SDG COVER PAGE

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

Lab Code: ACE Case No.: 51979 MA No.: SDG No.: MBHHA3

SOW No. : SFAM01.1

EPA Sample No.	Lab Sample Id	Analysis Method ICP-AES	ICP-MS	Mercury	Cyanide
MBHHA3	Q1314-01	X			
MBHHA4	Q1314-02	X			
MBHHA5	Q1314-03	X			
MBHHA6	Q1314-04	X			
MBHHA7	Q1314-05	X			
MBHHA7D	Q1314-06	X			
MBHHA7S	Q1314-07	X			
MBHHA9	Q1314-08	X			
MBHHA9D	Q1314-09	X			
MBHHA9S	Q1314-10	X			

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the SDG Narrative. All edits and manual integrations have been peer-reviewed. Release of the data contained in this hardcopy Complete SDG File and in the electronic data submitted has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name:

Date: Title:

68HERH20D0011 SDG # MBHHA3

USEPA CLP COC (LAB COPY)

DateShipped: 2/5/2025
CarrierName: FedEx
AirbillNo: 771891586681

CHAIN OF CUSTODY RECORD

Case #: 51979
Cooler #: 2

No: 3-020525-095551-0005

Lab: Alliance Techincal Group LLC
Lab Contact: Mohammad Ahmed
Lab Phone: 908-789-8900

2

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
SO-WC-05-20250204	MBHHA3	Soil/ Jon King	Composite	ICP-AES(14)	1073 (None), 1074 (None) (2)	EMZ5	02/04/2025 10:00	
SO-WC-08-20250204	MBHHA4	Soil/ Jon King	Composite	ICP-AES(14)	1081 (None), 1082 (None) (2)	EMZ8	02/04/2025 10:20	
SO-WC-09-20250204	MBHHA5	Soil/ Jon King	Composite	ICP-AES(14)	1089 (None), 1090 (None) (2)	EMZ9	02/04/2025 10:40	
SO-WC-10-20250204	MBHHA6	Soil/ Jon King	Composite	ICP-AES(14)	1097 (None), 1098 (None) (2)	EMZ10	02/04/2025 11:00	
SO-WC-11-20250204	MBHHA7	Soil/ Jon King	Composite	ICP-AES(14)	1105 (None), 1106 (None) (2)	EMZ11	02/04/2025 11:20	
AQ-WC-01F-20250204	MBHHA8	Water/ Jon King	Grab	ICP-AES(14)	1072 (HNO3 pH<2) (1)	Frac Tank	02/04/2025 11:45	FF
AQ-WC-01-20250204	MBHHA9	Water/ Jon King	Grab	ICP-AES(14)	1062 (HNO3 pH<2) (1)	Frac Tank	02/04/2025 11:45	

Special Instructions: Sample AQ-WC-01F-20250204 is field filtered.

Shipment for Case Complete? Y

Samples Transferred From Chain of Custody #

Analysis Key: ICP-AES=CLP ICP-AES 11+ Metals

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	(Sovereign)	2/5/25 1200		9:30 2-6-25	IR Gun #1 2.6
					Custody Seal Intact
					Trip Blk present

FORM DC-1

SAMPLE LOG-IN SHEET

Lab Name : Alliance Technical Group, LLC		Page 1 of 1
Received By (Print Name) Cassandra Reno		Log-in Date **2/6/2025**
Received By (Signature)		
Case Number 51979	SDG No. MBHHA3	MA No. N/A

Remarks:	
1. Custody Seal (s)	Present, Intact
2. Custody Seal Nos.	n/a
3. Traffic Reports/Chain Of Custody Records	Present
4. Airbill	Present
5. Airbill No. and Shipping Container ID No.	771891586681 1
6. Shipping Container Temperature Indicator Bottle	Present
7. Shipping Container Temperature	2.6 Degree C
8. Sample Condition	Intact
9. Sample Tags Sample Tag Numbers	Absent Listed on Traffic Report
10. Does information on Traffic Reports/Chain of Custody Records and Sample Tags agree ?	Yes
11. Date Received at Lab	02/06/2025
12.Time Received	09:30

	EPA Sample #	Aqueous/ Water Sample pH	Corresponding Sample Tag #	Corresponding Assigned Lab #	Remarks: Condition of Sample Shipment, etc.
1	MBHHA3	N/A	1073,74	Q1314-01	Intact
2	MBHHA4	N/A	1081,82	Q1314-02	Intact
3	MBHHA5	N/A	1089,90	Q1314-03	Intact
4	MBHHA6	N/A	1097,98	Q1314-04	Intact
5	MBHHA7	N/A	1105,06	Q1314-05	Intact
6	MBHHA7D	N/A	1105,06	Q1314-06	Intact
7	MBHHA7S	N/A	1105,06	Q1314-07	Intact
8	MBHHA9	1.3	1062	Q1314-08	Intact
9	MBHHA9D	1.3	1062	Q1314-09	Intact
10	MBHHA9S	1.3	1062	Q1314-10	Intact
11	N/A	N/A	N/A	N/A	N/A
12	N/A	N/A	N/A	N/A	N/A
13	N/A	N/A	N/A	N/A	N/A
14	N/A	N/A	N/A	N/A	N/A
15	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A
21	N/A	N/A	N/A	N/A	N/A
22	N/A	N/A	N/A	N/A	N/A
23	N/A	N/A	N/A	N/A	N/A

* Contact SMO and attach record of resolution

Reviewed By		Logbook No.	N/A
Date	2/6/25	Logbook Page No.	N/A

FORM DC-2
COMPLETE SDG FILE (CSF) INVENTORY SHEET

LAB NAME	**Alliance Technical Group, LLC**		
LAB CODE	**ACE**		
CONTRACT NO.	**68HERH20D0011**		
CASE NO.	**51979**	SDG NO.	**MBHHA3**
MA NO.		SOW NO.	**SFAM01.1**

All documents delivered in the Complete SDG File must be original documents where possible. (Reference - Exhibit B Section 2.4)

	PAGE NOs: FROM	PAGE NOs: TO	CHECK LAB	CHECK REGION
1 . SDG Cover Page	1	1	✓	
2 . Traffic Report/Chain of Custody Record(s)	2	2	✓	
3 . Sample Log-In Sheet (DC-1)	3	3	✓	
4 . CSF Inventory Sheet (DC-2)	4	6	✓	
5 . SDG Narrative	7	9	✓	
6 . Communication Logs	10	11	✓	
7 . Percent Solids Log	12	13	✓	
Analysis Forms and Data (ICP-AES)				
8 . Sample Analysis Data Forms (1A-OR, 1B-OR, and 1-IN) for each sample or sample analysis, laboratory QC as applicable	14	19	✓	
9 . Instrument raw data by instrument in analysis order	20	207	✓	
Other Data				
10 . Standard and Reagent Preparation Logs	208	368	✓	
11 . Original Preparation and Cleanup forms or copies of Preparation and Cleanup Logbooks	369	372	✓	
12 . Original Analysis or Instrument Run forms or copies of Analysis or Instrument Logbooks	373	376	✓	
13 . Performance Evaluation (PE)/Proficiency Testing (PT) Sample Instructions	NA	NA	✓	
14 . Extraction Logs for TCLP and SPLP	NA	NA	✓	
15 . Raw GPC Data	NA	NA	✓	
16 . Raw Florisil Data	NA	NA	✓	
Analysis Forms and Data (ICP-MS)				
17 . Sample Analysis Data Forms (1A-OR, 1B-OR, and 1-IN) for each sample or sample analysis, laboratory QC as applicable	NA	NA	✓	
18 . Instrument raw data by instrument in analysis order	NA	NA	✓	
Other Data				
19 . Standard and Reagent Preparation Logs	NA	NA	✓	
20 . Original Preparation and Cleanup forms or copies of Preparation and Cleanup Logbooks	NA	NA	✓	
21 . Original Analysis or Instrument Run forms or copies of Analysis or Instrument Logbooks	NA	NA	✓	
22 . Performance Evaluation (PE)/Proficiency Testing (PT) Sample Instructions	NA	NA	✓	

	PAGE NOs: FROM	TO	CHECK LAB	REGION
23. Extraction Logs for TCLP and SPLP	NA	NA	✓	
24. Raw GPC Data	NA	NA	✓	
25. Raw Florisil Data	NA	NA	✓	
Analysis Forms and Data (Mercury)				
26. Sample Analysis Data Forms (1A-OR, 1B-OR, and 1-IN) for each sample or sample analysis, laboratory QC as applicable	NA	NA	✓	
27. Instrument raw data by instrument in analysis order	NA	NA	✓	
Other Data				
28. Standard and Reagent Preparation Logs	NA	NA	✓	
29. Original Preparation and Cleanup forms or copies of Preparation and Cleanup Logbooks	NA	NA	✓	
30. Original Analysis or Instrument Run forms or copies of Analysis or Instrument Logbooks	NA	NA	✓	
31. Performance Evaluation (PE)/Proficiency Testing (PT) Sample Instructions	NA	NA	✓	
32. Extraction Logs for TCLP and SPLP	NA	NA	✓	
33. Raw GPC Data	NA	NA	✓	
34. Raw Florisil Data	NA	NA	✓	
Analysis Forms and Data (Cyanide)				
35. Sample Analysis Data Forms (1A-OR, 1B-OR, and 1-IN) for each sample or sample analysis, laboratory QC as applicable	NA	NA	✓	
36. Instrument raw data by instrument in analysis order	NA	NA	✓	
Other Data				
37. Standard and Reagent Preparation Logs	NA	NA	✓	
38. Original Preparation and Cleanup forms or copies of Preparation and Cleanup Logbooks	NA	NA	✓	
39. Original Analysis or Instrument Run forms or copies of Analysis or Instrument Logbooks	NA	NA	✓	
40. Performance Evaluation (PE)/Proficiency Testing (PT) Sample Instructions	NA	NA	✓	
41. Extraction Logs for TCLP and SPLP	NA	NA	✓	
42. Raw GPC Data	NA	NA	✓	
43. Raw Florisil Data	NA	NA	✓	

	PAGE NOs: FROM	TO	CHECK LAB	REGION
Additional				
44. EPA Shipping/Receiving Documents				
Airbill (No. of Shipments 1)	377	377	✓	
Sample Tags	NA	NA	✓	
Sample Log-In Sheet (Lab)	378	378	✓	
45. Misc. Shipping/Receiving Records (list all individual records)				
	NA	NA	✓	
46. Internal Lab Sample Transfer Records and Tracking Sheets (describe or list)				
	379	380	✓	
47. Other Records and related Communication Logs (describe or list)				
	NA	NA	✓	

48. Comments:

Completed by: (CLP Lab)		Nimisha Pandya, Document Control Officer	
	(Signature)	(Print Name & Title)	(Date)
Audited by: (EPA)			
	(Signature)	(Print Name & Title)	(Date)

284 Sheffield Street
Mountainside, NJ 07092

SDG NARRATIVE

USEPA
SDG # MBHHA3
CASE # 51979
CONTRACT # 68HERH20D0011
SOW# SFAM01.1
LAB NAME: Alliance Technical Group, LLC
LAB CODE: ACE
LAB ORDER ID # Q1314

A. Number of Samples and Date of Receipt

05 Soil & 01 Water samples were delivered to the laboratory intact on 02/06/2025

B. Parameters

Test requested for Metals CLP FULL = Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc.

C. Cooler Temp

Indicator Bottle**: Presence/**Absence

Cooler: 2.6^{o}C

D. Detail Documentation (related to Sample Handling Shipping, Analytical Problem, Temp of Cooler etc):

Issue 1: A "P" or "M" prefix was listed at the beginning of a CLP sample ID.

Issue 2: Laboratory QC is scheduled for soil and water ICP-AES Metals analysis, but no samples were designated for QC. The laboratory would like to use samples MBHHA7, MBHHA8, and MBHHA9 for laboratory QC. The laboratory confirms that these samples are not blanks, rinsates, or PT samples.

E. Corrective Action taken for above:

Resolution 1: To maintain COC integrity, ASB requests no changes to the Sample IDs. The laboratory will note the issue in the SDG Narrative and proceed with the analysis of the samples.

Resolution 2: Per SOW SFAM01.1 Exhibit A, Section 5.5.4.1., please note the issue in the SDG Narrative and proceed with the analysis of the samples using the selected samples for QC.

F. Analytical Techniques:

All analyses were based on CLP Methodology by method SFAM01.1.

Inter Element correction factors (IECs) are determined annually and correction factor are applied during ICP-AES analysis.

G. Calculation:

Calculation for ICP-AES Soil Sample:

Conversion of Results from mg/L or ppm to mg/kg (Dry Weight Basis):

$$\text{Concentration (mg/kg)} = C \times \frac{Vf}{W \times S} \times DF$$

Where,

C = Instrument value in ppm (The average of all replicate exposures)
Vf = Final digestion volume (mL)
W = Initial aliquot amount (g) (Sample amount taken in prep)
S = % Solids / 100 (Fraction of Percent Solids)
DF = Dilution Factor

Example Calculation For Sample MBHHA3 For Arsenic:

If C = 0.0271316 ppm
Vf = 100 ml
W = 1.13g
S = 0.983 (98.3/100)
DF = 1

$$\text{Concentration (mg/kg)} = 0.0271316 \times \frac{100}{1.13 \times 0.983} \times 1$$

$$= 2.44254 \text{ mg/kg}$$

$$= 2.4 \text{ mg/kg (Reported Result with Signification)}$$

284 Sheffield Street
Mountainside, NJ 07092

Calculation for ICP-AES Water Sample:

$$\text{Concentration or Result } (\mu g/L) = C \times \frac{Vf}{Vi} \times DF \times 1000$$

Where,

C = Instrument value in ppm (The average of all replicate exposures)
Vf = Final digestion volume (mL)
Vi = Initial aliquot amount (mL) (Sample amount taken in prep)
DF = Dilution Factor

Example Calculation For Sample MBHHA9 For Antimony:

If C = 0.0518795 ppm
Vf = 50 ml
Vi = 50 ml
DF = 1

$$\text{Concentration or Result } (\mu g/L) = 0.0518795 \times \frac{50}{50} \times 1 \times 1000$$

$$= 51.8795\ \mu g/L$$

$$= 52\ \mu g/L \text{ (Reported Result with Signification)}$$

H. QA/ QC

Calibrations met requirements. Interference check met requirements. Blank analyses did not indicate any presence of contamination. Laboratory Control sample was within control limits. Spike sample did meet requirements except for Silver. Duplicate sample did meet requirements. Serial Dilution did meet requirements.

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 Director or his designee, as verified by the following signature.

Signature_____ Name: Nimisha Pandya

Date _____ Title: Document Control Officer

From: DeBerry, Eric <Eric.Deberry@gdit.com>
Sent: Thursday, February 06, 2025 11:02 AM
To: Deepak Parmar; Sohil Jodhani; Mohammad Ahmed
Cc: Bauer, Heather E; Johnson, Matthew; Burman, Jarmael; Roberson, Sharon; 'Moody, Brett'; Gambrah, Derrick; Patel, Bhavita; Vargas.Magda@epa.gov; Britz, Helen
Subject: Region 03 | Case 51979 | Lab ACE | Issue Insufficient/inappropriate designation of laboratory QC | FINAL
Attachments: SKM_95825020609500.pdf

EXTERNAL EMAIL - This email was sent by a person from outside your organization. Exercise caution when clicking links, opening attachments or taking further action, before validating its authenticity.

Secured by Check Point

Good morning Deepak,

Issue: Laboratory QC is scheduled for soil and water ICP-AES Metals analysis, but no samples were designated for QC. The laboratory would like to use samples MBHHA7, MBHHA8, and MBHHA9 for laboratory QC. The laboratory confirms that these samples are not blanks, rinsates, or PT samples.

Resolution: Per SOW SFAM01.1 Exhibit A, Section 5.5.4.1., please note the issue in the SDG Narrative and proceed with the analysis of the samples using the selected samples for QC.

Please note that the laboratory may contact the appropriate CLP PM should any defects need to be waived for this issue.

Thanks,

Eric DeBerry

Associate Environmental Analyst
CLP QSS Coordinator – EPA Regions 1 & 3

Under contract to the EPA

T: (571) 833-5166
Eric.DeBerry@GDIT.com
15036 Conference Center Drive
Chantilly, VA 20151
www.gdit.com

GENERAL DYNAMICS
information technology

From: Deepak Parmar <Deepak.Parmar@alliancetg.com>
Sent: Thursday, February 6, 2025 10:14 AM
To: DeBerry, Eric <Eric.Deberry@gdit.com>

Cc: Sohil Jodhani <Sohil.Jodhani@AllianceTG.com>
Subject: Region 3 | Case 51979 | Lab ACE | Issue Discrepancies with tags, jars, and/or COC/QC

This Message Is From an External Sender

Please use caution with links, attachments, and any requests for credentials.

Good morning,

Issue 1: QC Scheduled for soil and water for ICP-AES METALS analysis However, a sample was not designated for Laboratory QC. Lab like to use sample MBHHA7,MBHHA8 and MBHHA9 for Lab QC. these samples is not blanks, rinsates or PT.

Please see attachment for your reference.

Thanks & Regards,

Deepak Parmar
QA/QC
An Alliance Technical Group Company
Main: 908-789-8900
Direct: 908-728-3154
Address: 284 Sheffield St, Ste 1, Mountainside, NJ 07092
www.alliancetg.com

Alliance TECHNICAL GROUP

PERCENT SOLID

Supervisor: Iwona
Analyst: jignesh
Date: 2/7/2025

OVENTEMP IN Celsius(°C): 107
Time IN: 13:40
In Date: 02/06/2025
Weight Check 1.0g: 1.00
Weight Check 10g: 10.00
OvenID: M OVEN#1

OVENTEMP OUT Celsius(°C): 103
Time OUT: 08:00
Out Date: 02/07/2025
Weight Check 1.0g: 1.00
Weight Check 10g: 10.00
BalanceID: M SC-4
Thermometer ID: % SOLID- OVEN

QC: LB134601

Lab ID	Client SampleID	Dish #	Dish Wt(g) (A)	Sample Wt(g)	Dish + Sample Wt(g) (B)	Dish+Dry Sample Wt(g) (C)	% Solid	Comments
Q1314-01	MBHHA3	1	1.15	8.66	9.81	9.66	98.3	
Q1314-02	MBHHA4	2	1.15	8.58	9.73	8.83	89.5	
Q1314-03	MBHHA5	3	1.15	8.73	9.88	8.96	89.5	
Q1314-04	MBHHA6	4	1.19	8.72	9.91	9.32	93.2	
Q1314-05	MBHHA7	5	1.12	8.70	9.82	8.72	87.4	
Q1314-06	MBHHA7D	6	1.12	8.70	9.82	8.72	87.4	
Q1314-07	MBHHA7S	7	1.12	8.70	9.82	8.72	87.4	

$$\% \text{ Solid} = \frac{(C-A) * 100}{(B-A)}$$

WORKLIST(Hardcopy Internal Chain)

LB134601

WorkList Name : %1-q1314 **WorkList ID :** 187532 **Department :** Wet-Chemistry **Date :** 02-06-2025 12:28:06

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q1314-01	MBHHA3	Solid	Percent Solids	Cool 4 deg C	USEP01	C11	02/04/2025	Chemtech -SO
Q1314-02	MBHHA4	Solid	Percent Solids	Cool 4 deg C	USEP01	C11	02/04/2025	Chemtech -SO
Q1314-03	MBHHA5	Solid	Percent Solids	Cool 4 deg C	USEP01	C11	02/04/2025	Chemtech -SO
Q1314-04	MBHHA6	Solid	Percent Solids	Cool 4 deg C	USEP01	C11	02/04/2025	Chemtech -SO
Q1314-05	MBHHA7	Solid	Percent Solids	Cool 4 deg C	USEP01	C11	02/04/2025	Chemtech -SO
Q1314-06	MBHHA7D	Solid	Percent Solids	Cool 4 deg C	USEP01	C11	02/04/2025	Chemtech -SO
Q1314-07	MBHHA7S	Solid	Percent Solids	Cool 4 deg C	USEP01	C11	02/04/2025	Chemtech -SO

13

Date/Time 02/06/25 12:35

Raw Sample Received by: SD WDC1

Raw Sample Relinquished by: CP SM

Date/Time 02/06/25 13:50

Raw Sample Received by: CP SM

Raw Sample Relinquished by: SD WDC1

EPA SAMPLE NO.

MBHHA3

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

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

Lab Code: ACE Case No.: 51979 MA No. : SDG No.: MBHHA3

Matrix: SOIL Lab Sample ID: Q1314-01

% Solids: 98.3 Date Received: 02/06/2025

Analytical Method: ICP_AES

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

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7429-90-5	Aluminum	2600		02/07/2025	1410
7440-36-0	Antimony	2.5	J	02/07/2025	1410
7440-38-2	Arsenic	2.4		02/07/2025	1410
7440-39-3	Barium	23		02/07/2025	1410
7440-41-7	Beryllium	0.42	J	02/07/2025	1410
7440-43-9	Cadmium	0.45	U	02/07/2025	1410
7440-70-2	Calcium	170	J	02/07/2025	1410
7440-47-3	Chromium	5.0		02/07/2025	1410
7440-48-4	Cobalt	6.9		02/07/2025	1410
7440-50-8	Copper	4.9		02/07/2025	1410
7439-89-6	Iron	12000		02/07/2025	1410
7439-92-1	Lead	6.7		02/07/2025	1410
7439-95-4	Magnesium	850		02/07/2025	1410
7439-96-5	Manganese	98		02/07/2025	1410
7440-02-0	Nickel	4.3		02/07/2025	1410
7440-09-7	Potassium	1200		02/07/2025	1410
7782-49-2	Selenium	3.2	U	02/07/2025	1410
7440-22-4	Silver	0.90	U*	02/07/2025	1410
7440-23-5	Sodium	450	U	02/07/2025	1410
7440-28-0	Thallium	2.3	U	02/07/2025	1410
7440-62-2	Vanadium	3.8	J	02/07/2025	1410
7440-66-6	Zinc	4.3	J	02/07/2025	1410

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

Comments:

EPA SAMPLE NO.

MBHHA4

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

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

Lab Code: ACE Case No.: 51979 MA No. : SDG No.: MBHHA3

Matrix: SOIL Lab Sample ID: Q1314-02

% Solids: 89.5 Date Received: 02/06/2025

Analytical Method: ICP_AES

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

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7429-90-5	Aluminum	1300		02/07/2025	1414
7440-36-0	Antimony	1.5	J	02/07/2025	1414
7440-38-2	Arsenic	3.1		02/07/2025	1414
7440-39-3	Barium	20		02/07/2025	1414
7440-41-7	Beryllium	0.27	J	02/07/2025	1414
7440-43-9	Cadmium	0.40	U	02/07/2025	1414
7440-70-2	Calcium	140	J	02/07/2025	1414
7440-47-3	Chromium	9.1		02/07/2025	1414
7440-48-4	Cobalt	1.4	J	02/07/2025	1414
7440-50-8	Copper	6.5		02/07/2025	1414
7439-89-6	Iron	7000		02/07/2025	1414
7439-92-1	Lead	4.8		02/07/2025	1414
7439-95-4	Magnesium	210	J	02/07/2025	1414
7439-96-5	Manganese	23		02/07/2025	1414
7440-02-0	Nickel	2.2	J	02/07/2025	1414
7440-09-7	Potassium	1200		02/07/2025	1414
7782-49-2	Selenium	2.8	U	02/07/2025	1414
7440-22-4	Silver	0.80	U*	02/07/2025	1414
7440-23-5	Sodium	400	U	02/07/2025	1414
7440-28-0	Thallium	2.0	U	02/07/2025	1414
7440-62-2	Vanadium	2.2	J	02/07/2025	1414
7440-66-6	Zinc	4.8	U	02/07/2025	1414

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

Comments:

EPA SAMPLE NO.

MBHHA5

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

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

Lab Code: ACE Case No.: 51979 MA No. : SDG No.: MBHHA3

Matrix: SOIL Lab Sample ID: Q1314-03

% Solids: 89.5 Date Received: 02/06/2025

Analytical Method: ICP_AES

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

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7429-90-5	Aluminum	2400		02/07/2025	1418
7440-36-0	Antimony	2.0	J	02/07/2025	1418
7440-38-2	Arsenic	1.4		02/07/2025	1418
7440-39-3	Barium	19		02/07/2025	1418
7440-41-7	Beryllium	0.31	J	02/07/2025	1418
7440-43-9	Cadmium	0.47	U	02/07/2025	1418
7440-70-2	Calcium	210	J	02/07/2025	1418
7440-47-3	Chromium	2.3		02/07/2025	1418
7440-48-4	Cobalt	2.9	J	02/07/2025	1418
7440-50-8	Copper	2.6		02/07/2025	1418
7439-89-6	Iron	9000		02/07/2025	1418
7439-92-1	Lead	6.3		02/07/2025	1418
7439-95-4	Magnesium	880		02/07/2025	1418
7439-96-5	Manganese	45		02/07/2025	1418
7440-02-0	Nickel	2.8	J	02/07/2025	1418
7440-09-7	Potassium	1200		02/07/2025	1418
7782-49-2	Selenium	3.3	U	02/07/2025	1418
7440-22-4	Silver	0.95	U*	02/07/2025	1418
7440-23-5	Sodium	470	U	02/07/2025	1418
7440-28-0	Thallium	2.4	U	02/07/2025	1418
7440-62-2	Vanadium	2.1	J	02/07/2025	1418
7440-66-6	Zinc	2.5	J	02/07/2025	1418

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

Comments:

EPA SAMPLE NO.

MBHHA6

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

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

Lab Code: ACE Case No.: 51979 MA No. : SDG No.: MBHHA3

Matrix: SOIL Lab Sample ID: Q1314-04

% Solids: 93.2 Date Received: 02/06/2025

Analytical Method: ICP_AES

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

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7429-90-5	Aluminum	1900		02/07/2025	1422
7440-36-0	Antimony	1.8	J	02/07/2025	1422
7440-38-2	Arsenic	1.3		02/07/2025	1422
7440-39-3	Barium	29		02/07/2025	1422
7440-41-7	Beryllium	0.37	J	02/07/2025	1422
7440-43-9	Cadmium	0.44	U	02/07/2025	1422
7440-70-2	Calcium	130	J	02/07/2025	1422
7440-47-3	Chromium	2.2		02/07/2025	1422
7440-48-4	Cobalt	2.3	J	02/07/2025	1422
7440-50-8	Copper	0.95	J	02/07/2025	1422
7439-89-6	Iron	9000		02/07/2025	1422
7439-92-1	Lead	7.4		02/07/2025	1422
7439-95-4	Magnesium	120	J	02/07/2025	1422
7439-96-5	Manganese	30		02/07/2025	1422
7440-02-0	Nickel	0.91	J	02/07/2025	1422
7440-09-7	Potassium	1800		02/07/2025	1422
7782-49-2	Selenium	3.1	U	02/07/2025	1422
7440-22-4	Silver	0.87	U*	02/07/2025	1422
7440-23-5	Sodium	440	U	02/07/2025	1422
7440-28-0	Thallium	2.2	U	02/07/2025	1422
7440-62-2	Vanadium	1.9	J	02/07/2025	1422
7440-66-6	Zinc	5.2	U	02/07/2025	1422

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

Comments:

EPA SAMPLE NO.

MBHHA7

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

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

Lab Code: ACE Case No.: 51979 MA No. : SDG No.: MBHHA3

Matrix: SOIL Lab Sample ID: Q1314-05

% Solids: 87.4 Date Received: 02/06/2025

Analytical Method: ICP_AES

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

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7429-90-5	Aluminum	6500		02/07/2025	1426
7440-36-0	Antimony	3.8	J	02/07/2025	1426
7440-38-2	Arsenic	12		02/07/2025	1426
7440-39-3	Barium	81		02/07/2025	1426
7440-41-7	Beryllium	0.87		02/07/2025	1426
7440-43-9	Cadmium	0.036	J	02/07/2025	1426
7440-70-2	Calcium	680		02/07/2025	1426
7440-47-3	Chromium	10		02/07/2025	1426
7440-48-4	Cobalt	4.8		02/07/2025	1426
7440-50-8	Copper	7.0		02/07/2025	1426
7439-89-6	Iron	17000		02/07/2025	1426
7439-92-1	Lead	13		02/07/2025	1426
7439-95-4	Magnesium	510		02/07/2025	1426
7439-96-5	Manganese	88		02/07/2025	1426
7440-02-0	Nickel	4.9		02/07/2025	1426
7440-09-7	Potassium	2900		02/07/2025	1426
7782-49-2	Selenium	3.2	U	02/07/2025	1426
7440-22-4	Silver	0.90	U*	02/07/2025	1426
7440-23-5	Sodium	450	U	02/07/2025	1426
7440-28-0	Thallium	2.3	U	02/07/2025	1426
7440-62-2	Vanadium	11		02/07/2025	1426
7440-66-6	Zinc	5.4	U	02/07/2025	1426

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

Comments:

EPA SAMPLE NO.

MBHHA9

FORM 1 - IN

INORGANIC ANALYSIS DATA SHEET

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

Lab Code: ACE Case No.: 51979 MA No. : SDG No.: MBHHA3

Matrix: Water Lab Sample ID: Q1314-08

% Solids: Date Received: 02/06/2025

Analytical Method: ICP_AES

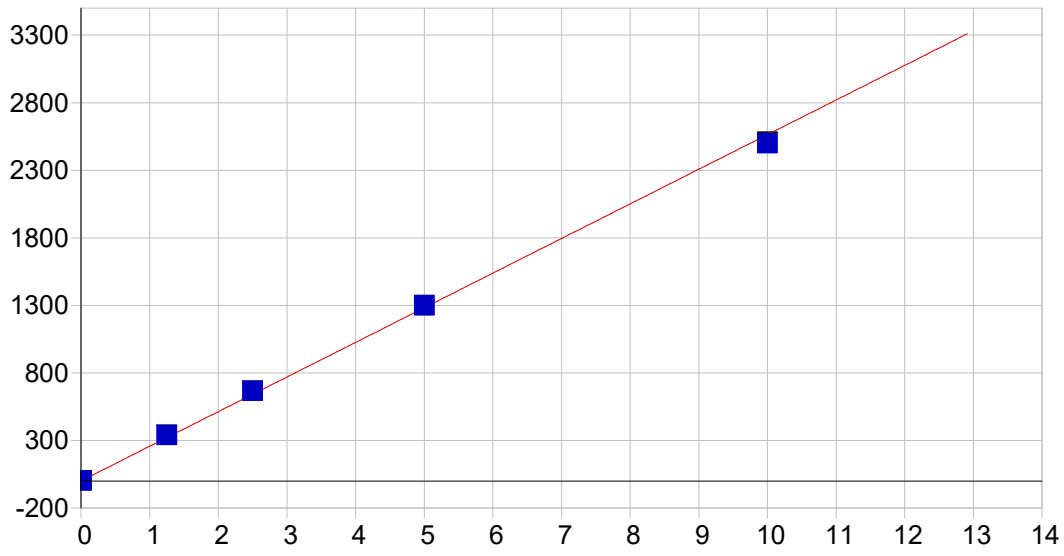
Concentration Units (µg/L, mg/L, mg/kg dry weight, µg, or µg/cm²): ug/L

CAS No.	Analyte	Concentration	Q	Date Analyzed	Time Analyzed
7429-90-5	Aluminum	52	J	02/12/2025	1412
7440-36-0	Antimony	60	U	02/12/2025	1412
7440-38-2	Arsenic	10	U	02/12/2025	1412
7440-39-3	Barium	10	J	02/12/2025	1412
7440-41-7	Beryllium	5.0	U	02/12/2025	1412
7440-43-9	Cadmium	5.0	U	02/12/2025	1412
7440-70-2	Calcium	11000		02/12/2025	1412
7440-47-3	Chromium	10	U	02/12/2025	1412
7440-48-4	Cobalt	8.0	J	02/12/2025	1412
7440-50-8	Copper	25	U	02/12/2025	1412
7439-89-6	Iron	290		02/12/2025	1412
7439-92-1	Lead	10	U	02/12/2025	1412
7439-95-4	Magnesium	2500	J	02/12/2025	1412
7439-96-5	Manganese	110		02/12/2025	1412
7440-02-0	Nickel	3.3	J	02/12/2025	1412
7440-09-7	Potassium	5000	U	02/12/2025	1412
7782-49-2	Selenium	35	U	02/12/2025	1412
7440-22-4	Silver	10	U*	02/12/2025	1412
7440-23-5	Sodium	5600		02/12/2025	1412
7440-28-0	Thallium	25	U	02/12/2025	1412
7440-62-2	Vanadium	50	U	02/12/2025	1412
7440-66-6	Zinc	25	J	02/12/2025	1412

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

Comments:

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



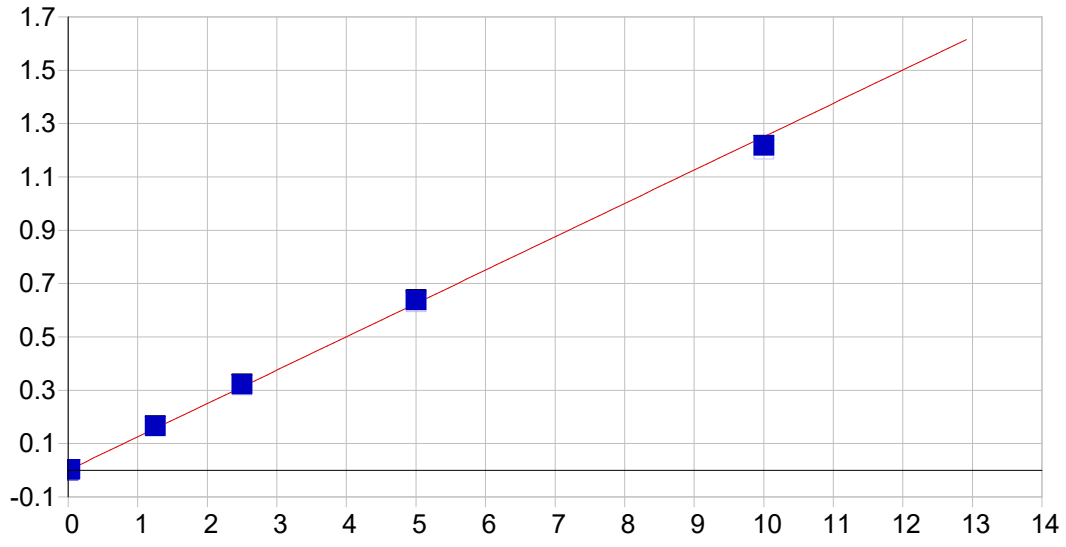
As 189.042 {478}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.354501	Re-Slope:	1.000000
A1 (Gain):	256.316166	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999584	Status:	OK.
Std Error of Est:	0.123811		
Predicted MDL:	0.003845		
Predicted MQL:	0.012816		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.35407	.400	1
S1	.01000	.01078	.001	7.80	3.1166	.597	1
S2	1.2500	1.3230	.073	5.84	339.08	1.54	1
S3	2.5000	2.6015	.102	4.06	666.39	1.15	1
S4	5.0000	5.0716	.072	1.43	1298.8	1.62	1
S5	10.000	9.7531	-.247	-2.47	2497.1	9.27	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



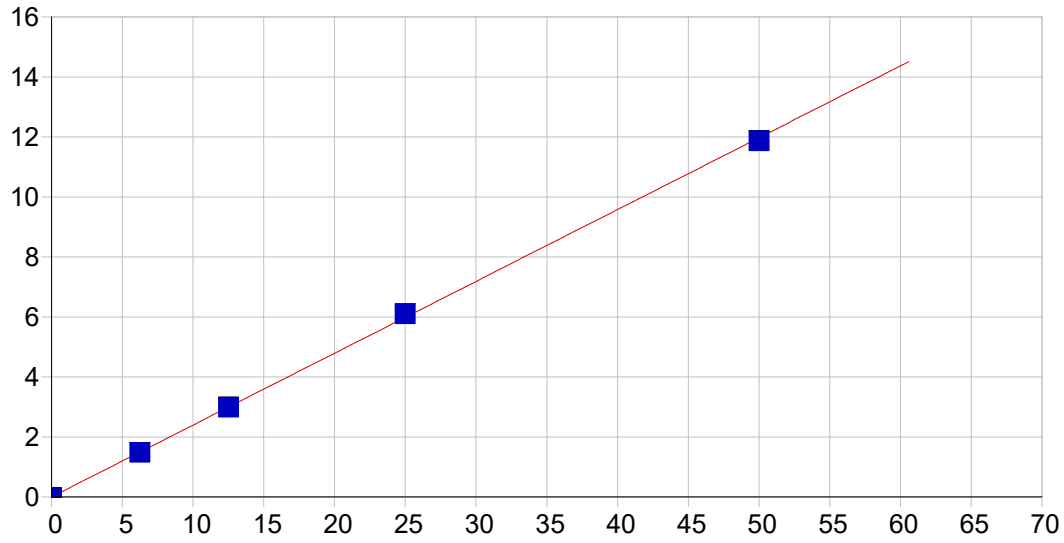
Tl 190.856 {477}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000057	Re-Slope:	1.000000
A1 (Gain):	0.125061	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999546	Status:	OK.
Std Error of Est:	0.000099		
Predicted MDL:	0.001491		
Predicted MQL:	0.004971		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00006	.000	1
S1	.02500	.02772	.003	10.9	.00341	.000	1
S2	1.2500	1.3254	.075	6.04	.16401	.000	1
S3	2.5000	2.5808	.081	3.23	.31919	.000	1
S4	5.0000	5.1054	.105	2.11	.63131	.001	1
S5	10.000	9.7357	-.264	-2.64	1.2031	.001	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



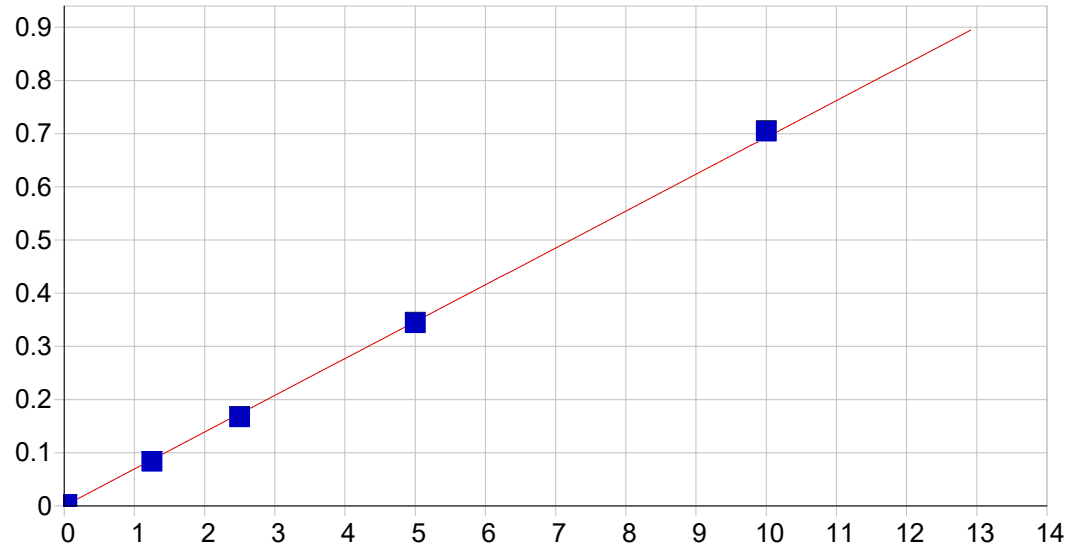
Pb 220.353 {453}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000285	Re-Slope:	1.000000
A1 (Gain):	0.239423	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999928	Status:	OK.
Std Error of Est:	0.000107		
Predicted MDL:	0.001854		
Predicted MQL:	0.006179		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00029	.000	1
S1	.01000	.00896	-.001	-10.4	.00241	.001	1
S2	6.2500	6.1935	-.057	-.904	1.4797	.003	1
S3	12.500	12.483	-.017	-.138	2.9821	.004	1
S4	25.000	25.485	.485	1.94	6.0883	.012	1
S5	50.000	49.590	-.410	-.820	11.846	.010	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



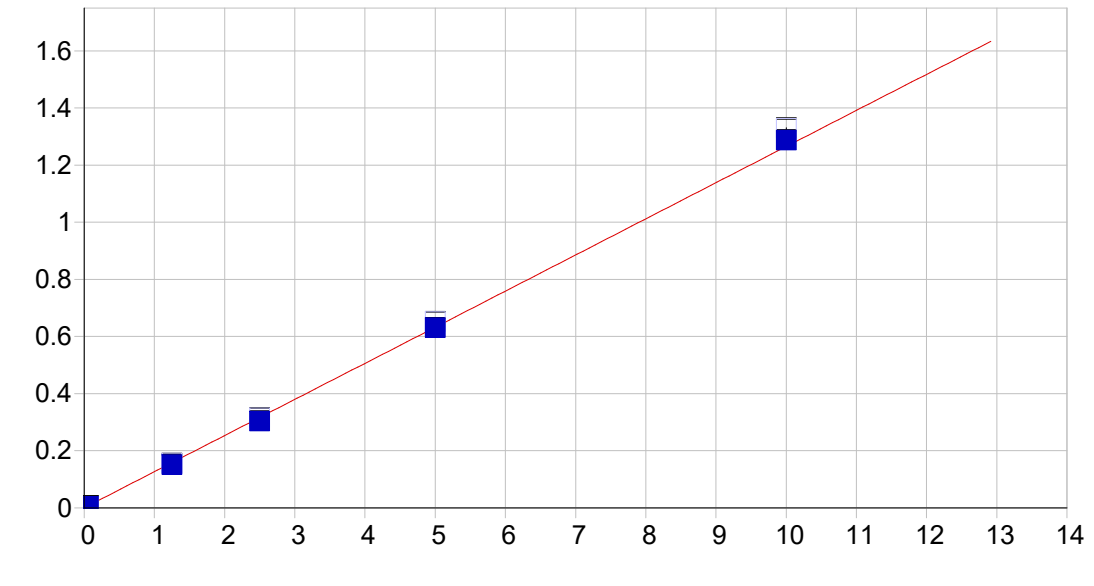
Se 196.090 {472}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000149	Re-Slope:	1.000000
A1 (Gain):	0.069269	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999781	Status:	OK.
Std Error of Est:	0.000045		
Predicted MDL:	0.003591		
Predicted MQL:	0.011969		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00015	.000	1
S1	.03500	.03124	-.004	-10.7	.00231	.000	1
S2	1.2500	1.2033	-.047	-3.73	.08337	.000	1
S3	2.5000	2.4124	-.088	-3.51	.16699	.000	1
S4	5.0000	4.9702	-.030	-.596	.34391	.001	1
S5	10.000	10.168	.168	1.68	.70343	.001	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



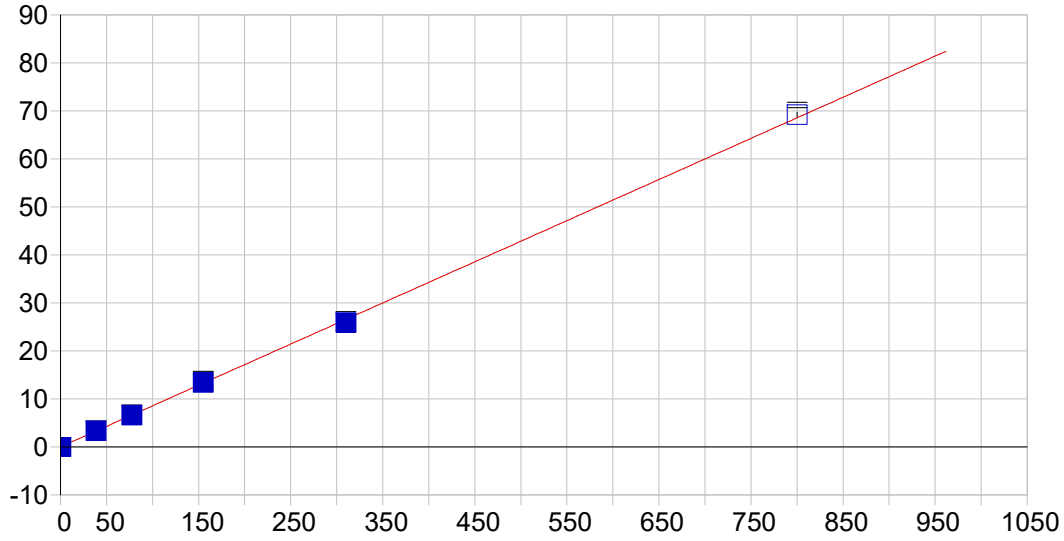
Sb 206.833 {463}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000269	Re-Slope:	1.000000
A1 (Gain):	0.126473	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999755	Status:	OK.
Std Error of Est:	0.000119		
Predicted MDL:	0.002556		
Predicted MQL:	0.008520		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00027	.000	1
S1	.06000	.05526	-.005	-7.90	.00726	.000	1
S2	1.2500	1.1931	-.057	-4.56	.15644	.000	1
S3	2.5000	2.4023	-.098	-3.91	.31467	.001	1
S4	5.0000	4.9857	-.014	-.286	.65197	.001	1
S5	10.000	10.174	.174	1.74	1.3292	.002	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



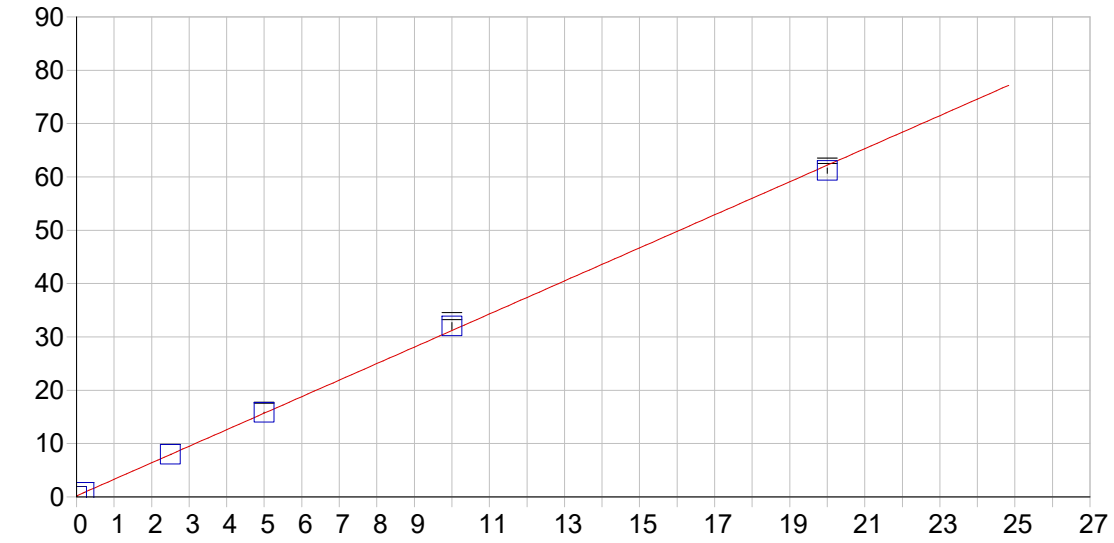
Al 396.152 { 85}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000182	Re-Slope:	1.000000
A1 (Gain):	0.085702	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999895	Status:	OK.
Std Error of Est:	0.000772		
Predicted MDL:	0.021763		
Predicted MQL:	0.072544		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00018	.000	1
S1	.20000	.19582	-.004	-2.09	.01699	.001	1
S2	38.750	38.634	-.116	-.300	3.3148	.012	1
S3	77.500	76.901	-.599	-.773	6.5979	.018	1
S4	155.00	156.62	1.62	1.04	13.437	.225	1
S5	310.00	302.02	-7.98	-2.57	25.913	.172	1
S6	800.00	807.09	7.09	.886	69.169	.540	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



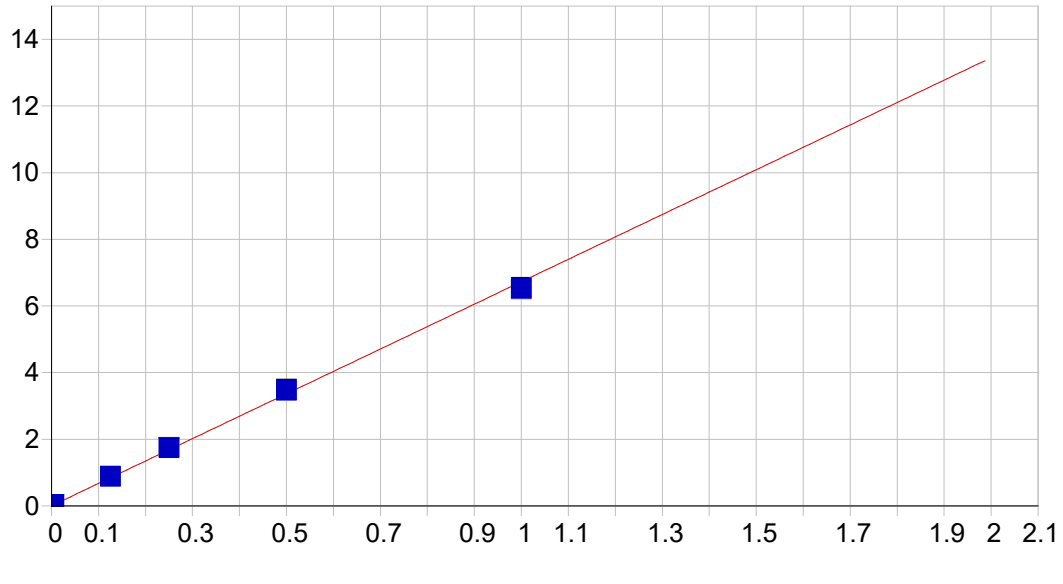
Ba 493.409 { 68}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.201200	Re-Slope:	1.000000
A1 (Gain):	3.099513	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999822	Status:	OK.
Std Error of Est:	0.006212		
Predicted MDL:	0.001595		
Predicted MQL:	0.005316		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	.20117	.002	1
S1	.20000	.20502	.005	2.51	.83666	.004	1
S2	2.5000	2.5100	.010	.398	7.9808	.003	1
S3	5.0000	5.0383	.038	.765	15.817	.086	1
S4	10.000	10.275	.275	2.75	32.049	.641	1
S5	20.000	19.672	-.328	-1.64	61.174	.513	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



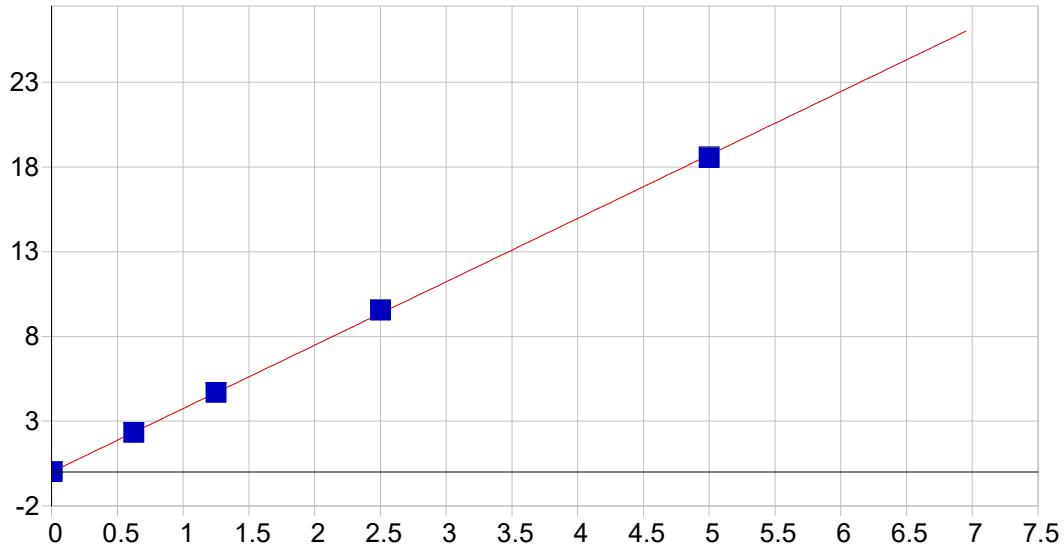
Be 234.861 {144}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.002641	Re-Slope:	1.000000
A1 (Gain):	6.724453	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999437	Status:	OK.
Std Error of Est:	0.000843		
Predicted MDL:	0.000136		
Predicted MQL:	0.000453		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00264	.000	1
S1	.00500	.00542	.000	8.43	.03907	.000	1
S2	.12500	.13081	.006	4.65	.87843	.009	1
S3	.25000	.25916	.009	3.67	1.7377	.011	1
S4	.50000	.51567	.016	3.13	3.4548	.033	1
S5	1.0000	.96893	-.031	-3.11	6.4873	.044	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



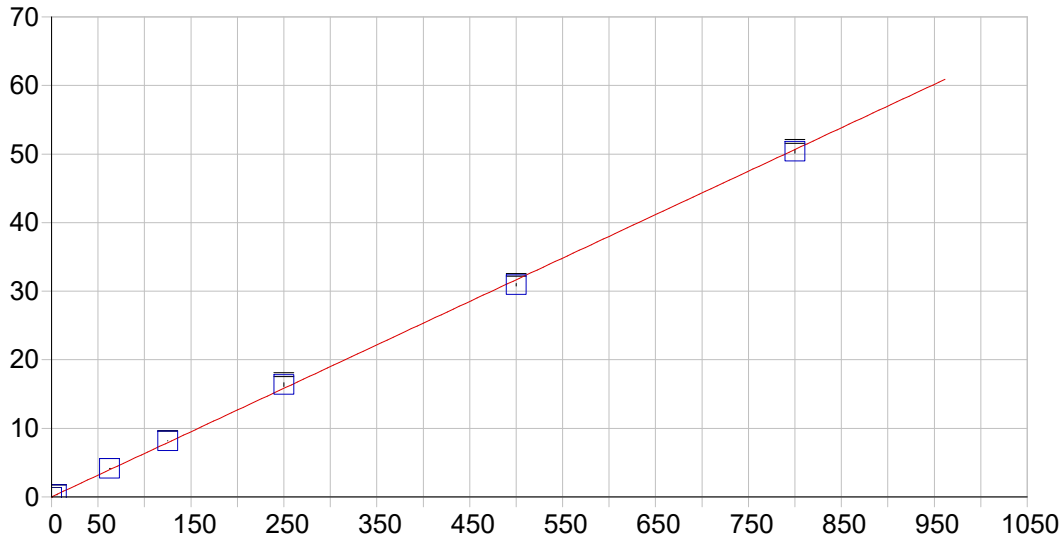
Cd 214.438 {457}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000174	Re-Slope:	1.000000
A1 (Gain):	3.742436	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999923	Status:	OK.
Std Error of Est:	0.000389		
Predicted MDL:	0.000079		
Predicted MQL:	0.000264		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00017	.000	1
S1	.00500	.00485	-.000	-3.08	.01838	.000	1
S2	.62500	.61910	-.006	-.944	2.3207	.004	1
S3	1.2500	1.2501	.000	.006	4.6857	.008	1
S4	2.5000	2.5499	.050	2.00	9.5575	.021	1
S5	5.0000	4.9560	-.044	-.879	18.577	.020	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



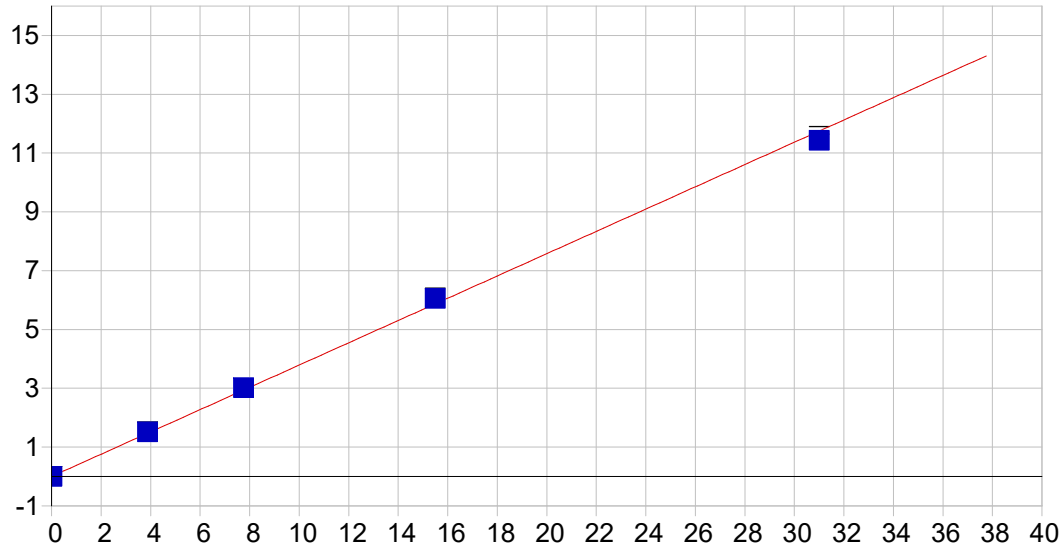
Ca 373.690 { 90}

Date of Fit: 02/07/2025 8:00:59 Type of Fit: Linear Weighting: 1/Conc

A0 (Offset):	0.003589	Re-Slope:	1.000000
A1 (Gain):	0.063327	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999750	Status:	OK.
Std Error of Est:	0.004939		
Predicted MDL:	0.023365		
Predicted MQL:	0.077883		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00074	-.001	.000	.00354	.002	1
S1	5.0000	5.3184	.318	6.37	.34039	.001	1
S2	62.500	65.362	2.86	4.58	4.1427	.005	1
S3	125.00	129.13	4.13	3.30	8.1810	.030	1
S4	250.00	258.50	8.50	3.40	16.374	.296	1
S5	500.00	488.36	-11.6	-2.33	30.930	.200	1
S6	800.00	795.83	-4.17	-.521	50.401	.291	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



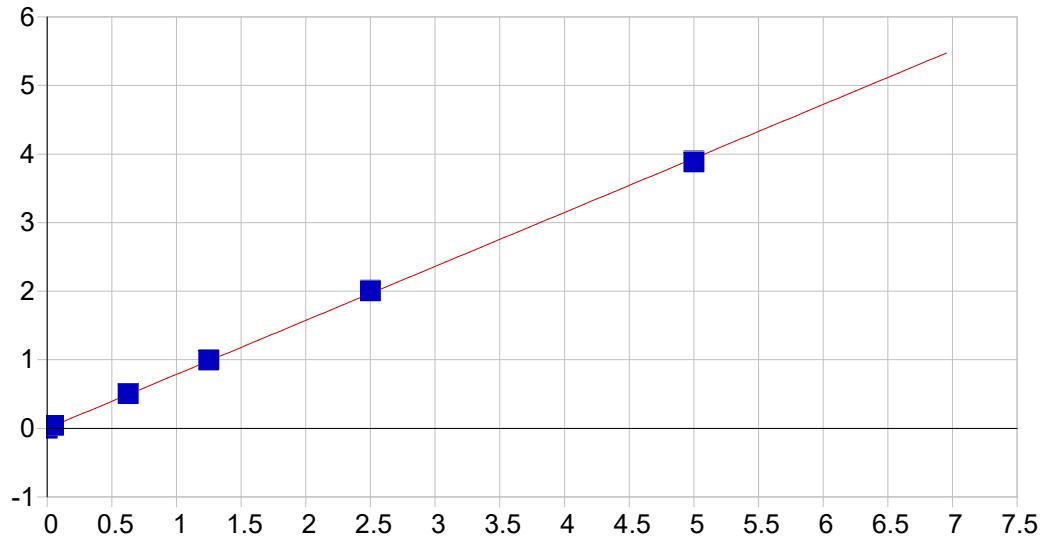
Cr 267.716 {126}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000039	Re-Slope:	1.000000
A1 (Gain):	0.378931	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999588	Status:	OK.
Std Error of Est:	0.000321		
Predicted MDL:	0.000692		
Predicted MQL:	0.002308		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00004	.000	1
S1	.01000	.01070	.001	6.95	.00410	.000	1
S2	3.8750	4.0021	.127	3.28	1.5177	.005	1
S3	7.7500	7.9691	.219	2.83	3.0221	.010	1
S4	15.500	15.985	.485	3.13	6.0620	.011	1
S5	31.000	30.168	-.832	-2.68	11.441	.128	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



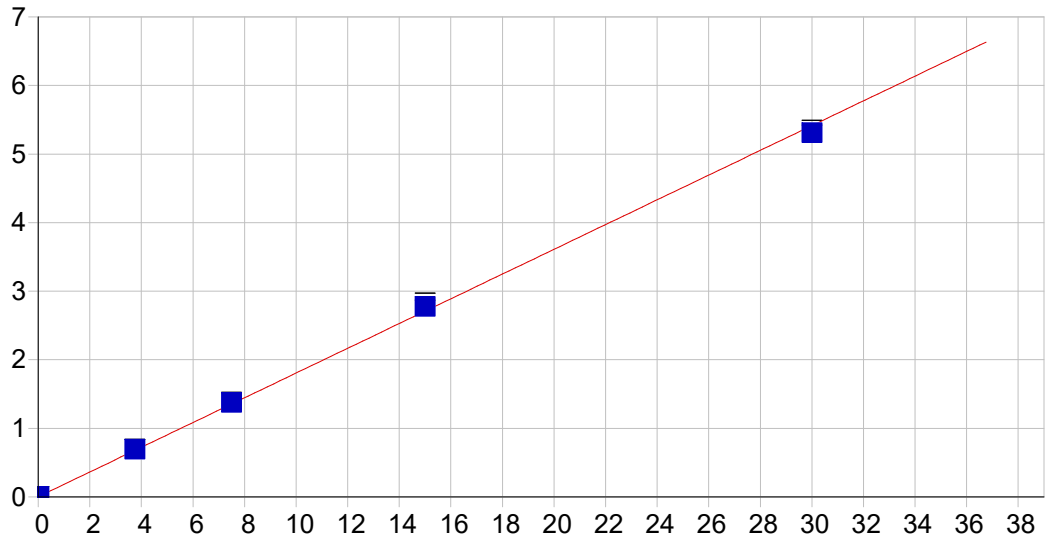
Co 228.616 {448}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000087	Re-Slope:	1.000000
A1 (Gain):	0.787132	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999898	Status:	OK.
Std Error of Est:	0.000300		
Predicted MDL:	0.000374		
Predicted MQL:	0.001247		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00008	.000	1
S1	.05000	.05129	.001	2.59	.04059	.001	1
S2	.62500	.63671	.012	1.87	.50285	.000	1
S3	1.2500	1.2611	.011	.891	.99594	.002	1
S4	2.5000	2.5422	.042	1.69	2.0075	.006	1
S5	5.0000	4.9337	-.066	-1.33	3.8962	.004	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



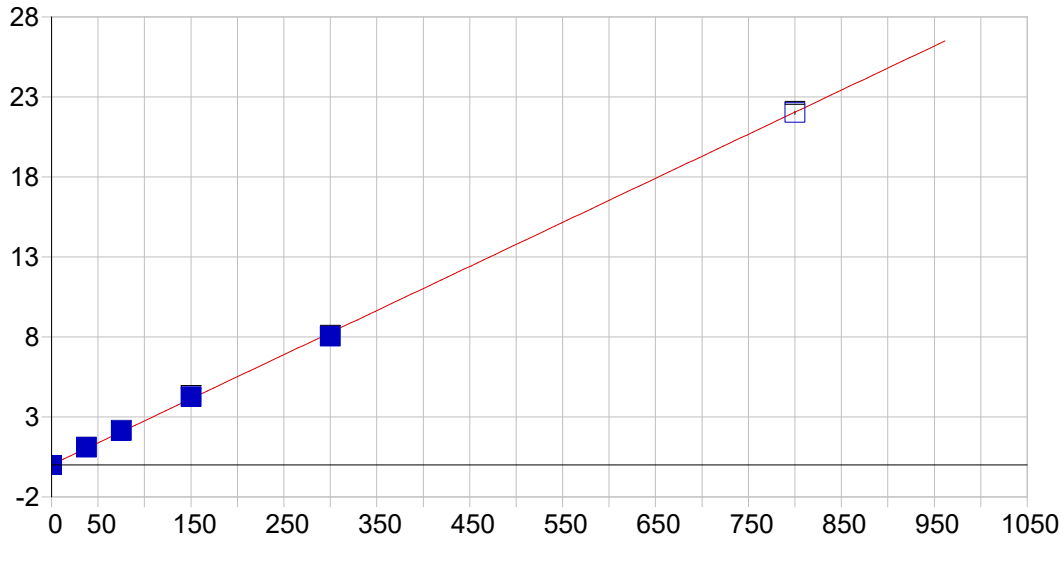
Cu 324.754 {104}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.002629	Re-Slope:	1.000000
A1 (Gain):	0.180402	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999789	Status:	OK.
Std Error of Est:	0.000170		
Predicted MDL:	0.005836		
Predicted MQL:	0.019455		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00263	.001	1
S1	.02500	.02307	-.002	-7.72	.00678	.001	1
S2	3.7500	3.8272	.077	2.06	.69298	.002	1
S3	7.5000	7.6156	.116	1.54	1.3763	.007	1
S4	15.000	15.377	.377	2.51	2.7764	.052	1
S5	30.000	29.432	-.568	-1.89	5.3117	.036	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



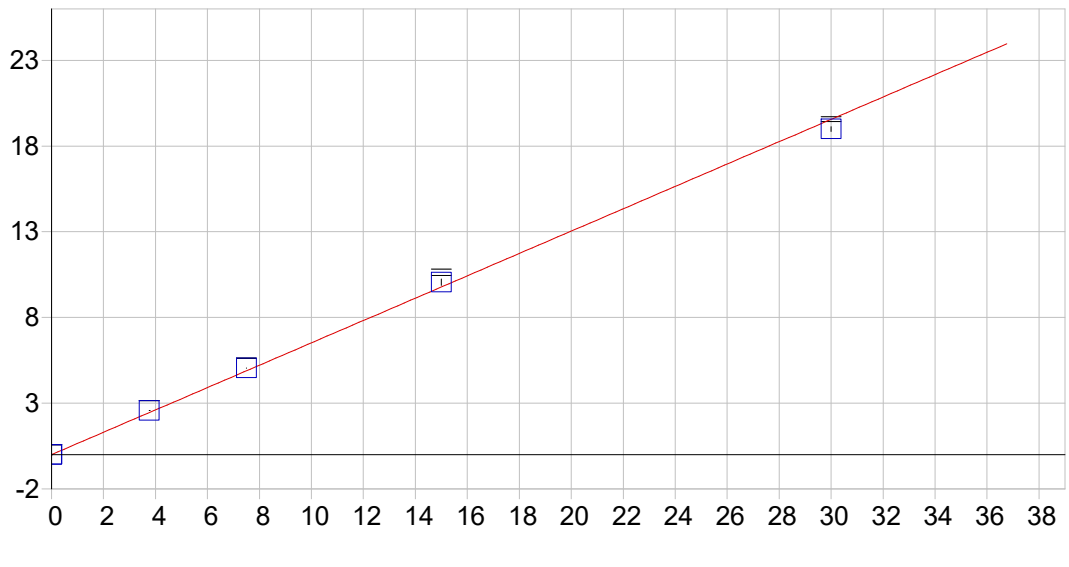
Fe 259.837 {130}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000248	Re-Slope:	1.000000
A1 (Gain):	0.027558	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999780	Status:	OK.
Std Error of Est:	0.000252		
Predicted MDL:	0.018766		
Predicted MQL:	0.062554		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00004	-.000	.000	-.00025	.000	1
S1	.10000	.12657	.027	26.6	.00324	.000	1
S2	37.500	39.673	2.17	5.79	1.0933	.004	1
S3	75.000	77.954	2.95	3.94	2.1485	.006	1
S4	150.00	154.31	4.31	2.87	4.2530	.080	1
S5	300.00	291.80	-8.20	-2.73	8.0431	.053	1
S6	800.00	798.74	-1.26	-.158	22.011	.085	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



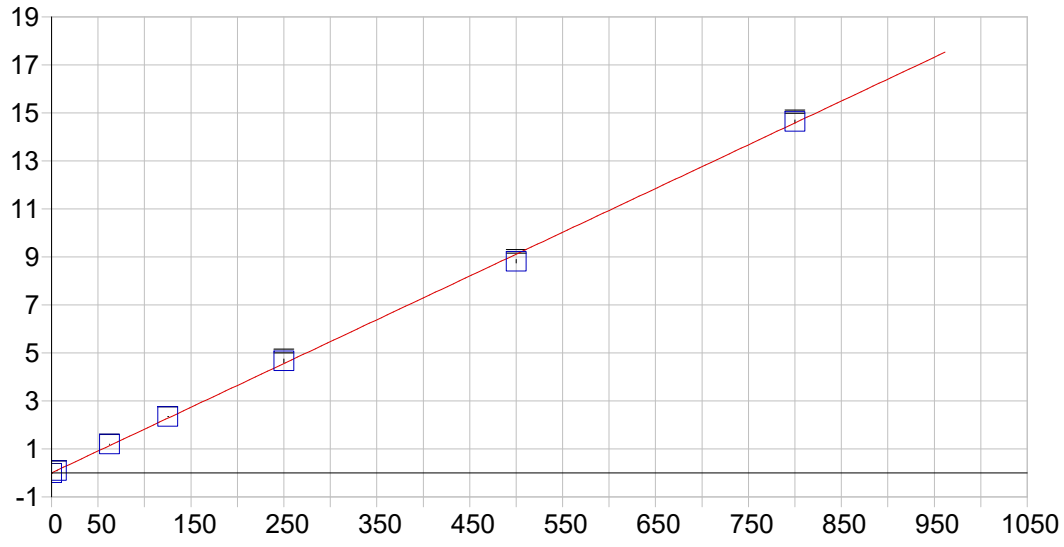
Mn 257.610 {131}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000023	Re-Slope:	1.000000
A1 (Gain):	0.651917	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999508	Status:	OK.
Std Error of Est:	0.000728		
Predicted MDL:	0.000856		
Predicted MQL:	0.002853		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00003	.000	1
S1	.01500	.01729	.002	15.3	.01125	.000	1
S2	3.7500	3.9429	.193	5.14	2.5704	.004	1
S3	7.5000	7.7456	.246	3.27	5.0495	.010	1
S4	15.000	15.426	.426	2.84	10.056	.185	1
S5	30.000	29.133	-.867	-2.89	18.992	.136	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



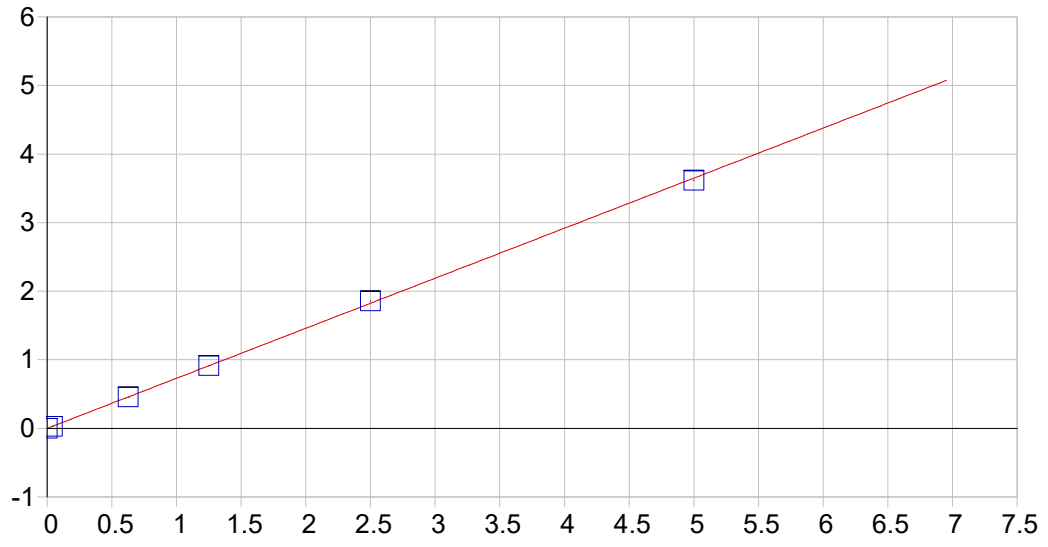
Mg 279.079 {121}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000697	Re-Slope:	1.000000
A1 (Gain):	0.018229	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999725	Status:	OK.
Std Error of Est:	0.001493		
Predicted MDL:	0.037904		
Predicted MQL:	0.126347		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00064	-.001	.000	-.00071	.001	1
S1	5.0000	5.2631	.263	5.26	.09524	.001	1
S2	62.500	65.578	3.08	4.92	1.1947	.007	1
S3	125.00	128.78	3.78	3.02	2.3468	.004	1
S4	250.00	255.95	5.95	2.38	4.6650	.084	1
S5	500.00	483.78	-16.2	-3.24	8.8183	.072	1
S6	800.00	803.15	3.15	.394	14.640	.063	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



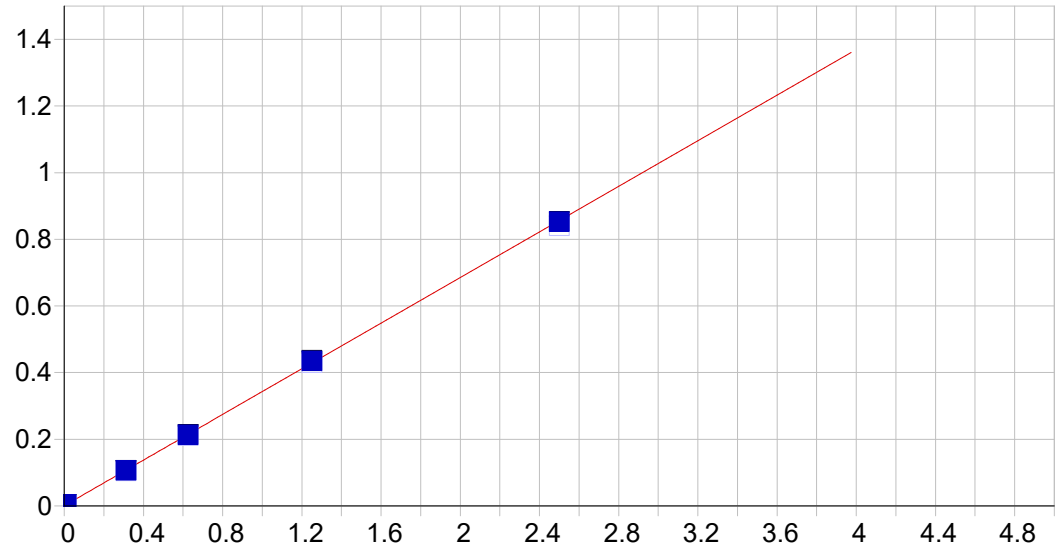
Ni 231.604 {446}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000087	Re-Slope:	1.000000
A1 (Gain):	0.729756	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999937	Status:	OK.
Std Error of Est:	0.000194		
Predicted MDL:	0.000471		
Predicted MQL:	0.001568		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00009	.000	1
S1	.04000	.03872	-.001	-3.21	.02817	.000	1
S2	.62500	.62373	-.001	-.203	.45508	.001	1
S3	1.2500	1.2531	.003	.251	.91440	.002	1
S4	2.5000	2.5432	.043	1.73	1.8558	.004	1
S5	5.0000	4.9562	-.044	-.875	3.6168	.005	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

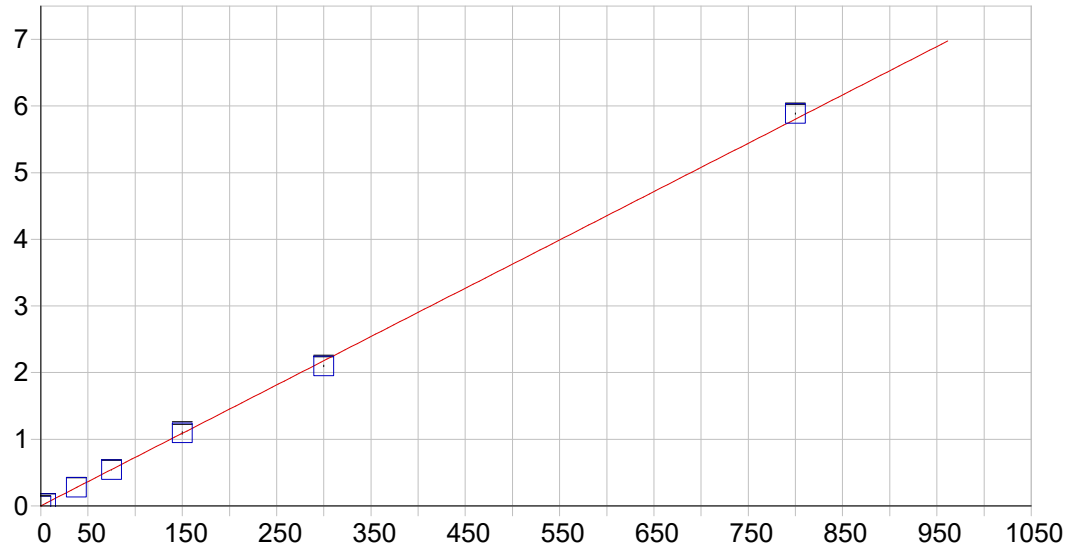


Ag 328.068 {103}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000849	Re-Slope:	1.000000
A1 (Gain):	0.342258	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999941	Status:	OK.
Std Error of Est:	0.000031		
Predicted MDL:	0.001127		
Predicted MQL:	0.003756		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00085	.000	1
S1	.01000	.01089	.001	8.85	.00457	.000	1
S2	.31250	.30777	-.005	-1.51	.10465	.000	1
S3	.62500	.62074	-.004	-.682	.21022	.000	1
S4	1.2500	1.2696	.020	1.57	.42922	.001	1
S5	2.5000	2.4885	-.012	-.460	.84024	.001	1



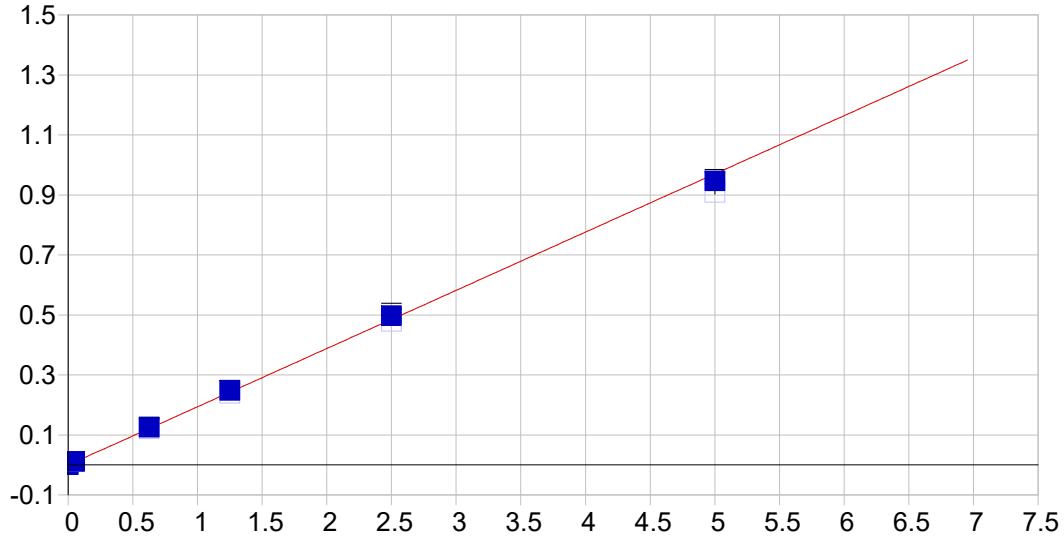
Na 818.326 { 41}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.002374	Re-Slope:	1.000000
A1 (Gain):	0.007252	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999777	Status:	OK.
Std Error of Est:	0.000473		
Predicted MDL:	0.457709		
Predicted MQL:	1.525696		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00055	.001	.000	.00238	.002	1
S1	5.0000	4.5514	-.449	-8.97	.03538	.004	1
S2	37.500	37.826	.326	.870	.27669	.004	1
S3	75.000	74.245	-.755	-1.01	.54080	.002	1
S4	150.00	150.44	.439	.292	1.0934	.019	1
S5	300.00	289.09	-10.9	-3.64	2.0989	.011	1
S6	800.00	811.35	11.3	1.42	5.8863	.008	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



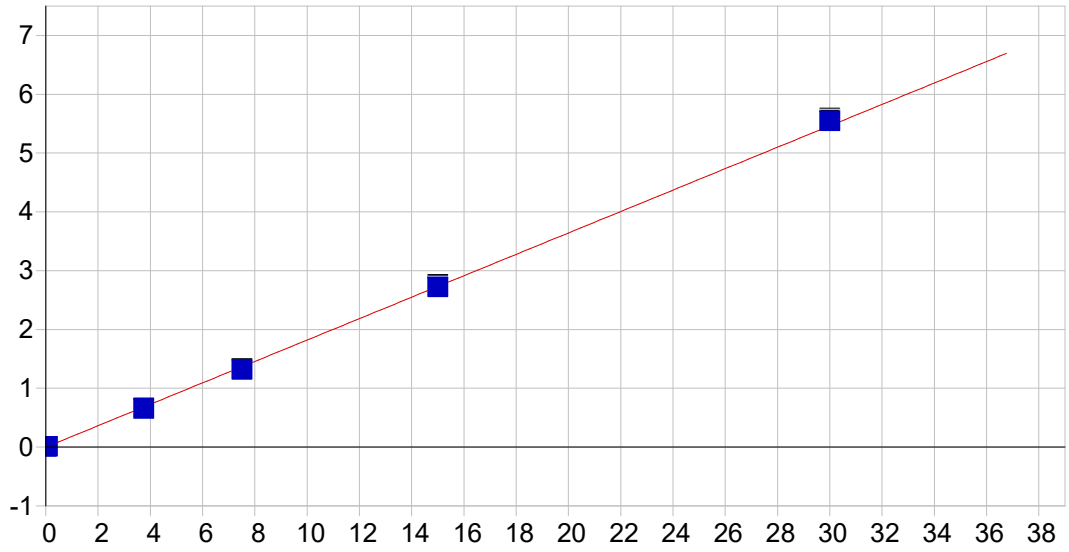
V 292.402 {115}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear
Weighting:	1/Conc		

A0 (Offset):	-0.000213	Re-Slope:	1.000000
A1 (Gain):	0.194053	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999565	Status:	OK.
Std Error of Est:	0.000146		
Predicted MDL:	0.004603		
Predicted MQL:	0.015344		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	-.00022	.000	1
S1	.05000	.05933	.009	18.7	.01127	.000	1
S2	.62500	.64529	.020	3.25	.12015	.001	1
S3	1.2500	1.2785	.029	2.28	.23817	.001	1
S4	2.5000	2.5627	.063	2.51	.47765	.009	1
S5	5.0000	4.8787	-.121	-2.43	.90763	.005	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



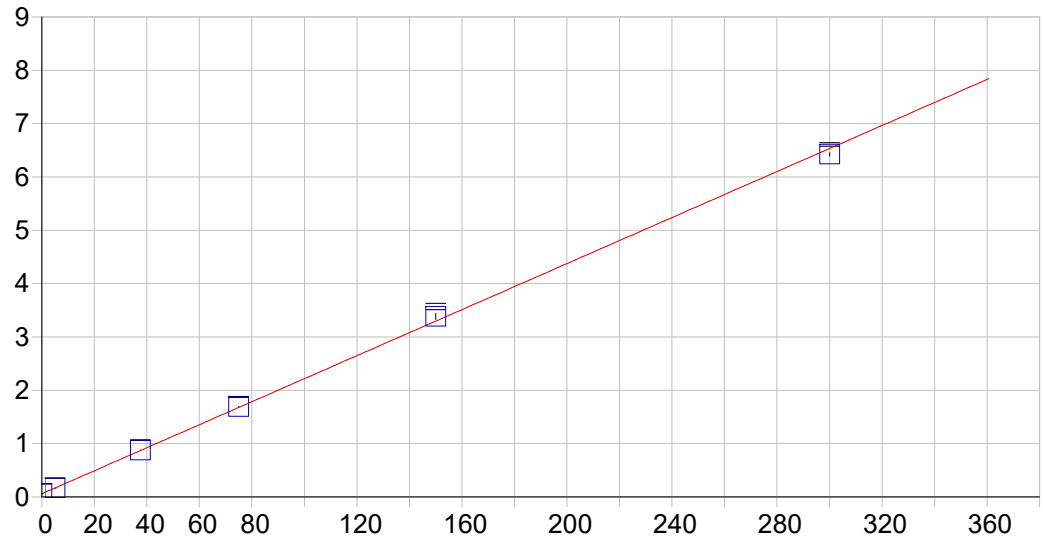
Zn 213.856 {158}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000392	Re-Slope:	1.000000
A1 (Gain):	0.182128	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999795	Status:	OK.
Std Error of Est:	0.000264		
Predicted MDL:	0.002656		
Predicted MQL:	0.008854		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00039	.000	1
S1	.06000	.06077	.001	1.29	.01071	.000	1
S2	3.7500	3.5928	-.157	-4.19	.65730	.006	1
S3	7.5000	7.2339	-.266	-3.55	1.3238	.012	1
S4	15.000	14.959	-.041	-.274	2.7374	.026	1
S5	30.000	30.464	.464	1.55	5.5746	.019	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



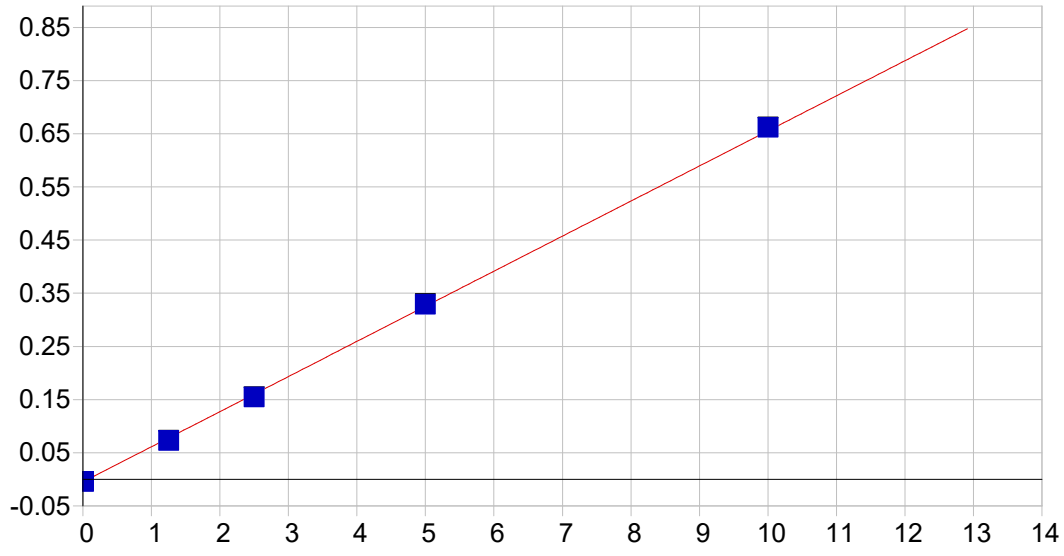
K 769.896 { 44}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.059065	Re-Slope:	1.000000
A1 (Gain):	0.021578	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999819	Status:	OK.
Std Error of Est:	0.000846		
Predicted MDL:	0.142645		
Predicted MQL:	0.475483		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00015	-.000	.000	.05906	.000	1
S1	5.0000	5.0055	.006	.110	.16708	.000	1
S2	37.500	37.883	.383	1.02	.87651	.003	1
S3	75.000	75.564	.564	.752	1.6896	.010	1
S4	150.00	154.10	4.10	2.73	3.3843	.058	1
S5	300.00	294.95	-5.05	-1.68	6.4235	.033	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



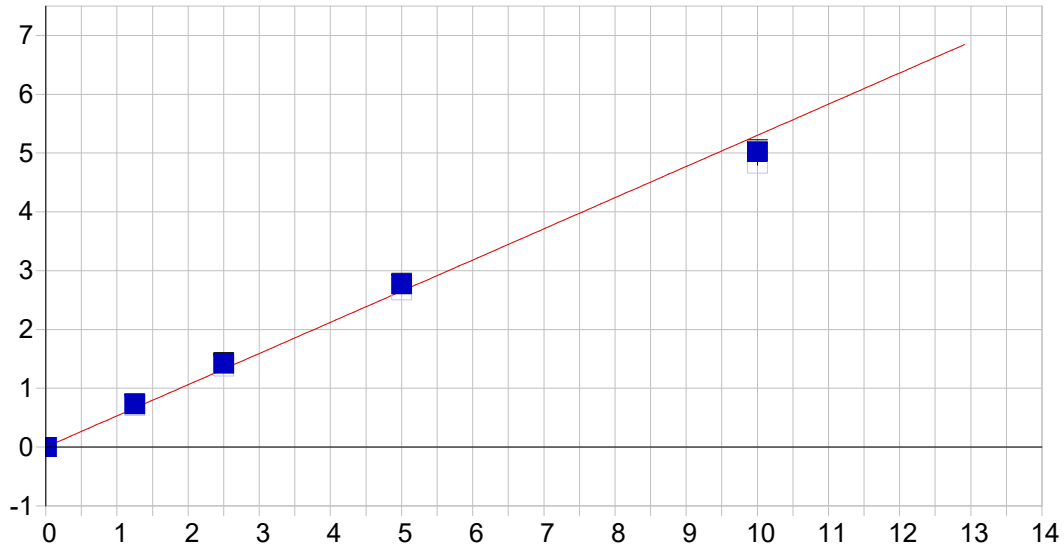
P 177.495 {490}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.004609	Re-Slope:	1.000000
A1 (Gain):	0.065983	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999754	Status:	OK.
Std Error of Est:	0.000025		
Predicted MDL:	0.002134		
Predicted MQL:	0.007114		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00461	.000	1
S1	.01000	.00925	-.001	-7.52	-.00400	.000	1
S2	1.2500	1.1738	-.076	-6.10	.07272	.000	1
S3	2.5000	2.4165	-.083	-3.34	.15460	.000	1
S4	5.0000	5.0542	.054	1.08	.32840	.001	1
S5	10.000	10.106	.106	1.06	.66127	.000	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

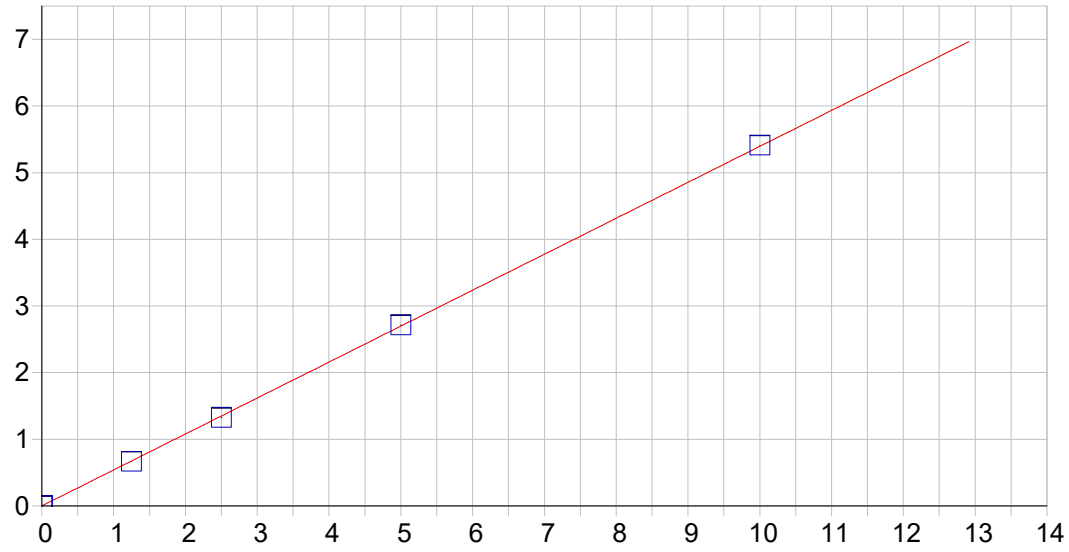


B 249.678 {135}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.001203	Re-Slope:	1.000000
A1 (Gain):	0.530069	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.997888	Status:	OK.
Std Error of Est:	0.000557		
Predicted MDL:	0.002057		
Predicted MQL:	0.006856		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00121	.002	1
S1	.01000	-.00042	-.010	-104.	.00095	.001	1
S2	1.2500	1.3735	.123	9.88	.70404	.004	1
S3	2.5000	2.6840	.184	7.36	1.3735	.014	1
S4	5.0000	5.2231	.223	4.46	2.6690	.019	1
S5	10.000	9.4802	-.520	-5.20	4.8248	.029	1



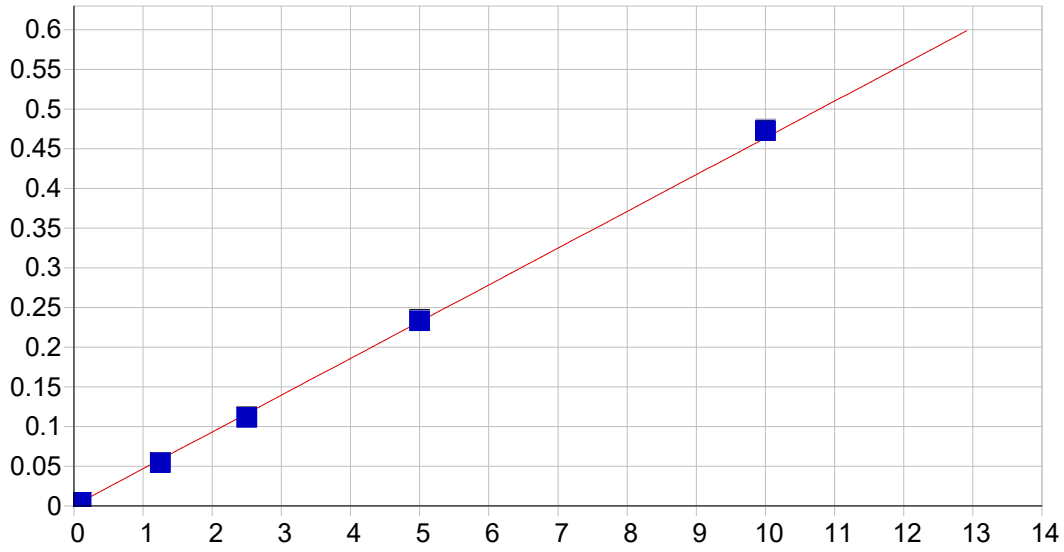
Mo 202.030 {467}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000242	Re-Slope:	1.000000
A1 (Gain):	0.539447	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999972	Status:	OK.
Std Error of Est:	0.000068		
Predicted MDL:	0.000496		
Predicted MQL:	0.001655		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00024	.000	1
S1	.01000	.01036	.000	3.64	.00583	.000	1
S2	1.2500	1.2348	-.015	-1.21	.66636	.002	1
S3	2.5000	2.4599	-.040	-1.60	1.3272	.005	1
S4	5.0000	5.0260	.026	.520	2.7115	.005	1
S5	10.000	10.029	.029	.289	5.4103	.003	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



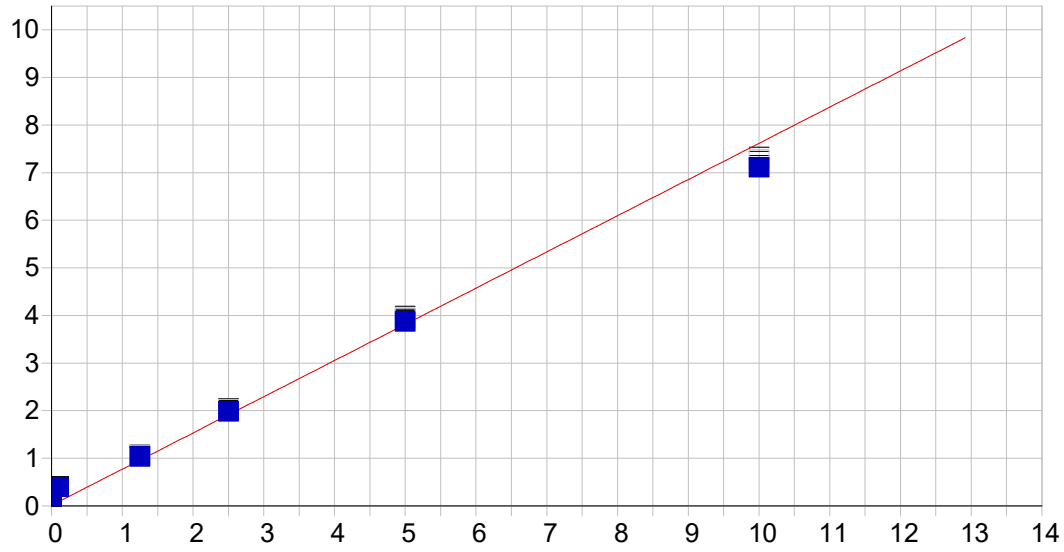
S 182.034 {485}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000586	Re-Slope:	1.000000
A1 (Gain):	0.046322	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999550	Status:	OK.
Std Error of Est:	0.000074		
Predicted MDL:	0.003285		
Predicted MQL:	0.010951		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00002	.000	.000	.00059	.000	1
S1	.10000	.08409	-.016	-15.9	.00448	.000	1
S2	1.2500	1.1620	-.088	-7.04	.05460	.000	1
S3	2.5000	2.3926	-.107	-4.30	.11179	.000	1
S4	5.0000	5.0205	.020	.409	.23389	.001	1
S5	10.000	10.191	.191	1.91	.47414	.000	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

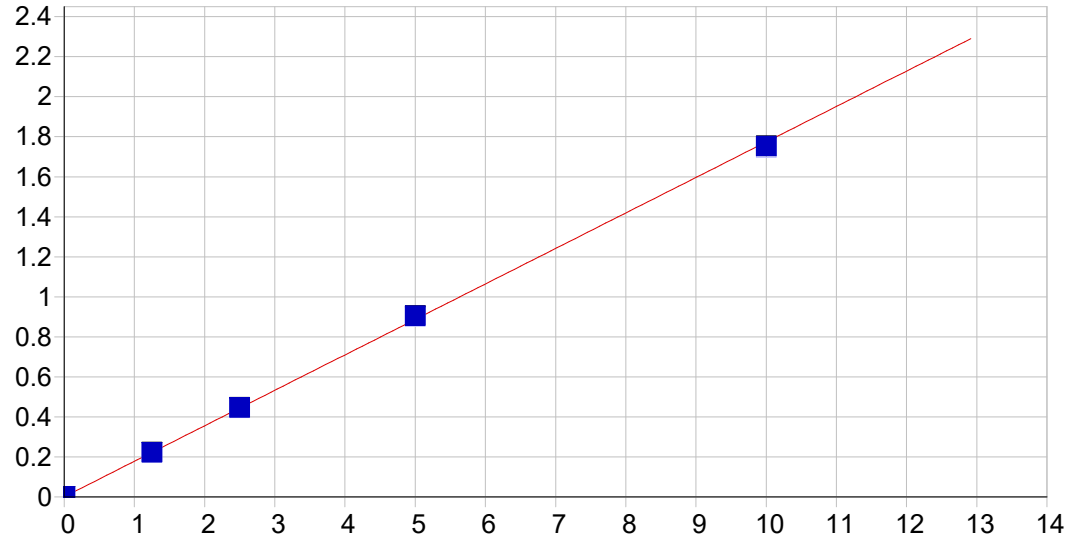


Si 251.611 {134}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.012064	Re-Slope:	1.000000
A1 (Gain):	0.760463	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.959050	Status:	OK.
Std Error of Est:	0.012205		
Predicted MDL:	0.001543		
Predicted MQL:	0.005144		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00041	-.000	.000	.01175	.001	1
S1	.10000	.50761	.408	408.	.39916	.003	1
S2	1.2500	1.3438	.094	7.51	1.0556	.011	1
S3	2.5000	2.5954	.095	3.82	2.0289	.016	1
S4	5.0000	5.0723	.072	1.45	3.9557	.031	1
S5	10.000	9.3342	-.666	-6.66	7.2830	.043	1

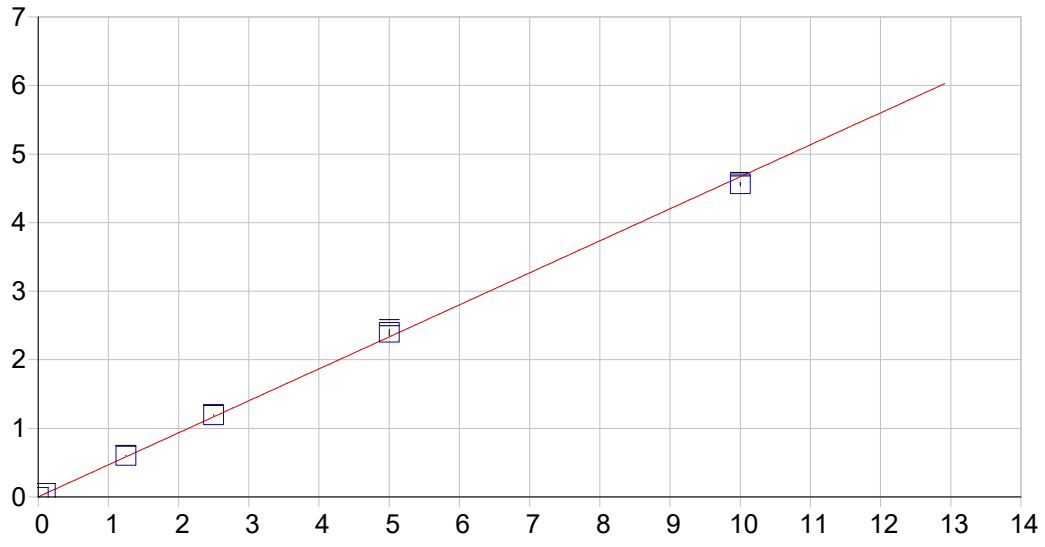


Sn 189.989 {478}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000682	Re-Slope:	1.000000
A1 (Gain):	0.177292	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999909	Status:	OK.
Std Error of Est:	0.000033		
Predicted MDL:	0.000851		
Predicted MQL:	0.002837		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00068	.000	1
S1	.00700	.00742	.000	6.03	.00195	.000	1
S2	1.2500	1.2518	.002	.147	.22151	.001	1
S3	2.5000	2.5147	.015	.587	.44429	.001	1
S4	5.0000	5.0984	.098	1.97	.90014	.001	1
S5	10.000	9.8847	-.115	-1.15	1.7443	.002	1



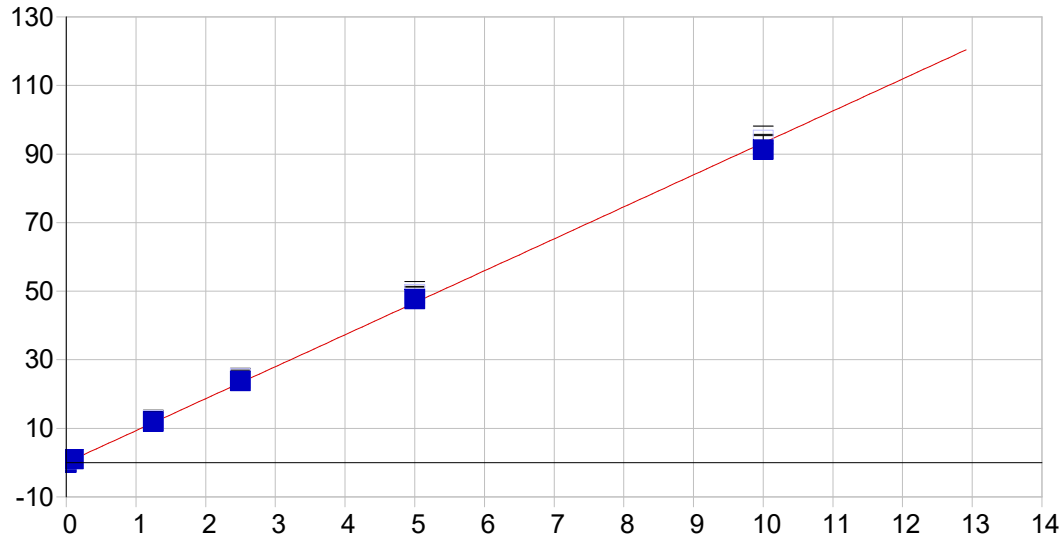
Ti 336.121 {100}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.001471	Re-Slope:	1.000000
A1 (Gain):	0.466718	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999705	Status:	OK.
Std Error of Est:	0.000603		
Predicted MDL:	0.002499		
Predicted MQL:	0.008328		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	.00147	.001	1
S1	.10000	.10316	.003	3.16	.04962	.000	1
S2	1.2500	1.2865	.037	2.92	.60193	.002	1
S3	2.5000	2.5555	.055	2.22	1.1942	.004	1
S4	5.0000	5.1328	.133	2.66	2.3970	.044	1
S5	10.000	9.7720	-.228	-2.28	4.5622	.026	1

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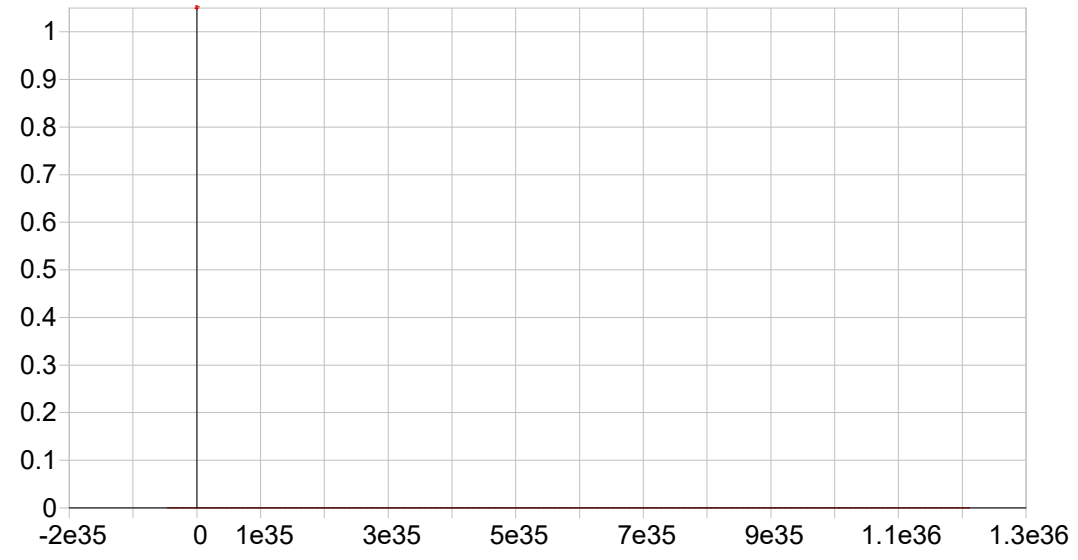


Sr 407.771 { 83}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.002118	Re-Slope:	1.000000
A1 (Gain):	9.324402	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999746	Status:	OK.
Std Error of Est:	0.011511		
Predicted MDL:	0.000195		
Predicted MQL:	0.000649		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	-.00224	.002	1
S1	.10000	.10843	.008	8.43	1.0099	.004	1
S2	1.2500	1.2841	.034	2.72	12.321	.036	1
S3	2.5000	2.5535	.053	2.14	24.507	.090	1
S4	5.0000	5.1184	.118	2.37	49.123	.770	1
S5	10.000	9.7859	-.214	-2.14	94.043	1.20	1

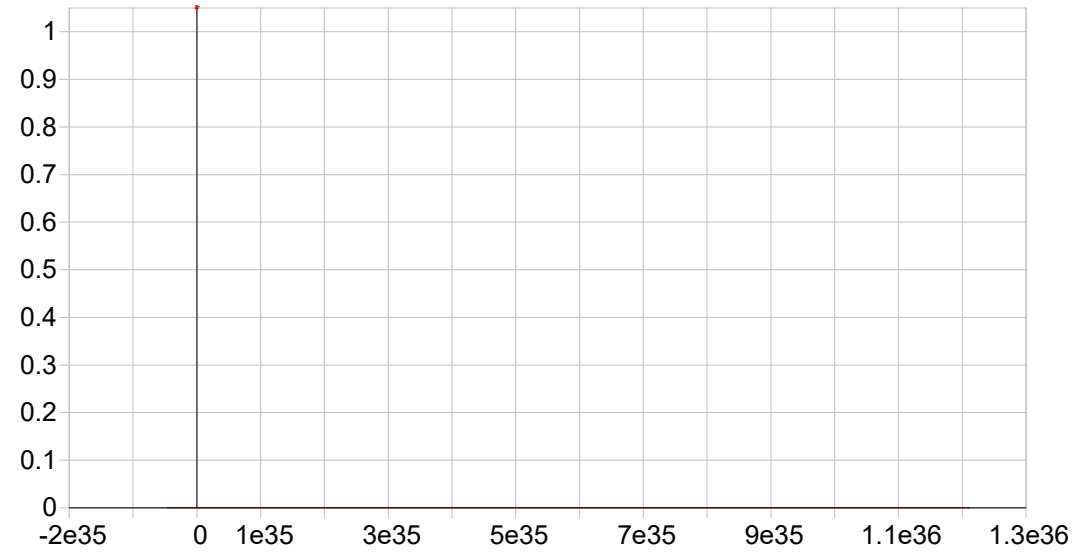


Y 224.306 {450}*

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

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

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



Y 360.073 { 94}*

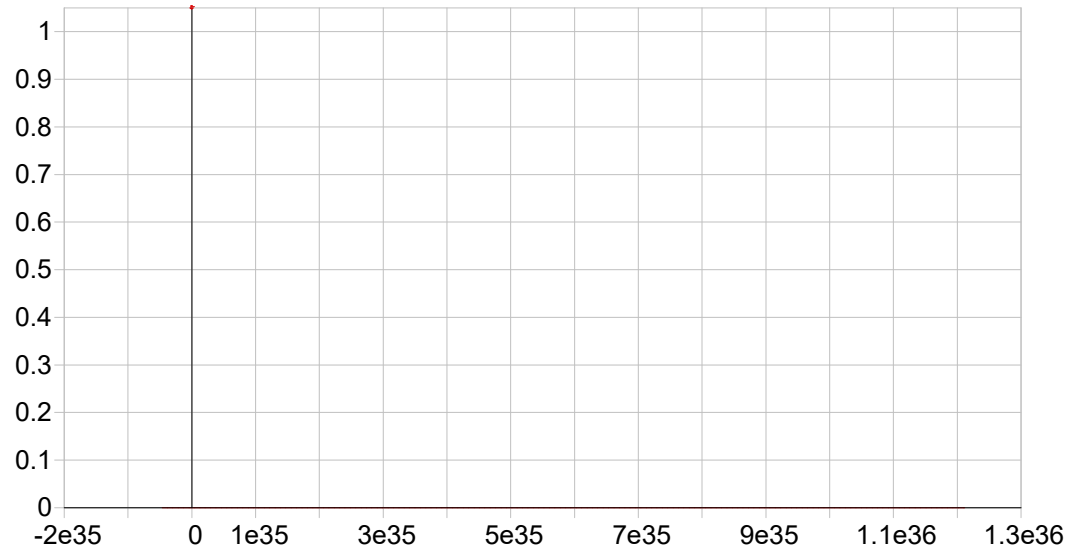
Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc

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

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
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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



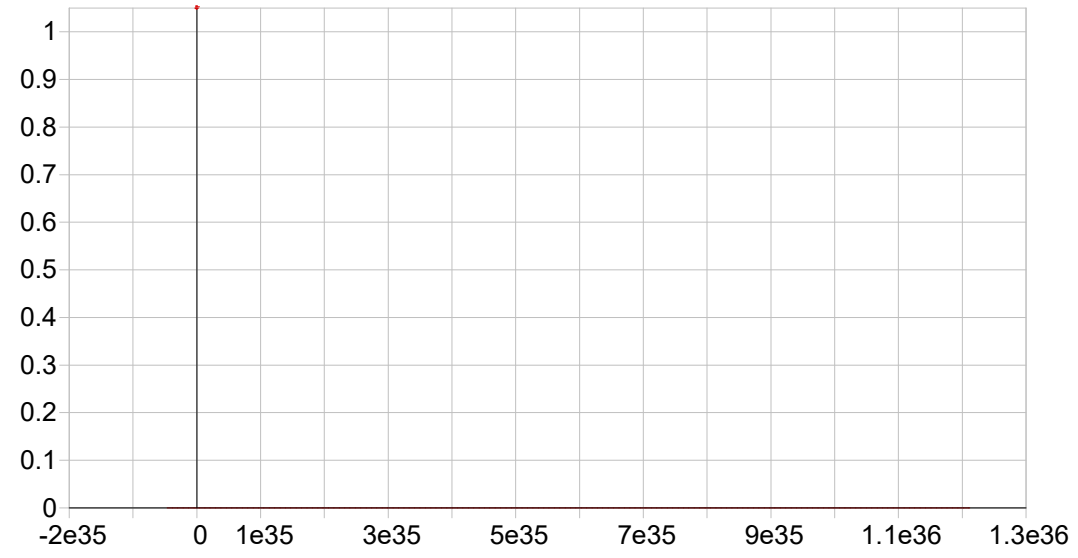
Y 371.030 { 91}*

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

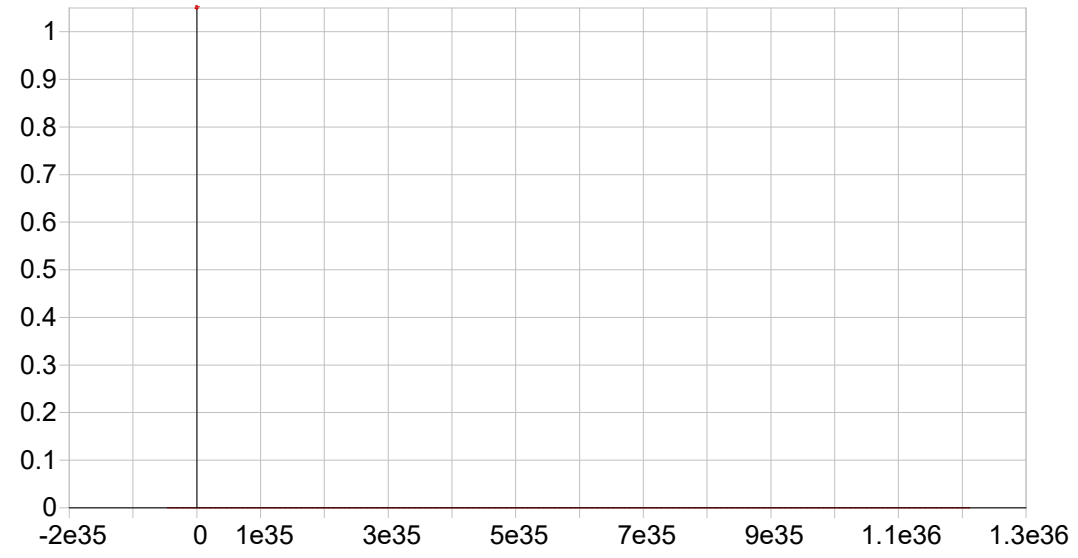
Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5



Y 224.306 {150}*

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

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



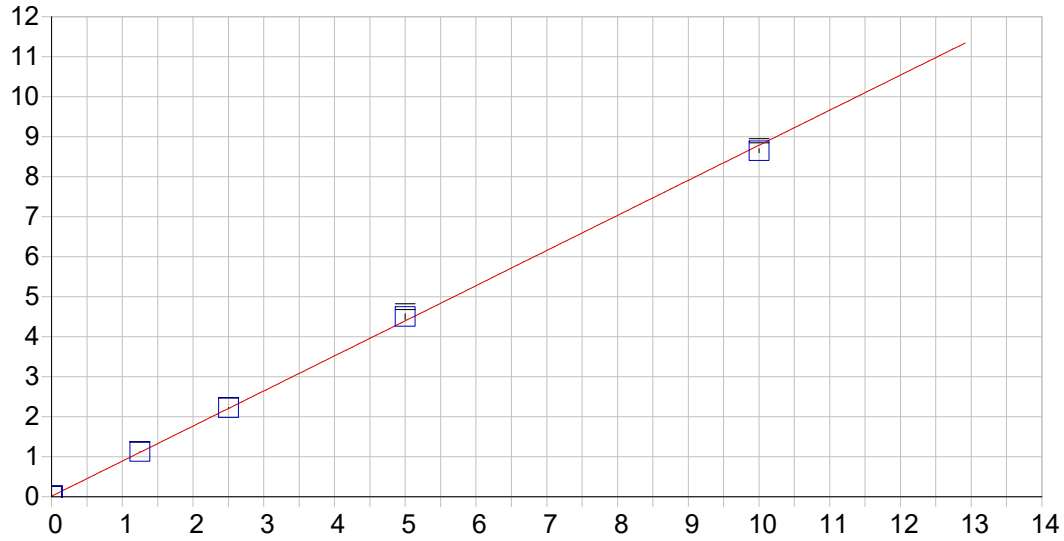
In 230.606 {446}*

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

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

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

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



Li 670.784 { 50}

Date of Fit:	02/07/2025 8:00:59	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.012952	Re-Slope:	1.000000
A1 (Gain):	0.877410	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999799	Status:	OK.
Std Error of Est:	0.000362		
Predicted MDL:	0.004099		
Predicted MQL:	0.013662		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.01296	.003	1
S5	10.000	9.8436	-.156	-1.56	8.6498	.053	1
S4	5.0000	5.1182	.118	2.36	4.5037	.074	1
S3	2.5000	2.5241	.024	.963	2.2276	.007	1
S2	1.2500	1.2693	.019	1.55	1.1267	.004	1
S1	.01500	.00982	-.005	-34.5	.02157	.005	1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S0 Acquired: 02/07/2025 13:18:33 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S0 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.35407	.00006	.00029	.00015	.00027	.00018	.20117	.00264
Stddev	.39977	.00010	.00021	.00013	.00014	.00047	.00166	.00024
%RSD	112.91	185.71	74.789	84.559	52.274	257.04	.82499	9.2015
#1	.80864	-.00005	.00004	.00012	.00035	.00067	.20066	.00290
#2	.05715	.00005	.00041	.00004	.00011	.00015	.19983	.00242
#3	.19643	.00016	.00040	.00029	.00035	-.00027	.20303	.00258

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00017	.00354	.00004	.00008	.00263	-.00025	-.00003	-.00071
Stddev	.00025	.00213	.00018	.00022	.00052	.00033	.00011	.00057
%RSD	144.78	59.998	477.54	264.77	19.627	131.87	436.25	80.488
#1	.00037	.00316	-.00017	-.00017	.00210	.00013	-.00003	-.00102
#2	-.00011	.00163	.00017	.00023	.00314	-.00046	.00009	-.00105
#3	.00026	.00583	.00012	.00020	.00265	-.00042	-.00013	-.00005

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00009	.00085	.00238	-.00022	-.00039	.05906	-.00461	.00121
Stddev	.00015	.00026	.00207	.00035	.00011	.00033	.00006	.00170
%RSD	178.34	30.353	86.910	162.11	27.761	.55432	1.2974	140.47
#1	-.00014	.00063	.00152	-.00057	-.00051	.05938	-.00461	.00009
#2	-.00021	.00113	.00474	.00013	-.00038	.05872	-.00455	.00316
#3	.00009	.00078	.00088	-.00020	-.00029	.05909	-.00467	.00037

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00024	.00059	.01175	.00068	.00147	-.00224	.01296
Stddev	.00022	.00014	.00073	.00007	.00085	.00164	.00287
%RSD	92.478	23.629	6.2380	10.451	57.892	73.184	22.137
#1	.00039	.00073	.01091	.00076	.00085	-.00255	.01275
#2	-.00002	.00045	.01207	.00062	.00111	-.00372	.01019
#3	.00035	.00058	.01227	.00067	.00244	-.00047	.01592

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S0 Acquired: 02/07/2025 13:18:33 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S0 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4320.9	28438.	4643.6	3011.2	5162.6
Stddev	10.8	703.	22.4	77.7	9.0
%RSD	.25081	2.4720	.48234	2.5817	.17368
#1	4314.9	27641.	4637.7	2921.9	5156.8
#2	4314.4	28970.	4668.3	3064.2	5158.1
#3	4333.4	28703.	4624.7	3047.4	5172.9

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S1 Acquired: 02/07/2025 13:22:38 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3.1166	.00341	.00241	.00231	.00726	.01699	.83666	.03907
Stddev	.5971	.00017	.00051	.00029	.00042	.00141	.00378	.00047
%RSD	19.158	5.1081	21.098	12.375	5.7890	8.3019	.45202	1.2148
#1	3.8057	.00321	.00227	.00220	.00718	.01798	.83259	.03855
#2	2.7935	.00353	.00199	.00210	.00772	.01762	.83731	.03948
#3	2.7508	.00350	.00298	.00264	.00689	.01538	.84007	.03918

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.01838	.34039	.00410	.04059	.00678	.00324	.01125	.09524
Stddev	.00026	.00087	.00013	.00060	.00051	.00023	.00037	.00053
%RSD	1.3979	.25543	3.1916	1.4709	7.4841	7.1184	3.2556	.56000
#1	.01854	.34078	.00400	.03990	.00717	.00305	.01084	.09563
#2	.01808	.33939	.00424	.04088	.00698	.00350	.01156	.09546
#3	.01851	.34099	.00404	.04099	.00621	.00318	.01134	.09464

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.02817	.00457	.03538	.01127	.01071	.16708	-.00400	.00095
Stddev	.00037	.00031	.00408	.00036	.00039	.00032	.00012	.00057
%RSD	1.3021	6.7549	11.521	3.2141	3.6121	.19079	3.0167	60.381
#1	.02803	.00445	.03069	.01089	.01028	.16731	-.00403	.00048
#2	.02788	.00492	.03742	.01161	.01082	.16671	-.00410	.00159
#3	.02858	.00434	.03803	.01133	.01103	.16720	-.00386	.00079

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00583	.00448	.39916	.00195	.04962	1.0099	.02157
Stddev	.00003	.00011	.00263	.00017	.00050	.0035	.00474
%RSD	.58816	2.3787	.65999	8.5911	.99886	.34672	21.952
#1	.00587	.00436	.40218	.00192	.05014	1.0060	.02177
#2	.00580	.00452	.39737	.00213	.04956	1.0128	.01674
#3	.00583	.00456	.39792	.00179	.04916	1.0109	.02621

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S1 Acquired: 02/07/2025 13:22:38 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S01 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4325.1	28404.	4738.8	3003.6	4966.8
Stddev	15.9	122.	4.2	17.2	13.6
%RSD	.36812	.43087	.08764	.57106	.27389
#1	4334.6	28420.	4734.0	2996.0	4978.5
#2	4334.0	28275.	4741.2	2991.6	4970.0
#3	4306.8	28518.	4741.2	3023.2	4951.9

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S2 Acquired: 02/07/2025 13:26:39 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	339.08	.16401	1.4797	.08337	.15644	3.3148	7.9808	.87843
Stddev	1.54	.00003	.0025	.00039	.00041	.0121	.0026	.00853
%RSD	.45323	.01973	.16923	.46903	.26118	.36578	.03241	.97146
#1	339.94	.16404	1.4807	.08306	.15654	3.3279	7.9837	.88823
#2	339.99	.16398	1.4769	.08325	.15600	3.3125	7.9803	.87444
#3	337.30	.16401	1.4816	.08381	.15680	3.3039	7.9786	.87262

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2.3207	4.1427	1.5177	.50285	.69298	1.0933	2.5704	1.1947
Stddev	.0039	.0046	.0051	.00039	.00201	.0043	.0043	.0069
%RSD	.16769	.11190	.33762	.07659	.28951	.39083	.16901	.57344
#1	2.3197	4.1475	1.5206	.50253	.69515	1.0982	2.5754	1.2026
#2	2.3174	4.1423	1.5118	.50275	.69119	1.0912	2.5683	1.1910
#3	2.3250	4.1383	1.5207	.50328	.69261	1.0904	2.5676	1.1906

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.45508	.10465	.27669	.12015	.65730	.87651	.07272	.70404
Stddev	.00114	.00025	.00397	.00137	.00553	.00334	.00046	.00403
%RSD	.25013	.23465	1.4353	1.1406	.84118	.38113	.63256	.57253
#1	.45537	.10490	.27334	.12065	.65092	.87942	.07322	.70869
#2	.45383	.10441	.28108	.11859	.66037	.87725	.07232	.70152
#3	.45605	.10463	.27566	.12119	.66062	.87286	.07262	.70192

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.66636	.05460	1.0556	.22151	.60193	12.321	1.1267
Stddev	.00195	.00021	.0107	.00065	.00249	.036	.0038
%RSD	.29201	.37654	1.0113	.29527	.41317	.29155	.33958
#1	.66732	.05477	1.0678	.22091	.60465	12.360	1.1239
#2	.66413	.05437	1.0507	.22143	.60134	12.290	1.1250
#3	.66765	.05466	1.0482	.22221	.59978	12.311	1.1310

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S2 Acquired: 02/07/2025 13:26:39 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S02 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4035.4	26195.	4537.3	2809.8	4260.9
Stddev	11.9	98.	22.1	15.3	7.9
%RSD	.29415	.37551	.48779	.54335	.18605
#1	4031.8	26234.	4512.4	2822.5	4259.5
#2	4048.6	26267.	4554.9	2814.0	4269.4
#3	4025.7	26083.	4544.5	2792.8	4253.7

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S3 Acquired: 02/07/2025 13:30:25 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S03 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	666.39	.31919	2.9821	.16699	.31467	6.5979	15.817	1.7377
Stddev	1.15	.00021	.0042	.00045	.00089	.0180	.086	.0106
%RSD	.17217	.06634	.14062	.26964	.28418	.27342	.54217	.61052
#1	665.92	.31944	2.9865	.16727	.31523	6.6097	15.912	1.7375
#2	667.70	.31908	2.9781	.16647	.31364	6.6069	15.794	1.7271
#3	665.56	.31907	2.9818	.16723	.31514	6.5772	15.746	1.7483

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4.6857	8.1810	3.0221	.99594	1.3763	2.1485	5.0495	2.3468
Stddev	.0080	.0298	.0095	.00211	.0066	.0056	.0100	.0039
%RSD	.16992	.36399	.31455	.21166	.47632	.26250	.19758	.16760
#1	4.6939	8.2134	3.0135	.99700	1.3807	2.1483	5.0550	2.3441
#2	4.6780	8.1747	3.0323	.99351	1.3795	2.1542	5.0554	2.3513
#3	4.6852	8.1548	3.0204	.99731	1.3688	2.1429	5.0379	2.3450

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.91440	.21022	.54080	.23817	1.3238	1.6896	.15460	1.3735
Stddev	.00166	.00042	.00167	.00132	.0121	.0100	.00022	.0143
%RSD	.18121	.19807	.30795	.55505	.91424	.58863	.14241	1.0402
#1	.91585	.20974	.54215	.23672	1.3236	1.6996	.15485	1.3781
#2	.91259	.21049	.53894	.23931	1.3360	1.6895	.15445	1.3575
#3	.91475	.21043	.54131	.23848	1.3118	1.6797	.15450	1.3849

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.3272	.11179	2.0289	.44429	1.1942	24.507	2.2276
Stddev	.0050	.00020	.0155	.00113	.0040	.090	.0066
%RSD	.37917	.18269	.76405	.25346	.33712	.36537	.29687
#1	1.3316	.11202	2.0320	.44523	1.1978	24.558	2.2351
#2	1.3217	.11169	2.0121	.44304	1.1948	24.559	2.2251
#3	1.3285	.11165	2.0427	.44461	1.1899	24.403	2.2226

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S3 Acquired: 02/07/2025 13:30:25 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S03 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3930.0	25658.	4552.8	2752.6	4071.0
Stddev	14.0	107.	25.4	7.9	8.7
%RSD	.35660	.41719	.55701	.28692	.21340
#1	3917.6	25655.	4531.1	2744.1	4064.2
#2	3945.2	25553.	4580.7	2754.0	4080.8
#3	3927.1	25767.	4546.7	2759.7	4067.9

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S4 Acquired: 02/07/2025 13:34:08 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S04 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1298.8	.63131	6.0883	.34391	.65197	13.437	32.049	3.4548
Stddev	1.6	.00138	.0121	.00103	.00139	.225	.641	.0333
%RSD	.12492	.21827	.19956	.29892	.21300	1.6762	2.0007	.96314
#1	1296.9	.62986	6.0794	.34287	.65135	13.697	32.782	3.4903
#2	1299.8	.63147	6.0833	.34394	.65099	13.295	31.596	3.4499
#3	1299.6	.63260	6.1021	.34492	.65356	13.319	31.767	3.4243

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	9.5575	16.374	6.0620	2.0075	2.7764	4.2530	10.056	4.6650
Stddev	.0206	.296	.0109	.0062	.0515	.0796	.185	.0839
%RSD	.21562	1.8107	.17935	.31108	1.8551	1.8725	1.8392	1.7993
#1	9.5378	16.714	6.0496	2.0021	2.8354	4.3449	10.270	4.7619
#2	9.5559	16.167	6.0702	2.0059	2.7407	4.2036	9.9380	4.6163
#3	9.5789	16.240	6.0661	2.0143	2.7530	4.2106	9.9616	4.6168

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.8558	.42922	1.0934	.47765	2.7374	3.3843	.32840	2.6690
Stddev	.0040	.00139	.0192	.00927	.0264	.0576	.00127	.0191
%RSD	.21725	.32348	1.7513	1.9408	.96319	1.7022	.38768	.71451
#1	1.8514	.42896	1.1150	.48805	2.7596	3.4502	.32695	2.6886
#2	1.8566	.43071	1.0785	.47027	2.7083	3.3434	.32889	2.6680
#3	1.8594	.42797	1.0866	.47463	2.7444	3.3593	.32935	2.6505

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2.7115	.23389	3.9557	.90014	2.3970	49.123	4.5037
Stddev	.0047	.00117	.0309	.00136	.0439	.770	.0744
%RSD	.17470	.50144	.78248	.15147	1.8325	1.5675	1.6521
#1	2.7085	.23254	3.9897	.89954	2.4477	49.698	4.5890
#2	2.7090	.23447	3.9481	.89918	2.3695	49.422	4.4519
#3	2.7170	.23466	3.9293	.90170	2.3739	48.248	4.4702

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S4 Acquired: 02/07/2025 13:34:08 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S04 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3676.6	24273.	4434.5	2564.0	3781.6
Stddev	5.8	51.	53.2	7.2	4.2
%RSD	.15669	.20872	1.1992	.28102	.11228
#1	3674.6	24214.	4373.8	2561.5	3782.9
#2	3683.1	24301.	4456.4	2572.1	3785.1
#3	3672.1	24303.	4473.2	2558.4	3776.9

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S5 Acquired: 02/07/2025 13:37:59 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S05 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2497.1	1.2031	11.846	.70343	1.3292	25.913	61.174	6.4873
Stddev	9.3	.0009	.010	.00099	.0023	.172	.513	.0439
%RSD	.37106	.07290	.08411	.14089	.17342	.66336	.83819	.67666
#1	2496.4	1.2033	11.846	.70244	1.3267	25.738	61.002	6.4379
#2	2488.3	1.2022	11.856	.70442	1.3298	25.918	60.770	6.5019
#3	2506.8	1.2039	11.836	.70342	1.3312	26.082	61.751	6.5220

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	18.577	30.930	11.441	3.8962	5.3117	8.0431	18.992	8.8183
Stddev	.020	.200	.128	.0039	.0356	.0530	.136	.0721
%RSD	.10918	.64508	1.1163	.10044	.67000	.65919	.71372	.81752
#1	18.590	30.762	11.564	3.8978	5.2776	7.9952	18.862	8.7495
#2	18.586	30.877	11.309	3.8991	5.3088	8.0338	18.984	8.8121
#3	18.553	31.150	11.449	3.8918	5.3486	8.1001	19.132	8.8933

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3.6168	.84024	2.0989	.90763	5.5746	6.4235	.66127	4.8248
Stddev	.0048	.00085	.0115	.00494	.0193	.0325	.00025	.0289
%RSD	.13222	.10149	.54757	.54399	.34531	.50611	.03820	.59975
#1	3.6171	.83968	2.0920	.90257	5.5763	6.3939	.66133	4.7920
#2	3.6214	.83981	2.0925	.90791	5.5546	6.4183	.66149	4.8354
#3	3.6118	.84122	2.1121	.91243	5.5930	6.4583	.66099	4.8469

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5.4103	.47414	7.2830	1.7443	4.5622	94.043	8.6498
Stddev	.0032	.00039	.0433	.0019	.0265	1.202	.0532
%RSD	.05952	.08239	.59393	.10786	.58084	1.2784	.61476
#1	5.4070	.47435	7.2346	1.7433	4.5378	92.689	8.6118
#2	5.4134	.47437	7.2968	1.7464	4.5584	94.984	8.6270
#3	5.4105	.47368	7.3177	1.7431	4.5904	94.455	8.7106

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S5 Acquired: 02/07/2025 13:37:59 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S05 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3445.1	23784.	4525.2	2387.2	3594.7
Stddev	13.4	59.	26.7	8.4	14.4
%RSD	.39036	.24958	.58908	.35110	.40124
#1	3447.9	23740.	4548.3	2382.9	3594.6
#2	3430.5	23851.	4531.2	2396.9	3580.3
#3	3457.0	23759.	4496.0	2381.9	3609.1

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: S6 Acquired: 02/07/2025 13:42:08 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S06 Custom ID2: Custom ID3:
Comment:

Elem	Al3961	Ca3736	Fe2598	Mg2790	Na8183
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	69.169	50.401	22.011	14.640	5.8863
Stddev	.540	.291	.085	.063	.0081
%RSD	.78066	.57742	.38485	.42829	.13732
#1	68.656	50.065	21.915	14.573	5.8776
#2	69.119	50.566	22.047	14.651	5.8875
#3	69.732	50.572	22.073	14.696	5.8936

Int. Std.	Y_3710
Units	Cts/S
Avg	4358.7
Stddev	21.2
%RSD	.48591
#1	4377.0
#2	4363.6
#3	4335.5

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: ICV003 Acquired: 02/07/2025 13:46:20 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICV003 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.065028	1.075651	.9766701	.9964649	.9432871	2.445009
Stddev	.003845	.004081	.0007476	.0046007	.0028548	.005122
%RSD	.3610224	.3794138	.0765497	.4616997	.3026450	.2095026
#1	1.062637	1.078188	.9758921	.9940240	.9402235	2.439313
#2	1.062984	1.070943	.9767349	.9935991	.9458728	2.449238
#3	1.069464	1.077822	.9773832	1.001772	.9437650	2.446475

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5243432	.5347565	.4814368	10.45946	.5482398	.4994114
Stddev	.0034588	.0044784	.0005611	.04652	.0013683	.0003076
%RSD	.6596342	.8374600	.1165416	.4447540	.2495903	.0615967
#1	.5204252	.5326006	.4816414	10.43917	.5467596	.4994548
#2	.5269731	.5399050	.4808021	10.51268	.5485012	.4990844
#3	.5256312	.5317637	.4818669	10.42653	.5494586	.4996950

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5301219	10.49731	.5395235	6.141250	.4999154	.2430006
Stddev	.0087561	.08189	.0030808	.025038	.0004421	.0005396
%RSD	1.651717	.7801284	.5710235	.4076972	.0884348	.2220485
#1	.5237618	10.57565	.5408841	6.164269	.5000703	.2423790
#2	.5264952	10.50399	.5416897	6.144888	.5002591	.2433487
#3	.5401086	10.41228	.5359966	6.114592	.4994167	.2432740

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.10952	.5247018	.9121145	9.866545	F -.003190	F -.021554
Stddev	.19388	.0046219	.0135712	.185432	.001680	.000471
%RSD	1.917795	.8808577	1.487887	1.879398	52.65756	2.185000
#1	9.92787	.5295560	.9204256	10.03868	-.004755	-.021928
#2	10.08702	.5241954	.8964536	9.67020	-.003398	-.021025
#3	10.31367	.5203540	.9194642	9.89076	-.001416	-.021709

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: ICV003 Acquired: 02/07/2025 13:46:20 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICV003 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .0009158	F .0030624	F .0005500	F .0104432	F -.002991	F -.009222
Stddev	.0003010	.0033916	.0015616	.0004725	.001280	.000286
%RSD	32.86718	110.7520	283.9596	4.524175	42.80426	3.097398
#1	.0011449	-.000460	.0003232	.0103655	-.003666	-.009550
#2	.0005749	.003340	-.000886	.0100145	-.001515	-.009029
#3	.0010276	.006306	.002213	.0109498	-.003793	-.009086

Elem	Li6707
Units	ppm
Avg	F .0034499
Stddev	.0054514
%RSD	158.0168
#1	-.002837
#2	.006313
#3	.006873

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4177.182	27179.42	4560.791	2913.968	4696.644
Stddev	9.082	45.95	24.838	17.376	8.155
%RSD	.2174162	.1690532	.5446093	.5963075	.1736394
#1	4173.062	27138.53	4560.836	2896.606	4690.334
#2	4170.889	27229.14	4535.930	2931.358	4693.745
#3	4187.593	27170.60	4585.607	2913.941	4705.852

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: ICB003 Acquired: 02/07/2025 13:51:02 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICB003 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001138	.0009591	-.001203	-.000313	-.002105	-.032198
Stddev	.002314	.0016348	.001795	.004295	.000760	.012150
%RSD	203.4069	170.4628	149.1684	1370.713	36.08985	37.73460
#1	-.001006	.0001699	-.003253	.003251	-.002687	-.028094
#2	.001108	-.000132	-.000441	.000890	-.001245	-.022632
#3	-.003515	.002839	.000085	-.005082	-.002382	-.045868

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.004352	.0000678	-.000007	-.014777	-.000449	.0001161
Stddev	.003158	.0001063	.000038	.025576	.000666	.0003096
%RSD	72.57293	156.6714	525.3629	173.0821	148.2415	266.6828
#1	-.000724	-.000011	-.000035	-.020691	.000162	-.000234
#2	-.006491	.000189	-.000023	.013238	-.001159	.000355
#3	-.005841	.000026	.000036	-.036877	-.000351	.000227

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000661	.0029995	-.000996	-.010782	-.000378	.0009334
Stddev	.003508	.0147065	.000181	.038223	.000195	.0008056
%RSD	530.4893	490.3030	18.21855	354.5044	51.59936	86.30651
#1	.002906	-.000876	-.000966	.000338	-.000182	.0017822
#2	-.000783	-.009381	-.000831	.020647	-.000380	.0001794
#3	-.004107	.019256	-.001190	-.053332	-.000573	.0008387

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.545860	-.000286	-.001471	.0154726	.0015244	.0134359
Stddev	.471063	.006127	.002598	.0889079	.0027737	.0011866
%RSD	86.29750	2139.706	176.6870	574.6159	181.9556	8.831219
#1	-.158104	.006426	-.000077	-.066355	.0007539	.0132845
#2	-1.07009	-.005580	-.004468	.002694	.0046019	.0146908
#3	-.40938	-.001705	.000134	.110078	-.000783	.0123323

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: ICB003 Acquired: 02/07/2025 13:51:02 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICB003 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000983	-.004876	-.003380	F .0104049	-.002726	.0001086
Stddev	.0001033	.001409	.002146	.0002957	.003153	.0001794
%RSD	105.1076	28.89293	63.48803	2.842323	115.6895	165.1619
#1	.0001006	-.005589	-.001749	.0102214	.000915	.0003064
#2	.0002005	-.003253	-.002581	.0102472	-.004570	.0000629
#3	-.000006	-.005786	-.005811	.0107460	-.004523	-.000043

Elem	Li6707
Units	ppm
Avg	-.004645
Stddev	.003056
%RSD	65.78871
#1	-.004518
#2	-.007762
#3	-.001654

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4290.190	27860.23	4589.708	2986.770	5143.727
Stddev	7.320	45.92	3.422	8.008	6.609
%RSD	.1706187	.1648403	.0745690	.2681072	.1284852
#1	4296.985	27822.47	4587.162	2977.543	5149.838
#2	4291.146	27911.35	4588.363	2990.858	5144.630
#3	4282.439	27846.86	4593.598	2991.908	5136.713

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: ICSA003 Acquired: 02/07/2025 13:55:05 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICSA003 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000255	-.001671	-.000307	-.027525	.0158022	234.5271
Stddev	.002578	.001354	.001185	.004346	.0036735	1.0304
%RSD	1012.859	81.03435	386.2401	15.79071	23.24675	.4393356
#1	.002447	-.001564	-.001667	-.032541	.0190316	233.4396
#2	-.000522	-.000374	.000247	-.025152	.0165693	234.6531
#3	-.002689	-.003076	.000499	-.024882	.0118057	235.4887

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0028136	.0030356	.0022318	242.8842	.0531312	.0290559
Stddev	.0021317	.0003900	.0001954	.8461	.0009209	.0005877
%RSD	75.76427	12.84895	8.753425	.3483502	1.733327	2.022833
#1	.0035940	.0026503	.0023423	241.9745	.0524658	.0292434
#2	.0004017	.0030263	.0020062	243.6476	.0541823	.0295270
#3	.0044451	.0034302	.0023468	243.0306	.0527455	.0283973

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.014142	99.06711	.0061698	241.8792	.0045554	-.004934
Stddev	.005525	.33961	.0014223	.8335	.0002266	.001163
%RSD	39.06821	.3428115	23.05217	.3446100	4.974270	23.56039
#1	-.007763	98.83545	.0049040	240.9178	.0043273	-.003598
#2	-.017422	99.45696	.0058965	242.3998	.0045585	-.005493
#3	-.017240	98.90891	.0077089	242.3200	.0047804	-.005712

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.101012	.0034646	-.031409	-.196912	.0009404	F -.314578
Stddev	.434158	.0036221	.003255	.026728	.0019563	.011662
%RSD	429.8077	104.5468	10.36255	13.57365	208.0345	3.707170
#1	-.496868	-.000625	-.028786	-.178230	-.001209	-.303353
#2	-.169479	.004751	-.035051	-.184978	.002617	-.326632
#3	.363311	.006268	-.030389	-.227528	.001413	-.313749

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: ICSA003 Acquired: 02/07/2025 13:55:05 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICSA003 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0037260	.0172162	-.008829	F .0189489	-.001324	.0037549
Stddev	.0003566	.0008669	.001007	.0017848	.001177	.0006643
%RSD	9.570802	5.035334	11.40013	9.419089	88.89225	17.69190
#1	.0040364	.0164995	-.009791	.0209351	-.002674	.0039653
#2	.0033365	.0169694	-.008913	.0174795	-.000506	.0030108
#3	.0038052	.0181798	-.007783	.0184321	-.000793	.0042885

Elem	Li6707
Units	ppm
Avg	.0024840
Stddev	.0020014
%RSD	80.57380
#1	.0006448
#2	.0021915
#3	.0046155

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3925.771	24730.64	4501.871	2733.161	4034.315
Stddev	11.304	205.06	32.659	37.379	4.016
%RSD	.2879397	.8291697	.7254518	1.367618	.0995401
#1	3914.385	24503.37	4538.194	2695.791	4029.870
#2	3925.937	24901.80	4474.930	2770.549	4035.393
#3	3936.991	24786.75	4492.489	2733.143	4037.681

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: ICSAB003 Acquired: 02/07/2025 13:59:02 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICSAB003 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0990756	.0972883	.0461726	.0191583	.5710064	237.6705
Stddev	.0021504	.0015606	.0030589	.0021954	.0008396	1.8524
%RSD	2.170420	1.604087	6.624899	11.45917	.1470431	.7794005
#1	.0971337	.0967888	.0492054	.0204166	.5706398	235.7461
#2	.1013866	.0960387	.0430883	.0204349	.5719669	237.8242
#3	.0987064	.0990375	.0462240	.0166233	.5704123	239.4413

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5156442	.5159490	.9867948	245.0479	.5830121	.5181167
Stddev	.0033791	.0008140	.0014584	1.4426	.0009714	.0009339
%RSD	.6553186	.1577722	.1477904	.5886821	.1666146	.1802513
#1	.5120071	.5151246	.9856701	243.5752	.5836298	.5173782
#2	.5162394	.5167522	.9862718	245.1102	.5835141	.5178055
#3	.5186863	.5159702	.9884426	246.4583	.5818925	.5191665

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4920596	100.4816	.5199974	244.7091	.9895467	.2002307
Stddev	.0068849	.9582	.0041778	1.6796	.0009407	.0005831
%RSD	1.399193	.9535592	.8034244	.6863819	.0950587	.2912084
#1	.4844345	99.4487	.5165396	242.8845	.9885775	.2000628
#2	.4978201	100.6549	.5188132	245.0519	.9896066	.2008793
#3	.4939243	101.3413	.5246395	246.1909	.9904559	.1997499

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.247576	.5100812	.9208782	-.508402	-.001657	F -.325322
Stddev	.238370	.0007839	.0029114	.042053	.000666	.004339
%RSD	96.28161	.1536830	.3161564	8.271516	40.20157	1.333763
#1	-.481115	.5106089	.9184634	-.533192	-.000936	-.322821
#2	-.004652	.5091804	.9200600	-.532168	-.001786	-.330333
#3	-.256961	.5104543	.9241111	-.459848	-.002250	-.322814

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: ICSAB003 Acquired: 02/07/2025 13:59:02 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICSAB003 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0033658	.0232141	-.007640	F .0182073	-.002269	.0040700
Stddev	.0004040	.0044358	.001168	.0009350	.005466	.0003252
%RSD	12.00381	19.10825	15.28833	5.135383	240.9279	7.989266
#1	.0029234	.0283304	-.008070	.0171292	-.005654	.0042266
#2	.0037152	.0208659	-.006318	.0186952	-.005189	.0042872
#3	.0034587	.0204461	-.008532	.0187974	.004037	.0036962

Elem	Li6707
Units	ppm
Avg	-.002502
Stddev	.001914
%RSD	76.49743
#1	-.003497
#2	-.003713
#3	-.000295

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4012.201	25324.85	4599.240	2782.652	4132.315
Stddev	10.853	50.60	4.230	8.053	12.367
%RSD	.2704976	.1998110	.0919630	.2894086	.2992731
#1	4016.622	25284.75	4602.322	2775.239	4135.019
#2	4020.146	25381.71	4594.418	2791.221	4143.105
#3	3999.835	25308.10	4600.980	2781.496	4118.819

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: CCV005 Acquired: 02/07/2025 14:02:55 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCV005 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.995217	4.912898	25.06902	4.938983	4.995066	400.0232
Stddev	.003851	.007353	.03774	.005613	.006978	1.4231
%RSD	.0770920	.1496629	.1505568	.1136571	.1397035	.3557570
#1	4.990968	4.904448	25.03092	4.941707	4.987197	398.7649
#2	4.996204	4.916408	25.06974	4.942714	4.997495	399.7370
#3	4.998478	4.917839	25.10640	4.932527	5.000504	401.5676

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.12206	.5028818	2.530498	402.6013	15.44823	2.513220
Stddev	.04086	.0015175	.002547	1.0720	.02249	.003194
%RSD	.4036461	.3017681	.1006643	.2662730	.1456058	.1270893
#1	10.08995	.5022018	2.527744	401.3792	15.43780	2.509564
#2	10.16805	.5046204	2.530978	403.3829	15.47404	2.515471
#3	10.10818	.5018232	2.532771	403.0418	15.43284	2.514623

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	15.08074	404.2519	14.96883	398.5638	2.517758	1.245563
Stddev	.05882	1.2758	.03819	1.2083	.000231	.001576
%RSD	.3900262	.3156016	.2551146	.3031627	.0091579	.1265536
#1	15.01370	403.0150	14.92773	397.5835	2.517865	1.245695
#2	15.12368	404.1774	14.97553	398.1942	2.517494	1.247069
#3	15.10485	405.5634	15.00322	399.9137	2.517916	1.243925

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	395.2435	2.515016	14.95905	152.8727	5.070078	F 4.111020
Stddev	1.1149	.009928	.03918	.4521	.005587	.009732
%RSD	.2820749	.3947465	.2618870	.2957365	.1101858	.2367238
#1	393.9563	2.506369	14.91555	152.5577	5.063846	4.101162
#2	395.9071	2.512820	14.97005	153.3907	5.074639	4.120620
#3	395.8670	2.525857	14.99156	152.6696	5.071748	4.111277

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: CCV005 Acquired: 02/07/2025 14:02:55 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCV005 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.900635	5.142240	4.794641	5.070953	5.029347	4.751545
Stddev	.000945	.003539	.008239	.004225	.014044	.075422
%RSD	.0192829	.0688316	.1718400	.0833121	.2792381	1.587320
#1	4.900785	5.145906	4.788863	5.068614	5.013677	4.683884
#2	4.899623	5.141971	4.804076	5.068415	5.033569	4.832862
#3	4.901495	5.138843	4.790986	5.075829	5.040796	4.737888

Elem	Li6707
Units	ppm
Avg	5.026157
Stddev	.015346
%RSD	.3053278
#1	5.008740
#2	5.037693
#3	5.032039

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3621.731	23902.26	4492.615	2513.703	3658.594
Stddev	5.424	48.32	12.510	6.377	7.253
%RSD	.1497723	.2021638	.2784633	.2536926	.1982391
#1	3620.646	23950.82	4506.839	2520.934	3661.146
#2	3627.615	23901.77	4487.689	2508.883	3664.226
#3	3616.930	23854.18	4483.318	2511.292	3650.410

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: CCB005 Acquired: 02/07/2025 14:06:43 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCB005 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001800	.0000705	.0004331	-.003936	-.000232	-.014844
Stddev	.001997	.0010260	.0009137	.001698	.001437	.023223
%RSD	110.9173	1455.233	210.9742	43.13854	617.9644	156.4429
#1	.000240	.0012482	.0009105	-.002241	.000780	-.009283
#2	-.001889	-.000406	-.000620	-.005637	.000399	-.040343
#3	-.003751	-.000631	.001009	-.003929	-.001877	.005093

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001621	.0000053	.0001043	.0019126	.0002165	-.000064
Stddev	.001020	.0001475	.0000587	.0107314	.0009476	.000215
%RSD	62.93335	2789.828	56.32364	561.0916	437.7844	337.1221
#1	-.000532	-.000044	.0001720	-.008644	.0012950	-.000311
#2	-.002555	-.000111	.0000677	.012810	-.000483	.000037
#3	-.001777	.000171	.0000730	.001572	-.000163	.000083

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.003499	.0132798	-.000151	.0033498	-.000443	.0008481
Stddev	.004479	.0070111	.000730	.0316215	.000186	.0011025
%RSD	128.0329	52.79525	482.3965	943.9774	41.85398	129.9900
#1	-.007635	.0208658	-.000366	.0393110	-.000621	.0015781
#2	-.004120	.0119351	-.000750	-.009153	-.000250	.0013863
#3	.001259	.0070384	.000662	-.020109	-.000459	-.000420

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0220968	.0017760	-.002499	.1608757	-.000141	.0129461
Stddev	.4262672	.0022756	.002481	.0614718	.001813	.0009969
%RSD	1929.091	128.1298	99.27044	38.21074	1284.033	7.700494
#1	.0101368	-.000707	-.001905	.2234888	-.001534	.0118444
#2	-.398065	.002274	-.005222	.1585257	-.000798	.0132077
#3	.454218	.003761	-.000369	.1006126	.001909	.0137860

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: CCB005 Acquired: 02/07/2025 14:06:43 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCB005 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0007868	-.008288	-.002108	F .0101809	-.003121	.0001458
Stddev	.0005067	.000382	.001430	.0002286	.000376	.0001639
%RSD	64.40170	4.609803	67.86415	2.245454	12.03323	112.4116
#1	.0013683	-.007849	-.003684	.0103394	-.002930	.0000042
#2	.0005519	-.008548	-.001747	.0102844	-.002879	.0001078
#3	.0004402	-.008466	-.000892	.0099188	-.003553	.0003254

Elem	Li6707
Units	ppm
Avg	-.004056
Stddev	.001459
%RSD	35.97304
#1	-.004117
#2	-.005484
#3	-.002567

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4339.240	28468.22	4633.620	3039.629	5198.673
Stddev	14.483	231.82	20.860	26.204	16.544
%RSD	.3337680	.8143160	.4501855	.8620775	.3182261
#1	4329.026	28297.10	4641.398	3010.896	5183.497
#2	4355.815	28375.52	4609.989	3045.781	5216.309
#3	4332.878	28732.05	4649.474	3062.210	5196.213

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-01 Acquired: 02/07/2025 14:10:47 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA3 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0271316	-.021154	.0742309	-.019429	.0277783	29.15223	.2551129
Stddev	.0009960	.000887	.0020590	.001270	.0020844	.14660	.0004382
%RSD	3.671048	4.194058	2.773768	6.534245	7.503816	.5028926	.1717653
#1	.0263594	-.020241	.0760934	-.017966	.0275266	29.30947	.2554386
#2	.0267797	-.022014	.0720199	-.020237	.0258312	29.12792	.2552854
#3	.0282558	-.021207	.0745795	-.020084	.0299772	29.01930	.2546147

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0046481	.0002631	1.903217	.0553352	.0767861	.0540253	129.6663
Stddev	.0000763	.0001630	.011662	.0006115	.0000665	.0047427	.2561
%RSD	1.641858	61.96801	.6127570	1.105119	.0865620	8.778733	.1975028
#1	.0046551	.0004512	1.916633	.0549920	.0768403	.0591291	129.9545
#2	.0045685	.0001746	1.897509	.0560412	.0768061	.0531929	129.5795
#3	.0047206	.0001634	1.895508	.0549724	.0767119	.0497539	129.4648

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.088267	9.399822	.0480760	-.011533	.0093576	.0424644	.0478889
Stddev	.004016	.012205	.0001833	.000898	.2177420	.0019064	.0030744
%RSD	.3690196	.1298408	.3811617	7.790443	2326.908	4.489285	6.419909
#1	1.091377	9.409657	.0480185	-.010495	-.223832	.0403941	.0512050
#2	1.089691	9.386163	.0482811	-.012035	.044537	.0428520	.0473283
#3	1.083733	9.403646	.0479284	-.012068	.207368	.0441472	.0451333

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	13.43983	.6815093	-.473124	.0081062	.2915117	2.465461	.0176322
Stddev	.03777	.0013645	.000496	.0004142	.0023808	.007976	.0005711
%RSD	.2810278	.2002110	.1047893	5.108999	.8167095	.3234938	3.238896
#1	13.43420	.6812589	-.472776	.0076662	.2890300	2.463688	.0173546
#2	13.48010	.6802874	-.472905	.0081640	.2937769	2.458520	.0172530
#3	13.40519	.6829816	-.473692	.0084884	.2917282	2.474174	.0182891

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-01 Acquired: 02/07/2025 14:10:47 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA3 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.6341012	-.109544	.0268058
Stddev	.0034767	.000394	.0034398
%RSD	.5482899	.3597555	12.83244
#1	.6371237	-.109833	.0307686
#2	.6303017	-.109703	.0245909
#3	.6348780	-.109095	.0250578

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4563.383	29283.86	4940.273	3162.176	4861.227
Stddev	17.265	83.13	12.868	10.207	17.390
%RSD	.3783365	.2838848	.2604783	.3227778	.3577260
#1	4578.180	29278.12	4936.704	3150.443	4876.760
#2	4544.414	29203.75	4929.565	3167.072	4842.440
#3	4567.555	29369.71	4954.548	3169.012	4864.481

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-02 Acquired: 02/07/2025 14:14:43 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA4 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0386721	-.016417	.0597768	-.015143	.0187336	15.75199	.2493465
Stddev	.0001285	.001173	.0005666	.000190	.0004908	.05312	.0014487
%RSD	.3323921	7.147251	.9478222	1.251813	2.619816	.3372443	.5809926
#1	.0387857	-.017500	.0599893	-.015081	.0185137	15.79940	.2487065
#2	.0386981	-.016581	.0602065	-.014992	.0183912	15.76199	.2483281
#3	.0385326	-.015170	.0591347	-.015355	.0192959	15.69458	.2510050

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0033966	.0001171	1.693604	.1136959	.0168843	.0817308	87.95308
Stddev	.0001123	.0000529	.013610	.0007881	.0002815	.0022703	.22135
%RSD	3.306546	45.18950	.8035938	.6931510	1.667416	2.777769	.2516659
#1	.0032716	.0001556	1.697595	.1144943	.0171666	.0819896	87.69774
#2	.0034890	.0000568	1.678445	.1129186	.0168829	.0838606	88.09070
#3	.0034291	.0001390	1.704771	.1136747	.0166035	.0793422	88.07078

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2827872	2.622823	.0277914	-.010574	-.234438	.0276843	.0041935
Stddev	.0013361	.010694	.0002767	.000576	.165517	.0029017	.0010105
%RSD	.4724949	.4077308	.9957960	5.448119	70.60189	10.48122	24.09626
#1	.2842915	2.625814	.0277928	-.010992	-.375031	.0309921	.0030818
#2	.2817381	2.631703	.0280674	-.010813	-.276261	.0255686	.0044425
#3	.2823320	2.610952	.0275139	-.009917	-.052020	.0264921	.0050563

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	15.18657	1.190138	-.314818	.0250855	.3077347	2.300554	.0124616
Stddev	.15995	.000874	.004721	.0001771	.0005382	.037356	.0011067
%RSD	1.053238	.0734766	1.499618	.7059516	.1748771	1.623794	8.880866
#1	15.07117	1.189147	-.312918	.0252625	.3079698	2.289313	.0120884
#2	15.36915	1.190465	-.311343	.0250859	.3081153	2.270109	.0115897
#3	15.11938	1.190801	-.320193	.0249083	.3071190	2.342240	.0137066

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-02 Acquired: 02/07/2025 14:14:43 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA4 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.3488715	-.032748	-.002561
Stddev	.0011277	.000347	.003274
%RSD	.3232409	1.060570	127.8715
#1	.3477717	-.032359	.000010
#2	.3500252	-.033027	-.006247
#3	.3488174	-.032857	-.001445

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4577.369	29598.08	4942.535	3206.842	4933.453
Stddev	15.056	118.88	18.791	12.408	9.158
%RSD	.3289279	.4016342	.3801978	.3869300	.1856207
#1	4572.386	29466.51	4964.001	3212.487	4927.246
#2	4565.436	29697.75	4934.547	3192.615	4929.142
#3	4594.285	29629.99	4929.058	3215.424	4943.970

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-03 Acquired: 02/07/2025 14:18:41 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA5 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0151980	-.015649	.0661377	-.014001	.0207933	25.33466	.1979992
Stddev	.0035287	.000478	.0014286	.003043	.0029044	.13070	.0009949
%RSD	23.21834	3.053814	2.160060	21.73122	13.96814	.5159123	.5024916
#1	.0148794	-.016198	.0670749	-.013422	.0203500	25.40669	.1975933
#2	.0188752	-.015323	.0668448	-.011290	.0238939	25.18379	.1972713
#3	.0118394	-.015427	.0644935	-.017292	.0181360	25.41350	.1991329

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0032797	.0002038	2.211844	.0244966	.0309112	.0269891	94.93562
Stddev	.0001150	.0000952	.020504	.0002311	.0001106	.0068575	.26553
%RSD	3.505181	46.70694	.9270064	.9433114	.3577200	25.40830	.2796991
#1	.0034012	.0002131	2.194481	.0242810	.0309099	.0191392	95.22100
#2	.0031727	.0002940	2.206586	.0247405	.0310225	.0318135	94.69584
#3	.0032651	.0001043	2.234465	.0244684	.0308013	.0300147	94.89000

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4768037	9.299479	.0295322	-.008085	-.142303	.0218369	.0265931
Stddev	.0004863	.020420	.0003102	.000876	.296667	.0044217	.0005880
%RSD	.1019911	.2195824	1.050302	10.82902	208.4760	20.24867	2.210952
#1	.4764642	9.323055	.0292467	-.009095	-.484498	.0190565	.0267584
#2	.4765860	9.288017	.0294879	-.007629	.015069	.0269357	.0259402
#3	.4773608	9.287365	.0298622	-.007532	.042520	.0195186	.0270807

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	12.21654	.6239171	-.345126	.0055693	.2966865	2.156832	.0091829
Stddev	.10187	.0015532	.004804	.0002651	.0028770	.019032	.0009323
%RSD	.8338322	.2489399	1.391931	4.760526	.9697123	.8824001	10.15279
#1	12.29479	.6230466	-.350515	.0052634	.2965689	2.174883	.0088897
#2	12.10136	.6229944	-.341294	.0057320	.2938700	2.136951	.0084325
#3	12.25348	.6257103	-.343567	.0057126	.2996204	2.158662	.0102266

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-03 Acquired: 02/07/2025 14:18:41 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA5 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.3033220	-.062232	.0075495
Stddev	.0019481	.000154	.0032759
%RSD	.6422600	.2476637	43.39241
#1	.3014982	-.062107	.0113294
#2	.3030934	-.062185	.0057836
#3	.3053743	-.062404	.0055353

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4476.361	28783.52	4844.090	3113.498	4901.533
Stddev	5.952	148.09	27.342	20.446	4.804
%RSD	.1329680	.5144887	.5644380	.6566871	.0980111
#1	4480.856	28908.19	4812.614	3129.201	4904.263
#2	4478.616	28619.83	4857.703	3090.379	4904.351
#3	4469.611	28822.54	4861.953	3120.915	4895.986

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-04 Acquired: 02/07/2025 14:22:37 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA6 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0148384	-.016742	.0843315	-.014220	.0207575	21.25631	.3307908
Stddev	.0039853	.002142	.0007970	.002245	.0011007	.03644	.0016871
%RSD	26.85769	12.79289	.9450295	15.78639	5.302911	.1714120	.5100178
#1	.0169164	-.014359	.0837875	-.015419	.0215562	21.22334	.3291246
#2	.0173551	-.017363	.0852463	-.015612	.0212144	21.29543	.3324981
#3	.0102436	-.018505	.0839606	-.011631	.0195019	21.25015	.3307498

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0042440	.0001342	1.509511	.0250610	.0267005	.0109288	103.0916
Stddev	.0001631	.0000464	.015275	.0003623	.0003920	.0027709	.1960
%RSD	3.844001	34.56011	1.011949	1.445511	1.468266	25.35428	.1901297
#1	.0041080	.0001766	1.517783	.0247280	.0271481	.0109070	102.9824
#2	.0041991	.0001412	1.518867	.0250084	.0264183	.0137106	103.3179
#3	.0044249	.0000847	1.491884	.0254467	.0265350	.0081689	102.9746

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3438134	1.427041	.0103867	-.007113	-.158099	.0218829	-.017839
Stddev	.0008877	.010993	.0001187	.000803	.465645	.0011868	.001634
%RSD	.2582063	.7703412	1.143191	11.28778	294.5267	5.423251	9.157573
#1	.3440808	1.418755	.0102613	-.006187	.184286	.0225658	-.018738
#2	.3428227	1.439512	.0104975	-.007612	.029740	.0225704	-.018826
#3	.3445367	1.422856	.0104012	-.007540	-.688324	.0205125	-.015953

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	20.16380	.8289211	-.385749	.0041126	.0992272	2.352866	.0236518
Stddev	.13013	.0022964	.002661	.0006609	.0026247	.030165	.0007811
%RSD	.6453844	.2770317	.6898498	16.06954	2.645104	1.282056	3.302352
#1	20.31406	.8267209	-.382723	.0048269	.0985928	2.320305	.0228942
#2	20.08788	.8313029	-.386796	.0039882	.1021109	2.358435	.0236069
#3	20.08945	.8287396	-.387727	.0035228	.0969778	2.379859	.0244544

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-04 Acquired: 02/07/2025 14:22:37 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA6 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.1865326	-.091671	-.004806
Stddev	.0014970	.000177	.002703
%RSD	.8025640	.1931398	56.25363
#1	.1865288	-.091475	-.006016
#2	.1880316	-.091818	-.006692
#3	.1850375	-.091720	-.001709

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4454.001	28900.85	4787.818	3101.588	4906.445
Stddev	13.934	96.56	10.954	8.287	13.881
%RSD	.3128407	.3341080	.2287953	.2671966	.2829138
#1	4466.947	28921.44	4797.560	3094.177	4915.168
#2	4439.254	28795.65	4775.960	3100.050	4890.438
#3	4455.802	28985.45	4789.932	3110.536	4913.730

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-05 Acquired: 02/07/2025 14:26:34 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA7 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1285607	-.028339	.1398575	-.024091	.0426585	71.68147	.9028577
Stddev	.0043192	.001394	.0011934	.003907	.0024186	.21260	.0031444
%RSD	3.359629	4.917281	.8532747	16.21893	5.669571	.2965855	.3482677
#1	.1271514	-.026768	.1385657	-.027983	.0400534	71.92564	.9064590
#2	.1334085	-.028827	.1409189	-.024119	.0430897	71.53742	.9014575
#3	.1251221	-.029424	.1400877	-.020169	.0448325	71.58135	.9006567

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0096706	.0003953	7.487051	.1142704	.0531431	.0773583	189.1860
Stddev	.0000775	.0000119	.017617	.0004735	.0003268	.0006045	.9545
%RSD	.8014367	3.019571	.2353001	.4143498	.6148524	.7814116	.5045476
#1	.0096764	.0003847	7.480613	.1137252	.0530543	.0767172	190.2851
#2	.0097450	.0003931	7.473558	.1145074	.0535051	.0779179	188.5645
#3	.0095904	.0004082	7.506981	.1145785	.0528699	.0774399	188.7085

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9778153	5.683728	.0544004	-.012153	.2131720	.1175498	-.005992
Stddev	.0007910	.030167	.0007554	.002119	.8560151	.0034934	.002261
%RSD	.0808926	.5307692	1.388506	17.43915	401.5607	2.971836	37.72817
#1	.9785784	5.715441	.0552663	-.013059	1.168463	.1154968	-.007685
#2	.9778684	5.680353	.0538768	-.009731	-.484305	.1155692	-.003425
#3	.9769991	5.655390	.0540581	-.013669	-.044643	.1215834	-.006867

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	31.89778	2.458192	-.678870	.0078638	.4011219	2.710174	.0345762
Stddev	.06085	.002383	.006135	.0004584	.0038754	.035492	.0005682
%RSD	.1907805	.0969269	.9037635	5.829379	.9661388	1.309578	1.643384
#1	31.83447	2.459187	-.684040	.0077920	.3995731	2.750733	.0349042
#2	31.90304	2.459916	-.680479	.0083538	.4055321	2.694986	.0349043
#3	31.95584	2.455473	-.672090	.0074455	.3982604	2.684804	.0339201

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-05 Acquired: 02/07/2025 14:26:34 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA7 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.8403153	-.165796	.0326022
Stddev	.0021728	.000828	.0034608
%RSD	.2585741	.4996853	10.61532
#1	.8419202	-.166733	.0302349
#2	.8378427	-.165162	.0365740
#3	.8411830	-.165492	.0309976

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4544.041	29011.79	4924.943	3155.549	4700.110
Stddev	8.327	145.64	9.172	13.587	7.600
%RSD	.1832565	.5019946	.1862339	.4305614	.1617070
#1	4535.140	29179.65	4914.641	3171.237	4692.058
#2	4551.641	28919.07	4927.966	3147.806	4707.159
#3	4545.341	28936.65	4932.221	3147.605	4701.113

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-06 Acquired: 02/07/2025 14:30:24 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA7D Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1261067	-.026883	.1364275	-.022660	.0419174	70.86302	.8955923
Stddev	.0035732	.000313	.0007853	.004746	.0015218	.23461	.0031531
%RSD	2.833489	1.165273	.5755865	20.94388	3.630413	.3310738	.3520721
#1	.1292583	-.026826	.1363227	-.027853	.0416040	70.59627	.8931803
#2	.1268370	-.026602	.1372599	-.018548	.0435715	70.95548	.8944364
#3	.1222247	-.027221	.1356999	-.021579	.0405767	71.03732	.8991603

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0096375	.0004164	7.376831	.1135146	.0530779	.0767375	186.4467
Stddev	.0001154	.0000612	.001544	.0003139	.0002281	.0015519	.5806
%RSD	1.197662	14.69855	.0209337	.2765454	.4298052	2.022320	.3114215
#1	.0095631	.0003639	7.377518	.1138682	.0528225	.0749678	185.8152
#2	.0097705	.0004018	7.377912	.1132686	.0531498	.0773784	186.5673
#3	.0095791	.0004836	7.375062	.1134071	.0532615	.0778662	186.9575

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.9631619	5.629869	.0542610	-.012034	-.048686	.1167098	-.007765
Stddev	.0029832	.077484	.0001596	.000483	.335733	.0059871	.002026
%RSD	.3097281	1.376304	.2941088	4.015339	689.5896	5.129915	26.09269
#1	.9605086	5.587642	.0541092	-.011578	-.403329	.1099726	-.007649
#2	.9663910	5.719294	.0542463	-.011984	.264238	.1214214	-.009846
#3	.9625860	5.582671	.0544274	-.012541	-.006967	.1187352	-.005799

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	31.62619	2.429493	-.678397	.0080728	.3956634	2.732002	.0319481
Stddev	.04817	.006526	.011276	.0002104	.0039806	.016129	.0004599
%RSD	.1522949	.2686233	1.662208	2.606279	1.006069	.5903846	1.439596
#1	31.64652	2.424091	-.691308	.0080838	.3912084	2.742694	.0315763
#2	31.66085	2.436745	-.670482	.0078571	.3988708	2.713450	.0318056
#3	31.57119	2.427644	-.673400	.0082775	.3969111	2.739863	.0324624

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-06 Acquired: 02/07/2025 14:30:24 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA7D Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.8297359	-.163263	.0290508
Stddev	.0053776	.000606	.0050137
%RSD	.6481081	.3712048	17.25832
#1	.8247503	-.162642	.0331599
#2	.8354343	-.163293	.0305282
#3	.8290231	-.163853	.0234645

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4514.630	29108.54	4906.033	3169.907	4680.063
Stddev	5.790	25.28	28.567	8.056	9.145
%RSD	.1282491	.0868410	.5822888	.2541450	.1954100
#1	4519.265	29133.59	4873.320	3174.241	4686.521
#2	4516.485	29083.04	4926.063	3174.869	4684.070
#3	4508.140	29108.97	4918.715	3160.612	4669.598

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-05LX5 Acquired: 02/07/2025 14:34:14 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA7L Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0255942	-.005483	.0294089	-.007286	.0089094	15.17973	.1902876
Stddev	.0013998	.001222	.0006902	.002196	.0028756	.07339	.0010970
%RSD	5.469222	22.28559	2.346986	30.13833	32.27651	.4834483	.5765191
#1	.0267682	-.004168	.0288939	-.004845	.0103760	15.09986	.1890214
#2	.0259693	-.006584	.0301932	-.009100	.0055961	15.24418	.1908880
#3	.0240450	-.005698	.0291396	-.007913	.0107560	15.19516	.1909534

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0020285	.0001137	1.549518	.0239604	.0106002	.0079586	39.89252
Stddev	.0000901	.0000831	.026075	.0002781	.0003408	.0067961	.09353
%RSD	4.441318	73.12008	1.682755	1.160759	3.215232	85.39342	.2344649
#1	.0021231	.0000233	1.519450	.0241754	.0107553	.0045181	39.79399
#2	.0019438	.0001869	1.563204	.0240595	.0108360	.0035707	39.98009
#3	.0020185	.0001307	1.565901	.0236463	.0102095	.0157870	39.90349

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2078374	1.243715	.0107727	-.002761	-.188311	.0246377	-.001548
Stddev	.0014836	.022518	.0003617	.001506	.389193	.0001826	.000854
%RSD	.7138325	1.810532	3.357902	54.52940	206.6756	.7411431	55.19463
#1	.2065535	1.226002	.0108738	-.003537	-.615748	.0248485	-.001662
#2	.2074972	1.269057	.0110731	-.003720	-.094777	.0245349	-.000642
#3	.2094616	1.236087	.0103711	-.001026	.145592	.0245297	-.002339

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.800933	.4727251	-.148733	.0017289	.0694532	.6915199	.0148221
Stddev	.050612	.0013319	.003882	.0004889	.0015761	.0097923	.0000482
%RSD	.7441953	.2817579	2.610311	28.27820	2.269352	1.416049	.3251250
#1	6.750284	.4716639	-.145005	.0011932	.0694228	.6839737	.0147699
#2	6.851508	.4742197	-.152754	.0021509	.0678925	.7025854	.0148649
#3	6.801007	.4722916	-.148441	.0018425	.0710443	.6880005	.0148314

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-05LX5 Acquired: 02/07/2025 14:34:14 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA7L Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.1742886	-.034853	.0024835
Stddev	.0009773	.000181	.0039945
%RSD	.5607281	.5187773	160.8433
#1	.1740626	-.034699	-.001058
#2	.1734441	-.035052	.006813
#3	.1753591	-.034808	.001695

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4372.071	28088.52	4675.530	3030.695	4917.848
Stddev	2.174	108.76	30.602	26.203	2.799
%RSD	.0497211	.3871990	.6545090	.8645761	.0569129
#1	4370.541	28008.60	4698.907	3007.459	4915.843
#2	4374.559	28212.37	4640.894	3059.096	4916.654
#3	4371.112	28044.59	4686.789	3025.531	4921.045

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-07 Acquired: 02/07/2025 14:38:12 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA7S Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2215467	.0750351	.1784267	.1674316	.2280158	74.32757	5.084362
Stddev	.0045717	.0012080	.0016961	.0046088	.0010659	.40820	.020207
%RSD	2.063524	1.609963	.9505822	2.752634	.4674841	.5491934	.3974410
#1	.2247955	.0736964	.1782640	.1658095	.2267862	74.36517	5.062242
#2	.2163189	.0760440	.1768179	.1638532	.2286770	73.90187	5.088991
#3	.2235256	.0753650	.1801983	.1726321	.2285843	74.71567	5.101853

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1138368	.1035070	7.271680	.5579843	1.093517	.6024016	185.6138
Stddev	.0004973	.0003254	.056195	.0028876	.004008	.0043955	1.1575
%RSD	.4368441	.3143958	.7727957	.5175142	.3664863	.7296558	.6235977
#1	.1134514	.1031656	7.211617	.5579334	1.090593	.6064531	185.5390
#2	.1143982	.1035419	7.280446	.5551224	1.091873	.5977284	184.4956
#3	.1136610	.1038136	7.322977	.5608970	1.098085	.6030235	186.8069

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.001594	5.557371	1.107341	.0619573	.5059189	1.156014	.9118378
Stddev	.007236	.084105	.002764	.0010478	.4426904	.011845	.0070084
%RSD	.3615192	1.513401	.2495761	1.691093	87.50226	1.024679	.7685968
#1	2.002056	5.569050	1.105867	.0631670	1.013989	1.155590	.9149678
#2	1.994139	5.468037	1.105627	.0613353	.300605	1.144386	.9038099
#3	2.008589	5.635027	1.110529	.0613697	.203163	1.168066	.9167358

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	31.74344	2.412823	-.664459	.0070470	.3970277	4.575586	.0322259
Stddev	.18028	.010218	.003584	.0005379	.0080275	.033713	.0006037
%RSD	.5679300	.4234783	.5394600	7.632610	2.021904	.7367950	1.873346
#1	31.68002	2.406818	-.662400	.0070017	.3942235	4.536725	.0321056
#2	31.60344	2.407031	-.668598	.0076061	.3907785	4.596994	.0316915
#3	31.94686	2.424621	-.662379	.0065332	.4060812	4.593038	.0328808

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1314-07 Acquired: 02/07/2025 14:38:12 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA7S Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.8193723	-.162700	.0275323
Stddev	.0042084	.001014	.0022665
%RSD	.5136087	.6234701	8.232218
#1	.8188667	-.162864	.0269656
#2	.8154395	-.161614	.0300284
#3	.8238106	-.163623	.0256029

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4583.719	29310.31	4979.011	3195.034	4748.105
Stddev	3.688	204.05	6.188	16.624	3.456
%RSD	.0804637	.6961835	.1242855	.5203174	.0727963
#1	4581.827	29231.39	4978.415	3187.484	4751.039
#2	4581.360	29542.04	4985.475	3214.093	4748.980
#3	4587.969	29157.51	4973.142	3183.524	4744.295

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: PB166600BL Acquired: 02/07/2025 14:42:01 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: PBS600 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001736	-.000042	-.002631	.0000130	-.000262	-.036189
Stddev	.002846	.000473	.001795	.0043915	.001044	.011760
%RSD	163.9429	1135.221	68.23104	33898.04	399.0881	32.49721
#1	.001474	-.000561	-.004364	-.002161	-.001398	-.025620
#2	-.003952	.000071	-.000780	.005067	.000655	-.048858
#3	-.002729	.000365	-.002748	-.002868	-.000042	-.034088

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001185	-.000102	.0000425	-.012066	.0001869	-.000220
Stddev	.001837	.000072	.0000303	.024011	.0004683	.000199
%RSD	155.1207	70.92282	71.21234	199.0024	250.5281	90.70508
#1	-.000971	-.000171	.0000713	-.026517	.0006877	-.000387
#2	.000537	-.000027	.0000109	-.025332	.0001133	.000001
#3	-.003119	-.000108	.0000455	.015652	-.000240	-.000273

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.003383	.0074117	.0005165	-.000569	-.000601	.0010834
Stddev	.003336	.0089839	.0008104	.019445	.000084	.0009015
%RSD	98.60311	121.2125	156.9207	3416.806	14.00694	83.21476
#1	-.001326	.0152481	-.000412	-.018301	-.000652	.0004306
#2	-.001591	-.002393	.000879	.020226	-.000504	.0007075
#3	-.007232	.009380	.001082	-.003633	-.000648	.0021120

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.419535	.0003027	.0001275	.0338337	-.000508	.0014134
Stddev	.471027	.0010337	.0025378	.0959795	.001403	.0011948
%RSD	112.2736	341.4479	1990.215	283.6805	276.3633	84.53230
#1	.099633	-.000294	.0028484	-.054067	-.002009	.0019951
#2	-.819529	.001496	-.002175	.136241	-.000285	.0022060
#3	-.538710	-.000294	-.000291	.019327	.000771	.0000392

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: PB166600BL Acquired: 02/07/2025 14:42:01 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: PBS600 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001153	-.010441	-.002517	F .0105236	-.002162	-.000035
Stddev	.0006317	.000196	.001385	.0006517	.000259	.000089
%RSD	547.8035	1.874147	55.02547	6.192280	11.96380	253.7638
#1	-.000580	-.010215	-.002353	.0099238	-.002386	-.000138
#2	.000653	-.010555	-.003976	.0104300	-.002220	.000014
#3	.000273	-.010552	-.001221	.0112170	-.001879	.000018

Elem	Li6707
Units	ppm
Avg	-.007365
Stddev	.004639
%RSD	62.98040
#1	-.010448
#2	-.009617
#3	-.002031

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4321.135	28213.83	4621.216	2999.435	5155.000
Stddev	3.689	151.18	8.111	13.368	9.625
%RSD	.0853734	.5358253	.1755068	.4456703	.1867206
#1	4324.941	28146.65	4630.088	2987.302	5161.525
#2	4317.574	28386.96	4619.377	3013.765	5143.945
#3	4320.891	28107.90	4614.183	2997.237	5159.529

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: PB166600BS Acquired: 02/07/2025 14:46:02 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: LCS600 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0201889	.0534189	.0169793	.0614773	.1113765	.3783045
Stddev	.0038077	.0004839	.0006643	.0062887	.0007702	.0163394
%RSD	18.86020	.9057663	3.912385	10.22937	.6915473	4.319121
#1	.0241606	.0531993	.0176858	.0564728	.1122657	.3788456
#2	.0198361	.0530838	.0168846	.0594227	.1109473	.3943666
#3	.0165699	.0539736	.0163674	.0685364	.1109165	.3617012

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4040777	.0106542	.0094924	10.37914	.0208670	.1014488
Stddev	.0014647	.0002560	.0001034	.08067	.0005256	.0001786
%RSD	.3624807	2.402928	1.089246	.7771839	2.518730	.1760367
#1	.4024386	.0105349	.0095530	10.29018	.0208406	.1012787
#2	.4045363	.0104796	.0095512	10.39971	.0214053	.1014328
#3	.4052582	.0109481	.0093730	10.44753	.0203551	.1016348

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0481180	.1971710	.0324369	10.11736	.0763213	.0206109
Stddev	.0046478	.0079699	.0009018	.00595	.0001198	.0005121
%RSD	9.659237	4.042111	2.780290	.0588229	.1569106	2.484632
#1	.0435941	.2048128	.0314714	10.11538	.0762856	.0212019
#2	.0528805	.1889092	.0332576	10.12405	.0762234	.0202980
#3	.0478795	.1977909	.0325816	10.11265	.0764548	.0203329

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.798991	.1101032	.1108565	10.06365	.0162263	F .0015688
Stddev	.524297	.0012480	.0022165	.17831	.0020622	.0023355
%RSD	5.350522	1.133490	1.999473	1.771815	12.70917	148.8694
#1	10.39466	.1113442	.1084538	10.03381	.0138523	.0006280
#2	9.59480	.1101171	.1128216	9.90214	.0172519	.0042280
#3	9.40751	.1088483	.1112940	10.25499	.0175746	-.000150

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: PB166600BS Acquired: 02/07/2025 14:46:02 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: LCS600 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0209333	.1631354	F 1.007560	F .0250433	.2008029	.2113808
Stddev	.0003913	.0017523	.008206	.0010807	.0045035	.0014696
%RSD	1.869234	1.074125	.8144129	4.315141	2.242723	.6952354
#1	.0209922	.1649670	1.000577	.0262177	.1971090	.2096911
#2	.0205159	.1614750	1.005505	.0248213	.2058196	.2123615
#3	.0212918	.1629641	1.016598	.0240908	.1994801	.2120897

Elem	Li6707
Units	ppm
Avg	.0232507
Stddev	.0048249
%RSD	20.75153
#1	.0275922
#2	.0241036
#3	.0180562

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4253.039	27666.56	4628.675	2959.950	4804.293
Stddev	2.302	64.95	59.834	20.191	1.489
%RSD	.0541240	.2347511	1.292676	.6821515	.0310002
#1	4250.465	27721.99	4677.250	2973.664	4802.636
#2	4254.900	27682.59	4646.936	2969.421	4804.724
#3	4253.751	27595.10	4561.838	2936.764	4805.520

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1273-03 Acquired: 02/07/2025 14:49:56 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0032017	.0132503	.0231580	-.009441	-.008460	.0858077
Stddev	.0008990	.0016705	.0001502	.001046	.001019	.0237254
%RSD	28.07854	12.60695	.6484409	11.08306	12.04554	27.64944
#1	.0034178	.0136242	.0229900	-.010603	-.007316	.0951954
#2	.0022143	.0114246	.0232049	-.009147	-.008794	.0588250
#3	.0039729	.0147021	.0232792	-.008574	-.009271	.1034029

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.880753	.0001001	.0027674	191.7880	.0039923	.0331988
Stddev	.011302	.0001273	.0000644	1.1002	.0003814	.0001614
%RSD	.6009214	127.2638	2.326914	.5736349	9.552266	.4862026
#1	1.871218	-.000039	.0027008	190.6519	.0043645	.0332840
#2	1.877802	.000130	.0028293	191.8639	.0040099	.0332998
#3	1.893237	.000210	.0027722	192.8483	.0036024	.0330127

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0779727	.0457870	3.852871	30.89053	.0087434	.0010164
Stddev	.0068230	.0201939	.026450	.26764	.0002893	.0006633
%RSD	8.750469	44.10399	.6865054	.8664023	3.308279	65.25989
#1	.0828271	.0422054	3.824135	30.61046	.0084663	.0004318
#2	.0809194	.0276235	3.858277	30.91742	.0090435	.0008800
#3	.0701716	.0675320	3.876199	31.14370	.0087202	.0017372

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1300.276	.0022210	.4583836	11.39180	.0828349	.2732830
Stddev	8.848	.0073089	.0033934	.23137	.0039103	.0032514
%RSD	.6804358	329.0884	.7402983	2.031005	4.720647	1.189738
#1	1290.779	-.005984	.4546778	11.23890	.0823544	.2721805
#2	1301.764	.008035	.4613389	11.27852	.0791870	.2707263
#3	1308.286	.004612	.4591341	11.65798	.0869633	.2769423

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1273-03 Acquired: 02/07/2025 14:49:56 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0029794	1.723940	3.260505	-.000041	-.003068	1.361597
Stddev	.0001503	.004382	.030507	.000721	.001629	.011470
%RSD	5.045784	.2541658	.9356643	1754.092	53.09076	.8423825
#1	.0029915	1.724178	3.253654	-.000402	-.004575	1.350437
#2	.0031233	1.719445	3.234006	-.000510	-.001340	1.361002
#3	.0028234	1.728199	3.293855	.000789	-.003287	1.373353

Elem	Li6707
Units	ppm
Avg	.0008702
Stddev	.0035032
%RSD	402.5692
#1	.0009501
#2	.0043327
#3	-.002672

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4081.925	25457.27	4882.366	2858.934	4007.234
Stddev	5.341	81.60	59.298	1.947	2.842
%RSD	.1308330	.3205495	1.214525	.0681030	.0709238
#1	4075.775	25506.28	4903.246	2860.241	4004.171
#2	4085.398	25502.47	4928.399	2859.864	4009.786
#3	4084.601	25363.07	4815.453	2856.696	4007.743

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1273-04 Acquired: 02/07/2025 14:53:48 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2D Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0043164	.0141721	.0244583	-.009846	-.010127	.1047315
Stddev	.0017839	.0019054	.0000424	.001130	.000745	.0057458
%RSD	41.32793	13.44495	.1734956	11.47688	7.355623	5.486192
#1	.0032663	.0163313	.0244626	-.010538	-.010026	.1060688
#2	.0063761	.0134586	.0244138	-.008542	-.010917	.0984350
#3	.0033068	.0127264	.0244983	-.010459	-.009437	.1096906

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.892112	.0001296	.0028951	193.0027	.0030152	.0338609
Stddev	.009279	.0000059	.0000908	.4352	.0008783	.0003215
%RSD	.4904078	4.585640	3.137205	.2255147	29.13084	.9494468
#1	1.892696	.0001250	.0029645	192.9381	.0040263	.0336003
#2	1.882555	.0001363	.0029285	192.6034	.0024411	.0342201
#3	1.901085	.0001276	.0027923	193.4667	.0025781	.0337622

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0718358	.0534157	3.882492	31.25215	.0089089	.0020341
Stddev	.0050795	.0075844	.015944	.16339	.0002849	.0002674
%RSD	7.070949	14.19878	.4106588	.5228123	3.197709	13.14597
#1	.0774273	.0474914	3.887744	31.38051	.0086434	.0017465
#2	.0675064	.0619635	3.864584	31.06822	.0088735	.0020807
#3	.0705736	.0507921	3.895147	31.30771	.0092098	.0022752

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1309.889	.0001456	.4585954	11.85023	.0823514	.2783847
Stddev	4.604	.0007836	.0013753	.29162	.0008915	.0022750
%RSD	.3514809	538.2584	.2998900	2.460903	1.082538	.8172291
#1	1307.923	.0007680	.4571017	11.88071	.0815412	.2759514
#2	1306.594	.0004031	.4598093	11.54456	.0822065	.2787440
#3	1315.149	-.000734	.4588752	12.12541	.0833064	.2804588

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1273-04 Acquired: 02/07/2025 14:53:48 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2D Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0028082	1.749589	3.308002	-.000000	-.003961	1.375489
Stddev	.0003767	.006195	.021133	.000559	.000775	.005678
%RSD	13.41324	.3540694	.6388472	150395.8	19.55817	.4128260
#1	.0024255	1.743804	3.283824	.000524	-.003162	1.372976
#2	.0031785	1.748836	3.322949	-.000589	-.004011	1.371501
#3	.0028207	1.756125	3.317232	.000064	-.004709	1.381990

Elem	Li6707
Units	ppm
Avg	.0006149
Stddev	.0044383
%RSD	721.8361
#1	-.004251
#2	.004441
#3	.001655

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4062.773	25319.20	4854.429	2845.935	3983.243
Stddev	10.384	99.75	45.747	8.534	10.097
%RSD	.2555955	.3939580	.9423772	.2998602	.2534800
#1	4056.876	25355.36	4876.173	2854.869	3980.505
#2	4056.679	25395.82	4885.247	2837.868	3974.797
#3	4074.763	25206.42	4801.865	2845.067	3994.426

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1273-03LX5 Acquired: 02/07/2025 14:57:42 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2L Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000972	.0045381	.0016247	-.008204	-.004763	-.015458	.3854417
Stddev	.002057	.0004412	.0015079	.004125	.001262	.010655	.0017735
%RSD	211.5914	9.722385	92.81264	50.28489	26.48732	68.92743	.4601314
#1	.001335	.0049088	-.000060	-.007590	-.004517	-.003643	.3865274
#2	-.001638	.0040501	.002086	-.004420	-.006130	-.018395	.3833950
#3	-.002613	.0046554	.002848	-.012602	-.003643	-.024337	.3864026

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000751	.0005702	40.01546	.0006925	.0176068	.0128895	.0172184
Stddev	.0001148	.0000307	.04834	.0003760	.0003641	.0080039	.0057971
%RSD	152.8952	5.381107	.1208081	54.29896	2.067725	62.09619	33.66788
#1	.0000629	.0006039	40.03131	.0002994	.0178655	.0062718	.0217596
#2	.0001955	.0005628	39.96119	.0010488	.0177645	.0217856	.0192067
#3	-.000033	.0005438	40.05389	.0007292	.0171905	.0106112	.0106888

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.8062381	6.528966	.0009696	.0004604	269.9415	.0059884	.0898450
Stddev	.0040665	.015345	.0003182	.0006043	1.2231	.0024777	.0019740
%RSD	.5043732	.2350341	32.81450	131.2481	.4531050	41.37535	2.197165
#1	.8061178	6.546020	.0012227	.0003247	270.1484	.0032750	.0884001
#2	.8022332	6.516274	.0010736	-.000064	268.6282	.0065596	.0890406
#3	.8103634	6.524602	.0006124	.001121	271.0480	.0081307	.0920942

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.794379	.0122388	.0640677	.0018981	.3296759	.7068316	.0097123
Stddev	.200706	.0031314	.0031428	.0003980	.0021424	.0012938	.0010967
%RSD	5.289572	25.58592	4.905493	20.96974	.6498420	.1830364	11.29223
#1	3.562825	.0133219	.0671242	.0023152	.3298151	.7055352	.0085492
#2	3.901772	.0087096	.0642339	.0015224	.3274673	.7081227	.0107277
#3	3.918538	.0146849	.0608451	.0018567	.3317453	.7068367	.0098601

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1273-03LX5 Acquired: 02/07/2025 14:57:42 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2L Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	-.000675	.2812286	.0213284
Stddev	.002323	.0010414	.0031113
%RSD	344.2396	.3703106	14.58758
#1	.001060	.2817969	.0188540
#2	-.003314	.2800266	.0203100
#3	.000230	.2818622	.0248213

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4156.235	26217.07	4668.680	2878.037	4305.341
Stddev	12.160	60.29	11.008	5.775	12.106
%RSD	.2925833	.2299610	.2357877	.2006616	.2811969
#1	4143.185	26241.50	4661.990	2875.907	4293.536
#2	4167.249	26148.40	4681.386	2884.575	4317.728
#3	4158.270	26261.30	4662.665	2873.630	4304.760

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1273-05 Acquired: 02/07/2025 15:01:38 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2S Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0458272	.0603824	.0459789	.0948483	.0849825	1.943884
Stddev	.0017461	.0023093	.0022142	.0042393	.0028823	.046053
%RSD	3.810102	3.824527	4.815599	4.469545	3.391684	2.369131
#1	.0447433	.0591739	.0450240	.0924743	.0818378	1.991511
#2	.0478414	.0589281	.0485103	.0923279	.0874989	1.899585
#3	.0448969	.0630452	.0444024	.0997427	.0856108	1.940558

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.874517	.0496108	.0554253	193.4447	.2143201	.5393790
Stddev	.006438	.0001557	.0001531	.8500	.0018655	.0006217
%RSD	.1661733	.3139116	.2761936	.4393825	.8704285	.1152637
#1	3.881881	.0496397	.0555367	194.2667	.2133086	.5400474
#2	3.871719	.0494426	.0552508	192.5693	.2164729	.5388179
#3	3.869950	.0497500	.0554885	193.4981	.2131788	.5392718

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3274842	1.063699	4.406678	31.21266	.5243305	.0375458
Stddev	.0021918	.020298	.031574	.26747	.0003553	.0005695
%RSD	.6692865	1.908260	.7164954	.8569278	.0677672	1.516769
#1	.3254084	1.072178	4.431701	31.45178	.5244917	.0374205
#2	.3272681	1.040537	4.371204	30.92382	.5239232	.0370494
#3	.3297760	1.078384	4.417129	31.26238	.5245767	.0381675

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1315.303	.5119580	.9499485	12.00391	.0784747	.2784328
Stddev	9.356	.0062138	.0078591	.15353	.0013685	.0056584
%RSD	.7113180	1.213738	.8273173	1.279024	1.743807	2.032213
#1	1325.128	.5158346	.9586770	11.94129	.0800202	.2842051
#2	1306.499	.5047909	.9477348	11.89159	.0779870	.2728957
#3	1314.282	.5152485	.9434336	12.17886	.0774169	.2781976

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: Q1273-05 Acquired: 02/07/2025 15:01:38 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA2S Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0028270	1.761497	3.348300	.0007344	-.005477	1.384795
Stddev	.0000980	.007371	.032305	.0007380	.003892	.007926
%RSD	3.467958	.4184227	.9648035	100.4904	71.07074	.5723423
#1	.0029297	1.764004	3.339243	.0001497	-.007476	1.391809
#2	.0027343	1.753200	3.321490	.0015637	-.007963	1.376196
#3	.0028171	1.767287	3.384166	.0004899	-.000991	1.386379

Elem	Li6707
Units	ppm
Avg	-.001038
Stddev	.001908
%RSD	183.8209
#1	-.003159
#2	-.000497
#3	.000541

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4154.398	26011.27	4949.774	2894.221	4059.947
Stddev	12.384	90.54	3.753	6.747	14.144
%RSD	.2980818	.3480888	.0758271	.2331210	.3483704
#1	4141.998	26067.86	4949.273	2896.087	4046.367
#2	4166.765	25906.84	4946.296	2886.737	4074.594
#3	4154.432	26059.10	4953.752	2899.838	4058.881

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: CCV006 Acquired: 02/07/2025 15:05:27 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCV006 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.964078	4.972818	25.36618	5.010067	5.046429	407.0491
Stddev	.030201	.008705	.04889	.010175	.010523	.7949
%RSD	.6083821	.1750572	.1927508	.2030976	.2085179	.1952841
#1	4.941697	4.968855	25.34215	5.006387	5.038013	407.8302
#2	4.952108	4.966800	25.33396	5.002243	5.043047	406.2411
#3	4.998429	4.982800	25.42244	5.021570	5.058227	407.0760

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.30046	.5162081	2.559821	410.6985	15.66661	2.547194
Stddev	.02615	.0047569	.004188	.5258	.05098	.004675
%RSD	.2538864	.9215001	.1636149	.1280377	.3254228	.1835198
#1	10.28672	.5108099	2.559482	410.1416	15.69569	2.545283
#2	10.33061	.5180282	2.555812	411.1865	15.69639	2.543777
#3	10.28403	.5197861	2.564168	410.7675	15.60774	2.552521

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	15.34352	409.7326	15.14989	402.4145	2.549212	1.273208
Stddev	.01908	.4616	.01565	.9106	.004563	.003129
%RSD	.1243282	.1126621	.1032805	.2262736	.1790019	.2457818
#1	15.35219	410.2527	15.16311	403.1110	2.551463	1.275011
#2	15.35672	409.5735	15.15394	401.3841	2.543960	1.275019
#3	15.32165	409.3716	15.13261	402.7484	2.552211	1.269594

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	403.6171	2.553822	14.84094	155.3281	5.127145	F 4.157530
Stddev	.1788	.007923	.19629	.5258	.008322	.028982
%RSD	.0443050	.3102489	1.322616	.3385409	.1623097	.6971084
#1	403.5928	2.560962	15.06620	154.7523	5.120041	4.124353
#2	403.4516	2.545298	14.75008	155.4492	5.125093	4.170311
#3	403.8068	2.555207	14.70655	155.7829	5.136301	4.177924

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: CCV006 Acquired: 02/07/2025 15:05:27 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCV006 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.974948	5.173315	4.895553	5.159666	5.128457	4.905608
Stddev	.011295	.014400	.032322	.012049	.007473	.063567
%RSD	.2270453	.2783475	.6602385	.2335240	.1457084	1.295796
#1	4.971321	5.167243	4.858555	5.161086	5.126894	4.837618
#2	4.965912	5.162946	4.909795	5.146970	5.121889	4.915649
#3	4.987612	5.189756	4.918308	5.170942	5.136587	4.963556

Elem	Li6707
Units	ppm
Avg	5.125686
Stddev	.026440
%RSD	.5158380
#1	5.095157
#2	5.141192
#3	5.140710

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3545.308	23309.50	4344.306	2465.211	3582.983
Stddev	10.316	138.00	24.830	20.768	10.109
%RSD	.2909764	.5920539	.5715621	.8424511	.2821351
#1	3533.930	23203.64	4372.921	2441.630	3572.355
#2	3547.942	23259.27	4328.432	2473.224	3584.118
#3	3554.051	23465.58	4331.565	2480.780	3592.477

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

Sample Name: CCB006 Acquired: 02/07/2025 15:09:12 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCB006 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0012496	-.000128	-.000511	-.001776	.0015822	.0216795
Stddev	.0022363	.001104	.000811	.002077	.0032942	.0198552
%RSD	178.9683	862.7214	158.5870	116.9440	208.2044	91.58517
#1	-.000903	.000480	.000378	.000595	.0048599	.0444580
#2	.001091	.000538	-.001210	-.002649	.0016149	.0125452
#3	.003561	-.001402	-.000702	-.003274	-.001728	.0080353

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.005465	.0001675	.0000735	.0249755	.0003839	.0000224
Stddev	.002095	.0000913	.0000414	.0175091	.0002467	.0001370
%RSD	38.33906	54.51310	56.23714	70.10498	64.25834	612.5581
#1	-.007796	.0000653	.0000694	.0438634	.0006172	.0001323
#2	-.003739	.0001959	.0000344	.0217766	.0001257	-.000131
#3	-.004860	.0002411	.0001168	.0092864	.0004088	.000066

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.003276	.0161856	.0003303	.0602724	-.000151	.0007694
Stddev	.003163	.0096140	.0010033	.0421034	.000265	.0005368
%RSD	96.55060	59.39847	303.6971	69.85524	175.4459	69.76746
#1	.000188	.0272394	.0014468	.0689902	-.000014	.0009116
#2	-.004006	.0115464	.0000399	.0144925	.000018	.0001758
#3	-.006010	.0097709	-.000496	.0973344	-.000456	.0012207

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.432256	.0030841	.0016453	.5934012	-.000645	.0113160
Stddev	.133434	.0044365	.0029229	.0408207	.001560	.0018970
%RSD	30.86932	143.8503	177.6519	6.879111	241.8900	16.76360
#1	-.586113	.0063534	.0009243	.5836851	-.002430	.0093568
#2	-.362437	-.001966	.0048613	.6382033	.000034	.0131440
#3	-.348216	.004865	-.000850	.5583151	.000461	.0114473

Reviewed By:Mohan
On:2/10/2025 5:27:03 PM
Inst Id :P5

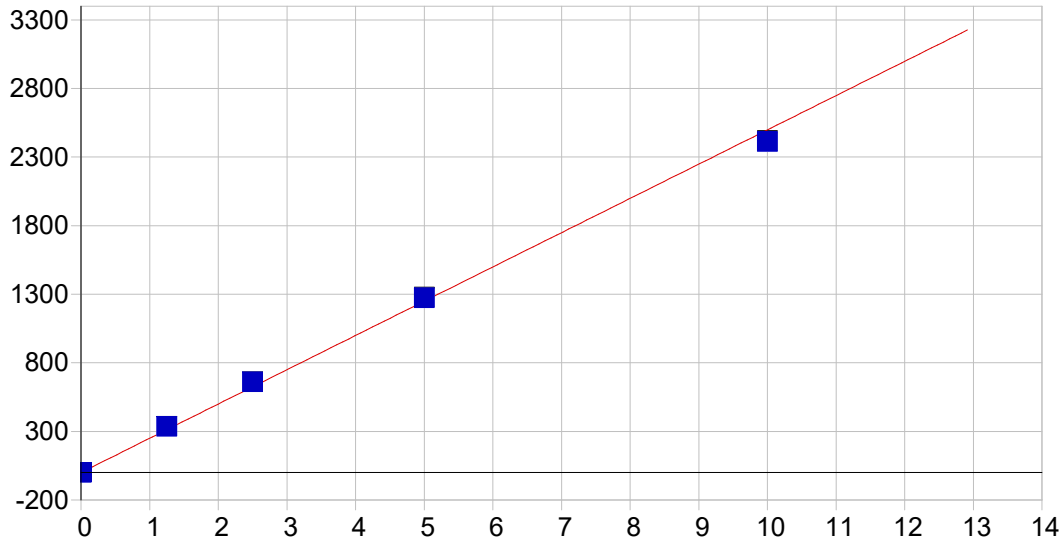
Sample Name: CCB006 Acquired: 02/07/2025 15:09:12 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v134) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCB006 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0005854	-.009047	-.002351	F .0103783	-.001429	.0001618
Stddev	.0006300	.003238	.001134	.0002637	.003223	.0001745
%RSD	107.6105	35.79097	48.24446	2.540584	225.5781	107.8041
#1	.0011859	-.005497	-.003532	.0106287	.002047	.0001199
#2	.0006407	-.011839	-.002252	.0101031	-.002016	.0003535
#3	-.000070	-.009804	-.001270	.0104030	-.004318	.0000121

Elem	Li6707
Units	ppm
Avg	.0086427
Stddev	.0027563
%RSD	31.89115
#1	.0058499
#2	.0087173
#3	.0113610

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4339.252	28229.87	4624.037	3022.877	5187.649
Stddev	100.528	172.59	22.557	18.732	128.267
%RSD	2.316709	.6113747	.4878278	.6196846	2.472545
#1	4331.501	28374.03	4612.959	3044.423	5173.344
#2	4443.431	28276.96	4609.161	3013.753	5322.469
#3	4242.824	28038.62	4649.992	3010.455	5067.134

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



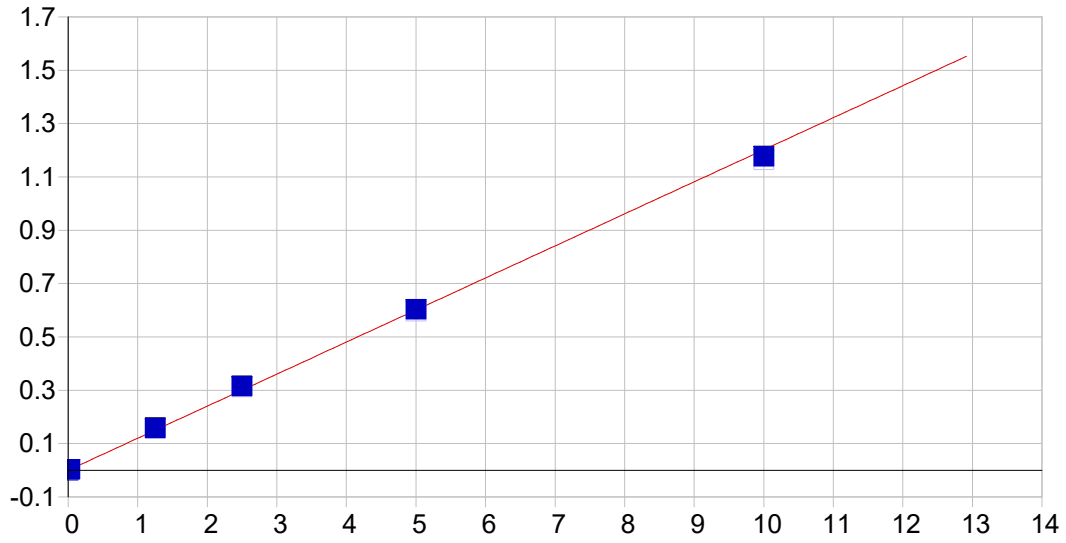
As 189.042 {478}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.185557	Re-Slope:	1.000000
A1 (Gain):	249.827486	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999216	Status:	OK.
Std Error of Est:	0.165761		
Predicted MDL:	0.003907		
Predicted MQL:	0.013024		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.18500	.554	1
S1	.01000	.01103	.001	10.3	2.9403	.325	1
S2	1.2500	1.3423	.092	7.38	335.15	.264	1
S3	2.5000	2.6474	.147	5.89	660.82	1.08	1
S4	5.0000	5.1016	.102	2.03	1273.2	4.25	1
S5	10.000	9.6578	-.342	-3.42	2410.0	6.02	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



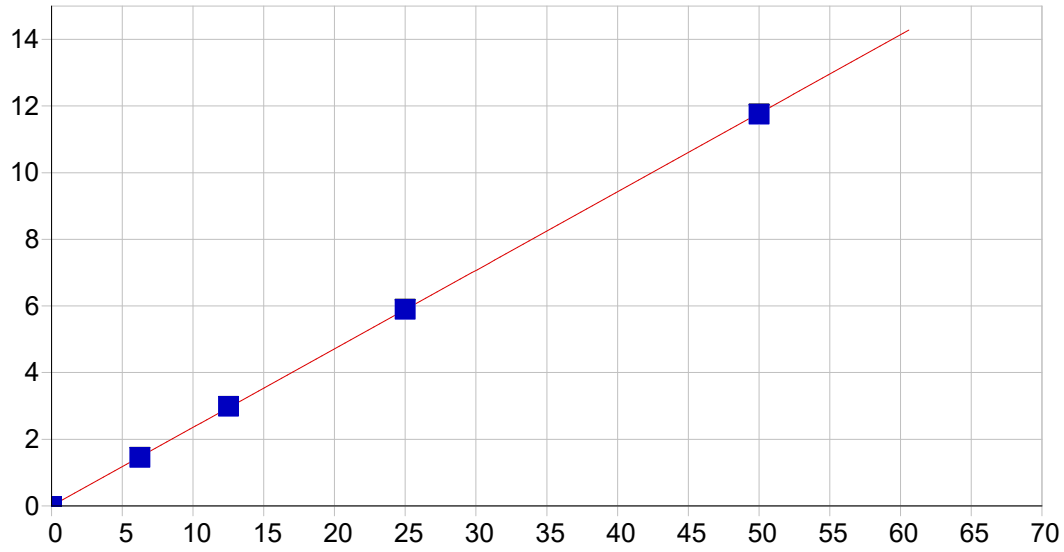
Tl 190.856 {477}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000058	Re-Slope:	1.000000
A1 (Gain):	0.120186	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999623	Status:	OK.
Std Error of Est:	0.000087		
Predicted MDL:	0.001520		
Predicted MQL:	0.005068		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00006	.000	1
S1	.02500	.02721	.002	8.84	.00310	.000	1
S2	1.2500	1.3159	.066	5.27	.15636	.001	1
S3	2.5000	2.6216	.122	4.86	.31154	.000	1
S4	5.0000	5.0156	.016	.313	.59579	.001	1
S5	10.000	9.7947	-.205	-2.05	1.1632	.001	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



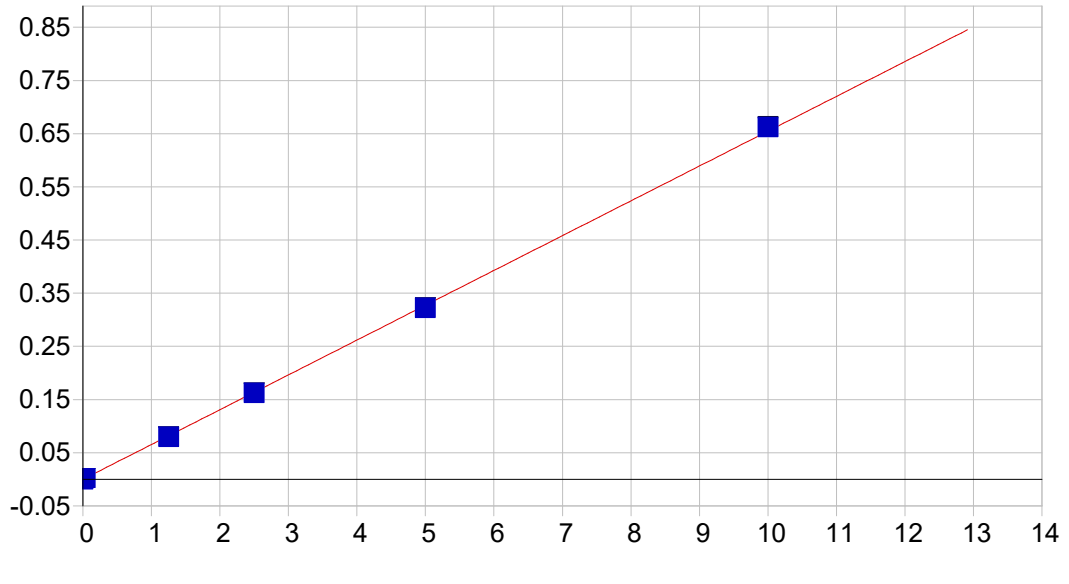
Pb 220.353 {453}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000341	Re-Slope:	1.000000
A1 (Gain):	0.235649	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999978	Status:	OK.
Std Error of Est:	0.000059		
Predicted MDL:	0.001861		
Predicted MQL:	0.006202		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00034	.000	1
S1	.01000	.00753	-.002	-24.7	.00210	.000	1
S2	6.2500	6.1696	-.080	-1.29	1.4508	.003	1
S3	12.500	12.668	.168	1.34	2.9788	.004	1
S4	25.000	25.021	.021	.084	5.8831	.008	1
S5	50.000	49.894	-.106	-.212	11.731	.011	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



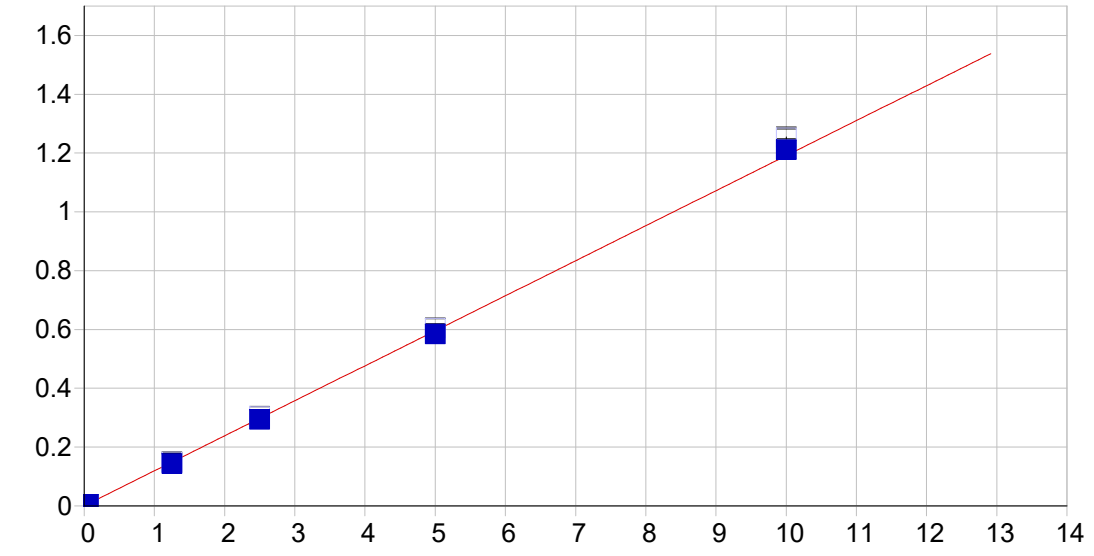
Se 196.090 {472}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000086	Re-Slope:	1.000000
A1 (Gain):	0.065475	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999905	Status:	OK.
Std Error of Est:	0.000028		
Predicted MDL:	0.003736		
Predicted MQL:	0.012454		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00009	.000	1
S1	.03500	.03424	-.001	-2.17	.00216	.000	1
S2	1.2500	1.2187	-.031	-2.51	.07958	.000	1
S3	2.5000	2.4837	-.016	-.654	.16229	.000	1
S4	5.0000	4.9251	-.075	-1.50	.32189	.001	1
S5	10.000	10.123	.123	1.23	.66176	.001	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



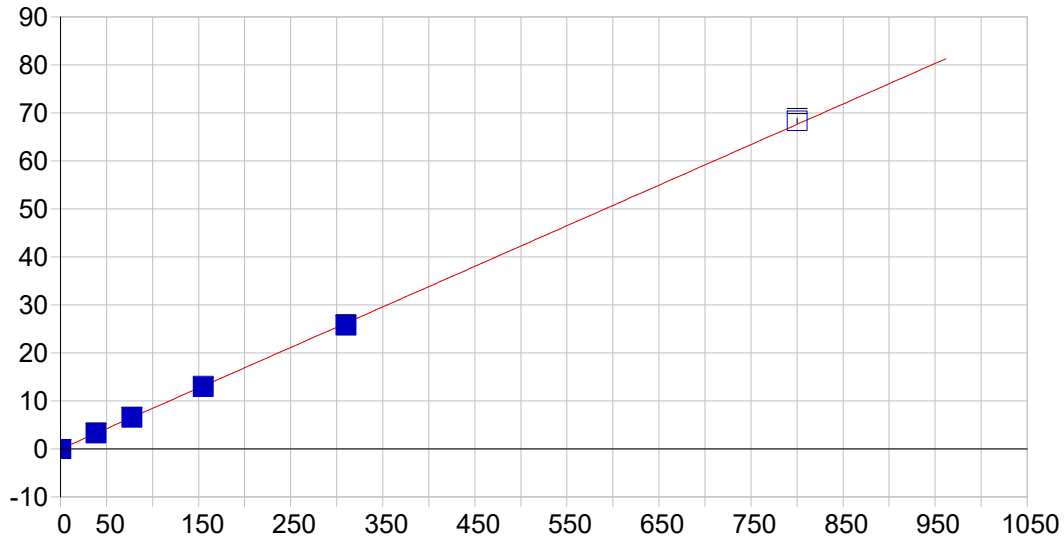
Sb 206.833 {463}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000229	Re-Slope:	1.000000
A1 (Gain):	0.119089	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999831	Status:	OK.
Std Error of Est:	0.000093		
Predicted MDL:	0.002680		
Predicted MQL:	0.008934		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00023	.000	1
S1	.06000	.05655	-.003	-5.75	.00697	.000	1
S2	1.2500	1.2086	-.041	-3.31	.14914	.000	1
S3	2.5000	2.4683	-.032	-1.27	.30412	.000	1
S4	5.0000	4.9042	-.096	-1.92	.60417	.001	1
S5	10.000	10.172	.172	1.72	1.2514	.003	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



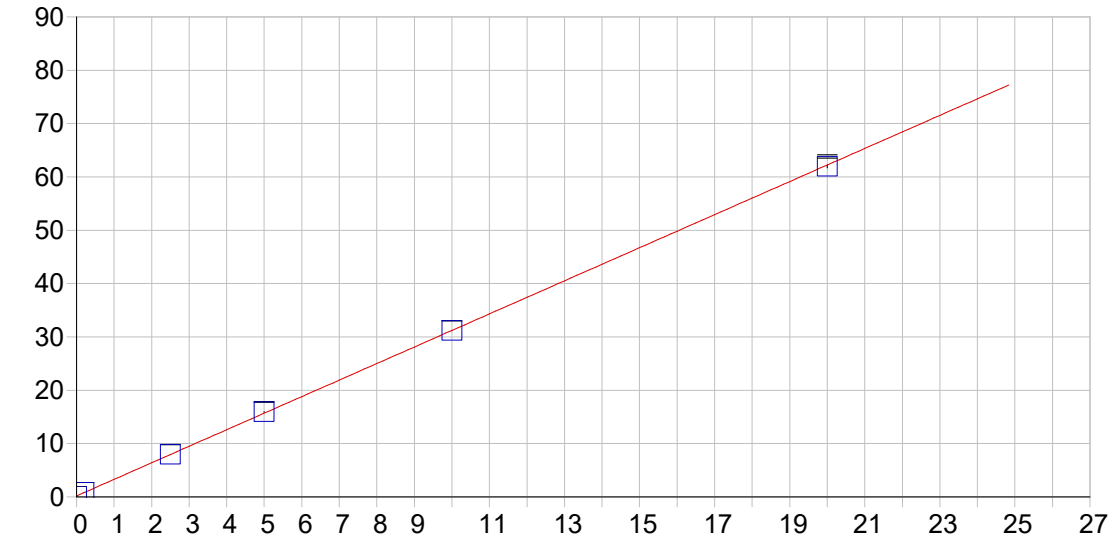
Al 396.152 { 85}

Date of Fit:	02/12/2025 12:52:56	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.003535	Re-Slope:	1.000000
A1 (Gain):	0.084538	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999916	Status:	OK.
Std Error of Est:	0.000682		
Predicted MDL:	0.023056		
Predicted MQL:	0.076853		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00004	-.000	.000	-.00354	.001	1
S1	.20000	.24795	.048	24.0	.01745	.001	1
S2	38.750	38.577	-.173	-.446	3.2613	.020	1
S3	77.500	77.662	.162	.210	6.5690	.020	1
S4	155.00	152.70	-2.30	-1.48	12.920	.122	1
S5	310.00	304.27	-5.73	-1.85	25.747	.098	1
S6	800.00	808.00	8.00	1.00	68.304	.534	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



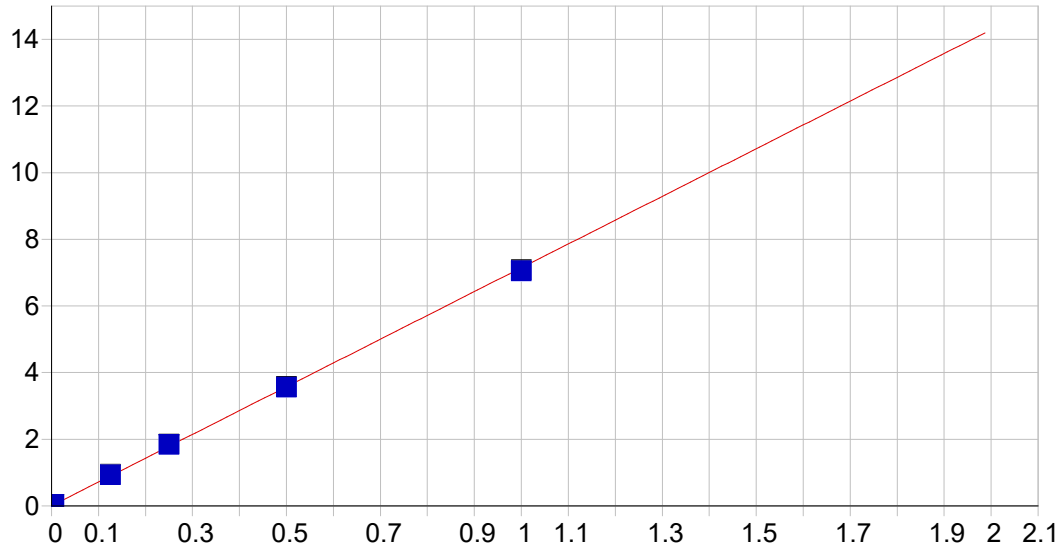
Ba 493.409 { 68}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.190906	Re-Slope:	1.000000
A1 (Gain):	3.102021	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999973	Status:	OK.
Std Error of Est:	0.002438		
Predicted MDL:	0.001632		
Predicted MQL:	0.005441		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	.19087	.001	1
S1	.20000	.20847	.008	4.24	.83760	.007	1
S2	2.5000	2.5032	.003	.130	7.9560	.008	1
S3	5.0000	5.0817	.082	1.63	15.954	.049	1
S4	10.000	9.9909	-.009	-.091	31.183	.033	1
S5	20.000	19.916	-.084	-.421	61.970	.291	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



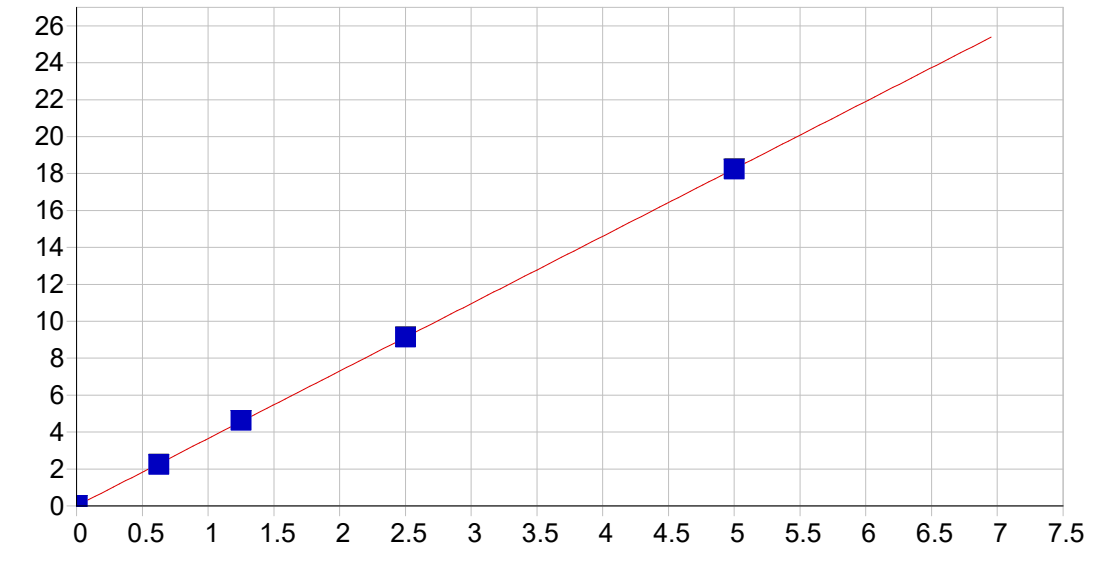
Be 234.861 {144}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.003033	Re-Slope:	1.000000
A1 (Gain):	7.143393	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999831	Status:	OK.
Std Error of Est:	0.000491		
Predicted MDL:	0.000137		
Predicted MQL:	0.000458		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00303	.001	1
S1	.00500	.00543	.000	8.55	.04177	.001	1
S2	.12500	.13055	.006	4.44	.93151	.011	1
S3	.25000	.25707	.007	2.83	1.8312	.009	1
S4	.50000	.49898	-.001	-.204	3.5510	.015	1
S5	1.0000	.98798	-.012	-1.20	7.0278	.022	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



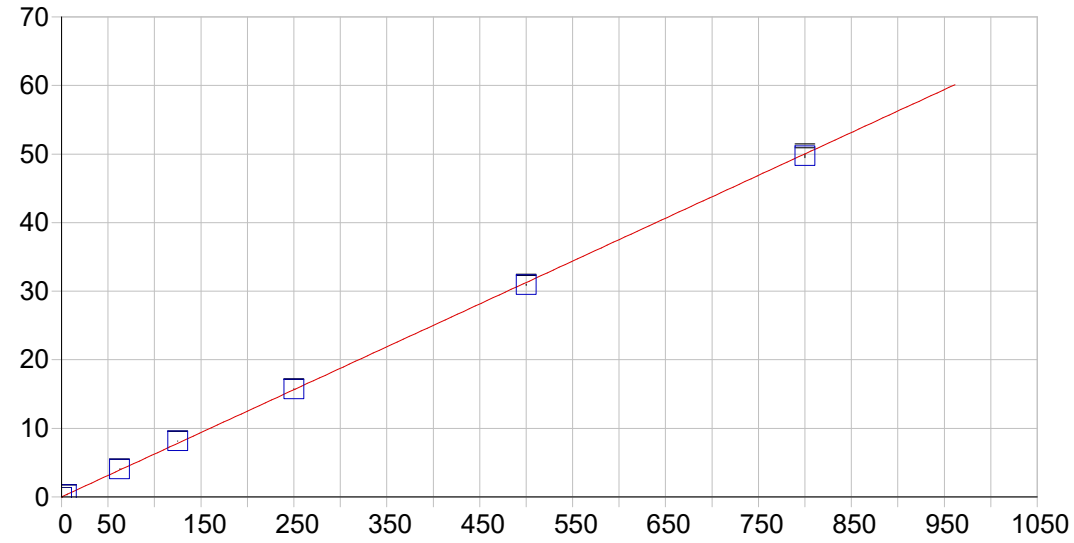
Cd 214.438 {457}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000246	Re-Slope:	1.000000
A1 (Gain):	3.650860	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999979	Status:	OK.
Std Error of Est:	0.000199		
Predicted MDL:	0.000080		
Predicted MQL:	0.000266		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00025	.000	1
S1	.00500	.00466	-.000	-6.74	.01734	.000	1
S2	.62500	.61463	-.010	-1.66	2.2477	.003	1
S3	1.2500	1.2653	.015	1.22	4.6267	.003	1
S4	2.5000	2.5025	.002	.099	9.1504	.016	1
S5	5.0000	4.9929	-.007	-.141	18.257	.014	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



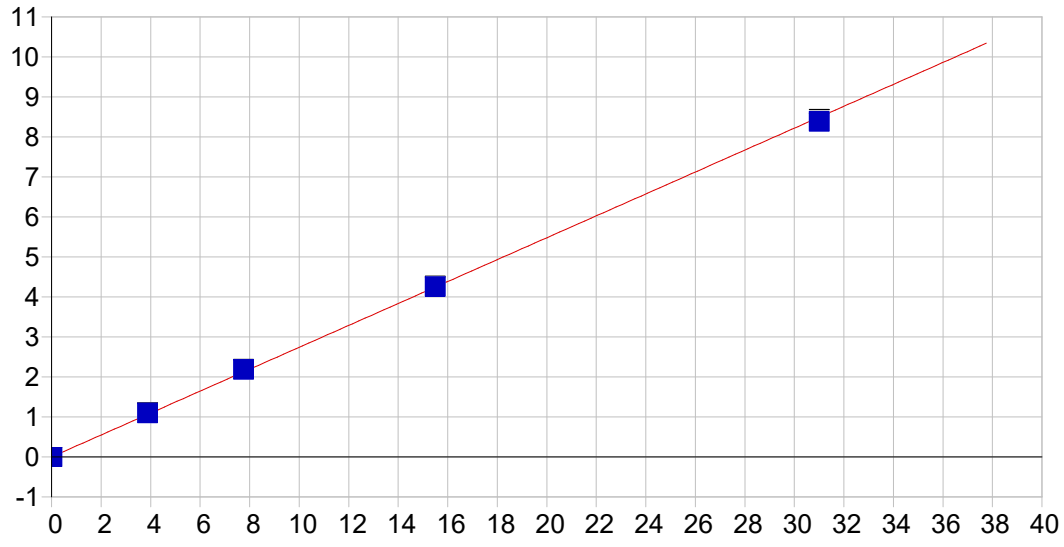
Ca 373.690 { 90}

Date of Fit:	02/12/2025 12:52:56	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.002956	Re-Slope:	1.000000
A1 (Gain):	0.062523	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999877	Status:	OK.
Std Error of Est:	0.003428		
Predicted MDL:	0.024776		
Predicted MQL:	0.082587		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00070	-.001	.000	.00291	.000	1
S1	5.0000	5.3348	.335	6.70	.33651	.001	1
S2	62.500	65.054	2.55	4.09	4.0704	.008	1
S3	125.00	130.21	5.21	4.17	8.1440	.023	1
S4	250.00	251.48	1.48	.591	15.726	.048	1
S5	500.00	494.87	-5.13	-1.03	30.944	.083	1
S6	800.00	795.55	-4.45	-.556	49.744	.281	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



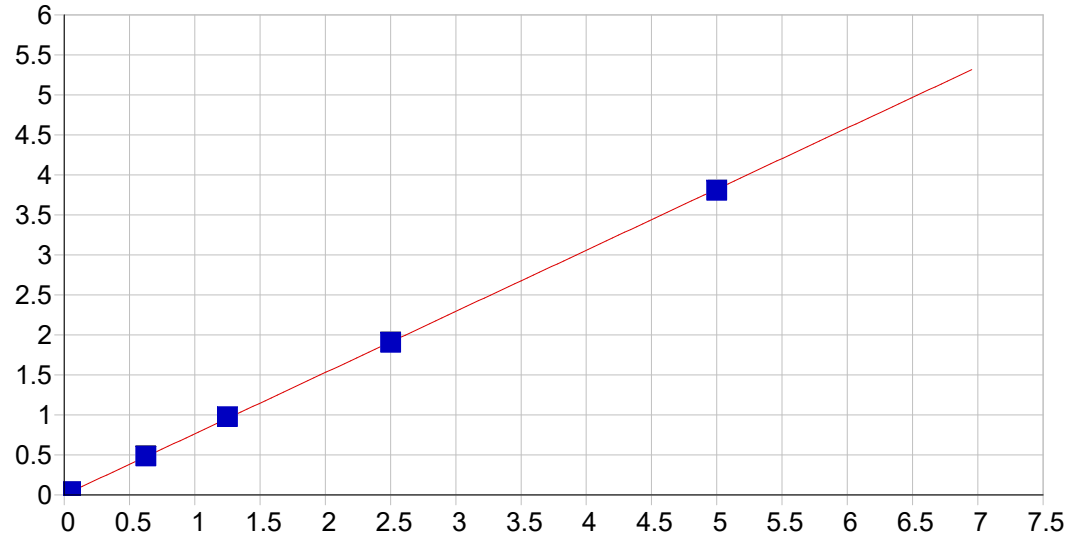
Cr 267.716 {126}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000119	Re-Slope:	1.000000
A1 (Gain):	0.273930	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999862	Status:	OK.
Std Error of Est:	0.000134		
Predicted MDL:	0.000739		
Predicted MQL:	0.002464		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00012	.000	1
S1	.01000	.01024	.000	2.36	.00293	.000	1
S2	3.8750	4.0082	.133	3.44	1.0989	.005	1
S3	7.7500	7.9745	.225	2.90	2.1862	.003	1
S4	15.500	15.532	.032	.208	4.2581	.011	1
S5	31.000	30.610	-.390	-1.26	8.3917	.049	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



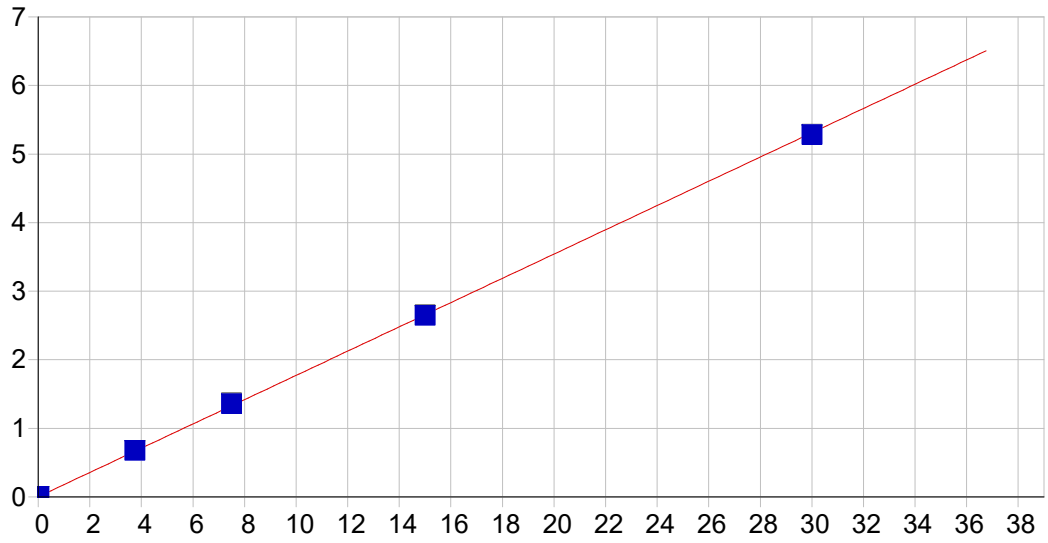
Co 228.616 {448}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000148	Re-Slope:	1.000000
A1 (Gain):	0.764477	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999957	Status:	OK.
Std Error of Est:	0.000189		
Predicted MDL:	0.000379		
Predicted MQL:	0.001264		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00015	.000	1
S1	.05000	.05096	.001	1.92	.03923	.000	1
S2	.62500	.63255	.008	1.21	.48526	.000	1
S3	1.2500	1.2761	.026	2.09	.97878	.001	1
S4	2.5000	2.4914	-.009	-.344	1.9109	.002	1
S5	5.0000	4.9740	-.026	-.520	3.8150	.002	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



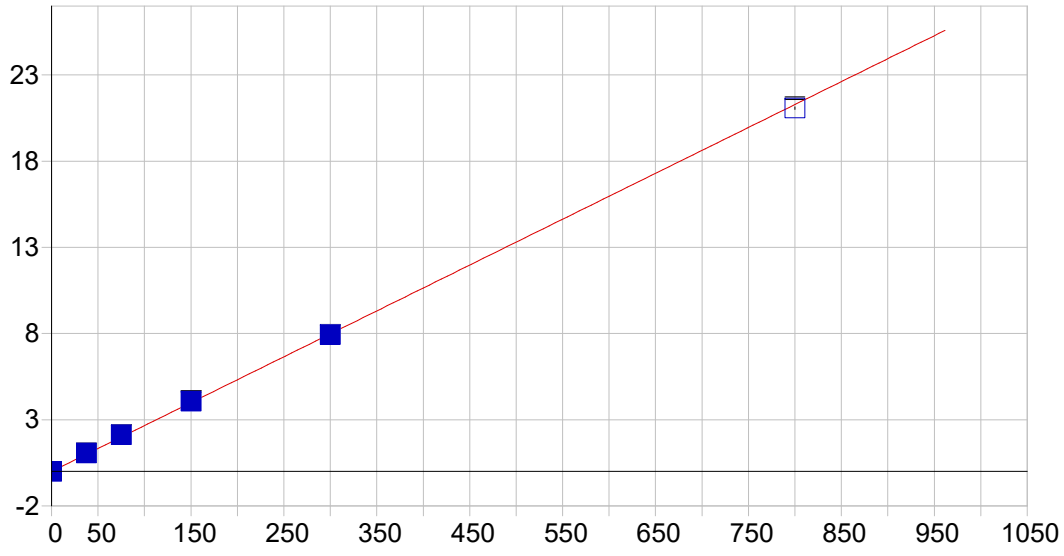
Cu 324.754 {104}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.002823	Re-Slope:	1.000000
A1 (Gain):	0.176930	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999947	Status:	OK.
Std Error of Est:	0.000084		
Predicted MDL:	0.006188		
Predicted MQL:	0.020625		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00282	.001	1
S1	.02500	.02303	-.002	-7.86	.00689	.000	1
S2	3.7500	3.8035	.054	1.43	.67571	.002	1
S3	7.5000	7.6714	.171	2.29	1.3600	.005	1
S4	15.000	14.942	-.058	-.388	2.6462	.004	1
S5	30.000	29.835	-.165	-.549	5.2810	.007	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



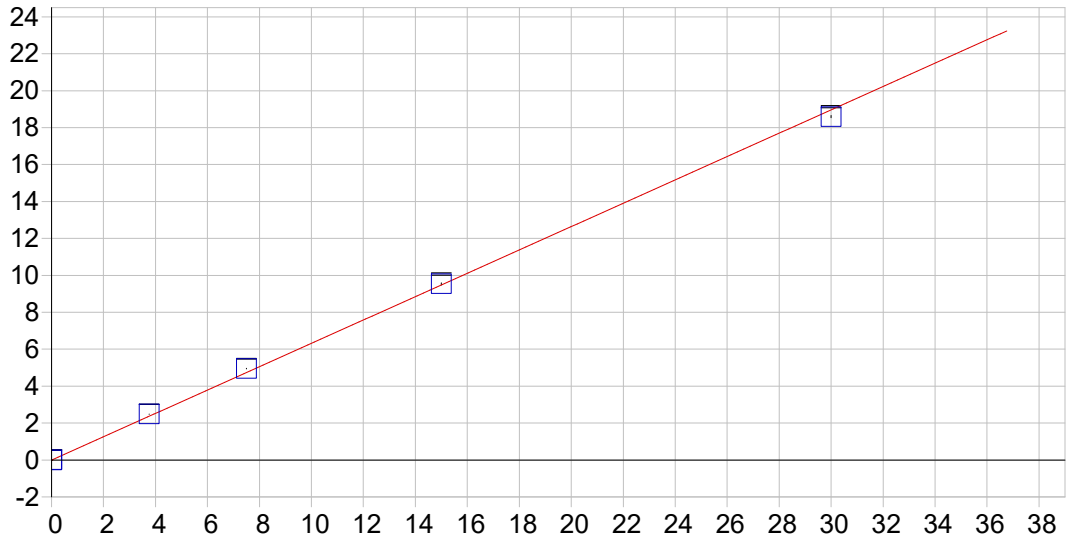
Fe 259.837 {130}

Date of Fit:	02/12/2025 12:52:56	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000502	Re-Slope:	1.000000
A1 (Gain):	0.026611	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999779	Status:	OK.
Std Error of Est:	0.000244		
Predicted MDL:	0.020080		
Predicted MQL:	0.066932		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00002	-.000	.000	-.00050	.001	1
S1	.10000	.10873	.009	8.73	.00239	.000	1
S2	37.500	39.789	2.29	6.10	1.0586	.006	1
S3	75.000	79.780	4.78	6.37	2.1230	.004	1
S4	150.00	153.07	3.07	2.05	4.0737	.034	1
S5	300.00	297.84	-2.16	-.721	7.9270	.029	1
S6	800.00	792.01	-7.99	-.998	21.076	.067	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



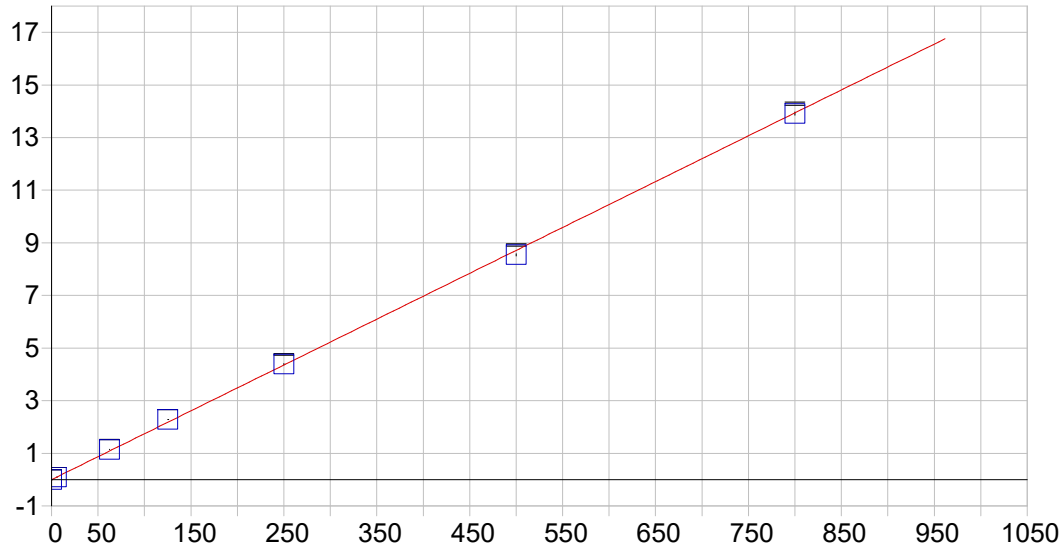
Mn 257.610 {131}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000302	Re-Slope:	1.000000
A1 (Gain):	0.632409	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999687	Status:	OK.
Std Error of Est:	0.000563		
Predicted MDL:	0.000916		
Predicted MQL:	0.003053		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	-.00030	.000	1
S1	.01500	.01659	.002	10.6	.01019	.001	1
S2	3.7500	3.9251	.175	4.67	2.4820	.012	1
S3	7.5000	7.8324	.332	4.43	4.9530	.014	1
S4	15.000	15.084	.084	.558	9.5387	.059	1
S5	30.000	29.407	-.593	-1.98	18.597	.063	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



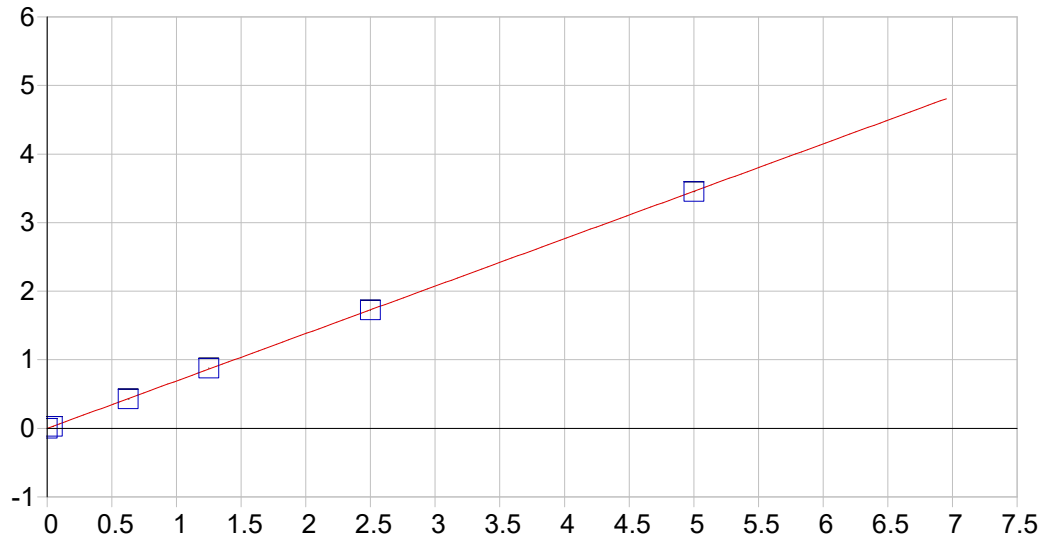
Mg 279.079 {121}

Date of Fit:	02/12/2025 12:52:56	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000467	Re-Slope:	1.000000
A1 (Gain):	0.017426	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999806	Status:	OK.
Std Error of Est:	0.001198		
Predicted MDL:	0.041120		
Predicted MQL:	0.137068		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00073	-.001	.000	-.00048	.000	1
S1	5.0000	5.3070	.307	6.14	.09201	.000	1
S2	62.500	65.709	3.21	5.13	1.1446	.009	1
S3	125.00	131.09	6.09	4.88	2.2840	.005	1
S4	250.00	251.59	1.59	.637	4.3839	.029	1
S5	500.00	490.49	-9.51	-1.90	8.5470	.044	1
S6	800.00	798.31	-1.69	-.211	13.911	.058	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



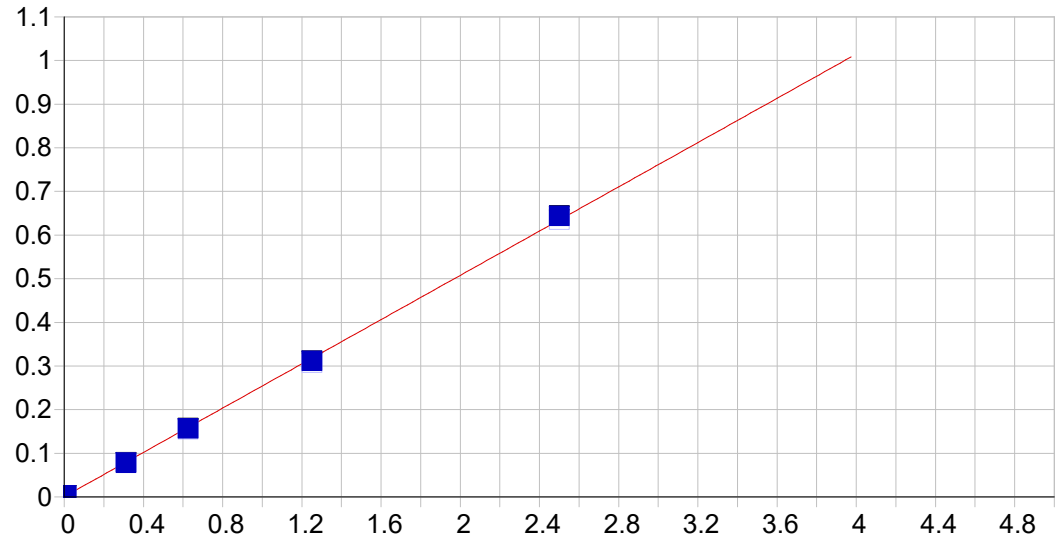
Ni 231.604 {446}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000162	Re-Slope:	1.000000
A1 (Gain):	0.691391	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999976	Status:	OK.
Std Error of Est:	0.000114		
Predicted MDL:	0.000493		
Predicted MQL:	0.001644		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00016	.000	1
S1	.04000	.03832	-.002	-4.20	.02633	.000	1
S2	.62500	.62143	-.004	-.571	.42949	.001	1
S3	1.2500	1.2704	.020	1.63	.87818	.001	1
S4	2.5000	2.4933	-.007	-.269	1.7237	.002	1
S5	5.0000	4.9916	-.008	-.169	3.4510	.001	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



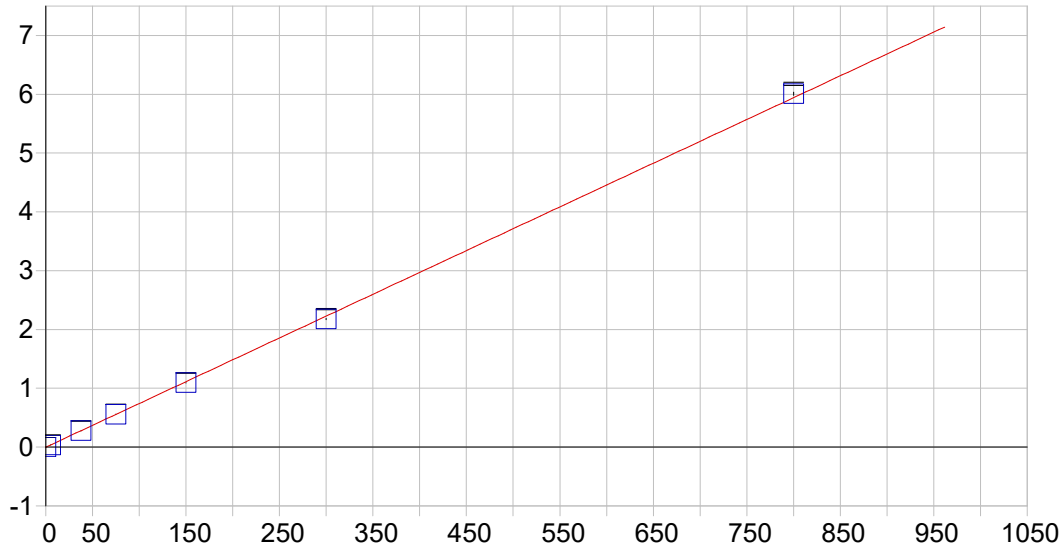
Ag 328.068 {103}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000678	Re-Slope:	1.000000
A1 (Gain):	0.253554	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999867	Status:	OK.
Std Error of Est:	0.000034		
Predicted MDL:	0.001177		
Predicted MQL:	0.003923		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	.00068	.000	1
S1	.01000	.00978	-.000	-2.16	.00316	.000	1
S2	.31250	.30744	-.005	-1.62	.07749	.001	1
S3	.62500	.61718	-.008	-1.25	.15488	.001	1
S4	1.2500	1.2258	-.024	-1.94	.30692	.000	1
S5	2.5000	2.5373	.037	1.49	.63490	.001	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



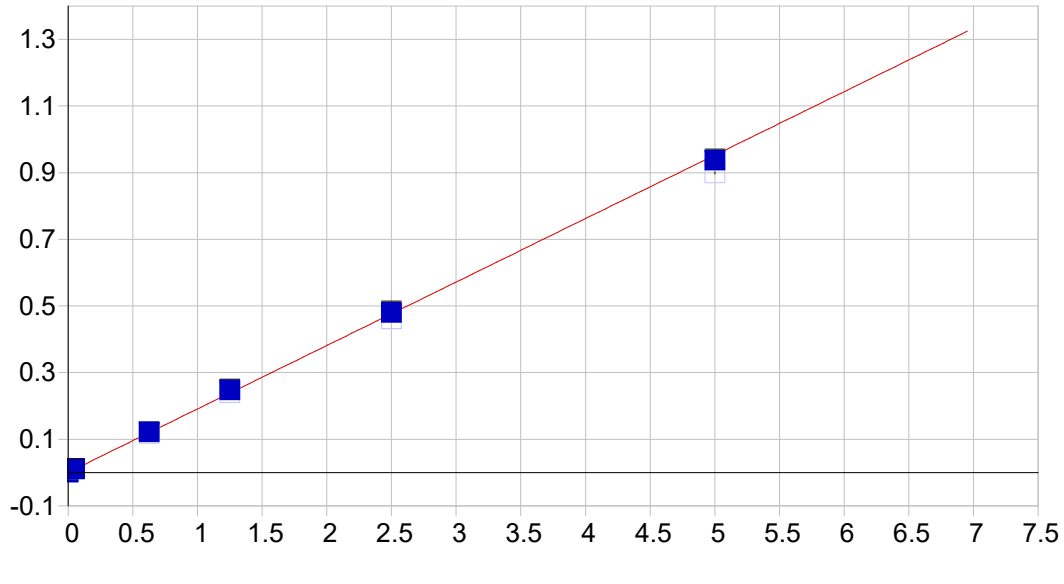
Na 818.326 { 41}

Date of Fit:	02/12/2025 12:52:56	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.001376	Re-Slope:	1.000000
A1 (Gain):	0.007430	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999891	Status:	OK.
Std Error of Est:	0.000339		
Predicted MDL:	0.479487		
Predicted MQL:	1.598289		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00014	.000	.000	-.00137	.002	1
S1	5.0000	4.9760	-.024	-.479	.03560	.004	1
S2	37.500	37.496	-.004	-.010	.27722	.004	1
S3	75.000	75.414	.414	.552	.55895	.003	1
S4	150.00	147.40	-2.60	-1.73	1.0938	.003	1
S5	300.00	293.29	-6.71	-2.24	2.1777	.009	1
S6	800.00	808.93	8.93	1.12	6.0090	.029	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



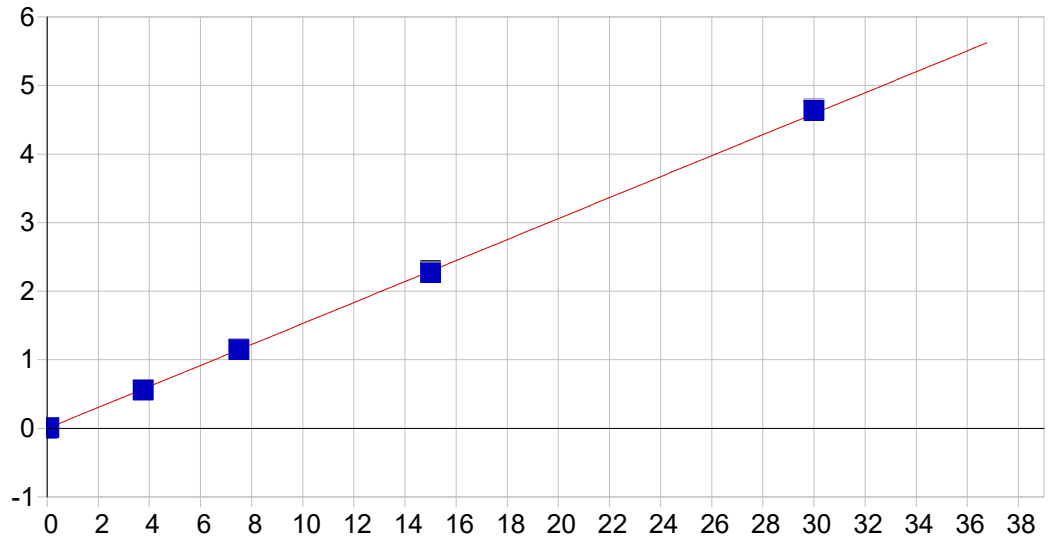
V 292.402 {115}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000573	Re-Slope:	1.000000
A1 (Gain):	0.190419	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999782	Status:	OK.
Std Error of Est:	0.000102		
Predicted MDL:	0.004845		
Predicted MQL:	0.016151		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00057	.001	1
S1	.05000	.05260	.003	5.19	.01056	.001	1
S2	.62500	.63537	.010	1.66	.11679	.000	1
S3	1.2500	1.2999	.050	3.99	.23856	.002	1
S4	2.5000	2.5192	.019	.766	.46119	.005	1
S5	5.0000	4.9179	-.082	-1.64	.89888	.004	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



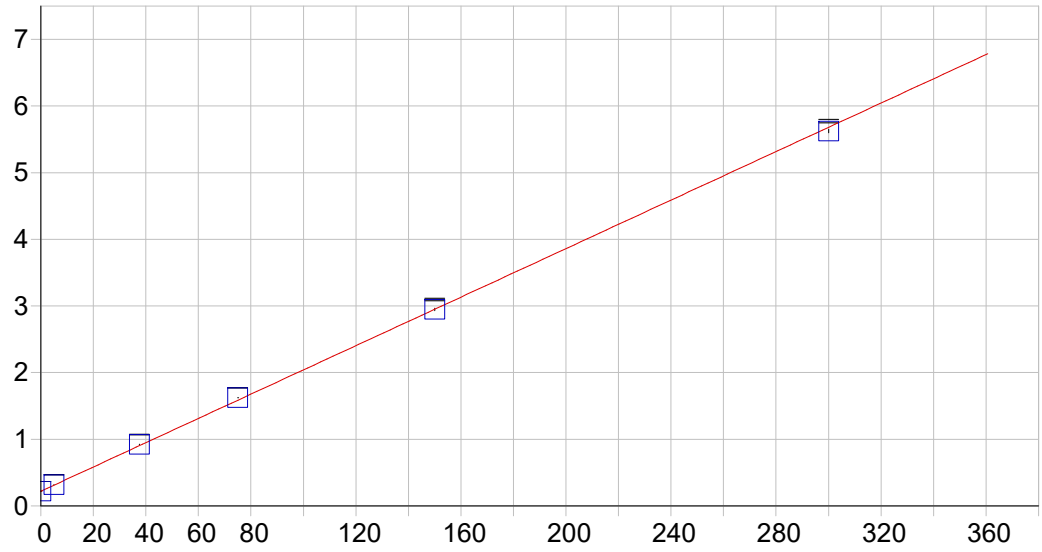
Zn 213.856 {158}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.000423	Re-Slope:	1.000000
A1 (Gain):	0.152942	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999924	Status:	OK.
Std Error of Est:	0.000135		
Predicted MDL:	0.002992		
Predicted MQL:	0.009972		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00042	.000	1
S1	.06000	.06144	.001	2.40	.00900	.000	1
S2	3.7500	3.6246	-.125	-3.34	.55674	.003	1
S3	7.5000	7.5114	.011	.152	1.1540	.004	1
S4	15.000	14.834	-.166	-1.11	2.2795	.018	1
S5	30.000	30.279	.279	.930	4.6530	.005	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



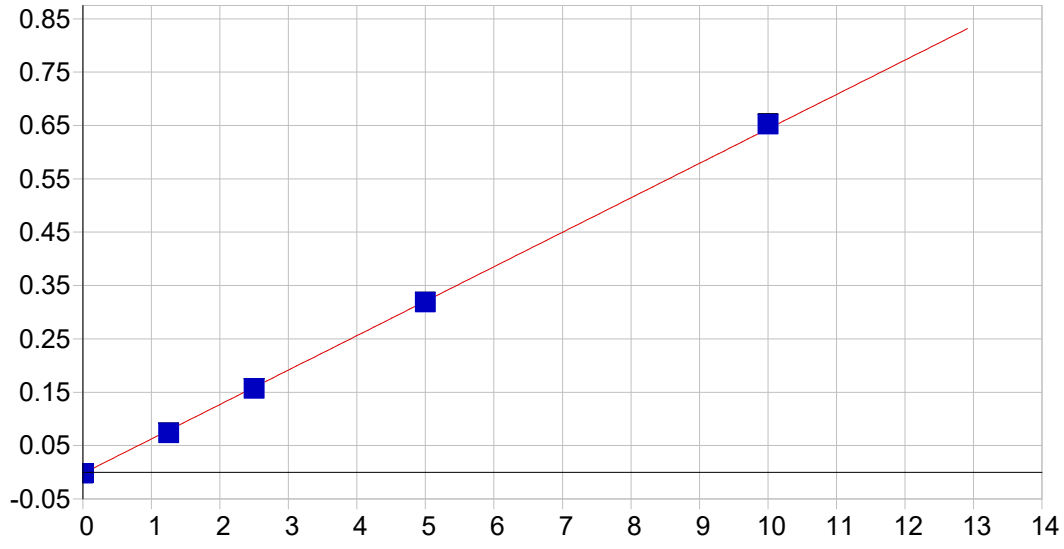
K 769.896 { 44}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.220461	Re-Slope:	1.000000
A1 (Gain):	0.018201	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999879	Status:	OK.
Std Error of Est:	0.000584		
Predicted MDL:	0.172911		
Predicted MQL:	0.576369		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00055	-.001	.000	.22045	.001	1
S1	5.0000	5.3477	.348	6.95	.31779	.002	1
S2	37.500	38.466	.966	2.58	.92059	.005	1
S3	75.000	77.024	2.02	2.70	1.6224	.002	1
S4	150.00	149.83	-.170	-.113	2.9475	.021	1
S5	300.00	296.83	-3.17	-1.06	5.6231	.027	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



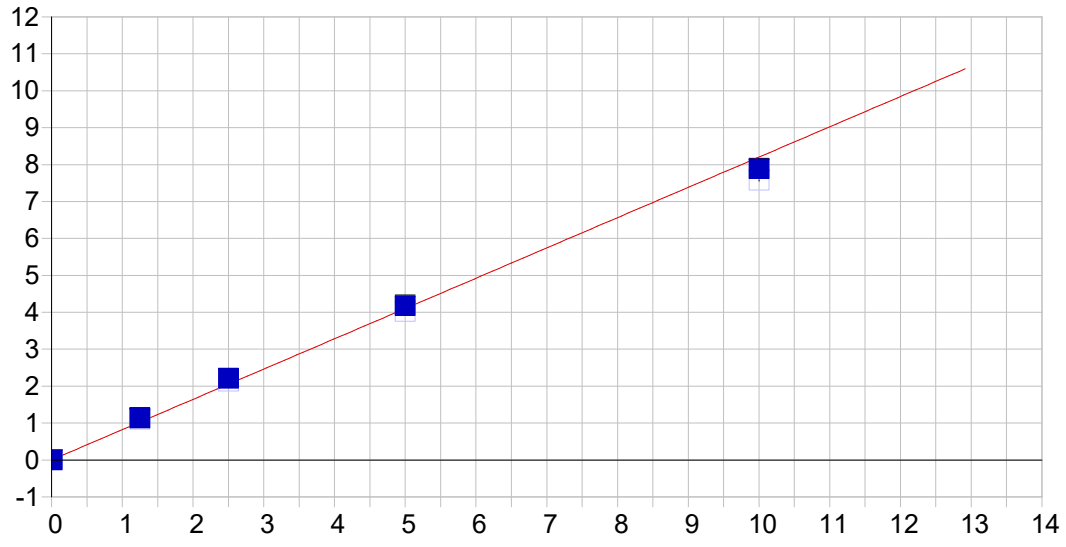
P 177.495 {490}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.002219	Re-Slope:	1.000000
A1 (Gain):	0.064574	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999803	Status:	OK.
Std Error of Est:	0.000021		
Predicted MDL:	0.002008		
Predicted MQL:	0.006693		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00000	.000	.000	-.00222	.000	1
S1	.01000	.00859	-.001	-14.1	-.00166	.000	1
S2	1.2500	1.1755	-.074	-5.96	.07357	.000	1
S3	2.5000	2.4632	-.037	-1.47	.15661	.000	1
S4	5.0000	4.9703	-.030	-.593	.31827	.000	1
S5	10.000	10.142	.142	1.42	.65178	.001	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



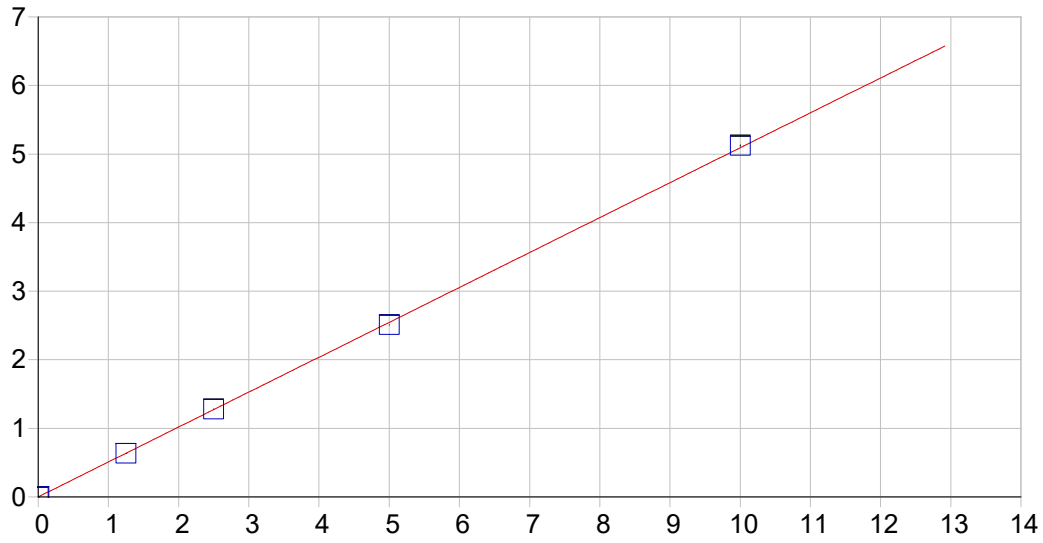
B 249.678 {135}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.001574	Re-Slope:	1.000000
A1 (Gain):	0.820185	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.998377	Status:	OK.
Std Error of Est:	0.000755		
Predicted MDL:	0.001509		
Predicted MQL:	0.005029		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00001	.000	.000	.00158	.002	1
S1	.01000	-.00083	-.011	-108.	.00084	.001	1
S2	1.2500	1.3820	.132	10.6	1.0961	.011	1
S3	2.5000	2.6859	.186	7.43	2.1265	.008	1
S4	5.0000	5.0866	.087	1.73	4.0176	.028	1
S5	10.000	9.6067	-.393	-3.93	7.5690	.017	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



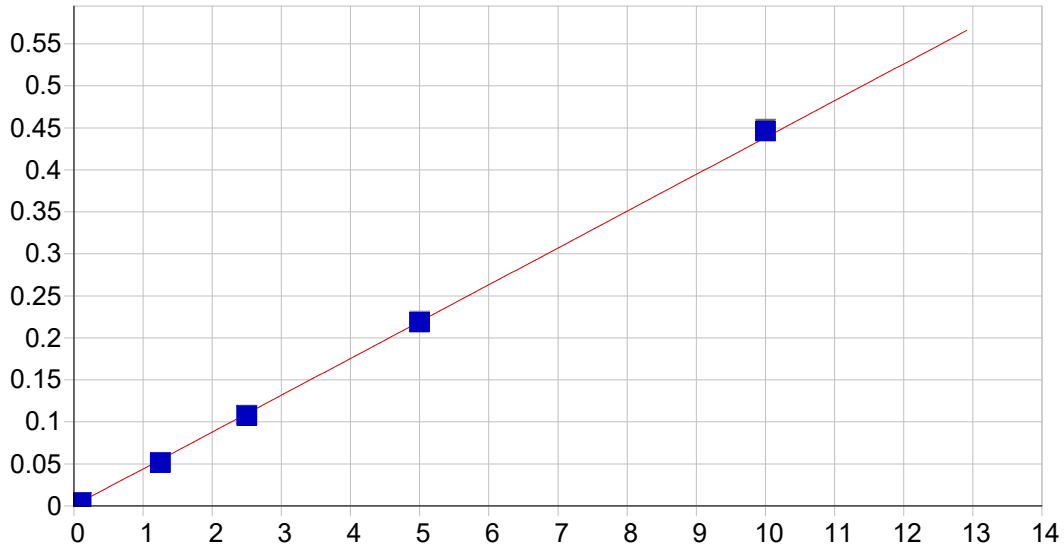
Mo 202.030 {467}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000247	Re-Slope:	1.000000
A1 (Gain):	0.509104	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999955	Status:	OK.
Std Error of Est:	0.000081		
Predicted MDL:	0.000517		
Predicted MQL:	0.001723		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00025	.000	1
S1	.01000	.01130	.001	13.0	.00600	.000	1
S2	1.2500	1.2457	-.004	-.344	.63444	.001	1
S3	2.5000	2.5141	.014	.564	1.2802	.002	1
S4	5.0000	4.9279	-.072	-1.44	2.5091	.004	1
S5	10.000	10.061	.061	.610	5.1223	.010	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



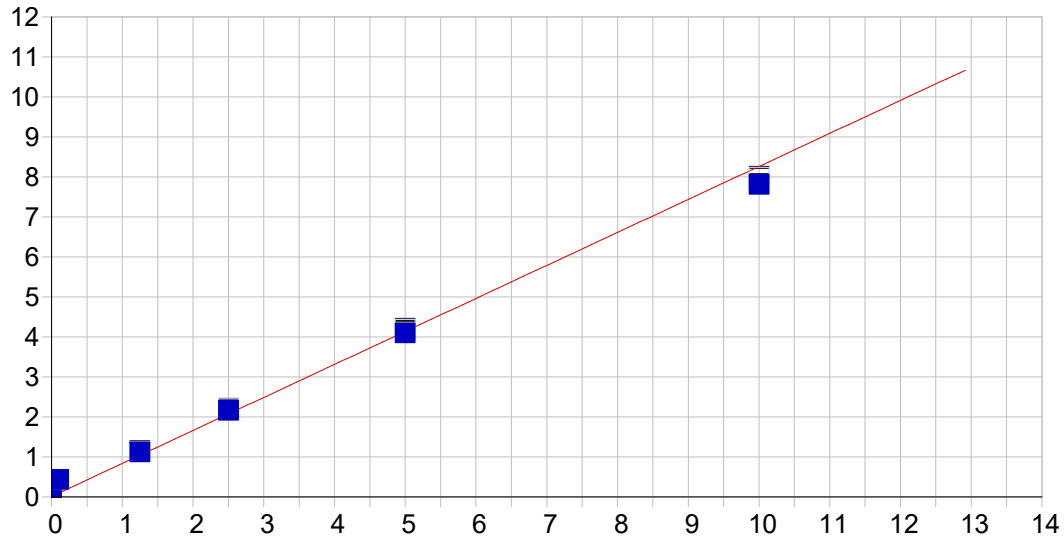
S 182.034 {485}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000301	Re-Slope:	1.000000
A1 (Gain):	0.043815	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999618	Status:	OK.
Std Error of Est:	0.000065		
Predicted MDL:	0.003402		
Predicted MQL:	0.011340		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	.00003	.000	.000	.00030	.000	1
S1	.10000	.07968	-.020	-20.3	.00379	.000	1
S2	1.2500	1.1635	-.087	-6.92	.05145	.000	1
S3	2.5000	2.4445	-.055	-2.22	.10776	.000	1
S4	5.0000	4.9858	-.014	-.285	.21946	.000	1
S5	10.000	10.176	.176	1.76	.44759	.001	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



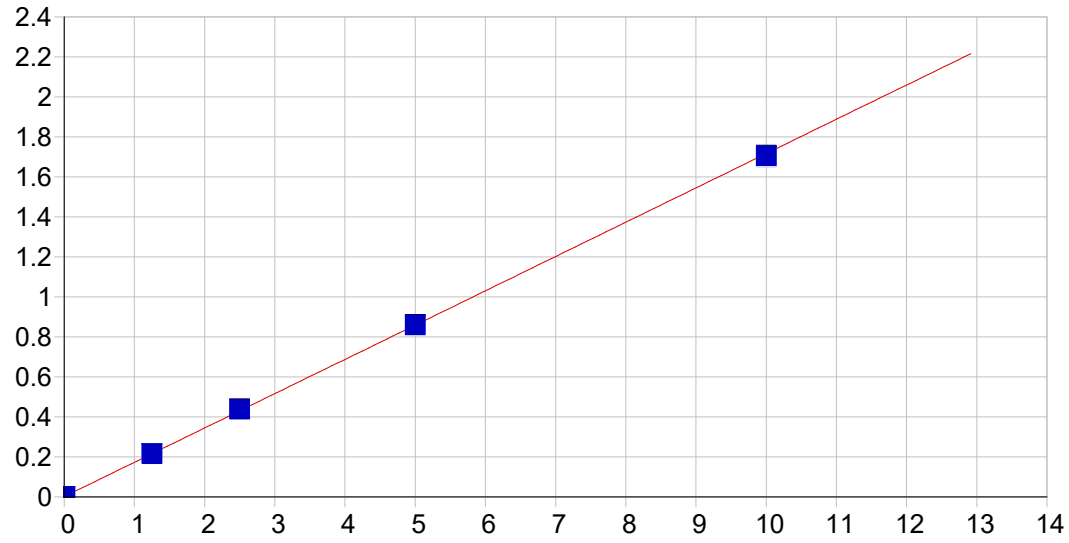
Si 251.611 {134}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.012196	Re-Slope:	1.000000
A1 (Gain):	0.825030	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.958286	Status:	OK.
Std Error of Est:	0.013372		
Predicted MDL:	0.001531		
Predicted MQL:	0.005103		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00042	-.000	.000	.01185	.001	1
S1	.10000	.51343	.413	413.	.43696	.000	1
S2	1.2500	1.3436	.094	7.49	1.1441	.013	1
S3	2.5000	2.6018	.102	4.07	2.2056	.008	1
S4	5.0000	4.9490	-.051	-1.02	4.1889	.029	1
S5	10.000	9.4456	-.554	-5.54	7.9924	.026	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



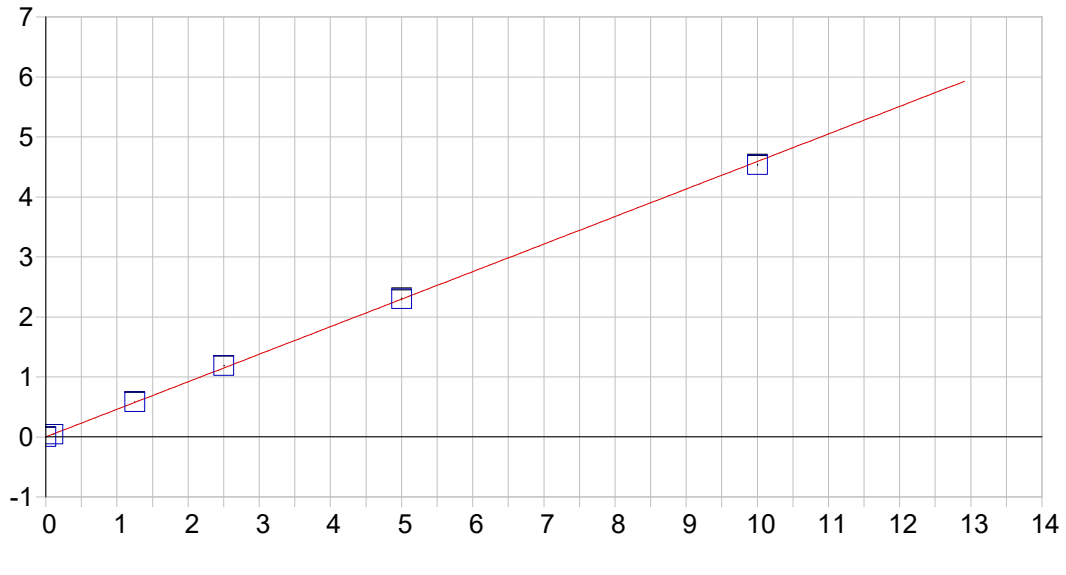
Sn 189.989 {478}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.001581	Re-Slope:	1.000000
A1 (Gain):	0.171488	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999960	Status:	OK.
Std Error of Est:	0.000022		
Predicted MDL:	0.000860		
Predicted MQL:	0.002865		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00158	.000	1
S1	.00700	.00792	.001	13.1	.00289	.000	1
S2	1.2500	1.2482	-.002	-.140	.21457	.001	1
S3	2.5000	2.5502	.050	2.01	.43675	.000	1
S4	5.0000	5.0099	.010	.197	.85641	.001	1
S5	10.000	9.9409	-.059	-.591	1.6977	.002	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



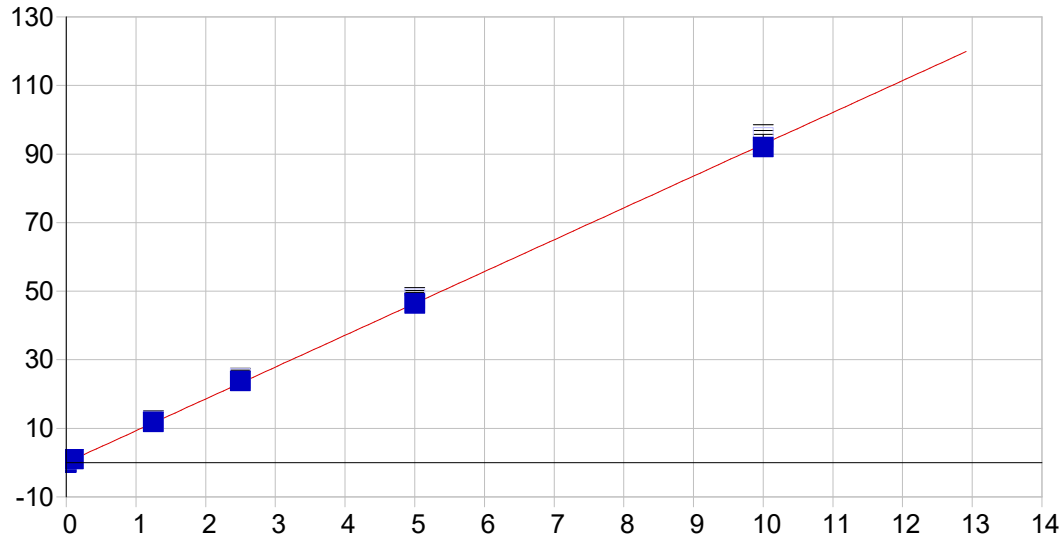
Ti 336.121 {100}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.000824	Re-Slope:	1.000000
A1 (Gain):	0.458949	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999876	Status:	OK.
Std Error of Est:	0.000384		
Predicted MDL:	0.002643		
Predicted MQL:	0.008809		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	.00082	.001	1
S1	.10000	.10170	.002	1.70	.04750	.000	1
S2	1.2500	1.2719	.022	1.76	.58458	.003	1
S3	2.5000	2.5834	.083	3.33	1.1865	.002	1
S4	5.0000	5.0129	.013	.257	2.3015	.016	1
S5	10.000	9.8801	-.120	-1.20	4.5353	.010	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



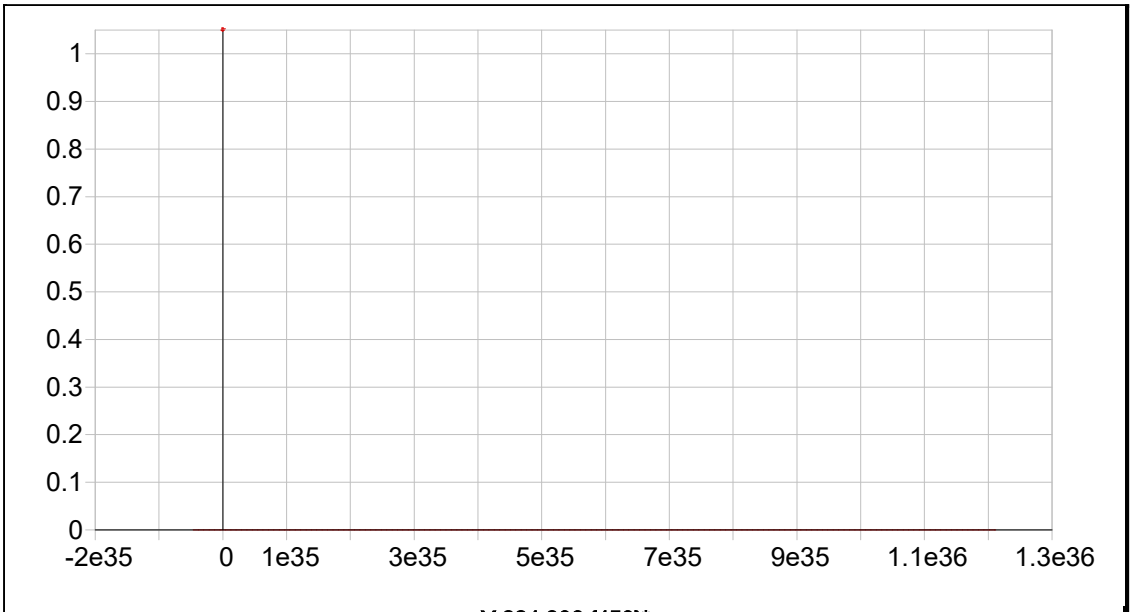
Sr 407.771 { 83}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	-0.001787	Re-Slope:	1.000000
A1 (Gain):	9.285078	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999911	Status:	OK.
Std Error of Est:	0.006781		
Predicted MDL:	0.000205		
Predicted MQL:	0.000683		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00001	-.000	.000	-.00189	.001	1
S1	.10000	.10763	.008	7.63	.99852	.003	1
S2	1.2500	1.2721	.022	1.77	12.158	.051	1
S3	2.5000	2.5668	.067	2.67	24.527	.069	1
S4	5.0000	4.9927	-.007	-.145	47.749	.418	1
S5	10.000	9.9110	-.089	-.890	94.808	.866	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

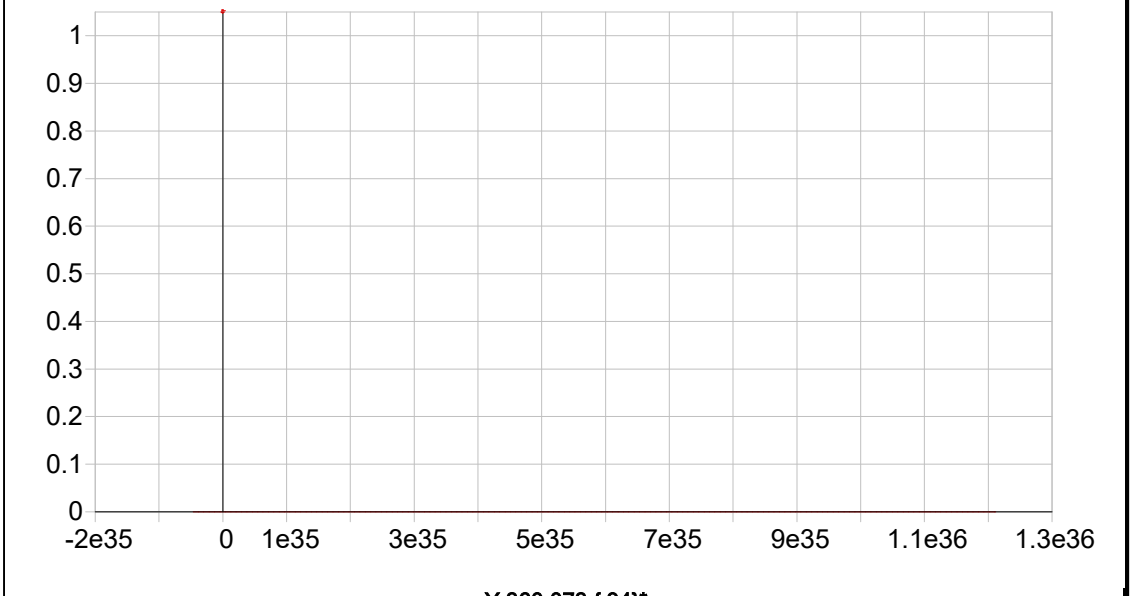


Y 224.306 {450}*

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

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

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



Y 360.073 { 94}*

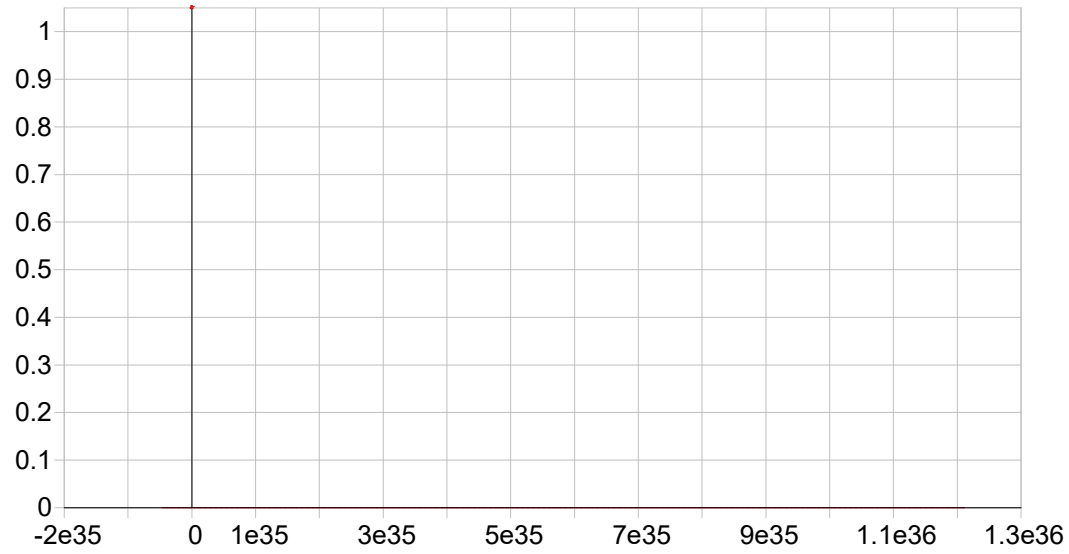
Date of Fit:	<not fit>	Type of Fit:	Linear	Weighting:	1/Conc

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

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

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

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



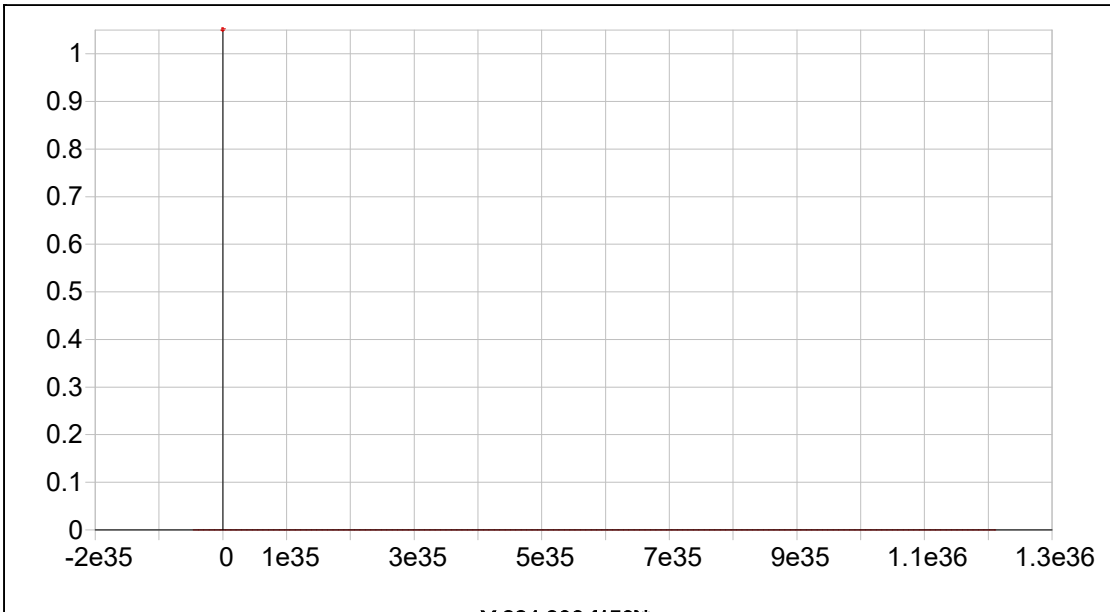
Y 371.030 { 91}*

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

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

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

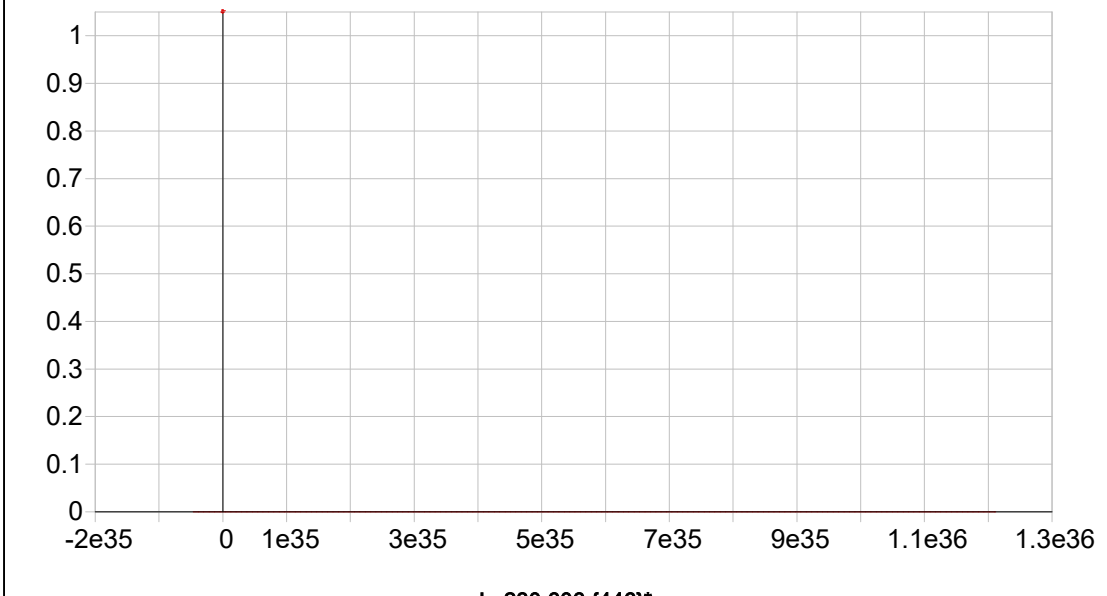
Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5



Y 224.306 {150}*

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

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



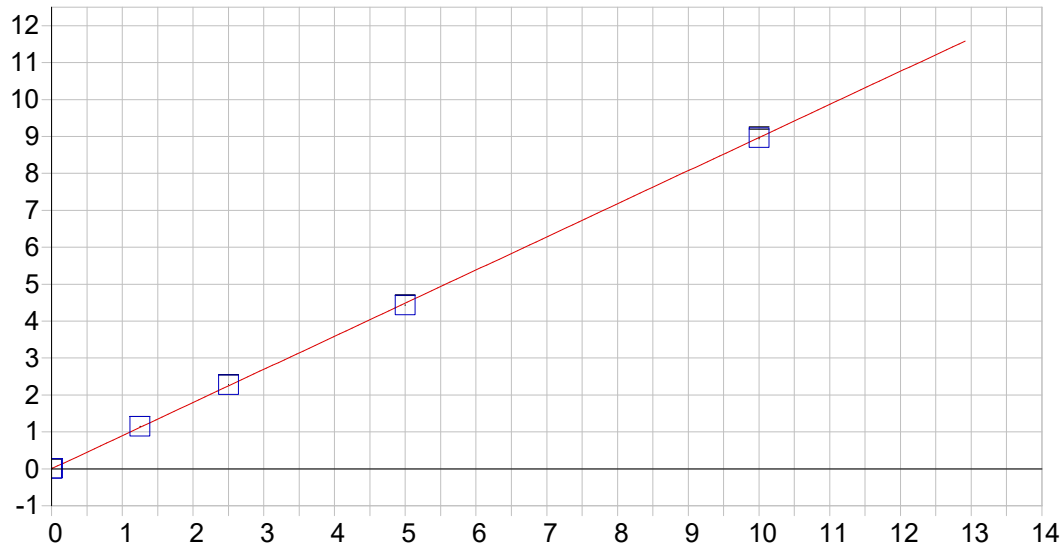
In 230.606 {446}*

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

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

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

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



Li 670.784 { 50}

Date of Fit:	02/12/2025 12:48:42	Type of Fit:	Linear	Weighting:	1/Conc

A0 (Offset):	0.001289	Re-Slope:	1.000000
A1 (Gain):	0.896910	Y-int:	0.000000
A2 (Curvature):	0.000000		
n (Exponent):	1.000000		
Correlation:	0.999950	Status:	OK.
Std Error of Est:	0.000184		
Predicted MDL:	0.004276		
Predicted MQL:	0.014252		

Std. Name	Stated Conc.	Found Conc.	Difference	% Diff.	(S)IR	Std Dev	Emphasis
S0	.00000	-.00000	-.000	.000	.00129	.002	1
S5	10.000	9.9903	-.010	-.097	8.9617	.029	1
S4	5.0000	4.9434	-.057	-1.13	4.4350	.007	1
S3	2.5000	2.5380	.038	1.52	2.2776	.003	1
S2	1.2500	1.2784	.028	2.27	1.1479	.001	1
S1	.01500	.01492	-.000	-.559	.01467	.004	1

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: S0 Acquired: 02/12/2025 12:25:13 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S0 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.18500	-.00006	.00034	-.00009	.00023	-.00354	.19087	.00303
Stddev	.55450	.00008	.00011	.00006	.00019	.00109	.00128	.00128
%RSD	299.72	144.59	31.103	64.170	82.572	30.674	.67010	42.118
#1	.77585	.00001	.00040	-.00005	.00038	-.00416	.19235	.00156
#2	.10321	-.00003	.00041	-.00006	.00002	-.00417	.19018	.00380
#3	-.32406	-.00015	.00022	-.00015	.00029	-.00229	.19009	.00373

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00025	.00291	.00012	.00015	.00282	-.00050	-.00030	-.00048
Stddev	.00005	.00023	.00018	.00012	.00107	.00067	.00041	.00007
%RSD	22.187	7.7734	154.30	83.705	37.900	132.58	135.19	13.550
#1	.00019	.00305	.00033	.00001	.00374	.00019	.00001	-.00055
#2	.00029	.00304	-.00002	.00023	.00309	-.00114	-.00077	-.00042
#3	.00026	.00265	.00005	.00020	.00165	-.00055	-.00015	-.00048

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00016	.00068	-.00137	.00057	-.00042	.22045	-.00222	.00158
Stddev	.00047	.00023	.00240	.00131	.00026	.00117	.00018	.00208
%RSD	293.23	33.430	174.83	229.25	62.036	.53013	8.1596	131.28
#1	-.00034	.00046	-.00384	-.00019	-.00015	.22119	-.00202	.00208
#2	.00037	.00091	-.00126	-.00018	-.00067	.21910	-.00225	.00336
#3	-.00052	.00066	.00097	.00208	-.00046	.22106	-.00238	-.00070

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00025	.00030	.01185	.00158	.00082	-.00189	.00129
Stddev	.00008	.00013	.00129	.00010	.00104	.00114	.00182
%RSD	32.464	44.290	10.879	6.5024	126.39	60.090	141.28
#1	.00030	.00025	.01122	.00158	.00134	-.00207	.00322
#2	.00029	.00020	.01333	.00168	-.00037	-.00293	.00106
#3	.00015	.00045	.01100	.00148	.00150	-.00068	-.00040

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: S0 Acquired: 02/12/2025 12:25:13 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S0 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4357.3	37929.	4303.7	3058.9	5230.4
Stddev	2.4	80.	22.6	11.4	11.0
%RSD	.05561	.21017	.52509	.37114	.20980
#1	4356.5	37852.	4320.9	3046.0	5218.3
#2	4355.4	38011.	4312.0	3063.1	5233.3
#3	4360.0	37924.	4278.1	3067.5	5239.7

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: S1 Acquired: 02/12/2025 12:29:16 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S01 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2.9403	.00310	.00210	.00216	.00697	.01745	.83760	.04177
Stddev	.3249	.00021	.00038	.00018	.00006	.00118	.00682	.00060
%RSD	11.050	6.7990	18.226	8.3720	.81447	6.7863	.81448	1.4346
#1	2.6765	.00325	.00247	.00222	.00698	.01690	.83601	.04212
#2	3.3032	.00286	.00211	.00230	.00690	.01881	.83171	.04211
#3	2.8412	.00320	.00171	.00195	.00701	.01665	.84507	.04108

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.01734	.33651	.00293	.03923	.00689	.00239	.01019	.09201
Stddev	.00012	.00071	.00009	.00035	.00006	.00025	.00074	.00040
%RSD	.67907	.21135	3.0675	.89904	.84051	10.511	7.2930	.43745
#1	.01723	.33649	.00288	.03946	.00693	.00242	.01098	.09155
#2	.01747	.33580	.00303	.03940	.00683	.00213	.00951	.09221
#3	.01731	.33722	.00286	.03882	.00693	.00263	.01008	.09228

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.02633	.00316	.03560	.01056	.00900	.31779	-.00166	.00084
Stddev	.00011	.00025	.00386	.00095	.00034	.00245	.00010	.00094
%RSD	.42510	7.8566	10.848	8.9848	3.7792	.77026	6.2360	110.96
#1	.02625	.00343	.03212	.00950	.00886	.31515	-.00175	.00153
#2	.02629	.00308	.03491	.01131	.00939	.31998	-.00155	.00123
#3	.02646	.00295	.03975	.01088	.00875	.31825	-.00169	-.00022

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00600	.00379	.43696	.00289	.04750	.99852	.01467
Stddev	.00009	.00002	.00006	.00010	.00044	.00342	.00413
%RSD	1.4427	.62017	.01313	3.3591	.91725	.34238	28.178
#1	.00598	.00378	.43697	.00295	.04705	.99534	.01943
#2	.00609	.00377	.43689	.00278	.04792	.99808	.01255
#3	.00592	.00382	.43701	.00293	.04752	1.0021	.01202

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: S1 Acquired: 02/12/2025 12:29:16 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S01 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4320.8	37886.	4326.0	3024.6	4975.6
Stddev	5.9	156.	20.6	12.9	12.3
%RSD	.13698	.41295	.47708	.42690	.24639
#1	4315.5	37757.	4317.9	3039.1	4962.4
#2	4319.7	38060.	4349.5	3014.3	4986.6
#3	4327.1	37841.	4310.7	3020.3	4977.7

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: S2 Acquired: 02/12/2025 12:33:17 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S02 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	335.15	.15636	1.4508	.07958	.14914	3.2613	7.9560	.93151
Stddev	.26	.00071	.0033	.00034	.00030	.0196	.0078	.01143
%RSD	.07883	.45475	.23046	.42162	.20298	.60198	.09858	1.2275
#1	335.41	.15581	1.4472	.07926	.14879	3.2744	7.9623	.93781
#2	335.15	.15610	1.4517	.07956	.14934	3.2387	7.9472	.91831
#3	334.88	.15716	1.4537	.07993	.14929	3.2708	7.9585	.93842

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2.2477	4.0704	1.0989	.48526	.67571	1.0586	2.4820	1.1446
Stddev	.0034	.0081	.0050	.00041	.00238	.0062	.0121	.0087
%RSD	.14892	.19971	.45367	.08407	.35239	.58442	.48669	.76116
#1	2.2438	4.0705	1.0959	.48479	.67811	1.0603	2.4880	1.1498
#2	2.2498	4.0622	1.1047	.48546	.67334	1.0517	2.4680	1.1345
#3	2.2494	4.0784	1.0962	.48553	.67567	1.0637	2.4898	1.1495

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.42949	.07749	.27722	.11679	.55674	.92059	.07357	1.0961
Stddev	.00055	.00067	.00401	.00028	.00308	.00545	.00038	.0112
%RSD	.12723	.85941	1.4458	.24056	.55316	.59230	.51436	1.0214
#1	.42907	.07672	.27337	.11658	.55434	.92303	.07314	1.1047
#2	.43011	.07793	.28137	.11668	.56021	.91435	.07374	1.0834
#3	.42930	.07781	.27693	.11711	.55568	.92441	.07383	1.1002

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.63444	.05145	1.1441	.21457	.58458	12.158	1.1479
Stddev	.00133	.00029	.0126	.00059	.00340	.051	.0012
%RSD	.20912	.55421	1.0999	.27579	.58123	.41877	.10435
#1	.63292	.05122	1.1551	.21409	.58732	12.185	1.1468
#2	.63539	.05138	1.1304	.21438	.58078	12.099	1.1478
#3	.63501	.05177	1.1468	.21523	.58565	12.190	1.1492

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: S2 Acquired: 02/12/2025 12:33:17 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S02 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4160.6	35865.	4263.5	2890.3	4386.4
Stddev	9.7	322.	25.8	18.8	10.8
%RSD	.23219	.89835	.60492	.65104	.24668
#1	4170.4	35930.	4235.2	2890.8	4398.2
#2	4151.1	35515.	4285.7	2871.2	4377.0
#3	4160.3	36149.	4269.5	2908.9	4384.0

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: S3 Acquired: 02/12/2025 12:37:03 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S03 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	660.82	.31154	2.9788	.16229	.30412	6.5690	15.954	1.8312
Stddev	1.08	.00010	.0036	.00034	.00016	.0203	.049	.0095
%RSD	.16377	.03247	.12108	.20893	.05217	.30869	.30417	.51735
#1	659.70	.31154	2.9826	.16232	.30397	6.5924	16.003	1.8376
#2	660.91	.31165	2.9754	.16261	.30429	6.5561	15.906	1.8203
#3	661.85	.31144	2.9785	.16193	.30411	6.5586	15.953	1.8355

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4.6267	8.1440	2.1862	.97878	1.3600	2.1230	4.9530	2.2840
Stddev	.0028	.0233	.0031	.00133	.0053	.0042	.0145	.0048
%RSD	.05958	.28668	.13975	.13626	.39078	.19939	.29236	.20981
#1	4.6299	8.1497	2.1828	.98025	1.3607	2.1272	4.9689	2.2889
#2	4.6249	8.1183	2.1885	.97764	1.3543	2.1188	4.9493	2.2793
#3	4.6254	8.1639	2.1874	.97846	1.3649	2.1230	4.9407	2.2840

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.87818	.15488	.55895	.23856	1.1540	1.6224	.15661	2.1265
Stddev	.00111	.00075	.00328	.00246	.0035	.0018	.00025	.0076
%RSD	.12690	.48523	.58670	1.0301	.30527	.10863	.15988	.35792
#1	.87946	.15404	.55927	.24128	1.1557	1.6239	.15678	2.1333
#2	.87744	.15511	.55552	.23788	1.1563	1.6228	.15671	2.1183
#3	.87763	.15549	.56206	.23650	1.1499	1.6205	.15632	2.1279

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.2802	.10776	2.2056	.43675	1.1865	24.527	2.2776
Stddev	.0017	.00012	.0080	.00042	.0018	.069	.0029
%RSD	.13084	.11214	.36028	.09632	.15236	.28114	.12545
#1	1.2821	.10790	2.2064	.43640	1.1885	24.606	2.2793
#2	1.2791	.10770	2.1973	.43722	1.1859	24.477	2.2743
#3	1.2794	.10768	2.2131	.43665	1.1850	24.499	2.2792

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: S3 Acquired: 02/12/2025 12:37:03 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S03 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4007.5	34889.	4258.6	2784.6	4122.8
Stddev	8.6	73.	12.5	7.4	8.6
%RSD	.21500	.20911	.29379	.26679	.20964
#1	3997.6	34868.	4244.9	2779.2	4113.0
#2	4013.3	34829.	4269.3	2781.6	4129.2
#3	4011.6	34971.	4261.7	2793.1	4126.4

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: S4 Acquired: 02/12/2025 12:40:47 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S04 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1273.2	.59579	5.8831	.32189	.60417	12.920	31.183	3.5510
Stddev	4.3	.00059	.0081	.00093	.00144	.122	.033	.0145
%RSD	.33396	.09949	.13833	.28791	.23897	.94493	.10527	.40956
#1	1268.5	.59540	5.8757	.32215	.60412	12.867	31.180	3.5673
#2	1276.8	.59550	5.8817	.32086	.60275	13.059	31.217	3.5466
#3	1274.2	.59647	5.8918	.32266	.60564	12.833	31.152	3.5392

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	9.1504	15.726	4.2581	1.9109	2.6462	4.0737	9.5387	4.3839
Stddev	.0158	.048	.0106	.0025	.0038	.0344	.0595	.0290
%RSD	.17229	.30289	.24983	.12946	.14474	.84449	.62321	.66257
#1	9.1334	15.729	4.2473	1.9087	2.6420	4.0632	9.5219	4.3664
#2	9.1534	15.772	4.2585	1.9105	2.6471	4.1121	9.6048	4.4175
#3	9.1645	15.677	4.2686	1.9136	2.6495	4.0458	9.4895	4.3679

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	1.7237	.30692	1.0938	.46119	2.2795	2.9475	.31827	4.0176
Stddev	.0022	.00035	.0033	.00451	.0181	.0209	.00029	.0281
%RSD	.12490	.11367	.30127	.97720	.79217	.70850	.09139	.70054
#1	1.7216	.30676	1.0913	.45872	2.2599	2.9364	.31807	4.0485
#2	1.7236	.30668	1.0975	.46639	2.2956	2.9716	.31813	4.0109
#3	1.7259	.30732	1.0925	.45846	2.2829	2.9346	.31860	3.9934

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2.5091	.21946	4.1889	.85641	2.3015	47.749	4.4350
Stddev	.0039	.00047	.0290	.00121	.0160	.418	.0067
%RSD	.15366	.21505	.69244	.14183	.69722	.87465	.15009
#1	2.5101	.21893	4.2197	.85501	2.2999	47.305	4.4274
#2	2.5048	.21983	4.1850	.85714	2.3183	48.133	4.4393
#3	2.5123	.21961	4.1621	.85709	2.2863	47.809	4.4384

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: S4 Acquired: 02/12/2025 12:40:47 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S04 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3859.7	33702.	4206.7	2676.8	3912.6
Stddev	10.0	141.	15.0	5.6	4.4
%RSD	.25941	.41921	.35764	.20914	.11201
#1	3849.0	33865.	4195.2	2682.3	3907.6
#2	3868.8	33620.	4201.2	2671.1	3915.7
#3	3861.3	33620.	4223.7	2676.8	3914.5

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: S5 Acquired: 02/12/2025 12:44:37 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S05 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934	Be2348
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	2410.0	1.1632	11.731	.66176	1.2514	25.747	61.970	7.0278
Stddev	6.0	.0013	.011	.00092	.0030	.098	.291	.0223
%RSD	.24971	.10859	.09019	.13890	.23752	.37965	.46926	.31741
#1	2414.6	1.1632	11.725	.66070	1.2492	25.644	61.897	7.0067
#2	2403.2	1.1620	11.743	.66232	1.2504	25.758	62.290	7.0253
#3	2412.1	1.1645	11.725	.66226	1.2548	25.839	61.722	7.0512

Elem	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598	Mn2576	Mg2790
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	18.257	30.944	8.3917	3.8150	5.2810	7.9270	18.597	8.5470
Stddev	.014	.083	.0486	.0022	.0069	.0291	.063	.0438
%RSD	.07703	.26967	.57908	.05835	.12978	.36753	.33828	.51283
#1	18.267	30.883	8.3367	3.8160	5.2734	7.8964	18.538	8.5097
#2	18.262	30.909	8.4092	3.8124	5.2829	7.9302	18.590	8.5359
#3	18.241	31.039	8.4290	3.8165	5.2866	7.9544	18.663	8.5953

Elem	Ni2316	Ag3280	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3.4510	.63490	2.1777	.89888	4.6530	5.6231	.65178	7.5690
Stddev	.0006	.00086	.0089	.00350	.0045	.0268	.00072	.0170
%RSD	.01863	.13468	.41020	.38978	.09680	.47608	.11072	.22449
#1	3.4516	.63588	2.1676	.89567	4.6487	5.5958	.65261	7.5587
#2	3.4510	.63446	2.1845	.89834	4.6577	5.6243	.65130	7.5596
#3	3.4503	.63434	2.1812	.90262	4.6525	5.6493	.65143	7.5886

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5.1223	.44759	7.9924	1.6977	4.5353	94.808	8.9617
Stddev	.0097	.00057	.0255	.0024	.0103	.866	.0291
%RSD	.18891	.12654	.31942	.13988	.22638	.91318	.32496
#1	5.1113	.44801	7.9712	1.6986	4.5276	93.811	8.9339
#2	5.1261	.44695	7.9851	1.6996	4.5313	95.249	8.9592
#3	5.1295	.44783	8.0207	1.6950	4.5470	95.365	8.9920

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: S5 Acquired: 02/12/2025 12:44:37 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S05 Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3518.4	31584.	4108.9	2462.1	3586.7
Stddev	12.7	66.	21.1	8.7	10.6
%RSD	.35958	.20809	.51448	.35318	.29595
#1	3531.7	31659.	4129.9	2471.5	3595.7
#2	3506.4	31554.	4109.1	2454.4	3575.0
#3	3517.2	31538.	4087.6	2460.3	3589.5

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: S6 Acquired: 02/12/2025 12:48:46 Type: Cal
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: IR Corr. Factor: 1.000000
User: Kareem Custom ID1: S06 Custom ID2: Custom ID3:
Comment:

Elem	Al3961	Ca3736	Fe2598	Mg2790	Na8183
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	68.304	49.744	21.076	13.911	6.0090
Stddev	.534	.281	.067	.058	.0291
%RSD	.78214	.56444	.31656	.41707	.48403
#1	67.781	49.523	21.024	13.860	5.9898
#2	68.282	49.648	21.052	13.900	5.9946
#3	68.849	50.060	21.151	13.974	6.0424

Int. Std.	Y_3710
Units	Cts/S
Avg	3991.9
Stddev	16.1
%RSD	.40440
#1	4003.1
#2	3999.1
#3	3973.4

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: ICV005 Acquired: 02/12/2025 13:20:54 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICV005 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.068983	1.060684	.9638056	.9927625	.9557956	2.519613
Stddev	.003338	.002353	.0034398	.0030474	.0038800	.014450
%RSD	.3123013	.2218451	.3568989	.3069628	.4059460	.5735049
#1	1.072038	1.058644	.9601099	.9954954	.9533992	2.503644
#2	1.069492	1.060148	.9669139	.9894764	.9537154	2.531787
#3	1.065419	1.063258	.9643932	.9933157	.9602721	2.523408

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5212881	.5268021	.4713048	10.35835	.5407012	.4897838
Stddev	.0003950	.0042800	.0004474	.02892	.0004235	.0013123
%RSD	.0757835	.8124436	.0949303	.2792354	.0783141	.2679302
#1	.5215276	.5309153	.4712313	10.33752	.5403141	.4903330
#2	.5215045	.5223729	.4708987	10.34616	.5411534	.4882861
#3	.5208321	.5271180	.4717844	10.39138	.5406361	.4907322

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5187974	10.44575	.5339791	6.084693	.4902381	.2397818
Stddev	.0087686	.03987	.0012813	.033811	.0011249	.0006853
%RSD	1.690168	.3817261	.2399514	.5556764	.2294642	.2858000
#1	.5277851	10.46558	.5325047	6.122603	.4899815	.2398305
#2	.5102658	10.47183	.5348230	6.057657	.4892637	.2390735
#3	.5183412	10.39985	.5346096	6.073820	.4914692	.2404415

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.890092	.5192119	1.042654	10.19748	F .0021881	F .0036425
Stddev	.036054	.0020794	.011456	.08299	.0012899	.0020069
%RSD	.3645464	.4004865	1.098743	.8138035	58.95053	55.09607
#1	9.851588	.5176856	1.029782	10.10171	.0013904	.0034677
#2	9.923054	.5215802	1.051731	10.24829	.0036763	.0017287
#3	9.895635	.5183699	1.046450	10.24242	.0014977	.0057310

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: ICV005 Acquired: 02/12/2025 13:20:54 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICV005 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .0004661	F .0035714	F .0037453	F .0006248	F -.000508	F -.009379
Stddev	.0002214	.0033509	.0013591	.0006293	.003026	.000274
%RSD	47.49074	93.82461	36.28715	100.7214	596.1216	2.925744
#1	.0005895	.0021599	.0041920	.0005420	-.000910	-.009602
#2	.0005983	.0011572	.0022191	.0000410	.002700	-.009072
#3	.0002106	.0073971	.0048248	.0012913	-.003313	-.009462

Elem	Li6707
Units	ppm
Avg	F -.004021
Stddev	.003517
%RSD	87.45700
#1	-.002412
#2	-.008054
#3	-.001596

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4322.395	37726.39	4314.281	3031.942	4868.340
Stddev	7.860	142.90	19.137	17.827	9.667
%RSD	.1818535	.3787918	.4435768	.5879595	.1985739
#1	4327.334	37891.24	4313.002	3052.508	4875.719
#2	4326.521	37650.37	4334.025	3020.907	4871.903
#3	4313.331	37637.58	4295.815	3022.411	4857.396

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: ICB005 Acquired: 02/12/2025 13:24:45 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICB005 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001827	.0009334	-.000803	.0039378	.0013196	.0182293	.0016771
Stddev	.001375	.0002065	.001823	.0021182	.0008230	.0104851	.0002772
%RSD	75.26668	22.11916	226.9235	53.79129	62.37193	57.51783	16.52789
#1	-.002880	.0008488	-.002418	.0027123	.0022406	.0132178	.0016501
#2	-.000271	.0007826	.001173	.0063837	.0010621	.0111904	.0014144
#3	-.002328	.0011687	-.001165	.0027174	.0006561	.0302798	.0019668

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000049	.0000083	.0044020	-.000468	-.000104	-.002607	.0268073
Stddev	.000108	.0000369	.0233600	.000564	.000112	.004029	.0213177
%RSD	219.8347	443.1617	530.6667	120.5588	108.3597	154.5416	79.52211
#1	-.000032	.0000051	.0299401	-.000349	.000026	-.001781	.0398099
#2	-.000165	-.000027	-.015886	-.001083	-.000159	.000945	.0022050
#3	.000049	.000047	-.000848	.000027	-.000177	-.006986	.0384069

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000059	.0049858	.0002506	.0009355	-.115318	-.006742	.0004265
Stddev	.0005306	.0457077	.0000445	.0004966	.263449	.005149	.0023101
%RSD	9031.069	916.7514	17.75929	53.08595	228.4549	76.36940	541.6067
#1	-.000363	-.047267	.0002372	.0007180	-.302971	-.010999	.0023556
#2	.000614	.024676	.0002142	.0005847	-.228843	-.008207	.0010575
#3	-.000234	.037549	.0003002	.0015037	.185861	-.001019	-.002134

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3384827	.0010635	.0005123	.0005191	-.004799	-.000011	-.000413
Stddev	.2422273	.0018849	.0004158	.0006341	.001813	.001528	.000494
%RSD	71.56268	177.2296	81.17146	122.1511	37.78093	14465.81	119.7699
#1	.0971813	.0032397	.0008695	.0003423	-.004795	-.000469	-.000810
#2	.5816254	.0000080	.0000558	.0012228	-.006614	.001694	-.000568
#3	.3366414	-.000057	.0006114	-.000008	-.002988	-.001258	.000141

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: ICB005 Acquired: 02/12/2025 13:24:45 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICB005 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.0000451	-.000071	.0013711
Stddev	.0016923	.000073	.0037303
%RSD	3753.253	103.1044	272.0670
#1	-.001886	-.000008	.0004273
#2	.000750	-.000152	-.001797
#3	.001271	-.000053	.005483

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4371.891	38343.29	4248.852	3038.168	5229.941
Stddev	4.964	131.75	37.831	9.272	2.727
%RSD	.1135458	.3436194	.8903851	.3051904	.0521502
#1	4369.627	38193.74	4292.438	3028.231	5228.267
#2	4368.462	38393.86	4229.589	3039.685	5228.468
#3	4377.583	38442.26	4224.529	3046.588	5233.088

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: ICSA005 Acquired: 02/12/2025 13:28:48 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICSA005 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.004561	-.001315	-.002309	-.022891	.0164846	245.6480
Stddev	.002789	.000714	.003986	.001897	.0057092	1.4052
%RSD	61.15130	54.28777	172.6752	8.287731	34.63362	.5720233
#1	-.003799	-.000638	-.002155	-.020848	.0146853	244.5194
#2	-.007653	-.001247	-.006370	-.023228	.0228768	245.2028
#3	-.002233	-.002061	.001599	-.024597	.0118918	247.2218

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0079028	.0030132	.0026586	252.6226	.0534214	.0311239
Stddev	.0002792	.0001590	.0001131	1.1019	.0008533	.0004864
%RSD	3.533597	5.275491	4.252852	.4361686	1.597349	1.562855
#1	.0079121	.0028300	.0026366	251.6619	.0526308	.0310802
#2	.0076190	.0031144	.0025582	252.3806	.0533074	.0306607
#3	.0081772	.0030952	.0027811	253.8254	.0543260	.0316306

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.016468	104.9522	.0085785	254.4094	.0082435	.0004118
Stddev	.002997	.4725	.0004135	1.5475	.0004501	.0007974
%RSD	18.20172	.4501595	4.820510	.6082624	5.459442	193.6315
#1	-.018109	104.6265	.0084861	253.1892	.0077355	.0012900
#2	-.018286	104.7361	.0090304	253.8891	.0084027	.0002120
#3	-.013008	105.4941	.0082190	256.1500	.0085923	-.000267

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0648614	-.000784	-.031385	-1.21287	.0040845	F .0295937
Stddev	.5673432	.003375	.001925	.24205	.0010925	.0010150
%RSD	874.7003	430.3472	6.133171	19.95683	26.74768	3.429646
#1	.5296897	-.002009	-.032106	-1.45830	.0029117	.0284219
#2	-.567339	.003032	-.029203	-1.20598	.0042684	.0301603
#3	.232234	-.003376	-.032844	-.97434	.0050733	.0301988

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: ICSA005 Acquired: 02/12/2025 13:28:48 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICSA005 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0024310	.0258217	-.006480	F .0095860	-.000041	.0019168
Stddev	.0005683	.0049800	.001446	.0004832	.001210	.0003918
%RSD	23.37738	19.28593	22.31416	5.040696	2987.256	20.44116
#1	.0023668	.0285033	-.006015	.0098702	.001034	.0014793
#2	.0018976	.0200756	-.008102	.0090281	-.001352	.0022354
#3	.0030287	.0288862	-.005324	.0098597	.000196	.0020357

Elem	Li6707
Units	ppm
Avg	.0087508
Stddev	.0046237
%RSD	52.83718
#1	.0128714
#2	.0037504
#3	.0096308

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4002.166	34069.07	4192.752	2811.669	4105.816
Stddev	8.975	45.28	16.840	13.386	8.611
%RSD	.2242530	.1329133	.4016429	.4760931	.2097182
#1	3994.264	34080.77	4182.948	2798.052	4096.587
#2	4000.309	34107.35	4212.197	2812.143	4107.228
#3	4011.923	34019.08	4183.111	2824.811	4113.633

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: ICSAB005 Acquired: 02/12/2025 13:32:44 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICSAB005 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1016581	.1020508	.0463316	.0253532	.5994175	245.7738
Stddev	.0019109	.0012945	.0017256	.0030769	.0009839	.2781
%RSD	1.879728	1.268482	3.724394	12.13615	.1641397	.1131687
#1	.1037296	.1032415	.0444645	.0288249	.5983575	245.8099
#2	.1012808	.1006729	.0478678	.0229636	.5995932	246.0322
#3	.0999641	.1022381	.0466623	.0242710	.6003016	245.4794

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5436094	.5384322	1.022328	254.8505	.6086994	.5384797
Stddev	.0019839	.0019276	.001611	.4420	.0023336	.0007388
%RSD	.3649491	.3579975	.1575897	.1734420	.3833678	.1372073
#1	.5449616	.5406447	1.024127	255.3478	.6075049	.5390882
#2	.5413319	.5375361	1.021839	254.7016	.6072048	.5386934
#3	.5445346	.5371159	1.021018	254.5022	.6113884	.5376576

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5080746	105.1798	.5409386	255.1530	1.028010	.2129734
Stddev	.0029175	.1375	.0024537	.6157	.002715	.0013633
%RSD	.5742274	.1307440	.4535956	.2413034	.2640727	.6401229
#1	.5113589	105.2485	.5435872	255.7267	1.031067	.2114043
#2	.5070820	105.0214	.5387430	255.2298	1.027086	.2138680
#3	.5057830	105.2694	.5404856	254.5025	1.025879	.2136478

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.160266	.5227678	.9690009	-2.59420	F .0101351	F .0306165
Stddev	.514189	.0051494	.0088612	.11020	.0034757	.0005875
%RSD	320.8343	.9850204	.9144694	4.248025	34.29365	1.918813
#1	-.739919	.5286042	.9640246	-2.54944	.0077272	.0312626
#2	.018240	.5208334	.9637465	-2.51341	.0141197	.0304726
#3	.240881	.5188657	.9792317	-2.71973	.0085585	.0301145

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: ICSAB005 Acquired: 02/12/2025 13:32:44 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: ICSAB005 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0028360	.0261924	-.005231	F .0077208	-.000767	.0023838
Stddev	.0004198	.0072064	.000908	.0014350	.001767	.0002816
%RSD	14.80273	27.51327	17.35116	18.58655	230.2735	11.81233
#1	.0026281	.0188570	-.005108	.0093181	-.001531	.0026275
#2	.0033192	.0264576	-.004391	.0065401	-.002024	.0024482
#3	.0025608	.0332624	-.006194	.0073044	.001253	.0020755

Elem	Li6707
Units	ppm
Avg	.0080281
Stddev	.0069298
%RSD	86.31970
#1	.0110674
#2	.0129188
#3	.0000979

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3986.330	33649.51	4167.040	2793.817	4094.206
Stddev	6.711	95.02	25.543	17.613	2.945
%RSD	.1683599	.2823781	.6129804	.6304364	.0719330
#1	3986.892	33748.48	4138.778	2773.518	4094.085
#2	3992.743	33641.02	4173.864	2805.055	4097.209
#3	3979.355	33559.02	4188.479	2802.879	4091.323

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: CCV011 Acquired: 02/12/2025 13:36:36 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCV011 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.738093	4.768842	24.36925	4.803961	4.921437	391.8105	10.04492
Stddev	.018285	.009413	.01332	.001333	.000990	1.5428	.04155
%RSD	.3859203	.1973950	.0546713	.0277406	.0201182	.3937559	.4135947
#1	4.750745	4.759732	24.37104	4.805018	4.921497	391.6825	10.03357
#2	4.746407	4.778532	24.35513	4.802464	4.920419	390.3358	10.01023
#3	4.717129	4.768262	24.38159	4.804400	4.922396	393.4133	10.09096

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4974895	2.461326	397.3900	15.59536	2.456205	14.76536	394.5813
Stddev	.0036119	.000825	1.5267	.05304	.000736	.06837	1.0319
%RSD	.7260241	.0335136	.3841729	.3401168	.0299630	.4630174	.2615057
#1	.5002235	2.460861	396.9486	15.64153	2.455509	14.77417	394.1443
#2	.4933949	2.462279	396.1326	15.53742	2.456975	14.69302	393.8398
#3	.4988501	2.460840	399.0887	15.60712	2.456130	14.82889	395.7597

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	14.47588	391.4919	2.456245	1.258468	391.9880	2.423090	14.63540
Stddev	.05140	1.4424	.002248	.003016	1.4010	.009661	.06733
%RSD	.3550445	.3684287	.0915125	.2396866	.3574061	.3987264	.4600744
#1	14.46521	390.9203	2.456285	1.260775	391.1744	2.414873	14.56102
#2	14.43066	390.4229	2.453977	1.255055	391.1839	2.420664	14.65297
#3	14.53177	393.1324	2.458472	1.259574	393.6057	2.433733	14.69221

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	148.4186	4.921723	4.868148	4.847289	4.930644	4.674697	4.892557
Stddev	1.0185	.004486	.016717	.008756	.010451	.024871	.004154
%RSD	.6862384	.0911558	.3434000	.1806335	.2119531	.5320430	.0849068
#1	147.8257	4.924401	4.874817	4.840032	4.935065	4.688717	4.894959
#2	147.8353	4.916543	4.849125	4.857014	4.938158	4.645980	4.887761
#3	149.5946	4.924224	4.880501	4.844822	4.918710	4.689392	4.894953

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: CCV011 Acquired: 02/12/2025 13:36:36 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCV011 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	4.886840	4.658102	5.026152
Stddev	.019278	.027677	.028763
%RSD	.3944856	.5941785	.5722646
#1	4.888295	4.662446	5.012526
#2	4.866877	4.628509	5.006735
#3	4.905350	4.683350	5.059196

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3619.733	31256.98	4062.464	2535.434	3632.972
Stddev	8.631	102.88	22.991	8.445	7.828
%RSD	.2384534	.3291486	.5659414	.3330698	.2154696
#1	3625.706	31196.90	4048.997	2542.275	3637.819
#2	3623.657	31375.78	4089.011	2538.032	3637.157
#3	3609.837	31198.26	4049.385	2525.996	3623.942

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: CCB011 Acquired: 02/12/2025 13:40:19 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCB011 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0003383	.0004607	-.001375	.0027289	.0002655	.0207165	-.001610
Stddev	.0026144	.0004387	.000657	.0011266	.0018144	.0249436	.001351
%RSD	772.7797	95.21689	47.75947	41.28542	683.2560	120.4041	83.95684
#1	.0033554	.0000656	-.001519	.0040098	.0022471	.0029689	-.000739
#2	-.001261	.0003838	-.001947	.0018918	-.000136	.0492359	-.003167
#3	-.001080	.0009327	-.000658	.0022849	-.001314	.0099448	-.000924

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000295	.0000504	.0237342	.0000515	-.000073	-.005185	.0291035
Stddev	.000071	.0001217	.0216866	.0004210	.000354	.006162	.0089634
%RSD	23.93138	241.5846	91.37289	816.7714	483.2672	118.8388	30.79817
#1	-.000296	-.000088	.0296254	-.000250	-.000282	.001338	.0281821
#2	-.000224	.000096	-.000289	-.000128	-.000273	-.005986	.0384920
#3	-.000365	.000143	.041867	.000532	.000336	-.010908	.0206365

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002671	.0054489	.0001512	.0003419	-.077288	.0002665	-.000517
Stddev	.0003714	.0295388	.0004247	.0006273	.489283	.0039433	.002396
%RSD	139.0733	542.1026	280.8636	183.4525	633.0654	1479.762	463.2010
#1	.0006709	.0225743	.0001137	-.000366	-.122140	-.002313	.002229
#2	.0001901	.0224320	.0005934	.000827	-.542600	-.001693	-.002178
#3	-.000060	-.028659	-.000253	.000565	.432877	.004806	-.001603

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4157597	.0021882	.0113737	.0005846	-.003443	-.000307	-.000472
Stddev	.1917042	.0001247	.0014242	.0004295	.003481	.000381	.000263
%RSD	46.10938	5.697485	12.52146	73.46467	101.1077	124.2125	55.76893
#1	.2702569	.0022677	.0124996	.0010801	-.001308	-.000106	-.000702
#2	.3440391	.0020445	.0097728	.0003542	-.007459	-.000068	-.000185
#3	.6329833	.0022524	.0118488	.0003195	-.001560	-.000747	-.000530

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: CCB011 Acquired: 02/12/2025 13:40:19 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCB011 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.0012298	.0000252	.0054563
Stddev	.0026062	.0002302	.0047431
%RSD	211.9128	914.0971	86.92879
#1	.0033895	.0002906	.0095629
#2	-.001665	-.000095	.0065414
#3	.001965	-.000121	.0002647

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4303.392	37266.02	4200.150	3028.119	5168.943
Stddev	3.590	188.92	14.480	10.143	7.141
%RSD	.0834291	.5069470	.3447378	.3349530	.1381538
#1	4303.677	37063.78	4216.641	3019.570	5171.304
#2	4299.668	37296.33	4194.294	3039.326	5160.920
#3	4306.831	37437.95	4189.516	3025.461	5174.605

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: PB166660TB Acquired: 02/12/2025 13:44:23 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: LEB660 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0059323	-.001981	-.000798	.0051937	.0014567	.0118865
Stddev	.0008188	.001429	.001399	.0028789	.0021279	.0156789
%RSD	13.80184	72.12931	175.2557	55.43012	146.0726	131.9055
#1	.0066666	-.001172	.000682	.0084697	-.000164	.0135393
#2	.0050494	-.001140	-.002099	.0030676	.000668	-.004553
#3	.0060809	-.003632	-.000978	.0040437	.003866	.026674

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001808	-.000055	.0000187	.0149614	.0011431	.0000905
Stddev	.000740	.000110	.0000144	.0186957	.0005740	.0003335
%RSD	40.95046	201.1582	77.10270	124.9599	50.21810	368.5657
#1	-.001565	-.000104	.0000164	.0027014	.0017782	-.000199
#2	-.001219	.000071	.0000342	.0364796	.0009897	.000455
#3	-.002639	-.000131	.0000056	.0057031	.0006613	.000016

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.003706	.0301447	.0020806	-.000757	.0039286	.0012422
Stddev	.003233	.0120443	.0003502	.010167	.0003029	.0010539
%RSD	87.25179	39.95475	16.83224	1342.644	7.709944	84.84409
#1	-.007008	.0184377	.0016812	-.007278	.0035896	.0008969
#2	-.000545	.0294964	.0023350	-.005952	.0041726	.0004042
#3	-.003564	.0425000	.0022256	.010958	.0040235	.0024254

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1393.828	-.004274	.0002517	F -10.3312	-.001229	.0024605
Stddev	5.325	.004986	.0021829	.1788	.002105	.0007609
%RSD	.3820284	116.6738	867.1238	1.730928	171.3225	30.92513
#1	1389.767	.000703	.0010837	-10.5331	.000939	.0024985
#2	1399.856	-.004255	.0018964	-10.2681	-.001361	.0032017
#3	1391.860	-.009269	-.002225	-10.1926	-.003265	.0016813

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: PB166660TB Acquired: 02/12/2025 13:44:23 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: LEB660 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0007162	.0209569	-.000449	-.007627	-.001226	-.000125
Stddev	.0001176	.0025104	.001006	.000416	.002494	.000011
%RSD	16.42632	11.97882	223.8793	5.454474	203.5190	8.445344
#1	.0007360	.0231499	.000712	-.007817	-.002103	-.000136
#2	.0008226	.0215023	-.001061	-.007913	-.003163	-.000115
#3	.0005899	.0182187	-.001000	-.007150	.001589	-.000124

Elem	Li6707
Units	ppm
Avg	-.002712
Stddev	.003084
%RSD	113.7122
#1	.000192
#2	-.002378
#3	-.005949

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4153.246	34296.23	4593.410	2914.173	4151.624
Stddev	9.242	82.37	12.593	4.647	11.338
%RSD	.2225356	.2401717	.2741507	.1594626	.2731045
#1	4162.277	34222.24	4606.263	2916.300	4163.241
#2	4153.655	34281.46	4581.095	2917.375	4151.045
#3	4143.806	34384.98	4592.873	2908.843	4140.587

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1292-01 Acquired: 02/12/2025 13:48:28 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: E1PM9 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.002865	.0191060	-.005254	-.019067	-.013641	.0722671
Stddev	.001695	.0011916	.001059	.006452	.002040	.0137490
%RSD	59.16458	6.236611	20.16174	33.83603	14.95641	19.02523
#1	-.001152	.0185023	-.005754	-.011637	-.014484	.0876329
#2	-.004542	.0183372	-.005971	-.023246	-.015124	.0680418
#3	-.002900	.0204786	-.004037	-.022318	-.011314	.0611267

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.114435	-.000110	.0035136	F 944.8809	.0024809	.0430995
Stddev	.000701	.000067	.0000746	8.1285	.0007949	.0003148
%RSD	.0331624	60.93096	2.124234	.8602668	32.04174	.7303272
#1	2.114392	-.000112	.0035784	940.4766	.0026217	.0429934
#2	2.115156	-.000176	.0034320	939.9050	.0016250	.0434537
#3	2.113756	-.000042	.0035305	954.2610	.0031960	.0428515

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.007973	.0505834	1.987006	23.15945	.0271061	.0013977
Stddev	.001371	.0197176	.011348	.10000	.0008544	.0004162
%RSD	17.19463	38.98043	.5710863	.4317706	3.151999	29.77655
#1	-.007194	.0302497	1.983002	23.08288	.0279537	.0018590
#2	-.009556	.0696210	1.978204	23.12290	.0271194	.0010505
#3	-.007169	.0518795	1.999813	23.27258	.0262451	.0012836

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1463.482	.0004099	.3885339	F -4.15433	.0218746	.2267060
Stddev	3.928	.0055527	.0015543	.40272	.0022687	.0022243
%RSD	.2684186	1354.665	.4000338	9.694012	10.37133	.9811395
#1	1460.007	-.005841	.3888163	-4.59009	.0200530	.2242383
#2	1462.695	.002302	.3899277	-3.79586	.0211549	.2285565
#3	1467.744	.004769	.3868579	-4.07703	.0244158	.2273232

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1292-01 Acquired: 02/12/2025 13:48:28 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: E1PM9 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0020293	4.441607	4.210936	-.002446	-.013903	1.164558
Stddev	.0003047	.010193	.045677	.001353	.002231	.005072
%RSD	15.01406	.2294856	1.084713	55.32277	16.04600	.4355671
#1	.0021266	4.448030	4.161302	-.002491	-.013507	1.161918
#2	.0022735	4.429854	4.220301	-.003777	-.011897	1.161350
#3	.0016879	4.446937	4.251203	-.001071	-.016305	1.170406

Elem	Li6707
Units	ppm
Avg	.0308450
Stddev	.0037237
%RSD	12.07221
#1	.0334504
#2	.0325046
#3	.0265801

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3860.076	32322.97	4355.392	2682.052	3762.024
Stddev	10.210	136.03	28.294	11.248	13.356
%RSD	.2644924	.4208609	.6496279	.4193917	.3550320
#1	3853.588	32168.01	4381.504	2669.410	3747.093
#2	3854.796	32422.71	4359.341	2690.953	3766.145
#3	3871.845	32378.20	4325.331	2685.793	3772.835

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1292-02 Acquired: 02/12/2025 13:52:33 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: E1PM9D Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.004709	.0178504	-.006628	-.016896	-.015010	.0410791
Stddev	.001191	.0016449	.000527	.001574	.001764	.0055224
%RSD	25.28588	9.214752	7.947131	9.313513	11.75095	13.44327
#1	-.005960	.0185130	-.006220	-.015200	-.013260	.0464162
#2	-.004578	.0190607	-.006443	-.018308	-.016787	.0353884
#3	-.003589	.0159776	-.007223	-.017179	-.014981	.0414328

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.043405	-.000056	.0035114	F 903.7533	.0024670	.0419587
Stddev	.006676	.000243	.0000819	2.8869	.0001583	.0007504
%RSD	.3267057	437.2290	2.331704	.3194313	6.414579	1.788388
#1	2.035888	-.000272	.0034303	903.4141	.0025900	.0420324
#2	2.048642	.000207	.0035940	901.0511	.0022885	.0426694
#3	2.045686	-.000102	.0035098	906.7949	.0025225	.0411741

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.003374	.0567956	1.909714	22.26709	.0262433	.0012713
Stddev	.005843	.0266690	.007303	.06863	.0003529	.0008308
%RSD	173.2006	46.95614	.3824208	.3082226	1.344639	65.34530
#1	-.009470	.0872488	1.902943	22.18899	.0266506	.0021922
#2	.002179	.0376083	1.908748	22.29451	.0260516	.0010437
#3	-.002831	.0455296	1.917453	22.31778	.0260278	.0005782

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1406.246	-.005489	.3740919	F -4.45901	.0213971	.2166149
Stddev	5.643	.004631	.0013592	.28106	.0004178	.0004915
%RSD	.4013064	84.36456	.3633435	6.303110	1.952538	.2269209
#1	1399.840	-.000431	.3726750	-4.77989	.0218756	.2171823
#2	1408.413	-.009520	.3753850	-4.34068	.0211049	.2163450
#3	1410.485	-.006515	.3742157	-4.25647	.0212107	.2163175

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1292-02 Acquired: 02/12/2025 13:52:33 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: E1PM9D Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0024230	4.349325	4.058719	-.003946	-.014995	1.122677
Stddev	.0003908	.015408	.011398	.002017	.002084	.004674
%RSD	16.12777	.3542625	.2808209	51.12372	13.89817	.4163104
#1	.0028510	4.359353	4.071244	-.002560	-.017354	1.117794
#2	.0020851	4.331583	4.048957	-.006260	-.013405	1.123128
#3	.0023330	4.357037	4.055954	-.003018	-.014226	1.127109

Elem	Li6707
Units	ppm
Avg	.0317964
Stddev	.0046991
%RSD	14.77883
#1	.0317979
#2	.0364947
#3	.0270965

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3958.761	33168.77	4532.950	2771.045	3857.337
Stddev	9.132	204.30	25.367	18.782	11.656
%RSD	.2306879	.6159407	.5596174	.6777800	.3021734
#1	3950.213	33303.23	4535.259	2780.107	3844.332
#2	3968.383	33269.40	4557.084	2783.577	3866.841
#3	3957.686	32933.67	4506.507	2749.450	3860.838

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1292-01LX5 Acquired: 02/12/2025 13:56:38 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: E1PM9L Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000067	.0128111	-.004583	-.012559	-.007403	.0210765	.4197837
Stddev	.000295	.0004101	.000568	.003357	.001270	.0171644	.0018465
%RSD	443.7776	3.201054	12.40211	26.73203	17.15195	81.43857	.4398712
#1	.000169	.0127380	-.003933	-.014893	-.005953	.0036769	.4218825
#2	.000029	.0124425	-.004986	-.008711	-.007942	.0379956	.4184089
#3	-.000398	.0132529	-.004831	-.014072	-.008314	.0215569	.4190596

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000142	.0007561	190.8062	.0007830	.0288329	-.004158	.0229463
Stddev	.0000746	.0000429	.2833	.0007037	.0002967	.005357	.0101841
%RSD	526.8835	5.678762	.1484817	89.87573	1.029112	128.8362	44.38232
#1	-.000056	.0007179	191.1290	.0000147	.0290568	-.009365	.0342398
#2	.000007	.0008026	190.5986	.0009380	.0284963	.001338	.0201382
#3	.000092	.0007479	190.6911	.0013964	.0289455	-.004448	.0144609

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.3998183	4.764373	.0051889	.0019882	289.5974	-.006432	.0711921
Stddev	.0011051	.051704	.0004781	.0008014	1.2041	.002154	.0004937
%RSD	.2763954	1.085220	9.214397	40.30822	.4157904	33.49010	.6934931
#1	.3985434	4.798572	.0055985	.0012896	289.9777	-.005772	.0717618
#2	.4005022	4.789655	.0046635	.0018118	288.2491	-.004685	.0708879
#3	.4004093	4.704893	.0053046	.0028630	290.5655	-.008839	.0709267

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.116341	.0073872	.0507509	.0025088	.8031428	.8937235	.0009565
Stddev	.276266	.0022326	.0010889	.0003565	.0029682	.0034363	.0009469
%RSD	24.74746	30.22186	2.145497	14.21098	.3695774	.3844983	98.99536
#1	1.140131	.0050694	.0496222	.0023592	.7999865	.8955797	.0004835
#2	.828949	.0075690	.0508357	.0022514	.8035637	.8897582	.0020467
#3	1.379943	.0095234	.0517950	.0029157	.8058780	.8958326	.0003393

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1292-01LX5 Acquired: 02/12/2025 13:56:38 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: E1PM9L Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	-.002604	.2296351	.0273411
Stddev	.003675	.0003624	.0026599
%RSD	141.1465	.1578271	9.728700
#1	.001499	.2300044	.0243191
#2	-.003717	.2292799	.0283772
#3	-.005594	.2296212	.0293271

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4086.430	34476.79	4303.471	2856.763	4199.102
Stddev	23.012	82.20	8.644	7.711	19.106
%RSD	.5631286	.2384323	.2008507	.2699236	.4549923
#1	4061.268	34531.25	4312.621	2862.202	4178.890
#2	4106.408	34382.23	4302.347	2847.939	4216.865
#3	4091.613	34516.88	4295.444	2860.149	4201.552

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1292-03 Acquired: 02/12/2025 14:00:39 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: E1PM9S Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0404346	.0632650	.0136883	.0917339	.0847349	1.960236
Stddev	.0029215	.0008149	.0016226	.0009952	.0034157	.013343
%RSD	7.225287	1.288012	11.85413	1.084913	4.031017	.6806678
#1	.0410747	.0626734	.0118477	.0928169	.0817441	1.955336
#2	.0372461	.0641945	.0143050	.0908596	.0840035	1.950036
#3	.0429831	.0629272	.0149122	.0915250	.0884570	1.975336

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.151378	.0485325	.0559611	F 1001.271	.2179120	.5499443
Stddev	.016889	.0002364	.0001681	6.318	.0005138	.0015507
%RSD	.4068206	.4870877	.3003778	.6309973	.2357772	.2819650
#1	4.170317	.0484262	.0561297	994.235	.2181973	.5505793
#2	4.145935	.0488033	.0557935	1006.459	.2173189	.5481769
#3	4.137881	.0483679	.0559601	1003.119	.2182198	.5510766

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2508765	1.007452	2.035369	22.02236	.5413476	.0398387
Stddev	.0018632	.014154	.003473	.03160	.0010086	.0002060
%RSD	.7426728	1.404958	.1706563	.1435097	.1863110	.5170839
#1	.2488711	1.008900	2.035558	21.98901	.5418891	.0396903
#2	.2512043	.992630	2.031805	22.05186	.5401839	.0400739
#3	.2525539	1.020827	2.038744	22.02620	.5419697	.0397518

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1525.046	.5028533	.8860490	F -5.19901	.0261410	.2044972
Stddev	2.691	.0039609	.0016737	.14620	.0018976	.0013591
%RSD	.1764377	.7876847	.1888965	2.812150	7.259002	.6645895
#1	1527.678	.5030748	.8879811	-5.30014	.0278536	.2038109
#2	1522.300	.4987862	.8850428	-5.26552	.0264682	.2060626
#3	1525.159	.5066987	.8851231	-5.03138	.0241010	.2036181

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1292-03 Acquired: 02/12/2025 14:00:39 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: E1PM9S Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0010816	3.693975	3.653945	-.003491	-.017327	1.204867
Stddev	.0005414	.012182	.019888	.000954	.001232	.002189
%RSD	50.05402	.3297788	.5442885	27.33378	7.109864	.1816791
#1	.0014775	3.705877	3.636078	-.003080	-.018657	1.207392
#2	.0013028	3.681531	3.650384	-.002811	-.017100	1.203505
#3	.0004647	3.694517	3.675373	-.004582	-.016225	1.203704

Elem	Li6707
Units	ppm
Avg	.0305057
Stddev	.0013857
%RSD	4.542375
#1	.0292711
#2	.0320044
#3	.0302416

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3845.633	32226.65	4345.809	2700.459	3741.637
Stddev	16.211	105.69	10.127	3.211	7.079
%RSD	.4215402	.3279489	.2330348	.1188951	.1891980
#1	3861.749	32106.47	4351.319	2698.855	3745.369
#2	3829.329	32268.40	4351.986	2704.155	3733.473
#3	3845.822	32305.09	4334.121	2698.366	3746.070

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: PB166667BL Acquired: 02/12/2025 14:04:42 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: PBW667 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002993	.0005271	-.000799	.0006991	-.000448	.0071219
Stddev	.0047117	.0006645	.002138	.0016546	.001421	.0188223
%RSD	1574.175	126.0613	267.5002	236.6665	317.0316	264.2888
#1	.0023200	.0008635	-.000650	.0026043	-.002080	-.003032
#2	-.005086	-.000238	.001260	-.000130	.000218	-.004443
#3	.003664	.000956	-.003008	-.000377	.000518	.028841

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.003229	.0001245	.0000002	.0159623	-.000252	-.000056
Stddev	.000728	.0001544	.0000837	.0210812	.000224	.000226
%RSD	22.55284	124.0187	36212.05	132.0683	88.85409	407.1695
#1	-.003822	-.000023	-.000016	-.001965	-.000494	-.000119
#2	-.002416	.000285	-.000074	.010666	-.000208	-.000243
#3	-.003448	.000111	.000091	.039187	-.000053	.000196

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.004478	.0235611	.0067446	.0040361	.0003568	-.000308
Stddev	.000527	.0223304	.0003943	.0244241	.0003256	.000799
%RSD	11.77721	94.77647	5.845526	605.1347	91.26262	259.2656
#1	-.003930	.0415151	.0066834	-.006191	.0000067	-.000919
#2	-.004982	-.001444	.0071658	-.013612	.0004131	-.000601
#3	-.004522	.030612	.0063845	.031911	.0006505	.000596

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6268458	-.008476	-.002533	F -11.9364	.0033399	-.000280
Stddev	.7836355	.006163	.002228	.0754	.0010700	.001252
%RSD	125.0125	72.70856	87.98715	.6315962	32.03566	446.5363
#1	1.515579	-.014278	-.000549	-11.8497	.0045264	-.000561
#2	.329785	-.009143	-.002105	-11.9868	.0030449	.001088
#3	.035173	-.002007	-.004944	-11.9727	.0024484	-.001368

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: PB166667BL Acquired: 02/12/2025 14:04:42 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: PBW667 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0002070	.0001788	-.001756	F -.009651	-.001028	-.000174
Stddev	.0001760	.0001016	.001889	.000274	.000852	.000284
%RSD	85.02627	56.83063	107.5810	2.840361	82.91775	163.5656
#1	.0000991	.0002357	-.003926	-.009356	-.001563	-.000221
#2	.0004101	.0002394	-.000862	-.009898	-.001475	-.000431
#3	.0001118	.0000615	-.000480	-.009697	-.000045	.000131

Elem	Li6707
Units	ppm
Avg	-.005756
Stddev	.004531
%RSD	78.70547
#1	-.010888
#2	-.002308
#3	-.004073

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4623.089	39982.99	4453.538	3233.506	5667.566
Stddev	7.592	186.43	9.466	22.678	9.434
%RSD	.1642249	.4662692	.2125590	.7013538	.1664476
#1	4619.706	39793.85	4464.408	3214.996	5661.709
#2	4631.785	40166.58	4447.099	3258.803	5678.448
#3	4617.777	39988.54	4449.110	3226.719	5662.540

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: PB166667BS Acquired: 02/12/2025 14:08:47 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: LCS667 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0238388	.0528574	.0165120	.0718398	.1149970	.4262203
Stddev	.0017106	.0005600	.0015545	.0017434	.0016214	.0219799
%RSD	7.175734	1.059516	9.414059	2.426727	1.409930	5.156929
#1	.0218848	.0523892	.0179110	.0698581	.1164440	.4054924
#2	.0250659	.0534778	.0148386	.0731374	.1132446	.4492681
#3	.0245658	.0527052	.0167864	.0725237	.1153024	.4239004

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4038085	.0107077	.0093122	10.30560	.0207657	.0992929
Stddev	.0040818	.0000502	.0000718	.04138	.0003285	.0005786
%RSD	1.010835	.4689727	.7714645	.4014980	1.581853	.5827273
#1	.4081472	.0106784	.0093504	10.35289	.0206282	.0999218
#2	.4000443	.0106790	.0092293	10.27606	.0205284	.0987831
#3	.4032340	.0107657	.0093568	10.28784	.0211406	.0991738

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0514409	.2225223	.0340318	10.31235	.0740157	.0194639
Stddev	.0079157	.0058948	.0002978	.06103	.0007672	.0006633
%RSD	15.38805	2.649089	.8749665	.5918081	1.036556	3.407623
#1	.0586719	.2183544	.0342984	10.36458	.0748481	.0188883
#2	.0429835	.2199457	.0340864	10.24526	.0738619	.0201892
#3	.0526674	.2292667	.0337105	10.32719	.0733370	.0193142

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.798564	.1008132	.1120166	F -1.75838	.0193435	F -.001169
Stddev	.194510	.0040425	.0021804	.22263	.0018570	.002001
%RSD	1.985088	4.009916	1.946455	12.66110	9.600234	171.1756
#1	9.676028	.1043749	.1100971	-1.54085	.0191912	-.003209
#2	10.02284	.1016453	.1115655	-1.98579	.0212720	.000790
#3	9.69682	.0964193	.1143872	-1.74851	.0175674	-.001088

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: PB166667BS Acquired: 02/12/2025 14:08:47 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: LCS667 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0209980	.1694659	F 1.034842	F .0038484	.1982706	F .0604318
Stddev	.0002431	.0025555	.002309	.0010788	.0022310	.0001930
%RSD	1.157784	1.507973	.2231236	28.03245	1.125243	.3193926
#1	.0212016	.1722955	1.032179	.0038495	.1991058	.0604572
#2	.0210634	.1673262	1.036053	.0049267	.1957425	.0602273
#3	.0207288	.1687760	1.036293	.0027691	.1999635	.0606109

Elem	Li6707
Units	ppm
Avg	.0245736
Stddev	.0023695
%RSD	9.642408
#1	.0222693
#2	.0244482
#3	.0270033

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4510.066	38662.07	4423.333	3132.547	5192.499
Stddev	17.847	441.20	20.727	38.556	19.606
%RSD	.3957168	1.141164	.4685862	1.230830	.3775922
#1	4502.674	38852.86	4399.413	3146.667	5179.360
#2	4530.422	38975.76	4435.998	3162.052	5215.036
#3	4497.103	38157.58	4434.587	3088.921	5183.103

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1314-08 Acquired: 02/12/2025 14:12:43 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA9 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0016587	.0023678	-.000840	-.000284	-.000116	.0518795	.0104365
Stddev	.0012810	.0012131	.000819	.001914	.001808	.0113036	.0018693
%RSD	77.23264	51.23542	97.51392	674.5029	1558.717	21.78817	17.91089
#1	.0022736	.0036985	-.000212	.000942	.001916	.0388629	.0125242
#2	.0025163	.0020813	-.001767	.000696	-.000715	.0592224	.0098674
#3	.0001861	.0013235	-.000541	-.002490	-.001549	.0575532	.0089179

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000104	-.000029	10.86440	-.000161	.0080066	-.005236	.2929792
Stddev	.0001592	.000048	.04945	.000165	.0003347	.003821	.0138014
%RSD	1527.076	166.7741	.4551182	102.7648	4.180973	72.97797	4.710722
#1	.0001589	-.000046	10.91225	.000030	.0077191	-.001899	.2900399
#2	.0000301	-.000067	10.81350	-.000251	.0083741	-.004405	.3080136
#3	-.000158	.000025	10.86747	-.000260	.0079265	-.009405	.2808843

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1094986	2.455277	.0032493	.0000770	5.639987	-.002401	.0250838
Stddev	.0006853	.036039	.0002328	.0003623	.231373	.004729	.0011911
%RSD	.6258364	1.467833	7.165672	470.4187	4.102369	196.9937	4.748402
#1	.1102884	2.483884	.0033952	.0000818	5.907105	.002635	.0237288
#2	.1091463	2.414800	.0033719	-.000288	5.502025	-.006748	.0255573
#3	.1090612	2.467147	.0029808	.000437	5.510832	-.003089	.0259654

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-3.52809	.0059145	.0175493	.0143363	1.785457	1.149174	-.009063
Stddev	.15540	.0018954	.0010011	.0000921	.002912	.007303	.000240
%RSD	4.404552	32.04717	5.704415	.6424686	.1630994	.6354741	2.647030
#1	-3.69398	.0038574	.0187025	.0143555	1.783925	1.149020	-.009207
#2	-3.50437	.0075903	.0170421	.0142361	1.788815	1.141949	-.008786
#3	-3.38591	.0062957	.0169033	.0144174	1.783630	1.156552	-.009196

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1314-08 Acquired: 02/12/2025 14:12:43 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA9 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.0008582	.0498248	-.000627
Stddev	.0016311	.0001337	.003674
%RSD	190.0635	.2682839	586.2039
#1	.0002130	.0498484	-.000827
#2	-.000352	.0496808	-.004196
#3	.002713	.0499450	.003144

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4558.055	39233.61	4417.049	3175.925	5327.404
Stddev	5.260	172.83	29.957	10.563	14.545
%RSD	.1154020	.4405115	.6782150	.3325851	.2730246
#1	4563.495	39185.27	4384.942	3164.004	5343.030
#2	4552.996	39090.10	4444.251	3179.656	5314.260
#3	4557.673	39425.46	4421.954	3184.116	5324.921

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1314-09 Acquired: 02/12/2025 14:16:43 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA9D Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000807	.0026566	-.002304	.0004437	-.002159	.0548117	.0135787
Stddev	.003166	.0013176	.000149	.0023708	.001506	.0223234	.0029880
%RSD	392.2751	49.59762	6.467785	534.3766	69.73776	40.72742	22.00478
#1	-.002755	.0024582	-.002269	-.000495	-.003201	.0757359	.0156820
#2	.002846	.0014495	-.002467	.003140	-.000433	.0573866	.0101585
#3	-.002512	.0040622	-.002174	-.001314	-.002843	.0313125	.0148956

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001372	.0000295	10.92955	-.000267	.0082930	-.004918	.2962374
Stddev	.0001536	.0000632	.04787	.000847	.0001981	.002032	.0178855
%RSD	111.9262	213.9786	.4379559	316.7325	2.388717	41.30889	6.037570
#1	.0003102	-.000040	10.87731	-.000223	.0083501	-.007254	.3161771
#2	.0000169	.000045	10.97131	.000556	.0084562	-.003938	.2909257
#3	.0000845	.000083	10.94002	-.001136	.0080726	-.003563	.2816094

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1105515	2.467298	.0033710	.0009763	6.017567	.0018292	.0256169
Stddev	.0017843	.036380	.0000435	.0009212	.247976	.0069656	.0028619
%RSD	1.614012	1.474498	1.291597	94.35367	4.120867	380.7942	11.17194
#1	.1113372	2.484610	.0033334	.0013169	6.302631	-.001563	.0242813
#2	.1085092	2.425495	.0033609	-.000067	5.851670	-.002791	.0236669
#3	.1118082	2.491790	.0034187	.001679	5.898400	.009841	.0289024

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-3.52216	.0044850	.0175310	.0138336	1.786954	1.144567	-.008658
Stddev	.12118	.0010161	.0019769	.0005201	.004844	.005856	.000115
%RSD	3.440413	22.65545	11.27690	3.759887	.2710802	.5116114	1.329336
#1	-3.48760	.0050590	.0195747	.0134824	1.792338	1.151042	-.008777
#2	-3.65686	.0033118	.0173900	.0144311	1.782948	1.139643	-.008650
#3	-3.42202	.0050842	.0156283	.0135872	1.785576	1.143017	-.008547

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1314-09 Acquired: 02/12/2025 14:16:43 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA9D Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.0004029	.0500467	-.001841
Stddev	.0010586	.0002208	.004483
%RSD	262.7423	.4412484	243.5793
#1	-.000818	.0502622	.001398
#2	.001068	.0498209	.000037
#3	.000958	.0500568	-.006958

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4553.475	39299.93	4442.053	3180.353	5328.558
Stddev	8.416	131.65	16.330	8.485	7.958
%RSD	.1848173	.3349902	.3676137	.2667989	.1493507
#1	4563.179	39192.56	4427.409	3170.972	5337.302
#2	4549.073	39446.81	4459.662	3187.492	5326.633
#3	4548.174	39260.41	4439.088	3182.594	5321.739

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1314-08LX5 Acquired: 02/12/2025 14:20:43 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA9L Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0001347	.0019422	-.001625	-.000339	-.001073	.0149592	.0032197
Stddev	.0005525	.0013856	.000681	.002970	.000630	.0191160	.0002271
%RSD	410.2002	71.34283	41.90813	876.7171	58.71585	127.7873	7.054911
#1	.0007521	.0004155	-.002012	-.001851	-.000346	.0257639	.0030323
#2	-.000313	.0031201	-.002023	-.002249	-.001415	-.007112	.0031546
#3	-.000035	.0022911	-.000838	.003083	-.001458	.026226	.0034723

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000177	-.000001	2.231150	-.000223	.0018134	-.008163	.0688169
Stddev	.0001146	.000040	.035241	.000090	.0001936	.001566	.0114432
%RSD	647.6668	3938.921	1.579479	40.13926	10.67404	19.17965	16.62853
#1	-.000111	.000022	2.206166	-.000131	.0018336	-.009540	.0564597
#2	.000056	.000022	2.215826	-.000229	.0016105	-.008488	.0709431
#3	.000108	-.000047	2.271459	-.000310	.0019960	-.006460	.0790479

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0222104	.4784068	.0004964	.0006625	1.451817	.0007625	.0044420
Stddev	.0011364	.0316953	.0001535	.0007970	.215520	.0031889	.0027400
%RSD	5.116564	6.625183	30.91687	120.2977	14.84485	418.2128	61.68387
#1	.0232548	.4971030	.0006659	.0002310	1.439435	.0023830	.0061556
#2	.0210002	.4418111	.0004569	.0001743	1.673261	.0028157	.0058884
#3	.0223760	.4963063	.0003666	.0015822	1.242755	-.002911	.0012819

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.1545976	.0018825	.0026860	.0030769	.3459526	.2268532	-.002019
Stddev	.2725769	.0010258	.0013931	.0001453	.0026523	.0006096	.000822
%RSD	176.3138	54.49393	51.86527	4.721135	.7666581	.2687271	40.68493
#1	-.127914	.0024162	.0041290	.0031247	.3487095	.2262118	-.001081
#2	.175694	.0025314	.0025800	.0029138	.3457291	.2274250	-.002609
#3	.416014	.0006998	.0013489	.0031923	.3434191	.2269227	-.002367

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1314-08LX5 Acquired: 02/12/2025 14:20:43 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA9L Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	-.000987	.0102149	.0102547
Stddev	.002303	.0002531	.0052587
%RSD	233.4786	2.477483	51.28090
#1	-.003617	.0105043	.0048676
#2	-.000013	.0101051	.0105218
#3	.000670	.0100353	.0153748

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4314.030	37778.57	4202.433	3018.543	5100.963
Stddev	11.317	207.92	7.927	19.061	4.901
%RSD	.2623388	.5503745	.1886213	.6314707	.0960797
#1	4325.716	37768.36	4206.276	2996.995	5105.097
#2	4313.252	37991.41	4207.706	3033.203	5102.245
#3	4303.121	37575.94	4193.318	3025.431	5095.549

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1314-10 Acquired: 02/12/2025 14:24:45 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA9S Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0484862	.0515690	.0170707	.0961748	.0972537	1.980031	2.031277
Stddev	.0017468	.0014465	.0016703	.0032556	.0019264	.028417	.002528
%RSD	3.602734	2.804970	9.784783	3.385045	1.980783	1.435205	.1244575
#1	.0497956	.0518175	.0163368	.0950336	.0950868	1.973598	2.030751
#2	.0491603	.0500144	.0158929	.0936436	.0987724	1.955382	2.034026
#3	.0465028	.0528752	.0189823	.0998474	.0979019	2.011114	2.029053

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0532718	.0449830	10.66515	.2159844	.4684369	.2525956	1.319396
Stddev	.0005988	.0002164	.04173	.0017919	.0013304	.0090187	.008277
%RSD	1.124115	.4811260	.3912735	.8296238	.2839994	3.570415	.6273294
#1	.0539160	.0448741	10.67906	.2155884	.4669544	.2562114	1.324209
#2	.0527320	.0448426	10.69815	.2144236	.4688294	.2423300	1.324140
#3	.0531675	.0452322	10.61824	.2179411	.4695268	.2592452	1.309839

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.6392339	2.356740	.4673785	.0369987	5.578017	.5047914	.4731432
Stddev	.0056846	.005872	.0010242	.0008011	.679719	.0088498	.0042934
%RSD	.8892834	.2491765	.2191352	2.165147	12.18567	1.753168	.9074199
#1	.6371904	2.360480	.4662543	.0362354	6.238456	.5060229	.4709149
#2	.6348535	2.359770	.4676226	.0378329	4.880534	.4953903	.4780926
#3	.6456578	2.349972	.4682586	.0369278	5.615061	.5129609	.4704221

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-3.47518	.0060906	.0162418	.0133707	1.802715	1.127506	-.009301
Stddev	.03173	.0001420	.0012682	.0005433	.002870	.005984	.000335
%RSD	.9130119	2.331004	7.808207	4.063423	.1591830	.5307486	3.606035
#1	-3.44483	.0059598	.0175372	.0132763	1.805112	1.134297	-.008965
#2	-3.50813	.0062416	.0150027	.0139551	1.803498	1.123002	-.009636
#3	-3.47258	.0060703	.0161854	.0128808	1.799535	1.125220	-.009303

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1314-10 Acquired: 02/12/2025 14:24:45 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA9S Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.0005833	.0477604	.0017567
Stddev	.0021016	.0001146	.0034612
%RSD	360.2897	.2399606	197.0329
#1	-.000907	.0478312	.0010137
#2	-.000330	.0478218	-.001273
#3	.002987	.0476282	.005529

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4522.601	39005.58	4401.525	3170.370	5290.403
Stddev	2.885	230.86	6.968	18.481	5.322
%RSD	.0637804	.5918592	.1583100	.5829141	.1005941
#1	4520.078	39272.12	4394.009	3191.513	5285.958
#2	4521.979	38875.80	4402.794	3162.297	5296.300
#3	4525.746	38868.81	4407.771	3157.299	5288.952

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1315-01 Acquired: 02/12/2025 14:28:39 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA8 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001071	.0048201	-.002566	-.001299	-.003354	.0273325	.0354175
Stddev	.002886	.0023683	.001611	.001918	.000449	.0288339	.0011674
%RSD	269.5573	49.13410	62.79563	147.6665	13.37649	105.4932	3.296173
#1	-.002633	.0075244	-.001179	-.003473	-.002861	.0197946	.0340928
#2	-.002839	.0031155	-.004333	-.000577	-.003463	.0591866	.0362962
#3	.002260	.0038205	-.002186	.000153	-.003738	.0030162	.0358634

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000112	.0000961	26.64938	.0003333	.0165129	.0018744	.4347901
Stddev	.0000862	.0000743	.09665	.0013679	.0002366	.0043692	.0104941
%RSD	769.0716	77.30087	.3626899	410.4523	1.432966	233.1063	2.413609
#1	.0000970	.0001816	26.55615	.0019020	.0166077	.0044420	.4448748
#2	-.000075	.0000592	26.64288	-.000291	.0166874	-.003171	.4355659
#3	.000012	.0000475	26.74913	-.000611	.0162436	.004352	.4239296

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2444120	6.202224	.0078070	.0002758	14.73259	.0003933	.0670105
Stddev	.0022077	.035339	.0005370	.0011275	.08602	.0025919	.0027352
%RSD	.9032552	.5697715	6.878906	408.8132	.5838987	659.0349	4.081818
#1	.2419962	6.175673	.0083763	.0008353	14.82402	-.002578	.0698137
#2	.2449149	6.188664	.0077351	.0010141	14.65326	.002191	.0643487
#3	.2463248	6.242334	.0073095	-.001022	14.72048	.001566	.0668691

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.283986	.0066862	.0474076	.0282407	3.556893	3.111294	-.009598
Stddev	.107730	.0023204	.0010868	.0002233	.008758	.017633	.000218
%RSD	1.160388	34.70381	2.292477	.7906237	.2462126	.5667347	2.276461
#1	9.296194	.0063110	.0461799	.0282124	3.547030	3.092652	-.009559
#2	9.170671	.0045763	.0477962	.0284768	3.563755	3.127705	-.009833
#3	9.385092	.0091713	.0482467	.0280329	3.559895	3.113525	-.009402

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1315-01 Acquired: 02/12/2025 14:28:39 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA8 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.0010035	.1300510	.0050556
Stddev	.0025853	.0008778	.0017101
%RSD	257.6302	.6749841	33.82587
#1	-.001482	.1291939	.0039542
#2	.000815	.1300109	.0070257
#3	.003678	.1309482	.0041869

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4456.976	38187.56	4388.369	3137.058	5056.066
Stddev	9.756	73.44	24.983	9.015	4.083
%RSD	.2188922	.1923122	.5693068	.2873675	.0807458
#1	4461.082	38156.66	4406.984	3135.157	5055.798
#2	4464.009	38271.40	4398.148	3146.872	5060.277
#3	4445.839	38134.62	4359.976	3129.146	5052.125

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1315-02 Acquired: 02/12/2025 14:32:39 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA8D Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0016443	.0043914	-.001707	-.003668	-.002751	.0101041	.0380775
Stddev	.0015005	.0001721	.000723	.002158	.004071	.0218182	.0005849
%RSD	91.25414	3.919500	42.34751	58.83754	147.9709	215.9342	1.535980
#1	.0031786	.0045889	-.002332	-.001330	.000285	-.014419	.0374370
#2	.0015741	.0043118	-.000916	-.005584	-.007378	.017367	.0382123
#3	.0001801	.0042735	-.001872	-.004091	-.001161	.027364	.0385831

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000646	.0000059	26.77404	.0001619	.0164032	-.001778	.4383086
Stddev	.0000698	.0000750	.02817	.0004568	.0003052	.004519	.0156539
%RSD	107.9767	1261.309	.1052245	282.0759	1.860814	254.1964	3.571440
#1	.0000564	-.000066	26.78464	.0006684	.0166616	-.006568	.4395969
#2	.0001381	-.000000	26.79537	-.000219	.0164817	.002409	.4532786
#3	-.000001	.000084	26.74210	.000036	.0160664	-.001174	.4220503

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.2452690	6.263664	.0079625	.0005982	14.94243	.0011420	.0629715
Stddev	.0017589	.057483	.0006017	.0003037	.71192	.0020833	.0012790
%RSD	.7171207	.9177158	7.556544	50.76822	4.764446	182.4132	2.031137
#1	.2434136	6.203829	.0084865	.0007611	14.24955	.0035397	.0642878
#2	.2454814	6.318462	.0080957	.0002478	14.90577	.0001118	.0617333
#3	.2469121	6.268700	.0073054	.0007856	15.67198	-.000225	.0628934

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.423126	.0043870	.0484894	.0287089	3.586885	3.144125	-.008097
Stddev	.146121	.0013162	.0012578	.0005223	.004219	.014813	.000451
%RSD	1.550667	30.00147	2.593881	1.819353	.1176240	.4711232	5.569667
#1	9.485862	.0052990	.0498066	.0286996	3.582653	3.155223	-.007639
#2	9.527403	.0028781	.0483607	.0281913	3.586910	3.127305	-.008113
#3	9.256113	.0049838	.0473010	.0292358	3.591091	3.149846	-.008540

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1315-02 Acquired: 02/12/2025 14:32:39 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA8D Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	-.000323	.1312578	.0054637
Stddev	.002462	.0003553	.0046352
%RSD	762.8456	.2707199	84.83467
#1	.001633	.1313655	.0093407
#2	-.003087	.1315468	.0003297
#3	.000486	.1308611	.0067208

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4510.613	38935.61	4447.355	3155.436	5101.942
Stddev	1.490	140.99	25.888	13.532	4.497
%RSD	.0330327	.3621065	.5821000	.4288440	.0881412
#1	4510.597	38928.31	4417.607	3142.392	5097.064
#2	4509.131	38798.42	4464.768	3169.408	5102.840
#3	4512.111	39080.11	4459.692	3154.510	5105.923

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1315-01LX5 Acquired: 02/12/2025 14:36:40 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA8L Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.001750	.0008985	-.000910	.0001347	-.000346	.0217920	.0106523
Stddev	.002228	.0032294	.000231	.0014554	.002421	.0102912	.0008968
%RSD	127.3109	359.4169	25.37615	1080.340	699.6656	47.22471	8.418664
#1	-.001870	.0000098	-.001177	-.000657	-.002229	.0151235	.0115324
#2	-.003916	-.001793	-.000786	.001814	.002385	.0336443	.0106847
#3	.000536	.004479	-.000768	-.000753	-.001195	.0166082	.0097398

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000156	.0001233	5.562907	-.000630	.0047422	-.006516	.1123237
Stddev	.000172	.0000426	.009554	.000230	.0003697	.005231	.0352004
%RSD	110.1997	34.55004	.1717466	36.43339	7.796526	80.28404	31.33834
#1	-.000349	.0001664	5.554294	-.000380	.0043199	-.004250	.1520228
#2	-.000099	.0001224	5.561244	-.000678	.0050077	-.002800	.1000272
#3	-.000020	.0000812	5.573184	-.000832	.0048990	-.012498	.0849210

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0522480	1.294139	.0018987	.0006497	3.102368	-.000818	.0142118
Stddev	.0002146	.015394	.0002580	.0009907	.434424	.006191	.0039125
%RSD	.4107369	1.189523	13.58839	152.4809	14.00297	757.0049	27.53013
#1	.0522346	1.306764	.0017466	.0004163	2.999785	-.007005	.0119857
#2	.0524689	1.298662	.0017529	.0017362	2.728417	-.000826	.0187294
#3	.0520403	1.276990	.0021966	-.000203	3.578903	.005377	.0119203

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.205566	-.000865	.0104831	.0060398	.6973926	.6299170	-.001349
Stddev	.135938	.000657	.0010492	.0004730	.0024233	.0074484	.000476
%RSD	6.163402	75.99629	10.00858	7.831227	.3474876	1.182434	35.32641
#1	2.342037	-.000133	.0096717	.0057560	.6998420	.6366278	-.000833
#2	2.070167	-.001056	.0101096	.0057775	.6973397	.6312200	-.001439
#3	2.204493	-.001405	.0116679	.0065858	.6949961	.6219031	-.001773

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1315-01LX5 Acquired: 02/12/2025 14:36:40 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA8L Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	-.002347	.0273873	.0095946
Stddev	.003669	.0001351	.0027186
%RSD	156.3085	.4931083	28.33466
#1	-.003772	.0273799	.0101691
#2	.001820	.0272561	.0119800
#3	-.005089	.0275259	.0066346

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4402.380	38176.21	4333.253	3060.715	5119.822
Stddev	5.252	138.17	18.215	20.626	5.442
%RSD	.1193104	.3619139	.4203437	.6739028	.1062962
#1	4396.461	38209.10	4317.388	3060.397	5115.971
#2	4406.486	38294.96	4329.228	3081.498	5126.048
#3	4404.192	38024.57	4353.144	3040.250	5117.449

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1315-03 Acquired: 02/12/2025 14:40:42 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA8S Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0478048	.0545450	.0155497	.0949813	.0964707	1.991976	2.074616
Stddev	.0021827	.0009142	.0005444	.0018118	.0020127	.024912	.008703
%RSD	4.565776	1.675977	3.500969	1.907495	2.086295	1.250631	.4194849
#1	.0503126	.0545446	.0149266	.0931527	.0961432	1.971883	2.083811
#2	.0467673	.0536310	.0159331	.0967758	.0946419	1.984196	2.073530
#3	.0463343	.0554594	.0157893	.0950152	.0986270	2.019850	2.066507

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0545770	.0469486	26.90465	.2157857	.4923351	.2532694	1.518512
Stddev	.0006060	.0001574	.08848	.0010717	.0005676	.0040686	.015375
%RSD	1.110301	.3353195	.3288667	.4966573	.1152877	1.606417	1.012488
#1	.0543520	.0471302	27.00248	.2148749	.4920034	.2524214	1.504028
#2	.0541156	.0468520	26.88122	.2155154	.4920114	.2576952	1.534645
#3	.0552632	.0468635	26.83024	.2169666	.4929905	.2496917	1.516863

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.7749368	6.336698	.4885911	.0359219	15.55797	.5248031	.5250688
Stddev	.0007133	.020343	.0005582	.0014281	.78830	.0063660	.0034631
%RSD	.0920496	.3210345	.1142493	3.975689	5.066850	1.213022	.6595431
#1	.7757361	6.346500	.4879467	.0362540	16.34097	.5276766	.5290343
#2	.7747093	6.313309	.4888987	.0343570	15.56845	.5292257	.5226399
#3	.7743649	6.350284	.4889279	.0371548	14.76448	.5175069	.5235322

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.819782	.0052499	.0503883	.0279029	3.555076	3.204889	-.009533
Stddev	.180867	.0028705	.0011665	.0001580	.003959	.016904	.000614
%RSD	1.841863	54.67627	2.315019	.5663061	.1113586	.5274456	6.445289
#1	9.611356	.0021260	.0499939	.0280732	3.551145	3.203821	-.009698
#2	9.912523	.0077713	.0494701	.0278742	3.555020	3.188545	-.008853
#3	9.935468	.0058525	.0517009	.0277611	3.559062	3.222302	-.010048

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: Q1315-03 Acquired: 02/12/2025 14:40:42 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: MBHHA8S Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	-.000056	.1316911	.0061584
Stddev	.003572	.0002289	.0032677
%RSD	6412.714	.1737951	53.06047
#1	.002630	.1316752	.0025303
#2	.001312	.1314707	.0088698
#3	-.004109	.1319276	.0070752

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4462.906	38628.09	4359.364	3129.340	5034.992
Stddev	18.824	174.05	32.881	13.538	14.132
%RSD	.4217928	.4505715	.7542501	.4326130	.2806792
#1	4483.632	38804.43	4385.913	3144.052	5049.923
#2	4458.212	38623.41	4369.595	3126.561	5033.229
#3	4446.872	38456.43	4322.584	3117.407	5021.824

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: PB166670BL Acquired: 02/12/2025 14:57:38 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: PBW670 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0003228	.0009221	-.000874	.0002341	-.000738	.0162616	.0006964
Stddev	.0024511	.0001611	.000693	.0019567	.000852	.0065654	.0005991
%RSD	759.3591	17.47552	79.32002	835.6703	115.5365	40.37365	86.03525
#1	.0031369	.0007847	-.001302	.0020804	-.000119	.0216096	.0013637
#2	-.000822	.0008822	-.000074	.0004389	-.000385	.0089343	.0002047
#3	-.001346	.0010994	-.001245	-.001817	-.001710	.0182410	.0005208

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0000375	.0000250	.0076838	-.000414	-.000224	-.006451	.0160573
Stddev	.0001258	.0000323	.0214744	.000147	.000362	.005528	.0084003
%RSD	335.9382	129.0963	279.4773	35.46894	161.2931	85.68932	52.31442
#1	-.000103	.0000611	.0314353	-.000362	-.000153	-.001875	.0210193
#2	.000077	-.000001	-.010361	-.000580	-.000616	-.004884	.0063584
#3	.000139	.000015	.001977	-.000300	.000097	-.012592	.0207943

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000297	-.013667	-.000054	.0005035	.1077125	-.001491	-.002226
Stddev	.000642	.020932	.000129	.0011693	.3945350	.002574	.001383
%RSD	216.4828	153.1651	238.3979	232.2390	366.2853	172.6545	62.10065
#1	-.000849	-.017711	-.000199	-.000462	.0411197	-.002760	-.002521
#2	-.000448	.008993	.000047	.001804	-.249288	-.003184	-.000720
#3	.000408	-.032281	-.000010	.000169	.531306	.001471	-.003438

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.5515887	.0004301	.0094844	.0005233	-.000239	.0005259	.0005822
Stddev	.0642256	.0026525	.0014250	.0000146	.000813	.0003538	.0005872
%RSD	11.64375	616.6574	15.02511	2.792717	340.5959	67.27645	100.8689
#1	.4806183	.0006927	.0087354	.0005397	-.000793	.0008881	.0012484
#2	.5684370	.0029416	.0085901	.0005118	-.000618	.0001811	.0003580
#3	.6057107	-.002344	.0111277	.0005183	.000695	.0005084	.0001400

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: PB166670BL Acquired: 02/12/2025 14:57:38 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: PBW670 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	.0011969	-.000149	.0118796
Stddev	.0010599	.000028	.0043838
%RSD	88.55084	18.67524	36.90228
#1	.0021012	-.000124	.0133463
#2	.0014591	-.000179	.0069505
#3	.0000306	-.000145	.0153420

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4438.584	38699.83	4335.235	3112.723	5309.988
Stddev	7.760	137.97	10.563	7.003	11.333
%RSD	.1748347	.3565022	.2436625	.2249863	.2134269
#1	4435.994	38846.78	4329.650	3114.785	5302.224
#2	4447.308	38679.64	4347.419	3118.464	5322.993
#3	4432.450	38573.07	4328.637	3104.921	5304.748

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: PB166670BS Acquired: 02/12/2025 15:01:44 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: LCS670 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0248918	.0529841	.0157824	.0682885	.1147844	.4268937
Stddev	.0022173	.0009864	.0018337	.0046170	.0009252	.0139642
%RSD	8.907721	1.861683	11.61875	6.761005	.8060574	3.271124
#1	.0274008	.0531887	.0137678	.0632166	.1154283	.4382449
#2	.0231954	.0538521	.0173541	.0722469	.1152009	.4311360
#3	.0240792	.0519114	.0162252	.0694019	.1137242	.4113003

Elem	Ba4934	Be2348	Cd2144	Ca3736	Cr2677	Co2286
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4116964	.0106586	.0094341	10.45407	.0213639	.1010616
Stddev	.0053775	.0000757	.0001188	.03647	.0004802	.0006268
%RSD	1.306185	.7102007	1.258949	.3488216	2.247880	.6201773
#1	.4149274	.0105876	.0094079	10.44170	.0218066	.1014690
#2	.4146731	.0107383	.0093306	10.49512	.0208533	.1003399
#3	.4054887	.0106500	.0095638	10.42540	.0214318	.1013759

Elem	Cu3247	Fe2598	Mn2576	Mg2790	Ni2316	Ag3280
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0520106	.2167890	.0323343	10.13559	.0768988	.0209322
Stddev	.0059348	.0035515	.0009623	.02400	.0007824	.0009932
%RSD	11.41074	1.638243	2.976126	.2368250	1.017469	4.744953
#1	.0457007	.2198003	.0332127	10.11582	.0777365	.0219906
#2	.0528503	.2176943	.0324846	10.16230	.0761869	.0207858
#3	.0574809	.2128724	.0313057	10.12866	.0767731	.0200204

Elem	Na8183	V_2924	Zn2138	K_7698	P_1774	B_2496
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.68007	.1042889	.1149724	10.70087	.0181113	F .0048652
Stddev	.36779	.0015197	.0025551	.20460	.0005281	.0012211
%RSD	3.443668	1.457165	2.222354	1.911958	2.915665	25.09845
#1	10.76074	.1048860	.1132356	10.82908	.0181453	.0062270
#2	11.00083	.1025614	.1137753	10.80861	.0186216	.0045007
#3	10.27864	.1054194	.1179063	10.46492	.0175671	.0038678

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: PB166670BS Acquired: 02/12/2025 15:01:44 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: LCS670 Custom ID2: Custom ID3:
Comment:

Elem	Mo2020	S_1820	Si2516	Sn1899	Ti3361	Sr4077
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0211258	.1666951	F 1.009713	.0150773	.2029348	.2108940
Stddev	.0003474	.0032406	.004832	.0003554	.0003364	.0009468
%RSD	1.644512	1.944031	.4785816	2.357227	.1657423	.4489242
#1	.0207425	.1685133	1.014824	.0146967	.2030318	.2117287
#2	.0214200	.1629537	1.009098	.0154006	.2032121	.2110879
#3	.0212149	.1686184	1.005219	.0151346	.2025606	.2098653

Elem	Li6707
Units	ppm
Avg	F .0407462
Stddev	.0016510
%RSD	4.051851
#1	.0410774
#2	.0389547
#3	.0422065

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4342.008	37604.47	4297.113	3040.249	4909.368
Stddev	7.120	161.99	19.333	11.171	7.368
%RSD	.1639740	.4307768	.4499099	.3674504	.1500719
#1	4346.729	37417.63	4281.951	3027.411	4908.219
#2	4345.477	37705.73	4290.505	3047.756	4917.243
#3	4333.819	37690.03	4318.884	3045.582	4902.642

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: CCV012 Acquired: 02/12/2025 15:05:44 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCV012 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.777725	4.732345	24.10192	4.769474	4.867937	387.4174	9.969990
Stddev	.009777	.004550	.01938	.007787	.008012	1.8735	.017813
%RSD	.2046282	.0961488	.0804032	.1632571	.1645782	.4835813	.1786643
#1	4.786438	4.731604	24.11858	4.770782	4.875228	385.9186	9.958530
#2	4.779585	4.737221	24.10653	4.761117	4.859360	389.5177	9.990511
#3	4.767152	4.728211	24.08065	4.776524	4.869223	386.8157	9.960927

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4913589	2.436314	393.5166	15.42262	2.431237	14.59440	387.9924
Stddev	.0059788	.002867	.9669	.02322	.003615	.03990	1.4209
%RSD	1.216783	.1176829	.2457087	.1505710	.1487015	.2733641	.3662095
#1	.4921726	2.439023	392.6711	15.39967	2.433333	14.59500	386.8620
#2	.4968891	2.436608	394.5708	15.42208	2.433316	14.63399	389.5874
#3	.4850149	2.433312	393.3079	15.44611	2.427063	14.55420	387.5279

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	14.22367	383.5744	2.427489	1.253763	388.7086	2.387796	14.34134
Stddev	.03700	1.8393	.000624	.001958	1.1314	.007494	.13156
%RSD	.2601404	.4795100	.0257144	.1561439	.2910743	.3138273	.9173309
#1	14.20312	381.9496	2.428208	1.255696	387.7521	2.391918	14.24604
#2	14.26639	385.5713	2.427173	1.253812	389.9575	2.392324	14.28655
#3	14.20151	383.2023	2.427086	1.251782	388.4161	2.379147	14.49144

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	146.5797	4.883351	4.788982	4.811771	4.892491	4.589425	4.860481
Stddev	.6827	.002983	.056293	.005472	.008017	.055243	.007046
%RSD	.4657706	.0610786	1.175467	.1137192	.1638634	1.203691	.1449684
#1	145.9380	4.881889	4.794673	4.811238	4.892358	4.595543	4.868358
#2	147.2971	4.881382	4.842214	4.806585	4.900574	4.641353	4.854778
#3	146.5040	4.886783	4.730060	4.817490	4.884542	4.531377	4.858307

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: CCV012 Acquired: 02/12/2025 15:05:44 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCV012 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	4.817721	4.595279	4.994597
Stddev	.019636	.044865	.015491
%RSD	.4075888	.9763218	.3101526
#1	4.796835	4.544482	4.977183
#2	4.835807	4.629487	5.006846
#3	4.820522	4.611867	4.999760

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3677.530	31505.30	4125.277	2561.323	3689.973
Stddev	10.286	139.92	29.384	7.023	2.887
%RSD	.2796907	.4441124	.7122963	.2741952	.0782312
#1	3677.394	31582.22	4115.161	2561.045	3690.781
#2	3687.883	31589.89	4102.287	2568.481	3692.369
#3	3667.313	31343.80	4158.383	2554.443	3686.768

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: CCB012 Acquired: 02/12/2025 15:09:28 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCB012 Custom ID2: Custom ID3:
Comment:

Elem	As1890	Tl1908	Pb2203	Se1960	Sb2068	Al3961	Ba4934
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0007618	.0017525	-.001265	.0026277	.0006487	.0308545	-.001865
Stddev	.0009136	.0014561	.001405	.0039856	.0017060	.0031105	.001268
%RSD	119.9183	83.08545	111.0415	151.6763	262.9692	10.08131	67.97942
#1	.0018167	.0004073	.000295	.0060929	.0024835	.0278870	-.000488
#2	.0002251	.0032986	-.002431	.0035179	.0003522	.0340907	-.002123
#3	.0002437	.0015517	-.001659	-.001728	-.000890	.0305858	-.002983

Elem	Be2348	Cd2144	Ca3736	Cr2677	Co2286	Cu3247	Fe2598
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.000020	.0000760	.0183258	-.000409	-.000273	-.002027	.0195654
Stddev	.000097	.0000402	.0124548	.000575	.000219	.009612	.0193095
%RSD	495.3703	52.89749	67.96285	140.7498	80.09676	474.3101	98.69187
#1	.000082	.0001217	.0041235	-.000060	-.000372	.005217	.0050864
#2	-.000029	.0000461	.0234672	-.001072	-.000022	-.012931	.0414891
#3	-.000111	.0000602	.0273868	-.000093	-.000425	.001635	.0121208

Elem	Mn2576	Mg2790	Ni2316	Ag3280	Na8183	V_2924	Zn2138
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.0017889	.0223298	-.000214	-.000058	.5130144	.0006457	.0010210
Stddev	.0005665	.0093000	.000350	.000444	.2428160	.0033392	.0002700
%RSD	31.66833	41.64853	163.2224	772.2847	47.33124	517.1543	26.44905
#1	.0023442	.0268515	-.000439	.000222	.3175088	-.001014	.0012757
#2	.0018108	.0285044	.000189	.000175	.4367189	.004490	.0007379
#3	.0012117	.0116335	-.000392	-.000570	.7848154	-.001538	.0010494

Elem	K_7698	P_1774	B_2496	Mo2020	S_1820	Si2516	Sn1899
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.4384530	.0013862	.0103778	.0011997	.0009120	.0002901	-.000130
Stddev	.2500591	.0016516	.0017602	.0002190	.0025016	.0008835	.000461
%RSD	57.03213	119.1514	16.96138	18.25621	274.2956	304.5073	355.6548
#1	.1930853	.0007077	.0109028	.0009477	-.001477	-.000713	-.000658
#2	.6929532	.0001818	.0118158	.0013442	.003513	.000630	.000191
#3	.4293205	.0032690	.0084148	.0013071	.000700	.000953	.000078

Reviewed By:kareem
On:2/13/2025 1:12:52 PM
Inst Id :P5

Sample Name: CCB012 Acquired: 02/12/2025 15:09:28 Type: Unk
Method: SFAM01.1 INSTRUMENT P5 WITH 6 POINT ICAL-2(v136) Mode: CONC Corr. Factor: 1.00000
User: Kareem Custom ID1: CCB012 Custom ID2: Custom ID3:
Comment:

Elem	Ti3361	Sr4077	Li6707
Units	ppm	ppm	ppm
Avg	-.000157	-.000074	.0057107
Stddev	.003242	.000125	.0024359
%RSD	2067.381	168.9425	42.65576
#1	.000534	.000054	.0085044
#2	.002684	-.000081	.0040313
#3	-.003689	-.000195	.0045963

Int. Std.	Y_2243	Y_3600	Y_3710	Y_2243	In2306
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	4428.926	38435.07	4334.001	3103.548	5319.696
Stddev	14.289	102.56	31.189	4.761	12.102
%RSD	.3226393	.2668305	.7196461	.1534190	.2274919
#1	4412.949	38334.88	4368.822	3099.389	5307.179
#2	4433.346	38539.84	4308.628	3102.512	5320.573
#3	4440.483	38430.48	4324.552	3108.741	5331.335

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Prep Standard - Chemical Standard Summary

Order ID : Q1314

Test : Metals CLP Full

Prepbatch ID : PB166600,PB166670,

Sequence ID/Qc Batch ID: LB134644,LB134696,

Standard ID :
MP83500,MP84041,MP84063,MP84070,MP84204,MP84218,MP84219,MP84230,MP84231,MP84297,MP84381,MP84382,MP84383,MP84384,MP84385,MP84386,MP84387,MP84388,MP84389,MP84390,MP84391,MP84392,

Chemical ID :
M4884,M5130,M5218,M5223,M5289,M5298,M5393,M5429,M5467,M5472,M5476,M5496,M5497,M5498,M5513,M5519,M5565,M5658,M5697,M5798,M5799,M5800,M5801,M5802,M5806,M5811,M5815,M5817,M5819,M5875,M5942,M5959,M5961,M5962,M5970,M5976,M5977,M5978,M5985,M5990,M6021,M6023,M6025,M6028,M6030,M6032,M6077,M6121,M6125,M6126,M6127,M6128,M6144,M6145,M6146,M6147,M6148,M6149,mp84446,W3112,

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
902	ICP AES CAL BLK (SO/ICB/CCB)	MP83500	12/06/2024	01/24/2025	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

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
169	1:1HNO3	MP84041	01/14/2025	07/14/2025	Eman Mughal	None	None	Sarabjit Jaswal 01/16/2025

FROM 1250.00000ml of M6126 + 1250.00000ml of W3112 = 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
994	ICPAES ISM01.2 S1 (CONC.)	MP84063	01/14/2025	02/14/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 01/16/2025

FROM 0.02000ml of M5815 + 0.03000ml of M5429 + 0.10000ml of M5798 + 0.10000ml of M6028 + 0.14000ml of M5799 + 0.20000ml of M5298 + 0.20000ml of M5476 + 0.20000ml of M5658 + 0.20000ml of M5801 + 0.20000ml of M5817 + 0.20000ml of M5976 + 0.20000ml of M6025 + 0.20000ml of M6030 + 0.30000ml of M6128 + 0.40000ml of M5496 + 0.50000ml of M5697 + 0.50000ml of M6023 + 0.70000ml of M5962 + 0.80000ml of M5961 + 1.00000ml of M5800 + 1.00000ml of M6021 + 1.20000ml of M5802 + 1.20000ml of M5819 + 10.00000ml of M5497 + 10.00000ml of M5519 + 10.00000ml of M5806 + 10.00000ml of M6127 + 2.00000ml of M5942 + 4.00000ml of M6032 + 34.24000ml of MP83500 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
921	ICPAES SPIKE SOL#6	MP84070	01/14/2025	02/14/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 01/16/2025

FROM 2.50000ml of M5962 + 50.00000ml of M5565 + 50.00000ml of M5990 + 147.50000ml of MP83500 = 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
902	ICP AES CAL BLK (SO/ICB/CCB)	MP84204	01/24/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 01/27/2025

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
919	ICP AES INTERNAL STD	MP84218	01/24/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 01/27/2025

FROM 1.00000ml of M5959 + 10.00000ml of M5985 + 1969.00000ml of W3112 + 20.00000ml of M6126 = Final Quantity: 2000.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
903	ICP AES RINSE SOLN	MP84219	01/24/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 01/27/2025

FROM 200.00000ml of M6126 + 9800.00000ml of W3112 = Final Quantity: 10000.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
904	ICP AES ICSA SOLN	MP84230	01/24/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 01/28/2025

FROM 25.00000ml of M5130 + 225.00000ml of MP84204 = 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
3494	ICP AES ICSAB SOLN-1	MP84231	01/24/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 01/28/2025

FROM 0.01000ml of M5815 + 0.01000ml of M5817 + 0.10000ml of M5472 + 0.10000ml of M5970 + 0.10000ml of M6077 + 10.00000ml of M5130 + 10.00000ml of M5223 + 79.50000ml of MP84204 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
170	1:1HCL	MP84297	01/31/2025	02/28/2025	Eman Mughal	None	None	Sarabjit Jaswal 01/31/2025

FROM 1250.00000ml of M6121 + 1250.00000ml of W3112 = 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
2480	ICP AES STD 6 ISM01.3	MP84381	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 4.00000ml of M5289 + 4.00000ml of M5497 + 4.00000ml of M5811 + 4.00000ml of M6127 + 4.00000ml of M6144 + 30.00000ml of MP84204 = Final Quantity: 50.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1004	ICPAES ISM01.2 (S5)	MP84382	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 0.25000ml of M5798 + 0.50000ml of M5429 + 0.50000ml of M5476 + 0.50000ml of M5815 + 0.50000ml of M5817 + 12.50000ml of M5519 + 12.50000ml of M6128 + 12.50000ml of M6144 + 13.75000ml of M5697 + 14.50000ml of M5496 + 14.50000ml of M5658 + 14.50000ml of M5811 + 2.00000ml of M5513 + 22.50000ml of M5497 + 22.50000ml of M6127 + 5.00000ml of M4884 + 5.00000ml of M5393 + 5.00000ml of M5875 + 5.00000ml of M6077 + 5.00000ml of M6146 + 303.50000ml of MP84204 = Final Quantity: 500.000 ml

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Fax : 908 789 8922

Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1004	ICPAES ISM01.2 (S5)	MP84383	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 0.25000ml of M5798 + 0.50000ml of M5429 + 0.50000ml of M5476 + 0.50000ml of M5815 + 0.50000ml of M5817 + 12.50000ml of M5519 + 12.50000ml of M6128 + 12.50000ml of M6144 + 12.50000ml of M6145 + 13.75000ml of M5697 + 14.50000ml of M5496 + 14.50000ml of M5658 + 14.50000ml of M5811 + 2.00000ml of M5513 + 22.50000ml of M5497 + 22.50000ml of M6127 + 5.00000ml of M4884 + 5.00000ml of M5393 + 5.00000ml of M5875 + 5.00000ml of M6077 + 5.00000ml of M6146 + 303.50000ml of MP84204 = Final Quantity: 500.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1005	ICPAES ISM01.2(S4)	MP84384	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 250.00000ml of MP84204 + 250.00000ml of MP84382 = Final Quantity: 500.000 ml

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Fax : 908 789 8922

Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1007	ICPAES ISM01.2(S3)	MP84385	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 25.00000ml of MP84382 + 75.00000ml of MP84204 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1008	ICPAES ISM01.2(S2)	MP84386	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 12.50000ml of MP84382 + 87.50000ml of MP84204 = Final Quantity: 100.000 ml

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Fax : 908 789 8922

Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
994	ICPAES ISM01.2 S1 (CONC.)	MP84387	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 0.02000ml of M5815 + 0.03000ml of M5429 + 0.10000ml of M5798 + 0.10000ml of M6028 + 0.14000ml of M5799 + 0.20000ml of M5476 + 0.20000ml of M5658 + 0.20000ml of M5801 + 0.20000ml of M5811 + 0.20000ml of M5817 + 0.20000ml of M5977 + 0.20000ml of M6025 + 0.20000ml of M6030 + 0.30000ml of M6128 + 0.40000ml of M5496 + 0.50000ml of M5697 + 0.50000ml of M6023 + 0.70000ml of M5962 + 0.80000ml of M5961 + 1.00000ml of M5800 + 1.00000ml of M6021 + 1.20000ml of M6145 + 1.20000ml of M6146 + 10.00000ml of M4884 + 10.00000ml of M5498 + 10.00000ml of M5519 + 10.00000ml of M6127 + 10.00000ml of M6144 + 2.00000ml of M5978 + 4.00000ml of M6032 + 34.24000ml of MP84204 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1003	ICPAES ISM01.2 S1	MP84388	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 0.50000ml of MP84387 + 99.50000ml of MP84204 = 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
912	ICP AES ICV SOLN	MP84389	01/27/2025	02/08/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 0.02500ml of M5429 + 0.02500ml of M5815 + 0.02500ml of M5817 + 0.10000ml of M5467 + 0.25000ml of M5218 + 0.25000ml of M5472 + 10.00000ml of M6147 + 89.77500ml of MP84204 = Final Quantity: 100.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
904	ICP AES ICSA SOLN	MP84390	01/27/2025	02/08/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 25.00000ml of M6148 + 225.00000ml of MP84204 = Final Quantity: 250.000 ml

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Metals STANDARD PREPARATION LOG

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
905	ICP AES ICSAB SOLN	MP84391	01/27/2025	02/08/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 25.00000ml of M6148 + 25.00000ml of M6149 + 200.00000ml of MP84204 = Final Quantity: 250.000 ml

Recipe ID	NAME	NO.	Prep Date	Expiration Date	Prepared By	ScaleID	PipetteID	Supervised By
1119	ICPAES ISM01.2(CCV)	MP84392	01/27/2025	02/24/2025	Kareem Khairalla	None	None	Sarabjit Jaswal 02/10/2025

FROM 0.75000ml of M5498 + 0.75000ml of M6127 + 1.22500ml of M5496 + 1.25000ml of M5811 + 1.25000ml of M6144 + 19.77500ml of MP84204 + 25.00000ml of MP84382 = Final Quantity: 50.000 ml

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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	030921	03/09/2025	08/06/2021 / jaswal	08/05/2021 / jaswal	M4884

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	01/31/2025	05/20/2024 / jaswal	04/20/2021 / bin	M5130

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
EPA	PART B / ICSAB (ICP) STOCK SOLN	ICSB-0710	01/31/2025	05/20/2024 / jaswal	04/20/2021 / bin	M5223

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58126 / Fe, 10000 PPM, 500 ml	020422	02/04/2025	05/02/2023 / jaswal	06/15/2022 / jaswal	M5298

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CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CLPP-CAL-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	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.	57038 / Sr, 1000 PPM, 125 ml	082922	08/29/2025	01/14/2025 / Jaswal	03/16/2023 / jaswal	M5472

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	58113 / Al, 10000 PPM, 500 ml	011623	01/16/2026	08/15/2023 / jaswal	03/17/2023 / bin	M5496

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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.	58120 / Ca, 10000 PPM, 500 ml	031523	03/15/2026	08/15/2023 / jaswal	03/17/2023 / bin	M5498

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

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CLPP-SPK-1 / SOIL/WATER SPIKE SOLN 1, 125mL	T2-MEB721963	07/27/2027	05/30/2023 / jaswal	05/26/2023 / jaswal	M5565

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

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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.	57004 / Be, 1000 PPM, 125 ml	102523	10/25/2026	02/09/2024 / bin	02/09/2024 / bin	M5798

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

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

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

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

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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.	58126 / Fe, 10000 PPM, 500 ml	051523	05/15/2026	02/06/2025 / kareem	01/03/2024 / jaswal	M5811

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.	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.	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 #
Inorganic Ventures	CLPP-CAL-1 / CLP CAL SOLUTION #1, 125mL	T2-MEB714417	01/27/2027	04/19/2024 / jaswal	02/22/2024 / jaswal	M5875

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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	CGTI1-1 / TITANIUM 125mL 1000ug/mL	T2-TI719972	06/17/2027	06/18/2024 / Jaswal	02/22/2024 / Jaswal	M5942

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.	57028 / Ni, 1000 PPM, 125 ml	041124	04/11/2027	07/02/2024 / Jaswal	06/11/2024 / Jaswal	M5961

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

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

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

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Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	CGMO1-1 / MOLYBDENUM 125mL 1000ug/mL	T2-MO720876	07/17/2027	01/16/2025 / JANVI	02/22/2024 / Jaswal	M5977

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 #
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	CLPP-SPK-5 / CLP Spike Standard 5	V2-MEB742037	03/12/2029	10/04/2024 / Jaswal	02/22/2024 / Jaswal	M5990

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

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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.	57082 / Pb, 1000 PPM, 125 ml	061224	11/09/2026	08/05/2024 / Jaswal	08/05/2024 / Jaswal	M6025

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	08/05/2024 / Jaswal	M6028

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Absolute Standards, Inc.	57056 / Ba, 1000 PPM, 125 ml	010924	01/09/2027	01/14/2025 / Jaswal	08/05/2024 / Jaswal	M6032

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	Z9651Q / CHEM-CLP-4/.25L	V2-MEB746762	09/06/2029	01/23/2025 / kareem	09/19/2024 / kareem	M6077

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

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

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	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 #
Absolute Standards, Inc.	58112 / Mg, 10000 PPM, 500 ml	112124	11/21/2027	01/13/2025 / kareem	01/13/2025 / kareem	M6127

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	101124	10/11/2027	01/13/2025 / kareem	01/13/2025 / kareem	M6128

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	072424	07/24/2027	01/23/2025 / kareem	01/13/2025 / Jaswal	M6144

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	121724	12/17/2027	02/04/2025 / jaswal	01/13/2025 / Jaswal	M6145

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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.	57051 / Sb, 1000 PPM, 125 ml	071724	07/17/2027	01/31/2025 / kareem	10/18/2024 / kareem	M6146

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
EPA	ICV-1 / ICV (ICP/ICPMS) STOCK SOLN	ICV1-1014	02/08/2025	02/06/2025 / kareem	02/20/2020 / kareem	M6147

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	02/08/2025	02/06/2025 / kareem	04/20/2021 / kareem	M6148

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	02/08/2025	02/06/2025 / kareem	04/20/2021 / kareem	M6149

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

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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-SPK-5
Lot Number:	V2-MEB742037
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	100 µg/mL ea: Antimony,
	50 µg/mL ea: Selenium, Cadmium, Thallium,
	40 µg/mL ea: Arsenic,
	20 µg/mL ea: Lead

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	100.0 ± 0.7 µg/mL	Arsenic, As	40.00 ± 0.26 µg/mL
Cadmium, Cd	49.99 ± 0.22 µg/mL	Lead, Pb	19.99 ± 0.09 µg/mL
Selenium, Se	50.00 ± 0.23 µg/mL	Thallium, Tl	50.00 ± 0.22 µg/mL

Density: 1.025 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
As	ICP Assay	3103a	100818
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Cd	Calculated		See Sec. 4.2
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Pb	Calculated		See Sec. 4.2
Sb	ICP Assay	3102a	140911
Se	ICP Assay	3149	100901
Se	Calculated		See Sec. 4.2
Tl	ICP Assay	3158	151215
Tl	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)

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**

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

March 12, 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

- March 12, 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 Approved By:

Joseph Burns
Custom VS Manager



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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

Certified Reference Material CRM

M6032

R: 8/5/24

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

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CERTIFIED WEIGHT REPORT:

Part Number:	**57056**		**Lot #**		
Lot Number:	**010924**	**Solvent:**	24002546	Nitric Acid	
Description:	**Barium (Ba)**				
		2%	40.0 (mL)	Nitric Acid	
Expiration Date:	010927				
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		

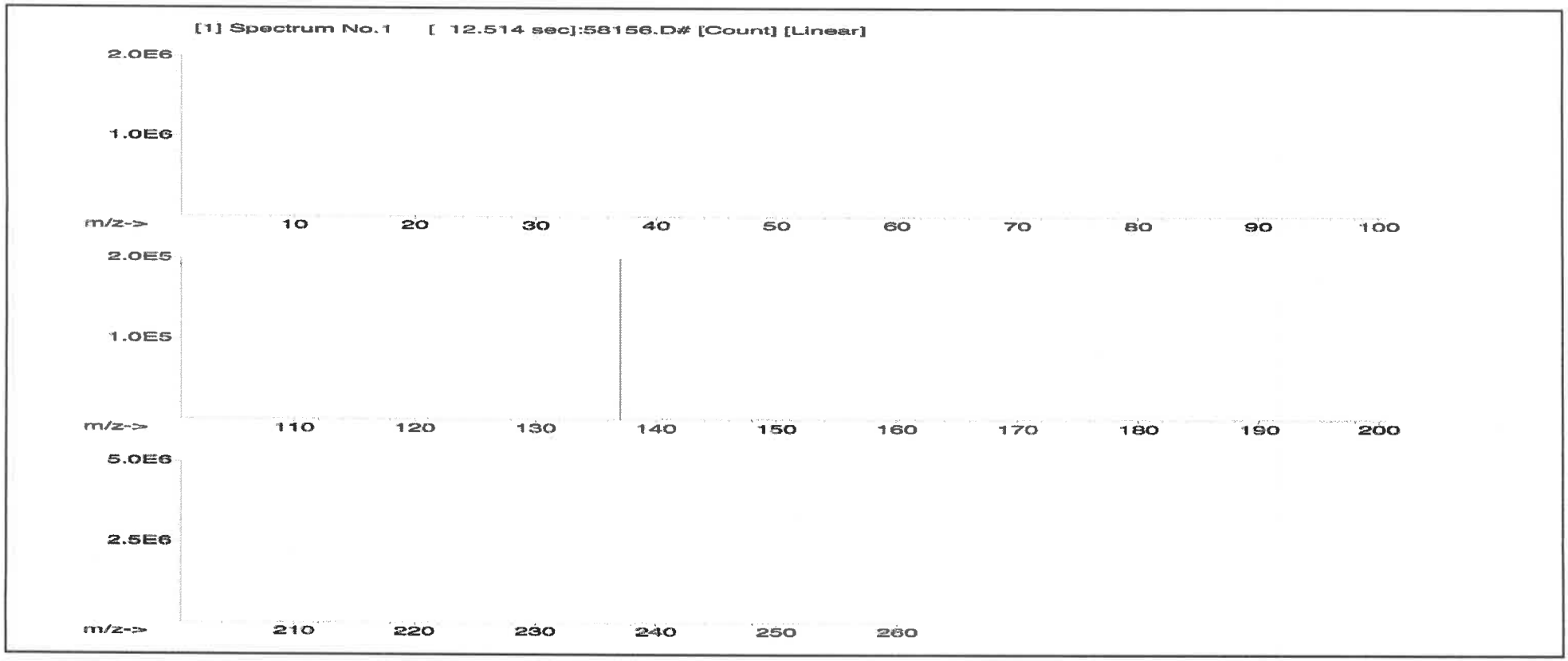
Giovanni Esposito

Formulated By:	Giovanni Esposito	010924

Pedro Rentas

Reviewed By:	Pedro L. Rentas	010924

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	3.82441	**1000.1**	**2.0**	10022-31-8	0.5 mg/m3	orl-rat 355 mg/kg	3104a



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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:

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

M6028

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

R: 8/5/24

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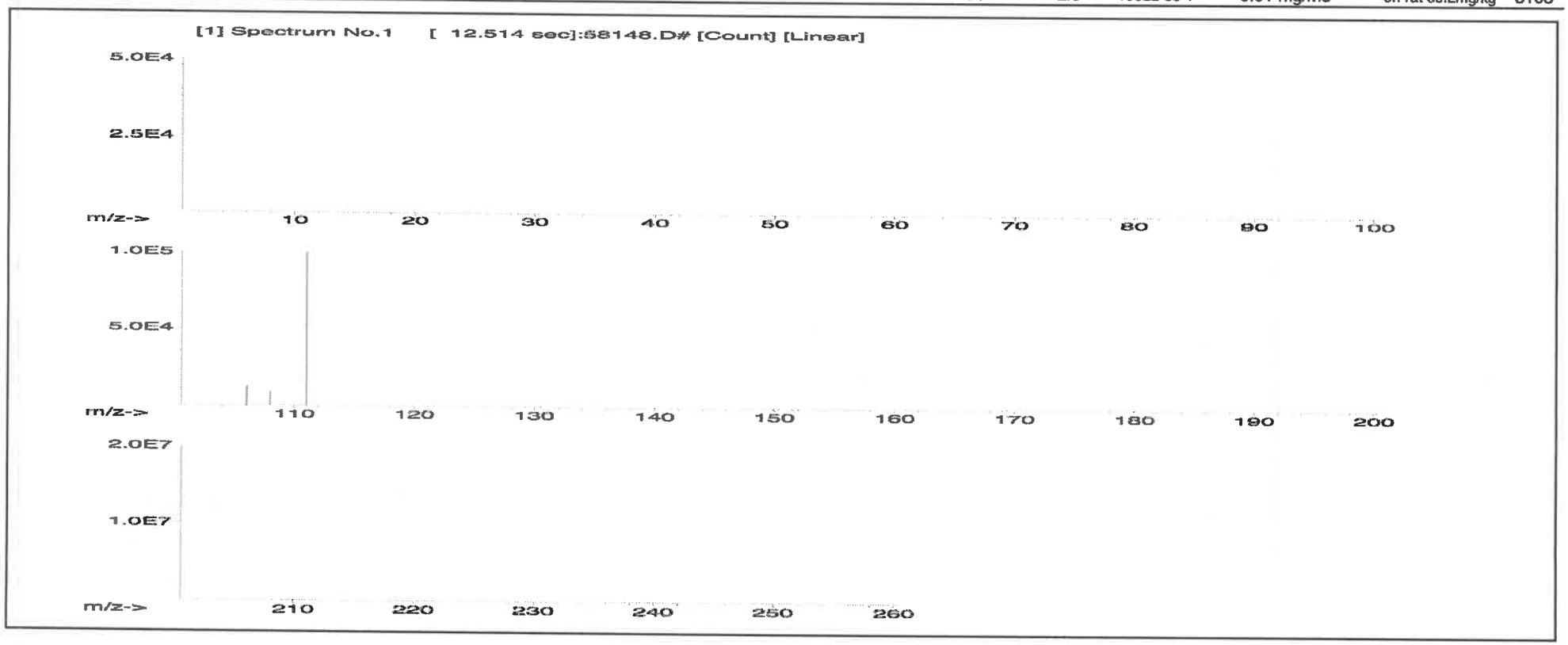
CERTIFIED WEIGHT REPORT:

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



237

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:

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

Certified by:

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

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Certificate of Analysis

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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:	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:

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

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

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

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

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

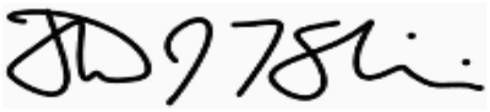
- Sealed TCT Bag Open Date: _____

- 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"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 13, 2022

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

11.2 Lot Expiration Date

- **January 13, 2027**

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

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

11.3 Period of Validity

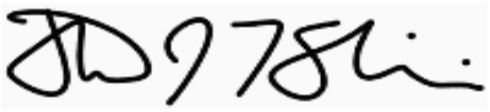
- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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

Certified Reference Material CRM

R : 01/03/24. M5810, M5811

ANAB ISO 17034 Accredited
AR-1539 Certificate Number
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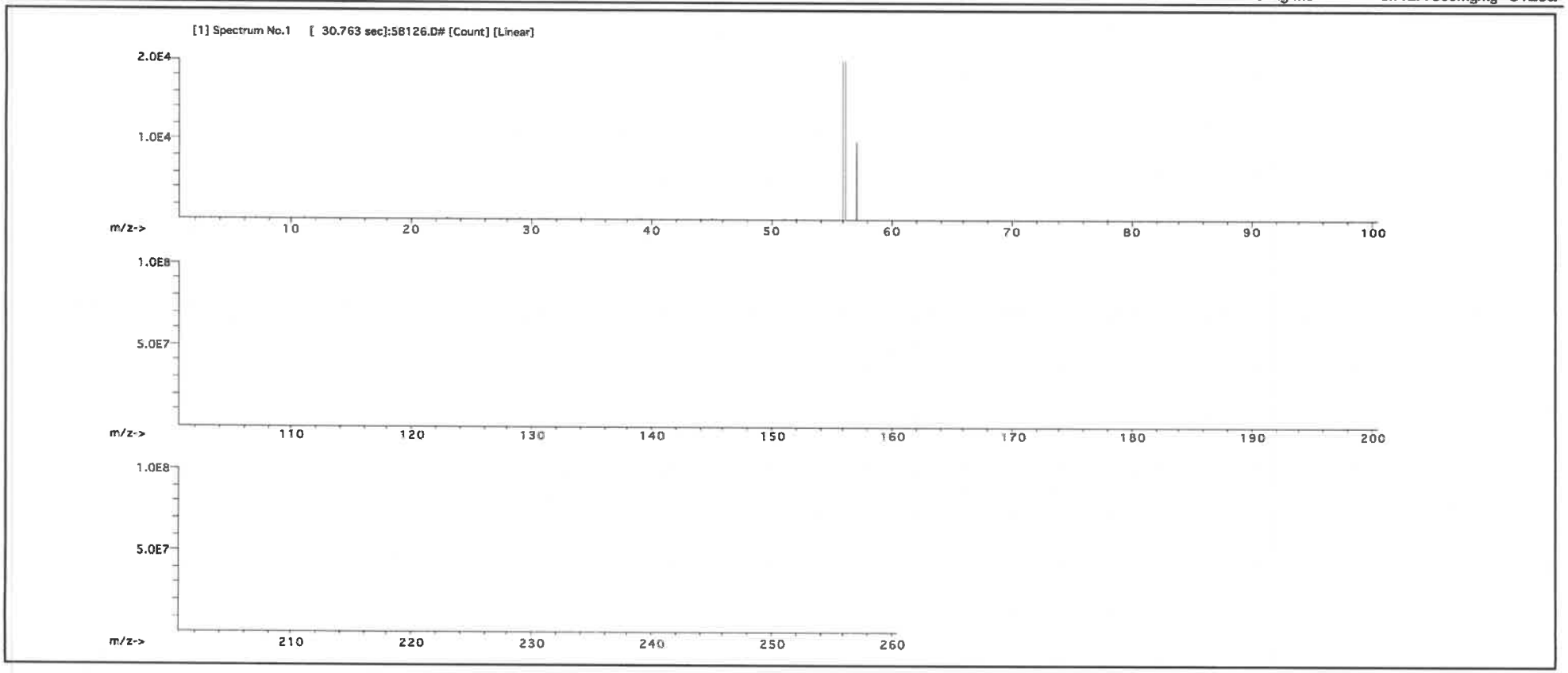
CERTIFIED WEIGHT REPORT:

		Lot #		
Part Number:	**58126**	**Solvent:**	21110221	Nitric Acid
Lot Number:	**051523**			
Description:	**Iron (Fe)**	5.0%	250.0 (mL)	Nitric Acid
Expiration Date:	051526			
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):	5000.1	0.12	Flask Uncertainty	

Giovanni Esposito

Formulated By:	Giovanni Esposito	051523
Reviewed By:	Pedro L. Rentas	051523

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	2302010-500	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



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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	<0.10
B	<0.02	Cu	<0.10	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

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

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www.absolutestandards.com

Certified Reference Material CRM

R: 8/5/24 M6025

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CERTIFIED WEIGHT REPORT:

Part Number: 57182
Lot Number: 110923
Description: Lead (Pb)

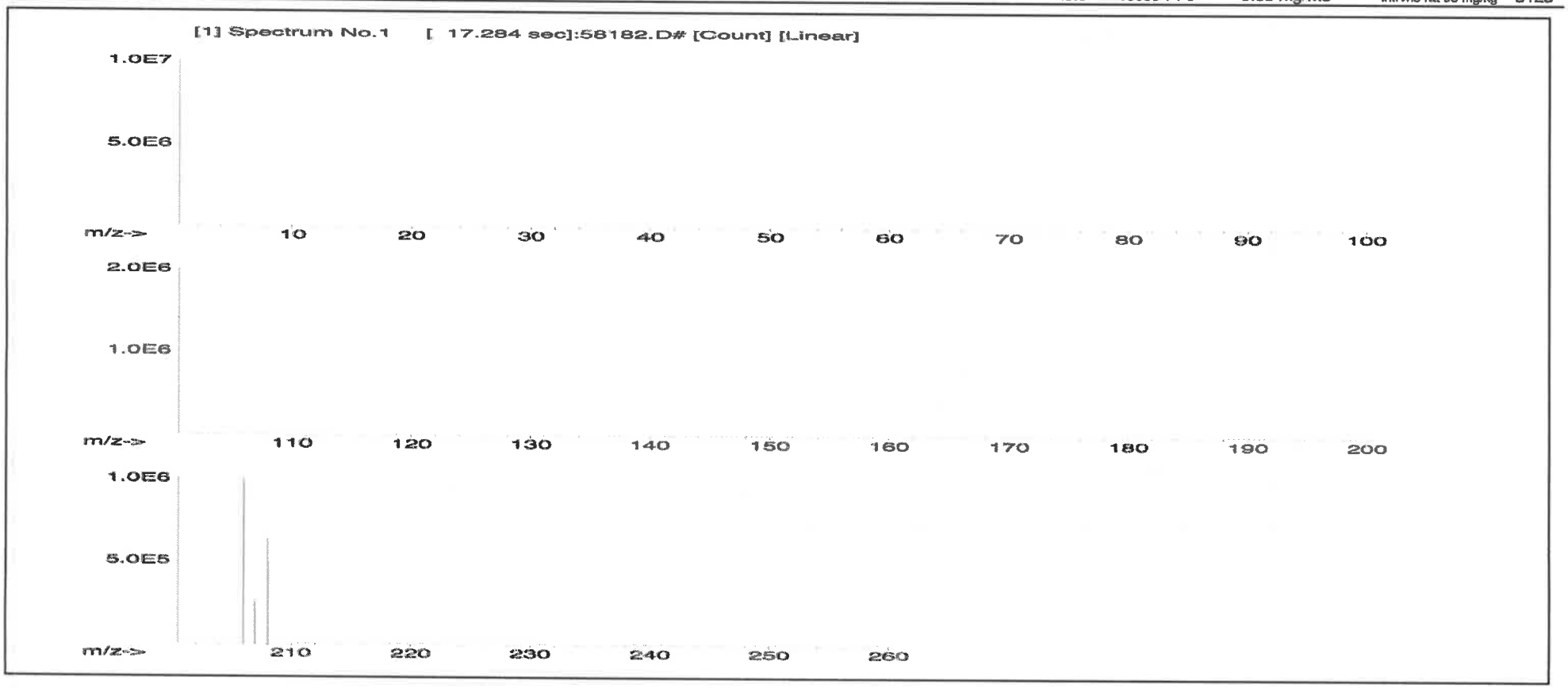
Expiration Date: 110926
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 2000.02

	Lot #		
Solvent:	24002546	Nitric Acid	
2%	40.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Formulated By:	Lawence Barry	110923
Reviewed By:	Pedro L. Rentas	110923

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Lead(II) nitrate (Pb)	IN029	PBD122016A1	10000	99.999	0.10	62.5	32.0006	32.0040	**10001.1**	**20.0**	10099-74-8	0.05 mg/m3	intrvns-rat 93 mg/kg	3128



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

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

(T)= Target analyte

Physical Characterization:

Certified by:

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

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

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Certified Reference Material CRM

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

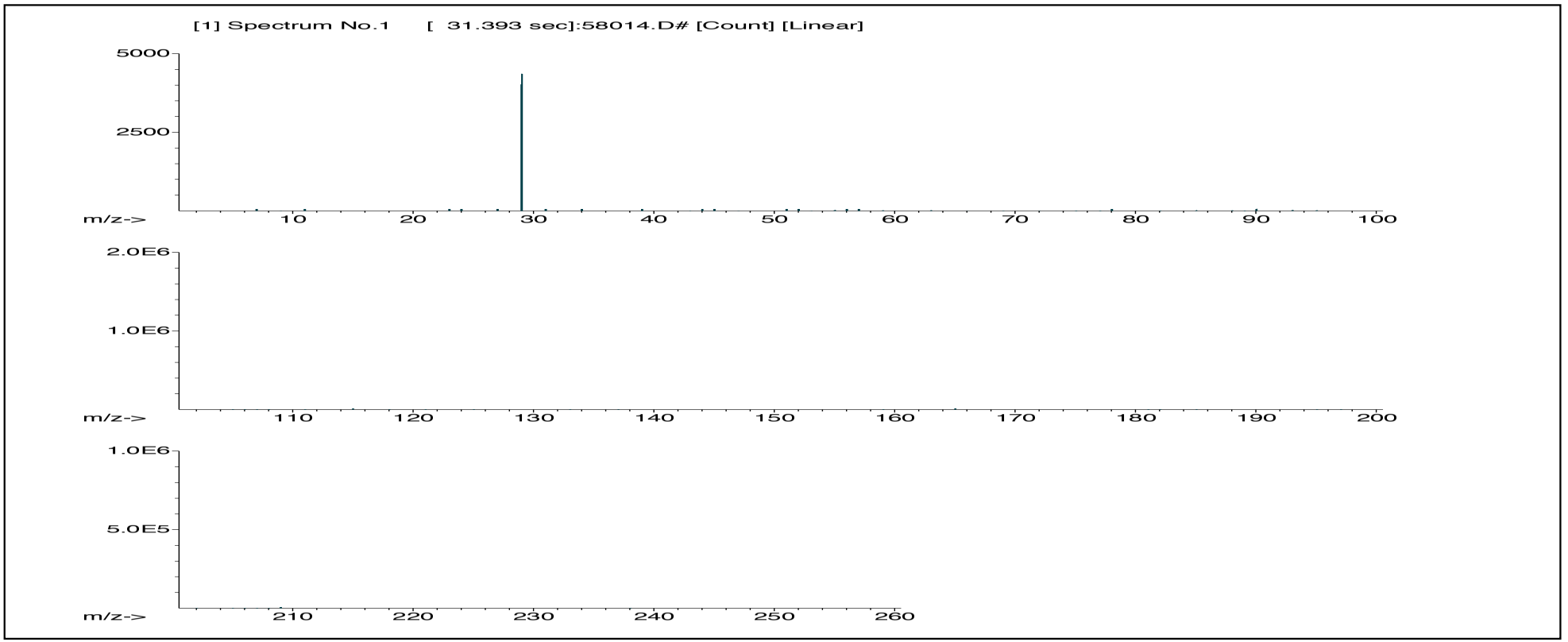
CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**57014**	19410105	Nitric Acid	
Lot Number:	**030921**			
Description:	**Silicon (Si)**			
		2.0%	60.0	Nitric Acid
Expiration Date:	030924		(mL)	
Recommended Storage:	Ambient (20 ºC)			
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 030921
Reviewed By:	Pedro L. Rentas 030921

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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 hexafluorosilicate (Si)	58114	070120	0.1000	300.0	0.084	1000	10000.0	**1000.0**	**2.1**	16919-19-0	2.50 mg/m3	orl-rat 70 mg/kg	NA



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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	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:

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 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,

Cd, Co, Cr, Cu, Mn, Ni, Pb, Tl, Se, V, and Zn. This instruction sheet provides the nominal values for ICP-AES Part A and Part B target analytes when diluted as directed.

Using Class "A" glassware, preparation and analysis must be performed according to the following instructions:

ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO_3. Analyze this ICSA solution by ICP-AES.

ICSB-0710, Analytes, mixed with ICSA-1211, Interferents: Pipet 10 mL of the ICSA solution and 10 mL of the ICSB solution into a 100 mL volumetric flask and dilute to volume with 2% v/v HNO_3. Analyze this ICSAB solution by ICP-AES.

(D) *"CERTIFIED VALUE" CONCENTRATIONS OF QATS ICP-AES ICS SOLUTION(S)*

The "Certified Value" concentrations of the elements, listed in Table 1 below, were derived from statistically pooled analysis results from the following sources, if available: QATS Laboratory, CLP laboratories, Quarterly Blind (QB)/Proficiency Testing (PT) events, CLP pre-award events, and external referee laboratories.

Table 1. "CERTIFIED VALUES" FOR INTERFERENCE CHECK SAMPLE ICP-AES ICSA-1211, AND ICSA-1211 MIXED WITH ICSB-0710

Element	CRQL	Part A (µg/L)	Low Limit (µg/L)	High Limit (µg/L)	Part A +Part B (µg/L)	Low Limit (µg/L)	High Limit (µg/L)
Al	200	255000	216000	294000	247000	209000	285000
Sb	60	(0.0)	-60.0	60.0	618	525	711
As	10	(0.0)	-10.0	10.0	104	88.4	120
Ba	200	(6.0)	-194	206	(537)	337	737
Be	5.0	(0.0)	-5.0	5.0	495	420	570
Cd	5.0	(1.0)	-4.0	6.0	972	826	1120
Ca	5000	245000	208000	282000	235000	199000	271000
Cr	10	(52.0)	42.0	62.0	542	460	624
Co	50	(0.0)	-50.0	50.0	476	404	548
Cu	25	(2.0)	-23.0	27.0	511	434	588
Fe	100	101000	85600	116500	99300	84400	114500
Pb	10	(0.0)	-10.0	10.0	(49.0)	39.0	59.0
Mg	5000	255000	216000	294000	248000	210000	286000
Mn	15	(7.0)	-8.0	22.0	507	430	584
Ni	40	(2.0)	-38.0	42.0	954	810	1100
Se	35	(0.0)	-35.0	35.0	(46.0)	11.0	81.0
Ag	10	(0.0)	-10.0	10.0	201	170	232
Tl	25	(0.0)	-25.0	25.0	(108)	83.0	133
V	50	(0.0)	-50.0	50.0	491	417	565
Zn	60	(0.0)	-60.0	60.0	952	809	1095

ICSA M5126 M5127 M5128 M5129 M5130

ICSB M5219 M5220 M5221 M5222 M5223

The acceptance ranges for all analytes in parentheses in the above table were determined using the listed certified value ± 1 times the associated CLP SOW CRQL. The acceptance ranges for all other analytes were determined using the certified value ± 15 percent of the listed certified value.

INORGANIC VENTURES™
Refine your results. Redefine your industry.

Certificate of Analysis

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

P: 800-669-6799/540-585-3030
F: 540-585-3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	CHEM-QC-4
Lot Number:	S2-MEB711674
Matrix:	3% (v/v) HNO3 3% (v/v) HF
Value / Analyte(s):	1 000 µg/mL ea: Boron, Molybdenum, Silicon, Tin, Titanium

Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Boron, B	**1 000 ± 7 µg/mL**	**Molybdenum, Mo**	**1 000 ± 5 µg/mL**
Silicon, Si	**1 000 ± 7 µg/mL**	**Tin, Sn**	**1 000 ± 5 µg/mL**
Titanium, Ti	**1 001 ± 6 µg/mL**		

Density: 1.032 g/mL (measured at 20 ± 4 ºC)

Assay Information:

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

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

N/A

6.0 INTENDED USE

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

November 02, 2021

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

11.2 Lot Expiration Date

- **November 02, 2026**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Director, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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,

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.

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M5289 R: 07/12/22 BH

Certified Reference Material CRM

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https://Absolutestandards.com

CERTIFIED WEIGHT REPORT:

Part Number: 58113
Lot Number: 070622
Description: Aluminum (Al)

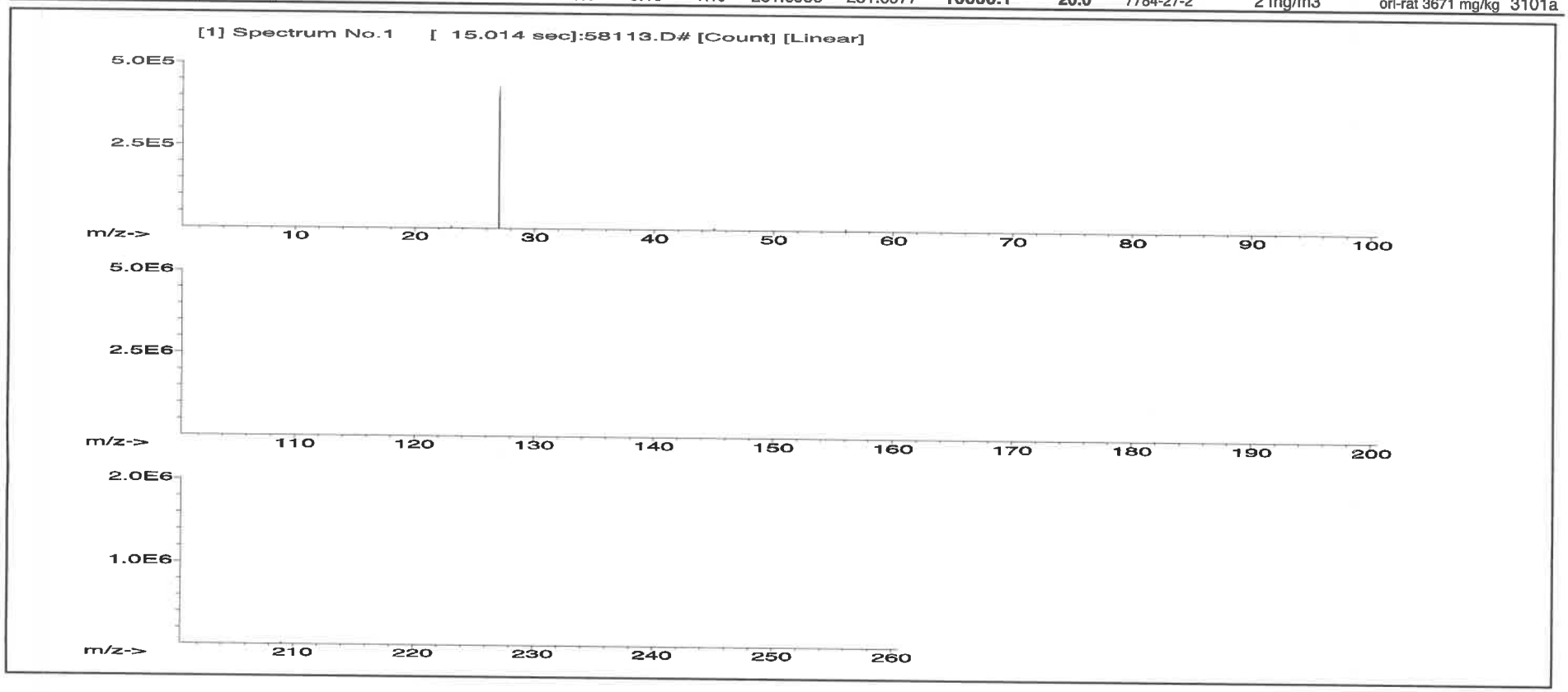
Expiration Date: 070625
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 2000.02

		Lot #	
Solvent:	20370011	Nitric Acid	
2%	40.0 (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. Aluminum nitrate nonahydrate (Al)	IN022	ALD012021A1	10000	99.999	0.10	7.10	281.6956	281.6977	**10000.1**	**20.0**	7784-27-2	2 mg/m3	orl-rat 3671 mg/kg	3101a



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

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

(T)= Target analyte

Physical Characterization:

Certified by:

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

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

SJ 6/15/22

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Certified Reference Material CRM

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CERTIFIED WEIGHT REPORT:

Part Number: 58126
Lot Number: 020422
Description: Iron (Fe)

M5298

Expiration Date: 020425
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 3000.41

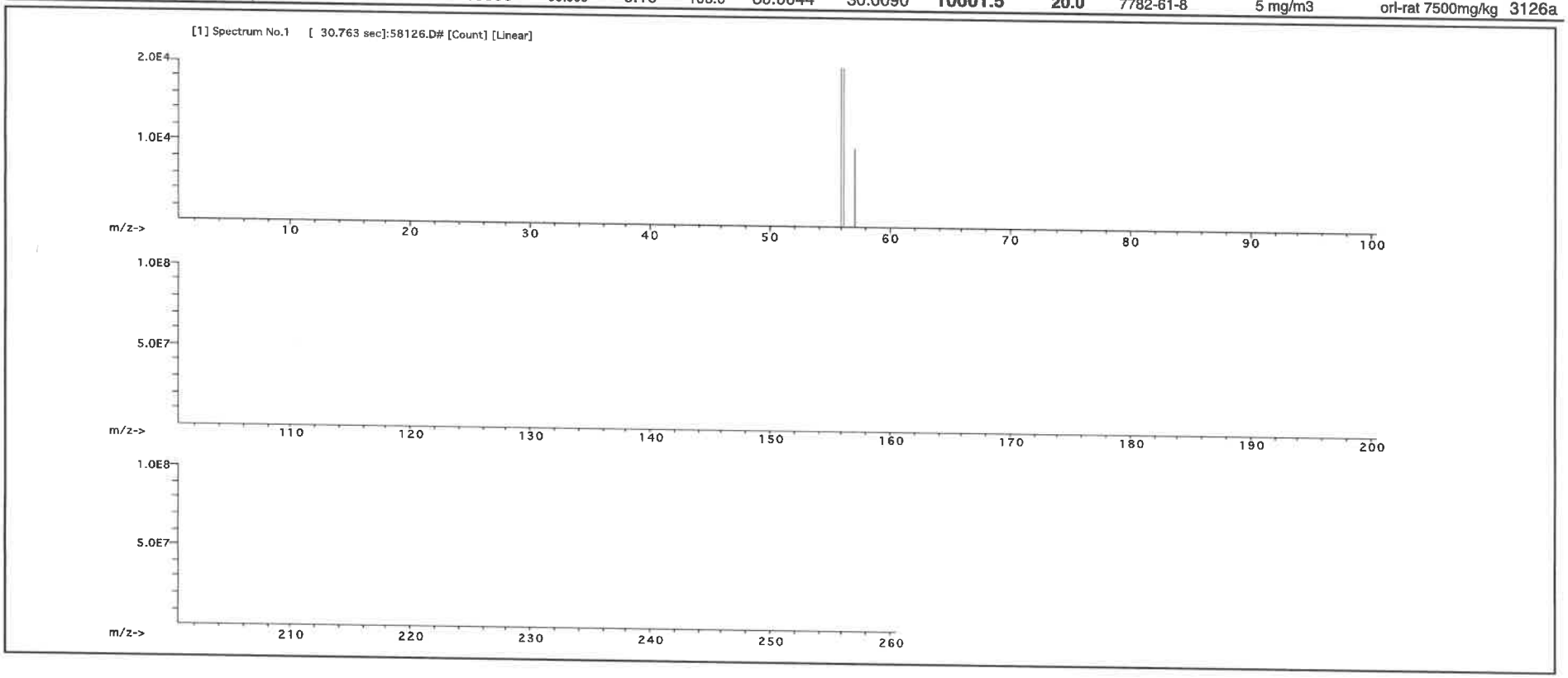
	Lot #		
Solvent:	20370011	Nitric Acid	
5.0%	150.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Giovanni Esposito
Formulated By: Giovanni Esposito 020422

Pedro Rentas
Reviewed By: Pedro L. Rentas 020422

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(III) nitrate nonahydrate (Fe)	IN346	221035107	10000	99.999	0.10	100.0	30.0044	30.0090	**10001.5**	**20.0**	7782-61-8	5 mg/m3	orl-rat 7500mg/kg	3126a



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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	<0.5	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	<0.02
B	<0.02	Cu	<0.10	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T)= Target analyte

Physical Characterization:

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

Certified by:



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

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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)

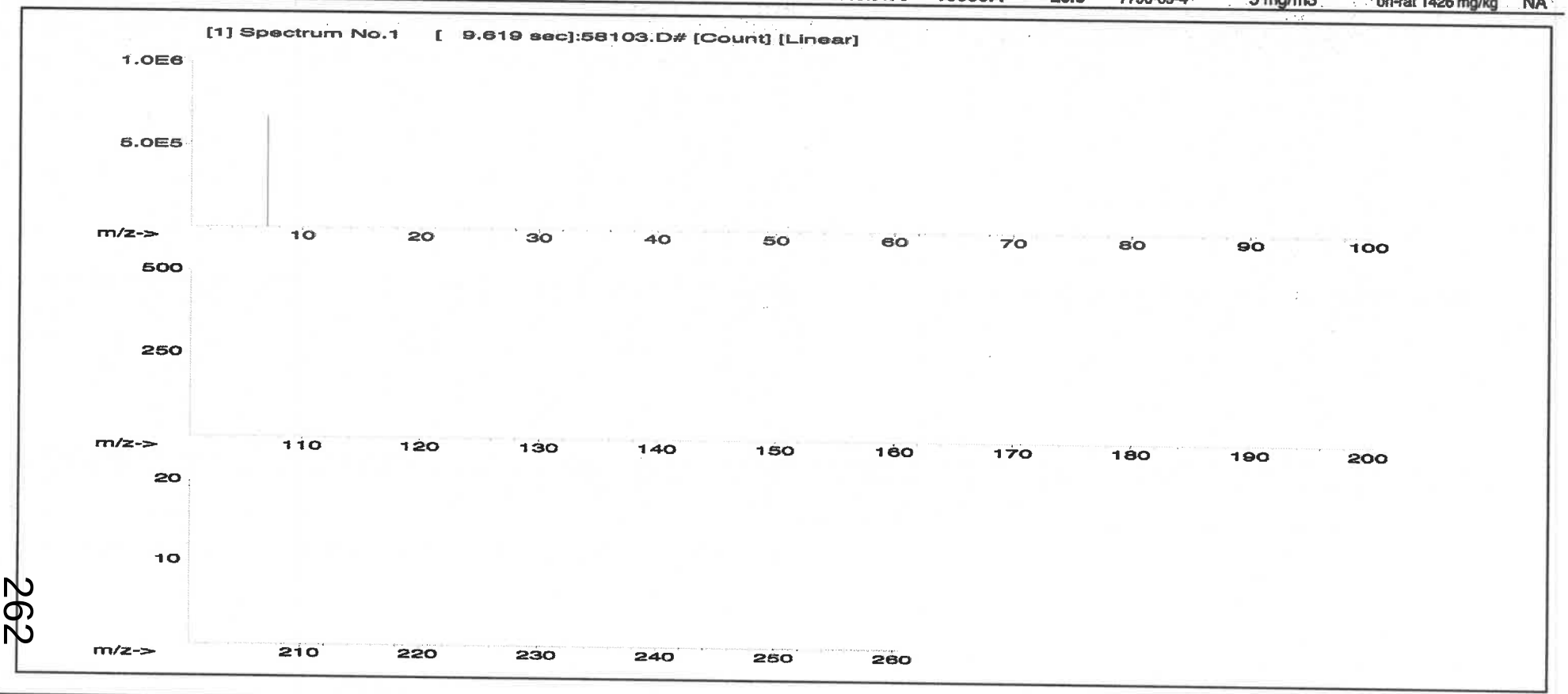
Expiration Date: 070625
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 1000.12

	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



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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:

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

M5467 R: 03/01/23 (LA)

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AR-1539 Certificate Number
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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

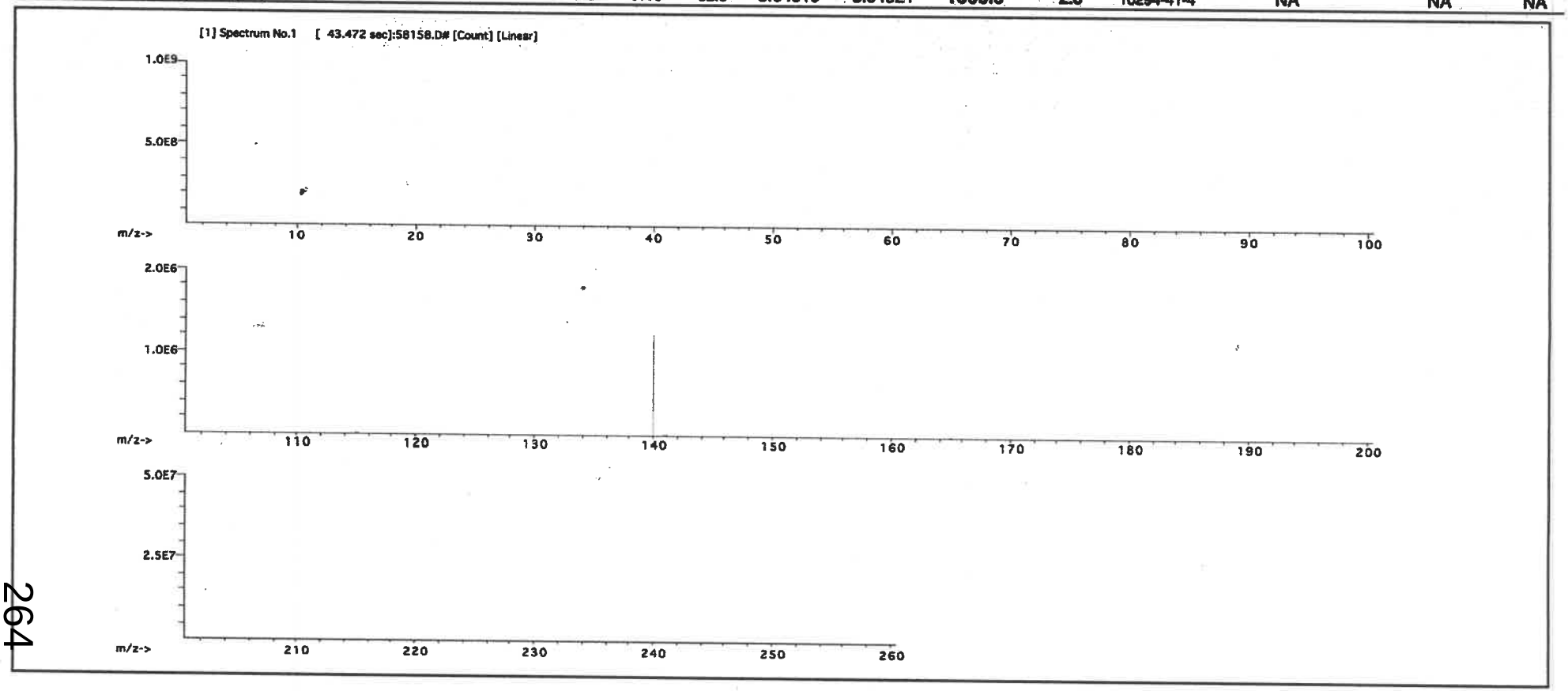
Weight shown below was diluted to (mL): 1000.12 0.058 Flask Uncertainty

		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



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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.

* 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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M5496 R 7/20/23

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CERTIFIED WEIGHT REPORT:

			Lot #	
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	

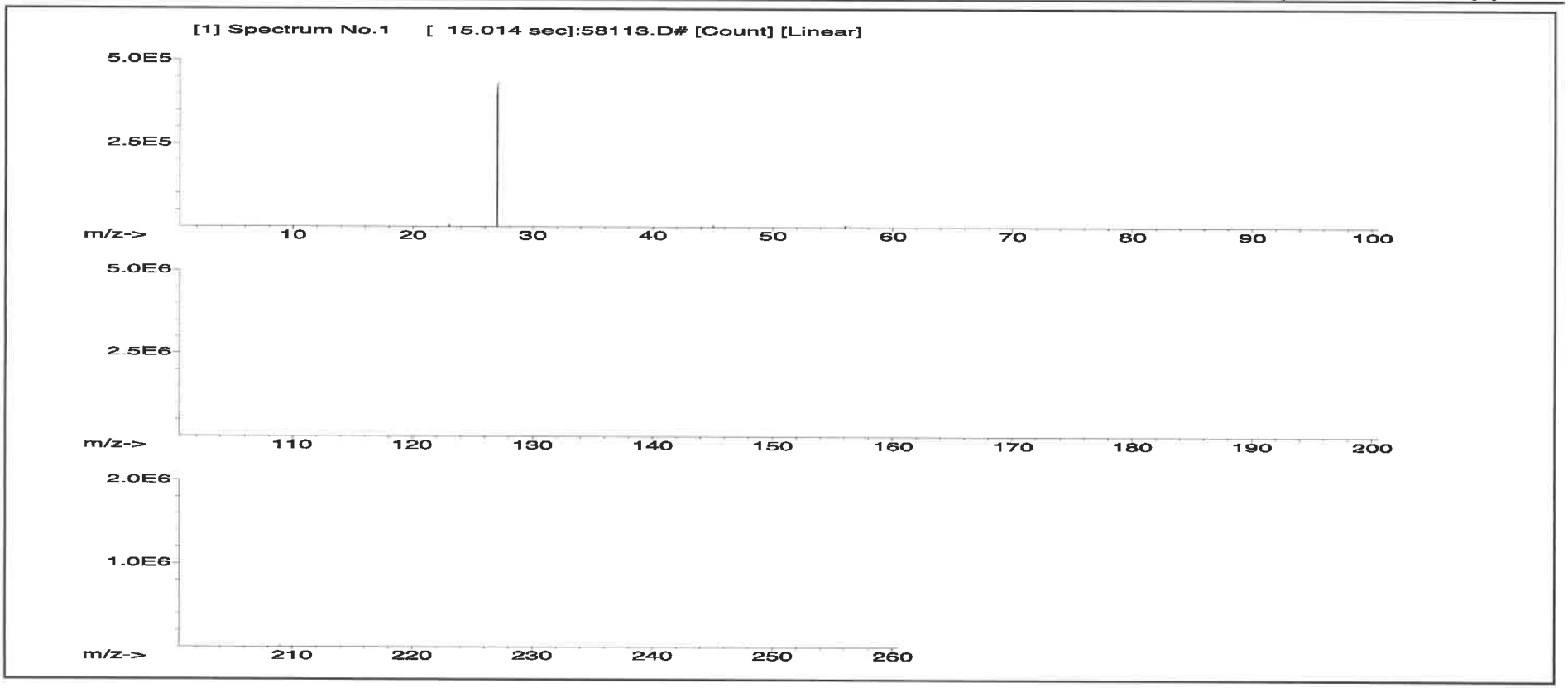
Giovanni Esposito

Formulated By:	Giovanni Esposito	011623

Pedro Rentas

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



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IN5497 - IN5498 R: 03/17/23 BH

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CERTIFIED WEIGHT REPORT:

Part Number: 58120
Lot Number: 031523
Description: Calcium (Ca)

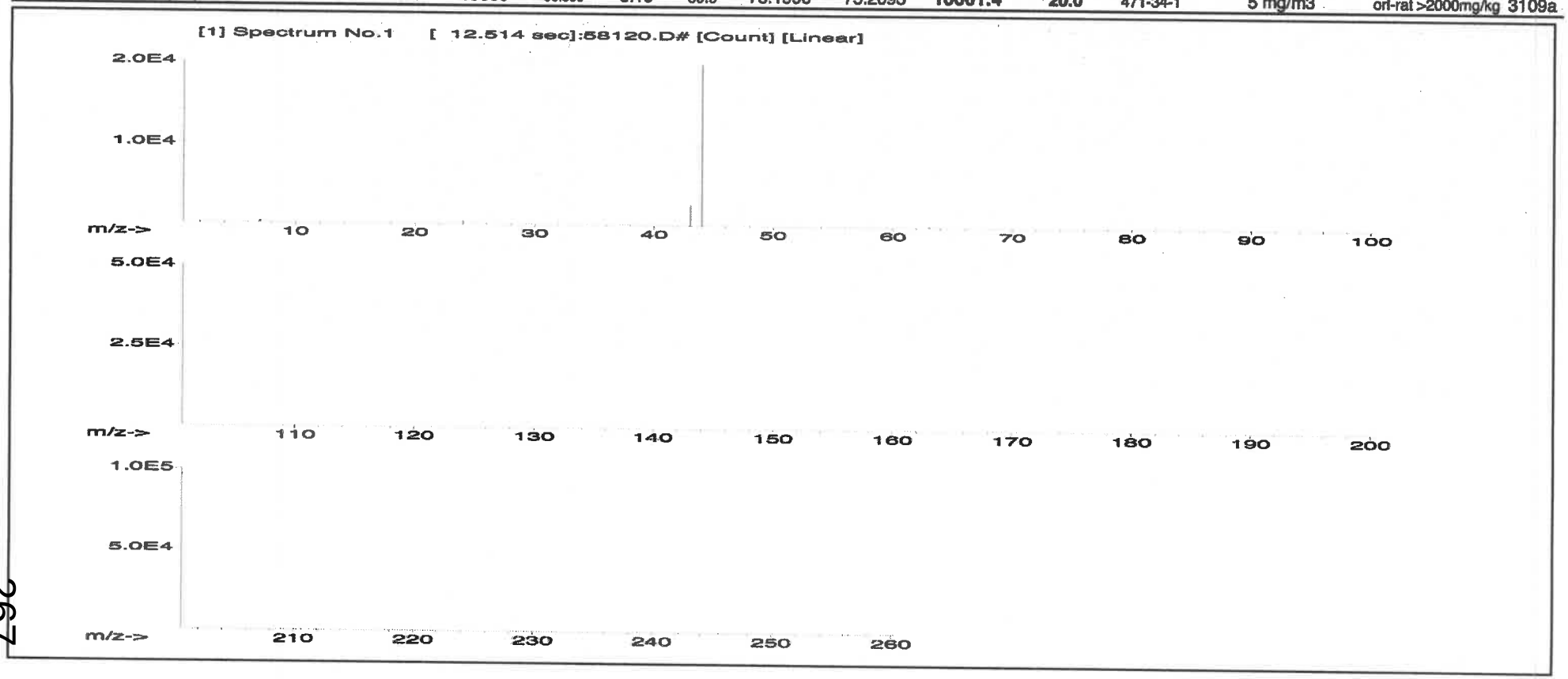
Expiration Date: 031526
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 3000.41 ± 0.058 Flask Uncertainty

	Lot #		
Solvent:	21110221	Nitric Acid	
2%	60.0 (mL)	Nitric Acid	
	5E-05	Balance Uncertainty	

Giovanni Esposito
Formulated By: Giovanni Esposito 031523

Pedro Rentas
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



267

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.
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CERTIFIED WEIGHT REPORT:

Part Number: 58120
Lot Number: 031523
Description: Calcium (Ca)

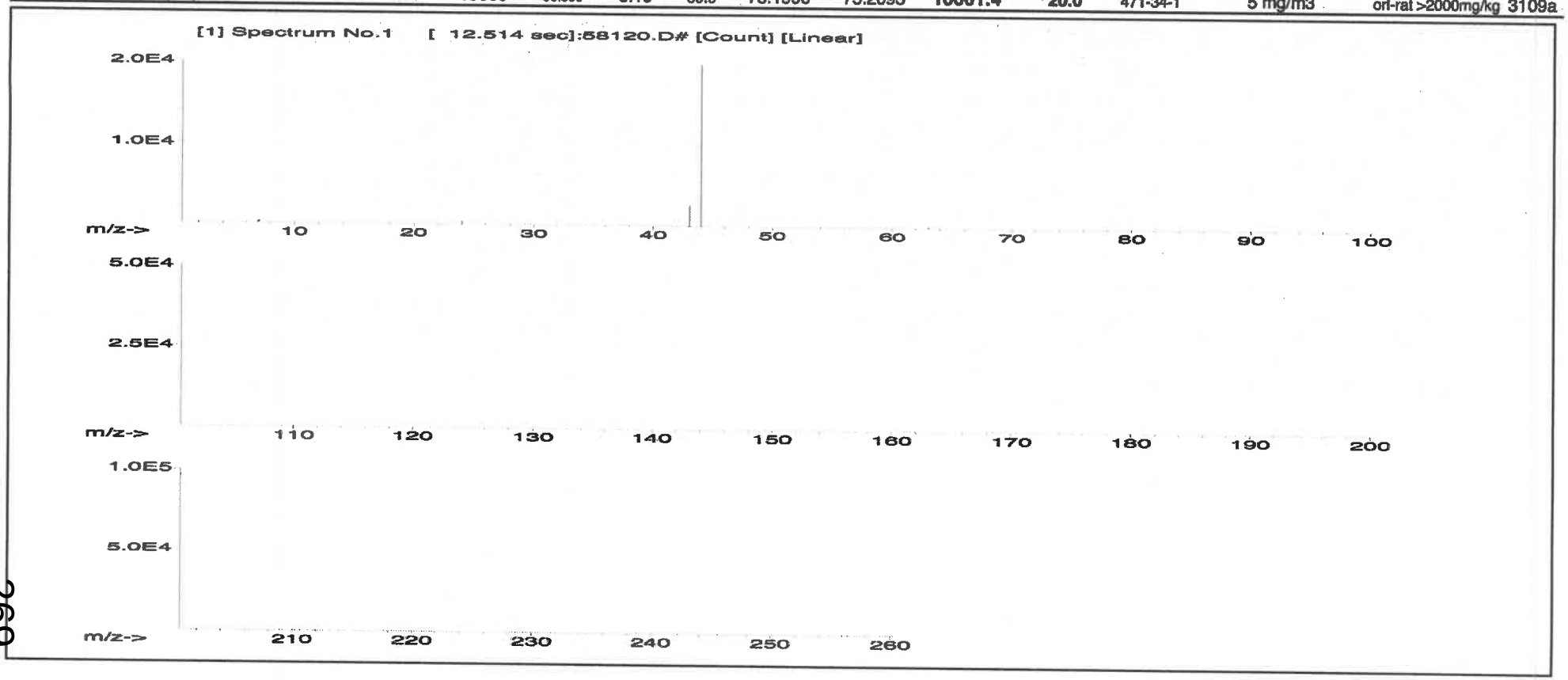
Expiration Date: 031526
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 3000.41 ± 0.058 Flask Uncertainty

	Lot #		
Solvent:	21110221	Nitric Acid	
2%	60.0 (mL)	Nitric Acid	
	5E-05	Balance Uncertainty	

Giovanni Esposito
Formulated By: Giovanni Esposito 031523

Pedro Rentas
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



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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.
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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: 57182
Lot Number: 061522
Description: Lead (Pb)

Expiration Date: 061525
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 2000.02

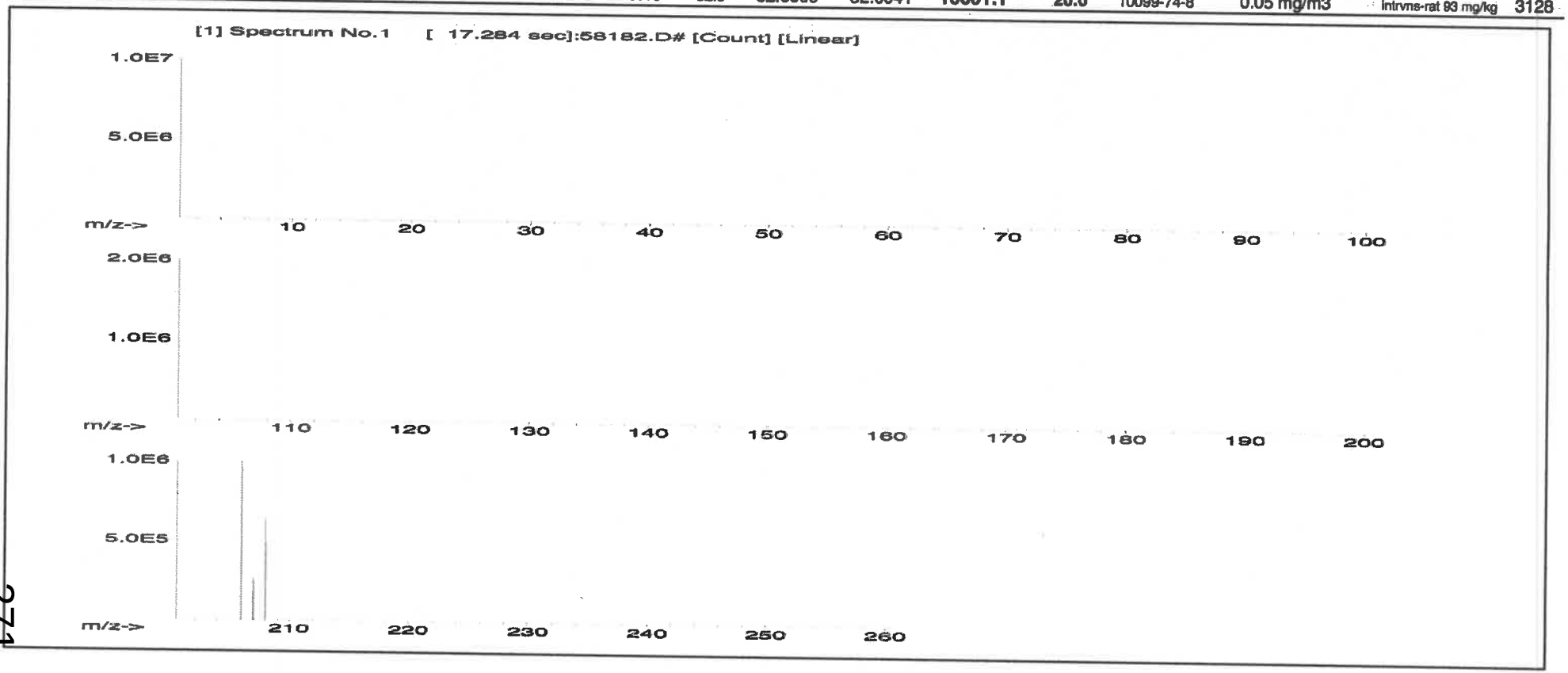
	Lot #		
Solvent:	20510011	Nitric Acid	
2%	40.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty
0.058 Flask Uncertainty

Giovanni Esposito

Formulated By:	Giovanni Esposito	061522
Reviewed By:	Pedro L. Rentas	061522

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Lead(II) nitrate (Pb)	IN029	PBD122016A1	10000	99.999	0.10	62.5	32.0006	32.0041	**10001.1**	**20.0**	10099-74-8	0.05 mg/m3	Intrvns-rat 93 mg/kg	3128



271

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:

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M5519. M5520 (BH) R:03/17/23

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CERTIFIED WEIGHT REPORT:

Part Number: 58119
Lot Number: 120822
Description: Potassium (K)

Expiration Date: 120825
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 10000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 3000.4

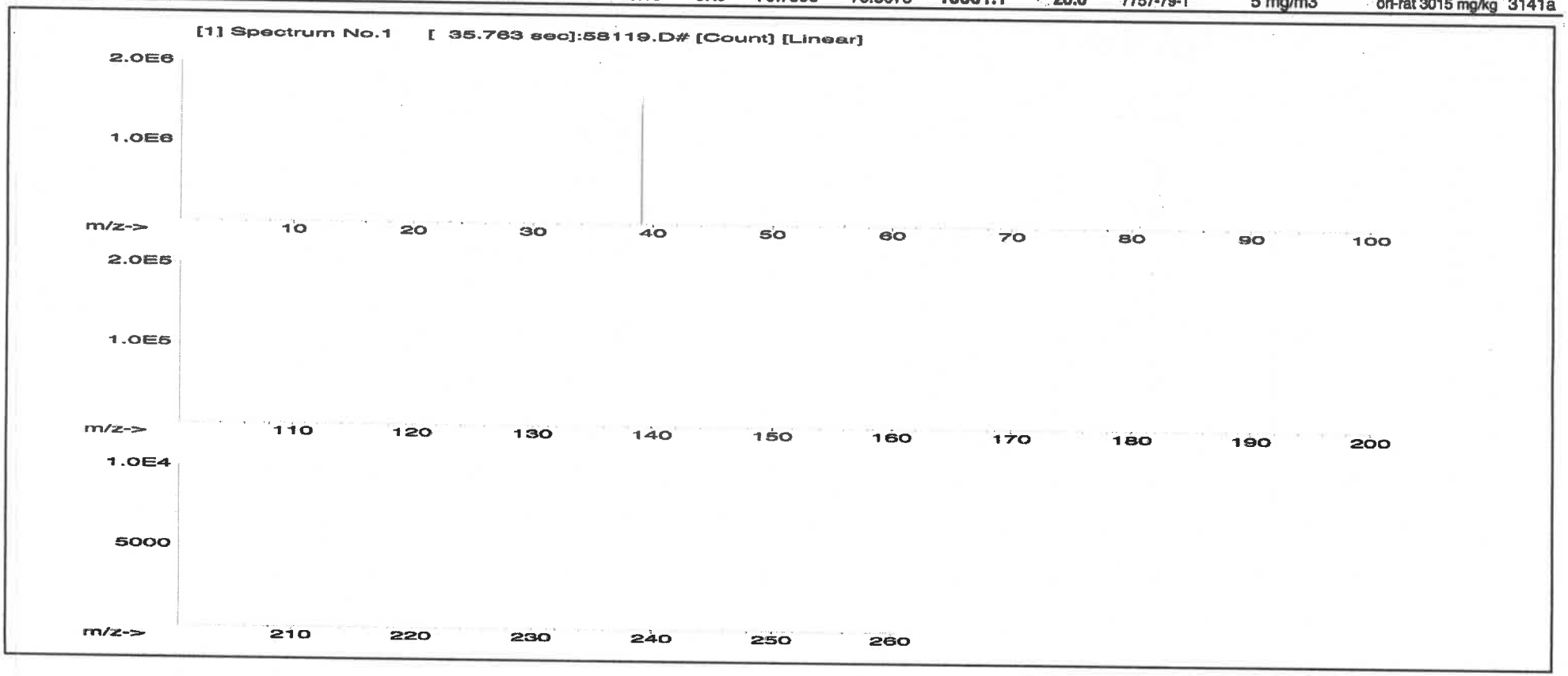
		Lot #		
Solvent:	20510011	Nitric Acid		
2%	60.0 (mL)	Nitric Acid		

5E-05 Balance Uncertainty
0.06 Flask Uncertainty

Giovanni Esposito

Formulated By:	Giovanni Esposito	120822
Reviewed By:	Pedro L. Rentas	120822

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	Actual Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Potassium nitrate (K)	IN034	KD022021A1	10000	99.999	0.10	37.6	79.7990	79.8075	**10001.1**	**20.0**	7757-79-1	5 mg/m3	orl-rat 3015 mg/kg	3141a



274

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.
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Certificate of Analysis

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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).

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	CLPP-SPK-1
Lot Number:	T2-MEB721963
Matrix:	7% (v/v) HNO3
Value / Analyte(s):	2 000 µg/mL ea: Aluminum, Barium,
	1 000 µg/mL ea: Iron,
	500 µg/mL ea: Manganese, Nickel, Vanadium, Zinc, Cobalt,
	250 µg/mL ea: Copper,
	200 µg/mL ea: Chromium,
	50 µg/mL ea: Beryllium, Silver

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	Chromium, Cr	200.0 ± 1.1 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	Manganese, Mn	500.0 ± 2.0 µg/mL
Nickel, Ni	500.0 ± 2.2 µg/mL	Silver, Ag	50.00 ± 0.22 µg/mL
Vanadium, V	500.0 ± 2.2 µg/mL	Zinc, Zn	500.0 ± 2.2 µg/mL

Density: 1.070 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
Ba	ICP Assay	3104a	140909
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Be	Calculated		See Sec. 4.2
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
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
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

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

July 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

- July 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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M5658 R! 8/25/23

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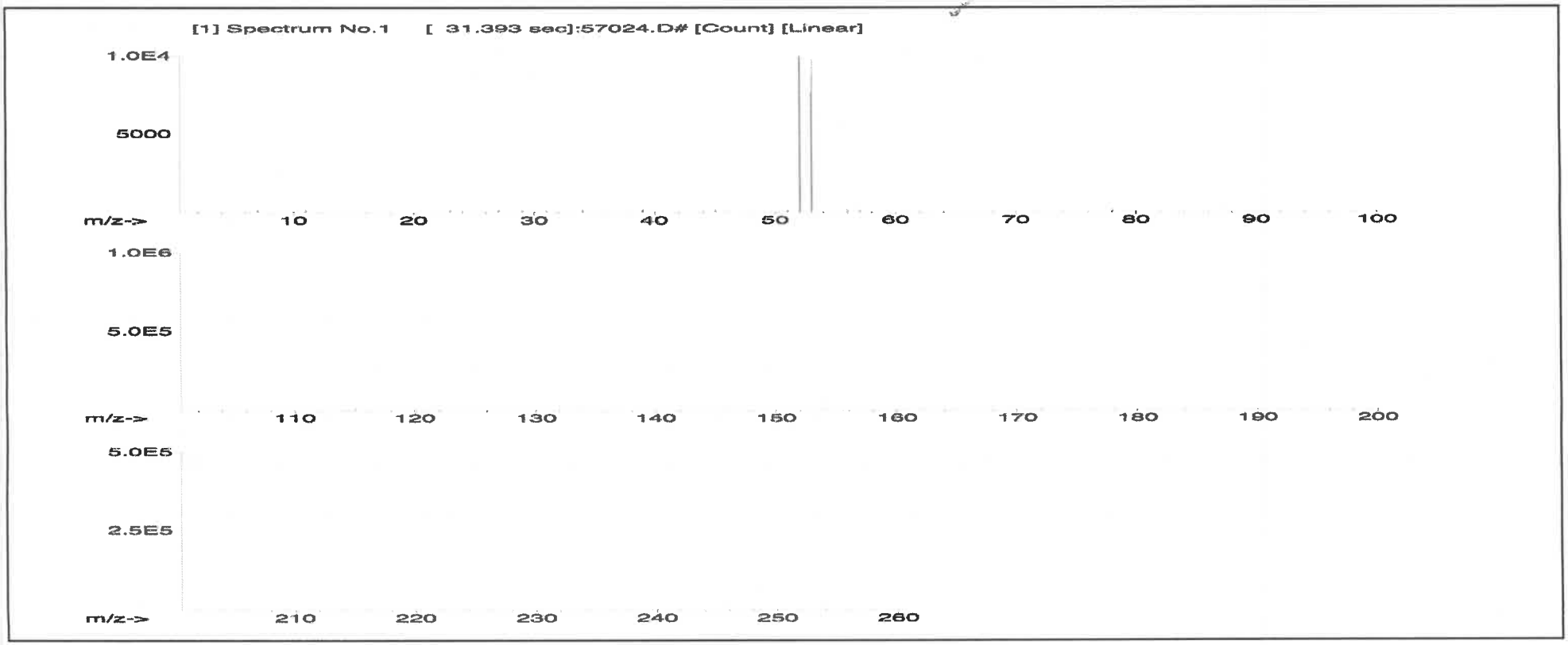
279

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



280

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.

* 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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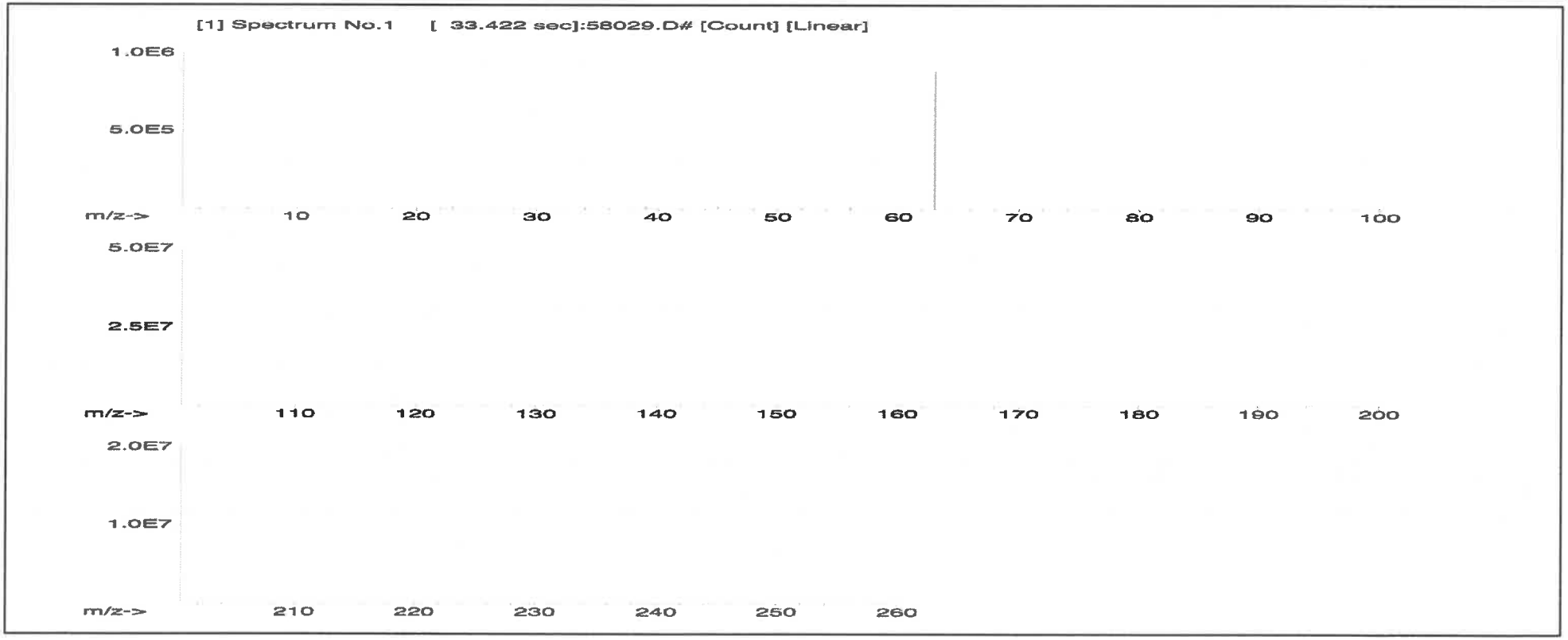
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CERTIFIED WEIGHT REPORT:

		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



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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.
* 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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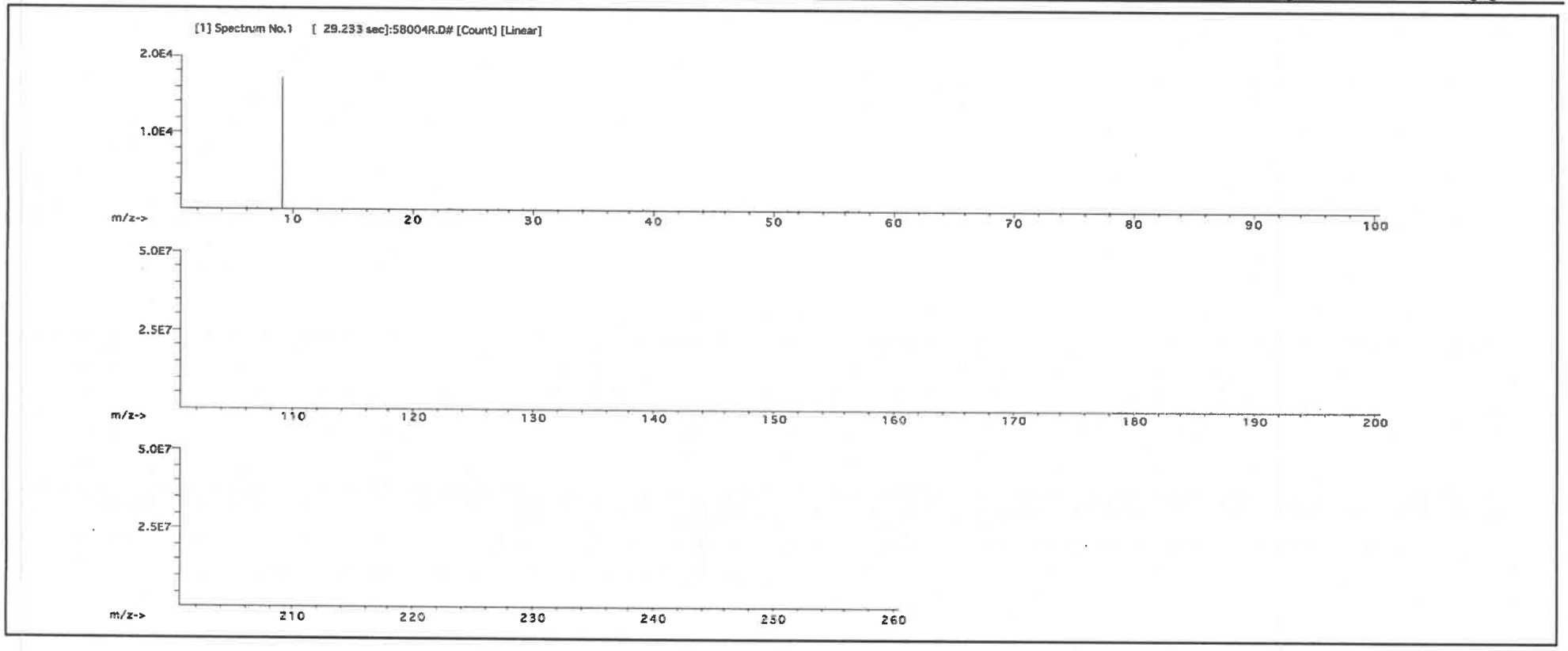
283

CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:		
Part Number:	**57004**	24002546	Nitric Acid		
Lot Number:	**102523**				
Description:	**Beryllium (Be)**	2.0%	40.0 (mL)	Nitric Acid	
Expiration Date:	102526				
Recommended Storage:	Ambient (20 °C)				
Nominal Concentration (µg/mL):	**1000**				
NIST Test Number:	6UTB	5E-05	Balance Uncertainty		
Volume shown below was diluted to (mL):	2000.02	0.058	Flask Uncertainty		

Formulated By:	Benson Chan	102523
Reviewed By:	Pedro L. Rentas	102523

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Beryllium nitrate (Be)	58104	091423	0.1000	200.0	0.084	1000	10001.5	**1000.0**	**2.2**	13597-99-4	0.2ug/m3	intrvns-rat 3.16mg/kg	NA



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

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

(T) = Target analyte

Physical Characterization:

Certified by:

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

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* All standard containers are meticulously cleaned prior to use.
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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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285

CERTIFIED WEIGHT REPORT:

Part Number: 57050
Lot Number: 071123
Description: Tin (Sn)

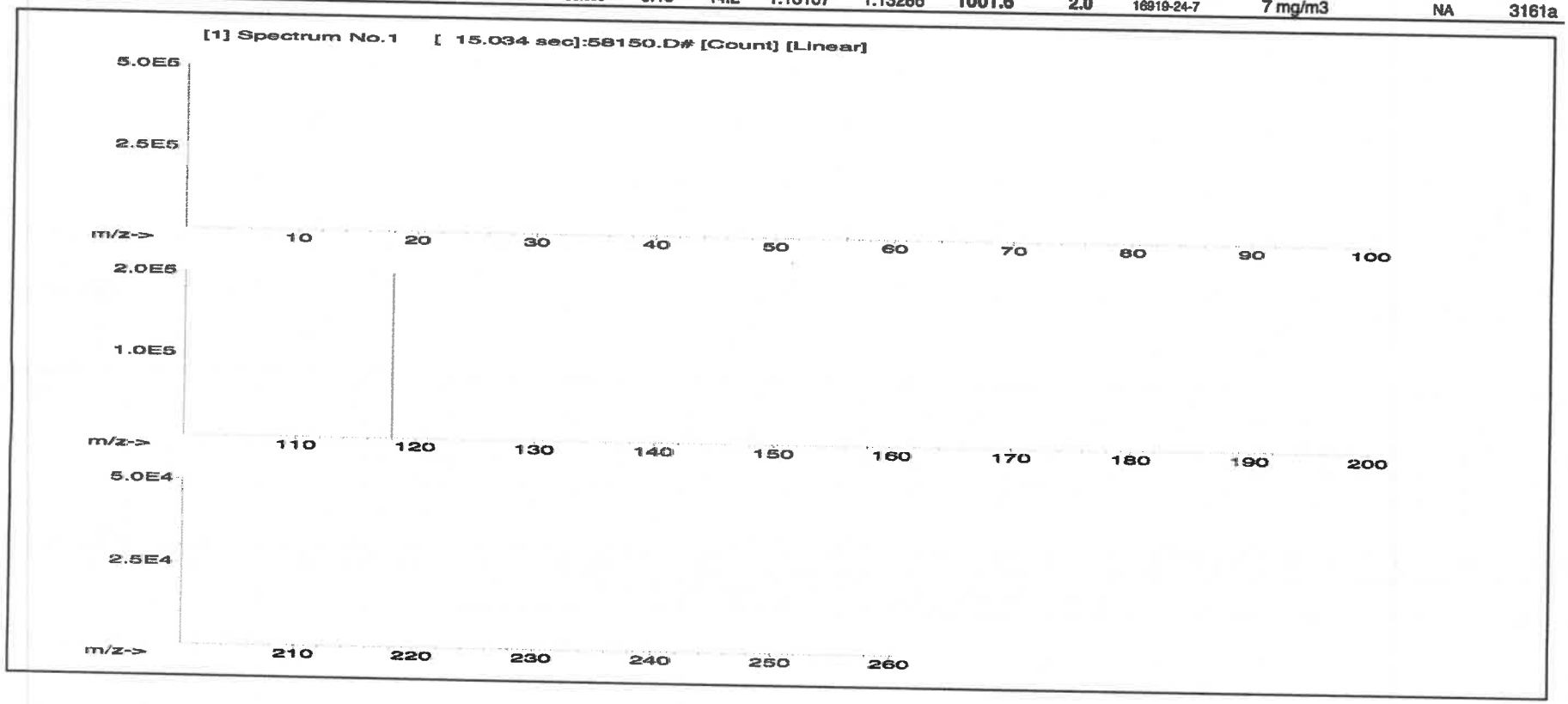
Expiration Date: 071126
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Weight shown below was diluted to (mL): 499.93

	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



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

Trace Metals Verification by ICP-MS (µg/mL)																	
Al	<0.02	Cd	<0.02	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	<0.02	Pr	<0.02	Se	<0.2	Tb	<0.02	W	<0.02
Sb	<0.02	Ca	<0.2	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	<0.2	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	<0.01	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	<0.02	V	<0.02
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	<0.02	Pd	<0.02	Rb	<0.02	Na	<500	Th	<0.02	Yb	<0.02
Be	<0.01	Cr	<0.02	Ga	<0.02	Fe	<0.2	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	<0.02	Ge	<0.02	La	<0.02	Mo	<0.02	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	T	Zn	<0.02
B	<0.02	Cu	<0.02	Au	<0.02	Pb	<0.02	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	<0.02	Zr	<0.02

(T) = Target analyte

Physical Characterization:

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

Certified by:

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Purified acids, 18.2 megohm deionized water, calibrated Class A glassware and the highest purity raw materials are used in the preparation of all standards.
* 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).
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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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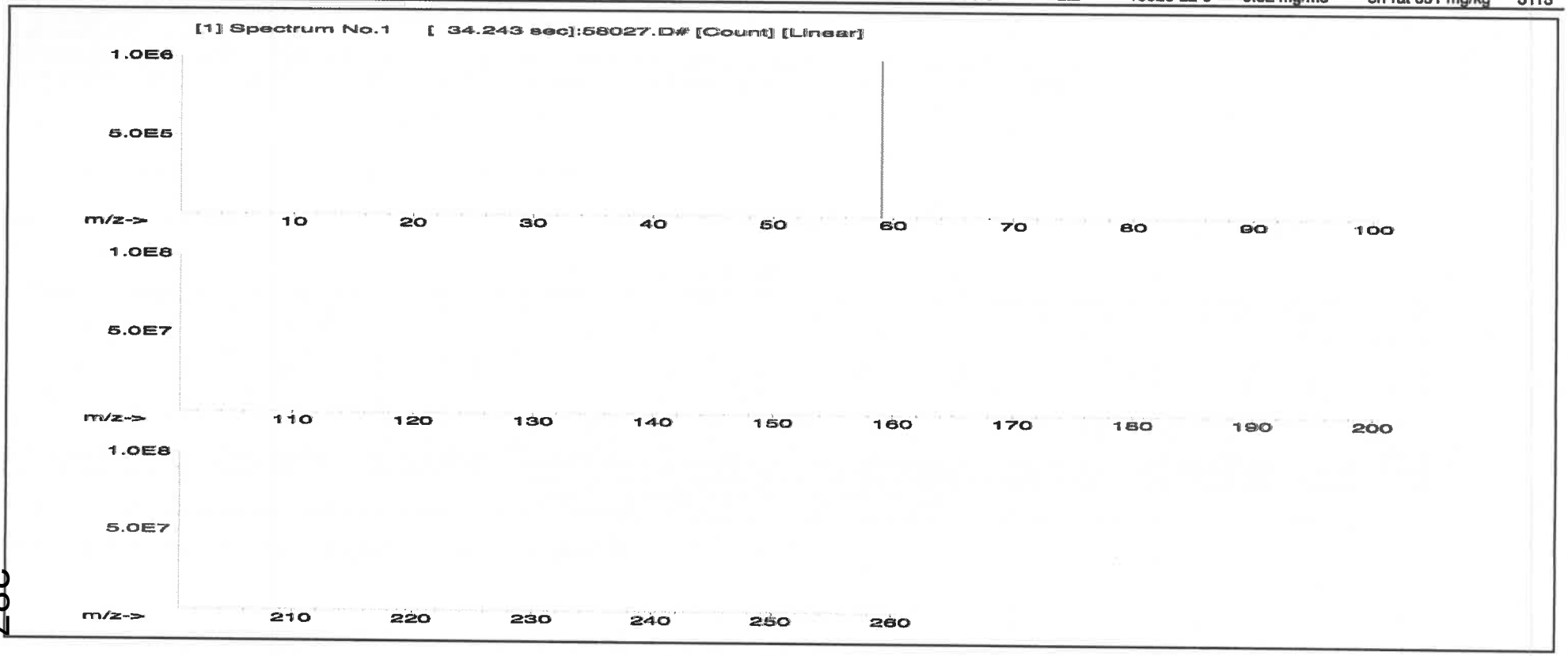
CERTIFIED WEIGHT REPORT:

		Lot #	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



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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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* 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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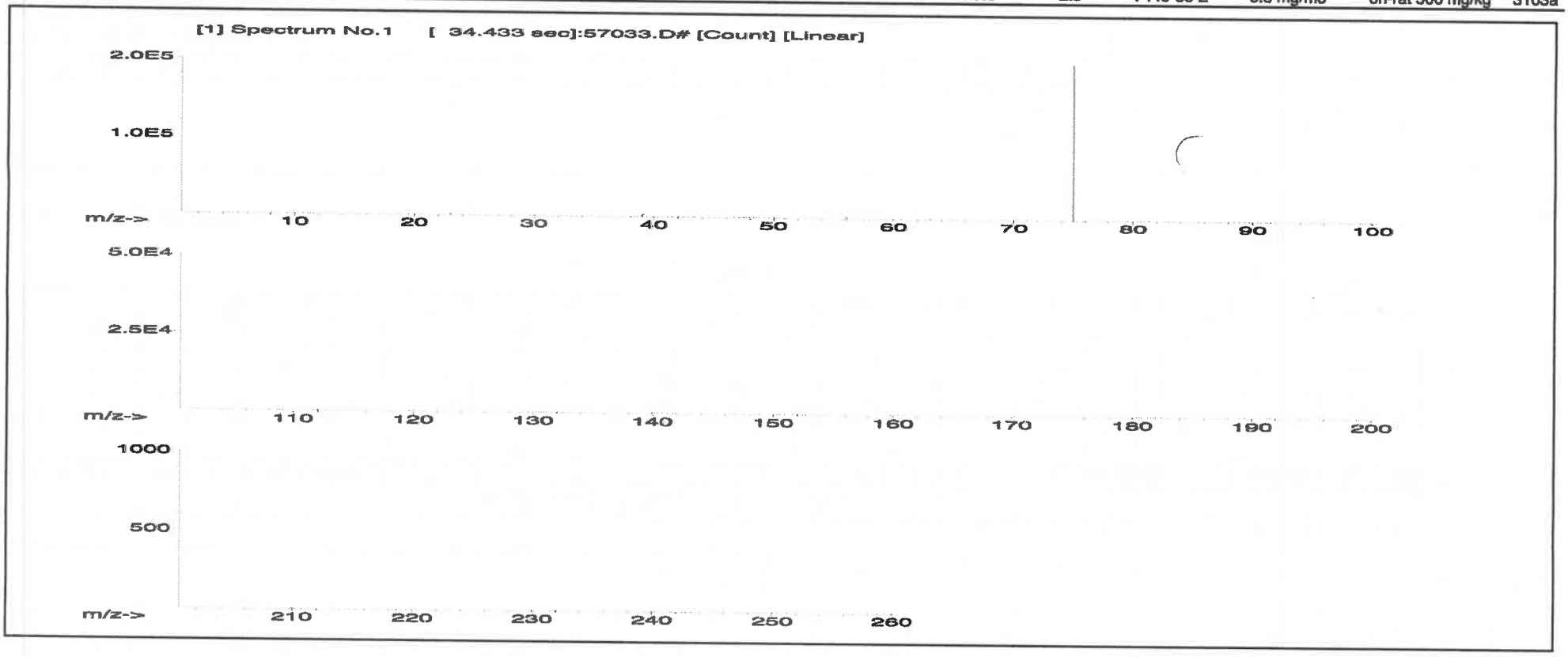
289

CERTIFIED **WEIGHT** REPORT:

		Lot #	Solvent:		
Part Number:	**57033**				
Lot Number:	**111323**	24002546	Nitric Acid		
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



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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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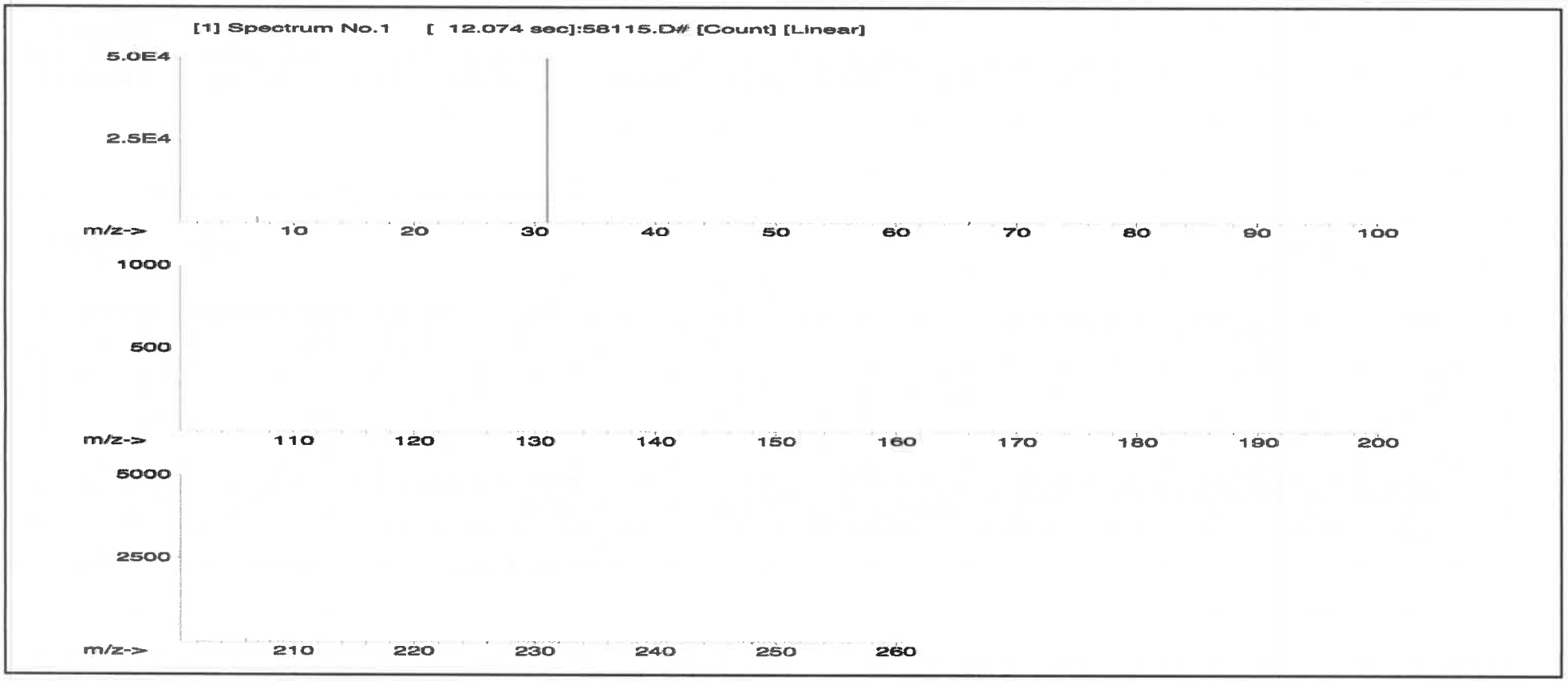
291

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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CERTIFIED WEIGHT REPORT:

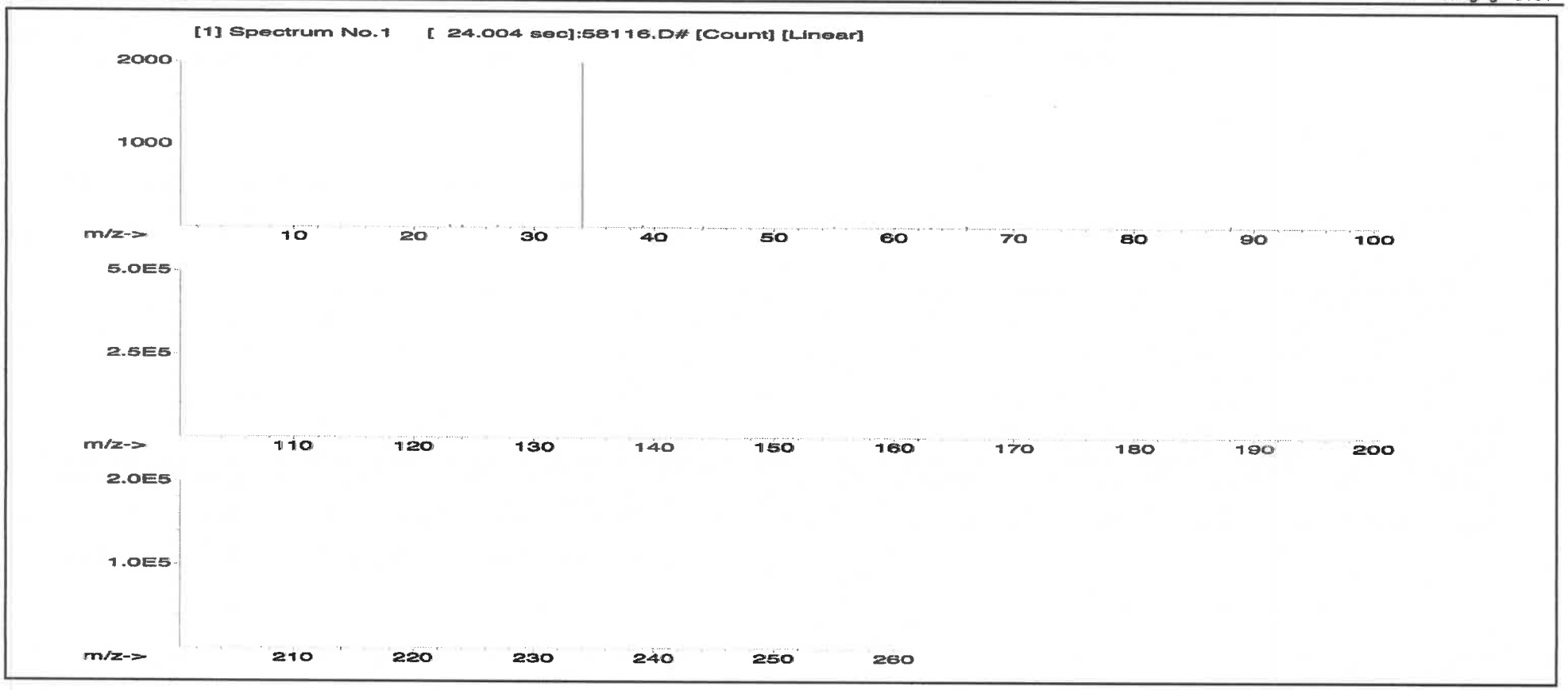
Part Number: 57116
Lot Number: 071123
Description: Sulfur (S)

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: 58030
Lot Number: 111623
Description: Zinc (Zn)

Expiration Date: 111626
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

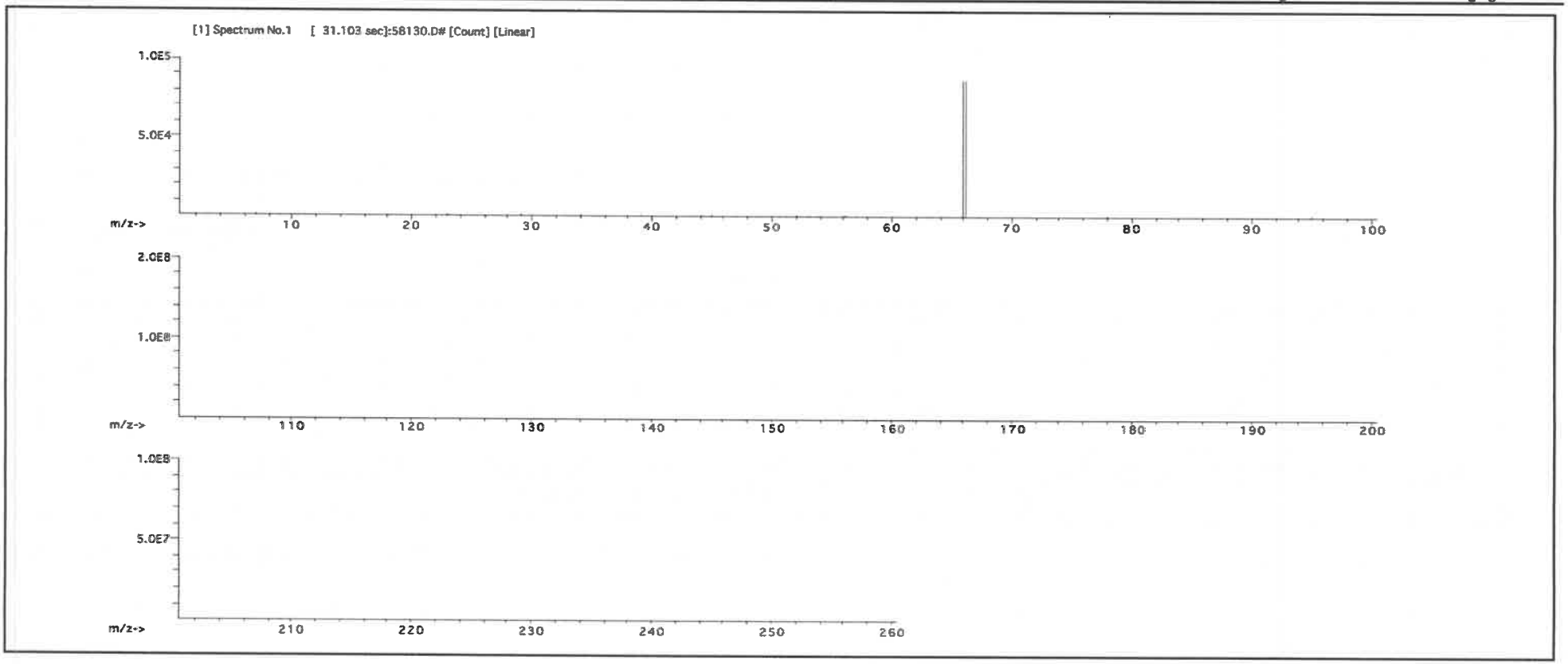
Weight shown below was diluted to (mL): 3000.4 0.06 Flask Uncertainty

	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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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:

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

$$\text{CRM/RM Expanded Uncertainty } (\pm) = U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$$

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

$$\text{CRM/RM Expanded Uncertainty } (\pm) = U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$$

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	<	0.000536	M	Eu	<	0.000268	O	Na	<	0.032670	M	Se		0.001204	O	Zn	<	0.003267
O	Al		0.000872	O	Fe		0.003225	O	Nb	<	0.043560	O	Si		0.004735	O	Zr	<	0.043560
M	As	<	0.008586	M	Ga	<	0.000268	M	Nd	<	0.000268	M	Sm	<	0.000268				
M	Au	<	0.004577	M	Gd	<	0.000268	O	Ni	<	0.010890	M	Sn		0.000096				
O	B	<	0.008929	M	Ge	<	0.002146	M	Os	<	0.000269	O	Sr		0.000096				
M	Ba	<	0.002683	M	Hf		0.002161	O	P	<	0.054450	M	Ta		0.010560				
M	Be	<	0.005366	M	Hg	<	0.003231	M	Pb	<	0.001073	M	Tb	<	0.000268				
M	Bi	<	0.001609	M	Ho	<	0.000268	M	Pd	<	0.000268	M	Te	<	0.001341				
O	Ca		0.000676	M	In	<	0.002683	M	Pr	<	0.000268	M	Th	<	0.053663				
M	Cd	<	0.000268	M	Ir	<	0.000269	M	Pt	<	0.000536	s	Ti	<					
M	Ce	<	0.000268	M	K		0.001172	M	Rb	<	0.000268	M	Tl	<	0.000268				
M	Co	<	0.004293	M	La	<	0.000268	M	Re	<	0.000268	M	Tm	<	0.000268				
M	Cr		0.000752	O	Li	<	0.027225	M	Rh	<	0.000268	M	U	<	0.000268				
M	Cs	<	0.000268	M	Lu	<	0.000268	M	Ru	<	0.000269	M	V	<	0.019855				
O	Cu	<	0.010890	O	Mg	<	0.005445	i	S	<		M	W		0.000473				
M	Dy	<	0.000268	O	Mn	<	0.003267	M	Sb	<	0.006976	M	Y	<	0.002146				
M	Er	<	0.000268	M	Mo		0.000774	O	Sc	<	0.004900	M	Yb	<	0.000536				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 47.87 +4 6 Ti(F)6-2

Chemical Compatibility - Soluble in concentrated HCl, HF, H3PO4 H2SO4 and HNO3. Avoid neutral to basic media. Unstable at ppm levels with metals that would pull F- away (i.e. Do not mix with Alkaline or Rare Earths or high levels of transition elements unless they are fluorinated). Stable with most inorganic anions with a tendency to hydrolyze forming the hydrated oxide in all dilute acids except HF.

Stability - 2-100 ppb levels stable (Alone or mixed with all other metals) as the Ti(F)6-2 for months in 1% HNO3 / LDPE container. 1-10,000 ppm single element solutions as the Ti(F)6-2 chemically stable for years in 2-5% HNO3 / trace HF in an LDPE container.

Ti Containing Samples (Preparation and Solution) - Metal (Soluble in H2O / HF caution -powder reacts violently); Oxide - low temperature history anatase or rutile (Dissolved by heating in 1:1:1 H2O / HF / H2SO4); Oxide - high temperature history (~800EC) brookite (fuse in Pt0 with K2S2O7); Ores (fuse in Pt0 with KF + K2S2O7 - no KF if silica not present); Organic Matrices (Dry ash at 450EC in Pt0 and dissolve by heating with 1:1:1 H2O / HF / H2SO4 or fuse ash with pyrosulfate if oxide is as plastic pigment and likely in brookite crystalline form).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 48 amu	14 ppt	N/A	32S16O, 32S14N, 14N16O18O, 14N17N2, 36Ar12C, 48Ca, [96X=2 (where X = Zr, Mo, Ru)]
ICP-OES 323.452 nm	0.0054 / 0.00092 µg/mL	1	Ce, Ar, Ni
ICP-OES 334.941 nm	0.0038 / 0.000028 µg/mL	1	Nb, Ta, Cr, U
ICP-OES 336.121 nm	0.0053 / 0.000034 µg/mL	1	W, Mo, Co

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

June 17, 2022

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

11.2 Lot Expiration Date

- **June 17, 2027**

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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Certificate of Analysis

M5959 R: 6/14/24.

300 Technology Drive
Christiansburg, VA 24073 USA
inorganicventures.com

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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 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

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

February 20, 2024

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

11.2 Lot Expiration Date

- February 20, 2029

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Custom Processing Supervisor



Certificate Approved By:

Muzzammil Khan
Stock Laboratory Supervisor



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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Certified Reference Material CRM

M5961 R: 6/11/24

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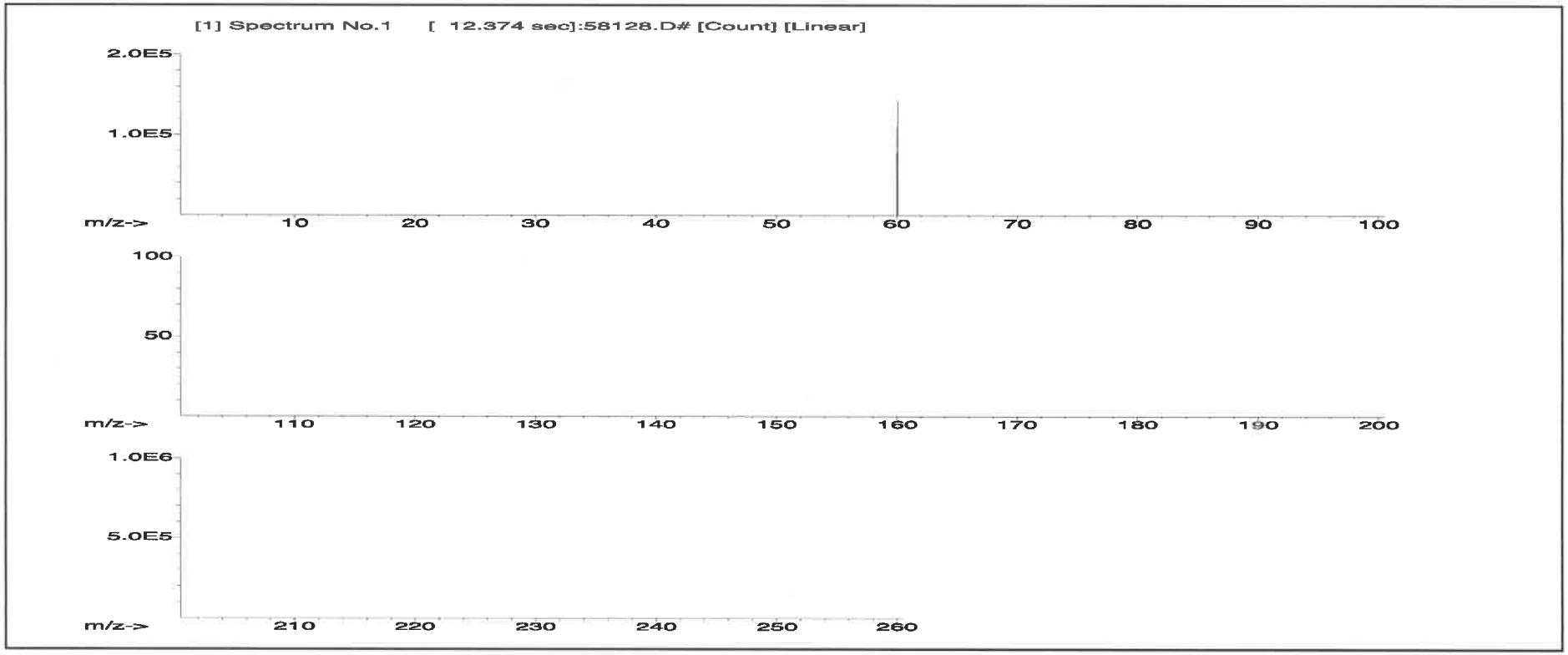
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CERTIFIED WEIGHT REPORT:

			Lot #	
Part Number:	**57028**	**Solvent:**	24002546	Nitric Acid
Lot Number:	**041124**			
Description:	**Nickel (Ni)**			
		2%	5.0 (mL)	Nitric Acid
Expiration Date:	041127			
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):	249.85	0.002	Flask Uncertainty	

Formulated By:	Brian Geddes	041124
Reviewed By:	Pedro L. Rentas	041124

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. Nickel(II) nitrate hexahydrate (Ni)	IN033	NIM052023A1	1000	99.999	0.10	20.2	1.2369	1.2369	**1000.0**	**2.0**	13478-00-7	1 mg/m3	orl-rat 1620 mg/kg	3136



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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	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.
* 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

M5962 R! 06/14/24.

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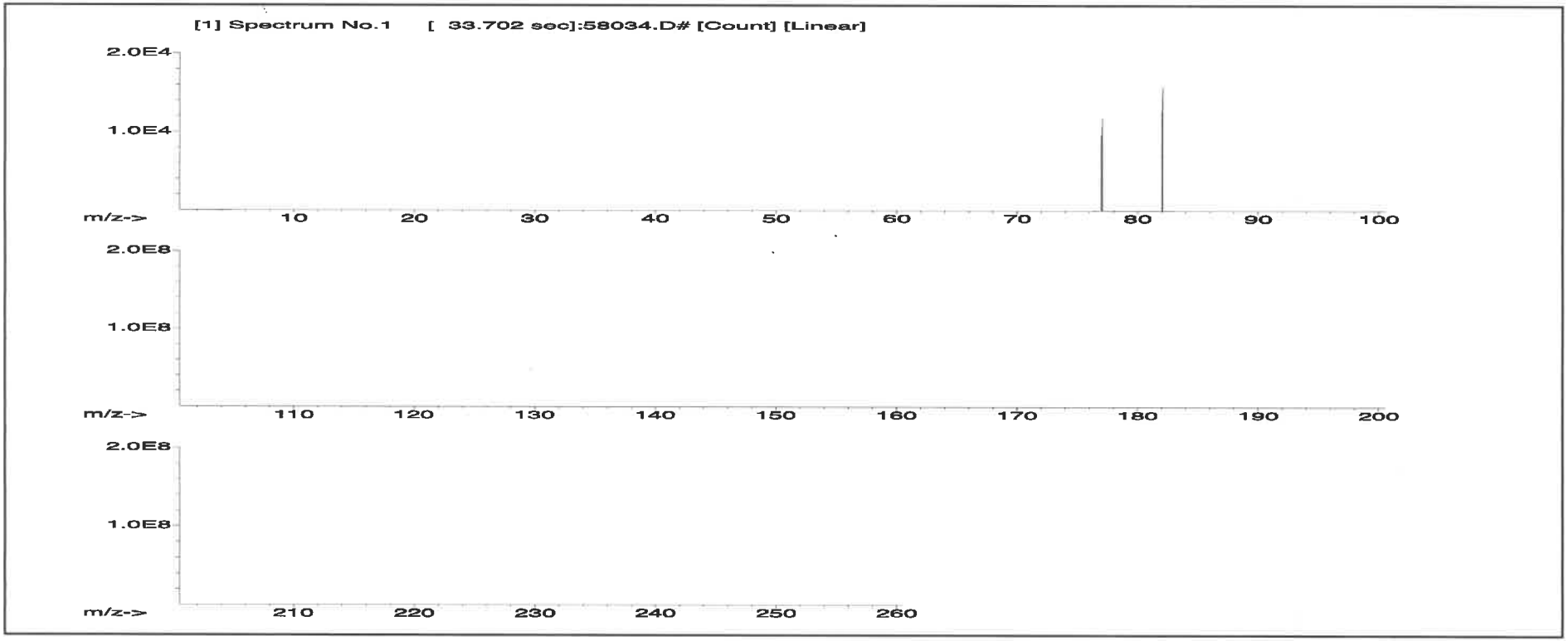
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CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**57034**	24002546	Nitric Acid	
Lot Number:	**060624**			
Description:	**Selenium (Se)**			
		2.0%	40.0 (mL)	Nitric Acid
Expiration Date:	060627			
Recommended Storage:	Ambient (20 °C)			
Nominal Concentration (µg/mL):	**1000**			
NIST Test Number:	6UTB	5E-05	Balance Uncertainty	
Volume shown below was diluted to (mL):	2000.07	0.100	Flask Uncertainty	

Formulated By:	Benson Chan	060624
Reviewed By:	Pedro L. Rentas	060624

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Nominal Conc. (µg/mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Selenium (Se)	58134	071223	0.1000	200.0	0.084	1000	10002.5	**1000.0**	**2.2**	7782-49-2	0.2 mg/m3	orl-rat 6700 mg/kg	3149



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

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

(T) = Target analyte

Physical Characterization:

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

Certified by:



* 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

M5970, M5971 R: 7/01/24

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CERTIFIED WEIGHT REPORT:

Part Number: 57003
Lot Number: 062124
Description: Lithium (Li)
Expiration Date: 062127
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB
Volume shown below was diluted to (mL): 250.11

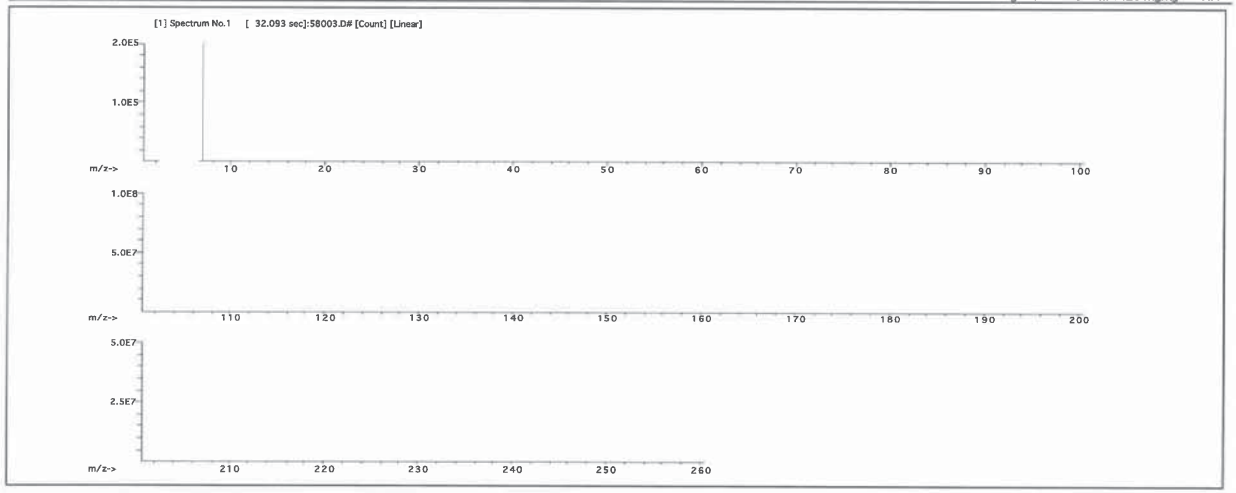
Lot #	Solvent:		
24002546	Nitric Acid		
2.0%	5.0 (mL)	Nitric Acid	

5E-05 Balance Uncertainty
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



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

Certified Reference Material CRM

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

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

Trace Metals Verification by ICP-MS (µg/mL)

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

(T) = Target analyte

Physical Characterization:

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

Certified by:



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

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Certificate of Analysis

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01 — ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGMO1
Lot Number:	T2-MO720876
Matrix:	H2O tr. NH4OH
Value / Analyte(s):	1 000 µg/mL ea: Molybdenum
Starting Material:	Ammonium Molybdate
Starting Material Lot#:	2361
Starting Material Purity:	99.9893%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 998 ± 7 µg/mL

Density: 1.000 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **998 ± 4 µg/mL**
ICP Assay NIST SRM 3134 Lot Number: 130418

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000590	M	Eu	<	0.000300	M	Na		0.000879	M	Se	<	0.008000	M	Zn		0.000598
M	Al		0.000563	M	Fe	<	0.006500	M	Nb	<	0.029000	i	Si	<		M	Zr	<	0.001800
M	As	<	0.002100	M	Ga	<	0.000300	i	Nd	<		M	Sm	<	0.000300				
M	Au	<	0.000300	M	Gd	<	0.000300	M	Ni	<	0.008000	M	Sn	<	0.008900				
M	B	<	0.003300	M	Ge	<	0.000300	M	Os	<	0.000590	M	Sr		0.000175				
M	Ba		0.001689	M	Hf	<	0.001800	i	P	<		M	Ta	<	0.004200				
M	Be	<	0.000890	M	Hg	<	0.003300	M	Pb	<	0.000300	M	Tb	<	0.000300				
M	Bi	<	0.000890	M	Ho	<	0.000300	M	Pd	<	0.001800	M	Te	<	0.021000				
O	Ca		0.006334	M	In	<	0.032000	M	Pr	<	0.013000	M	Th	<	0.000300				
O	Cd	<	0.026000	M	Ir	<	0.000300	M	Pt	<	0.000300	O	Tl	<	0.032000				
M	Ce	<	0.008300	M	K		0.130213	M	Rb		0.004575	M	Tl		0.001266				
M	Co		0.000598	M	La	<	0.000300	M	Re	<	0.000300	M	Tm	<	0.000300				
M	Cr		0.000527	O	Li		0.000059	M	Rh	<	0.000300	M	U	<	0.005300				
M	Cs		0.000527	M	Lu	<	0.000300	M	Ru	<	0.079000	M	V	<	0.000890				
M	Cu		0.002252	M	Mg		0.000563	i	S	<		M	W		0.087982				
M	Dy	<	0.000300	M	Mn	<	0.005900	M	Sb		0.001513	M	Y	<	0.000300				
M	Er	<	0.000300	s	Mo	<		M	Sc	<	0.001200	M	Yb	<	0.000300				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 95.94 +6 6,7,8,9 [MoO4]-2(chemical form as received)

Chemical Compatibility -Mo is received in a NH4OH matrix giving the operator the option of using HCl or HF to stabilize acidic solutions. The [MoO4]-2 is soluble in concentrated HCl [MoOCl5]-2, dilute HF / HNO3 [MoOF5]-2 and basic media [MoO4]-2. Stable at ppm levels with some metals provided it is fluorinated. Do not mix with Alkaline or Rare Earths when HF is present. Stable with most inorganic anions provided it is in the [MoO4]-2 chemical form.

Stability - 2-100 ppb levels stable (alone or mixed with all other metals that are at comparable levels) as the [MoOF5]-2 for months in 1% HNO3 / LDPE container. 1-10,000 ppm single element solutions as the [MoO4]-2 chemically stable for years in 1% NH4OH in a LDPE container.

Mo Containing Samples (Preparation and Solution) -Metal (Soluble in HF / HNO3 or hot dilute HCl); Oxide (soluble in HF or NH4OH) ; Organic Matrices (Dry ash at 450EC in Pt0 and dissolve oxide with HF or HCl).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 95 amu	3 ppt	n/a	40Ar39K16O,79Br1 6O,190Os2+,190Pt 2+
ICP-OES 202.030 nm	0.008 / 0.0002 µg/mL	1	Os, Hf
ICP-OES 203.844 nm	0.012 / 0.002 µg/mL	1	
ICP-OES 204.598 nm	0.012 / 0.001 µg/mL	1	Ir, Ta

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

July 17, 2022

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

11.2 Lot Expiration Date

- July 17, 2027

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Supervisor, Product Documentation



Certificate Approved By:

Michael Booth
Director, Technical



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01 — ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGMO1
Lot Number:	T2-MO720876
Matrix:	H2O tr. NH4OH
Value / Analyte(s):	1 000 µg/mL ea: Molybdenum
Starting Material:	Ammonium Molybdate
Starting Material Lot#:	2361
Starting Material Purity:	99.9893%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 998 ± 7 µg/mL

Density: 1.000 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1 **998 ± 4 µg/mL**
ICP Assay NIST SRM 3134 Lot Number: 130418

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000590	M	Eu	<	0.000300	M	Na		0.000879	M	Se	<	0.008000	M	Zn		0.000598
M	Al		0.000563	M	Fe	<	0.006500	M	Nb	<	0.029000	i	Si	<		M	Zr	<	0.001800
M	As	<	0.002100	M	Ga	<	0.000300	i	Nd	<		M	Sm	<	0.000300				
M	Au	<	0.000300	M	Gd	<	0.000300	M	Ni	<	0.008000	M	Sn	<	0.008900				
M	B	<	0.003300	M	Ge	<	0.000300	M	Os	<	0.000590	M	Sr		0.000175				
M	Ba		0.001689	M	Hf	<	0.001800	i	P	<		M	Ta	<	0.004200				
M	Be	<	0.000890	M	Hg	<	0.003300	M	Pb	<	0.000300	M	Tb	<	0.000300				
M	Bi	<	0.000890	M	Ho	<	0.000300	M	Pd	<	0.001800	M	Te	<	0.021000				
O	Ca		0.006334	M	In	<	0.032000	M	Pr	<	0.013000	M	Th	<	0.000300				
O	Cd	<	0.026000	M	Ir	<	0.000300	M	Pt	<	0.000300	O	Tl	<	0.032000				
M	Ce	<	0.008300	M	K		0.130213	M	Rb		0.004575	M	Tl		0.001266				
M	Co		0.000598	M	La	<	0.000300	M	Re	<	0.000300	M	Tm	<	0.000300				
M	Cr		0.000527	O	Li		0.000059	M	Rh	<	0.000300	M	U	<	0.005300				
M	Cs		0.000527	M	Lu	<	0.000300	M	Ru	<	0.079000	M	V	<	0.000890				
M	Cu		0.002252	M	Mg		0.000563	i	S	<		M	W		0.087982				
M	Dy	<	0.000300	M	Mn	<	0.005900	M	Sb		0.001513	M	Y	<	0.000300				
M	Er	<	0.000300	s	Mo	<		M	Sc	<	0.001200	M	Yb	<	0.000300				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

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

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 95.94 +6 6,7,8,9 [MoO4]-2(chemical form as received)

Chemical Compatibility -Mo is received in a NH4OH matrix giving the operator the option of using HCl or HF to stabilize acidic solutions. The [MoO4]-2 is soluble in concentrated HCl [MoOCl5]-2, dilute HF / HNO3 [MoOF5]-2 and basic media [MoO4]-2. Stable at ppm levels with some metals provided it is fluorinated. Do not mix with Alkaline or Rare Earths when HF is present. Stable with most inorganic anions provided it is in the [MoO4]-2 chemical form.

Stability - 2-100 ppb levels stable (alone or mixed with all other metals that are at comparable levels) as the [MoOF5]-2 for months in 1% HNO3 / LDPE container. 1-10,000 ppm single element solutions as the [MoO4]-2 chemically stable for years in 1% NH4OH in a LDPE container.

Mo Containing Samples (Preparation and Solution) -Metal (Soluble in HF / HNO3 or hot dilute HCl); Oxide (soluble in HF or NH4OH) ; Organic Matrices (Dry ash at 450EC in Pt0 and dissolve oxide with HF or HCl).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 95 amu	3 ppt	n/a	40Ar39K16O,79Br1 6O,190Os2+,190Pt 2+
ICP-OES 202.030 nm	0.008 / 0.0002 µg/mL	1	Os, Hf
ICP-OES 203.844 nm	0.012 / 0.002 µg/mL	1	
ICP-OES 204.598 nm	0.012 / 0.001 µg/mL	1	Ir, Ta

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

July 17, 2022

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

11.2 Lot Expiration Date

- July 17, 2027

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Supervisor, Product Documentation



Certificate Approved By:

Michael Booth
Director, Technical



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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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) HNO3 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:

$X_{CRM/RM} = \Sigma(w_i)(\bar{x}_i)$

$\bar{x}_i$ = 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:

$X_{CRM/RM} = (\bar{x}_a)\,(u_{char\ a})$

$\bar{x}_a$ = 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

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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

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

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

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

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

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 47.87 +4 6 Ti(F)6-2

Chemical Compatibility - Soluble in concentrated HCl, HF, H3PO4 H2SO4 and HNO3. Avoid neutral to basic media. Unstable at ppm levels with metals that would pull F- away (i.e. Do not mix with Alkaline or Rare Earths or high levels of transition elements unless they are fluorinated). Stable with most inorganic anions with a tendency to hydrolyze forming the hydrated oxide in all dilute acids except HF.

Stability - 2-100 ppb levels stable (Alone or mixed with all other metals) as the Ti(F)6-2 for months in 1% HNO3 / LDPE container. 1-10,000 ppm single element solutions as the Ti(F)6-2 chemically stable for years in 2-5% HNO3 / trace HF in an LDPE container.

Ti Containing Samples (Preparation and Solution) - Metal (Soluble in H2O / HF caution -powder reacts violently); Oxide - low temperature history anatase or rutile (Dissolved by heating in 1:1:1 H2O / HF / H2SO4); Oxide - high temperature history (~800EC) brookite (fuse in Pt0 with K2S2O7); Ores (fuse in Pt0 with KF + K2S2O7 - no KF if silica not present); Organic Matrices (Dry ash at 450EC in Pt0 and dissolve by heating with 1:1:1 H2O / HF / H2SO4 or fuse ash with pyrosulfate if oxide is as plastic pigment and likely in brookite crystalline form).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 48 amu	14 ppt	N/A	32S16O, 32S14N, 14N16O18O, 14N17N2, 36Ar12C, 48Ca, [96X=2 (where X = Zr, Mo, Ru)]
ICP-OES 323.452 nm	0.0054 / 0.00092 µg/mL	1	Ce, Ar, Ni
ICP-OES 334.941 nm	0.0038 / 0.000028 µg/mL	1	Nb, Ta, Cr, U
ICP-OES 336.121 nm	0.0053 / 0.000034 µg/mL	1	W, Mo, Co

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

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

June 17, 2022

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

11.2 Lot Expiration Date

- June 17, 2027

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 863.01
ACCREDITED Reference Material Producer Certificate 863.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGIN10
Lot Number:	U2-IN729349
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Indium
Starting Material:	Indium Metal
Starting Material Lot#:	2511
Starting Material Purity:	99.9995%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10022 ± 30 µg/mL

Density: 1.044 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	**10021 ± 56 µg/mL** ICP Assay NIST SRM 3124a Lot Number: 110516
Assay Method #2	**10035 ± 25 µg/mL** EDTA NIST SRM 928 Lot Number: 928
Assay Method #3	**10001 ± 33 µg/mL** Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

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

Characterization of CRM/RM by Two or More Methods

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

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

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

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

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

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

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

X_a = mean of Assay Method A with

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

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

k = coverage factor = 2

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

u_{bb} = bottle to bottle homogeneity standard uncertainty

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

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

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

4.1 Thermometer Calibration

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

4.2 Balance Calibration

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

4.3 Glassware Calibration

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

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

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000760	M	Eu	<	0.000760	O	Na		0.012771	M	Se	<	0.023000	M	Zn	<	0.006100
M	Al		0.003385	O	Fe		0.004462	M	Nb	<	0.000760	O	Si		0.024619	M	Zr	<	0.000760
M	As	<	0.004600	M	Ga	<	0.000760	M	Nd	<	0.000760	M	Sm	<	0.000760				
M	Au	<	0.002300	M	Gd	<	0.000760	O	Ni	<	0.005100	M	Sn	<	0.000760				
O	B		0.003692	M	Ge	<	0.001600	M	Os	<	0.000760	O	Sr	<	0.000610				
M	Ba	<	0.001600	M	Hf	<	0.000760	n	P	<		M	Ta	<	0.000760				
O	Be	<	0.000130	M	Hg	<	0.003100	M	Pb		0.001400	M	Tb	<	0.000760				
M	Bi	<	0.000760	M	Ho	<	0.000760	M	Pd	<	0.001600	M	Te	<	0.000760				
O	Ca		0.004616	s	In	<		M	Pr	<	0.000760	M	Th	<	0.000760				
M	Cd	<	0.000760	M	Ir	<	0.000760	M	Pt	<	0.000760	O	Ti	<	0.001100				
M	Ce	<	0.000760	O	K		0.007078	M	Rb	<	0.000760	M	Tl	<	0.000760				
M	Co	<	0.000760	M	La	<	0.000760	M	Re	<	0.000760	M	Tm	<	0.000760				
O	Cr	<	0.001300	O	Li	<	0.000130	M	Rh	<	0.000760	M	U	<	0.000760				
M	Cs	<	0.000760	M	Lu	<	0.000760	M	Ru	<	0.000760	M	V	<	0.001600				
M	Cu	<	0.003800	O	Mg		0.000707	n	S	<		M	W	<	0.001600				
M	Dy	<	0.000760	O	Mn		0.000149	M	Sb	<	0.000760	M	Y	<	0.000760				
M	Er	<	0.000760	M	Mo	<	0.002300	M	Sc	<	0.000760	M	Yb	<	0.000760				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

6.1 This standard is intended for the calibration of analytical instruments and validation of analytical methods as appropriate. This CRM may be used in connection with EPA Methods 6010, 6020 (all versions), Standard Methods 3120 B and USP <232> / ICH Q3D.

6.2 For products attaining traceability through Inorganic Ventures' Primary Certified Reference Materials (PCRM™) see the Limited License to Use PCRM™ in the Inorganic Ventures Terms and Conditions of Sale, https://www.inorganicventures.com/terms-and-conditions-sale. The Terms and Conditions contain information on the use of materials traceable to PCRM™ certified reference materials. This Limited License agreement is especially pertinent for laboratories accredited under ISO:17034.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

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

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

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

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

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 114.82 +3 6 In(H2O)6+3

Chemical Compatibility -Soluble in HCl, HNO3, and H2SO4. Avoid neutral and basic media. Stable with most metals and inorganic anions. The oxalate, sulfide, carbonate, hydroxide and phosphate are insoluble in water.

Stability - 2-100 ppb levels stable for months in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 2-5% HNO3 / LDPE container.

In Containing Samples (Preparation and Solution) -Metal (Best dissolved in HCl / HNO3); Oxide (Soluble in mineral acids); Ores (Carbonate fusion in Pt0 followed by HCl dissolution); Organic Matrices (Sulfuric/peroxide digestion or dry ash and dissolution in dilute HCl).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 115 amu	1 ppt	n/a	115Sn, 99Ru16O
ICP-OES 158.583 nm	0.05 / 0.002 µg/mL	1	
ICP-OES 230.606 nm	0.1 / 0.03 µg/mL	1	Ni, Os
ICP-OES 325.609 nm	0.2 / 0.05 µg/mL	1	Mn, Mo, Th

8.0 HAZARDOUS INFORMATION

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

9.0 HOMOGENEITY

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

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

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

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

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

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

February 21, 2023

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

11.2 Lot Expiration Date

- February 21, 2028

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

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

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

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

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Thomas Kozikowski
Manager, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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EXP.: 9/6/2029

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:	V2-MEB746762
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 ± 5 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	1 000 ± 6 µg/mL		

Density: 1.033 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
B	ICP Assay	3107	190605
B	Calculated		See Sec. 4.2
Mo	ICP Assay	traceable to 3134	U2-MO739068
Si	ICP Assay	Traceable to 3150	S2-SI702546
Sn	ICP Assay	3161a	140917
Ti	ICP Assay	traceable to 3162a	T2-TI725816

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

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

September 06, 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

- September 06, 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 Approved By:

Joseph Burns
Custom VS Manager



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director



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 6121

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

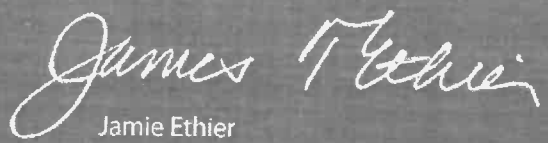
331

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

M6125 Receive -> 11/22/24

CORCO CHEMICAL CORPORATION

Manufacturers of ACS Reagents and Semiconductor Grade Chemicals

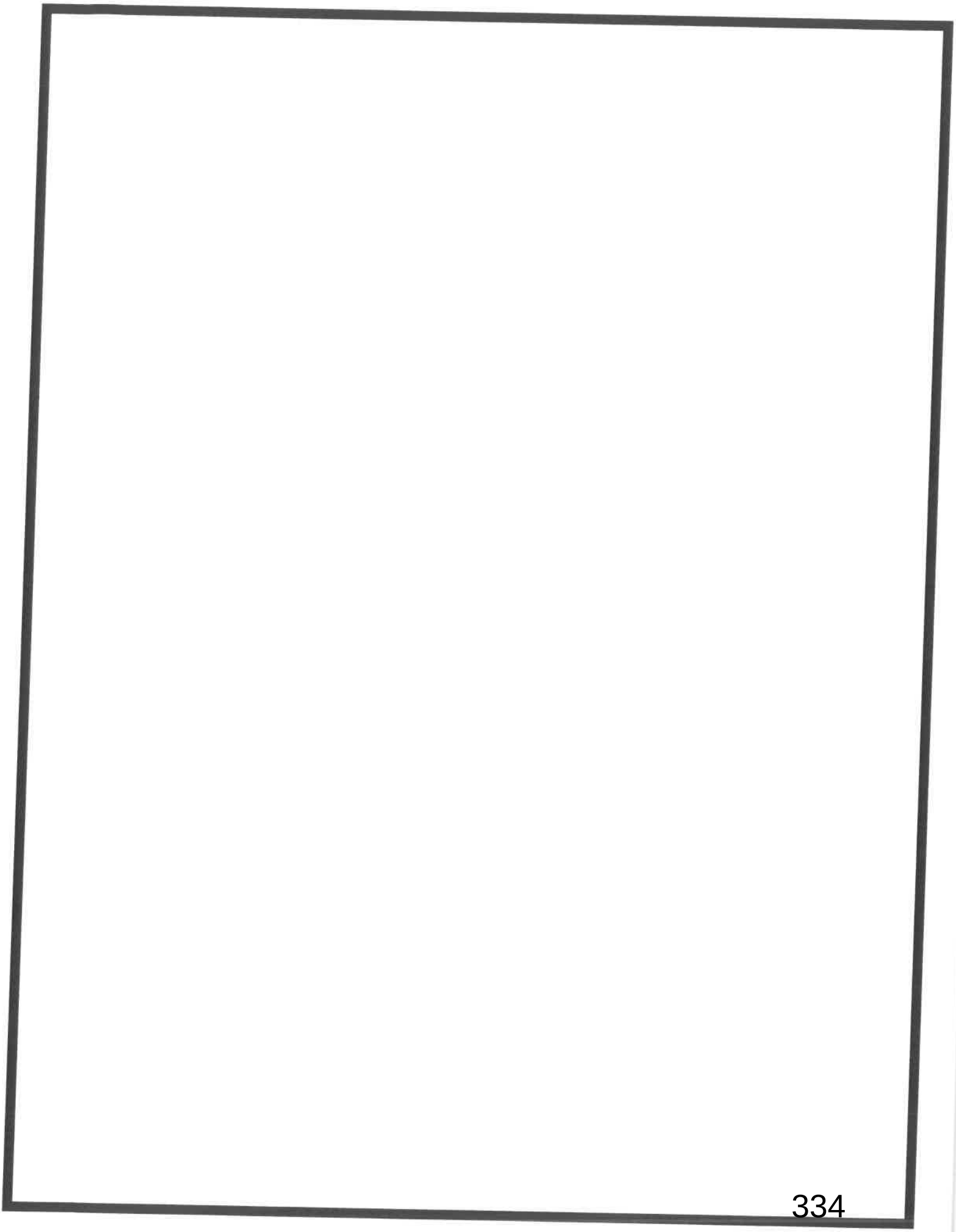
Office and Plant
299 Cedar Lane
Fairless Hills, PA 19030

Phone: 215-295-5006
Fax: 215-295-0781

Hydrogen Peroxide 30%, ACS

Reagent Grade

SPECIFICATION	MAXIMUM LIMITS
Appearance	Colorless and free from suspended matter or sediment
Assay	29-32%
Color (APHA)	10
Residue after Evaporation	0.002%
Titratable Acid	0.0006 meq/g
Chloride (Cl)	3 ppm
Nitrate (NO_3)	2 ppm
Phosphate	2 ppm
Sulfate (SO_4)	5 ppm
Ammonium (NH_4)	5 ppm
Heavy Metals (as Pb)	1 ppm
Iron (Fe)	0.5 ppm



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

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CERTIFIED WEIGHT REPORT:

R→ 1/13/25

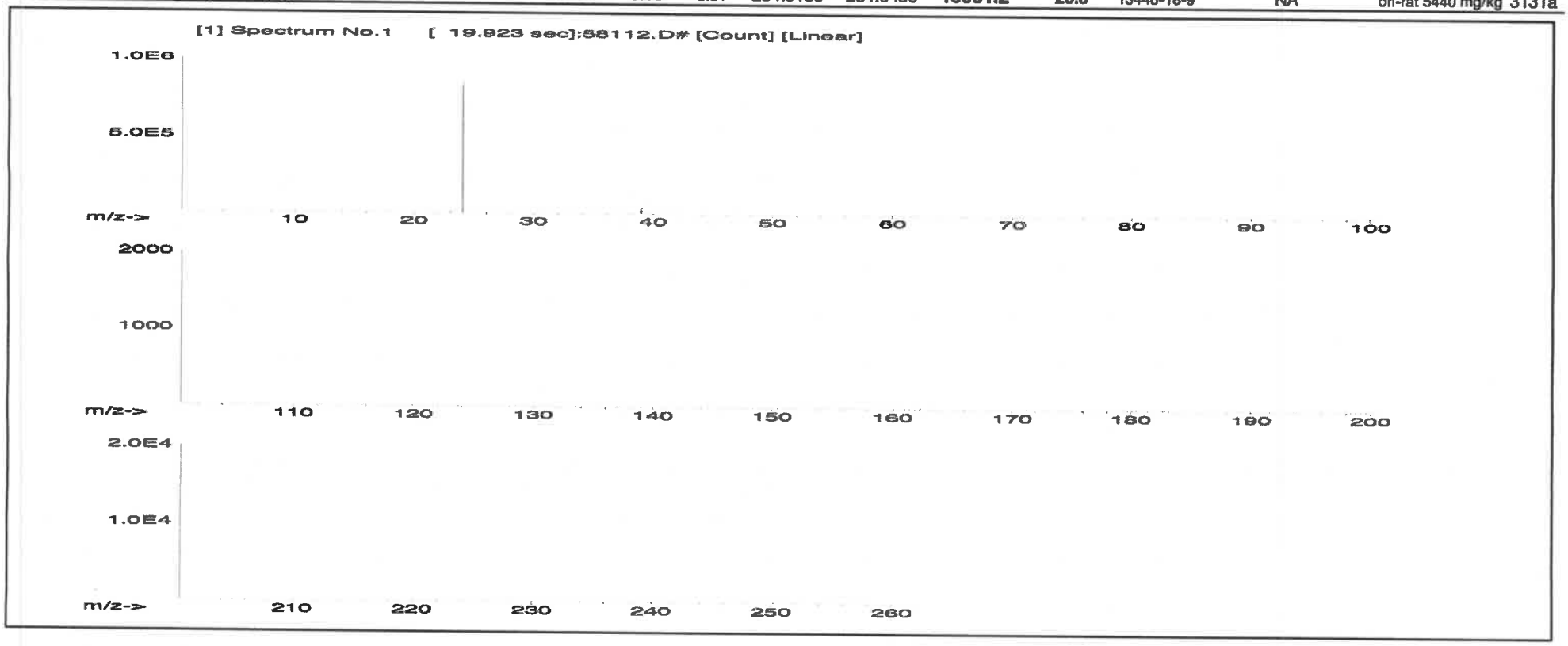
M 6127

			Lot #	
Part Number:	**58112**	**Solvent:**	24012496	Nitric Acid
Lot Number:	**112124**			
Description:	**Magnesium (Mg)**	2%	40.0 (mL)	Nitric Acid
Expiration Date:	112127			
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):	2000.07	0.100	Flask Uncertainty	

Giovanni Esposito

Formulated By:	Giovanni Esposito	112124
Reviewed By:	Pedro L. Rentas	112124

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	234.9183	234.9459	**10001.2**	**20.0**	13446-18-9	NA	orl-rat 5440 mg/kg	3131a



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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:

* 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

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CERTIFIED WEIGHT REPORT:

R->1/13/25
M6128

Part Number:	**58025**	**Solvent:**	**Lot #** 24002546	Nitric Acid
Lot Number:	**101124**			
Description:	**Manganese (Mn)**	2%	80.0 (mL)	Nitric Acid
Expiration Date:	101127			
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):	4000.2	0.10	Flask Uncertainty	

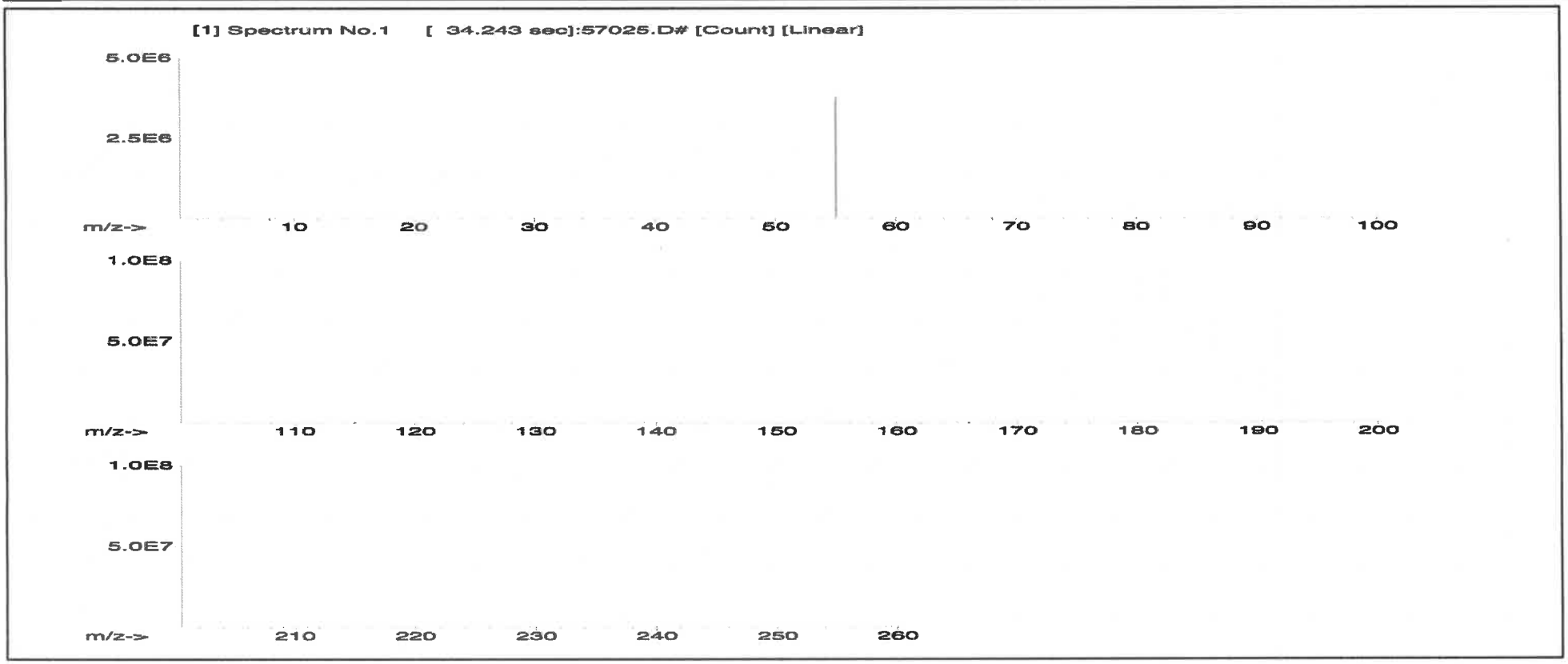
Giovanni Esposito

Formulated By:	Giovanni Esposito	101124

Pedro Rentas

Reviewed By:	Pedro L. Rentas	101124

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. Manganese(II) nitrate hydrate (Mn)	IN031	MNM092020A1	1000	99.999	0.10	20.8	19.2322	19.2344	**1000.1**	**2.0**	15710-66-4	5 mg/m3	orl-rat >300mg/kg	3132



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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:

* 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

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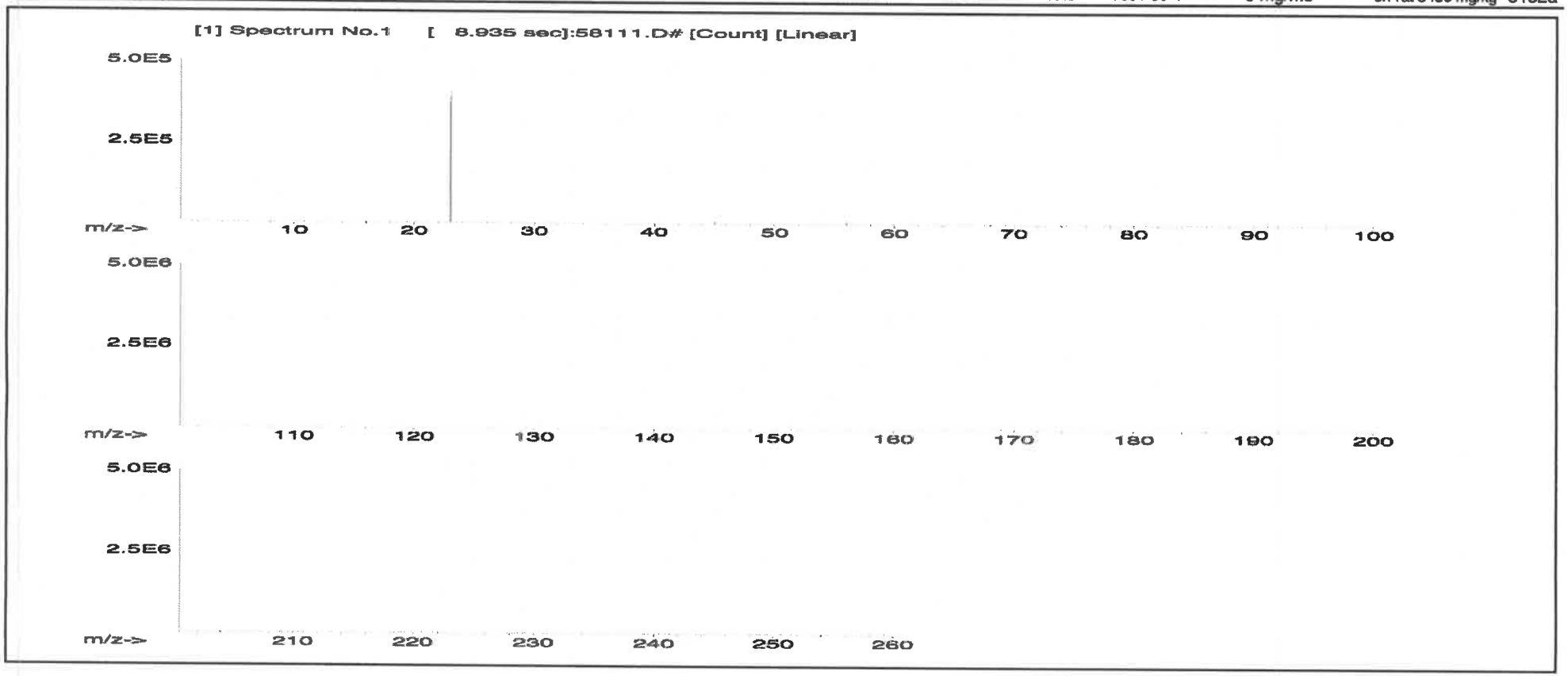
CERTIFIED WEIGHT REPORT:

R->1/13/25

Part Number:	**58111**		**Lot #**		
Lot Number:	**072424**	**Solvent:**	24002546	Nitric Acid	
Description:	**Sodium (Na)**				
	MG144	2%	80.0 (mL)	Nitric Acid	
Expiration Date:	072427				
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):	4000.2	0.10	Flask Uncertainty		

Formulated By:	Benson Chan 072424
Reviewed By:	Pedro L. Rentas 072424

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	148.7096	######	**10000.0**	**20.0**	7631-99-4	5 mg/m3	orl-rat 3430 mg/kg	3152a



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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	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	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:

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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CERTIFIED WEIGHT REPORT:

Part Number: 58030
Lot Number: 121724
Description: Zinc (Zn)

R → 1/13/25

M6145

Expiration Date: 121727
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

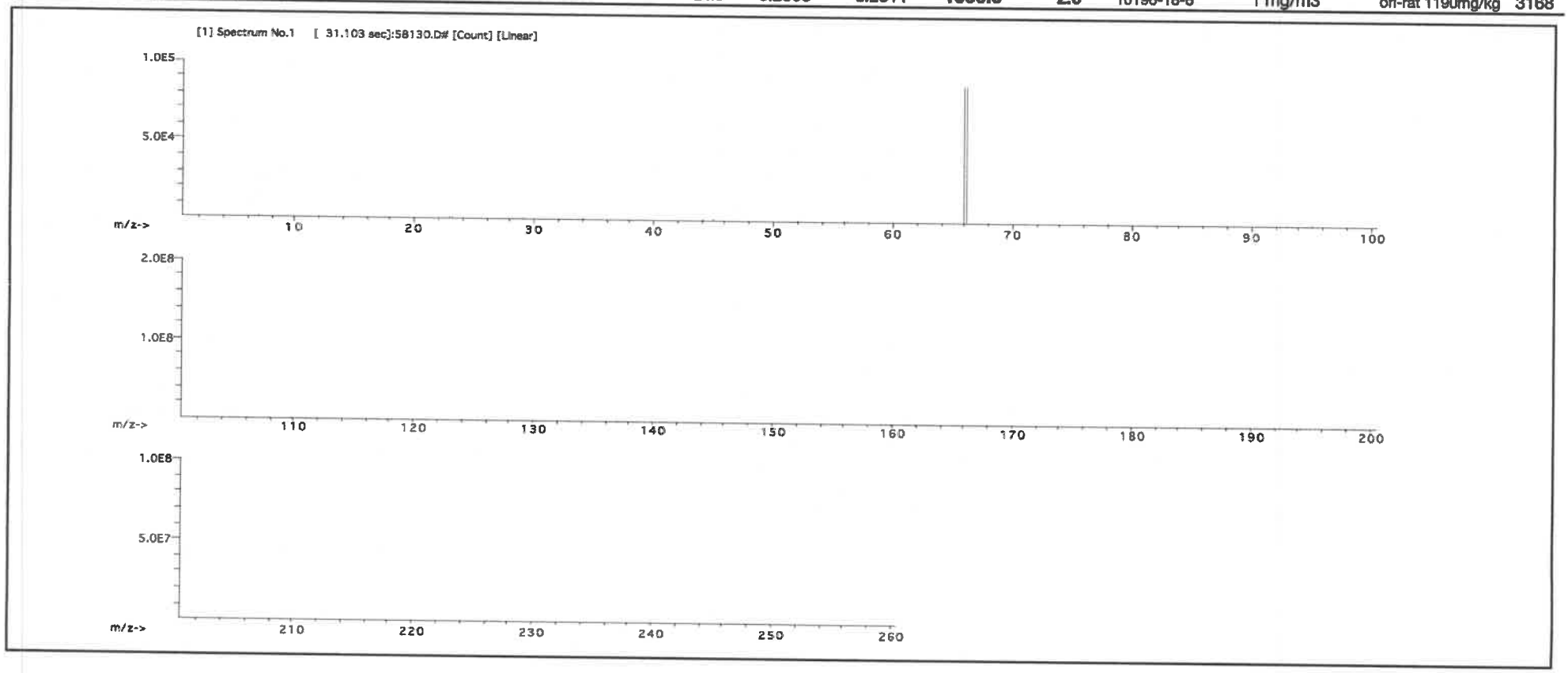
		Lot #	
Solvent:	24012496	Nitric Acid	
	2%	40.0 (mL)	Nitric Acid

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 121724

Reviewed By: Pedro L. Rentas 121724

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	8.2308	8.2311	**1000.0**	**2.0**	10196-18-6	1 mg/m3	ori-rat 1190mg/kg	3168



344

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:

Certified by:

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

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R: 01/03/24 M5806, M5807

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345

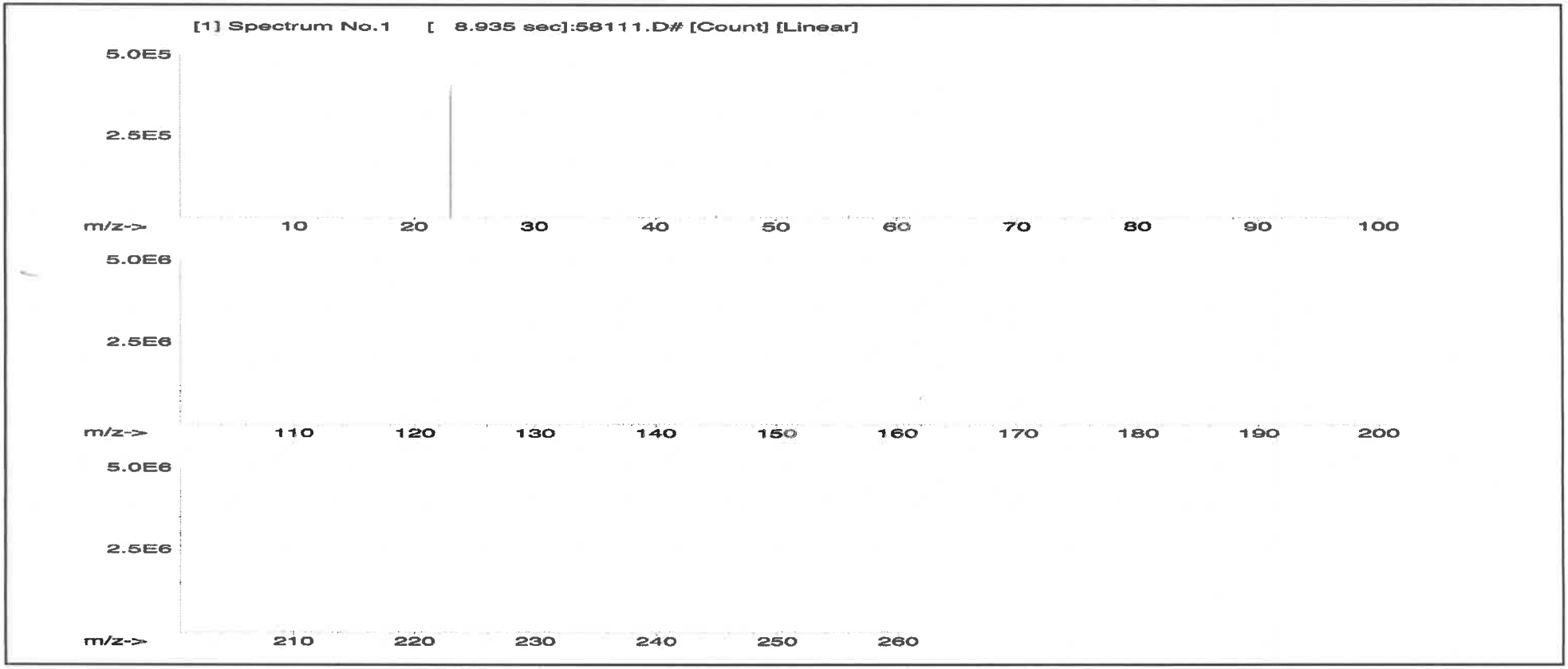
CERTIFIED WEIGHT REPORT:

			Lot #	
Part Number:	**58111**	**Solvent:**	24002546	Nitric Acid
Lot Number:	**122223**			
Description:	**Sodium (Na)**	2%	60.0 (mL)	Nitric Acid
Expiration Date:	122226			
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):	3000.4	0.06	Flask 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



346

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.
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R: 01/03/24 M5802, M5803

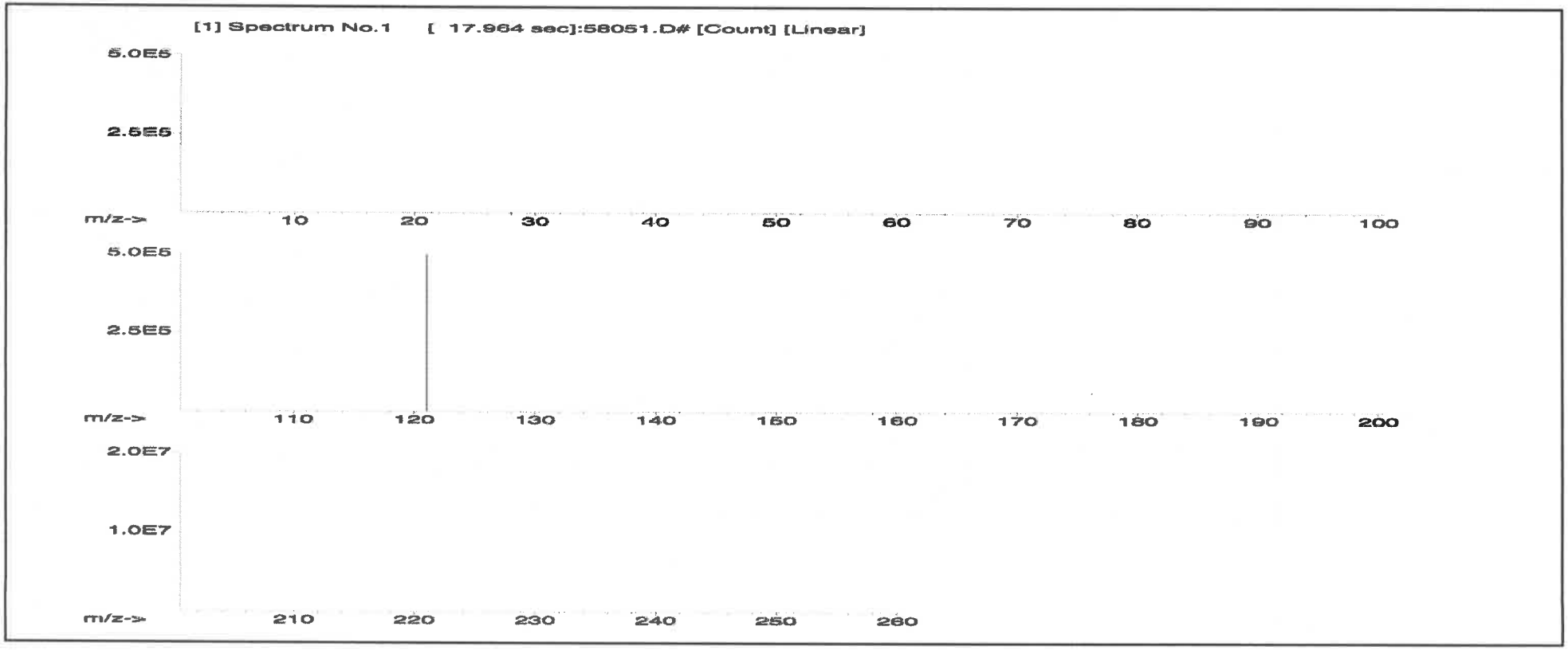
347

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



348

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:

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M6030

R: 8/5/24

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349

CERTIFIED WEIGHT REPORT:

Part Number: 57047
Lot Number: 122823
Description: Silver (Ag)

Expiration Date: 122826
Recommended Storage: Ambient (20 °C)
Nominal Concentration (µg/mL): 1000
NIST Test Number: 6UTB

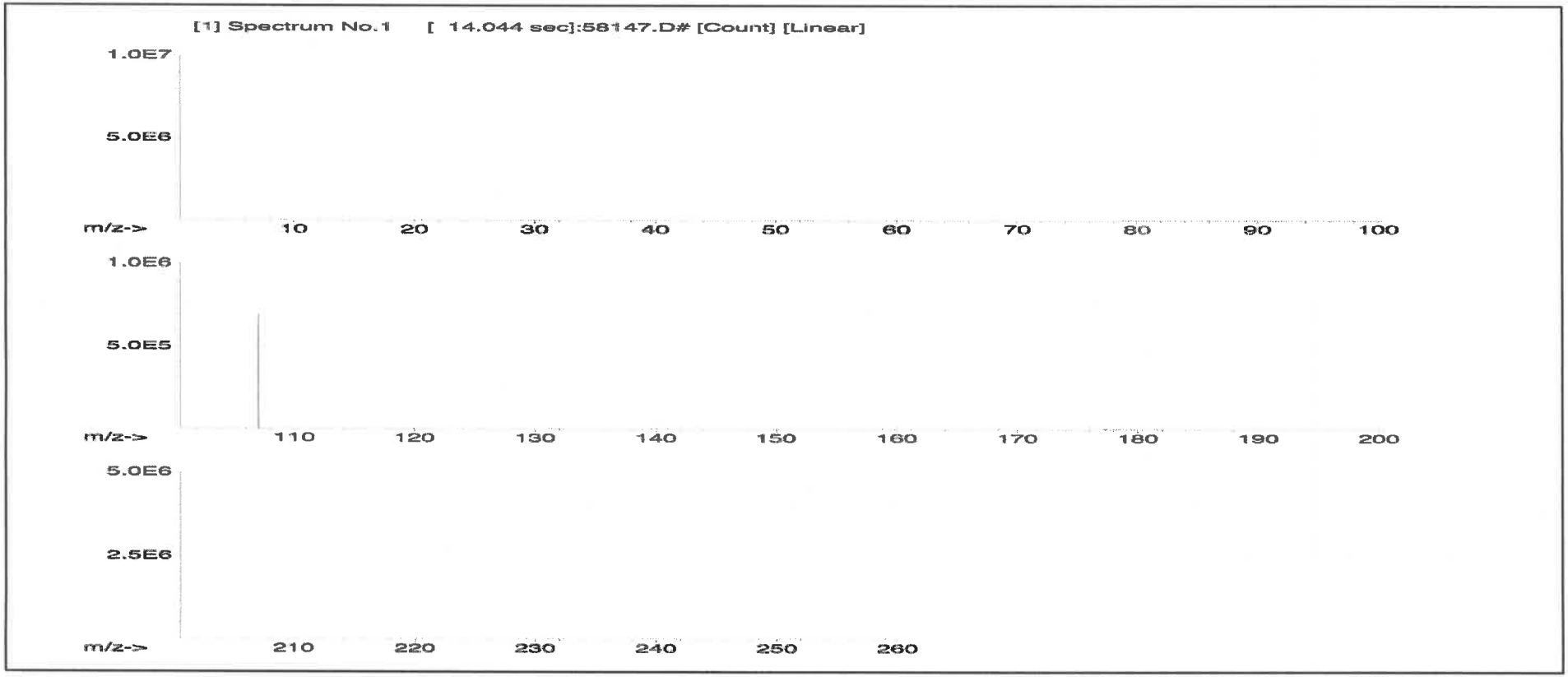
Weight shown below was diluted to (mL): 4000.30 0.058 Flask Uncertainty

	Lot #		
Solvent:	24002546	Nitric Acid	
2%	80.0 (mL)	Nitric Acid	

5E-05 Balance 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



350

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

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

(T)= Target analyte

Physical Characterization:

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

Certified by:

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R: 10/18/24

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CERTIFIED WEIGHT REPORT: MG146

		Lot #	Solvent:		
Part Number:	**57051**	24002546	Nitric Acid		
Lot Number:	**071724**				
Description:	**Antimony (Sb)**				
		2.0%	40.0 (mL)	Nitric Acid	
Expiration Date:	071727				
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):	2000.26	0.058	Flask Uncertainty		

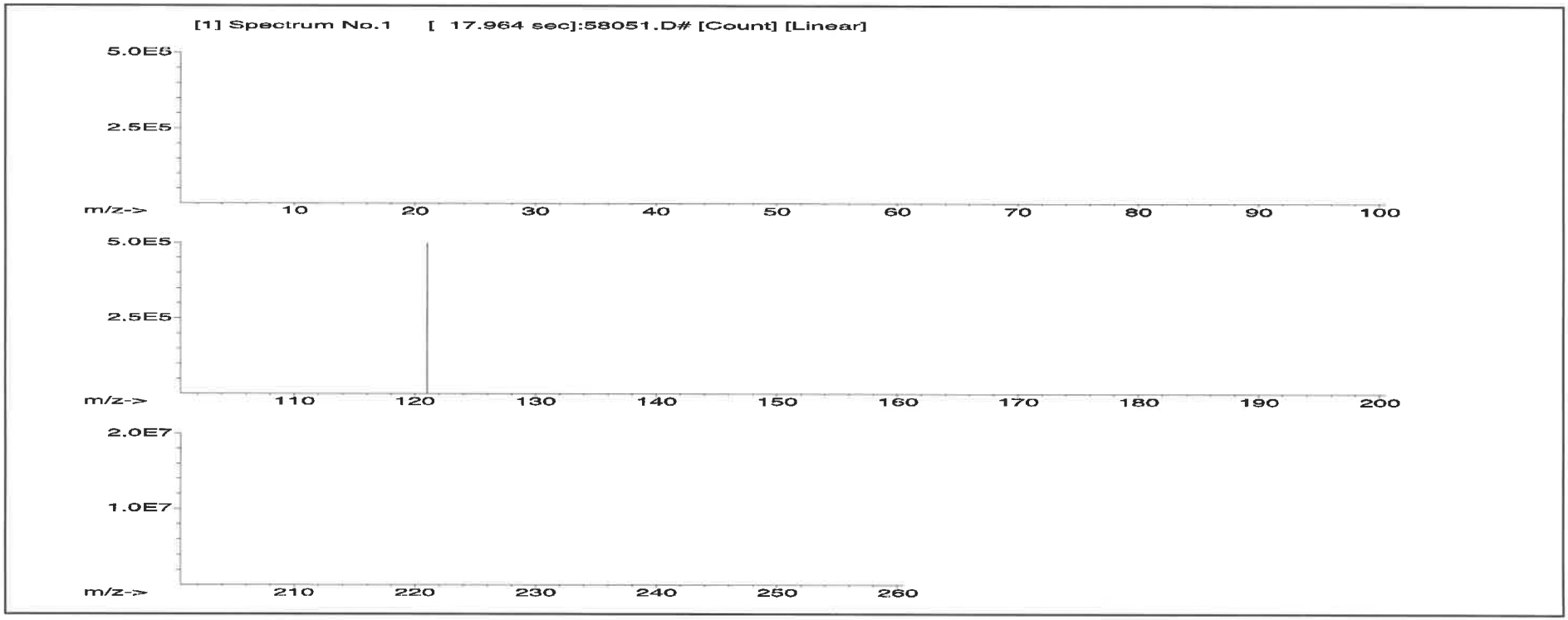
Giovanni Esposito

Formulated By:	Giovanni Esposito	071724

Pedro Rentas

Reviewed By:	Pedro L. Rentas	071724

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	060324	0.1000	200.0	0.084	1000	10001.4	**1000.0**	**2.2**	7440-36-0	0.5 mg/m3	orl-rat 7000 mg/kg	3102a



352

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
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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

(T) = Target analyte

Physical Characterization:

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Certified by:



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QATS LABORATORY INORGANIC REFERENCE MATERIAL INITIAL CALIBRATION VERIFICATION SOLUTIONS (ICV1, ICV5, AND ICV6)

M6147

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

(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

R : 04/20/21

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
"An ISO 9001:2015 Certified Program"

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APTIM

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

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.

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.**

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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.

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(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,

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
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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
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Ni	40	(2.0)	-38.0	42.0	954	810	1100
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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

The acceptance ranges for all analytes in parentheses in the above table were determined using the listed certified value ± 1 times the associated CLP SOW CRQL. The acceptance ranges for all other analytes were determined using the certified value ± 15 percent of the listed certified value.

INORGANIC VENTURES™
Refine your results. Redefine your industry.

Certificate of Analysis

R: 8/5/24 M6019

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 888.01 ACCREDITED Reference Material Producer Certificate 888.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGSR1
Lot Number:	U2-SR730227
Matrix:	0.1% (v/v) HNO3
Value / Analyte(s):	1 000 µg/mL ea: Strontium
Starting Material:	SrCO3
Starting Material Lot#:	M2-2192
Starting Material Purity:	99.9993%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1001 ± 3 µg/mL

Density: 1.000 g/mL (measured at 20 ± 4 °C)

Assay Information:

Assay Method #1	**998 ± 4 µg/mL** ICP Assay NIST SRM Traceable to 3153a Lot Number: K2-SR650985
Assay Method #2	**1001 ± 3 µg/mL** EDTA NIST SRM 928 Lot Number: 928
Assay Method #3	**1001 ± 2 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	<	0.001980	M	Eu	<	0.000495	O	Na		0.000200	M	Se	<	0.013862	O	Zn		0.000143
O	Al		0.000370	O	Fe		0.000410	M	Nb	<	0.000495	i	Si	<		M	Zr	<	0.000495
M	As	<	0.000495	M	Ga	<	0.000495	M	Nd	<	0.000495	M	Sm	<	0.000495				
M	Au	<	0.000989	M	Gd	<	0.000495	O	Ni	<	0.007631	M	Sn	<	0.000990				
M	B	<	0.039606	M	Ge	<	0.000495	M	Os	<	0.000494	s	Sr	<					
M	Ba		0.006486	M	Hf	<	0.000495	i	P	<		M	Ta	<	0.000495				
M	Be	<	0.000990	M	Hg	<	0.000989	M	Pb	<	0.002970	M	Tb	<	0.000495				
M	Bi	<	0.000495	M	Ho	<	0.000495	M	Pd	<	0.003957	M	Te	<	0.027724				
O	Ca		0.004255	M	In	<	0.000495	M	Pr	<	0.000495	M	Th	<	0.000990				
M	Cd		0.001339	M	Ir	<	0.000494	M	Pt	<	0.002970	M	Ti	<	0.005940				
M	Ce	<	0.004950	O	K	<	0.008184	M	Rb	<	0.002970	M	Tl	<	0.000495				
M	Co	<	0.000495	M	La	<	0.000495	M	Re	<	0.000495	M	Tm	<	0.000495				
O	Cr	<	0.003207	O	Li	<	0.000884	O	Rh	<	0.012829	M	U	<	0.001485				
M	Cs	<	0.000990	M	Lu	<	0.002970	M	Ru	<	0.000989	M	V	<	0.001980				
M	Cu		0.000099	O	Mg		0.000064	i	S	<		M	W	<	0.003960				
M	Dy	<	0.000495	O	Mn		0.000066	M	Sb	<	0.014852	O	Y	<	0.000995				
M	Er	<	0.000495	M	Mo	<	0.001980	M	Sc	<	0.001980	M	Yb	<	0.000495				

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 - 87.62 +2 6 $Sr(H_2O)_6^{+2}$

Chemical Compatibility - Soluble in HCl, and HNO_3. Avoid H_2SO_4, HF and neutral to basic media. Stable with most metals and inorganic anions forming insoluble silicate, carbonate, hydroxide, oxide, fluoride, sulfate, oxalate, chromate, arsenate and tungstate in neutral aqueous media.

Stability - 2-100 ppb levels stable for months in 1% HNO_3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1 - 3.5% HNO_3 / LDPE container.

Sr Containing Samples (Preparation and Solution) -Metal (Best dissolved in diluted HNO_3); Ores (Carbonate fusion in Pt0 followed by HCl dissolution); Organic Matrices (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 88 amu	1200 ppt	N/A	72Ge16O, 176Yb+2, 176Lu+2 , 176Hf+2
ICP-OES 407.771 nm	0.0004 / 0.00006 µg/mL	1	U, Ce
ICP-OES 421.552 nm	0.0008 / 0.00004 µg/mL	1	Rb
ICP-OES 460.733 nm	0.07 / 0.003 µg/mL	1	Ce

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

March 03, 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 03, 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: 03/16/23 M5473, M5474, M5475, M5476

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

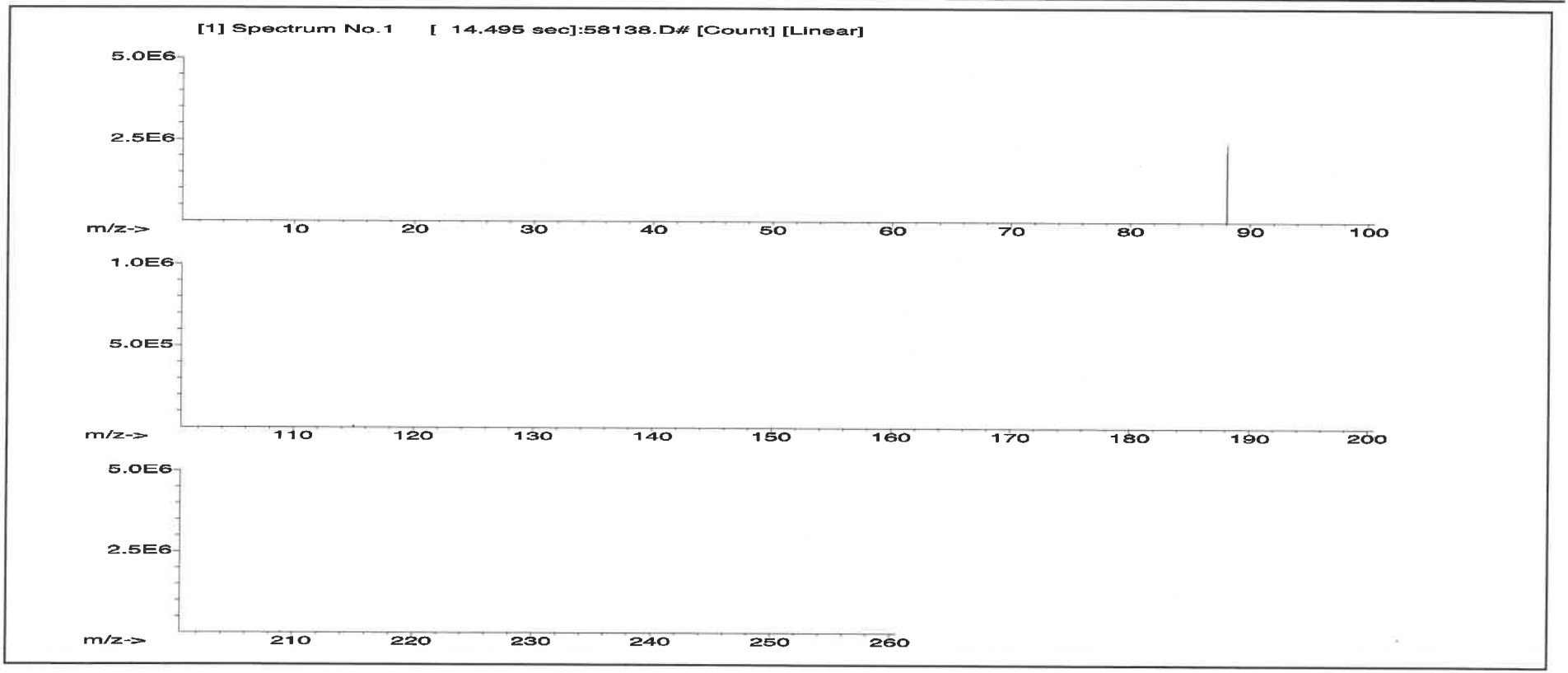
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CERTIFIED WEIGHT REPORT:

Part Number:	**56138**		**Lot #**		
Lot Number:	**082922**	**Solvent:**	20510011	Nitric Acid	
Description:	**Strontium (Sr)**	2%	20.0 (mL)	Nitric Acid	
Expiration Date:	082925				
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):	1000.12	0.058	Flask Uncertainty		

Formulated By:	Lawrence Barry	082922
Reviewed By:	Pedro L. Rentas	082922

Compound	RM#	Lot Number	Nominal Conc. (µg/mL)	Purity (%)	Uncertainty Purity (%)	Assay (%)	Target Weight (g)	Actual Weight (g)	**Actual Conc. (µg/mL)**	Expanded Uncertainty +/- (µg/mL)	SDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50	NIST SRM
1. Strontium nitrate (Sr)	IN017	SRZ022018A1	10000	99.997	0.10	41.2	24.2756	24.2758	**10000.1**	**20.0**	10042-76-9	NA	orl-rat >2000mg/kg	3153a



364

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

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

(T)= Target analyte

Physical Characterization:

Certified by:

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

* 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.
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Certified Reference Material CRM

M6023

R ! 8/5/24

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

365

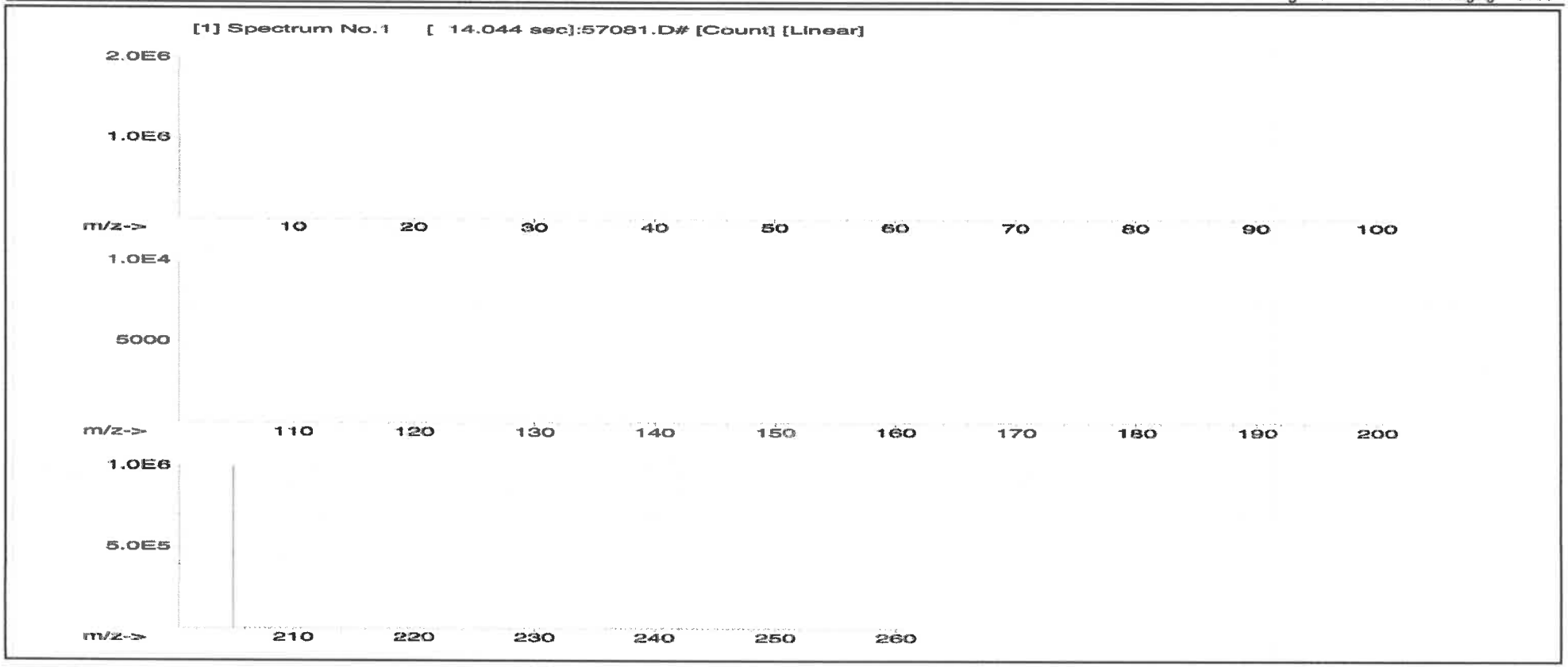
CERTIFIED WEIGHT REPORT:

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



366

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:



* 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

M6021

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

Rc. 8/5/24

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CERTIFIED WEIGHT REPORT:

		Lot #	Solvent:	
Part Number:	**57023**			
Lot Number:	**062424**			
Description:	**Vanadium (V)**	24002546	Nitric Acid	
		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	

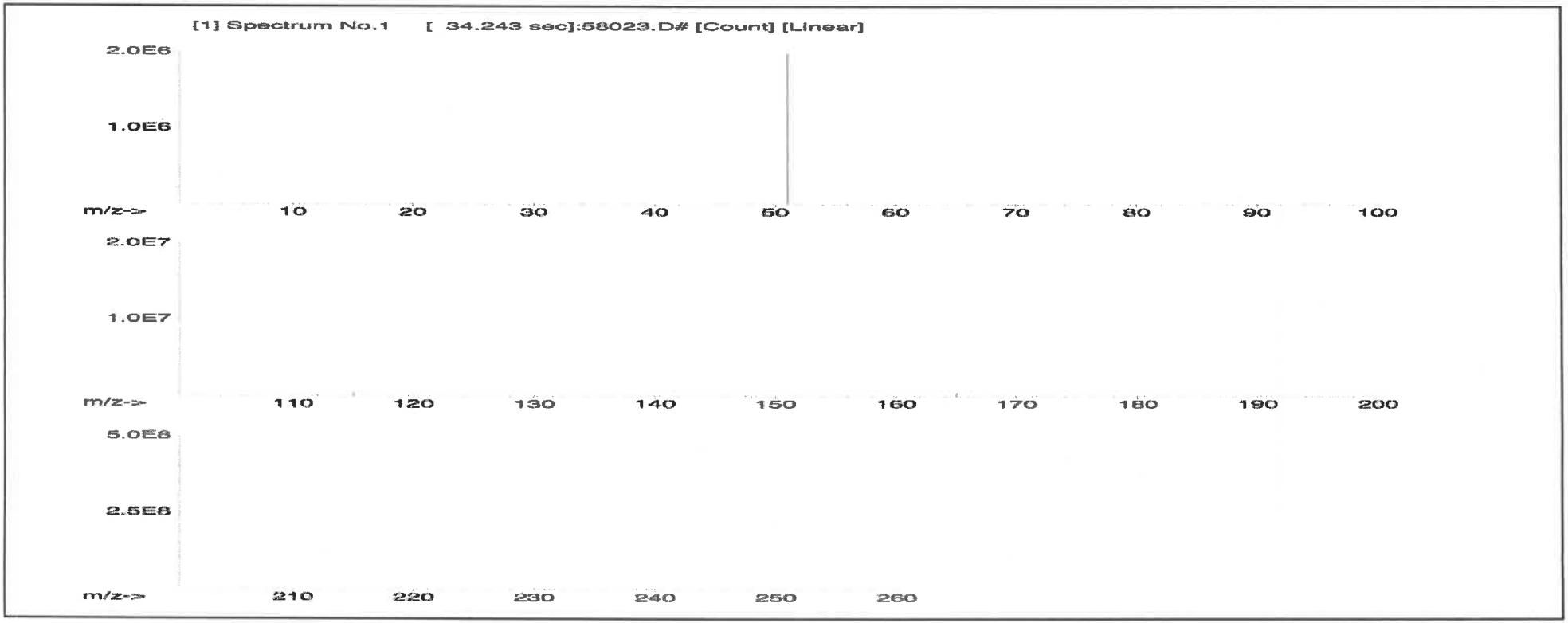
Aleah O'Brady

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



368

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

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

(T) = Target analyte

Physical Characterization:

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 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).

Alliance TECHNICAL GROUP

Soil/Sludge Metals Preparation Sheet

PB166600

SOP ID : M3050B-Digestion-20, MSFAM01.1-Trace Metals-2

SDG No : MBHHA3

Matrix : SOIL

Pippete ID: ICP A

Balance ID : M SC-2

Filter paper ID : N/A

pH Strip ID : N/A

Hood ID : #3

Block ID: 1. HOT BLOCK #2 2. N/A

Start Digest Date: 02/06/2025 **Time :** 14:15 **Temp :** 96 °C

End Digest Date: 02/06/2025 **Time :** 16:20 **Temp :** 96 °C

Digestion tube ID: M6054

Block thermometer ID: MET-DIG. #2

Dig Technician Signature: [signature]

Supervisor Signature: [signature]

Temp : 1. 96°C 2. N/A

Standared Name	MLS USED	STD REF. # FROM LOG
LCSS	1.00	MP84063
Spike Sol 6	1.00	MP84070
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Chemical Used	ML/SAMPLE USED	Lot Number
1:1 HNO3	10.00	MP84041
Conc. HNO3	5.00	M6126
30% H2O2	3.00	M6125
Conc. HCL	10.00	M6121
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Extraction Conformance/Non-Conformance Comments:

HOT BLOCK #2 CELL #35 : 96 C

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
02/06/25 17:20	SLD. Met. Dig	[signature] Metals Lab
	Preparation Group	Analysis Group

Alliance TECHNICAL GROUP

Soil/Sludge Metals Preparation Sheet

PB166600

Lab Sample ID	Client Sample ID	pH	Initial Weight (g)	Final Vol (ml)	Color Before	Color After	Texture	Artifact	Comment	Prep Pos
PB166600BL	PBS600	N/A	1.00	100	Colorless	Colorless	Fine	N/A	N/A	1
PB166600BS	LCS600	N/A	1.00	100	Colorless	Colorless	Fine	N/A	MP84063	2
Q1314-01	MBHHA3	N/A	1.13	100	Brown	Yellow	Medium	N/A	N/A	3
Q1314-02	MBHHA4	N/A	1.40	100	Brown	Yellow	Medium	N/A	N/A	4
Q1314-03	MBHHA5	N/A	1.18	100	Brown	Yellow	Medium	N/A	N/A	5
Q1314-04	MBHHA6	N/A	1.23	100	Brown	Yellow	Medium	N/A	N/A	6
Q1314-05	MBHHA7	N/A	1.27	100	Brown	Yellow	Medium	N/A	N/A	7
Q1314-06	MBHHA7D	N/A	1.12	100	Brown	Yellow	Medium	N/A	N/A	8
Q1314-07	MBHHA7S	N/A	1.25	100	Brown	Yellow	Medium	N/A	MP84070	9

Alliance TECHNICAL GROUP

Water Metals Preparation Sheet

PB166670

SOP ID : M200.7-Trace Elements-22, MSFAM01.1-Trace Metals-2

SDG No : MBHHA3,MBHHA8

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: 02/11/2025 **Time :** 11:05 **Temp :** 96 °C

End Digest Date: 02/11/2025 **Time :** 13:10 **Temp :** 96 °C

Digestion tube ID: M5595

Block thermometer ID: MET-DIG. #1

Dig Technician Signature: S129.

Supervisor Signature: MD

Temp : 1. 96°C 2. N/A

Standared Name	MLS USED	STD REF. # FROM LOG
LCSW	0.50	MP84063
Spike Sol 6	0.25	MP84070
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Chemical Used	ML/SAMPLE USED	Lot Number
1:1 HNO3	1.00	MP84041
1:1 HCL	0.50	MP84297
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Extraction Conformance/Non-Conformance Comments:

HOT BLOCK #1 CELL #55 :96

Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
02/11/25 14:10	S129. met.dig.	MS metal LM
	Preparation Group	Analysis Group

Alliance TECHNICAL GROUP

Water Metals Preparation Sheet

PB166670

Lab Sample ID	Client Sample ID	pH	Initial Vol (ml)	Final Vol (ml)	Color Before	Color After	Clarity Before	Clarity After	Comment	Prep Pos
PB166670BL	PBW670	<2	50	50	Colorless	Colorless	Clear	Clear	N/A	1
PB166670BS	LCS670	<2	50	50	Colorless	Colorless	Clear	Clear	MP84063	2
Q1314-08	MBHHA9	<2	50	50	Colorless	Colorless	Clear	Clear	N/A	3
Q1314-09	MBHHA9D	<2	50	50	Colorless	Colorless	Clear	Clear	N/A	4
Q1314-10	MBHHA9S	<2	50	50	Colorless	Colorless	Clear	Clear	MP84070	5
Q1315-01	MBHHA8	<2	50	50	Colorless	Colorless	Clear	Clear	N/A	6
Q1315-02	MBHHA8D	<2	50	50	Colorless	Colorless	Clear	Clear	N/A	7
Q1315-03	MBHHA8S	<2	50	50	Colorless	Colorless	Clear	Clear	MP84070	8

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

Instrument ID: P5

Daily Analysis Runlog For Sequence/QCBatch ID # LB134644

Review By	Kareem Khairalla	Review On	2/10/2025 3:29:53 PM
Supervise By	Mohan Bera	Supervise On	2/10/2025 5:27:03 PM

STD. NAME	STD REF.#
ICAL Standard	MP84204,MP84388,MP84386,MP84385,MP84384,MP84383,MP84381
ICV Standard	MP84389
CCV Standard	MP84392
ICSA Standard	MP84390,MP84391
CRI Standard	
LCS Standard	MP84063
Chk Standard	MP84218,MP84219

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	02/07/25 13:18		Kareem	OK
2	S1	S01	CAL2	02/07/25 13:22		Kareem	OK
3	S2	S02	CAL3	02/07/25 13:26		Kareem	OK
4	S3	S03	CAL4	02/07/25 13:30		Kareem	OK
5	S4	S04	CAL5	02/07/25 13:34		Kareem	OK
6	S5	S05	CAL6	02/07/25 13:37		Kareem	OK
7	S6	S06	CAL7	02/07/25 13:42		Kareem	OK
8	ICV003	ICV003	ICV	02/07/25 13:46		Kareem	OK
9	ICB003	ICB003	ICB	02/07/25 13:51		Kareem	OK
10	ICSA003	ICSA003	ICSA	02/07/25 13:55		Kareem	OK
11	ICSAB003	ICSAB003	ICSAB	02/07/25 13:59		Kareem	OK
12	CCV005	CCV005	CCV	02/07/25 14:02		Kareem	OK
13	CCB005	CCB005	CCB	02/07/25 14:06		Kareem	OK
14	Q1314-01	MBHHA3	SAM	02/07/25 14:10		Kareem	OK
15	Q1314-02	MBHHA4	SAM	02/07/25 14:14		Kareem	OK
16	Q1314-03	MBHHA5	SAM	02/07/25 14:18		Kareem	OK
17	Q1314-04	MBHHA6	SAM	02/07/25 14:22		Kareem	OK
18	Q1314-05	MBHHA7	SAM	02/07/25 14:26		Kareem	OK

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

Instrument ID: P5

Daily Analysis Runlog For Sequence/QCBatch ID # LB134644

Review By	Kareem Khairalla	Review On	2/10/2025 3:29:53 PM
Supervise By	Mohan Bera	Supervise On	2/10/2025 5:27:03 PM

STD. NAME	STD REF.#
ICAL Standard	MP84204,MP84388,MP84386,MP84385,MP84384,MP84383,MP84381
ICV Standard	MP84389
CCV Standard	MP84392
ICSA Standard	MP84390,MP84391
CRI Standard	
LCS Standard	MP84063
Chk Standard	MP84218,MP84219

19	Q1314-06	MBHHA7D	DUP	02/07/25 14:30		Kareem	OK
20	Q1314-05L	MBHHA7L	SD	02/07/25 14:34		Kareem	OK
21	Q1314-07	MBHHA7S	MS	02/07/25 14:38		Kareem	OK
22	PB166600BL	PBS600	MB	02/07/25 14:42		Kareem	OK
23	PB166600BS	LCS600	LCS	02/07/25 14:46		Kareem	OK
24	Q1273-03	MBHHA2	SAM	02/07/25 14:49		Kareem	OK
25	Q1273-04	MBHHA2D	DUP	02/07/25 14:53		Kareem	OK
26	Q1273-03L	MBHHA2L	SD	02/07/25 14:57		Kareem	OK
27	Q1273-05	MBHHA2S	MS	02/07/25 15:01		Kareem	OK
28	CCV006	CCV006	CCV	02/07/25 15:05		Kareem	OK
29	CCB006	CCB006	CCB	02/07/25 15:09		Kareem	OK

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

Instrument ID: P5

Daily Analysis Runlog For Sequence/QCBatch ID # LB134696

Review By	Mohan Bera	Review On	2/13/2025 11:53:27 AM
Supervise By	Kareem Khairalla	Supervise On	2/13/2025 1:12:52 PM

STD. NAME	STD REF.#
ICAL Standard	MP84204,MP84388,MP84386,MP84385,MP84384,MP84383,MP84381
ICV Standard	MP84446
CCV Standard	MP84392
ICSA Standard	MP84230,MP84231
CRI Standard	
LCS Standard	MP84063
Chk Standard	MP84218,MP84219

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	02/12/25 12:25		Kareem	OK
2	S1	S01	CAL2	02/12/25 12:29		Kareem	OK
3	S2	S02	CAL3	02/12/25 12:33		Kareem	OK
4	S3	S03	CAL4	02/12/25 12:37		Kareem	OK
5	S4	S04	CAL5	02/12/25 12:40		Kareem	OK
6	S5	S05	CAL6	02/12/25 12:44		Kareem	OK
7	S6	S06	CAL7	02/12/25 12:48		Kareem	OK
8	ICV005	ICV005	ICV	02/12/25 13:20	Inst. paused for calibration review	Kareem	OK
9	ICB005	ICB005	ICB	02/12/25 13:24		Kareem	OK
10	ICSA005	ICSA005	ICSA	02/12/25 13:28		Kareem	OK
11	ICSAB005	ICSAB005	ICSAB	02/12/25 13:32		Kareem	OK
12	CCV011	CCV011	CCV	02/12/25 13:36		Kareem	OK
13	CCB011	CCB011	CCB	02/12/25 13:40		Kareem	OK
14	PB166660TB	LEB660	MB	02/12/25 13:44		Kareem	OK
15	Q1292-01	E1PM9	SAM	02/12/25 13:48		Kareem	OK
16	Q1292-02	E1PM9D	DUP	02/12/25 13:52		Kareem	OK
17	Q1292-01L	E1PM9L	SD	02/12/25 13:56		Kareem	OK
18	Q1292-03	E1PM9S	MS	02/12/25 14:00	MS Fail For Pb(below RI)	Kareem	OK

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

Instrument ID: P5

Daily Analysis Runlog For Sequence/QCBatch ID # LB134696

Review By	Mohan Bera	Review On	2/13/2025 11:53:27 AM
Supervise By	Kareem Khairalla	Supervise On	2/13/2025 1:12:52 PM

STD. NAME	STD REF.#
ICAL Standard	MP84204,MP84388,MP84386,MP84385,MP84384,MP84383,MP84381
ICV Standard	MP84446
CCV Standard	MP84392
ICSA Standard	MP84230,MP84231
CRI Standard	
LCS Standard	MP84063
Chk Standard	MP84218,MP84219

19	PB166667BL	PBW667	MB	02/12/25 14:04		Kareem	OK
20	PB166667BS	LCS667	LCS	02/12/25 14:08		Kareem	OK
21	Q1314-08	MBHHA9	SAM	02/12/25 14:12		Kareem	OK
22	Q1314-09	MBHHA9D	DUP	02/12/25 14:16		Kareem	OK
23	Q1314-08L	MBHHA9L	SD	02/12/25 14:20		Kareem	OK
24	Q1314-10	MBHHA9S	MS	02/12/25 14:24		Kareem	OK
25	Q1315-01	MBHHA8	SAM	02/12/25 14:28		Kareem	OK
26	Q1315-02	MBHHA8D	DUP	02/12/25 14:32		Kareem	OK
27	Q1315-01L	MBHHA8L	SD	02/12/25 14:36		Kareem	OK
28	Q1315-03	MBHHA8S	MS	02/12/25 14:40		Kareem	OK
29	PB166670BL	PBW670	MB	02/12/25 14:57		Kareem	OK
30	PB166670BS	LCS670	LCS	02/12/25 15:01		Kareem	OK
31	CCV012	CCV012	CCV	02/12/25 15:05		Kareem	OK
32	CCB012	CCB012	CCB	02/12/25 15:09		Kareem	OK

ORIGIN ID:TTNA
SANDRA HERNANDEZ (609) 259-8200
111A N. GOLD DR.
ROBBINSVILLE, NJ 08691
UNITED STATES US

SHIP DATE: 05FEB25
ACTWGT: 20.00 LB
CAD: 101231259/INET4535

BILL SENDER

TO **MOHAMMAD AHMED**
ALLIANCE TECHNICAL GROUP LLC
284 SHEFFIELD STREET
MOUNTAINSIDE NJ 07092
(908) 789-8900
INV:
PO: CN003.100.09

REF: CN003.100.09
DEPT:

58C32/E49C/C6C4

J2510241217flzv

FedEx Express

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2/6/25 9:30

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Alliance TECHNICAL GROUP 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Login Summary Report

Order ID :	Q1314	Order Date :	2/6/2025 9:30:00 AM	Project Mgr :	Deepak
Client :	USEPA CLP SMO	Project :	51979	Report Type :	USEPA CLP
Contact :	Anita Kapadia	Receive Date :	2/6/2025 9:30:00 AM	EDD Type :	EPA CLP
Date Sign Off :	2/6/2025 11:17:36 AM				

Sample ID	Client ID	Matrix	Sampling Date	Test	Test Group	Method	TAT Days	Fax Due Date	HC Due Date
Q1314-01	MBHHA3	Solid	02/04/2025						
				Metals CLP Full		SFAM_AES	10	02/20/2025	02/20/2025
				Percent Solids		Chemtech -SOP	10	02/20/2025	02/20/2025
Q1314-02	MBHHA4	Solid	02/04/2025						
				Metals CLP Full		SFAM_AES	10	02/20/2025	02/20/2025
				Percent Solids		Chemtech -SOP	10	02/20/2025	02/20/2025
Q1314-03	MBHHA5	Solid	02/04/2025						
				Metals CLP Full		SFAM_AES	10	02/20/2025	02/20/2025
				Percent Solids		Chemtech -SOP	10	02/20/2025	02/20/2025
Q1314-04	MBHHA6	Solid	02/04/2025						
				Metals CLP Full		SFAM_AES	10	02/20/2025	02/20/2025
				Percent Solids		Chemtech -SOP	10	02/20/2025	02/20/2025
Q1314-05	MBHHA7	Solid	02/04/2025						
				Metals CLP Full		SFAM_AES	10	02/20/2025	02/20/2025
				Percent Solids		Chemtech -SOP	10	02/20/2025	02/20/2025
Q1314-06	MBHHA7D	Solid	02/04/2025						
				Metals CLP Full		SFAM_AES	10	02/20/2025	02/20/2025
				Percent Solids		Chemtech -SOP	10	02/20/2025	02/20/2025
Q1314-07	MBHHA7S	Solid	02/04/2025						
				Metals CLP Full		SFAM_AES	10	02/20/2025	02/20/2025
				Percent Solids		Chemtech -SOP	10	02/20/2025	02/20/2025
Q1314-08	MBHHA9	Water	02/04/2025						
				Metals CLP Full		SFAM_AES	10	02/20/2025	02/20/2025
Q1314-09	MBHHA9D	Water	02/04/2025						
				Metals CLP Full		SFAM_AES	10	02/20/2025	02/20/2025
Q1314-10	MBHHA9S	Water	02/04/2025						
				Metals CLP Full		SFAM_AES	10	02/20/2025	02/20/2025

WORKLIST(Hardcopy Internal Chain)

WorkList Name : PB166600 **WorkList ID :** 187537 **Department :** Digestion **Date :** 02-06-2025 13:37:09

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q1314-01	MBHHA3	Solid	Metals CLP Full	Cool 4 deg C	USEP01	C11	02/04/2025	SFAM_AES
Q1314-02	MBHHA4	Solid	Metals CLP Full	Cool 4 deg C	USEP01	C11	02/04/2025	SFAM_AES
Q1314-03	MBHHA5	Solid	Metals CLP Full	Cool 4 deg C	USEP01	C11	02/04/2025	SFAM_AES
Q1314-04	MBHHA6	Solid	Metals CLP Full	Cool 4 deg C	USEP01	C11	02/04/2025	SFAM_AES
Q1314-05	MBHHA7	Solid	Metals CLP Full	Cool 4 deg C	USEP01	C11	02/04/2025	SFAM_AES
Q1314-06	MBHHA7D	Solid	Metals CLP Full	Cool 4 deg C	USEP01	C11	02/04/2025	SFAM_AES
Q1314-07	MBHHA7S	Solid	Metals CLP Full	Cool 4 deg C	USEP01	C11	02/04/2025	SFAM_AES

379

Date/Time 02/06/25 13:50

Raw Sample Received by: SLW.met.dio

Raw Sample Relinquished by: JT(SM)

Date/Time 02/06/25 14:50

Raw Sample Received by: JT(SM)

Raw Sample Relinquished by: SLW.met.dio

WORKLIST(Hardcopy Internal Chain)

WorkList Name : PB166670 **WorkList ID :** 187631 **Department :** Digestion **Date :** 02-11-2025 10:25:55

380

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
Q1314-08	MBHHA9	Water	Metals CLP Full	1:1 HNO3 to pH < 2	USEP01	C11	02/04/2025	SFAM_AES
Q1314-09	MBHHA9D	Water	Metals CLP Full	1:1 HNO3 to pH < 2	USEP01	C11	02/04/2025	SFAM_AES
Q1314-10	MBHHA9S	Water	Metals CLP Full	1:1 HNO3 to pH < 2	USEP01	C11	02/04/2025	SFAM_AES
Q1315-01	MBHHA8	Water	Metals CLP Full	Cool 4 deg C	USEP01	C11	02/04/2025	SFAM_AES
Q1315-02	MBHHA8D	Water	Metals CLP Full	1:1 HNO3 to pH < 2	USEP01	C12	02/04/2025	SFAM_AES
Q1315-03	MBHHA8S	Water	Metals CLP Full	1:1 HNO3 to pH < 2	USEP01	C12	02/04/2025	SFAM_AES
						C12	02/04/2025	SFAM_AES

Date/Time 02/11/25 10:50

Raw Sample Received by: S.Reddy, metals

Raw Sample Relinquished by: JM (GM)

Date/Time 02/12/25 11:50

Raw Sample Received by: JM (GM)

Raw Sample Relinquished by: S.Reddy, metals