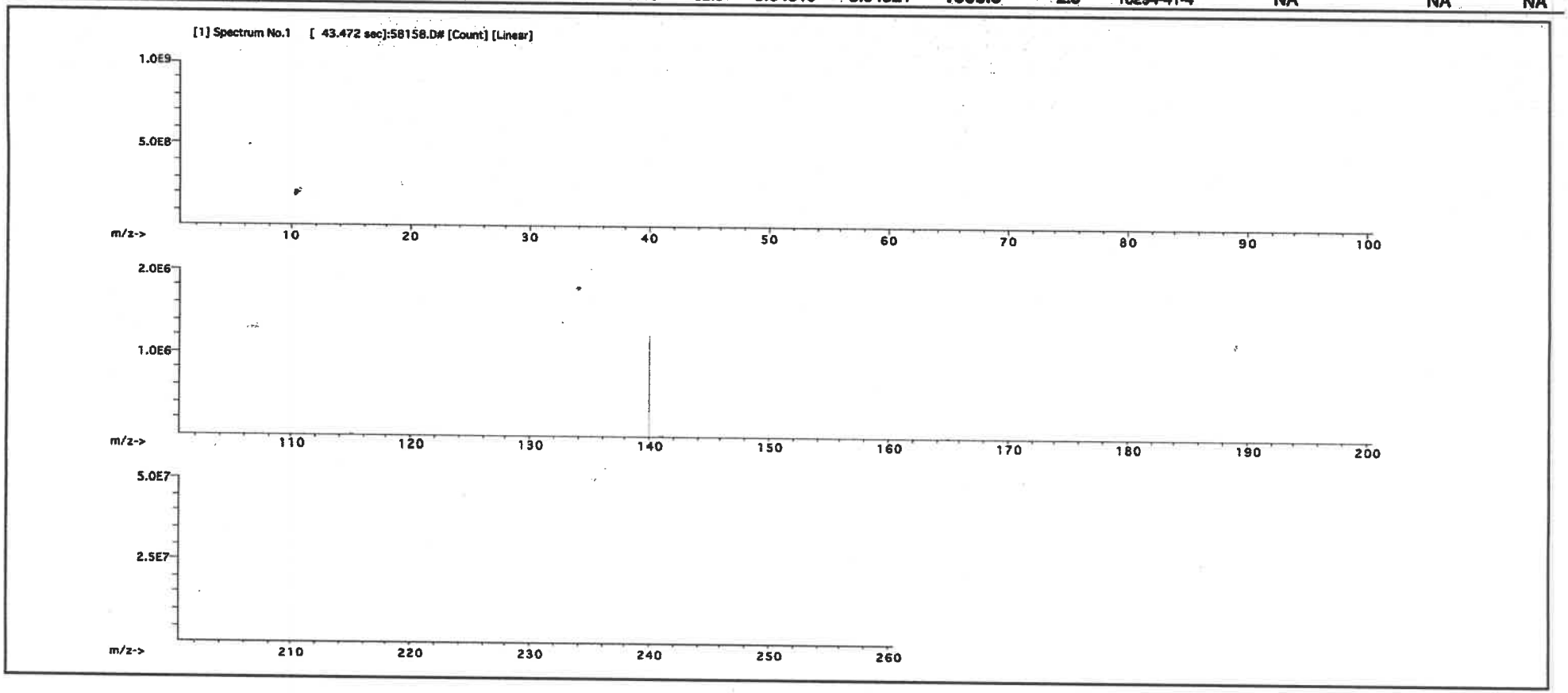
Weight shown below was diluted to (mL): 1000.12 0.058 Flask Uncertainty

		Lot #	
Solvent:	21110221	Nitric Acid	
2%	20.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty

Formulated By:	Lawrence Barry	020623
Reviewed By:	Pedro L. Rentas	020623

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. Cerium nitrate hexahydrate (Ce)	IN146	Z512CEB1	1000	99.999	0.10	32.8	3.04919	3.04921	**1000.0**	**2.0**	10294-41-4	NA	NA	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	<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	T	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

IN5497 - IN5498 R: 03/17/23 BH

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AR-1539 Certificate Number
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CERTIFIED WEIGHT REPORT:

Part Number: 58120
Lot Number: 031523
Description: Calcium (Ca)

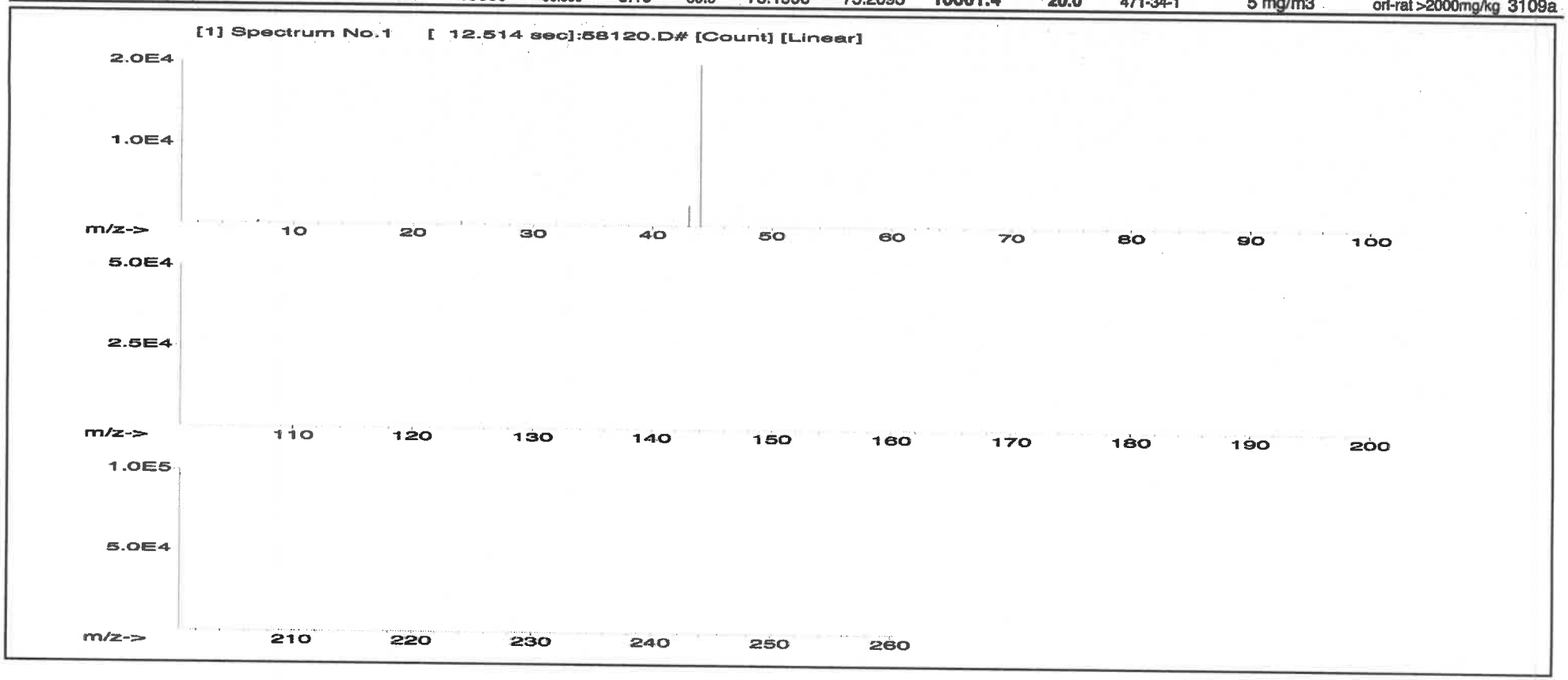
Expiration Date: 031526
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 3000.41 ± 0.058 Flask Uncertainty

		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.

* 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.
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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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M5514 - M5515 R: 03/17/22

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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

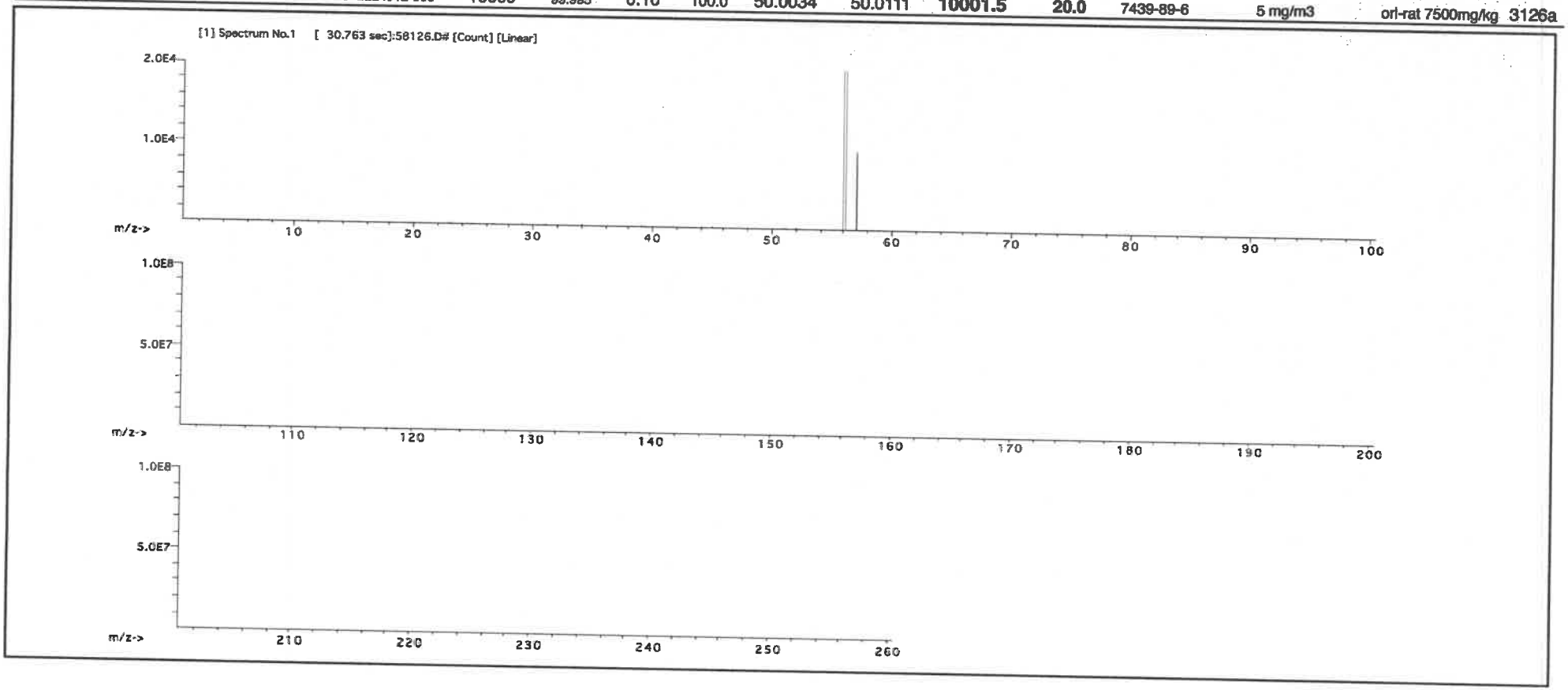
Giovanni Esposito

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:

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* 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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M5658 R ! 8/25/23

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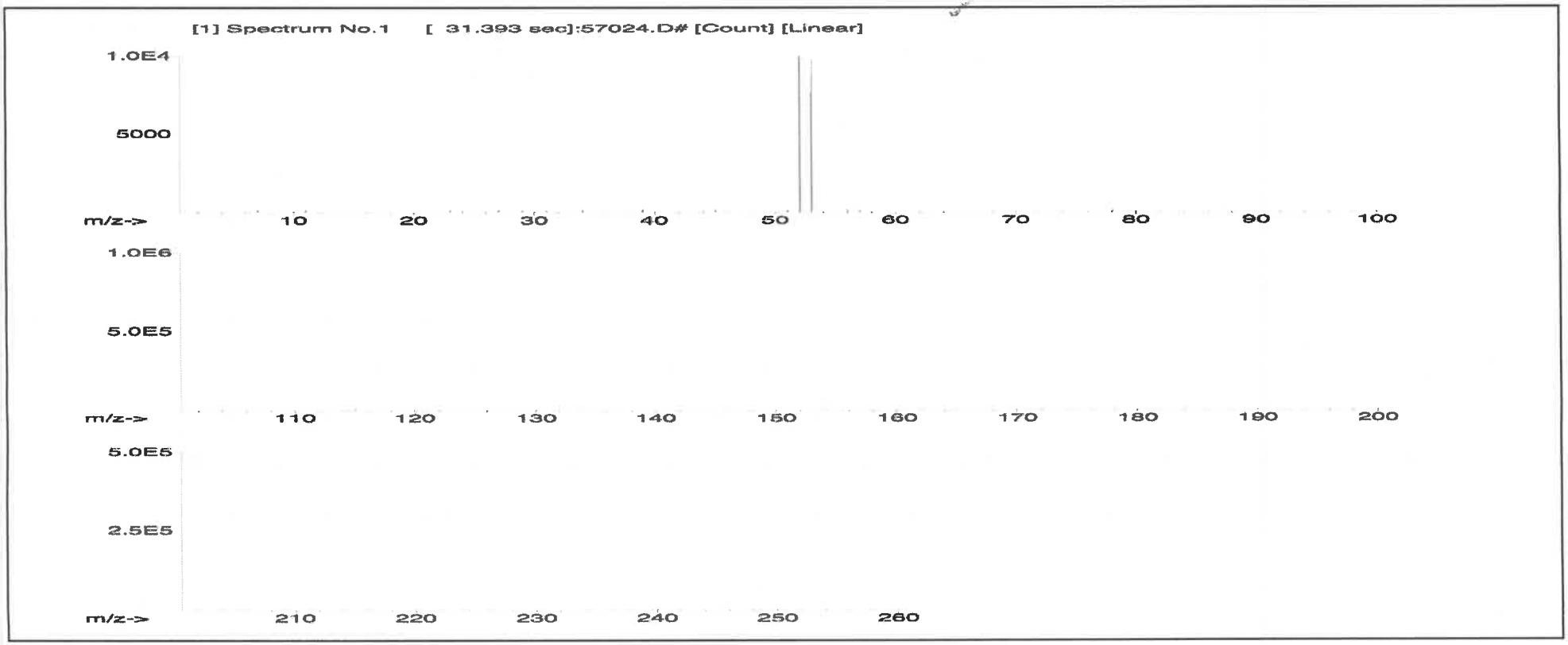
CERTIFIED WEIGHT REPORT:

		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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M5697 R: 10/27/23

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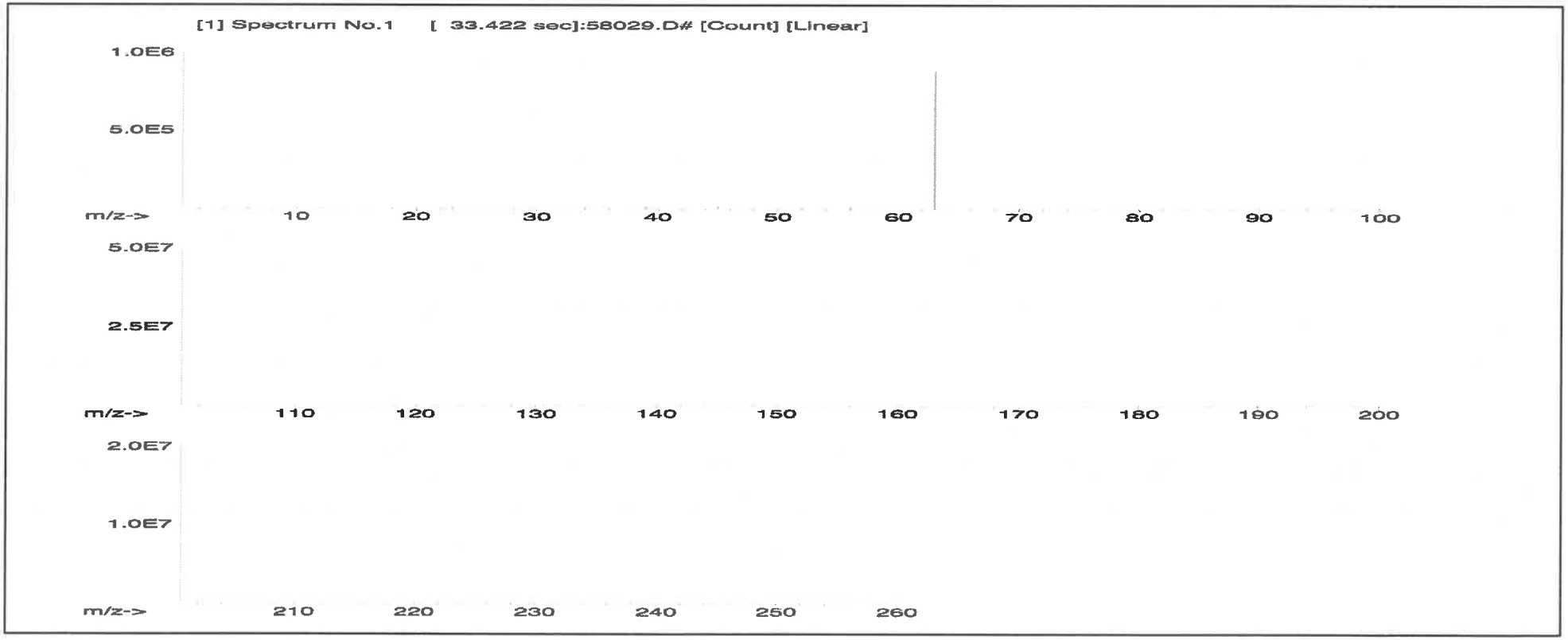
CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**58029**	24002546	Nitric Acid	
Lot Number:	**102523**			
Description:	**Copper (Cu)**			
		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. Copper(II) nitrate trihydrate (Cu)	58129	100223	0.1000	200.0	0.084	1000	10000.1	**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:

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.
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M5648 R: 10/27/23

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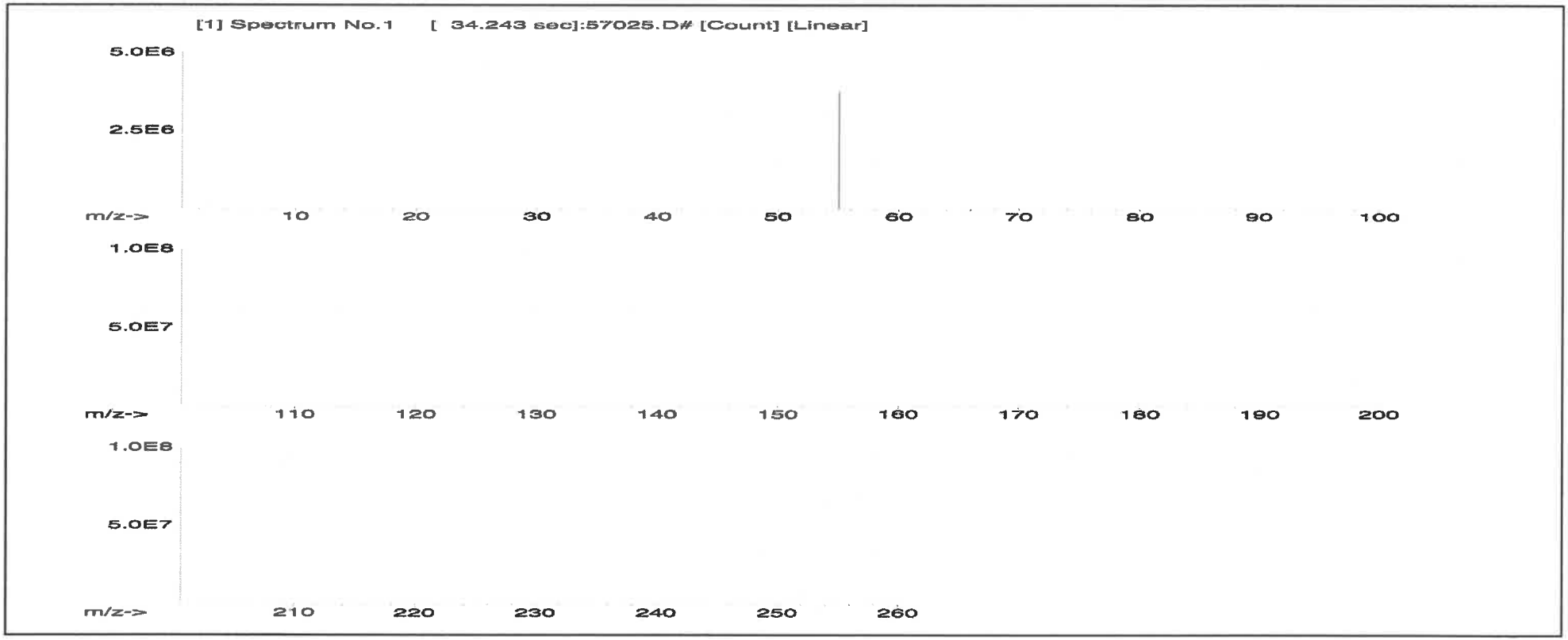
CERTIFIED WEIGHT REPORT:

		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: 12/20/23 M5747

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CERTIFIED WEIGHT REPORT:

Part Number: 57082
Lot Number: 100923
Description: Lead (Pb)

Expiration Date: 100926
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

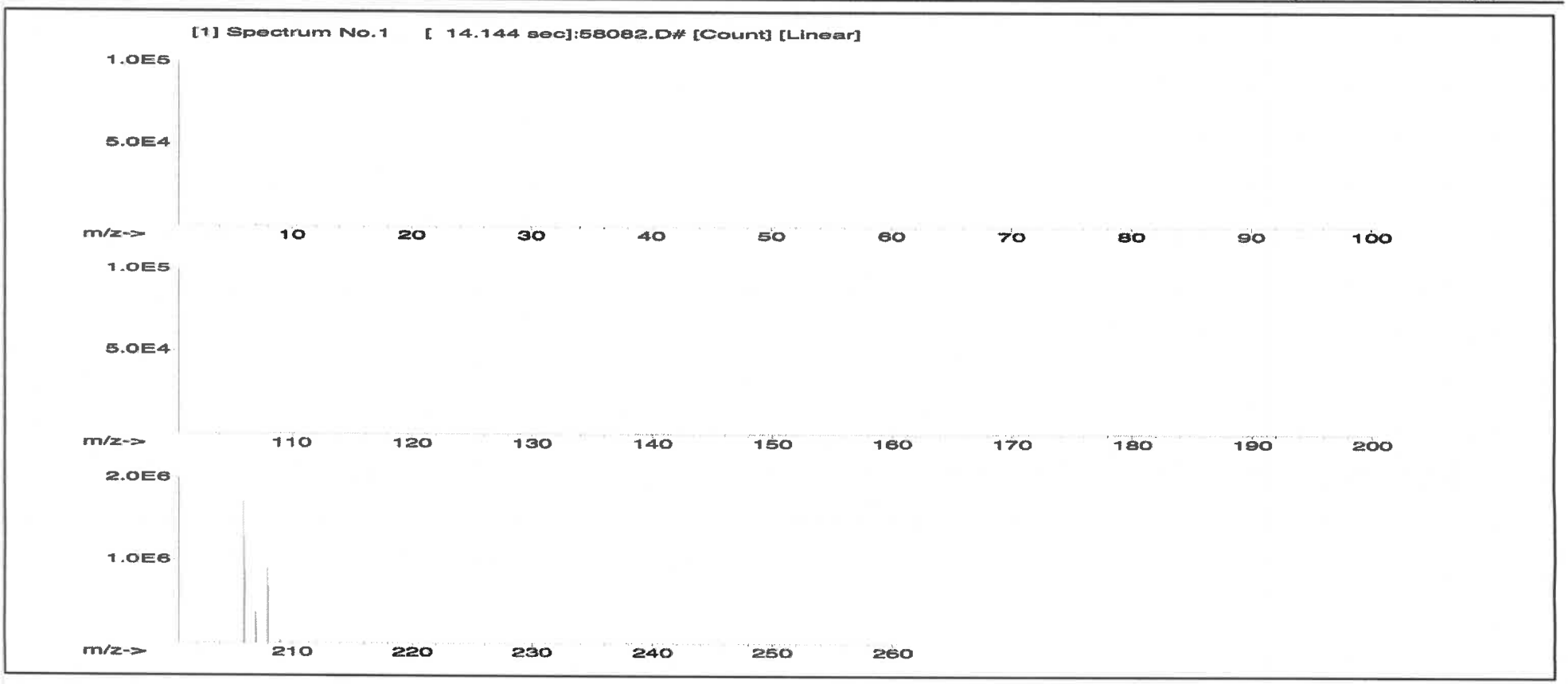
Weight shown below was diluted to (mL): 3000.41 0.06 Flask Uncertainty

	Lot #		
Solvent:	24002546	Nitric Acid	
2%	60.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty

Formulated By:	Lawrence Barry	100923
Reviewed By:	Pedro L. Rentas	100923

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	1000	99.999	0.10	62.5	4.80071	4.80077	**1000.0**	**2.0**	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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R: 12/20/23 M5748

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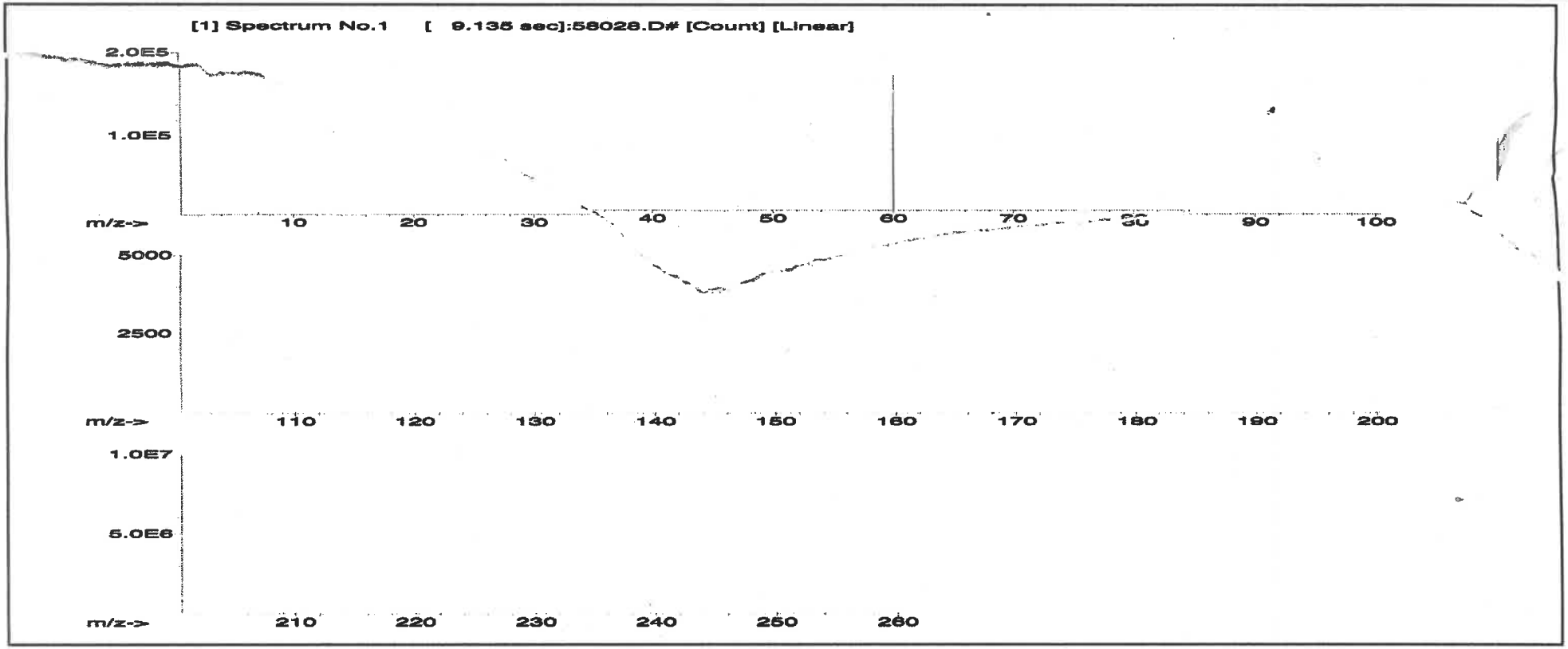
CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**57028**	24002546	Nitric Acid	
Lot Number:	**091223**			
Description:	**Nickel (Ni)**			
		2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	091226			
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	091223
Reviewed By:	Pedro L. Rentas	091223

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. Nickel(II) nitrate hexahydrate (Ni)	58128	062023	0.1000	200.0	0.084	1000	10000.4	**1000.0**	**2.2**	13478-00-7	1 mg/m3	orl-rat 1620 mg/kg	3136



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	T	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.
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* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
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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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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

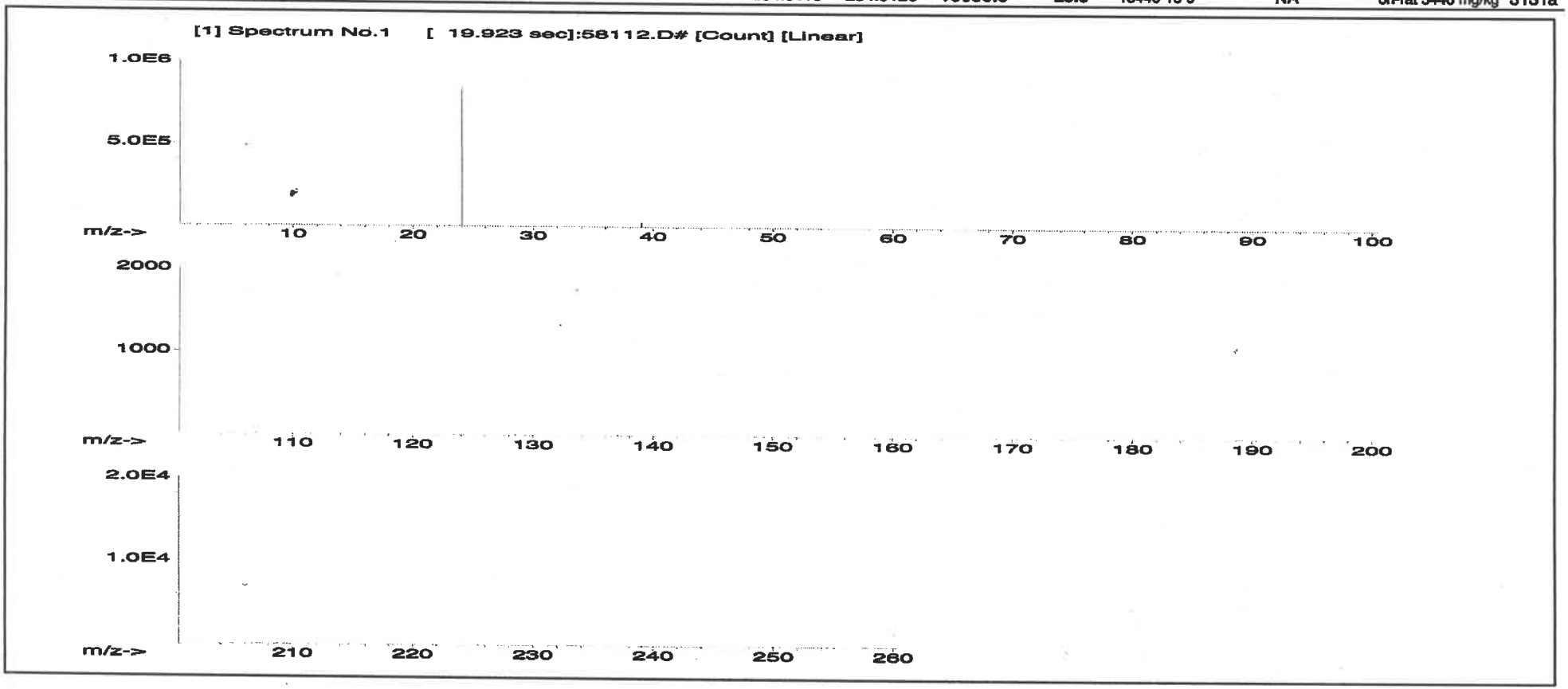
Weight shown below was diluted to (mL): 2000.02 0.058 Flask Uncertainty

	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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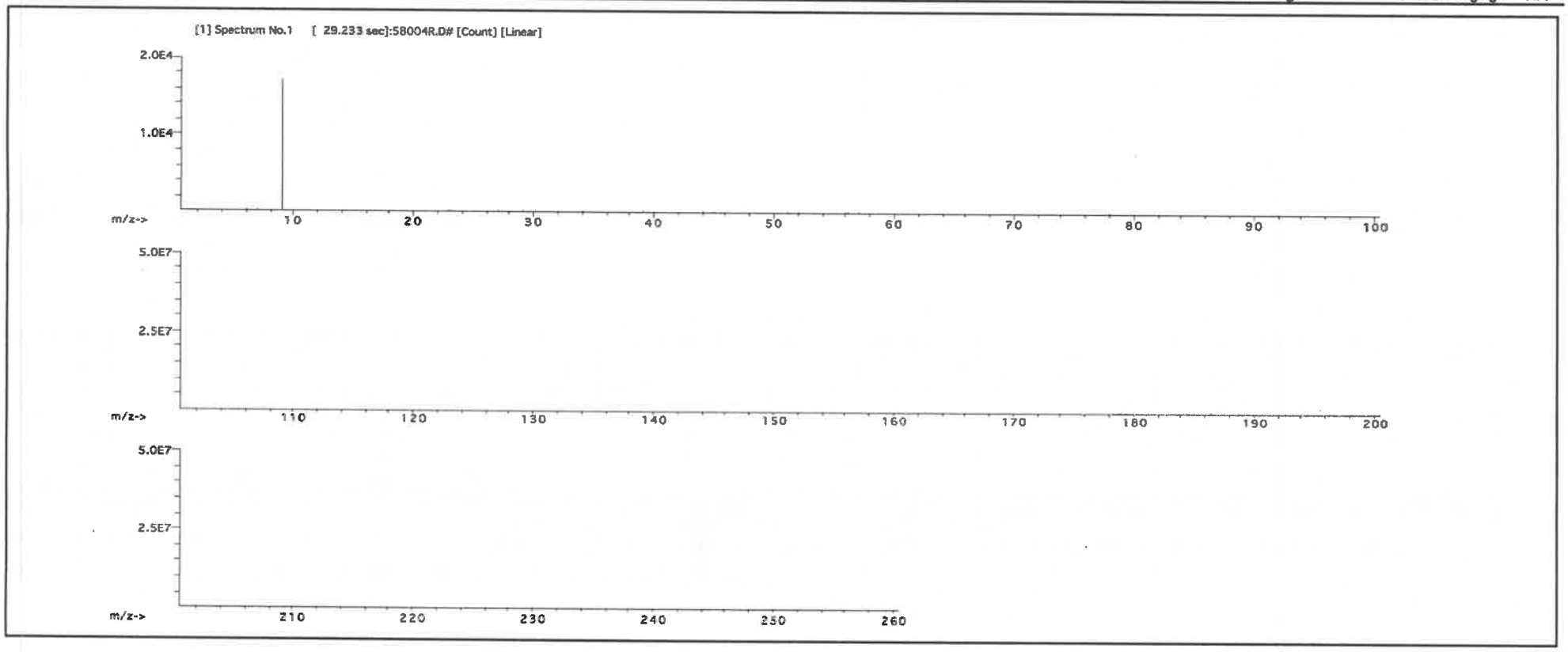
CERTIFIED WEIGHT REPORT:

		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.

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CERTIFIED WEIGHT REPORT:

Part Number: 57050
Lot Number: 071123
Description: Tin (Sn)

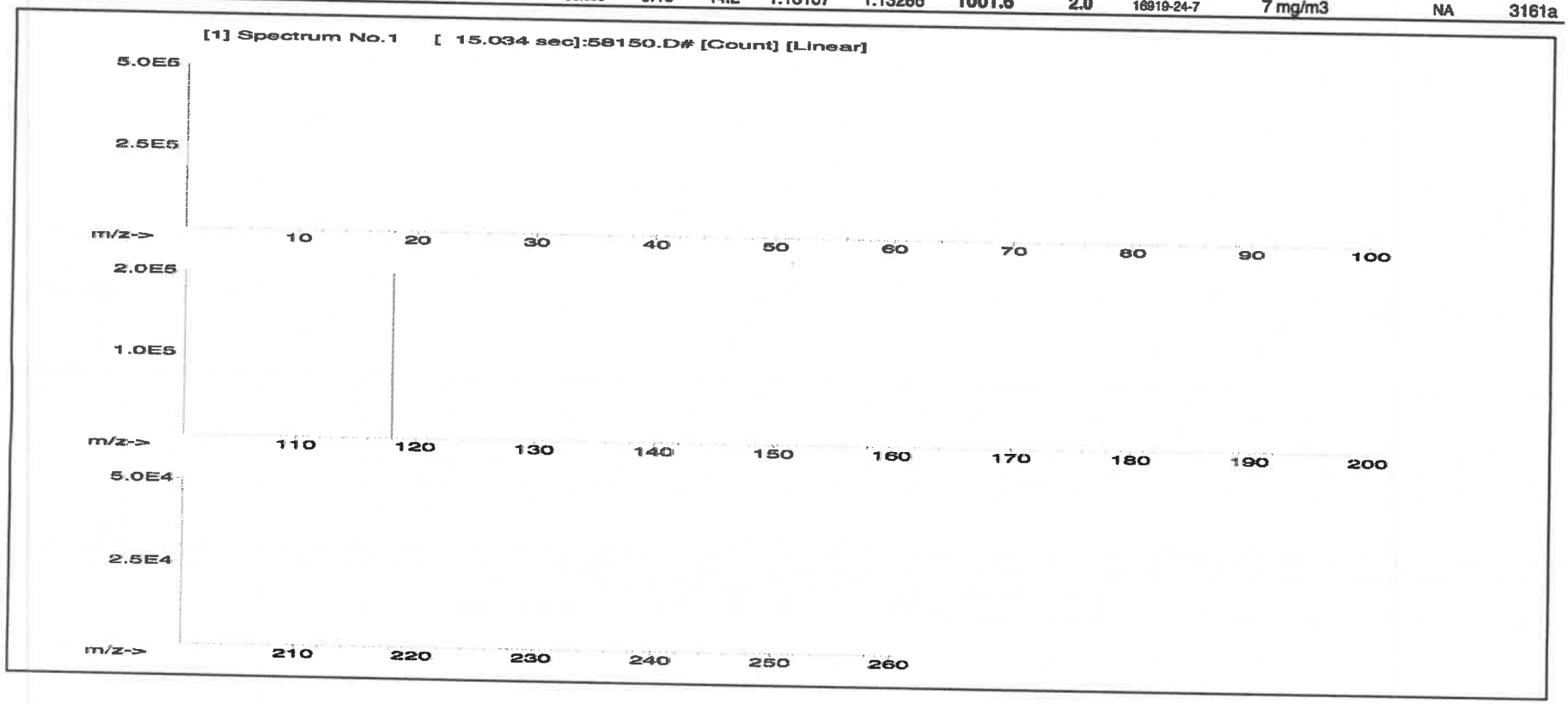
Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 499.93

	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:

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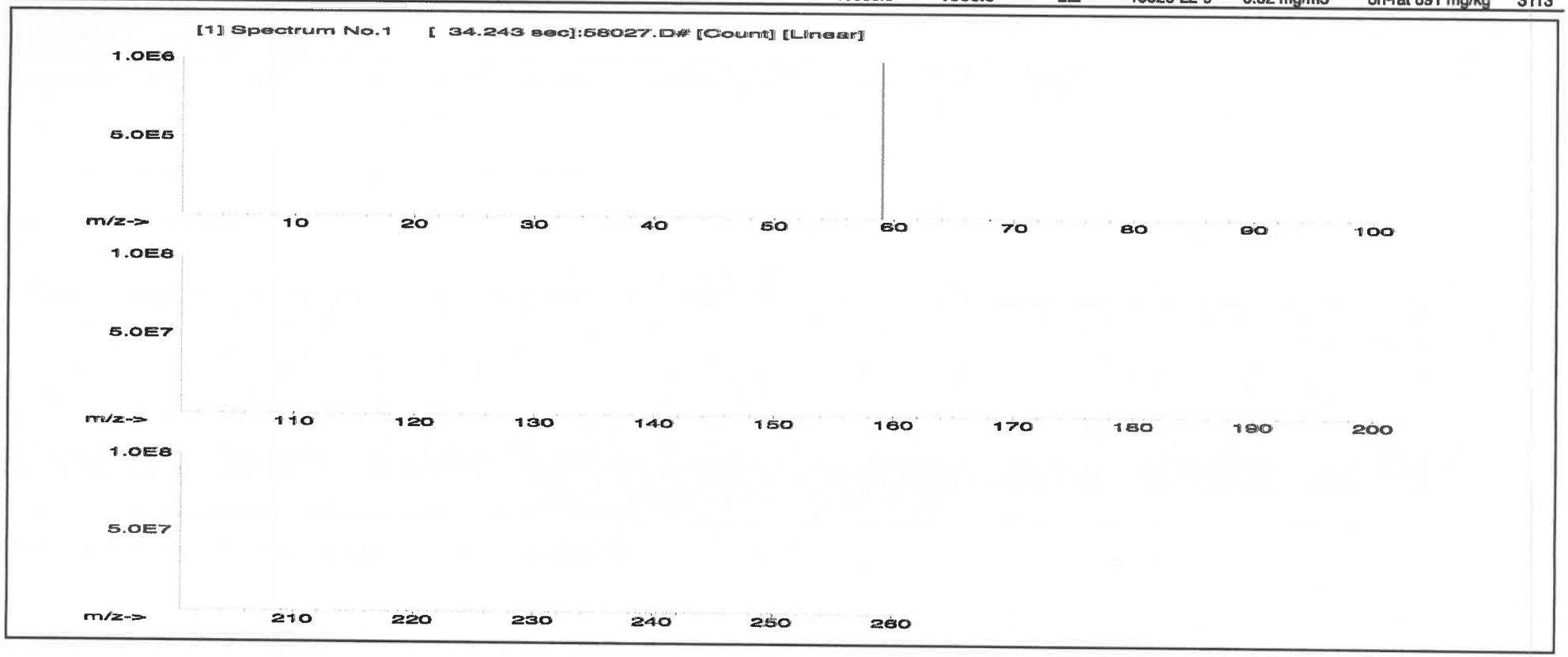
CERTIFIED WEIGHT REPORT:

		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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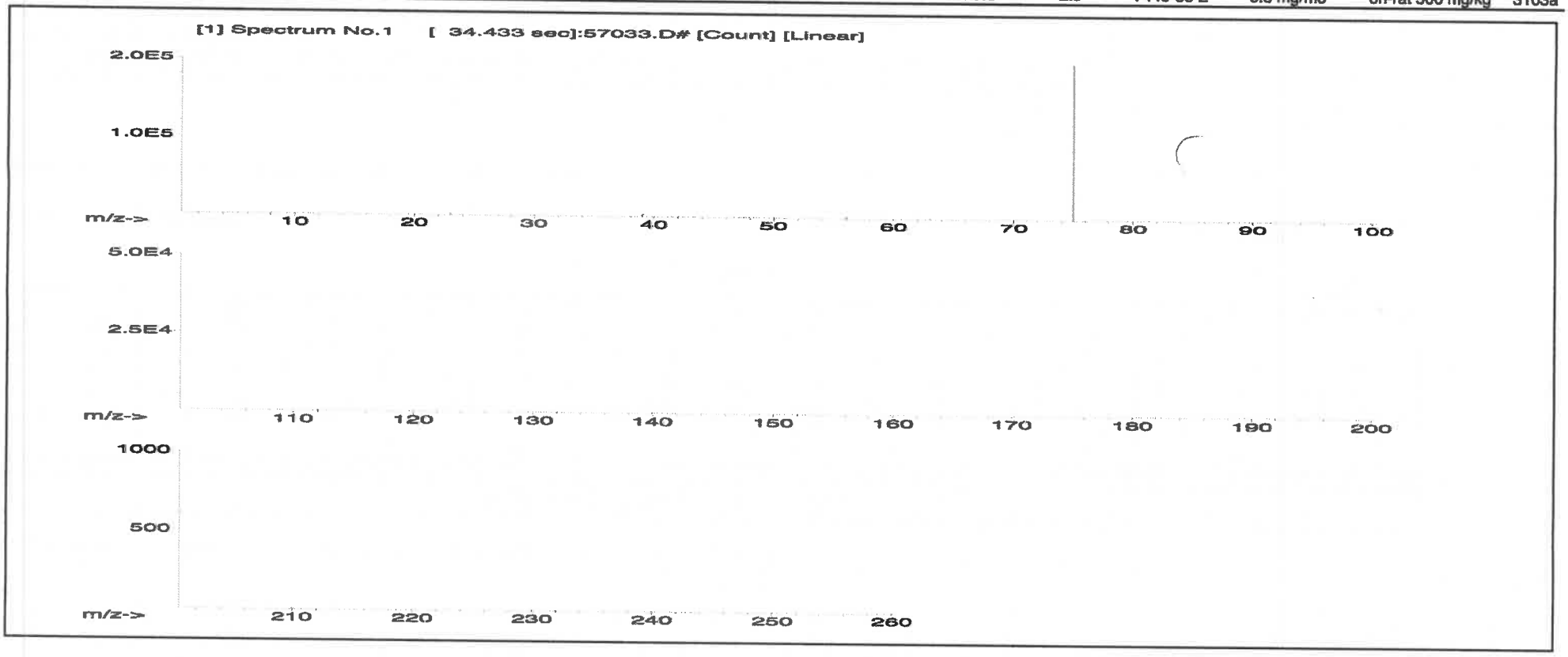
CERTIFIED **WEIGHT** REPORT:

		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:

Certified by:

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

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A: 02/09/24 M.5814

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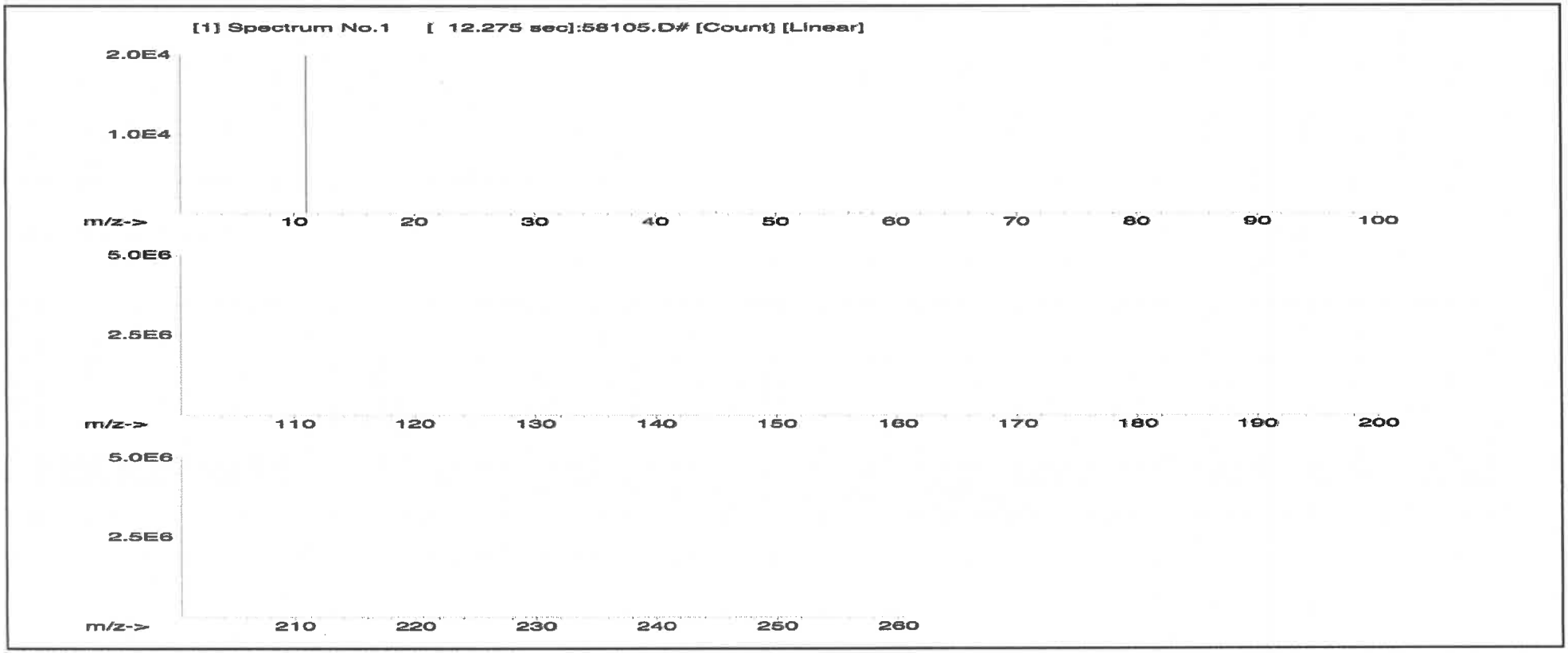
CERTIFIED WEIGHT REPORT:

Part Number:	**57005**		**Solvent:**	MKBQ8597V	Ammonium hydroxide
Lot Number:	**071123**				
Description:	**Boron (B)**		2.0%	40.0 (mL)	Ammonium hydroxide
Expiration Date:	071126				
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):	1999.48	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. Boric acid (B)	IN018	BV092016A1	1000	99.9999	0.10	17.3	11.55772	11.56201	**1000.4**	**2.0**	10043-35-3	2 mg/m3	orl-rat 2660 mg/kg	3107



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	<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	T	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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* 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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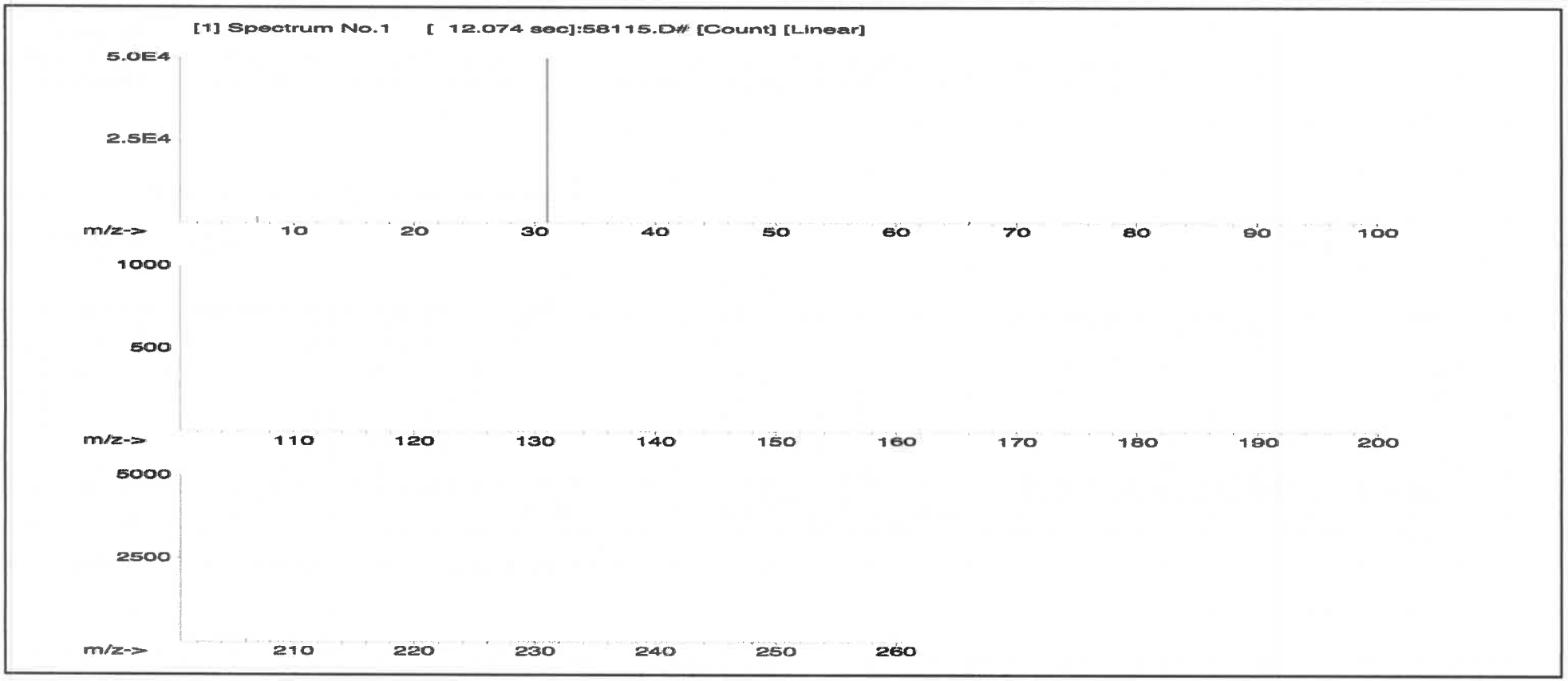
CERTIFIED WEIGHT REPORT:

			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:

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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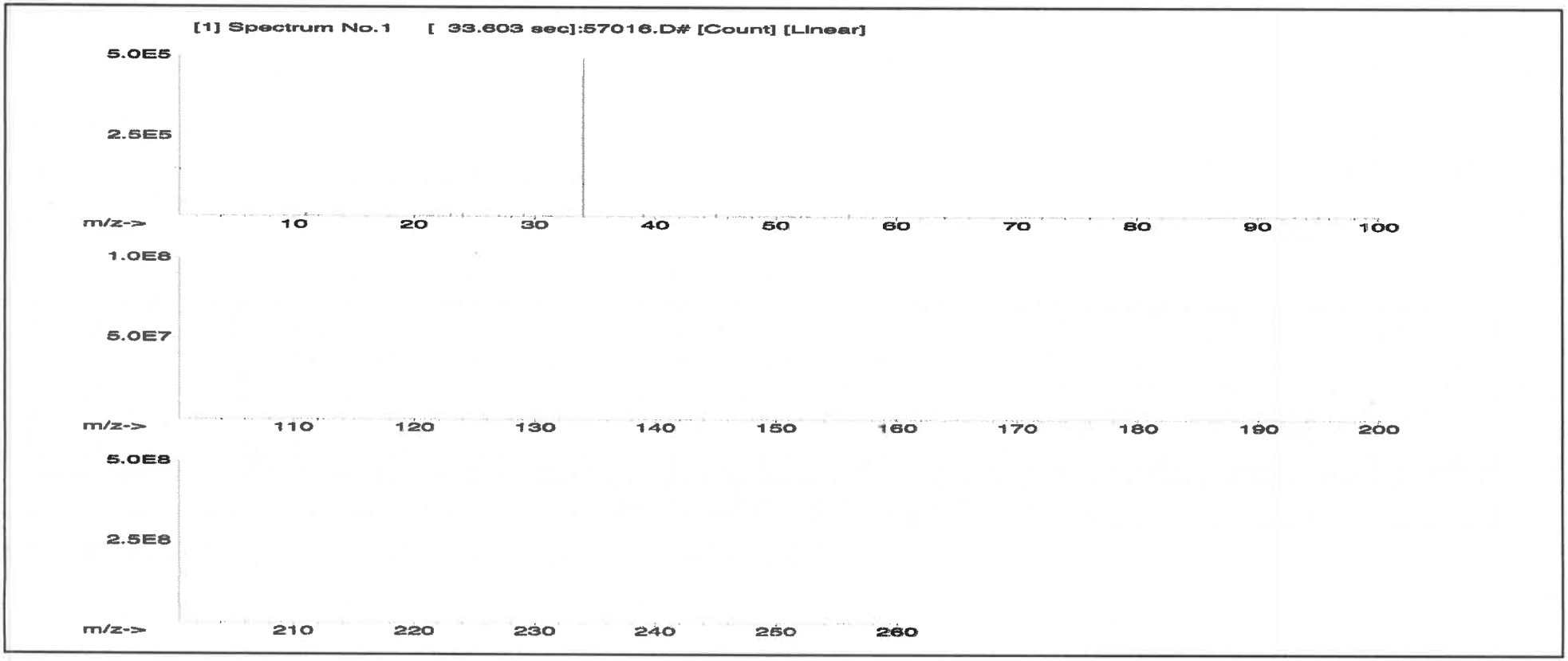
CERTIFIED WEIGHT REPORT:

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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CERTIFIED WEIGHT REPORT:

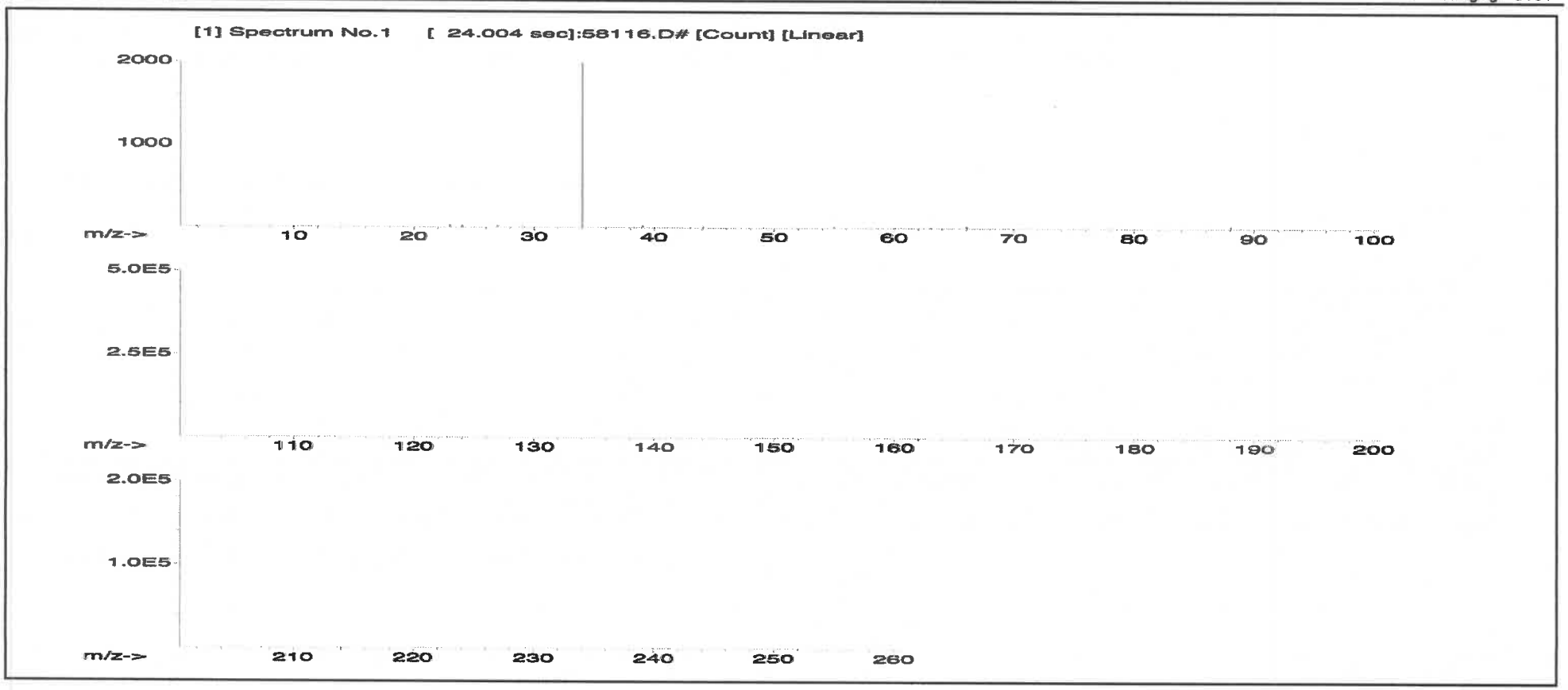
Part Number: 57116
Lot Number: 071123
Description: Sulfur (S)

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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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

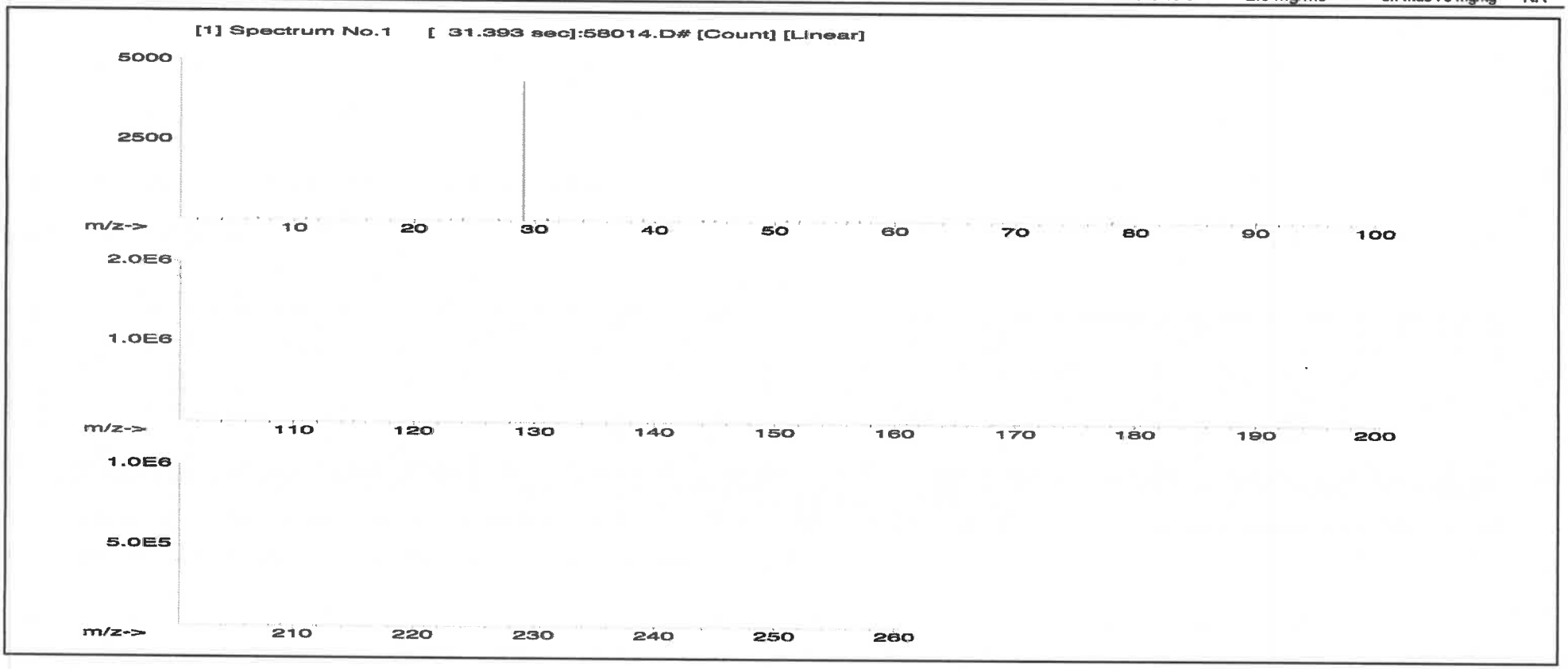
Aleah O'Brady

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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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

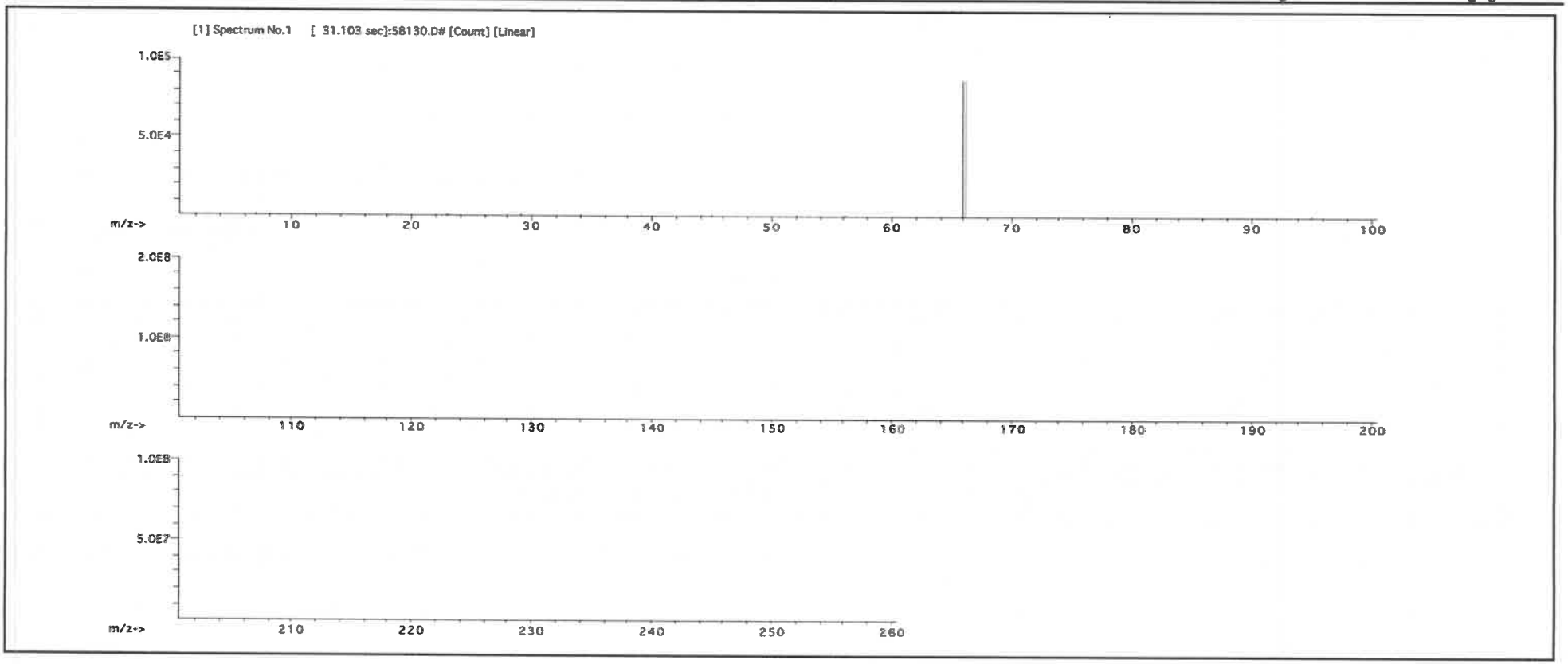
Weight shown below was diluted to (mL): 3000.4 0.06 Flask Uncertainty

		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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Certified Reference Material CRM

R: 02/09/24 M5820

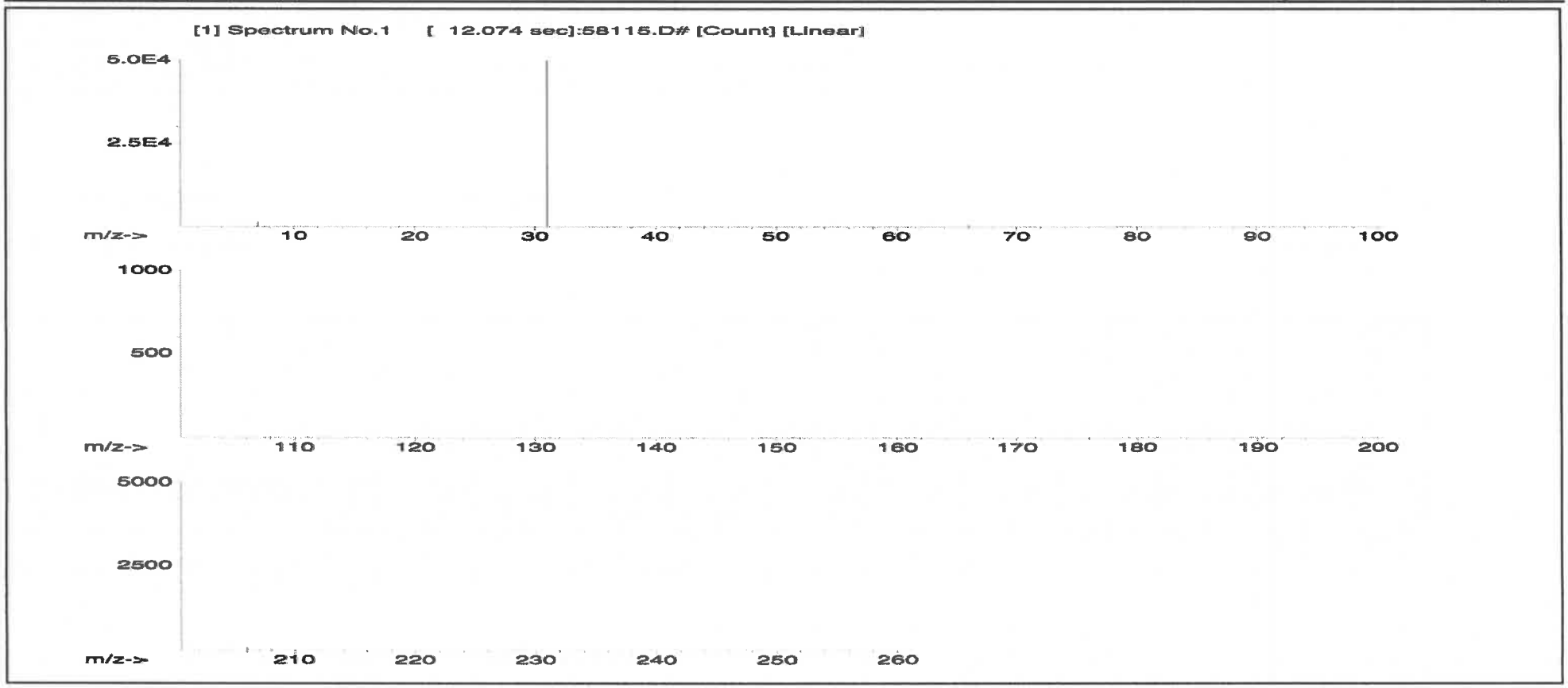
ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

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.

* 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.

MSS28 - 37 MB MSS53 MB 3/30/23

Contains Metals in Dilute Acidic or Cyanide in Basic Aqueous Solutions
HAZARDOUS MATERIAL

Safety Data Sheets Available Upon Request

(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.

Instructions for QATS Reference Material: *Inorganic ICV Solutions*

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

INORGANIC VENTURES
Refine your results. Redefine your industry.

Certificate of Analysis

M5959 R: 6/14/24.

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 863.01
ACCREDITED Reference Material Producer Certificate 863.02

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 (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{1/2}$ 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 (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

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

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

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

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

Certified Reference Material CRM

M5962 R! 06/14/24.

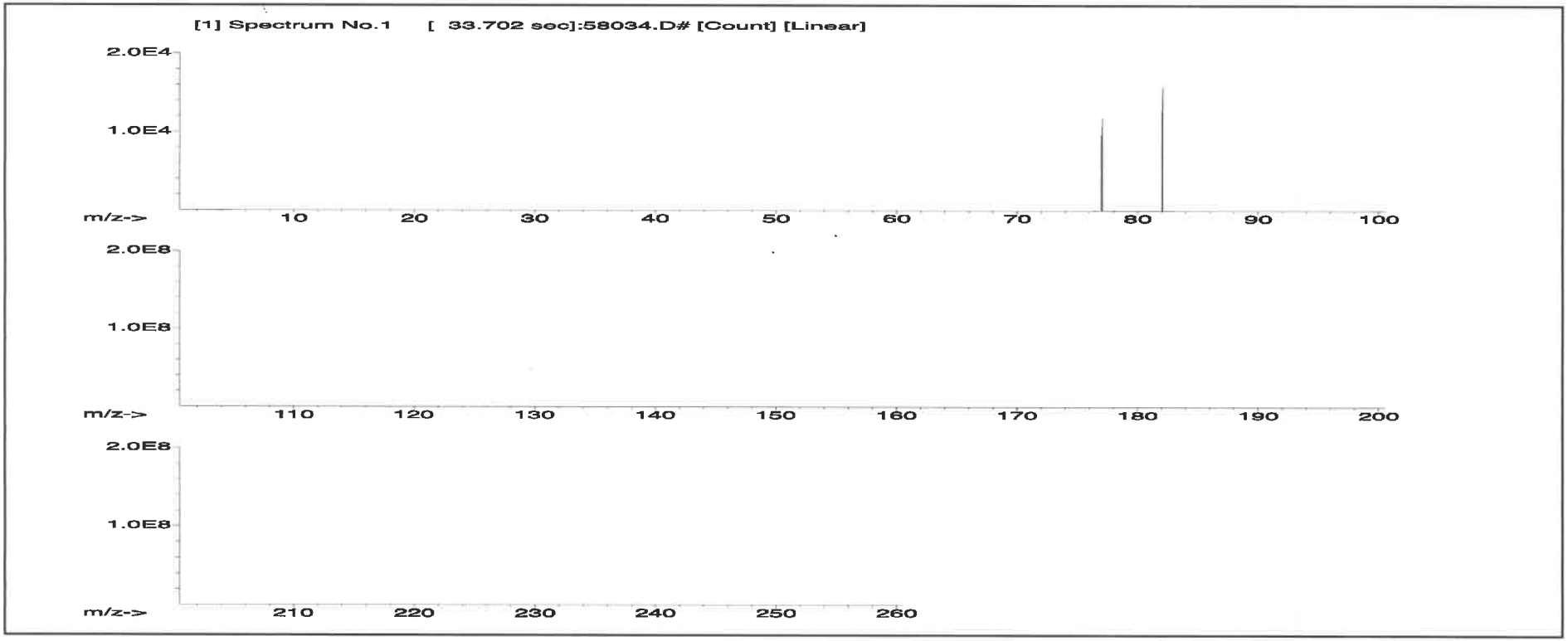
ANAB ISO 17034 Accredited
AR-1539 Certificate Number
https://Absolutestandards.com

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:

* 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).

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

Certified Reference Material CRM

M5970, M5971 R: 7/01/24

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

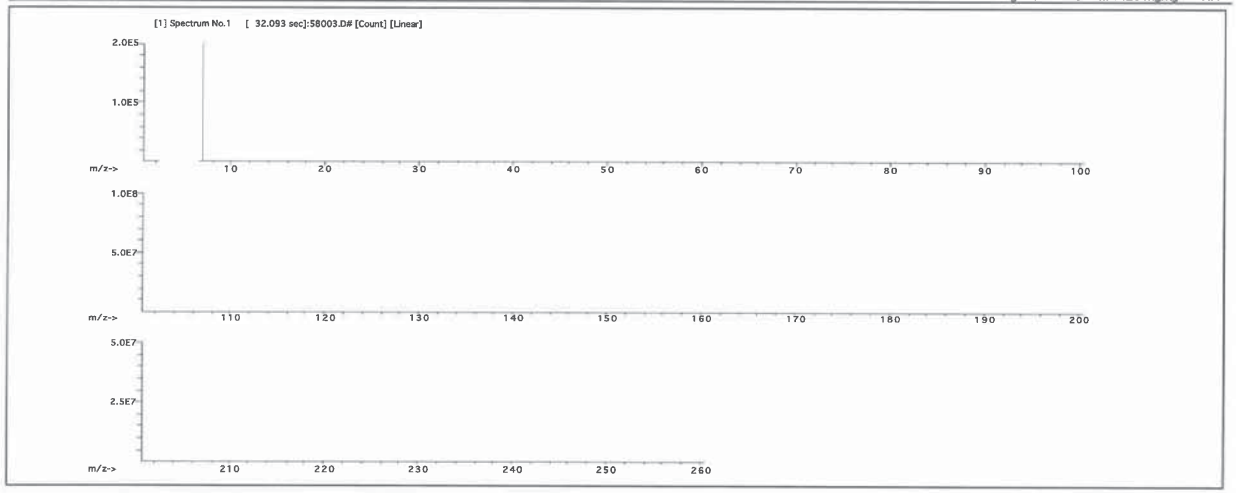
CERTIFIED WEIGHT REPORT:

		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).

M5978, M5979

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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:	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

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

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

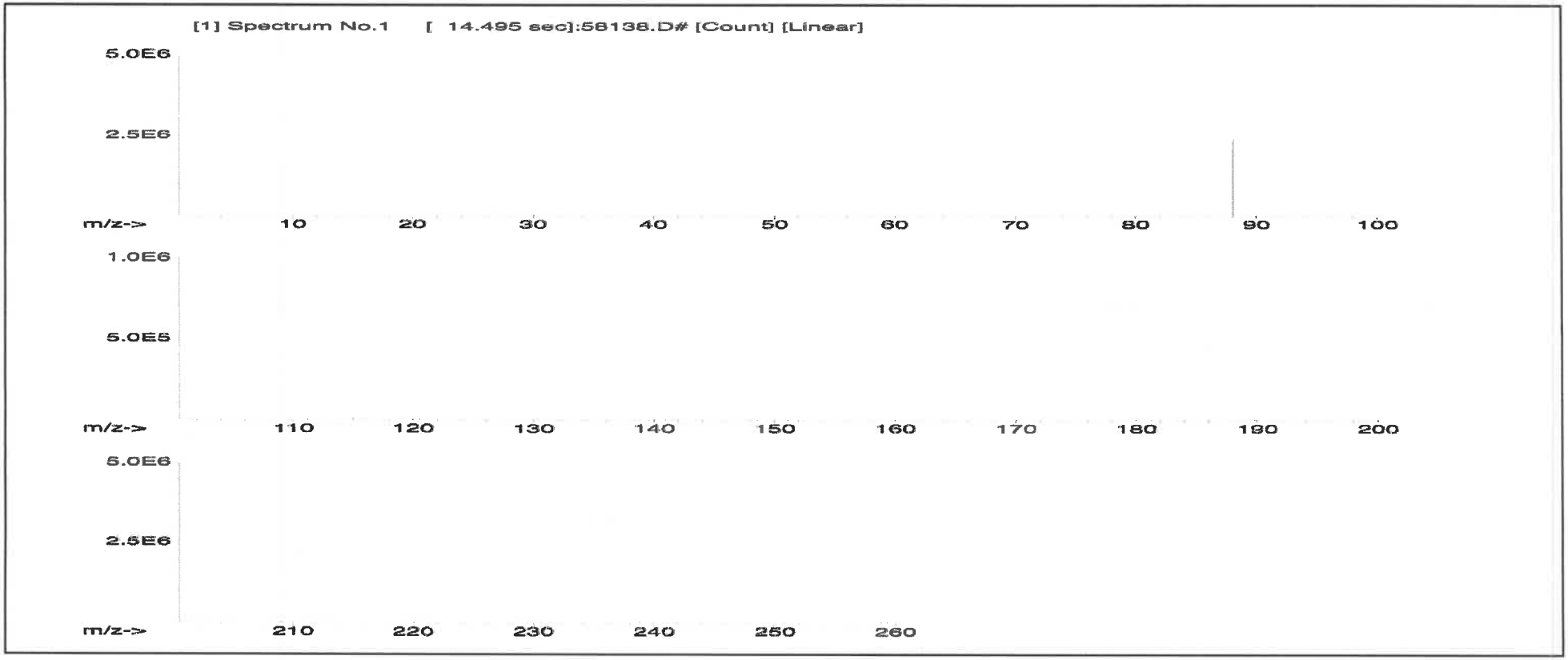
45982 R: 6/11/24

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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1.0 ACCREDITATION / REGISTRATION

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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

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

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:

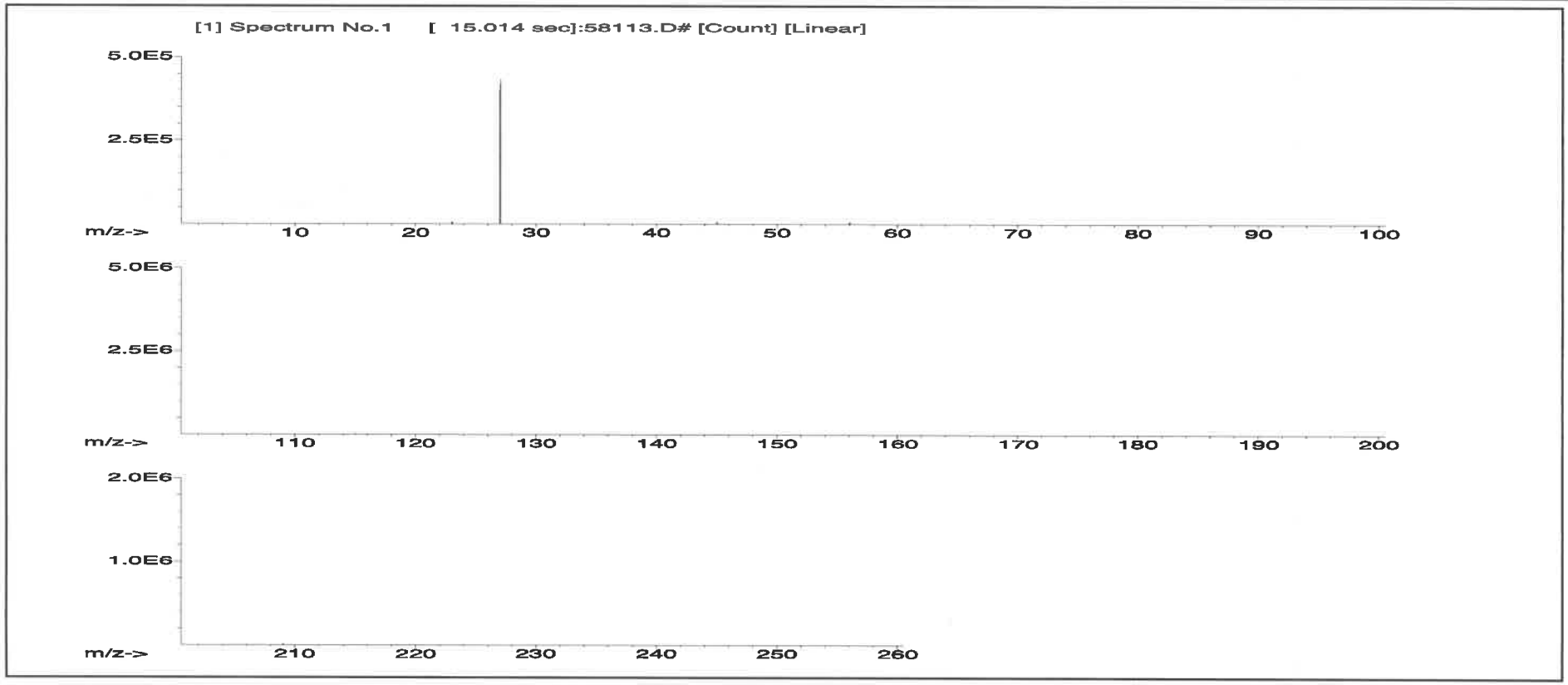
Part Number:	**58113**		**Solvent:**	20510011	Nitric Acid
Lot Number:	**011623**				
Description:	**Aluminum (Al)**				
			2%	40.0 (mL)	Nitric Acid
Expiration Date:	011626				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**10000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
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

avantor™ | J.T.Baker®

R → 10/13/24
Met dig

M 6/21

Material No.: 9530-33
Batch No.: 0000275677
Manufactured Date: 2020/12/16
Retest Date: 2025/12/15
Revision No: 1

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
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
ACS - Free Chlorine (as Cl_2)	<= 0.5 ppm	< 0.5
Phosphate (PO_4)	<= 0.05 ppm	< 0.03
Sulfate (SO_4)	<= 0.5 ppm	< 0.3
Sulfite (SO_3)	<= 0.8 ppm	0.3
Ammonium (NH_4)	<= 3 ppm	< 1
Trace Impurities - Arsenic (As)	<= 0.010 ppm	< 0.003
Trace Impurities - Aluminum (Al)	<= 10.0 ppb	< 0.2
Arsenic and Antimony (as As)	<= 5 ppb	< 3
Trace Impurities - Barium (Ba)	<= 1.0 ppb	< 0.2
Trace Impurities - Beryllium (Be)	<= 1.0 ppb	< 0.2
Trace Impurities - Bismuth (Bi)	<= 10.0 ppb	< 1.0
Trace Impurities - Boron (B)	<= 20.0 ppb	< 5.0
Trace Impurities - Cadmium (Cd)	<= 1.0 ppb	< 0.3
Trace Impurities - Calcium (Ca)	<= 50.0 ppb	29.7
Trace Impurities - Chromium (Cr)	<= 1.0 ppb	< 0.4
Trace Impurities - Cobalt (Co)	<= 1.0 ppb	< 0.3
Trace Impurities - Copper (Cu)	<= 1.0 ppb	< 0.1
Trace Impurities - Gallium (Ga)	<= 1.0 ppb	< 0.2

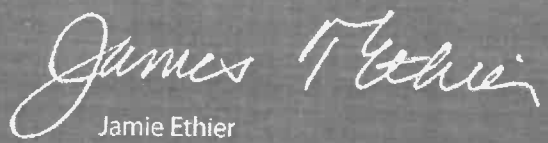
For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700

Material No.: 9530-33
Batch No.: 0000275677

Test	Specification	Result
Trace Impurities - Germanium (Ge)	<= 3.0 ppb	< 2.0
Trace Impurities - Gold (Au)	<= 4.0 ppb	< 0.2
Heavy Metals (as Pb)	<= 100 ppb	< 50
Trace Impurities - Iron (Fe)	<= 15.0 ppb	<1
Trace Impurities - Lead (Pb)	<= 1.0 ppb	< 0.5
Trace Impurities - Lithium (Li)	<= 1.0 ppb	0.2
Trace Impurities - Magnesium (Mg)	<= 10.0 ppb	0.4
Trace Impurities - Manganese (Mn)	<= 1.0 ppb	< 0.4
Trace Impurities - Mercury (Hg)	<= 0.5 ppb	0.1
Trace Impurities - Molybdenum (Mo)	<= 10.0 ppb	< 5.0
Trace Impurities - Nickel (Ni)	<= 4.0 ppb	< 0.3
Trace Impurities - Niobium (Nb)	<= 1.0 ppb	< 0.2
Trace Impurities - Potassium (K)	<= 9.0 ppb	< 2.0
Trace Impurities - Selenium (Se), For Information Only	ppb	1.0
Trace Impurities - Silicon (Si)	<= 100.0 ppb	< 10.0
Trace Impurities - Silver (Ag)	<= 1.0 ppb	< 0.3
Trace Impurities - Sodium (Na)	<= 100.0 ppb	< 5.0
Trace Impurities - Strontium (Sr)	<= 1.0 ppb	< 0.2
Trace Impurities - Tantalum (Ta)	<= 1.0 ppb	< 0.9
Trace Impurities - Thallium (Tl)	<= 5.0 ppb	< 2.0
Trace Impurities - Tin (Sn)	<= 5.0 ppb	< 0.8
Trace Impurities - Titanium (Ti)	<= 1.0 ppb	0.2
Trace Impurities - Vanadium (V)	<= 1.0 ppb	< 0.2
Trace Impurities - Zinc (Zn)	<= 5.0 ppb	0.3
Trace Impurities - Zirconium (Zr)	<= 1.0 ppb	< 0.1

For Laboratory, Research or Manufacturing Use
Product Information (not specifications):
Appearance (clear, fuming liquid)
Meets ACS Specifications

Country of Origin: US
Packaging Site: Phillipsburg Mfg Ctr & DC



Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700

Nitric Acid 69%
CMOS

avantor™ | J.T.Baker®

R -> 11/12/24

M6126

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

For Microelectronic Use

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

Jamie Croak
Director Quality Operations, Bioscience Production

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

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

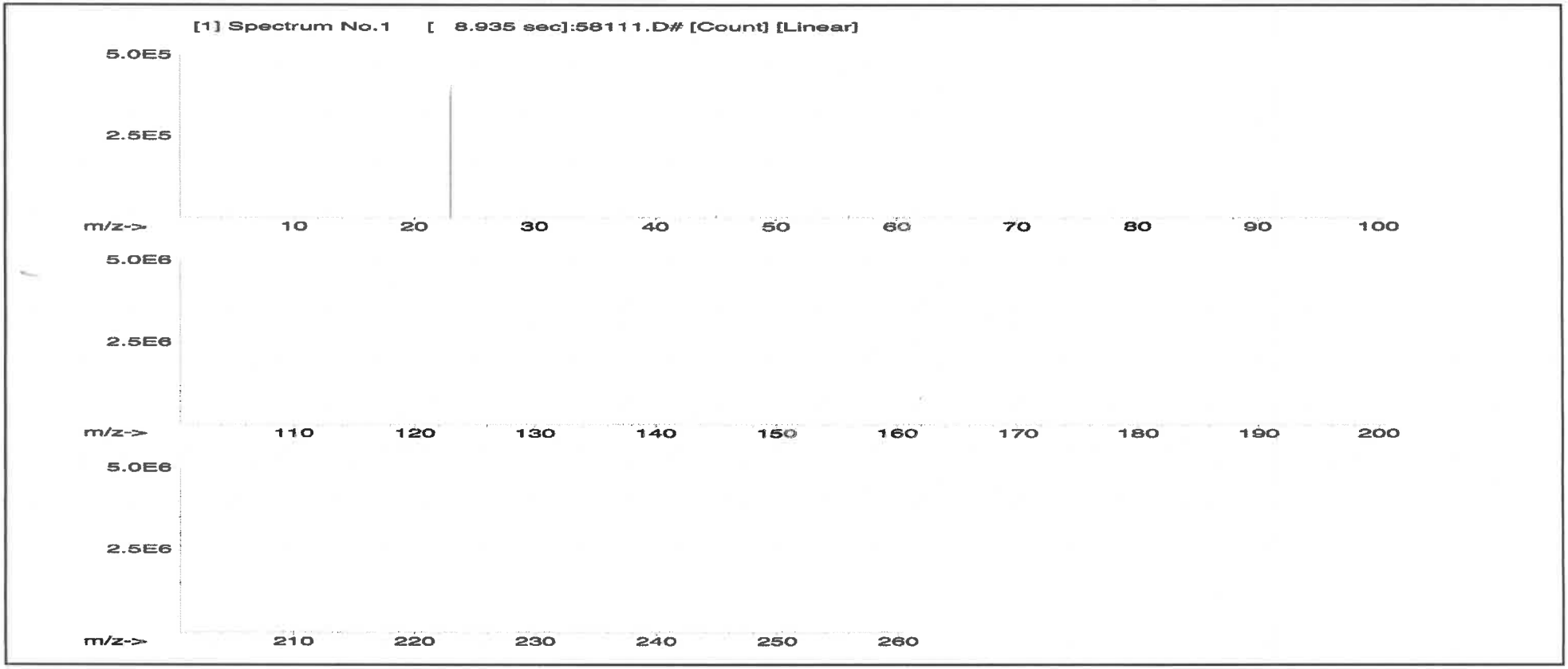
	Lot #		
Solvent:	24002546	Nitric Acid	
2%	60.0 (mL)	Nitric Acid	

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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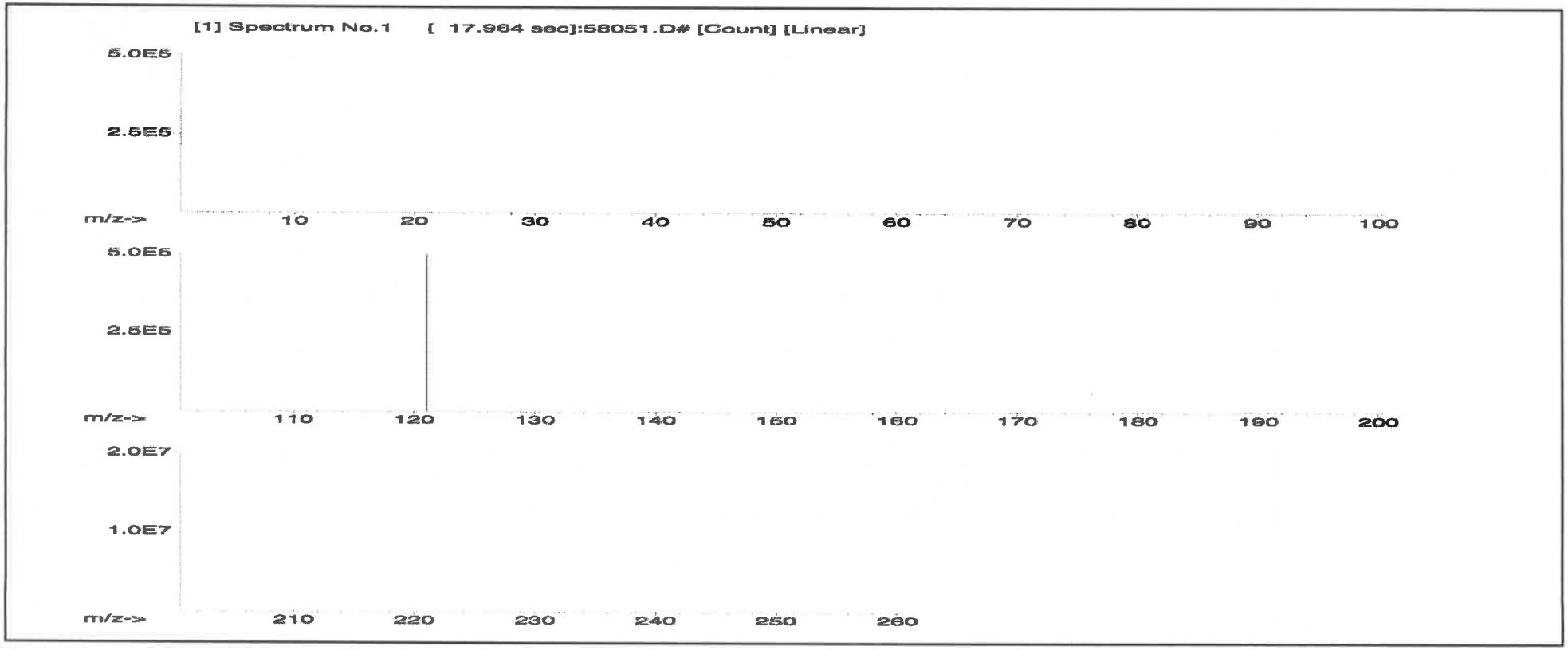
R: 01/03/24 M5802, M5803

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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Certified Reference Material CRM

M6030

R: 8/5/24

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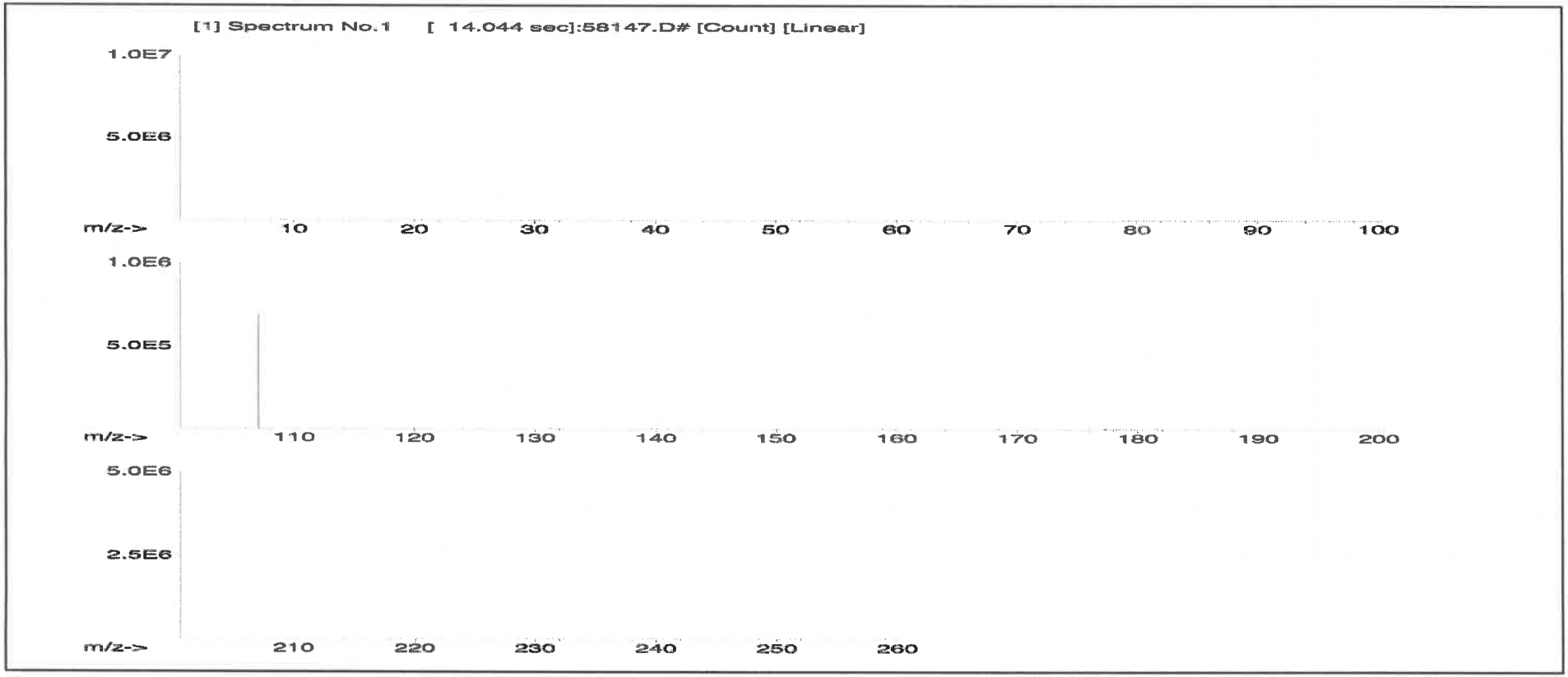
CERTIFIED WEIGHT REPORT:

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:

* 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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* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
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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).

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

Certified Reference Material CRM

R ! 8/5/24

M6023

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

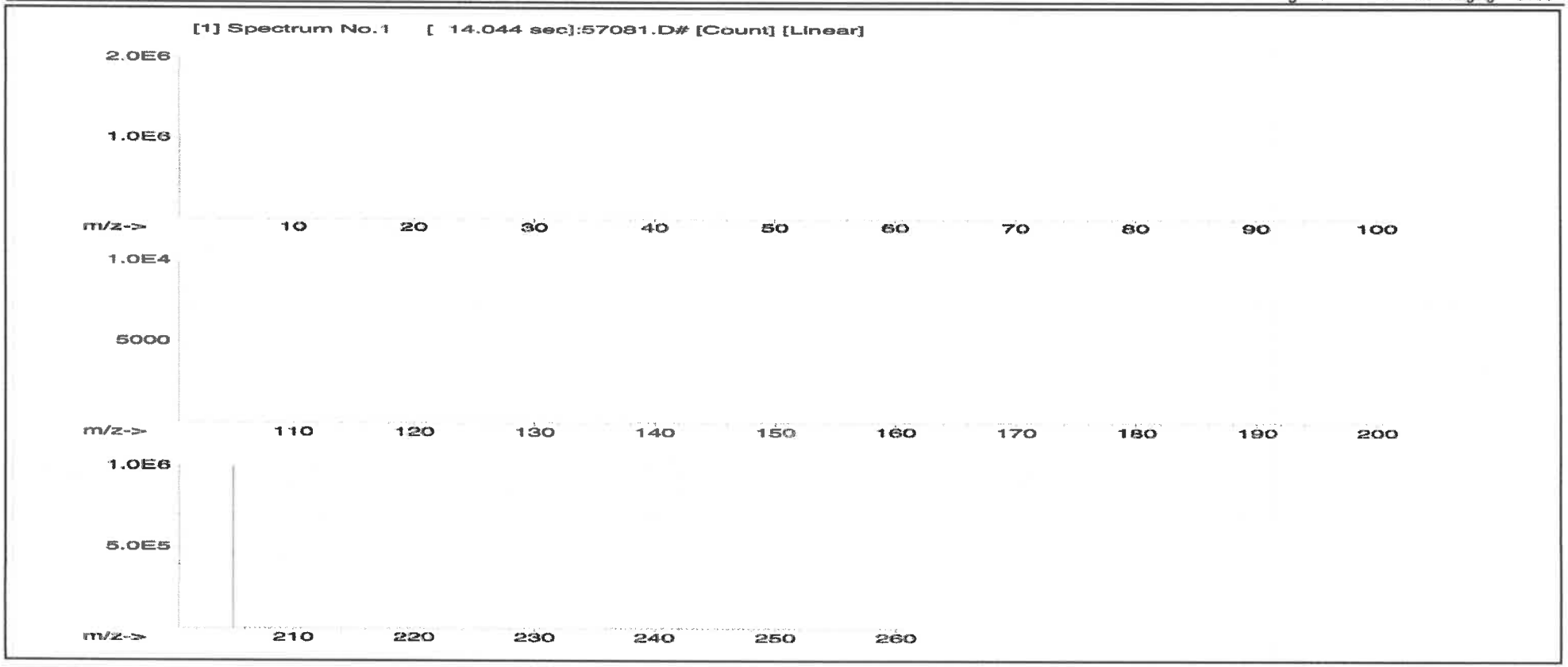
CERTIFIED WEIGHT REPORT:

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:

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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www.absolutestandards.com

Certified Reference Material CRM

M6021

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

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	

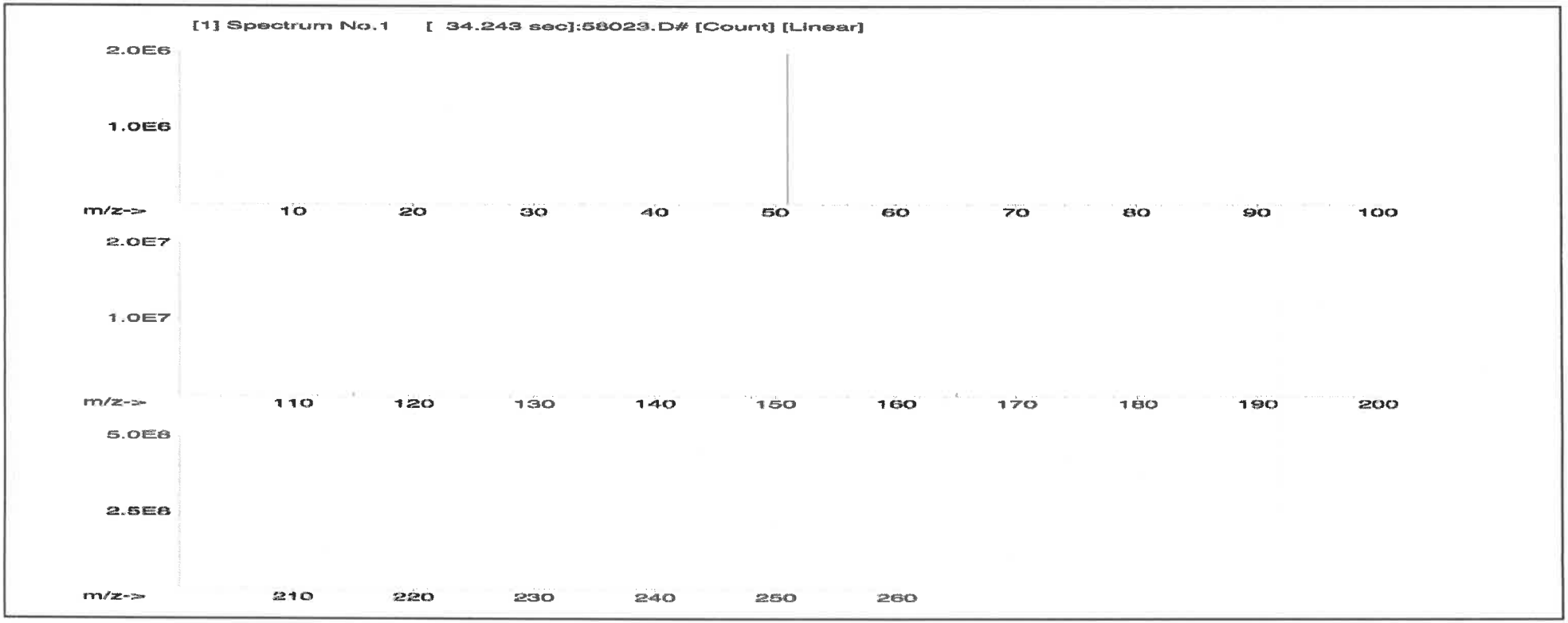
Aleah O'Brady

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
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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

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Physical Characterization:

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

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SHIPPING DOCUMENTS

CHEMTECH
CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 • Fax (908) 789-8922
www.chemtech.net

CHEMTECH PROJECT NO.
QUOTE NO. P50093
COC Number 2040990 P5094

CLIENT INFORMATION

REPORT TO BE SENT TO:
COMPANY: R3M Engineering, INC
ADDRESS: 11 Landing Ln.
CITY New Brunswick STATE: NJ ZIP:
ATTENTION: Stacey L. Felts-Bock
PHONE: (973) 207-1820 FAX:

CLIENT PROJECT INFORMATION

PROJECT NAME: MC054.36 23-B-1 LM - Landing Lane New Brunswick
PROJECT NO.: LOCATION:
PROJECT MANAGER:
e-mail:
PHONE: FAX:

CLIENT BILLING INFORMATION

BILL TO: PO#:
ADDRESS:
CITY STATE: ZIP:
ATTENTION: PHONE:

DATA TURNAROUND INFORMATION

FAX (RUSH) _____ DAYS*
HARDCOPY (DATA PACKAGE): STD DAYS*
EDD: _____ DAYS*
*TO BE APPROVED BY CHEMTECH
STANDARD HARDCOPY TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

- ❑ Level 1 (Results Only)
- ❑ Level 2 (Results + QC)
- ❑ Level 3 (Results + QC + Raw Data)
- ❑ Level 4 (QC + Full Raw Data)
- ❑ NJ Reduced ❑ US EPA CLP
- ❑ NYS ASP A ❑ NYS ASP B
- ❑ Other _____
- ❑ EDD FORMAT _____

ANALYSIS

1 VOC-TCL
2 SVOC-TCL BNA 20
3 Pest./PCB
4 TOC
5 Dioxin
6 Metals
7 Cyanide
8
9

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# OF BOTTLES	PRESERVATIVES 1	2	3	4	5	6	7	8	9	COMMENTS
								A	E	E	C	E	B	D			← Specify Preservatives
1.	LL-001	W.		X	12/4	1105	10	X	X	X	X	X	X	X			A-HCl D-NaOH
2.	LL-001-FB-12-4-24	W		X	12/4	1100	10	X	X	X	X	X	X	X			B-HN03 E-ICE
3.	TB-12-4-24	W		X	12/4	—	2	X									C-H2SO4 F-OTHER
4.																	
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

	DATE/TIME	RECEIVED BY
RELINQUISHED BY SAMPLER: 1.	DATE/TIME: 1200 12/4/24	RECEIVED BY: 1.
RELINQUISHED BY SAMPLER: 2.	DATE/TIME:	RECEIVED BY: 2.
RELINQUISHED BY SAMPLER: 3.	DATE/TIME: 1300 12/4/24	RECEIVED BY: 3.

Conditions of bottles or coolers at receipt: ❑ COMPLIANT ❑ NON COMPLIANT ❑ COOLER TEMP 5.3°C °C
Comments:

Page 1 of 1

CLIENT: ❑ Hand Delivered ❑ Other _____
CHEMTECH: ❑ Picked Up ❑ Field Sampling

Shipment Complete ❑ YES ❑ NO

Copyright © 2023

WHITE - CHEMTECH COPY FOR RETURN TO CLIENT YELLOW - CHEMTECH COPY PINK - SAMPLER COPY

LOW FLOW SAMPLING
DATA SHEET

SHEET 1 OF 1

SITE: Landing Lane New Brunswick
DATE: 12-4-24
WEATHER:

CONSULTING FIRM: Alliance Technical Group
FIELD PERSONNEL: Gorge Vegnon

MONITOR WELL #:
WELL PERMIT #:
WELL DEPTH: 20'
WELL DIAMETER: 2" inches
SCREENED/OPEN INTERVAL:

PID/FID READINGS (ppm):
BACKGROUND: 0.0
BENEATH OUTER CAP: 0.0
BENEATH INNER CAP: 0.0

PUMP INTAKE DEPTH: _____ ft below TOC
DEPTH TO WATER BEFORE PUMP INSTALLATION: 22.8' ft below TOC

TIME	PURGING	SAMPLING	pH (pH units)		SPECIFIC CONDUCTIVITY (mS/cm)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
			READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*		
0925	X		7.38	NA	0.266	NA	162	NA	4.60	NA	257	NA	15.42	NA	—	22.8'
0930	X		7.24	0.14	0.261	0.005	157	5	4.03	0.57	253	4	16.05	0.63	—	22.8'
0935	X		7.14	0.1	0.257	0.004	139	18	2.77	1.26	94.8	158.2	16.44	0.39	—	22.8'
0940	X		7.11	0.03	0.255	0.002	132	7	1.89	0.88	73.6	21.2	16.66	0.22	—	22.8'
0945	X		7.11	0	0.254	0.001	128	4	1.19	0.7	60.1	13.5	16.92	0.26	—	22.8'
0950	X		7.11	0	0.252	0.002	122	6	2.11	0.92	54.2	5.9	16.82	0.1	—	22.8'
0955	X		7.11	0	0.253	0.001	121	1	2.12	0.01	52.8	1.4	16.79	0.03	—	22.8'
1000	X		7.11	0	0.255	0.002	120	1	2.08	0.04	52.6	0.2	16.78	0.01	—	22.8'
1005		X	7.11	0	0.257	0.002	122	2	2.06	0.02	51.9	0.9	16.77	0.01	—	22.8'

COMMENTS:

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ±0.1 for pH; ±3% for Specific Conductivity and Temperature; ±10 mv for Redox Potential; and ±10% for Dissolved Oxygen and Turbidity.

Alliance Technical Group, LLC-Newark

284 Sheffield Street, Mountainside, NJ 07092 Tel. 908-789-8900 Fax 908-789-8922

FIELD SAMPLING LOG

Client Name: R3M Engineering, INC

Client Address: 11 Landing Ln. New Brunswick

Client Rep on Site: Stacey L. Fehto-Bock

Sampling Date: 12-4-24

Arrival Time: 0700 Departure Time: 1200

Project Name: MC054.36 23-8-1 LH-Landing Lane New Brunswick

Project Location: New Brunswick

Cooler Custody Seal: N/A

Temperature Correction Factor (°C): —

FIELD EQUIPMENT CALIBRATION

pH Calibration (SM4500-H B/9040C)				
	Calibration			ICV (± 0.1 pH unit)
	7.00 Buffer W 3071	4.00 Buffer W 3107	10.00 Buffer W 3094	7.00 Buffer W 3093
Time	0710	0712	0714	0716
Temp °C	14.92	14.96	14.90	14.93
pH	7.00	4.01	10.02	7.00

FIELD EQUIPMENT CALIBRATION

Specific Conductance (mS/cm) (99% -101%)/(mmho/cm) (SM2510 B/120.1/9050A)		
	Calibration (± 1%) (99% -101%)	ICV (± 1%) (99% -101%)
	WP	WP
Time		
Temp °C		
Reading (mS/cm)		

Sampler Signature/Date: [signature] 12/4/24

Supervisor Review/Date:

Alliance Technical Group, LLC-Newark

284 Sheffield Street, Mountainside, NJ 07092 Tel. 908-789-8900 Fax 908-789-8922

FIELD SAMPLING LOG

Client Name: R3M Engineering, INC

Client Address: 11 Landing Ln.

Client Rep on Site: Stacey L. Felts-Bock

Sampling Date: 12-4-24

Arrival Time: 0700 Departure Time: _____

Project Name: MC054 36 23-8-1 LM-Landing Lane New Brunswick

Project Location: New Brunswick

Cooler Custody Seal: N/A

Temperature Correction Factor (°C): —

FIELD SAMPLING INFORMATION

Sampling Location	Date/Time of sampling	Field Measurements			
		Date/Time of Analysis	pH	Temperature °C	Specific Conductance (mS/cm) (99% -101%)
CCV (W3071)	12-4-24 0959	12-4-24 1001	7.01	16.70	0.266
LL-001	1003	1005	7.11	16.77	0.257
DUP	1007	1009	7.11	16.76	0.255
CCV (W3071)	1011	1013	7.00	16.72	0.264

Meter: YSI MPS, Model # 556, Serial # 085A0063

Sampler Signature/Date: [signature] 12/4/24

Supervisor Review/Date: _____

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Laboratory Certification

Certified By	License No.
CAS EPA CLP Contract	68HERH20D0011
Connecticut	PH-0830
DOD ELAP (ANAB)	L2219
Maine	2024021
Maryland	296
New Hampshire	255424 Rev 1
New Jersey	20012
New York	11376
Pennsylvania	68-00548
Soil Permit	525-24-234-08441
Texas	T104704488

Alliance TECHNICAL GROUP

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

LOGIN REPORT/SAMPLE TRANSFER

Order ID : P5093 RTHR01
Client Name : R3M Engineering, Inc.
Client Contact : Stacey L. Felts-Bock
Invoice Name : R3M Engineering, Inc.
Invoice Contact : Stacey L. Felts-Bock

Order Date : 12/4/2024 12:24:38 PM
Project Name : MC054.36 23-8-1 LM - Lar
Receive DateTime : 12/4/2024 ~~12:00:00 AM~~ 13:00
Purchase Order :

Project Mgr :
Report Type : Level 1
EDD Type : Excel NJ
Hard Copy Date :
Date Signoff :

LAB ID	CLIENT ID	MATRIX	SAMPLE DATE	SAMPLE TIME	TEST	TEST GROUP	METHOD	FAX DATE	DUE DATES
P5093-01	LL-001	Water	12/04/2024	11:05					
					VOC-TCLVOA-10	TCL+30/TAL	8260-Low		10 Bus. Days
P5093-02	LL-001-FB-12-4-24	Water	12/04/2024	11:00					
					VOC-TCLVOA-10	TCL+30/TAL	8260-Low		10 Bus. Days
P5093-03	TB-12-4-24	Water	12/04/2024	00:00					
					VOC-TCLVOA-10	TCL+30/TAL	8260-Low		10 Bus. Days

Relinguished By : AV
Date / Time : 12/4/24 1400

Received By : Sally
Date / Time : 12/4/24 14:00 NG 12 4

Storage Area : **VOA Refridgerator Room**